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Volume: 1197

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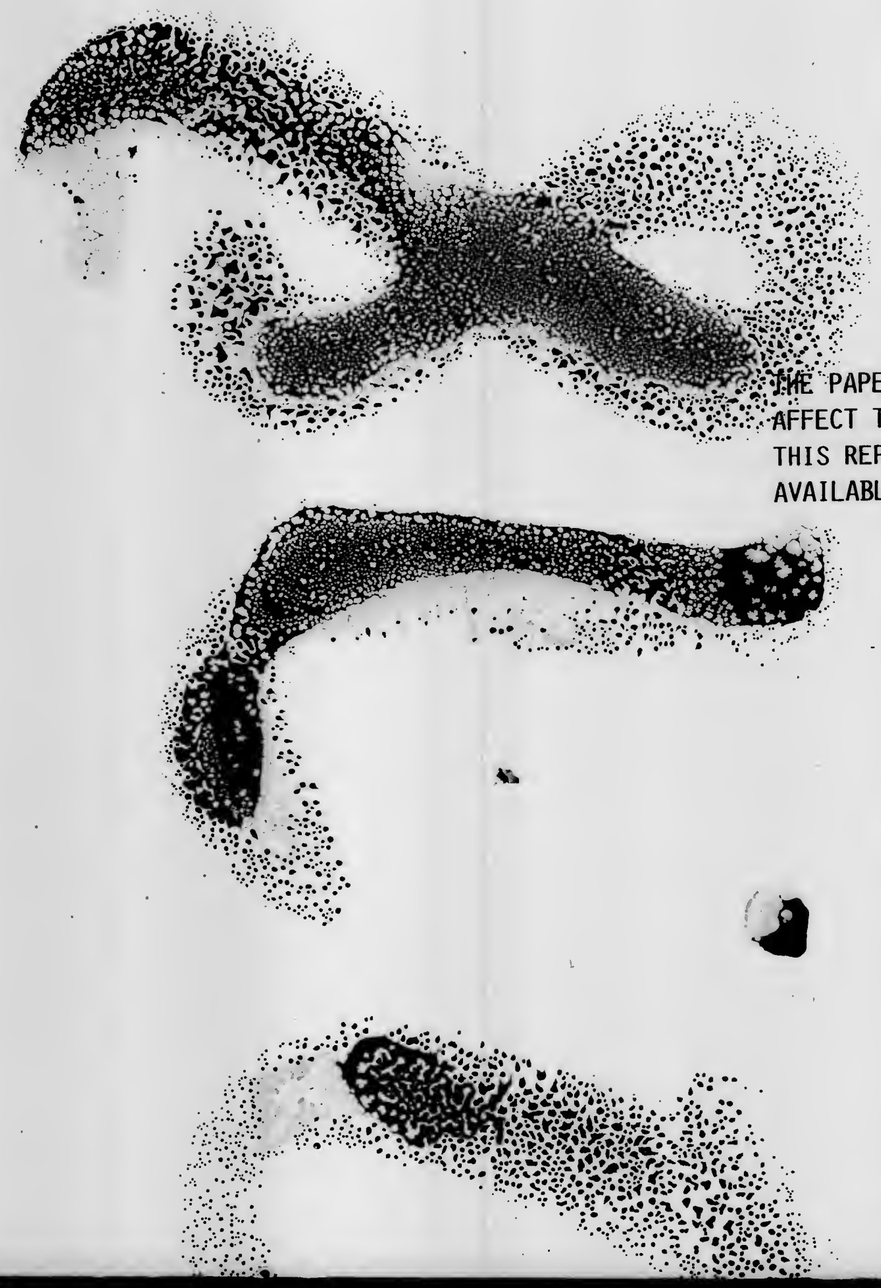
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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 12, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,301,370 through 5,303,422
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 10, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,914,752 through 4,916,751
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 8, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,580,296 through 4,581,770
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 5, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,774	07/006,054	11/01/88
(4,497,504)	(06/494,651)	(02/05/85)
Re. 33,906	07/006054	04/28/92
(4,801,585)	(06/945,038)	(01/31/89)
4,497,069	06/459,369	02/05/85
4,497,073	06/508,866	02/05/85
4,497,078	06/466,089	02/05/85
4,497,089	06/416,316	02/05/85
4,497,091	06/476,429	02/05/85
4,497,107	06/531,524	02/05/85
4,497,114	06/486,918	02/05/85
4,497,115	06/473,687	02/05/85
4,497,116	06/483,816	02/05/85
4,497,119	06/486,103	02/05/85
4,497,129	06/443,879	02/05/85
4,497,131	06/328,485	02/05/85
4,497,136	06/560,252	02/05/85
4,497,142	06/461,589	02/05/85
4,497,147	06/425,725	02/05/85
4,497,150	06/423,925	02/05/85
4,497,151	06/425,477	02/05/85
4,497,159	06/344,870	02/05/85
4,497,160	06/616,783	02/05/85
4,497,162	06/458,871	02/05/85
4,497,170	06/400,578	02/05/85
4,497,180	06/594,817	02/05/85
4,497,182	06/424,523	02/05/85
4,497,201	06/460,820	02/05/85
4,497,215	06/490,323	02/05/85
4,497,216	06/379,510	02/05/85
4,497,218	06/382,715	02/05/85
4,497,220	06/487,970	02/05/85
4,497,222	06/454,570	02/05/85
4,497,224	06/522,123	02/05/85
4,497,228	06/506,481	02/05/85
4,497,234	06/476,980	02/05/85
4,497,239	06/308,420	02/05/85
4,497,240	06/510,889	02/05/85
4,497,241	06/603,752	02/05/85
4,497,244	06/459,852	02/05/85
4,497,247	06/362,232	02/05/85
4,497,255	06/440,427	02/05/85
4,497,258	06/429,745	02/05/85
4,497,263	06/472,807	02/05/85
4,497,269	06/488,043	02/05/85
4,497,270	06/535,729	02/05/85
4,497,276	06/321,979	02/05/85
4,497,277	06/467,998	02/05/85
4,497,285	06/416,425	02/05/85
4,497,288	06/465,716	02/05/85
4,497,291	06/557,224	02/05/85
4,497,296	06/437,001	02/05/85
4,497,298	06/587,513	02/05/85
4,497,299	06/570,556	02/05/85
4,497,302	06/471,127	02/05/85
4,497,306	06/403,858	02/05/85
4,497,325	06/398,623	02/05/85
4,497,331	06/407,081	02/05/85

Patent Number	Serial Number	Issue Date
4,497,333	06/491,665	02/05/85
4,497,334	06/397,454	02/05/85
4,497,342	06/505,832	02/05/85
4,497,346	06/300,663	02/05/85
4,497,348	06/634,044	02/05/85
4,497,353	06/300,757	02/05/85
4,497,354	06/617,842	02/05/85
4,497,366	06/581,339	02/05/85
4,497,370	06/407,514	02/05/85
4,497,371	06/274,170	02/05/85
4,497,376	06/404,367	02/05/85
4,497,384	06/336,804	02/05/85
4,497,390	06/497,121	02/05/85
4,497,394	06/416,023	02/05/85
4,497,396	06/419,851	02/05/85
4,497,397	06/350,284	02/05/85
4,497,403	06/507,445	02/05/85
4,497,408	06/445,362	02/05/85
4,497,412	06/588,764	02/05/85
4,497,414	06/418,973	02/05/85
4,497,415	06/576,868	02/05/85
4,497,426	06/527,374	02/05/85
4,497,431	06/336,675	02/05/85
4,497,435	06/549,276	02/05/85
4,497,437	06/415,945	02/05/85
4,497,438	06/452,533	02/05/85
4,497,443	06/415,214	02/05/85
4,497,445	06/540,102	02/05/85
4,497,447	06/496,830	02/05/85
4,497,477	06/318,450	02/05/85
4,497,491	06/563,237	02/05/85
4,497,493	06/629,813	02/05/85
4,497,506	06/461,135	02/05/85
4,497,508	06/392,372	02/05/85
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4,497,512	06/533,388	02/05/85
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4,497,542	06/269,141	02/05/85
4,497,543	06/269,211	02/05/85
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4,497,746	06/422,332	02/05/85
4,497,748	06/421,699	02/05/85
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4,497,751	06/398,186	02/05/85
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4,497,909	06/290,629	02/05/85
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4,497,915	06/413,471	02/05/85
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4,497,993	06/513,287	02/05/85
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4,498,022	06/329,925	02/05/85
4,498,025	06/323,488	02/05/85
4,498,030	06/441,185	02/05/85
4,498,031	06/455,395	02/05/85
4,498,036	06/522,979	02/05/85
4,498,043	06/391,350	02/05/85
4,498,047	06/444,971	02/05/85
4,498,058	06/378,556	02/05/85
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4,801,108	07/137,481	01/31/89
4,801,117	07/147,717	01/31/89
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4,801,793	07/143,411	01/31/89
4,801,794	07/045,746	01/31/89
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5,183,029	07/868,197	02/02/93
5,183,037	07/655,387	02/02/93
5,183,043	07/613,904	02/02/93
5,183,045	07/460,336	02/02/93
5,183,051	07/640,968	02/02/93
5,183,055	07/813,655	02/02/93
5,183,060	07/659,651	02/02/93
5,183,063	07/712,405	02/02/93
5,183,068	07/710,137	02/02/93
5,183,077	07/803,987	02/02/93
5,183,078	07/719,992	02/02/93
5,183,088	07/877,771	02/02/93
5,183,094	07/808,172	02/02/93
5,183,099	07/662,288	02/02/93
5,183,107	07/879,027	02/02/93
5,183,108	07/747,042	02/02/93
5,183,119	07/714,907	02/02/93
5,183,123	07/813,979	02/02/93
5,183,125	07/499,517	02/02/93
5,183,133	07/668,866	02/02/93
5,183,135	07/792,625	02/02/93
5,183,143	07/708,288	02/02/93
5,183,146	07/838,135	02/02/93
5,183,154	07/825,595	02/02/93
5,183,156	07/899,103	02/02/93
5,183,163	07/828,354	02/02/93
5,183,166	07/638,082	02/02/93
5,183,167	07/755,845	02/02/93
5,183,170	07/573,023	02/02/93
5,183,174	07/905,813	02/02/93
5,183,178	07/908,776	02/02/93
5,183,183	07/811,848	02/02/93
5,183,185	07/656,195	02/02/93
5,183,194	07/816,617	02/02/93
5,183,196	07/813,605	02/02/93
5,183,200	07/756,960	02/02/93
5,183,204	07/848,315	02/02/93
5,183,214	07/692,652	02/02/93
5,183,217	07/860,839	02/02/93
5,183,223	07/722,254	02/02/93
5,183,224	07/522,810	02/02/93
5,183,225	07/294,788	02/02/93
5,183,226	07/764,243	02/02/93
5,183,227	07/819,466	02/02/93

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5,183,228	07/711,680	02/02/93
5,183,229	07/805,633	02/02/93
5,183,231	07/857,109	02/02/93
5,183,232	07/828,422	02/02/93
5,183,233	07/698,136	02/02/93
5,183,235	07/590,080	02/02/93
5,183,247	07/779,375	02/02/93
5,183,249	07/575,072	02/02/93
5,183,252	07/692,817	02/02/93
5,183,253	07/634,597	02/02/93
5,183,256	07/874,506	02/02/93
5,183,257	07/805,893	02/02/93
5,183,258	07/794,522	02/02/93
5,183,263	07/800,848	02/02/93
5,183,275	07/828,352	02/02/93
5,183,278	07/608,274	02/02/93
5,183,279	07/682,628	02/02/93
5,183,281	07/669,928	02/02/93
5,183,282	07/674,466	02/02/93
5,183,290	07/743,030	02/02/93
5,183,295	07/749,861	02/02/93
5,183,302	07/740,737	02/02/93
5,183,303	07/766,447	02/02/93
5,183,307	07/804,096	02/02/93
5,183,309	07/764,809	02/02/93
5,183,317	07/702,535	02/02/93
5,183,320	07/779,934	02/02/93
5,183,322	07/688,907	02/02/93
5,183,325	07/594,834	02/02/93
5,183,327	07/757,217	02/02/93
5,183,328	07/805,249	02/02/93
5,183,329	07/745,559	02/02/93
5,183,334	07/681,976	02/02/93
5,183,335	07/650,770	02/02/93
5,183,339	07/840,018	02/02/93
5,183,342	07/807,339	02/02/93
5,183,346	07/883,530	02/02/93
5,183,348	07/895,107	02/02/93
5,183,352	07/838,484	02/02/93
5,183,353	07/780,070	02/02/93
5,183,354	07/725,437	02/02/93
5,183,355	07/791,746	02/02/93
5,183,357	07/761,880	02/02/93
5,183,358	07/905,421	02/02/93
5,183,364	07/798,628	02/02/93
5,183,370	07/628,487	02/02/93
5,183,376	07/623,451	02/02/93
5,183,377	07/359,083	02/02/93
5,183,386	07/358,423	02/02/93
5,183,391	07/881,301	02/02/93
5,183,399	07/629,253	02/02/93
5,183,417	07/805,135	02/02/93
5,183,422	07/851,028	02/02/93
5,183,427	07/885,832	02/02/93
5,183,436	07/863,210	02/02/93
5,183,437	07/708,895	02/02/93
5,183,449	07/592,205	02/02/93
5,183,450	07/802,507	02/02/93
5,183,460	07/877,237	02/02/93
5,183,462	07/570,395	02/02/93
5,183,465	07/636,063	02/02/93
5,183,467	07/517,577	02/02/93
5,183,468	07/679,561	02/02/93
5,183,472	07/629,620	02/02/93
5,183,473	07/692,098	02/02/93
5,183,474	07/700,153	02/02/93
5,183,480	07/783,472	02/02/93
5,183,482	07/717,790	02/02/93
5,183,496	07/835,649	02/02/93
5,183,497	07/835,646	02/02/93
5,183,503	07/882,009	02/02/93
5,183,508	07/484,518	02/02/93
5,183,511	07/352,644	02/02/93
5,183,512	07/751,909	02/02/93
5,183,514	07/677,927	02/02/93
5,183,518	07/830,464	02/02/93
5,183,519	07/711,632	02/02/93
5,183,524	07/678,845	02/02/93
5,183,525	07/528,294	02/02/93
5,183,536	07/850,522	02/02/93
5,183,540	07/584,280	02/02/93
5,183,542	07/461,578	02/02/93
5,183,543	06/863,527	02/02/93
5,183,553	07/379,809	02/02/93
5,183,554	07/756,813	02/02/93
5,183,555	07/751,947	02/02/93
5,183,558	07/636,463	02/02/93
5,183,560	07/756,446	02/02/93
5,183,572	07/749,302	02/02/93
5,183,575	07/751,946	02/02/93
5,183,577	07/817,157	02/02/93
5,183,578	07/598,696	02/02/93
5,183,584	07/832,873	02/02/93
5,183,589	07/501,481	02/02/93
5,183,591	07/442,590	02/02/93
5,183,592	07/639,020	02/02/93
5,183,601	07/706,210	02/02/93
5,183,607	07/808,814	02/02/93
5,183,613	07/773,744	02/02/93
5,183,616	07/433,044	02/02/93
5,183,620	07/635,917	02/02/93
5,183,625	07/679,228	02/02/93
5,183,627	07/798,789	02/02/93
5,183,645	07/625,550	02/02/93
5,183,648	07/665,794	02/02/93
5,183,667	07/677,485	02/02/93
5,183,668	07/786,940	02/02/93
5,183,679	07/733,666	02/02/93
5,183,687	07/610,417	02/02/93
5,183,694	07/598,722	02/02/93
5,183,701	07/747,490	02/02/93
5,183,710	07/690,009	02/02/93
5,183,745	07/426,541	02/02/93
5,183,748	06/800,669	02/02/93
5,183,752	07/605,539	02/02/93
5,183,755	07/482,717	02/02/93
5,183,758	07/528,006	02/02/93
5,183,765	07/595,975	02/02/93
5,183,779	07/695,018	02/02/93
5,183,784	07/760,454	02/02/93
5,183,785	07/545,864	02/02/93
5,183,789	07/667,120	02/02/93
5,183,790	07/790,621	02/02/93
5,183,791	07/840,197	02/02/93
5,183,805	07/567,407	02/02/93
5,183,810	07/744,565	02/02/93
5,183,811	07/554,343	02/02/93
5,183,822	07/631,957	02/02/93
5,183,831	07/748,590	02/02/93
5,183,851	07/752,977	02/02/93
5,183,853	07/485,928	02/02/93
5,183,855	07/762,607	02/02/93
5,183,864	07/558,955	02/02/93
5,183,865	07/642,103	02/02/93
5,183,868	07/556,631	02/02/93
5,183,872	07/782,805	02/02/93
5,183,874	07/599,475	02/02/93
5,183,887	07/727,192	02/02/93
5,183,893	07/664,120	02/02/93
5,183,896	07/666,515	02/02/93
5,183,897	07/687,272	02/02/93
5,183,898	07/792,850	02/02/93
5,183,901	07/825,359	02/02/93
5,183,904	07/796,048	02/02/93
5,183,907	07/784,743	02/02/93
5,183,908	07/485,821	02/02/93
5,183,913	07/812,902	02/02/93
5,183,915	07/846,364	02/02/93
5,183,918	07/398,591	02/02/93
5,183,919	07/739,778	02/02/93
5,183,920	07/819,895	02/02/93
5,183,923	07/500,432	02/02/93
5,183,925	07/623,386	02/02/93
5,183,926	07/759,794	02/02/93
5,183,929	07/770,333	02/02/93
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5,183,951	07/765,874	02/02/93
5,183,952	07/687,183	02/02/93
5,183,957	07/509,057	02/02/93
5,183,958	07/901,647	02/02/93
5,183,963	07/789,982	02/02/93
5,183,974	07/862,706	02/02/93
5,183,984	07/841,260	02/02/93
5,183,985	07/623,808	02/02/93
5,183,991	07/720,848	02/02/93
5,183,992	07/750,837	02/02/93
5,183,996	07/724,243	02/02/93
5,183,999	07/811,415	02/02/93
5,184,014	07/785,090	02/02/93
5,184,040	07/575,536	02/02/93
5,184,051	07/293,564	02/02/93
5,184,056	07/450,682	02/02/93
5,184,062	07/522,181	02/02/93
5,184,063	07/834,748	02/02/93
5,184,083	07/676,282	02/02/93
5,184,103	07/649,181	02/02/93
5,184,104	07/538,093	02/02/93
5,184,105	07/661,371	02/02/93
5,184,108	07/638,443	02/02/93
5,184,110	07/772,542	02/02/93
5,184,111	07/599,701	02/02/93
5,184,113	07/784,128	02/02/93
5,184,126	07/458,116	02/02/93
5,184,137	06/234,037	02/02/93
5,184,138	07/067,578	02/02/93
5,184,160	07/672,369	02/02/93
5,184,163	07/740,449	02/02/93
5,184,189	07/706,831	02/02/93
5,184,190	07/706,043	02/02/93
5,184,201	07/793,235	02/02/93
5,184,230	07/634,120	02/02/93
5,184,234	07/764,145	02/02/93
5,184,238	07/797,036	02/02/93
5,184,239	07/743,076	02/02/93
5,184,241	07/369,171	02/02/93
5,184,249	07/802,828	02/02/93
5,184,259	07/732,946	02/02/93
5,184,260	07/727,647	02/02/93
5,184,276	07/711,170	02/02/93
5,184,297	07/602,568	02/02/93
5,184,298	07/575,012	02/02/93
5,184,305	07/621,627	02/02/93
5,184,317	07/623,238	02/02/93
5,184,331	07/891,120	02/02/93
5,184,338	07/655,181	02/02/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 1/31/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,356,296	06/237,838	02/25/81	10/26/82	02/03/97
4,378,520	06/232,695	02/09/81	03/29/83	01/31/97
4,463,438	06/329,707	12/11/81	07/31/84	02/03/97
4,477,431	06/225,005	01/14/81	10/16/84	02/06/97
4,645,465	06/664,238	10/24/84	02/24/87	02/05/97
4,651,536	06/570,233	08/19/83	03/24/87	01/31/97
4,652,095	06/780,411	09/26/85	03/24/87	02/03/97
4,700,209	06/792,915	10/30/85	10/13/87	01/31/97
4,721,010	06/939,251	12/05/86	01/26/88	02/05/97
4,722,895	06/654,213	09/25/84	02/02/88	02/03/97
4,746,438	07/103,462	10/01/87	05/24/88	01/31/97
4,960,017	07/372,831	06/29/89	10/02/90	01/31/97
4,970,625	07/344,457	04/28/89	11/13/90	01/31/97
5,002,058	07/340,050	04/18/89	03/26/91	01/31/97
5,062,361	07/557,406	07/23/90	11/05/91	02/03/97
5,062,731	07/476,741	02/08/90	11/05/91	01/31/97
5,070,650	07/600,914	10/22/90	12/10/91	02/03/97
5,084,046	07/344,385	04/28/89	01/28/92	02/05/97
5,088,229	07/563,530	08/06/90	02/18/92	01/31/97
5,103,920	07/546,440	06/29/90	04/14/92	02/03/97
5,147,110	07/617,832	11/26/90	09/15/92	01/31/97
5,149,222	07/771,652	10/04/91	09/22/92	01/31/97
5,158,979	07/340,344	04/19/89	10/27/92	01/31/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,348,619, Re. S.N. 08/739,885, Oct. 31, 1996, Cl. 156/664.1, METAL SELECTIVE POLYMER REMOVAL, Brynne K. Bohannon, et. al., Owner of Record: *FSI International, Inc., Chaska, Minn.*, Attorney or Agent: Walter J. Steinkraus, Ex. Gp.: 1109

5,374,328, Re. S.N. 08/751,776, Dec. 5, 1996, Cl. 156/628, METHOD OF FABRICATING GROUP III-V COMPOUND SEMICONDUCTOR DEVICES USING SELECTIVE ETCHING, Ronald D. Remba, et. al., Owner of Record: *Watkins Johnson Co., Palo Alto, Calif.*, Attorney or Agent: Maria S. Swiatek, Ex. Gp.: 1109

5,383,678, Re. S.N. 08/786,863, Jan. 22, 1997, Cl. 280/661, MULTI-ELEMENT WHEEL ALIGNMENT SHIM ASSEMBLY, AND METHOD OF USE, Gary L. Sokol, Owner of Record: *Ingalls Engineering Co., Inc., Longmont, Colo.*, Attorney or Agent: Harold A. Burdick, Ex. Gp.: 3106

5,384,966, Re. S.N. 08/792,660, Jan. 31, 1997, Cl. 33/265, BOW SIGHT, Charles S. Gibbs, Owner of Record: *C. S. Gibbs Corp., Roscoe, Ill.*, Attorney or Agent: Paul J. Korniczky, Ex. Gp.: 2406

5,385,711, Re. S.N. 08/787,160, Jan. 23, 1997, Cl. 422/186.070, ELECTROLYTIC CELL FOR GENERATING STERILIZATION SOLUTIONS HAVING INCREASED OZONE CONTENT, Forrest A. Baker, et. al., Owner of Record: *Miox Corp., Albuquerque, N. Mex.*, Attorney or Agent: Calvin B. Ward, Ex. Gp.: 2204

5,417,516, Re. S.N. 08/797,778, Feb. 7, 1997, Cl. 404/71, ELECTRICALLY HEATED PAVING SCREED, Ralph D. Birtchet, Owner of Record: *Universal Screed, Inc., Centralia, Wash.*, Attorney or Agent: Marcia S. Kelbon, Ex. Gp.: 3506

5,417,665, Re. S.N. 08/786,936, Jan. 23, 1997, Cl. 604/164, INTRAVASCULAR CANNULA, Carlo R. De La Mata, et. al., Owner of Record: *Cordis Corp., Miami Lakes, Fla.*, Attorney or Agent: George H. Gerstman, Ex. Gp.: 3301

5,495,108, Re. S.N. 08/792,303, Jan. 31, 1997, Cl. 250/288, ORTHOGONAL ION SAMPLING FOR ELECTROSPRAY LC/MS, Charles A. Appfel, Jr., et. al., Owner of Record: *Hewlett-Packard Co., Palo Alto, Calif.*, Attorney or Agent: Janet Pauline Clark, Ex. Gp.: 2506

5,516,909, Re. S.N. 08/800,384, Feb. 14, 1997, Cl. 546, PROCESS FOR PRODUCING AMINE-BORANES, Jeffrey M. Sullivan, Owner of Record: *Boulder Scientific Co., Mead, Colo.*, Attorney or Agent: Edward S. Irons, Ex. Gp.: 1209

5,570,684, Re. S.N. 08/801,046, Feb. 14, 1996, Cl. 128/201.13, HEATING AND HUMIDIFYING RESPIRATORY MASK, R. Douglas Behr, Owner of Record: *Inventor*, Attorney or Agent: Christopher John Rudy, Ex. Gp.: 3312

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,396,806, Reexam. No. 90/004,565, Feb. 26, 1997, Cl. 381/103, HEARING AID AMPLIFIER, Jared A. Anderson, Owner of Record: *A & L Ventures I, Orinda, Calif.*, Attorney or Agent: Kenneth R. Allen, Townsend and Townsend & Crew, San Francisco, Calif., Ex. Gp.: 2605, Requester: Siemens Hearing Instruments, Inc., c/o Mark H. Jay, Siemens Intellectual Property Dept., Iselin, N.J.

4,605,576, Reexam. No. 90/004,570, March 3, 1997, Cl. 428/036.6, MULTILAYER PLASTIC ARTICLES, Saleh A. Jabarin, et. al., Owner of Record: *Owens-Brockway Plastic Prod., Inc., Toledo, Ohio*, Attorney or Agent: Howard G. Bruse, Owens-Illinois, Inc., Toledo, Ohio, Ex. Gp.: 1315, Requester: Owner

4,713,147, Reexam. No. 90/004,566, Feb. 28, 1997, Cl. 162/358.3, EXTENDED NIP PRESS WITH DISPLACEABLE CENTER OF GRAVITY FOR THE SUPPORTING FORCE, Esko Saarinen, Owner of Record: *Valmet Paper Machinery, Inc., Helsinki, Finland*, Attorney or Agent: Kenneth E. Payne, Finnegan, Henderson, Farabow, Garrett & Dunner, Wash., D.C., Ex. Gp.: 1303, Requester: Beloit Corp., Beloit, Wis., c/o George Wheeler, McAndrews, Held & Malloy, Chicago, Ill.

5,098,676, Reexam. No. 90/004,567, Feb. 28, 1997, Cl. 422/292, STERILIZATION AND STORAGE CONTAINER TRAY, John A. Brooks, Jr., Owner of Record: *Poly Vac Inc., Manchester, N.H.*, Attorney or Agent: Norman P. Soloway, Hayes Soloway Hennessey Grossman & Hage, Manchester, N.H., Ex. Gp.: 1312, Requester: Owner

5,160,209, Reexam. No. 90/004,568, Feb. 28, 1997, Cl. 402/075, FASTENER ASSEMBLY FOR CONCEALABLY FASTENING A PAPER RETAINING MECHANISM TO A BINDER, Robert F. Schuessler, Owner of Record: *Wells Aluminum Corp., c/o Robert F. Schuessler, SSS Enterprises, Vero Beach, Fla.*, Attorney or Agent: John W. Harbst, Dressler, Goldsmith Shore Sutker & Milnamow, Chicago, Ill., Ex. Gp.: 3206, Requester: Kenneth R. Adamo & Lawrence S. Drasner, Jones Day Reavis & Pogue, Cleveland, Ohio

5,300,564, Reexam. No. 90/004,569, Feb. 28, 1997, Cl. 525/054.1, DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS, David Avnir, et. al., Owner of Record: *Yissum Research Development Comp. of the Hebrew Univ. of Jerusalem, Jerusalem, Israel*, Attorney or Agent: Benjamin J. Hauptman, Lowe Price LeBlanc & Becker, Alexandria, Va., Ex. Gp.: 1505, Requester: Alvin T. Rockhill, The Goodyear Tire & Rubber Co., Akron, Ohio

5,564,741, Reexam. No. 90/004,563, Feb. 24, 1997, Cl. 280/740, AIR BAG AND SEAL ARRANGEMENT, Alan J. Ward, et. al., Owner of Record: *Morton International Inc., Chicago, Ill.*, Attorney or Agent: Gerald K. White, Morton International, Inc., Chicago, Ill., Ex. Gp.: 3106, Requester: Owner

5,583,937, Reexam. No. 90/004,564, Feb. 25, 1997, Cl. 380/020, METHOD FOR PROVIDING VIDEO PROGRAMMING NEARLY ON DEMAND, Kathryn E. Ullrich, et. al., Owner of Record: *GTE Service Corp., Stamford, Conn.; GTE Laboratories Inc., Waltham, Mass.*, Attorney or Agent: Barry W. Graham, Finnegan, Henderson, Farabow, Garrett & Dunner, Wash., D.C., Ex. Gp.: 2202, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 07, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,374	71/073,911	04/04/1916
109,387	71/074,667	04/04/1916
333,604	71/371,185	03/31/1936
333,641	71/369,301	03/31/1936
333,642	71/369,300	03/31/1936
333,654	71/365,867	03/31/1936
333,667	71/370,724	03/31/1936
333,668	71/370,704	03/31/1936
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624,308	71/695,387	04/03/1956
624,313	71/646,796	04/03/1956
624,315	71/665,926	04/03/1956
624,319	71/682,344	04/03/1956
624,321	71/684,771	04/03/1956
624,326	71/690,980	04/03/1956
624,329	71/663,668	04/03/1956
624,334	71/688,627	04/03/1956
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624,350	71/695,154	04/03/1956
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624,621	71/687,137	04/03/1956
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624,630	71/684,374	04/03/1956
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1,036,534	73/052,979	03/30/1976
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1,036,775	73/038,184	03/30/1976
1,036,776	73/038,234	03/30/1976
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1,036,786	73/046,925	03/30/1976
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1,037,046	73/041,221	03/30/1976
1,037,051	73/042,926	03/30/1976
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1,037,105	72/451,157	03/30/1976
1,037,114	72/462,555	03/30/1976
1,037,115	72/466,942	03/30/1976
1,037,118	73/049,475	03/30/1976
1,037,119	73/048,017	03/30/1976
1,037,121	73/034,981	03/30/1976
1,037,122	73/044,387	03/30/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

President Banking Company, Inc., Washington, Ill., Reg. No. 781,831, for the mark "MUNCH-KINS", Canc. No. 24,555.

Systems Management, Inc., SMI, Des Plains, Ill., Reg. No. 1,315,092, for the mark "SMI", Canc. No. 25,482.

Key Airlines, Inc., Herndon, Va., Reg. No. 1,754,618, for the mark "MISCELLANEOUS DESIGN", Canc. No. 25,877.

Davalco, Amhearst, Mass., Reg. No. 1,778,367, for the mark "PACKHORSE", Canc. No. 25,726.

Patrick Donovan dba Golf Today Magazine, Inc., Roswell, Ga., Reg. No. 1,761,282, for the mark "GOLF TODAY MAGAZINE (STYLIZED)", Canc. No. 25,668.

NSK Industries, Inc., New York, N.Y., Reg. No. 1,720,418 and 1,769,365, for the mark "MADISON KIDS", Canc. No. 25,765.

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Stax, Inc., Secaucus, N.J., Reg. No. 1,254,020, for the mark "STAX", Canc. No. 25,862.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patent Term Extended Under 35 U.S.C. § 156

A certificate extending the term of the following patent was issued on March 17, 1997:

U.S. Patent No. 4,364,921; Granted December 21, 1982, to Ulrich Speck, et. al.; Original Expiration Date: March 6, 2000; Owner of Record: Schering Aktiengesellschaft; Title: Novel Triodinated Isophthalic Acid Diamides as Nonionic X-Ray Contrast Media; Classification: 424/9.454; Product Trade Name: ULTRAVIST®; Term Extended: five years.

Errata

In the list of patents which expired on June 06, 1993, due to failure to pay maintenance fees, in the O.G. of August 24, 1993, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,836,561	07/015,863	06/06/89	02/17/87

Errata

In the list of patents which expired on February 21, 1996, due to failure to pay maintenance fees, in the O.G. of April 30, 1996, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,433,057	06/348,067	02/21/96	07/03/80

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before May 30, 1997.

Evans, David W., 3600 Ave. DuParc, #2004, Montreal, Que., H2X 3R2, Canada

Jain, Nada, 11 Georgia Ln., Croton-On-Hudson, N.Y. 10520

Reutens, Patrick G., P.O. Box 60271, Palo Alto, Calif. 94306

March 17, 1997

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/365,605	Dec. 27, 1994	Kenneth Tighe Thomas Sweeting Timothy Fleischer	System For Performing Multiple Processes On Images Of Scanned Documents
08/536,624	Sept. 29, 1995	Joseph A. Horton	Anatomically Shaped Vasocclusive Devices
08/554,263	Nov. 6, 1995	Judy James Potter	Image Statement Preparation By Work Flow Management Using Statement Cycles And Statement Interactive Sessions
08/615,474	Mar. 15, 1996	Michael Leary	Automated Visual Inspection Apparatus
08/706,204	Aug. 29, 1996	Franco Ranalli	Three Stages Process For The Preparation Of Solid Thermoplastic Compositions . . . And Extrudable Compositions

Section 44 Trademark Applications May Be Based On Applications And Registrations In World Trade Organization Countries

The World Trade Organization (WTO), established on January 1, 1995, resulted from the Uruguay Round trade negotiations and is the successor to the General Agreement on Tariffs and Trade (GATT). The WTO Agreement entered into force in the United States on January 1, 1996. Article 4 of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), provides that any advantage, favor, privilege or immunity that a WTO member gives to the nationals of another WTO member must normally be extended to the nationals of all other members. Section 44(b) of the Trademark Act, 15 U.S.C. 1126(b), provides that any person whose country of origin is a party to any convention or treaty to which the United States is a member is entitled to the benefits of Section 44. Accordingly, foreign applicants may file a U.S. application based on either (a) a valid registration from any of the WTO members listed below, or (b) a claim of priority arising from an application from any of the WTO members listed below. A claim of priority may be made only if the United States application is filed within 6 months of the date of the first filing of the foreign application. Benefits accorded to nationals under this agreement by the United States date from January 1, 1996.

WTO members who are also members of the Paris Convention for the Protection of Industrial Property have been able to base their U.S. application on their home country application or registration since the date of the country's accession to the Paris Convention. Therefore, for convenience, the following chart lists only WTO members who are not presently members of the Paris Convention.

Country	Effective Date of Membership in WTO	Term of Registration (in years)	Renewal Period (in years)
Angola	Nov. 23, 1996	10 (from date of application)	10
Antigua and Barbuda	Jan. 1, 1995	14 (from date of application)	14
Bahrain	Jan. 1, 1995	10 (from date of application)	10
Belize*	Jan. 1, 1995		
Botswana**	May 31, 1995		
Brunei Darussalam	Jan. 1, 1995	7 (from date of application)	14
Djibouti	May 31, 1995	10 (from date of application)	10
Dominica	Jan. 1, 1995	14 (from date of application)	14
European Community	Jan. 1, 1995	10 (from date of application)	10
Fiji	Jan. 14, 1996	14 (from date of application)	14
Grenada*	Feb. 22, 1996		
Guatemala	July 21, 1995	10 (from date of registration)	10
Hong Kong	Jan. 1, 1995	7 (from date of application)	14
India	Jan. 1, 1995	7 (from date of application)	7
Jamaica	Mar. 9, 1995	7 (from date of application)	14
Kuwait	Jan. 1, 1995	10 (from date of registration)	10
Macau	Jan. 1, 1995	7 (from date of application)	7
Mozambique	Aug. 26, 1995	10 (from date of registration)	10
Myanmar***	Jan. 1, 1995		
Namibia	Jan. 1, 1995	10 (from date of registration)	10
Pakistan	Jan. 1, 1995	7 (from date of application)	15
Papua New Guinea	June 9, 1996	10 (from date of application)	10
Qatar	Jan. 13, 1996	10 (from date of application)	10
Sierra Leone	July 23, 1995	14 (from date of application)	14
Slovenia	July 30, 1995	10 (from date of application)	10
Solomon Islands*	July 26, 1996		
Thailand	Jan. 1, 1995	10 (from date of registration)	10

*Term and Renewal Dependent on United Kingdom Registration
**Term and Renewal Dependent on United Kingdom or South African Registration
***Unlimited Term from Date of First Use

March 17, 1997

PHILLIP G. HAMPTON, II
Assistant Commissioner for Trademarks

Certificates of Correction For the Week of April 15, 1997

				5,483,055	5,516,001	5,530,067	5,544,312
				5,485,242	5,516,078	5,530,591	5,546,040
				5,487,780	5,516,134	5,531,485	5,546,948
				5,489,600	5,517,219	5,531,945	5,547,289
				5,490,356	5,517,470	5,532,333	5,547,350
B1 5,019,450	5,160,002	5,368,260	5,455,770	5,490,828	5,519,115	5,532,887	5,547,482
B1 5,367,884	5,170,887	5,382,109	5,459,529	5,491,567	5,519,580	5,533,112	5,548,233
P. 09,562	5,176,152	5,387,235	5,459,815	5,493,028	5,519,610	5,535,011	5,548,240
Re. 35,346	5,196,959	5,391,145	5,460,376	5,495,578	5,519,932	5,535,417	5,548,321
Re. 35,387	5,201,911	5,404,311	5,460,623	5,497,509	5,521,319	5,536,439	5,548,424
D. 352,762	5,209,732	5,408,004	5,462,416	5,500,849	5,522,448	5,538,361	5,548,834
D. 374,953	5,212,938	5,411,269	5,462,871	5,501,642	5,522,551	5,539,828	5,549,488
D. 376,141	5,213,881	5,412,413	5,463,158	5,501,729	5,523,073	5,540,559	5,549,745
D. 377,106	5,226,995	5,412,859	5,464,872	5,502,413	5,523,391	5,540,716	5,549,951
4,517,480	5,230,183	5,414,879	5,465,214	5,503,639	5,524,314	5,541,344	5,550,502
4,804,161	5,239,439	5,420,076	5,465,308	5,505,606	5,526,041	5,541,449	5,550,655
4,824,552	5,266,723	5,420,898	5,468,323	5,506,379	5,526,047	5,541,551	5,551,351
4,872,087	5,275,948	5,427,788	5,468,617	5,506,434	5,526,711	5,541,739	5,551,371
4,964,416	5,295,281	5,433,072	5,468,628	5,510,196	5,526,847	5,542,253	5,551,472
5,051,822	5,318,741	5,433,108	5,468,845	5,510,648	5,527,158	5,542,275	5,551,691
5,075,581	5,319,752	5,434,811	5,474,522	5,510,909	5,527,170	5,542,454	5,551,866
5,136,825	5,346,925	5,447,921	5,478,213	5,511,940	5,528,173	5,542,811	5,552,206
5,144,848	5,350,054	5,451,700	5,478,832	5,512,432	5,528,180	5,543,656	5,552,237
5,157,283	5,363,109	5,454,476	5,482,118	5,512,594	5,528,644	5,544,233	5,552,908

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5,552,919	5,561,540	5,566,640	5,571,544	5,575,133	5,584,116	5,591,516	5,597,639
5,553,167	5,562,425	5,566,828	5,571,577	5,575,182	5,585,332	5,591,728	5,597,861
5,553,286	5,562,516	5,567,331	5,571,653	5,576,117	5,585,390	5,592,660	5,598,576
5,553,287	5,562,870	5,567,654	5,572,105	5,577,345	5,585,433	5,592,803	5,599,564
5,553,376	5,563,041	5,567,759	5,572,270	5,578,691	5,585,452	5,593,233	5,599,659
5,554,340	5,563,138	5,567,997	5,572,308	5,578,816	5,587,537	5,593,246	5,599,812
5,555,185	5,563,172	5,568,093	5,572,329	5,579,323	5,587,650	5,593,303	5,600,016
5,555,508	5,563,236	5,568,168	5,572,365	5,579,644	5,587,905	5,594,205	5,600,240
5,556,251	5,563,317	5,568,416	5,573,455	5,580,076	5,588,541	5,594,208	5,600,288
5,557,025	5,563,396	5,568,609	5,573,464	5,580,078	5,589,555	5,594,225	5,600,438
5,557,032	5,563,552	5,569,231	5,573,504	5,580,079	5,589,663	5,595,445	5,600,658
5,557,092	5,563,807	5,570,009	5,573,759	5,581,024	5,589,799	5,595,452	5,600,677
5,557,116	5,563,955	5,570,120	5,574,142	5,581,662	5,589,976	5,595,583	5,601,383
5,557,716	5,563,997	5,570,216	5,574,225	5,581,803	5,590,150	5,595,861	5,601,451
5,558,694	5,565,182	5,570,302	5,574,272	5,582,089	5,590,226	5,596,070	5,601,930
5,559,355	5,565,257	5,570,423	5,574,326	5,582,452	5,590,345	5,596,499	5,604,141
5,559,536	5,565,277	5,570,468	5,574,563	5,582,647	5,590,532	5,596,592	5,604,822
5,559,914	5,565,460	5,570,716	5,574,867	5,582,703	5,590,662	5,596,748	5,605,264
5,559,962	5,565,941	5,571,308	5,574,869	5,582,907	5,590,794	5,596,921	5,606,081
5,560,807	5,566,003	5,571,313	5,574,945	5,583,139	5,591,351	5,596,942	
5,561,377	5,566,376	5,571,348	5,574,977	5,583,189	5,591,471	5,597,629	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

February 17-21, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-13**	EX	74/263,770	DJS Associates, Inc.	2(e)(1); Section 2(f) distinctiveness	Refusal Affirmed (on both grounds)		"EXPERT NETWORK" [business investigations; educational services, namely, conducting seminars and lectures in the field of engineering and scientific methods and procedures; accident investigations, private investigations; technical consultation in the fields of engineering, science and computers and expert testimony rendered in conjunction therewith]		No
2-19	OPP	92,712	Laboratoires Dermo-Cosmetik, Inc. v. Beauycology, Inc.	2(d)	Opposition Dismissed	"G.M. COLLIN-PARIS (and design incorporating a stylized female form) [skin care products, etc.]	design mark (incorporating a stylized female form) [skin care products, etc.]		No
2-19	EX EX EX	74/527,954 74/527,963 74/527,965	Circon Corp.	2(e)(1)	Refusal Affirmed (in all three cases)		"SNAP-IN SNAP-OUT" (same mark in all three applications) [gynecological resectoscope systems; medical devices for laparoscopy; medical devices for thoracoscopy; etc.]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

***This decision was inadvertently omitted from the Summary of Final Decisions for the week of February 10-14, 1997.*

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Date Issued	Type of Case[1]	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-20	EX(R) EX(R) EX(R) EX(R)	74/107,141 74/330,369 74/390,769 74/391,199	Orange Communications, Inc.	de jure functionality (of color)	Request for reconsideration denied as untimely [Refusal Affirmed (in all four cases)]		the color orange and the color yellow applied across the surface of applicant's goods [pay telephones and pay telephone booths]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION, CANC=CANCELLATION, CU=CONCURRENT USE; (S)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
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Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
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Box 6	Mail for the Office of Procurement.
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Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
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Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
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	Springfield: Illinois State Library	(217) 782-5659
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		(214) 670-1468
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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/04/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/13/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/25/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/23/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/09/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/03/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/14/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/16/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/26/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/22/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/28/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/25/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/25/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/04/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/04/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/08/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/27/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Phillip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of March 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/25/96	12/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	10/25/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/96	02/19/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	11/06/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/03/96	11/11/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	12/02/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/23/96	12/06/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	12/17/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/24/96	12/10/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126	01/27/97	—0—
Affidavits Under Sections 8 & 15 (All Classes)	01/13/97	—0—
Renewals (All Classes)	09/01/96	—0—
Section 12(c) Publications (All Classes)		

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

APRIL 15, 1997

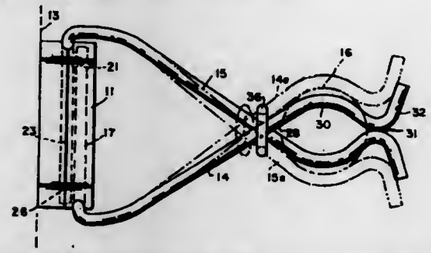
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,116,003 (3176th)

HANGER FOR ARTICLES OF DIFFERENT SIZES AND SHAPES

Karsten H. Gerhardt, Lemon Grove, Calif., assignor to Ultra-Hold Corporation, Quebec, Canada

Reexamination Request No. 90/004,064, Dec. 7, 1995.
Reexamination Certificate for Patent 5,116,003, issued May 26, 1992, Ser. No. 619,090, Nov. 26, 1990.
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—312



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5** and **6** are cancelled.

Claim **2** is determined to be patentable as amended.

Claims **3** and **4**, dependent on an amended claim, are determined to be patentable.

New claims **7** and **8** are added and determined to be patentable.

8. A hanger for articles comprising:

a base,

a pair of elongate article gripping members, and

means on said base pivotally supporting these members at one end of each for swinging movement about respective axes oppositely inclined relative to each other and to the horizontal,

said one end of each of said pair of gripping members being provided with retainer means for preventing said gripping members from sliding out of said base,

each of said members having an article gripping portion between its opposite end and its pivotal supporting means, and said members crossing each other at a point intermediate their pivotal supporting means and their gripping portions,

whereby swinging of said members about respective ones of said axes under the influence of gravity causes their gripping portions to converge toward each other and to grip an article positioned therebetween,

wherein said base comprises an open box member having a substantially open wall-facing side exposing a cavity receiving said one end of said gripping members, said box member having a peripheral wall engaging lip and an outwardly facing closed substantially flat front side,

wherein said one end of each of the elongate article gripping members that is pivotally supported in the base terminates within the open box member, and

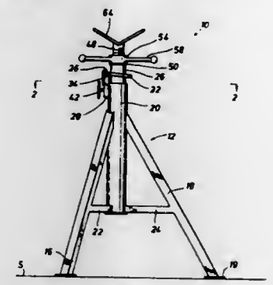
wherein lateral side walls of said box member have upper portions angled inwardly through which said gripping members are pivotally inserted, said upper portions being substantially perpendicular to said respective axes of said gripping members.

B1 5,297,779 (3177th)

JACK MECHANISM HAVING SAFETY PROTECTION FOR WORKERS

Robert H. Collins, Jr., Incline, Nev., and Wilbert Jollivette, Houston, Tex., assignors to Sumner Manufacturing, Co., Inc., Houston, Tex.

Reexamination Request No. 90/004,265, Jun. 5, 1996.
Reexamination Certificate for Patent 5,297,779, issued Mar. 29, 1994, Ser. No. 3,793, Jan. 13, 1993.
Int. Cl.[6] B66F *3/08*
U.S. Cl. 254—98



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4** and **12** are cancelled.

Claims **1**, **3**, **8**, **10**, **11** and **13** are determined to be patentable as amended.

Claims **2**, **5**, **6**, **7**, **9**, **14**, **15** and **16**, dependent on an amended claim, are determined to be patentable.

Claim **17** was not reexamined.

1. A safety jack stand mechanism for supporting and positioning pipes and other objects such as during construction operations, comprising:

a. a base structure having a vertically oriented outer tubular member *said outer tubular member having open upper and lower ends*;

b. an inner tubular member defining upper and lower ends [being] *and having a lower portion thereof* disposed in telescoping relation within said outer tubular member, said inner tubular member [having] *defining* a thrust surface at the upper end thereof *said lower end of said inner tubular member defining a stop surface*;

c. [f] an adjustment screw being received in telescoping relation within said inner tubular member and defining external threads, said adjustment screw having a support member at the upper extremity thereof for support of objects;

d. an adjustment nut being threadedly received by said adjustment screw and being disposed in supported engagement with said thrust surface of said inner tubular member, said adjustment screw and said inner tubular member for vertical adjustment said inner tubular member and said support member;

e. a thrust washer positioner being fixed to said outer tubular member and having an upper end portion thereof projecting above said outer tubular member;

f. a thrust washer retainer element being fixed to said thrust washer positioner and having a portion thereof overlying and being disposed in spaced relation with said upper end portion of said thrust washer positioner;

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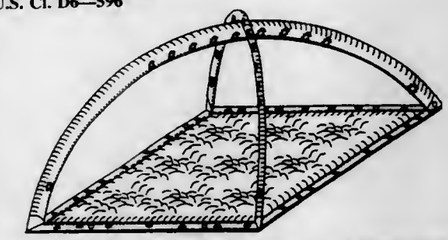
g. [A] *a* thrust washer being located in loose fitting relation about said inner tubular member and, when disposed in predetermined angulated relation with said inner tubular member and, when disposed in predetermined angulated relation with said inner tubular member, establishing binding with said inner tubular member and restraining downward movement of said inner tubular member relative thereto, an outer peripheral portion of said thrust washer being located between said thrust washer positioner and said thrust washer retainer element and having positioned and supported engagement with said upper end portion of said thrust washer positioner; and

[means] *a circular tubular stop element being disposed in fixed relation within said lower end of said outer tubular member and defining an upwardly facing stop shoulder disposed for stopping engagement with said stop surface of said inner tubular member* for limiting downwardly telescoping movement of said inner tubular member relative to said outer tubular member to the extent that, at the maximum downward position of said inner tubular member, said thrust surface of said inner tubular member and said adjustment screw have sufficient vertical clearance relative to said thrust washer and thrust washer retainer that the hand or fingers of a worker cannot become pinched therebetween.

B1 359,869 (3175th)
BABY'S MATTRESS

Isaac Oren, Hertzlia, Israel, assignor to Tiny Love Ltd., Tel Aviv, Israel

Reexamination Request No. 90/004,212, Apr. 10, 1996.
Reexamination Certificate for Patent Des. 359,869, issued Jul. 4, 1995, Ser. No. 18,462, Feb. 7, 1994.
Claims priority, application Israel, Aug. 11, 1993, 21255; Aug. 11, 1993, 21256
U.S. Cl. D6—596



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of the single design claim is confirmed.

1. The ornamental design for a baby's mattress, as shown and described.

REISSUES

APRIL 15, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,493
ROLLER BRAKE

H. Burke Horton, Malvern, Pa., assignor to Thistle Sports Enterprises, Inc., West Chester, Pa.

Original No. 5,280,931, dated Jan. 25, 1994, Ser. No. 979,603, Nov. 20, 1992. Application for reissue May 3, 1995, Ser. No. 433,143
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2
21 Claims



1. A roller brake for a device travelling over a ground surface, the device having a chassis, the chassis including a substantially horizontal platform, the roller brake comprising:

a brake hub connected to the chassis, the brake hub defining a horizontal axis of symmetry oriented perpendicular to a direction of forward travel of the device, the brake hub being fixed against rotation and having a circumferential periphery; and,

a brake tire rotatably mounted annularly on the brake hub such that facing surfaces of the brake tire and the brake hub are in frictional contact, an outer periphery of the brake tire being disposed above the ground surface, the outer periphery being selectively engageable with the ground surface, contact between the brake tire and the ground surface producing rotation of the brake tire on the brake hub due to frictional engagement of the brake tire and the ground surface at a relatively greater radius from the horizontal axis, and kinetic energy of motion being dissipated by frictional engagement between the facing surfaces of the rotating brake tire and the fixed brake hub at a lesser radius from the horizontal axis, whereby varying pressure of the roller brake against the ground surface varies friction forces between the brake tire and the brake hub as the brake tire continues to rotate on the brake hub.

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PLANT PATENTS

GRANTED APRIL 15, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,857

CHERRY TREE 'FIRM RED'

Marvin L. Nies, 9296 E. Kettleman La., Lodi, Calif. 95240

Filed Aug. 21, 1995, Ser. No. 520,209
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry tree, substantially as illustrated and described: a very vigorous, large tree with a tree habit semi-upright and semi-open, hardy and heat tolerant; leaves large, ovate, acuminate, acutely pointed, with leaf margins coarsely crenate, setting from one (1) to three (3) fruits per fruit bud, the fruit being very very large and uniform in size with even distribution of fruit the length of the branches and throughout the tree, blooming four (4) days later than 'Garnet' and 'Large Red', indicating a slightly higher chilling requirement than either parent; a moderately heavy bloom, with large flowers that have an open appearance; flower cup with a slight reddish tinge with no pigment on the sepals; fairly long, medium thick unpigmented fruit stems that are not as long as the stems of 'Large Red', the seed parent, but considerably longer than Garnet the pollen parent; fruit firm hard and crisp, shiny red skin color when picking ripe, with a red to reddish black pigmented line from base to apex on the suture line, skin of the fruit turning dark red at full maturity with very very dark red flesh and juice; the fruit being very similar in form to 'Giant Red', with very prominent rounded shoulders that accentuate a circular, deep, flaring stem cavity, being strongly rounded on the dorsal side with a very shallow almost inconspicuous compressed groove from base to apex, moderately rounded on the ventral side; a fairly long medium thick stem that is shorter than that of 'Large Red', the seed parent, but much longer than that of 'Garnet', the pollen parent; the size of the fruit being somewhat larger than the large fruited 'Garnet' and 'Large Red' varieties, and equal in size to the very very large size of 'Giant Red'; being considerably firmer and harder than 'Garnet', 'Large Red' and 'Giant Red', with more firmness than any other commercial variety known to the originator; picking ripe five (5) days after 'Giant Red', three (3) days after 'Garnet', the same timing as 'Large Red'; the present variety being the only exceedingly firm, hard, crisp fruit, known to the originator, that is almost crack free in extremely wet weather conditions during harvest; with few sutures but no spurs or doubles in the hotter Central Valley of Northern California.

9,858

PLUM TREE "HIROMI RED"

Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 16, 1996, Ser. No. 585,725
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—38.1 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth, being a productive and regular bearer of large, yellow flesh, clingstone fruit with good flavor and eating quality; the fruit is further characterized by having firm flesh with good storage and shipping quality, relatively uniform in ripening, and in comparison to Queen Rosa Plum (non-patented), the new variety has firmer fruit, heavier production and fruit ripening approximately 7 to 8 days earlier.

9,859

APRICOT TREE "EARLISUNRISE"

Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 29, 1996, Ser. No. 593,456
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by its large size, vigorous and semi-spreading growth, and is a productive and regular bearer of medium size, yellow flesh, freestone fruit with good flavor and eating quality; the fruit is further characterized by having firm flesh with good handling and shipping quality and, in comparison to Earlicot Apricot (U.S. Plant Pat. No. 7,198), is approximately 10 to 11 days earlier in maturity.

9,860

PEACH TREE SUPER RICH

Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 29, 1996, Ser. No. 593,003
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and a regular and productive bearer of large, firm, early maturing, yellow flesh, clingstone fruit with good flavor and eating quality; the fruit is further characterized by having good handling and shipping quality, having a high degree of attractive red skin color and, in comparison to the variety May Crest Peach (U.S. Plant Pat. No. 4,064), the new variety has greater production of larger size fruit, maturing approximately 9 days earlier.

9,861

BLACKBERRY— KIOWA CULTIVAR

James N. Moore, and John R. Clark, both of Fayetteville, Ark., assignors to University of Arkansas, Fayetteville, Ark.

Filed Nov. 6, 1995, Ser. No. 553,962
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—46.1 **1 Claim**

1. A new and distinct variety of blackberry plant, substantially as illustrated and described, characterized by its very large fruit size, erect canes, late ripening, long harvest period, and uniformly large fruits throughout the season.

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PATENTS

GRANTED April 15, 1997

ERRATA

For CLASS	See PATENT NO.
087–007	5,619,903
188–024	5,620,054
473–564	5,620,179
473–521	5,620,180
473–423	5,620,186
438–008	5,620,556
438–507	5,620,557
216–095	5,620,558
438–723	5,620,559
216–041	5,620,560
438–720	5,620,615
442–050	5,620,786
442–102	5,620,787
442–118	5,620,788
442–059	5,620,789
530–300	5,620,850
364–491	5,620,916
427–108	5,620,924
029–841	5,620,927
216–002	5,620,933
337–380	5,621,370
396–052	5,621,491
396–002	5,621,492
396–538	5,621,493
396–056	5,621,494
396–089	5,621,495
399–366	5,621,503
399–001	5,621,504
399–274	5,621,505
399–284	5,621,506
399–111	5,621,507
399–106	5,621,508
399–046	5,621,509
399–338	5,621,510
399–044	5,621,511
399–328	5,621,512
399–398	5,621,513

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ERRATA–CONTINUED

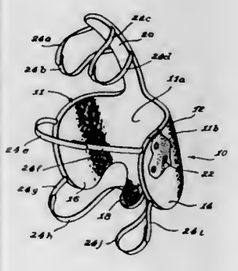
For CLASS	See PATENT NO.
386–131	5,621,534
386–026	5,621,535
386–052	5,621,536
386–017	5,621,537
386–065	5,621,538
349–005	5,621,550
349–007	5,621,551
349–086	5,621,552
349–153	5,621,553
349–139	5,621,554
349–054	5,621,555
349–042	5,621,556
349–042	5,621,557
349–130	5,621,558
386–121	5,621,579
395–796	5,621,641
386–068	5,621,840

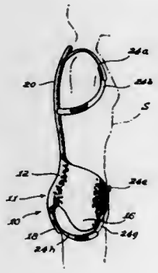
PATENTS

GRANTED APRIL 15, 1997

GENERAL AND MECHANICAL

5,619,747
PROTECTIVE BRACE FOR FIGURE SKATERS
Carole Boisclair, and Marcel Tousignant, both of 931 Avenue des Cèdres, Shawinigan, Qc, Canada
Filed Oct. 18, 1995, Ser. No. 544,876
Int. Cl.[6] A41D *13/00*; A61F *5/02*
U.S. Cl. 2—465 **10 Claims**

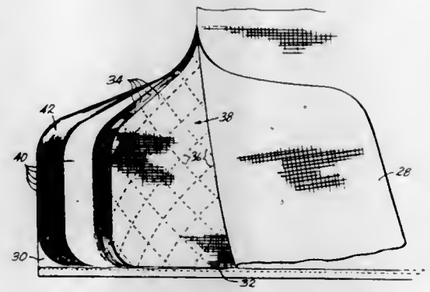




1. A protective brace for use by a figure skater, the skater having a back and hips, ribs and spinal column defining an upper lombo-thoracic section, a lower lombo-sacral section and a coccygial section at its lower end, the skater further having ilia on opposite sides of the spine lower area to which are connected the femur heads, each femur defining a greater trochanter laterally offset away from its respective ilium, said brace defining a soft flexible, compressible insert comprising an elongated main sheet web with oppositely-extending first and second tongues integrally and transversely attached to said web, said web being destined for engagement with the back of the skater in a perpendicular fashion relative to the spinal column at the lombo-sacral section thereof and to laterally extend and curve around the hips to shieldingly cover the protruding ilia, greater trochanters and femur heads of the skater while extending well under the skater's ribs, said first tongue sized to straddle downwardly over the coccygial section of the spinal column, said second tongue longer than said first tongue and sized to extend upwardly over all the lombo-thoracic section of the spinal column; said brace further defining removable attachment means for adjustably attaching said insert conformingly to the skater, wherein figure skating body motions of the figure skater are not significantly hampered by the attached said brace, while thigh and spinal column body parts are well protected by the soft flexible insert.

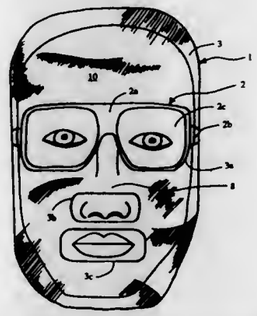
5,619,748
BALLISTIC VEST
Jeff S. Nelson, Chino Hills, Calif., and Allen L. Price, Rising Sun, Md., assignors to Safariland Ltd., Inc., Ontario, Calif.
Continuation of Ser. No. 321,994, Oct. 12, 1994, abandoned, which is a continuation of Ser. No. 109,082, Aug. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 44,285, Apr. 7, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 617,426
Int. Cl.[6] F41H *1/02*
U.S. Cl. 2—2.5 **25 Claims**

1. A ballistic vest of the soft body armor type comprising:
a composite protective panel having ballistic resistance and consisting essentially of a first flexible panel and a second flexible panel, the composite panel having a strike side and a body side,
the first flexible panel comprising a first group of flexible woven fabric layers arranged in a stack in face-to-face surface contact on the strike side of the composite panel,



each first woven fabric layer comprising an array of woven plastic fibers, the individual first woven fabric layers being secured to each other to form a flexible unitary panel,
the second flexible panel comprising a second group of flexible imperforate plastic sheets arranged in a stack in face-to-face surface contact on the body side of the composite panel,
each second flexible imperforate plastic sheet comprising an array of plastic fibers embedded in a resinous matrix-type film,
in which the plastic fibers in the first woven fabric layers and the second imperforate plastic sheets comprise extended chain polyethylene fibers having a fiber tenacity of at least about 30 gm/denier,
the ballistic resistance of the composite panel being provided essentially in its entirety from the strike side of the composite panel through the first flexible panel directly through the second flexible panel to the body side of the composite panel, the first and second flexible panels having a combined areal weight not greater than about 1.20 lbs/ft^2 and having an NIJ Standard maximum backface of about 44 mm (.44 Magnum), with a ballistic resistance that prevents projectile penetration of the combined first and second flexible panels according to NIJ Standard 101.03 for Threat Level IIIA.

5,619,749
ANTIPHOTOAGING FACE MASK
Isabel M. Banuchi, Avenida Domenech 302, Hato Rey, Puerto Rico
Filed Sep. 7, 1995, Ser. No. 524,902
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—9 **6 Claims**

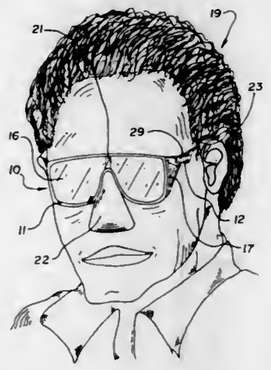


1. An antiphotoaging face mask adapted to protect the skin along the face of a wearer from sun damage, comprising:
an integrated structure including a frame and a one-piece plastic wrap permanently attached thereto, said frame including a

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front frame portion, a pair of temples extending therefrom that seat along the earlobes of the wearer, and a nosebridge extending from the front frame portion, said wrap being secured to the frame along said front frame portion, said wrap being curved along a longitudinal direction so as to cover the nose and lateral aspects of the face of the wearer, and being curved along a latitudinal direction, perpendicular to the longitudinal direction, such that the wrap covers the forehead of the wearer and generally follows an outer contour of the forehead, the entirety of the wrap being comprised of a plastic material that blocks at least harmful UV rays from the sun.

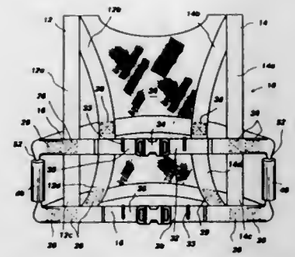
5,619,750
EYES-EARS-NOSE PROTECTOR
Donald L. Allewalt, 8 Rainflower Path No. 103, Sparks, Md. 21152
Filed Dec. 4, 1995, Ser. No. 567,134
Int. Cl.[6] A61F *9/00; G02C 5/14*
U.S. Cl. 2—13 **9 Claims**



5. A sunlight protector comprising:
eyeglasses having a lens shield;
a pair of temple bars, each temple bar having an ear end; and
a pair of ear shields, each immovably attached to the ear end of a respective temple bar,
wherein the ear end of each of said pair of temple bars is curved to be conveniently held by an ear;
wherein each of said pair of ear shields is an integral member comprising first, second and third surfaces;
wherein one edge of the first surface is curved to substantially follow a shape of the ear end, said one edge being immovably connected to said ear end;
wherein said second surface is angled outwardly from the first surface, and said third surface is tilted outwardly and down from the second surface, such that the second and the third surfaces, in combination, cover a top of the ear, thereby protecting the top of the ear from an excessive sunlight.

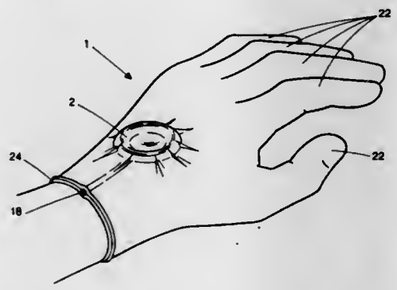
5,619,751
SAFETY VEST AND METHOD FOR USE IN WATER AND OTHER APPLICATIONS
Eric Ray, Riverside, Calif., and Todd Schmidt, 2957 Oakbrook Dr., Riverside, Calif. 92503, assignors to Todd Schmidt, Riverside, Calif.
Continuation-in-part of Ser. No. 219,193, Mar. 28, 1994, abandoned. This application Mar. 14, 1995, Ser. No. 404,901
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **7 Claims**

1. A safety vest adapted to be worn by a forward rider of a pair of tandem vehicle riders, including



a back section comprising a pair of shoulder straps positioned to fit over the shoulders of the forward rider, each shoulder strap having a front segment and a back segment extending lengthwise towards the waist of said forward rider, each segment having terminal ends near the waist of said forward rider while the vest is being worn,
a cross strap attached to an intermediate portion of each of said front and back segments of the shoulder straps and positioned to be underneath and nearby the arm pits of the forward rider while the vest is being worn,
said cross strap having free ends which terminate near the middle of the front upper torso of said forward rider while the vest is being worn, each free end having attached thereto one component of a first two-component buckle, so that said forward rider can manually buckle and unbuckle the first two-component buckle while the vest is being worn,
a waist strap positioned below and spaced from the cross strap which is attached to the terminal ends of the front and back segments of the shoulder straps, said waist strap having free ends which terminate near the middle of the front upper torso near the waist of said forward rider while the vest is being worn, each free end having attached thereto one component of a second two-component buckle, so that the person can manually buckle and unbuckle the second two-component buckle while the vest is being worn, and
a pair of handles, each handle having opposed ends, with one end attached to the cross strap and the other end attached to the waist strap, each handle being at one side of said forward rider while the vest is worn.

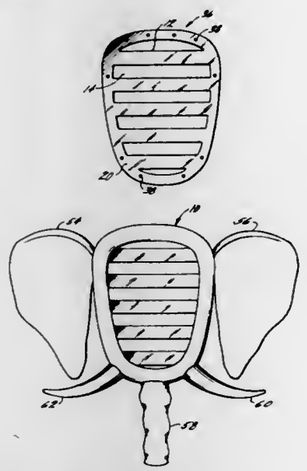
5,619,752
PUNCTURE EVIDENT SURGICAL GLOVE
Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forrest, Calif.
Filed Apr. 9, 1996, Ser. No. 628,895
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—161.7 **11 Claims**



1. A puncture evident surgical glove including a finger area in which the wearer's fingers are received, and comprising:

flexible indicator means having a fluid inflated condition at which said indicator means is filled with a fluid from a source of fluid and a fluid evacuated condition at which the fluid is expulsed from said indicator means to said source of fluid;
a fluid exhaust path extending between said flexible indicator means and said source of fluid through which the fluid from said indicator means is expulsed to said source of fluid when said indicator means is compressed to said fluid evacuated condition; and
a fluid inlet path extending between said source of fluid and said flexible indicator means through which the fluid from said source of fluid is supplied to fill said indicator means and thereby cause said indicator means to expand to said fluid inflated condition from said fluid evacuated condition,
said fluid inlet path extending around the finger area of said surgical glove.

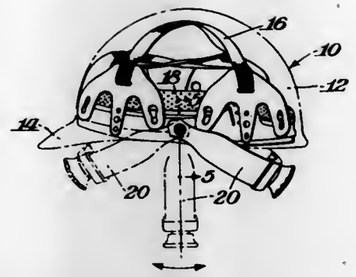
5,619,753
REFLECTIVE NOVELTY MASK HAVING TRANSPARENT STRIPS
Lawrence E. Van Cort, Conway, Mass., assignor to Van Cort Instruments, Inc., Northampton, Mass.
Filed Jun. 6, 1995, Ser. No. 467,220
Int. Cl.[6] A42B *1/24*
U.S. Cl. 2—206 **33 Claims**



1. A reflective novelty mask comprising:
a frame defining a framed area;
a plurality of reflective strip areas supported by said frame and extending substantially across said framed area; and
a plurality of transparent strip areas interposed in an alternating fashion with said reflective strip areas.

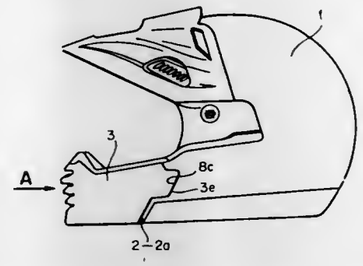
5,619,754
PROTECTIVE CAP WITH REVERSIBLE HEADBAND
Gary J. Thurwanger, Springfield, and Barry P. Durham, Brookhaven, both of Pa., assignors to Fibre-Metal Products, Co., Concordville, Pa.
Filed Feb. 13, 1995, Ser. No. 387,341
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—418 **23 Claims**

1. In a protective cap comprising a rigid shell for covering the head of the wearer, a peak extending outwardly from said shell to define the front of said cap, the rear of said cap being directly opposite to said peak, a sweatband in said shell for fitting against



the head of the wearer, and a headband mounted to said sweatband for fitting against the back of the neck of the wearer, the improvement being in that said headband is pivotally mounted to said sweatband in a free swinging manner whereby said headband may readily swing selectively toward said front of said cap and toward said rear of said cap to selectively permit said cap to be worn with said peak at the front of the head of the wearer and at the back of the head of the wearer, said headband being mounted to said sweatband on opposite sides of said sweatband along an imaginary line bisecting said sweatband whereby the wearing position of said cap may be reversed without requiring any adjustment to said headband so that once said cap is properly fitted for the head of the user the fit remains proper even when the wearing position of said cap is reversed, said headband including a pair of ends with interconnecting side edges, each of said ends being pivotally mounted to said sweatband, each of said side edges including an ear accommodating recess generally located at each of said ends, and said side edges being symmetrically shaped at said ends to provide identical ear accommodating recesses.

5,619,755
INTEGRAL CRASH-HELMET FOR MOTORCYCLISTS AND THE LIKE TRANSFORMABLE INTO AN OPEN, JET-LIKE HELMET
Gabriele Casartelli, Clamart, France, assignor to E.D.C. Sarl, Issy-les-Moulineaux, France
Filed Feb. 27, 1995, Ser. No. 394,829
Claims priority, application European Pat. Off., Mar. 8, 1994, 94103523
Int. Cl.[6] A42B *3/18*
U.S. Cl. 2—424 **15 Claims**



1. Crash-helmet for motorcyclists and sport-competitions comprising
a frontally open rigid cap and a rigid chin protector, removable and fastenable to said cap by means of coupling, holding and hand operatable locking means,
said removable chin protector being fastened to said cap in seats provided within flanges protruding from the base of said cap and housed within the thickness of the flanges due to a

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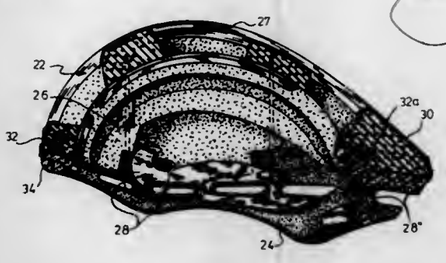
reduction in the thickness of said flanges by an association of snap coupling and holding devices with stable locking means, said snap coupling devices and said locking means being correspondingly provided on the opposing faces of said flanges protruding from the cap base and on the faces of the end of said chin protector, so as to realize the coupling between said flange and said protector ends by partial superposition of same, and upon removal of the chin protector, so as to obtain a "jet"-like open helmet, and, so as to obtain by a chin protector stably locked to the cap, an integral helmet; and said snap coupling and holding devices are constituted by rectilinear ribs, provided on the cap flanges and sliding along corresponding guides protruding from the end faces of the chin protector, and by tangs provided on the chin protector, which are snap-embeddable into corresponding windows provided in the cap flanges, or by tangs provided on the double flanges which are snap-embeddable into corresponding windows provided in the chin protector ends.

5,619,756

CYCLIST HELMET WITH MULTIPLE APERTURES RIM

Louis Garneau, Augustin-de-Desmaures, Canada, assignor to 9001 6262 Québec Inc., St-Augustin-de-Desmaures, Canada

Filed Mar. 29, 1996, Ser. No. 625,492
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—425 **9 Claims**



1. A protective helmet for use on a cyclist's head, comprising an upper rigid generally convex shell part, a lower semi-rigid resilient annular rim part, and interlocking means to interlock said shell and rim parts, said rim part having a number of first air ventilation apertures distributed at its periphery, said shell part adapted to be attached to the person's head by chin straps;
wherein a circular air ventilation path beneath said shell part is achieved under dynamic cycling conditions;
said shell part further having a number of spaced second air ventilation apertures;
wherein said helmet shell is made from polystyrene, and said rim part is made from polypropylene.

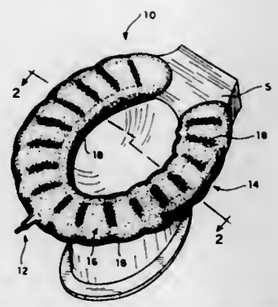
5,619,757

DISPOSABLE INFLATABLE SANITARY TOILET SEAT COVER

Richard A. Baratta, 150 N. Banana River Dr., Merritt Island, Fla. 32952

Filed Aug. 22, 1995, Ser. No. 517,972
Int. Cl.[6] A47K *13/00*
U.S. Cl. 4—239 **9 Claims**

1. A generally U-shaped inflatable toilet seat cover comprising:
a top layer and a bottom layer, each said top layer and said bottom layer further comprised of a flexible and air-impermeable sheet material dimensioned and configured to define a pair of arms and an arc, each said arm and said arc having an inner edge, an outer edge, and a gripping lip extending downward from said inner edge and said outer edge, wherein said top layer has a greater surface area than



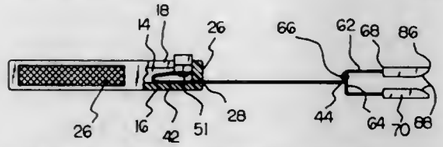
said bottom layer, wherein said top layer and said bottom layer are bonded along the entire periphery of said sheet materials to form a continuous and air-tight peripheral weld defining a continuous wall, an interior surface, an exterior surface, and a cavity capable of retaining pressurized air;
a plurality of welds for bonding said top layer to said bottom layer, wherein said welds are configured generally perpendicular to the peripheral weld and interruptedly extend from said inner edge to said outer edge of said arms and said arc, each of said plurality of welds defining at least one interruption in each of said plurality of welds;
an inlet valve for inflation of the cover; and
an outlet valve for deflation of the cover.

5,619,758

HAND-HELD TOILET SEAT LIFTING DEVICE

Rebecca M. Burkett, 10773 Bent Mountain Rd., Bent Mountain, Va. 24059

Filed Sep. 26, 1995, Ser. No. 533,692
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.1 **7 Claims**



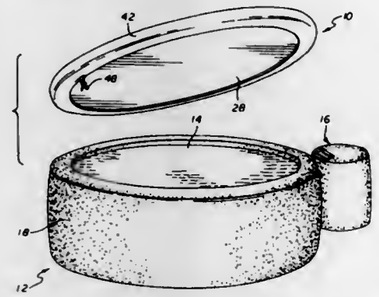
1. A hand-held toilet seat lifting device comprising:
an elongated handle having a hollow interior, an inboard end, an outboard end and a longitudinal aperture formed between said ends, and a slot formed through the inboard end, said aperture is bounded by a rectangular edge formed of a pair of spaced parallel long edge portions with a pair of short edge portions extended therebetween, and with one of the long edge portions having a plurality of spaced notches formed therealong;
an elongated strip having an inboard end slidably disposed within said aperture of the handle and acting as spring, said strip having an outboard end, and an intermediate portion of a generally straight shape extended between the ends and through the slot in the handle, and with the strip and handle serving as a longitudinal extension to a user's hand,
a button coupled to the inboard end of the strip and extended upwards through the aperture, and with the button being depressible to compress the spring and remove the protrusion from one of the notches, thereby allowing the strip to slide within the interior of the handle and permit telescopic adjustment of the outboard end of the strip; and
wherein the button has a textured thumb gripping surface formed thereon and a protrusion thereon that is removably engagable within a selected one of the notches of the handle through upward force applied by the spring;
a generally C-shaped clamping member coupled to the outboard end of the strip and having a pair of spaced engaging arms for clamping onto and removably holding a toilet seat.

5,619,759

INSULATED COVER FOR A HOT TUB

Borg Hansen, Long Beach, and Rafael Gonzalez, Palmdale, both of Calif., assignors to Softub, Inc., Chatsworth, Calif.

Filed Jun. 7, 1995, Ser. No. 472,392
Int. Cl.[6] E04H *4/00*
U.S. Cl. 4—498 **23 Claims**



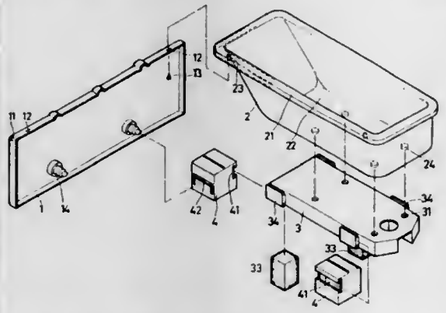
1. An insulated cover for removable mounting onto a fluid-containing tank, said insulated cover comprising:
an outer frame ring formed in a closed loop configuration and defining at least one outwardly projecting rim;
a structural membrane having a periphery connected to said frame ring and cooperating therewith to define an upwardly open insulation pocket, said structural membrane having the periphery thereof wrapped over said rim;
insulation means received into said insulation pocket; and
a top sheet having a periphery connected to said frame ring to close said insulation pocket with said insulation means therein.

5,619,760

DETACHABLE BATHTUB

Sung-Shun Wang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jan. 31, 1996, Ser. No. 594,429
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—592 **1 Claim**



1. A detachable bathtub comprising:
a bathtub having an upper flange with a plurality of spaced posts under said upper flange, an interior and a plurality of bulges on a lower surface of said bathtub;
each of said posts having a central threaded hole;
a side board for supporting one side of said bathtub;
said side board having a peripheral flange with a plurality of spaced rectangular holes on said peripheral flange, and a plurality of spaced protrusions disposed at a lower portion of said side board;
a base disposed beneath said bathtub;
said base having a plurality of inserted holes thereon, an elongated recess thereunder, and a plurality of guide blocks disposed at two sides of said base;
said elongated recess receiving at least one adjusting block thereon;
at least one supporting block disposed between said side board and said base;
said at least one supporting block having a rectangular groove on one side of said supporting block and an inserted groove on an opposite side of said supporting block whereby
said bulges are inserted into respective inserted holes;
at least one of said guide blocks is inserted into a respective rectangular groove;
an upper portion of said peripheral flange is disposed beneath said upper flange;
a screw passes through each said rectangular hole and screwing in said central threaded hole of said post to fasten said side board and said bathtub together; and
at least one of said protrusions is pressed into a respective inserted groove to fasten said side board and said supporting block together.

5,619,761

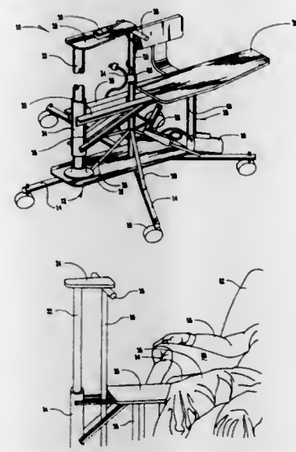
Patent Not Issued For This Number

5,619,762

APPARATUS FOR ASSISTING A PERSON IN STANDING FROM A SEATED POSITION

Jake Mein, 315 Bryan Rd., Ottumwa, Iowa 52501

Filed Jul. 31, 1995, Ser. No. 508,390
Int. Cl.[6] B61G *7/00*
U.S. Cl. 5—86.1 **6 Claims**



1. A lift for assisting a person in standing from a seated position comprising,
a base assembly having a plurality of outwardly extending arms with wheels at their outer ends,
a pair of spaced apart vertically positioned posts on said base assembly, said pair of posts having upper ends and an arm rest support extending between and on the upper ends of said pair of posts,
an upstanding jack means on said base assembly positioned in alignment with said pair of posts, one of said pair of posts being located more remotely from said jack means than the other of said pair of posts, said jack means having an upper end,

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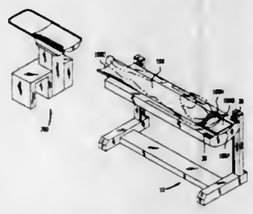
an elongated seat on the upper end of said jack means and said elongated seat having a stabilizer arm means extending into sliding engagement with the post of said pair of posts most remote to said jack means, said elongated seat having an outer free end adapted to be positioned on a furniture seat between the furniture arm and a person for the person to slide onto and be raised to a standing position by operation of the jack means.

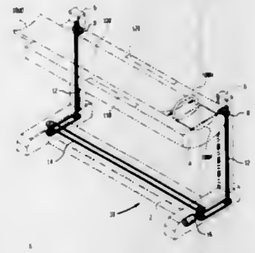
5,619,763

PATIENT HANDLING SYSTEM FOR DIAGNOSTIC IMAGING APPLICATION

Alan Randolph, Park Ridge, and Herb F. Velazquez, Lombard, both of Ill., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 24, 1995, Ser. No. 409,785
Int. Cl.[6] A61B *6/02*
U.S. Cl. 5—601 **7 Claims**





1. A patient handling system, comprising:

a patient pallet with two sides, a proximal end and a distal end, the patient pallet being horizontally elongated and positioned to support a human patient with the patient's body axis horizontal;

a pedestal supporting the patient pallet, the pedestal being vertically moveable, whereby the patient may be raised and lowered with respect to the floor, and the pedestal receiving the patient pallet in such a manner that the pallet is moveable lengthwise with respect to the pedestal, whereby the patient pallet is always supported at and adjacent its proximal end by the pedestal;

a pallet support, the support being horizontally spaced from the pedestal and being so located that the distal end of the patient pallet can be supported by the pallet support when the patient pallet is moved lengthwise;

left and right horizontally elongated arm rests, each being individually securable to a corresponding one of the sides of the patient pallet and moving together therewith when so secured; and

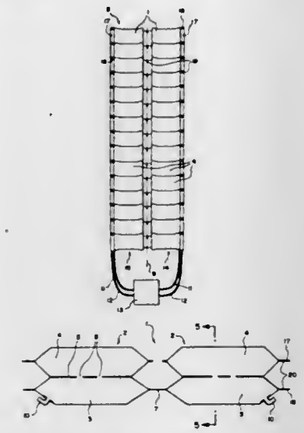
means, attached to each arm rest and moving together therewith, for indicating side boundaries beyond which the patient's body should not project.

5,619,764

MATTRESS FOR DECUBITUS PROPHYLAXIS

Helmut Lopau, Buchenweg 6, D-25492 Heist, Germany

Filed Apr. 10, 1996, Ser. No. 630,627
Claims priority, application Germany, May 6, 1995, 195 16 744.9
Int. Cl.[6] A61G *7/00*
U.S. Cl. 5—713 **15 Claims**



1. A mattress for recumbent prophylaxis, comprising:

a plurality of inflatable support elements arranged in sequence one behind another, with each of said support elements including at least two air-inflatable sections connected together by a fillet, said support elements being detachably connected together and arranged transverse to the longitudinal axis of said mattress, so that at least two rows of said air-inflatable sections are formed in sequence one behind another to form at least first and second non-communicating chamber systems acted upon with air via an air pump assembly, each of said air-inflatable sections includes a bottom hollow body and a top hollow body connected with and overlying said bottom hollow body, said bottom and top hollow bodies being joined by a partition wall with at least one opening therein to fluidly interconnect said bottom and top hollow bodies, and adjacent said bottom hollow bodies of the same said support element being connected together along one of their sides by said fillet, while corresponding adjacent sides of said top hollow bodies of the same said support element are not connected with one another, and said fillets of said support elements being sequentially arranged relative to one another and parallel to the longitudinal axis of said mattress, and each of said air-inflatable sections being connected through a tubing system to said air pump assembly in such a manner that said at least first and second non-communicating chamber systems can be alternately inflated and deflated with air.

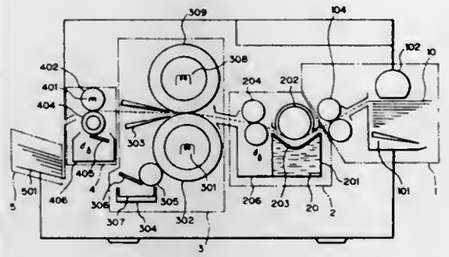
5,619,765

DEVICE FOR REMOVING A FILM-LIKE IMAGE FORMING SUBSTANCE

Toshiaki Tokita, Zama; Akiko Konishi, Tokyo; Yasuo Miyoshi, Yokohama; Kakuji Murakami, Kamakura, and Toshiaki Takahashi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,958
Claims priority, application Japan, Sep. 6, 1994, 6-238369
Int. Cl.[6] B08B *11/00;* **G03G** *21/00*
U.S. Cl. 15—3 **24 Claims**

13. A device for removing a film-like image forming substance from a recording medium having a swelling layer, which swells



with a water-containing image removal promoting liquid, at least in the vicinity of a surface where an image is to be formed, said device comprising:

applying means for applying said image removal promoting liquid to the recording medium on which an image is formed by the image forming substance, to thereby cause the swelling layer to swell more than the image forming substance; and

separating means comprising a separating member for separating the image forming substance from the recording medium by being pressed against said recording medium to which said image removal promoting liquid has been applied;

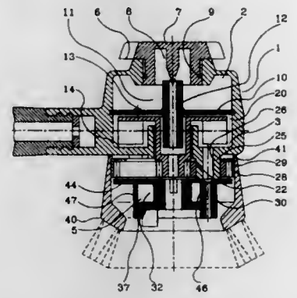
at least a surface of said separating member that contacts the recording medium being formed of a metallic material, wherein said metallic material comprises at least one metallic element selected from a group consisting of Fe, Co, Ni, Al, Cr, Au, Ag, Cu, and an alloy containing said at least one metallic element.

5,619,766

WATER DRIVEN CLEANING DEVICE

Sam Zhadanov, and Eli Zhadanov, both of 2944 W 5th St., Apt. 20J, Brooklyn, N.Y. 11224

Filed Feb. 15, 1996, Ser. No. 601,978
Int. Cl.[6] A46B *13/06*
U.S. Cl. 15—29 **14 Claims**



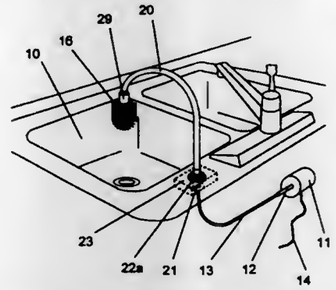
1. A water driven cleaning device, comprising a housing having a water inlet, a water outlet and a chamber located between said water inlet and said water outlet; a rotatable cleaning tool; a rotor connected with said cleaning tool and arranged in said housing so that when water passes through said housing from said water inlet to said water outlet through said chamber said rotor is rotated by the water and therefore the cleaning tool connected with the rotor rotates as well, said rotor having a plurality of vanes which are arranged at a side facing water outlet of said housing, said rotor being arranged in said housing so that a gap is formed around said rotor and water passes through the gap to form a water bearing supporting said rotor during its rotation.

5,619,767

TARGETABLE-ACTION STATIONARY POT-SCRUBBING MACHINE

Mark C. Larson, 516 Stevens Dr. #108, Addison, Ill. 60101

Filed Oct. 16, 1995, Ser. No. 543,413
Int. Cl.[6] A47L *15/00; 17/02*
U.S. Cl. 15—74 **10 Claims**



7. An adaptable, stationary, pot scrubbing machine comprising,

a motor mounted in a desired location proximate to a kitchen sink;

a positioning neck of a rigid arch shaped tubular structure rotatably mounting a scrubbing member over the sink, and suitable for housing a flexible shaft; and

a base adjacent to the sink supporting the positioning neck; and

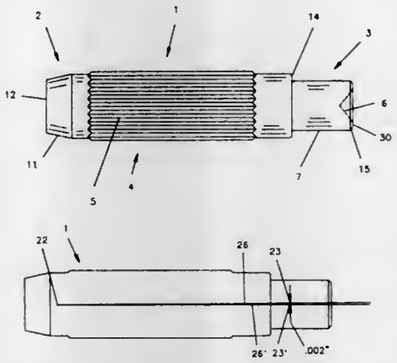
said flexible shaft coupling the motor with the scrubbing member to cause rotation of the scrubbing member.

5,619,768

VACUUM SWEEPER BRUSH AND CONCENTRIC ROLLER PIN

Rudolph F. Brundula, Gates Mills, and William P. Brundula, Kirtland, both of Ohio, assignors to Bruns Brush, Inc., Willoughby, Ohio

Filed Jun. 28, 1995, Ser. No. 495,301
Int. Cl.[6] A46B *13/02*
U.S. Cl. 15—179 **6 Claims**

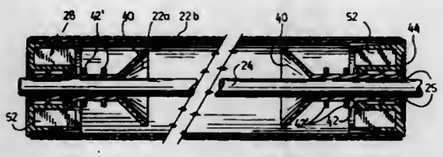


1. A vacuum sweeper brush comprising: a roller member; a roller pin; said roller member having a bore therein; said bore terminating in a perpendicular surface; said roller pin includes an inner end, an outer end, and an intermediate portion; said inner end of said roller pin includes a face and an inner center; said outer end of said roller pin includes an outer center, a bearing lip, a bearing surface, a staked crown, a staked beveled edge, and an axial indentation; said staked crown and said staked beveled edge surround said axial indentation; said intermediate portion of said roller pin includes a knurled outer surface; said inner and outer

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centers being concentric, plus or minus 0.002 inches; said roller pin residing substantially in said bore of said roller member; said knurled outer surface of said roller pin fixedly securing said roller pin with respect to said roller member; said face of said inner end of said roller pin abutting said perpendicular surface of said bore of said roller member; a bearing; said bearing includes an inner ring and an outer ring; said staked crown and beveled edge of said outer end of said roller pin securing said inner ring of said bearing to said bearing surface and against said bearing lip of said roller pin permitting said roller member and said roller pin to smoothly rotate with respect to said outer ring of said bearing.

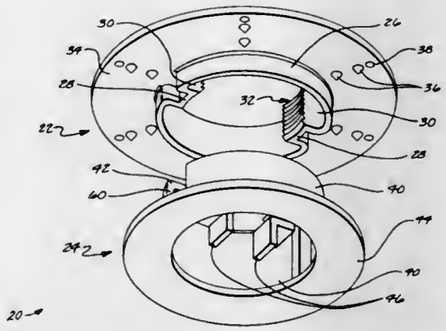
5,619,769
PAINT ROLLER BEARING SUPPORT ASSEMBLY
Heinz Hutt, 9140 Cérès, Pierrefonds (Québec), Canada
Filed Dec. 1, 1994, Ser. No. 352,139
Int. Cl.[6] B05C 17/02
U.S. Cl. 15—230.11 **8 Claims**



1. A paint roller bearing support for use with a paint roller assembly, the paint roller assembly having a handle-carried straight shaft and a cylindrical roller to be carried coaxially around the shaft, said roller bearing support comprising:
(a) a tubular clamping bearing sleeve member, defining a generally tubular main body circumscribing an inner tubular channel, said tubular main body sized for axial through-engagement therein by said shaft in releasable friction-fit interlock fashion;
(b) an end cap roller member, defining a cylindrical outer wall member, sized to fit within the cylindrical paint roller in releasable friction fit fashion, and a tubular inner wall member, for freely surrounding said shaft; and
(c) means for interconnecting in freely rotating fashion said end cap roller member inner wall member and said clamping bearing sleeve member whereby axial displacement of the former relative to the latter is prevented; wherein said paint roller bearing support is adaptable to paint rollers of different lengths, and is for use at one of opposite end portions of the paint roller shaft; wherein said interconnecting means is releasable and includes:
(i) a pair of closely spaced circumferential ribs which radially outwardly depend from an intermediated section of said clamping bearing sleeve member main integrally thereof, whereby an annular cavity is defined therebetween, said ribs being diametrally smaller than the internal diameter defined by said inner wall member of said end cap roller member; and
(ii) a flange which radially inwardly depends from one end of said inner wall member of the end cap roller member, wherein said flange releasably engages said annular cavity.

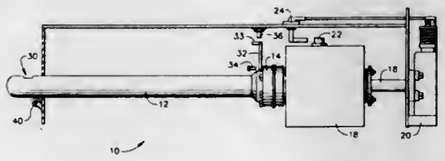
5,619,770
ROTARY PAD HOLDER WITH QUICK-RELEASE MECHANISM
William E. Bell, Lawrenceville, Ga., assignor to Flo-Pac Corporation, Minneapolis, Minn.
Filed Nov. 24, 1995, Ser. No. 562,475
Int. Cl.[6] A47L 11/14
U.S. Cl. 15—230.17 **15 Claims**

1. An apparatus for mounting a pad to a rotary pad machine comprising:



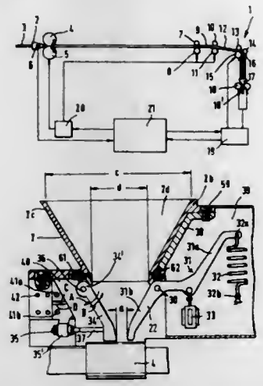
a base piece having a base wall and a base flange extending radially outward from said base wall;
a plurality of base teeth on said base wall;
a retainer piece comprising a retainer wall, said retainer wall adapted to be received in said base wall;
a retainer flange extending radially outward from said retainer wall;
a locking rib attached to said retainer wall, said locking rib adapted to lock with said base teeth; and
a quick-release tab attached to said locking rib, said quick-release tab adapted to release said locking rib from said base teeth;
said retainer piece and said base piece configured such that when said retainer wall is received in said base wall, said pad is located and held between said base flange and said retainer flange.

5,619,771
OSCILLATING AND REVERSE CLEANING SOOTBLOWER
Michael J. Minic, Lebanon, Ohio, assignor to Effox, Inc., Cincinnati, Ohio
Filed Aug. 11, 1995, Ser. No. 514,260
Int. Cl.[6] A47L 5/38
U.S. Cl. 15—316.1 **13 Claims**



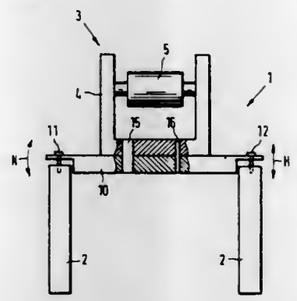
1. A sootblower comprising a movable lance tube, a carriage assembly, a source of cleaning fluid, a first motor which drives said lance tube axially along its centerline to both extend and retract the lance tube, a second motor which drives said lance tube rotationally about its centerline in both the clockwise and counterclockwise directions, a first timer which delays the rotation of said lance tube at the beginning of the extend stroke or the lance tube, and a second timer which delays the rotation of said lance tube at the beginning of the retract stroke of the lance tube.

5,619,772
SLIVER GUIDE ASSEMBLY INCLUDING A THICKNESS SENSOR AND A MOVABLE COUNTERELEMENT
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany
Filed Oct. 27, 1995, Ser. No. 549,311
Claims priority, application Germany, Oct. 31, 1994, 44 38 884.5
Int. Cl.[6] D01H 5/32
U.S. Cl. 19—240 **5 Claims**



1. An apparatus for measuring sliver thickness in a drawing frame, comprising
(a) a sliver guiding device including
(1) an inlet for simultaneously receiving a plurality of side-by-side running slivers having an advancing direction;
(2) sliver combining means defining a plane extending parallel to said advancing direction for bringing the slivers together to form a sliver assembly constituted by a plurality of side-by-side positioned running slivers arranged in said plane and laterally contacting one another; the sliver assembly having oppositely located first and second outermost slivers; said sliver combining means comprising oppositely located, converging wall surfaces;
(3) an outlet for discharging the sliver assembly from said sliver guiding device;
(b) a sensor element contacting said first outermost sliver at said outlet;
(c) first positioning means for movably supporting said sensor element;
(d) a counterelement contacting said second outermost sliver at said outlet;
(e) second positioning means for pivotally supporting said counterelement for a swinging motion parallel to said plane; said second positioning means including
(1) a rotary bearing supporting said counterelement; and
(2) means for displaceably supporting said rotary bearing;
(f) adjusting means for changing a position of said counterelement and for immobilizing said counterelement in an adjusted state;
(g) biasing means for urging said sensor element into a resilient contact with said first outermost sliver in a direction towards said second outermost sliver, whereby said sensor element undergoes excursions upon variation of thickness of said sliver assembly in said plane; said sensor element and said counterelement together defining a restriction through which said sliver assembly passes; said sensor element and said counterelement forming part of said combining means;
(h) transducer means for converting excursions of said sensor element into electric pulses;
(i) a withdrawing roller pair supported downstream of said sliver guiding device as viewed in said advancing direction; said withdrawing roller pair defining a nip through which the sliver assembly passes; and
(j) means for driving said withdrawing roller pair for pulling said sliver assembly through said sliver guiding device.

5,619,773
DRAW FRAME
Wolfgang Göhler; Rudolf Becker, both of Ingolstadt, and Michael Strobel, Eichstätt, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany
Continuation of Ser. No. 184,490, Jan. 21, 1994, abandoned.
This application Apr. 17, 1996, Ser. No. 633,708
Claims priority, application Germany, Jan. 25, 1993, 43 01 953.6
Int. Cl.[6] D01H 5/56
U.S. Cl. 19—294 **15 Claims**

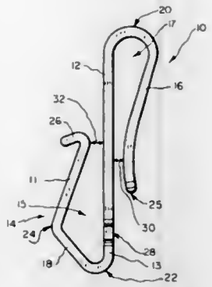


1. A draw frame, comprising:
a machine frame;
a pillow block supported by said machine frame with at least one drafting unit supported by said pillow block, said drafting unit comprising drafting rollers supported by said pillow block at each end thereof;
a table provided between said pillow block and said machine frame, said table being adjustable relative to said machine frame for adjustment of said pillow block, said pillow block being adjustable relative to said table;
a table adjusting device operably disposed relative to said machine frame and said table to allow for adjustment of said table relative said machine frame; and
a pillow block adjusting device operably disposed relative to said pillow block and said table to allow for adjustment of said pillow block relative to said table.

5,619,774
EYEGLASS RETAINING APPARATUS.
Ronald J. Perry, Vernal, Utah, assignor to Xcell, LLC, Spanisk Fork, Utah
Filed Jan. 25, 1995, Ser. No. 378,159
Int. Cl.[6] A44B 21/00; A45F 5/02
U.S. Cl. 24—3.6 **25 Claims**

1. A retaining apparatus for holding eyeglasses, comprising:
a main body portion having a first end and a second end;
a mounting clip coupled to the first end of the main body portion;
a retaining clip comprising an inclined section, an apex, and a return section, the inclined section being coupled to the second end of the main body portion, the inclined section extending at an acute angle away from the main body portion, the inclined section terminating at the apex, the return section extending from the apex reward toward the main body portion;
a mounting area formed between the retaining clip and the main body portion for mounting the retaining apparatus to a support structure;

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a retaining area formed between the retaining clip and the main body portion, the retaining area sized to hold a pair of eyeglasses including a pair of attached, articulable temples within the retaining area such that the temples are supportedly engaged by the main body portion thereby preventing relative movement between the eyeglasses and the retaining apparatus.

5,619,775

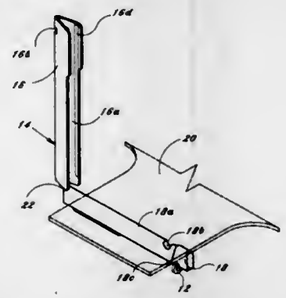
SAFETY LATCH FOR A REMOVABLE CLIP FOR A COLOSTOMY BAG

Barry W. Klinck, 4680 Brandywine Dr., Baco Raton, Fla. 33487

Continuation-in-part of Ser. No. 26,488, Jul. 29, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 583,950

Int. Cl.[6] B65D *77/10*

U.S. Cl. 24—30.5 R **6 Claims**



1. A safety latch for an ostomy pouch clip to prevent accidental disengagement of the clip, comprising:

an ostomy bag clip body, unitarily formed, having a first branch and a second branch;

a flexible hinge member connecting said first branch to said second branch, allowing said first branch to move pivotally relative to said second branch;

said clip body first branch having a free end and an opposite end connected to said hinge member, said second branch of said clip body having a free end and an opposite end connected to said hinge member, said first branch having a recessed area near its free end and said second branch having a recessed area near its free end; and

a resilient fastener, said resilient fastener having a first state of a given size and a second, stretched state of a second size, said resilient fastener connected to said first branch recessed area and within said second branch recessed area in a stretched state, locking said first branch against said second branch when they are together;

said clip body second branch recessed area including a retaining aperture, said second branch recessed area retaining aperture having a circumference less than a complete circle (360 degrees), but greater than a semicircle (180 degrees), said resilient fastener having an exterior circumference with a diameter that approximates the diameter of said second branch retaining aperture;

whereby said resilient fastener can be manually removed from said first branch recessed portion, allowing said first branch to be separated from said second branch, said resilient fastener is held and connected to said second branch member.

5,619,776

INTEGRATED AUTOMOTIVE UPHOLSTERING ELEMENT AND RELATIVE FABRICATION METHOD

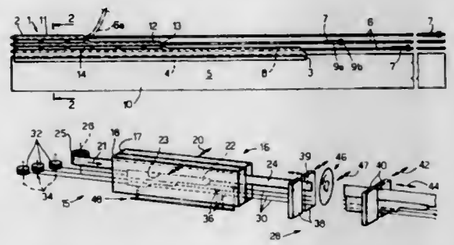
Manrico Oddenino, Buttigliera Alta, Italy, assignor to ITW Fastex Italia S.p.A., Strada Settimo, Italy

Filed Mar. 12, 1996, Ser. No. 615,007

Claims priority, application Italy, Mar. 17, 1995, TO95A0205

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—298 **19 Claims**



1. An integrated upholstering element for securing a fabric cover to an article to be covered, comprising:

tape means having a first portion which is adapted to be secured to a fabric cover;

a supporting element connected to a second portion of said tape means; and

at least one flexible tie member having a first end connected to said supporting element, and having at least one retaining member, for engaging a connecting member upon said article to be covered, connected to said at least one flexible tie member at a position adjacent to a second opposite end of said at least one flexible tie member;

said first end of said at least one flexible tie member and said second portion of said tape means being integrally incorporated in, and attached to, said supporting element as a result of said supporting element comprising synthetic plastic material and being molded onto said second portion of said tape means and said first end of said at least one flexible tie member so as to define a one-piece securing element.

5,619,777

ENGAGING DEVICE

Claude P. Genero, and Gail A. Genero, both of 30 Phillips Street, Dianella Western Australia 6062, Australia

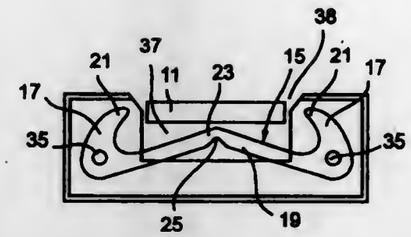
Filed Oct. 10, 1995, Ser. No. 541,510

Claims priority, application Australia, Oct. 11, 1994, PM8709

Int. Cl.[6] A41F *1/00*

U.S. Cl. 24—495 **20 Claims**

1. An engaging device comprising a supporting part, an engaging part mounted on the supporting part for pivotal movement about two spaced apart axes between two conditions one being an engaging condition and the other being a release condition, the engaging part comprising engaging means and a bridge portion, said bridge portion extending between said axes and being of deflectable construction whereby the bridge portion deflects in a direction perpendicular to the direction of movement of the bridge portion when moving from the engaging condition to the release condition upon application of a force of sufficient magnitude to the engaging means and wherein said bridge portion is provided with a formation for biasing said deflection towards said direction perpendicular to said direction of movement of the bridge portion when moving from the engaging condition to the release condition.



5,619,778

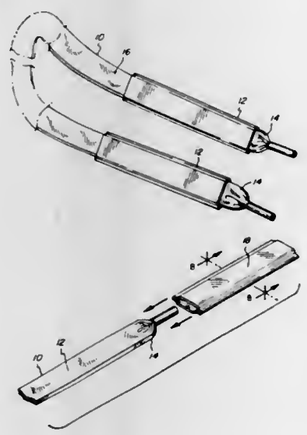
REFLECTIVE SHOE LACES AND METHOD FOR MAKING SAME

Alexander Sloot, Sugarloaf, Pa., assignor to Printmark Industries, Inc., Hazleton, Pa.

Filed May 1, 1995, Ser. No. 432,090

Int. Cl.[6] A44C *11/02*

U.S. Cl. 24—715.4 **12 Claims**



1. A reflective lace comprising:

a lace having an outside surface, having a sealed end portion, and having a profile;

a flexible reflective attachment having an inner surface; said flexible reflective attachment being affixed to said outside surface of said lace adjacent to said sealed end portion; and

said inner surface of said reflective attachment substantially conforming to said profile of said lace.

5,619,779

DEVICE FOR SMOOTHING DOWN A RUNNING MATERIAL WEB

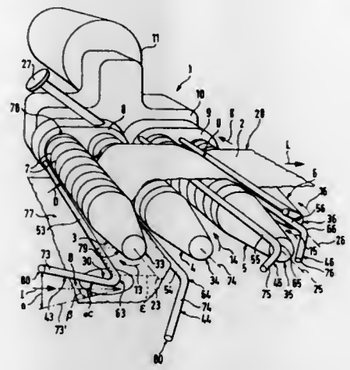
Werner Geyer, Königsbrunn, Germany, assignor to Erhardt + Leimer GmbH, Augsburg, Germany

Filed Dec. 12, 1995, Ser. No. 570,785

Claims priority, application Germany, Dec. 22, 1994, 44 45 977.7; Oct. 17, 1995, 295 16 391.7

Int. Cl.[6] D06C *3/06*

U.S. Cl. 26—97 **14 Claims**



1. A device for smoothing out a running material web having a marginal edge and a downstream direction of travel comprising:

at least two driven, threaded spindles engaging the marginal edge of the material web, each spindle having a free end, an axis and a plane e, each plane ϵ intersecting the respective axis and extending parallel to the web as it runs up on the respective spindle; and

a web-guiding body located upstream of at least the first of said spindles in the downstream direction, said web-guiding body having a guiding segment located at least in the region of the free end between the web and plane ϵ.

5,619,780

PRODUCTION OF TEXTURED YARN AND METHOD FOR CONTAINING SAID YARN

Jerry F. Potter, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

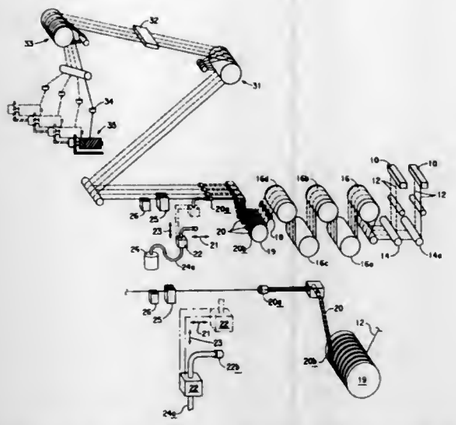
Continuation-in-part of Ser. No. 283,019, Jul. 29, 1994, abandoned. This application Sep. 7, 1995, Ser. No. 524,684

Int. Cl.[6] D02G *1/12*

U.S. Cl. 28—256 **1 Claim**

1. In a method for bulking a plurality of yarns traveling side-by-side that includes the steps of heating, stretching, and passing each of said yarns through a bulking jet then forming each of the resultant bulked yarns into plugs and cooling the plugs on a rotating drum, withdrawing said bulked yarns from said plugs, and forwarding them in paths to a windup the improvement comprising: capturing said bulked yarns when at least one of said yarns have been interrupted between said drum and said windup by containing each of said bulked yarns in individual tubes extending along said yarn paths from said drum toward said windup to prevent the yarn when interrupted from entangling with yarn in adjacent paths and interrupting adjacent yarns, recapturing said

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yarn from said tube by means of a vacuum applied to the outlet end of said tube by means of a jet moveable into and out of engagement with said outlet end.

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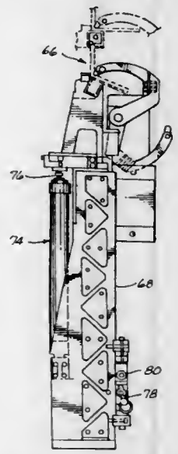
RECONFIGURING A JIG

Paul E. Ffield, Marysville, Wash.; John W. Schooff, Janesville, Wis., and Steven C. Van Swearingen, Edmonds, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 949,177, Aug. 21, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,336

Int. Cl.[6] B23P *17/00;* **B25B** *5/00*

U.S. Cl. 29—401.1 **2 Claims**



1. A method for reconfiguring a jig for supporting an elongated workpiece to enable the jig to support two different configurations of the workpiece, said jig having a plurality of clamps for holding the workpiece, each of said clamps mounted at the top of a respective one of a plurality of clamp posts and each of said clamp posts supported on a respective one of a plurality of pillars mounted on a fixed solid base, said method comprising the steps of:

sliding said posts along slides on said pillars to a first position therealong at which said posts can be placed to position said clamps at the correct elevation to support said workpiece at a first configuration position, and inserting a respective one of a plurality of pins through a first set of aligned holes in each pair of said clamp posts and said pillars to prevent said posts from sliding from said first position relative to said pillars;

counterbalancing the weight of each of said clamp posts and clamps with a respective one of a plurality of fluid cylinders, each connected at one end to one of said clamp posts, and connected at the other; end to one of said pillars;

removing each of said pins and moving said clamp posts along said pillars to a second position therealong at which said posts can be placed to position said clamps at the correct elevation to support said workpiece at a second configuration position; and

inserting said pins through a second set of aligned holes in each pair of said clamp posts and said pillars to prevent said posts from sliding from said second position relative to said pillars.

5,619,782

METHOD AND APPARATUS FOR INSERTING A MEMBER INTO A HOLE OF ANOTHER MEMBER

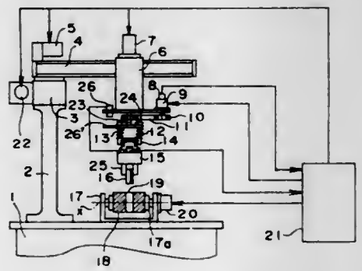
Katsuhisa Tanaka, Toyota; Akiyoshi Yamashita, Saito, and Nobuyuki Akaishi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 20, 1994, Ser. No. 361,305

Claims priority, application Japan, Dec. 20, 1993, 5-320485; Sep. 28, 1994, 6-233341

Int. Cl.[6] B23Q *17/00*

U.S. Cl. 29—407.1 **6 Claims**



1. A method for inserting a first member having a cylindrical contour into a cylindrical hole of a second member comprising the steps of:

(a) inclining one of the first member and the second member relative to the other of the first member and the second member by a small angle, and offsetting one of a center of a tip of the first member and a center of the hole of the second member from the other of the center of the tip of the first member and the center of the hole of the second member;

(b) moving one of the first member and the second member toward the other of the first member and the second member in an axial direction of the hole of the second member so that one of a periphery of the tip of the first member and a periphery of an open end of the hole of the second member contacts the other of the periphery of the tip of the first member and the periphery of the open end of the hold of the second member at one point, and biasing one of the first member and the second member against the other of the first member and the second member; and

(c) rotating one of the first member and the second member relative to the other of the first member and the second member about said one point in a direction such that one of the center of the tip of the first member end and the center of the hole of the second member approaches the other of the center of the tip of the first member and the center of the hole of the second member, until the first member is automatically inserted into the hole of the second member when the centers are substantially aligned.

5,619,783

METHOD FOR SETTING CUTTING TOOL

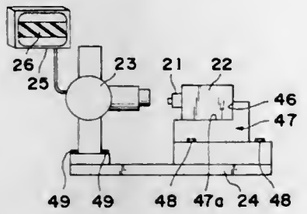
Nobuo Yasuhira, Hirakata, and Shuji Ueda, Neyagawa, both of Japan, assignors to Matsushita Electric Industrical Co., Ltd., Osaka-fu, Japan

Filed Dec. 27, 1994, Ser. No. 364,117

Claims priority, applicatiou Japan, Dec. 28, 1993, 5-336227

Int. Cl.[6] B23Q *17/00*

U.S. Cl. 29—407.04 **10 Claims**



1. A method of setting cutting tool on a processing machine for performing a cutting operation on a workpiece, said method comprising the steps of:

fixing a cutting tool to a cutting tool holder in such a manner that a posture of the cutting tool can be adjusted relative to the cutting tool holder;

fixing the cutting tool holder in a predetermined position on the processing machine using a fixing means;

reflecting light off the cutting tool, detecting the reflected light with a posture detecting means, and generating an interference fringe with the posture detecting means based on the detected light and corresponding to the posture of the cutting tool fixed to the cutting tool holder; and

displaying the interference fringe on a monitor, and adjusting the posture of the cutting tool with respect to the cutting tool holder until the interference fringe displayed on the monitor coincides with a predetermined one.

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VEHICLE ASSEMBLING METHOD

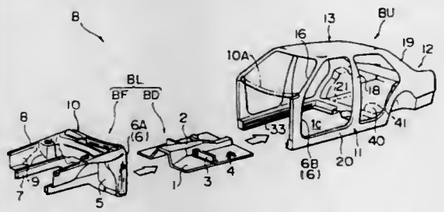
Syuji Nishimoto; Masahiro Osumi; Hisaaki Katsuki, all of Hiroshima; Tetsuya Murakami, Hiroshima-ken; Masakatsu Ohsugi, Hiroshima-ken; Hiroaki Inoue, Hiroshima-ken; Masamiti Kogai, Hiroshima, and Nobuo Kihara, Hiroshima-ken, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Continuation of Ser. No. 880,715, May 8, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 400,319

Claims priority, application Japan, May 10, 1991, 3-106117; May 10, 1991, 3-135785; May 10, 1991, 3-135791

Int. Cl.[6] B21D *39/03*

U.S. Cl. 29—430 **27 Claims**



1. A vehicle assembling method comprising the steps of:

assembling a lower body shell including an underbody portion, having a front floor, and a front body portion having a structure including a first front hinge pillar portion,

assembling an upper body shell including a roof member, right and left body side panels formed with side sills having right and left bearing portions extending in a longitudinal direction of said upper body shell, and a structure including a second front hinge pillar portion,

moving the lower body shell rearward relative to the upper body shell and in the longitudinal direction of said upper body shell, thereby engaging transverse opposite side ends of the front floor with said right and left bearing portions, and thereby combining said first and second front hinge pillar portions with each other such that an integrated front hinge pillar is formed.

5,619,785

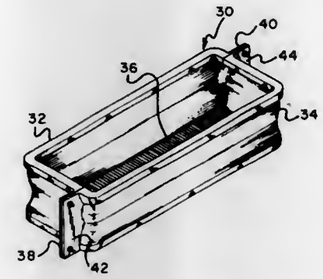
METHOD OF MAKING A METAL CASKET

William C. Tambussi, 13 Greensward, Cherry Hill, N.J. 08002

Filed Feb. 27, 1995, Ser. No. 394,896

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—434 **7 Claims**



1. A method of fabricating a metal casket comprising the steps of:

providing a body containment mold and a lid mold, each of said molds having an inner surface;

applying a release mechanism to said inner surface of each of said molds;

forming a body containment compartment by spray depositing a layer of molten metal on said inner surface of said body containment mold until a desired thickness is achieved, said body containment compartment having an interior surface, an exterior surface and an upper edge;

forming a lid component by spray depositing a layer of molten metal on said inner surface of said lid mold until a desired thickness is achieved, said lid component having an interior surface;

allowing said layers of molten metal on said body containment compartment and said lid component to cool;

applying structural material to said interior surfaces of said body containment compartment and said lid component;

removing said body containment mold and said lid mold from said body containment compartment and said lid component, respectively, and

hingedly connecting said lid component to said body containment compartment.

5,619,786

METHOD OF FORMING A SEAL BETWEEN A CONTROL SHAFT AND BUSHING

Kerry W. Baland, Calimesa, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

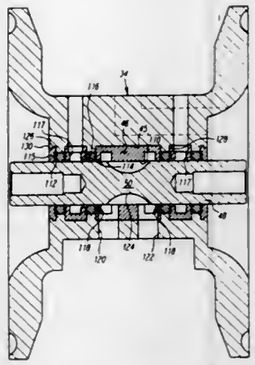
Division of Ser. No. 65,632, May 21, 1993, Pat. No. 5,441,281. This application Jun. 7, 1995, Ser. No. 484,599

Int. Cl.[6] B32P *11/02*

U.S. Cl. 29—450 **4 Claims**

1. A method for forming a shaft seal comprising the steps of

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molding a housing around a bushing, the bushing having a longitudinal passageway therethrough and an exterior groove about the outer periphery of the bushing into which the housing is molded;

cutting an annular channel in the bushing to extend and radially outwardly from the longitudinal fully passageway to the exterior groove and the molded housing therein, wherein after cutting, the bushing comprises a plurality of separated rings;

locating a first O-ring in the annular channel touching the molded housing.

5,619,787

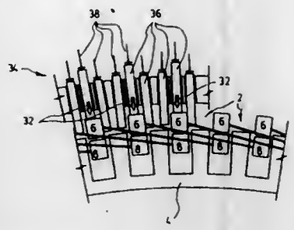
METHOD FOR MOUNTING CONDUCTOR SECTIONS ONTO A STATOR FRAME OF A DYNAMOELECTRIC MACHINE

Pierre Couture, Boucherville; Bruno Francoeur, Beloeil; André Langlois, Gramby; Jacques Leduc, St-Mathieu de Beloeil; Stéphane Reiher, Ste-Julie, and Jan Svoboda, Longueuil, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Division of Ser. No. 264,504, Jun. 23, 1994. This application Jan. 27, 1995, Ser. No. 378,821

Int. Cl.[6] H02K *15/085*

U.S. Cl. 29—596 **4 Claims**



1. A method for mounting conductor sections of a stator winding onto a circular shaped stator frame of a dynamoelectric machine, each of said conductor sections having two parallel conductor sides and at least one conductor head connecting two adjacent ends of said parallel sides, said stator frame being provided with circumferentially distributed parallel slots, comprising steps of:

a) inserting one conductor side of each conductor section at least partially into a corresponding slot of said parallel slots;

b) positioning the other conductor side of each conductor section one beside the other along said stator frame;

c) after said steps (a) and (b), circumferentially shifting said other conductor sides with respect to said stator frame until said other conductor sides are superimposed respectively above said one conductor sides for forming pairs of superimposed conductor sides; and

d) after said step (c), applying a force onto said other conductor sides along a radial direction of said circular stator frame for inserting said pairs of superimposed conductor sides completely into the corresponding slots.

5,619,788

PUNCH HEAD MOUNTABLE IN A PRESS FOR FASTENING BOLTS TO SHEET MATERIAL

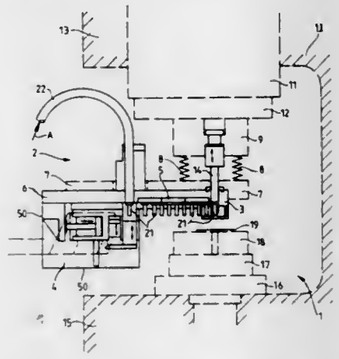
Dieter Schmidt, Ludwig-Thomas - Str. 2, Lappersdorf D-93138, Germany

Filed Jan. 5, 1995, Ser. No. 369,167

Claims priority, application Germany, Jul. 31, 1992, 42 25 282.2

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—798 **17 Claims**



1. A punch head, mountable (7,9,12;16,17,18) in a press, for the attachment of bolts (21) to a sheet material, with each bolt having a head and a bolt-shaft, said punch head comprising:

a. a ram (14);

b. a rigid feed chute (5) in which the bolts are aligned in a lateral head-against-head queue and, via which feed chute, the bolts are fed in said head-against-head queue, from a loading device (4) having a loading bushing (26), to said ram of punch head (3);

c. a receiving chamber (46) in said loading bushing (26) which chamber is adapted to receive the bolts (21) individually in a fixed aligned orientation, to align the bolts (21) in said feed chute and to advance said bolts (21) in said feed chute in a chute axis perpendicular to an axis of the ram (14),

said loading bushing (26) adapted to perform a first reciprocating motion in said chute axis, with said motion including an advance stroke for advancing the bolts (21) in said feed chute (5), and a return stroke, and a second reciprocating movement, parallel to the axis of the ram, and

wherein the punch head (3) forms a structural unit which can be handled independently of the press and which can be mounted in the press as a unit.

5,619,789

SPRING CLIP FOR SHEET MATERIAL AND APPLICATOR THEREFOR

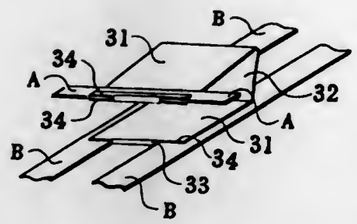
Jin W. Chung, 13514 Cedar Creek La., Silver Spring, Md. 20904

Filed Sep. 29, 1994, Ser. No. 314,640

Int. Cl.[6] B23Q *7/10;* **B23P** *11/00*

U.S. Cl. 29—814 **8 Claims**

1. A spring clip in the form of a generally U-shaped clamp for holding sheet material, comprising:



two substantially flat holding members, each holding member including parallel side edges, a front end, and a rear end opposite said front end; and

a rear bight joining member;

said rear bight joining member being connected to and between said rear ends of said holding members, and resiliently biasing said front ends of said holding members together with a predetermined clamping force such that said front ends are adjacent to each other;

each of said front ends of said holding members being folded over outwardly away from its corresponding holding member and toward said rear bight joining member, forming a J-shaped outer channel including an inner side portion and an opposite outer side portion connected by a base portion, said inner side portions adapted for contacting said sheet material when said sheet material is inserted within said clip;

each of said base portions of said channels including cuts therein at opposite ends thereof which extend for a predetermined distance from the side edges of its corresponding holding member, forming slits in each base portion at said opposite ends thereof.

5,619,790

METHOD AND APPARATUS FOR MAKING AN ELECTRICAL CONNECTION

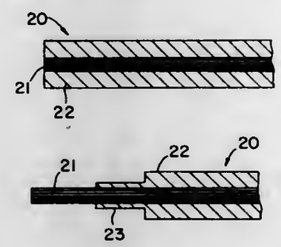
Hitoshi Takanashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Division of Ser. No. 280,001, Jul. 25, 1994. This application May 19, 1995, Ser. No. 445,424

Claims priority, application Japan, Sep. 29, 1993, 5-268334

Int. Cl.[6] H01R *43/00;* **H02G** *1/12*

U.S. Cl. 29—825 **9 Claims**



1. A method of stripping an insulating sheath from a cable having an electrically conductive wire core which has a core diameter, said insulating sheath surrounding said core and having a sheath diameter, said method comprising simultaneously removing part of said sheath to leave a portion with a reduced diameter larger than said core diameter and smaller than said sheath diameter, and removing said sheath at an end of said cable to form an exposed length of said core, without rotation of said cable.

6. A device for stripping an insulating sheath from a cable having a free end, an electrically conductive wire core which has a core diameter, said insulating sheath surrounding said core and having a sheath diameter, to form a portion of said sheath with a reduced diameter which is larger than said core diameter and smaller than said sheath diameter,

said device comprising at least one pair of cutters, movable in a cutting direction which is substantially perpendicular to an axis of said cable into a cutting position, wherein said cutters at least partially penetrate said sheath, and an open position, wherein said cutters are out of contact with said sheath, each of said cutters having a cutting tip nearer said cable, and a base end remote from said cable,

a first of said cutters being of a length such that, when in said cutting position, said cutting tip penetrates said sheath to said wire core, a second of said cutters being of a length shorter than that of said first cutter so that, when in said cutting position, its said cutting tip is at a distance from said axis of said cable substantially equal to one half said reduced diameter,

a pair of clamping arms, remote from said free end and adapted for movement betweeo a free position, wherein said clamping arms are out of contact with said insulating sheath, and a clamped position, wherein said clamping arms grip said abrasion-resistant cable, whereby said cable is stripped by interaction between said cutters and said clamping arms.

5,619,791

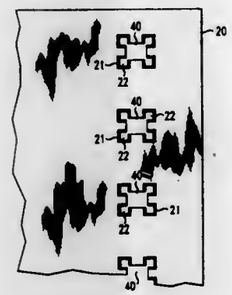
METHOD FOR FABRICATING HIGHLY CONDUCTIVE VIAS

Vincent G. Lambrecht, Jr., Millington; Henry H. Law, Berkeley Heights, both of N.J.; Apurba Roy, Rockwall, Tex.; John Thomson, Jr., Spring Lake, and Te-Sung Wu, New Providence, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 268,465, Jun. 30, 1994. This application Apr. 28, 1995, Ser. No. 430,963

Int. Cl.[6] H05K *3/42*

U.S. Cl. 29—852 **6 Claims**



1. A method for making conductive vias in an insulating substrate comprising the steps of:

providing an insulating substrate having a pair of major surfaces;

forming a plurality of via through-holes in said substrate between said major surfaces;

applying a first coating of conductive material to said substrate within said via holes;

forming one or more apertures in said substrate intersecting said conductively coated via holes so that the peripheries of the resulting composite apertures include both conductively coated via portions and insulating portions; and

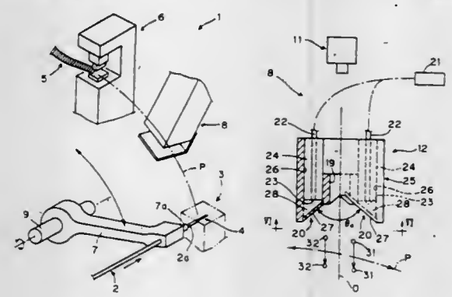
plating said conductively coated via portions with a second layer of conductor.

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5,619,792
METHOD AND DEVICE FOR ILLUMINATION IN TERMINATED CABLE PART INSPECTION DEVICE FOR STRIPPED TERMINAL CRIMPING MACHINE

Hideki Ohmori, and Yoshihide Ichikawa, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 14, 1995, Ser. No. 572,419
Claims priority, application Japan, Dec. 22, 1994, 6-320789
Int. Cl.[6] H01R *43/048;* **F21V** *33/00;21/14*
U.S. Cl. 29—863 **9 Claims**



1. A method for illumination in a terminated cable part inspection device for a stripped terminal crimping machine, said stripped terminal crimping machine comprising a stripping portion for stripping a coating at an end of a cable, a terminal crimping portion for crimping a crimp terminal to the stripped end of the cable, and a transport mechanism for transporting the stripped cable end in a first direction along a bidirectional path from an initial position of the bidirectional path to the terminal crimping portion and then transporting the stripped cable end in a second direction along the bidirectional path from the terminal crimping portion to the initial position after crimping of the crimp terminal, said terminated cable part inspection device for photographing the cable end transported along the bidirectional path to inspect a stripped part and a terminal crimped part of the cable by image processing, said terminated cable part inspection device including an image pickup camera for photographing the cable end, and illuminating means for illuminating the cable end to be photographed by said image pickup camera, said illuminating means including a pair of illuminating portions on opposite sides of a photographing path of said image pickup camera for directing illumination in substantially the same direction as a photographing direction of said image pickup camera toward the cable end passing therethrough along the bidirectional path, said pair of illuminating portions being elongated in substantially the same direction as a longitudinal direction of the cable, said method comprising

directing illumination by said pair of illuminating portions in inwardly angled directions respectively from the opposite sides of the photographing path of said image pickup camera toward the cable end passing therethrough along the bidirectional path.

5,619,793
METHOD OF REFURBISHING A PLATE ELECTRODE

Charles P. Tomba, Painesville; Joseph J. Scarpucci, and Andy W. Getsy, both of Eastlake, all of Ohio, assignors to Eltech Systems Corporation, Chardon, Ohio

Division of Ser. No. 160,632, Dec. 2, 1993, Pat. No. 5,464,519.
This application Oct. 16, 1995, Ser. No. 543,679
Int. Cl.[6] H01R *43/02*
U.S. Cl. 29—879 **9 Claims**

6. The method of refurbishing a plate electrode having front and back major faces and an edge, with the refurbishing providing the electrode in secured engagement to a current distributor, which method comprises:

providing a plate electrode consisting essentially of a used valve metal electrode which was coated and used;



establishing outer valve metal envelope members on the major faces of said used valve metal plate electrode, said outer envelope members having extension sections projecting beyond the perimeter of said plate electrode with said extension sections leaving exposed edges of said plate electrode;

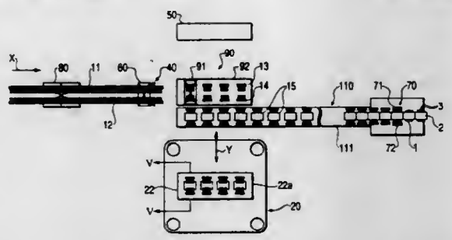
striking a welding arc between said valve metal extension sections to an exposed edge of said valve metal plate electrode to provide a weld along said exposed edge; and

pooling metal of said valve metal extension sections at said welding arc, providing said weld at the plate electrode edge of extension section valve metal.

5,619,794
COMPLEX STRUCTURE MOLDING PROCESS AND APPARATUS

Keizo Hokazono, Iwakuni, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Mar. 17, 1995, Ser. No. 405,946
Claims priority, application Japan, Mar. 17, 1994, 6-046287
Int. Cl.[6] H01R *43/20;* **H01L** *21/56;23/48*
U.S. Cl. 29—883 **16 Claims**



1. A complex structure molding process for molding a complex structure including a plastic base and a plurality of terminal pins having an inner portion embedded in said plastic base and an outer portion extending outwardly of the plastic base, comprising the steps of:

molding said plastic base to have said terminal pins partly embedded in said plastic base;

storing a continuous metal material having a rim portion and a plurality of terminals pins perpendicularly extending from said rim portion and equally spaced apart from one another along the longitudinal direction of said rim portion;

cutting said continuous metal material in a first direction parallel to the direction in which said terminal pins extend from said rim portion to form a plurality of segmented metal materials before said segmented metal materials are partly molded with said plastic;

setting said segmented metal materials in the state having said segmented metal materials assume their predetermined attitudes;

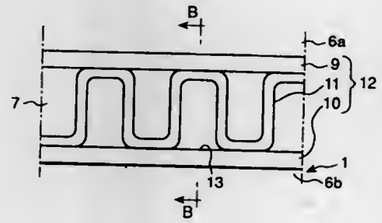
feeding said continuous metal material to cut said continuous metal materials and to set said segmented metal materials for molding to said plastic base to have said terminal pins partly embedded in said plastic base; and

cutting said molded segmented metal materials in a second direction perpendicular to said first direction to remove said rim portion from said terminal pins and said plastic base.

5,619,795
METHOD FOR DESIGNING AN OIL RING

Katsuya Miyoshi, and Ichiro Hirose, both of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Dec. 2, 1994, Ser. No. 353,247
Claims priority, application Japan, Dec. 2, 1993, 5-302923; Dec. 2, 1993, 5-302924
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.01 **21 Claims**



1. A method of making an oil ring set for a reciprocal internal combustion engine comprising the steps of:

forming an upper side rail and a bottom side rail;

forming an expander; and

fitting said expander between said upper side rail and said bottom side rail so that said oil ring set will fit in a ring groove cut into a piston and satisifes a first relationship between a radial thickness of the oil ring set and tension of said oil ring set based on a coefficient for a thickness of an oil film on a cylinder wall and a standard parameter representative of a predetermined thickness of said oil film, a second relationship between said radial thickness and tension of said oil ring set based on a coefficient for a propensity of said oil ring set to follow deformation of said cylinder wall and a pattern of said deformation of said cylinder wall and a standard parameter representative of a predetermined amount of oil consumption, and a third relationship between said radial thickness and tension of said oil ring set based on a coefficient representative of springiness permanence of said oil ring set against swelling and a standard parameter of said coefficient representative of springiness permanence of said oil ring set.

5,619,796
METHOD OF MAKING AN ULTRA LIGHT ENGINE VALVE

Jay M. Larson, Marshall, and David L. Bonesteel, Richland, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 379,816, Jan. 27, 1995, abandoned, which is a division of Ser. No. 41,749, Apr. 1, 1993, Pat. No. 5,413,073. This application Jun. 19, 1996, Ser. No. 668,003
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.46 **6 Claims**

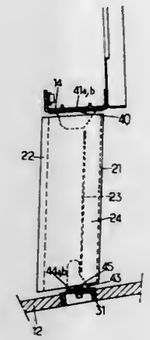
1. A method for manufacturing an ultra light poppet valve for an internal combustion engine comprising the steps of providing a blank in the form of a ductile metal disk, subjecting said blank to a plurality of cold forming steps wherein mandrels of decreasing diameter and increasing length are sequentially engaged with said blank while said blank is held in fixtures of corresponding size to said mandrels to draw said blank into an elongated cylinder having a substantially flat closed end and a flared open end, and fixing a substantially disk-like cap member to said flared end.



5,619,797
FLOW-STRAIGHTENER VANE FOR COUNTER-TORQUE DEVICE WITH DUCTED ROTOR AND DUCTED FLOW-STRAIGHTENING STATOR, FOR HELICOPTER

Henri F. Barquet, Chateauneuf-les-Martigues, and Rémy E. Arnaud, Vitrolles, both of France, assignors to Eurocopter France, Marignane Cedex, France

Division of Ser. No. 298,310, Sep. 1, 1994, Pat. No. 5,454,691.
This application Apr. 13, 1995, Ser. No. 422,314
Claims priority, application France, May 4, 1994, 94 05480
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.72 **4 Claims**



1. A method for manufacturing a flow-straightening vane for a counter-torque device of a helicopter with an aerodynamic profile in order (a) to support a central body (i) substantially coaxially within a duct passing through a helicopter rear part and having an axis substantially transverse to a central longitudinal axis of the helicopter, and (ii) downstream of a substantially coaxial rotor mounted so that the rotor rotates on the body and rotates within the duct and, (b) to straighten out, downstream of the rotor, an airflow generated by the rotation of the rotor within the duct, wherein said method comprises the steps of:

extruding a hollow metal section of cross-section corresponding to the aerodynamic profile of the vane,

cutting a section portion of the metal section having a length at least equal to a span of the vane, and

arranging at least one end of the section portion as an end fitting equipped with at least one fastening tab for fastening the end fitting respectively to one of the body or the wall of the duct.

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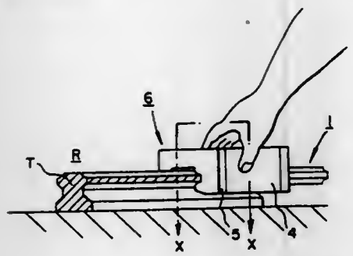
PROCESS FOR ASSEMBLING A LINEAR MOTION BEARING USING A RETAINERLESS SADDLE ASSEMBLY

Kenichi Hattori, 3472, Hill St., Fairfax, Va. 22030

Continuation of Ser. No. 216,428, Mar. 23, 1994, abandoned. This application Aug. 9, 1996, Ser. No. 694,840

Int. Cl.[6] F16C *33/14*

U.S. Cl. 29—898.03 **1 Claim**



1. A process for assembling a linear motion bearing using a retainerless saddle assembly, said retainerless saddle assembly being composed of a bearing body having escape-ball through holes, steel balls, a pair of end caps and a ball holder, said ball holder having a length substantially equal to that of the bearing body and being independent therefrom, said assembling process comprising the steps of:

(a) attaching one of said pair of end caps at one end surface of said bearing body;

(b) providing raceways within said bearing body, a diameter of each of said raceways being slightly larger than that of each of said steel balls;

(c) feeding said steel balls into said raceways and escape-ball through holes in said bearing body;

(d) covering an open end of said bearing body by another one of said pair of end caps so as to form a saddle;

(e) holding said balls positioned within said raceways by said ball holder such that said balls will no fall off from said raceways within said bearing body thereby forming a retainerless saddle assembly; and

(f) sliding said retainerless saddle assembly onto a rail to form a retainerless linear motion bearing without said ball holder, said ball holder being displace by said rail.

5,619,799

THREE-DIMENSIONAL PATTERN DESIGN METHOD FOR GARMENTS FITTED WITH SLEEVES

Alexandre K. Keung-Lung, Bernay, and Dominique Longavesne, Grandchain, both of France, assignors to TPC International, Paris, France

Filed Mar. 23, 1995, Ser. No. 409,152

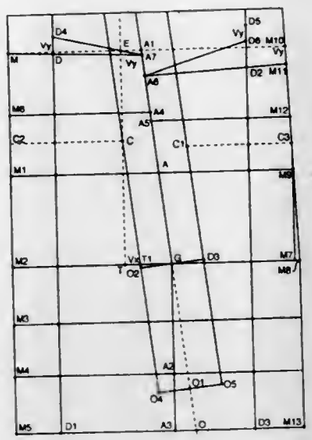
Claims priority, application France, Sep. 23, 1992, 92 11510

Int. Cl.[6] A41H *3/00*

U.S. Cl. 33—11 **8 Claims**

1. A method for designing three-dimensional patterns for pieces of garments with sleeves, especially jackets, blazers, coats, overcoats, dresses, shirts and blouses for men, women and children without any limitation in length and from any material with warp and weft, made of natural or synthetic fibers or of leather, according to which method a plurality of structural lines are drawn first of all, especially the waist line, the length lines, the neck lines, the hip line and the pelvis line, in which, in order to obtain a structural outline:

a theoretical axis of the profile of the bust is drawn by means of a line made of two segments, which is broken at a specific point known as the point of gravity, marking the angle of projection of the pelvis forwards and, by reaction, inclined backwards by 6° to 8° in its upper segment, said line constituting the fundamental reference line for constructing the garment, and being termed body line;



the specific position of the sleeve is determined symmetric to the upper segment of the reference line;

a first reference value is determined by drawing a theoretical straight line perpendicular to the waist line, this value lying between the point of intersection of this theoretical line and the waist line, and the point of intersection of the back sleeve orientation line and the waist line;

a specific and proportional geometric calculation is carried out on the fitting of the waist, using said first reference value;

a second reference value is determined on the center-front line using the difference lying between the points where it passes through the theoretical height of the neck back and the shoulder front line, this difference determining, in ordinates, the exact second reference value,

a specific and proportional geometric calculation is carried out between the neck, top of neck and shoulder slope points with the aid of said second reference value;

a specific three-dimensional and relational geometric calculation is carried out on the armhole/sleeve fitting with the aid of curve transfer lines consisting of the tangents to the armhole originating from said point of gravity at the end of the line defining a third specific reference value;

two tension points denoted respectively back hanging point and front hanging point are determined, and these make it possible to fine-tune the fitting of the pattern in order to obtain integral fitting of the garment on the shoulder, through a specific calculation on the theoretical back shoulder slope at the intersection of a straight line originating from the center of the back shoulder line and perpendicular to the theoretical neck line, and the distance between said back hanging point and the point of intersection of the back shoulder line and of said upper segment of the body line is transferred onto the theoretical front shoulder slope starting from the point of intersection of the shoulder line and of said upper segment; and

the bust dart value is specifically taken in making it possible to eliminate or use up any excess material depending on the desired volume;

and wherein all the components of the garment fall within the construction plan.

5,619,800

PARALLEVEL ALIGNMENT SYSTEM

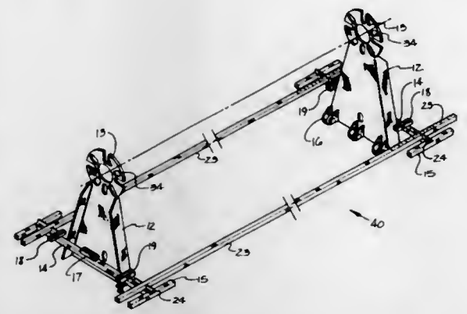
Willie C. Unruh, 8107 Peachtree, Wichita, Kans. 67207

Filed Apr. 18, 1995, Ser. No. 423,366

Int. Cl.[6] G01B *5/255*

U.S. Cl. 33—203.15 **5 Claims**

1. An alignment apparatus comprising:



(a) two tripods that are able to replace the hubs and wheels of a particular axle on a vehicle, in which each said tripod has a top area that defines a plurality of spaced apertures, where said apertures are able to receive studs, so that when nuts are tightened on the studs, against the tripod, the tripod is fixed to a hub;

(b) one or more rollers that are fixed to the tripod;

(c) a gauge bar that is fixed to each tripod;

(d) a caster gauge that is fixed to the gauge bar, in which said gauge displays whether the gauge bar length is horizontal;

(e) a camber gauge that is fixed to the gauge bar, in which said gauge displays the tilt of the gauge bar from side to side;

(f) an adjustable gauge that is fixed to the gauge bar, in which said gauge displays the tilt of the gauge bar from side to side, and which can be calibrated to a zero or level setting;

(g) two toe bars that are positioned between the tripods, forward and rearward of the hub, where the ends of said toe bars are supported by the gauge bar on each tripod.

5,619,801

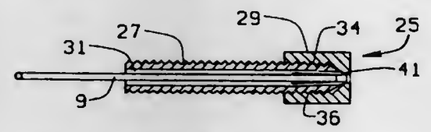
FIBER OPTIC PIN SIGHT FOR A BOW

Scott O. Slates, Wentzville, Mo., assignor to Toxonics Manufacturing, Inc., Wentzville, Mo.

Filed Jun. 26, 1995, Ser. No. 494,946

Int. Cl.[6] F41G *1/467*

U.S. Cl. 33—241 **8 Claims**



1. A fiber optic pin sight, the pin sight being mountable to an archery bow, the pin sight including:

a mounting plate which is operatively secured to a bow, a plurality of pin mounting blocks secured to the mounting plate, a fiber optic cable holder secured to each of said plurality of mounting blocks, and a fiber optic cable extending through and secured in the cable holder, the cable holder gripping the fiber optic cable along a portion of the cable, the fiber optic cable holder includes an externally threaded shaft defining a shaft bore and a compression nut defining a nut bore, said cable extending through said shaft bore, the shaft having a front end and a back end, the shaft having an outer diameter which is substantially constant along the length of the shaft, the outer diameter being slopingly reduced at the back end of said shaft, said shaft further including a slot extending forwardly from said back end of said shaft to define two spaced apart legs, said slot being sufficiently long such that said legs are slightly flexible, the nut bore having three sections, a first threaded section of substantially constant diameter which extends a majority of the length of the nut, a second tapering section, and a third section of constant diameter which extends from the tapered section to the back surface of the nut, the third section having a diameter slightly larger than the diameter of the shaft at the back thereof, but smaller than the constant diameter of the shaft, wherein as said nut is screwed over said shaft, the tapered section of the shaft is introduced into the tapered section of the nut and into the third portion of the nut bore bringing said shaft legs together such that said legs tightly grip said fiber optic cable and resists its movement once adjusted and when subjected to extensive forces during usage of the archery bow.

5,619,802

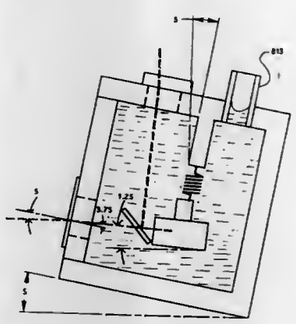
AUTOMATIC LEVEL AND PLUMB TOOL

Joseph F. Rando, Los Altos Hills, and Christiaan Ligtenberg, Mountain View, both of Calif., assignors to Levelite Technology, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 178,039, Jan. 6, 1994, abandoned, and Ser. No. 248,517, May 24, 1994, Pat. No. 5,459,932, which is a continuation-in-part of Ser. No. 178,039, which is a continuation-in-part of Ser. No. 113,773, Aug. 27, 1993, abandoned. This application Nov. 18, 1994, Ser. No. 342,175

Int. Cl.[6] G01C *5/02; G12B 5/00*

U.S. Cl. 33—291 **9 Claims**



1. A portable hand tool for projecting a laser beam in level or plumb direction, in spite of a tilted condition of the tool itself, to align the projected laser beam in two stages to substantially truly level or plumb orientation, comprising:

a housing,

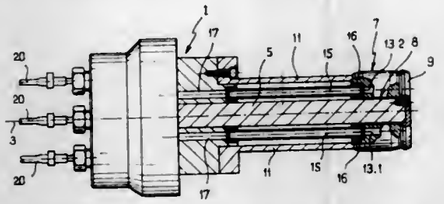
laser means with projection means for projecting a laser beam,

pendulous mounting means secured to the housing and depending internally in the housing, for effecting a first stage of alignment when the housing is not truly level or plumb, said laser means being mounted on the pendulous mounting means such that the projected beam from the laser means is partially aligned toward level or plumb orientation when the housing is tilted, leaving a residual angle of deviation of the laser beam from a truly level or plumb orientation, and

refractive correction means in the housing and positioned in the path of the laser beam, in a second stage of alignment, having optics selected for aligning the laser beam to substantially truly level or plumb orientation, by bending the path of the laser beam by said residual angle of deviation.

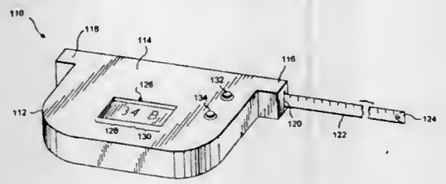
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5,619,803
PNEUMATIC MEASUREMENT PLUG
François Decool, Bayeux, France, assignor to Societe Industrielle de Liaisons Electriques, Paris Cedex, France
Filed Nov. 8, 1995, Ser. No. 555,150
Claims priority, application France, Nov. 10, 1994, 94 13555
Int. Cl.[6] G01B 13/10
U.S. Cl. 33—543.1 4 Claims



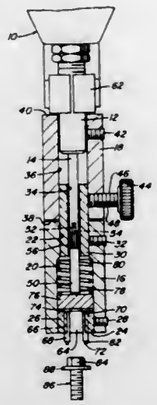
1. A pneumatic measurement plug comprising an elongate member and at least one measuring ring mounted with radial play on the elongate member and having at least one pair of diametrically opposite measurement nozzles fed with gas under pressure plus at least three centering members disposed on the periphery of the measurement ring on radii that define substantially equal angles between one another, wherein the center members are nozzles fed with gas under pressure independently from the measurement nozzles.

5,619,804
ANATOMICAL MEASURING TAPE WITH INDICATOR
Katie S. Vogt, 275 Engle St., Apt. B-2, Englewood, N.J. 07631, and David Porat, 18 Sunset Rd., Newton, Mass. 02158
Continuation-in-part of Ser. No. 150,812, Nov. 12, 1993, Pat. No. 5,414,943. This application May 15, 1995, Ser. No. 446,944
Int. Cl.[6] G01B 3/10
U.S. Cl. 33—763 16 Claims



5. An anatomical device for determining the brassiere size for a user, said brassiere size being defined by a band size and a cup size, said device comprising:
a housing having first lateral dimension and a second longitudinal dimension substantially perpendicular to said first dimension;
reel means rotatably disposed in said housing;
measuring tape means disposed on said reel means and having at least one free end, said tape means being arranged and constructed to be paid off to a first and a second length, said first length being defined by said tape means being deployed from said housing in a substantially longitudinal direction about the user's rib cage; said second length being defined by said tape means being deployed from said housing in a substantially longitudinal direction about said person's bust, wherein said tape means is deployed from a substantially common lateral location along said housing for defining either said first or second lengths;
conversion means for converting said first length and second length to a specific band and cup size, respectively; and
display means for displaying said band and cup size.

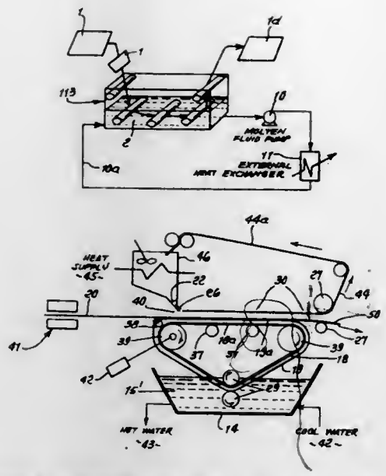
5,619,805
DEVICE FOR MEASURING WRENCHING HEIGHT OF HEXAGONAL HEAD FASTENERS
Joe E. Greenslade, 2118 Edwin St., Fort Worth, Tex. 76110
Filed Jun. 28, 1995, Ser. No. 496,200
Int. Cl.[6] G01B 3/22
U.S. Cl. 33—833 18 Claims



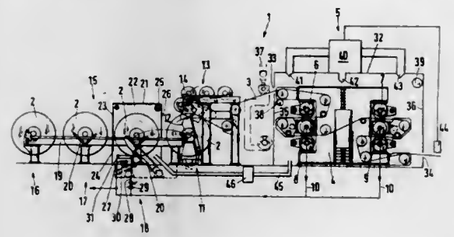
1. A device for measuring wrenching height of polygonal head fasteners, the device comprising in combination:
a linear dimension indicator having an indicator shaft extending therefrom, the indicator being actuable by reciprocal movement of the indicator shaft to indicate a linear dimension of a fastener being measured;
a gaging element housing having an interior bore with a longitudinal axis, the gaging element housing coupling to the indicator with the indicator shaft extending into the interior bore;
a gaging ring which is coaxially fixed to the gaging element housing, the gaging ring having a central opening of a selected diameter for partially receiving a polygonal head of a fastener being measured, the gaging ring having at least three pin holes which extend through the gaging ring parallel to the longitudinal axis and which are circumferentially spaced apart about the central opening;
at least three gaging pins, each pin being closely received within one of the pin holes, the pins having opposite inner and outer ends, the gaging pins being free to reciprocate between an inward and an outward position within the pin holes so that the outer ends contact a base line area of the fastener and the inner ends project within the interior bore towards the indicator shaft when moved to the inward position; and
translation means for causing the movement of the pins to move the indicator shaft in unison therewith to thereby cause the indicator to indicate wrenching height.

5,619,806
DRYING OF FIBER WEBS
David W. Warren, 9253 Glenoaks Blvd., Sun Valley, Calif. 91352
Filed Feb. 26, 1996, Ser. No. 605,519
Int. Cl.[6] F26B 3/00
U.S. Cl. 34—331 30 Claims

1. The method of drying a moist, fibrous web or sheet, which includes:
a) providing a molten metallic material at a temperature substantially above 100° C.,
b) and contacting the web or sheet with the molten material for a drying time period sufficient to cause partial or substantial removal of moisture from the web by heat transfer from the molten material, said drying time period being of relatively short duration.

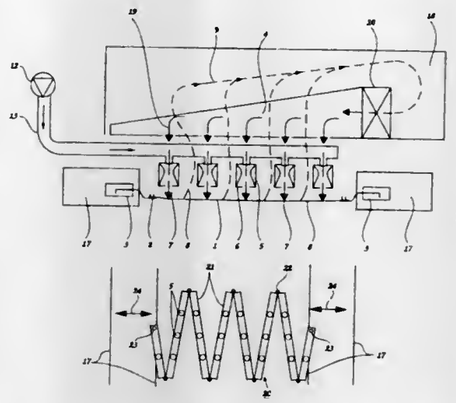


5,619,807
METHOD AND APPARATUS FOR PROCESSING A WEB OF MATERIAL
Hans-Rolf Conrad, Dormagen, Germany, assignor to Voith Sulzer Finishing GmbH, Krefeld, Germany
Filed Mar. 30, 1995, Ser. No. 413,683
Claims priority, application Germany, Apr. 13, 1994, 44 12 624.7
Int. Cl.[6] F26B 3/00
U.S. Cl. 34—414 20 Claims



1. A method of processing a web of material, comprising the steps of:
a) providing a roll having a web of material wound thereabout;
b) exposing said roll, with said web of material wound thereabout, in a roll storage position to a preselected atmospheric environment at least one of the temperature and humidity level higher than that of the normal ambient environment for a predetermined minimum time duration; and
c) unwinding said web of material from said roll and feeding said unwound web of material through at least one roller gap of a roller-gap system.

5,619,808
APPARATUS FOR BLOWING AIR AT A LENGTH OF TEXTILE FABRIC
Manfred Pabst, Cologne, Germany, assignor to A. Monforts GmbH & Co., Moenchengladbach, Germany
PCT No. PCT/DE93/00747, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04740, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 18, 1993, Ser. No. 387,800
Claims priority, application Germany, Aug. 26, 1992, 42 28 454.6; Aug. 26, 1992, 42 28 453.8
Int. Cl.[6] F26B 9/00
U.S. Cl. 34—640 11 Claims

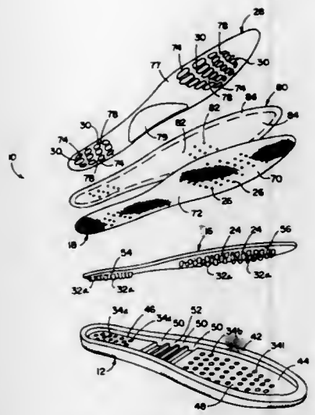


1. An apparatus for blowing air at a traveling spread-out length of textile fabric (1) with the aid of an optionally heated treatment gas (7) flowing in accelerated fashion toward the length of fabric, comprising injector nozzles (5) disposed on at least one side of the surface of the length of fabric and aimed at the length of fabric, particularly in a tentering frame in the textile industry, with each nozzle including an injector to accelerate the treatment gas; a compressed air supply for delivering compressed air to said injector nozzles (5) individually or in groups, means for heating the treatment gas via waste heat, and a gas turbine for driving said injector nozzles.

5,619,809
SHOE SOLE WITH AIR CIRCULATION SYSTEM
Raymond Sessa, 5123 S. Quail Crest, Grand Rapids, Mich. 49546
Filed Sep. 20, 1995, Ser. No. 530,999
Int. Cl.[6] A43B 13/18
U.S. Cl. 36—3 R 23 Claims

1. An article of footwear comprising:
an upper;
an outsole defining a plurality of upwardly opening pockets each having a circumferential wall;
an insert above said outsole and deeming an air chamber therebetween, said insert including a plurality of pins each extending toward one of said pockets, each of said pins having a circumferential wall dimensioned to engage the associated pocket wall, said insert defining a plurality of apertures which allow air to flow into and out of said air chamber; and
support means for flexibly suspending said insert above said outsole, said support means disposed above said insert and including a periphery, said support means affixed around said periphery to said upper, said support means being sufficiently flexible to allow said insert to move toward said outsole when a load is applied to said insert, whereby said pins engage said

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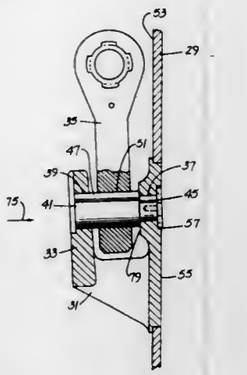
pockets to provide cushioning, and further whereby air is expelled from said air chamber through said insert apertures.

5,619,810

PIN RETENTION DEVICE AND RELATED METHOD FOR RETAINING A TRUNNION LINK PIN IN A DIGGING IMPLEMENT

Rikos A. Kasim, Mukwonago, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Dec. 4, 1995, Ser. No. 558,555
Int. Cl.[6] E02F *3/60*
U.S. Cl. 37—399 **15 Claims**



1. In a digging implement having a trunnion link connected to the implement by a pin and wherein:

the implement has a wall and a trunnion mounting plate away from the wall, such plate and wall defining a space therebetween;

the pin has a longitudinal axis and is secured to the implement by a retention device;

the pin has first and second cylindrical portions of differing diameters,

the improvement wherein:

the first portion has an interior threaded opening;

the retention device is threaded to the first portion along the longitudinal axis;

the second portion extends away from the wall and into the space; and

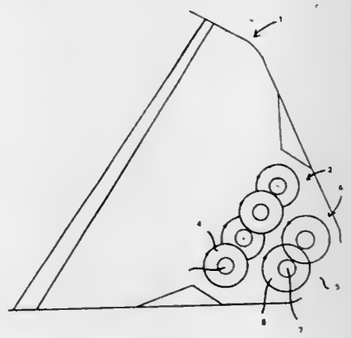
the wall is between the second portion and the retention device.

5,619,811

BUCKET EQUIPPED WITH GRINDING AND LOOSENING DEVICE

Mikko Yrjölä , Norolantie 12, FIN-15270 Kukkila, Finland

PCT No. PCT/FI93/00268, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/00644, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 23, 1993, Ser. No. 360,771
Claims priority, application Finland, Jun. 2[illegible], 1992, 922918
Int. Cl.[6] E02F *3/00*
U.S. Cl. 37—466 **8 Claims**



1. A device for handling material, comprising a bucket of a machine having a grinding device grinding material fitted thereto, the grinding device comprising:

at least two substantially parallel shafts which are spaced from each other and are rotatable in the same direction in synchronization, the shafts comprising grinding members grinding the material, wherein the grinding members of two adjacent shafts overlap each other, the bottom of the bucket includes an outlet opening for the handled material, the grinding members include discs which are spaced from each other on each of the shafts, the peripheral surfaces of the discs comprising projections, and wherein a notch is provided between two adjacent projections, and the bucket includes a loosening device loosening material lodged between the grinding device and the outlet opening, the loosening device having at least two essentially parallel shafts which are spaced from each other, are rotatable in synchronization and which include aeration blades loosening the ground material obtained from the grinding device.

5,619,812

HEEL REST FOR AN IRON

Keith J. Hensel, North Sydney, and Richard L. Hoare, Neutral Bay, both of Australia, assignors to Sunbeam Products, Inc., Fort Lauderdale, Fla.

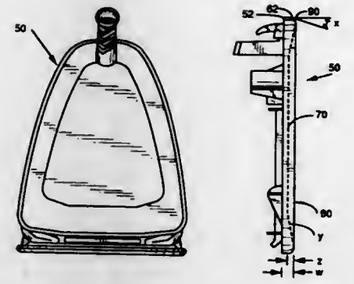
Filed Nov. 14, 1995, Ser. No. 555,703
Int. Cl.[6] D06F *75/40*
U.S. Cl. 38—88 **15 Claims**

1. An iron comprising:

a) a housing;

b) a soleplate connected to said housing; and

c) a rear cover means connected to said housing, said rear cover means having a planar recess for stabilizing said iron in an upright position on a surface, said planar recess comprising an inwardly sloped portion surrounding an inner flat portion, said inner flat portion comprising a maximum depth of said planar recess ranging from 1.0 to 3.0 mm, said inwardly sloped portion sloping inward at an angle ranging from 2 to 15



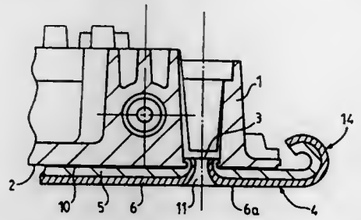
degrees, said rear cover means having a height of approximately 126.0 mm and a width of approximately 116.0 mm.

5,619,813

MULTILAYER IRON SOLEPLATE MADE UP OF CO-LAMINATED MATERIALS

Michel Forest, Vienne, and Jean-Louis Brandolini, Saint-Etienne, both of France, assignors to SEB S.A., Selongey, France

PCT No. PCT/FR94/00077, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/17236, PCT Pub. Date Aug. 8, 1994
PCT Filed Jan. 21, 1994, Ser. No. 448,568
Claims priority, application France, Jan. 25, 1993, 93 00910
Int. Cl.[6] D06F *75/38*
U.S. Cl. 38—93 **22 Claims**



1. A soleplate for an iron, the soleplate comprising a casting (**1**) secured to a metal ironing cover (**4**) made up of at least two layers of different materials, said soleplate being characterized in that the metal cover (**4**) is made up of an assembly comprising at least two layers (**5,6**) of co-laminated materials, in which assembly the first layer (**5**) forms the layer for fixing to the casting (**1**) and is constituted by the same material as the casting (**1**) or by a material having similar physical characteristics, and the second layer (**6**) forms the ironing layer, the thickness of the second layer lying in the range 5% to 40% of the thickness of the first layer (**5**).

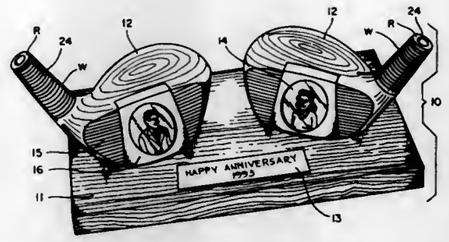
5,619,814

SHAFTLESS GOLF CLUB HEAD PHOTOGRAPH HOLDER AND METHOD OF MAKING SAME

Timothy H. Herrndobler, 54 N. Winston Dr., Palatine, Ill. 60067

Filed Apr. 16, 1993, Ser. No. 48,670
Int. Cl.[6] A63B *53/04*
U.S. Cl. 40—358 **7 Claims**

1. A shaftless golf club head photograph holder having an inclined surface simulating a striking face of a wood-type golf club, the face having a concave center portion, the improvement of a photograph having corresponding length and width dimensions to length and width dimensions of said concave center portion, an adhesive tape, said tape having adhesive characteristics on opposite sides thereof, the adhesive on one side of the tape being secured to a bottom face of the photograph, the adhesive on the opposite side of the tape being secured to said concave center portion to maintain the photograph, a layer of transparent epoxy engaged over the photograph encasing and securing said photograph is a fixed position in said concave center portion enabling the photograph to be viewed from said striking face of the shaftless golf club head, the holder having a recessed underside portion, a weight of corresponding dimension to said recessed underside portion is mounted within the recessed underside portion, said holder mounted on a heel plate, the heel plate providing support means to fixedly secure said weight in said recessed underside portion, said heel plate mounted on a decorative support base, said base having an ornamental letter plate affixed to a top of the base enabling unobstructed viewing of said ornamental letter plate, screw means protruding up from an underside of the decorative support base through the top of said base into said heel plate through said heel plate into said head connecting said head to said heel plate to said base in mounted fixed assembly therein, said screw means securing said head in a fixed horizontally planar manner mounted upon said decorative support base.

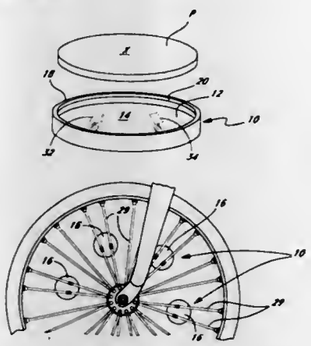


5,619,815

POG HOLDER AND METHOD

Dennis Greene, 2211 S. Grand Ave., Santa Ana, Calif. 92705

Filed Feb. 6, 1995, Ser. No. 385,111
Int. Cl.[6] G02B *5/12*
U.S. Cl. 40—661.05 **7 Claims**



1. A device adapted to hold a POG and be attached between adjacent spokes of a wheel, including

a disk-like, circular base having a diameter slightly greater than about 1.5 inch,

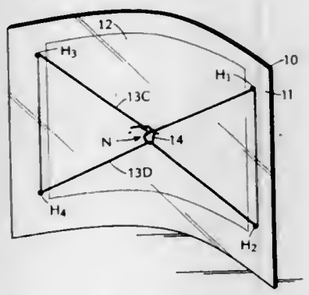
said base having a front face and a rear face, with the front face having a rim extending at least partially along the perimeter of the base, and rim having a height of slightly greater than about 1/16 inch and a lip extending along the interior of the rim, whereby the POG may be placed on the front face with the rim snugly holding the POG on the base, displaying the POG, and

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at least two spaced gripper on the rear face, each gripper having a pair of fingers cooperating with one another to define a slot having a longitudinally axis, so that the axes of the slots are spaced from each other a predetermined distance and positioned at a predetermined angle to one another sufficient to enable the base to be attached between said adjacent pair of spokes,

the fingers of each pair of gripper are adapted to straddle and grasp one spoke of said adjacent pair of spokes.

5,619,816
FREE-STANDING DISPLAY FRAME
Hillary Ellison, 21 E. 7th St., #5, New York, N.Y. 10003
Filed Feb. 26, 1996, Ser. No. 607,151
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—738 **8 Claims**



1. A free-standing frame displaying a photo or other sheet inserted in the frame bearing decorative or informative data to be displayed, said frame comprising:

A. a pair of normally planar superposed flexible panels formed by a face panel and a rear panel, at least the face panel being transparent; and

B. a length of cord threaded through holes bored in the superposed panels at the corners of a rectangle, the cord threaded through said holes defining a pair of parallel vertical cord sections overlying the face panel on either side of the photo or other sheet inserted between the panels and sandwiched thereby, and a pair of horizontal upper and lower cord sections behind the rear panel joining the vertical cord sections at the holes to hold these panels together loosely when the frame is in a flat state; and

C. detachable means linking the upper horizontal cord section to the lower horizonal cord section at their centers to create a holding node and to cause the panels to flex to convert the frame to a curved state in which the frame is free standing, said panels in the curved state being tightly held together to compress the sheet sandwiched therebetween to maintain its frame position.

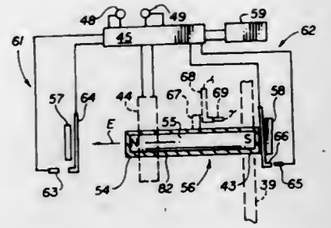
5,619,817
LOCK FOR HAND HELD WEAPON
David W. Jones, 4271 Skywalker Ave., Las Vegas, Nev. 89120
Filed Apr. 3, 1995, Ser. No. 415,565
Int. Cl.[6] F41A *17/04*
U.S. Cl. 42—70.01 **20 Claims**

1. In combination with a hand held weapon including a firing system including

trigger means,

hammer means, and

linkage means interconnecting said trigger means and said hammer means, the improvements comprising safety means for preventing the unauthorized firing of the hand held weapon, said safety means including



(a) a first member which attracts a magnetically polarized member;

(b) a second member which attracts a magnetically polarized member;

(c) a control member including a magnet having first and second ends and moveable between at least two operative positions

(i) a first operative position to prevent the normal operation of the firing system, said first end being magnetically attracted to said first member to maintain said control member in said first operative position when said control member is in said first operative position, and

(ii) a second operative position to permit the normal operation of the firing system, said second end being magnetically attracted to said second member to maintain said control member in said second operative position when said control member is in said second operative position;

(d) electrically activated means adjacent said control member to produce a first electromagnetic field which interacts with at least one magnetic field in said magnet to move said magnet from said first to said second operative position, said magnetic field being in said first end of said magnet;

(e) a source of electricity; and,

(f) supply means for

(i) providing to said electrically activated means electricity from said source of electricity to produce an electromagnetic field to move said magnet from said first to said second operative position, and

(ii) after said magnet has moved from said first to said second operative position, deactivating said electrically activated means by discontinuing the flow of electricity from said source of electricity to said electrically activated means, said second member maintaining said magnet in said second operative position after electricity from said source of electricity has been discontinued to said electrically activated means.

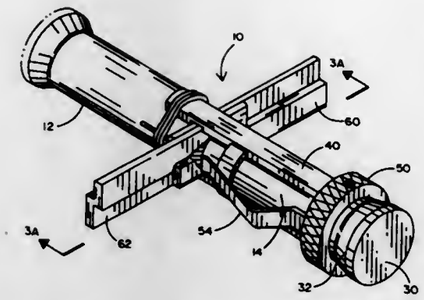
7. The combination of claim 1 wherein said first member, second member, control member, electrically activated means, and supply means are permanently mounted on said weapon.

5,619,818
FLY TIER'S STACK AND CLAMP TOOL
Dellas Frederiksen, 5413 Capson Ave., Boise, Id. 83704
Filed Aug. 28, 1995, Ser. No. 520,162
Int. Cl.[6] A01K *97/26*
U.S. Cl. 43—4 **21 Claims**

1. A fly tier's tool comprising:

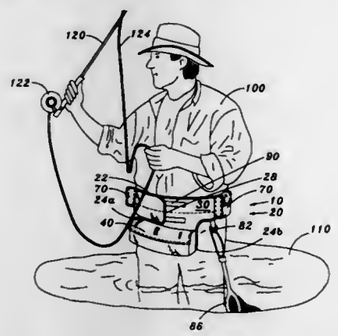
a tube to receive fly tiers' fibrous material having ends, a stop surface within said tube to position the ends of said fibrous material;

means within said tube for gathering the fibrous material within said tube for bunching the fibrous material within said tube; and



means within said tool for clamping the fibrous material and holding the fibrous material in gathered and stacked position while the fiberous material is removed from said tube.

5,619,819
WRAP AROUND CARRYING CASE WITH ACCESSORIES
Alan D. Hauschild, 24908 W. Fox Trail, Lake Villa, Ill. 60046
Continuation-in-part of Ser. No. 239,941, May 9, 1994, Pat. No. 5,488,799, which is a continuation of Ser. No. 121,263, Sep. 13, 1993, abandoned. This application Aug. 2, 1995, Ser. No. 510,187
Int. Cl.[6] A01K *97/08*
U.S. Cl. 43—26 **20 Claims**



1. An elongated recreational device and accessories carrier comprising:

a front panel;

a back panel attached to said front panel at a top edge, a first side edge, a bottom edge and a second side edge, said front and back panel defining an elongated recreational device holding compartment therebetween;

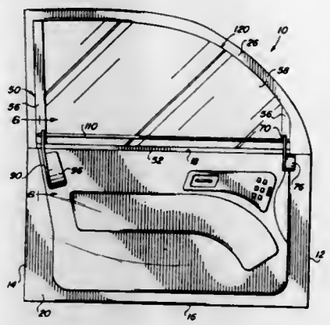
means for selectively opening and closing said device holding compartment disposed on said first side edge;

means for carrying said carrier attached to said top edge;

means for fastening attached to said front panel at said first side edge; and

complimentary means for fastening attached to said back panel at said side edge, said carrier selectively usable as a belt, said means for fastening coacting with said complimentary means for fastening when said carrier is used as a belt.

5,619,820
BRACKET APPARATUS FOR VEHICLE DOORS HAVING NO UPPER WINDOW FRAME
James R. Madden, Jr., 4410 W. Acoma Dr., Glendale, Ariz. 85306
Filed Feb. 12, 1996, Ser. No. 599,750
Int. Cl.[6] E06B *9/00*
U.S. Cl. 49—50 **6 Claims**



1. Bullet resistant window apparatus for a vehicle door having a sill, a window extending above the sill, and having no frame for the window above the sill comprising in combination:

a bottom channel to be disposed on the sill for receiving the bottom portion of a bullet resistant window panel;

a first side channel secured to the bottom channel for receiving the first side portion of the bullet resistant window panel;

a second side channel secured to the bottom channel for receiving a second side portion of the bullet resistant window panel;

inner support means secured to the bottom channel and extending downwardly to be disposed within the door below the window;

a first outer bracket secured to the first side channel and extending downwardly therefrom to be disposed against the door;

a second outer bracket secured to the second side channel and extending downwardly therefrom to be disposed against the door; and

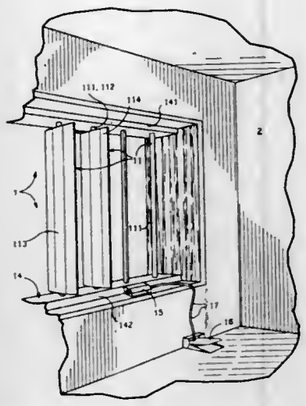
a bullet resistant window panel disposed in the bottom channel and in the first and second side channels.

5,619,821
EASILY-INSTALLED QUICK-RELEASE LOCKING MODULAR SECURITY GRILL WITH OPTIONALLY AFFIXED PENETRATION-RESISTANT ROTATING FINS SERVING AS LOUVERS AND AS A SECURITY SHIELD
Charles W. St. George, Lakemba, Australia; Craig Adams, Medford, Oreg.; Donald Gonrowski, Scappoosh, Oreg., and William Rose, Grants Pass, Oreg., assignors to Locklnbar, Inc., Portland, Oreg.
Filed Jun. 26, 1995, Ser. No. 494,499
Int. Cl.[6] E06B *3/68*
U.S. Cl. 49—57 **14 Claims**

1. A security grille for a structure having and defining a multi-sided window opening, the securitiy grille comprising:

spanning elements, each having a first end and a second end, for spanning the window opening, each of the spanning elements being individually interchangeably selected from the group consisting of

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bars, meaning elongate prisms having a maximum cross-sectional dimension that is less than 50% of a distance of separation between adjacent spanning elements in the security grill, and

fins, meaning substantially planar elongate prisms having a maximum cross-sectional dimension that is more than 50% of the distance of separation between adjacent spanning elements in the security grill,

where, in at least at a one of its first end and its second end, each of the spanning elements includes a stud portion;

a spanning element first-end support member, affixed to the structure at a first side of the window opening, for selectively receiving and engaging the first end of each of the spanning elements;

a spanning element second-end support member, affixed to the structure at a second side of the window opening opposite to the first side, for selectively receiving and engaging the second end, opposite to the first end, of each of the spanning elements, the spanning elements forming a security grille over the window opening when their first and their second ends are selectively respectively received and engaged by the first-end and the second-end support members;

at least a one of the spanning element first-end support member and the spanning element second-end support member that receives and engages the at least one stud portion end of the spanning elements including

a housing,

a securement means for securing the housing to the structure at a side of the structure's multi-sided window opening,

openings in the housing to accept the stud portion of each of the spanning elements,

a slide means, having and defining catch means suitable to engage the stud portions of spanning elements, mounted for sliding in the housing for sliding movement between a first, stud-locking position where the catch means secures the stud portions of the spanning elements, securing the spanning elements to the housing and thus to the structure, and a second, stud-disengaging, position where the catch means releases the stud portion of the spanning elements, permitting removal of the spanning elements from the housing, and

locking means to retain the slide means in its first, stud-locking, position.

5,619,822

SASH WINDOW UNIT, AT LEAST COMPRISING A FRAME WITH A SASH WINDOW WHICH IS SLIDABLE VERTICALLY THEREIN

Michel N. Trompert, van Trigtstraat 65, 2597 VX 's-Gravenhage, Netherlands

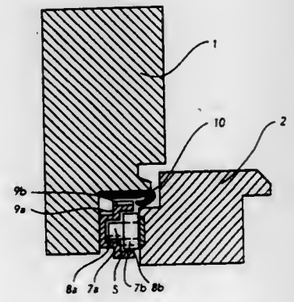
PCT No. PCT/NL93/00054, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/18262, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 9, 1993, Ser. No. 302,645

Claims priority, application Netherlands, Mar. 9, 1992, 9200431

Int. Cl.[6] E05D *15/10*

U.S. Cl. 49—209 **6 Claims**



1. A sash window unit comprising a frame, a sash window, rubber sealing means between said sash window and said frame, and guide means slideably coupling said sash window to said frame; said guide means comprising at least two guideways and at least two guide parts, each one of said guide parts adapted to engage one said guideway, at least one of said guideways comprising a portion defining a locally curved path for moving said sash window in a direction generally at right angles to the plane of said sash window, thereby bringing said sealing means into contact with said frame and said sash window.

5,619,823

PRE-FINISHED METAL DOOR FRAME

Robert O. Ruff, Cincinnati, and Donald L. King, Loveland, both of Ohio, assignors to Ingersoll-Rand Co., Phillipsburg, N.J.

Filed Jul. 11, 1995, Ser. No. 499,604

Int. Cl.[6] E06B *1/18*

U.S. Cl. 49—504 **22 Claims**

1. A metal frame member comprising;

a bent sheet metal frame element encompassing an inner space and having a soffit spaced apart from and generally parallel to a rabbet and a stop extending substantially perpendicular to and between said rabbet and said soffit;

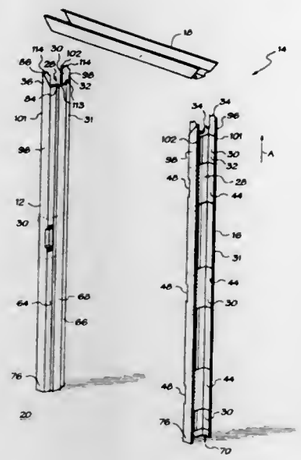
a face extending perpendicularly from said rabbet away from said soffit to a back end of said face;

a backbend extending perpendicularly inward from said back end of said face so as to be generally parallel to said rabbet and bordering said inner space;

a slidably insertable sleeve disposed in said frame element;

said sleeve having a front wall, a side wall extending perpendicularly inward away from said front wall towards said backbend, and a flange extending perpendicularly from said side wall; and

said flange is bonded to said backbend.



5,619,824

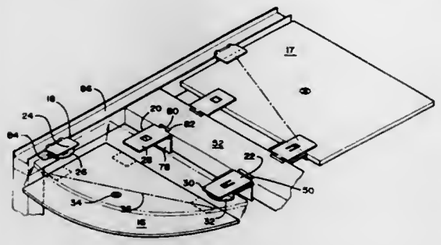
HEAT RELEASEABLE CEILING SUPPORT

Scott H. Russell, Kalamazoo; Mark A. Baloga, East Grand Rapids; David P. Lathrop, Ada, all of Mich.; Kevin S. Nason, Racine, Wis., and Paul B. Siebert, East Grand Rapids, Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Jun. 12, 1995, Ser. No. 489,656

Int. Cl.[6] E04H *1/12*

U.S. Cl. 52—1 **35 Claims**



1. A heat releasable bracket for use in supporting a panel at an upper end of a freestanding workspace module, comprising:

a first bracket part adapted to be mounted on a support structure;

a second bracket part adapted to be joined to said first bracket part, said second bracket part having a surface for supportingly engaging the panel; and

a heat releasable link which at a normal room temperature joins said second bracket part to said first bracket part, and which in response to exposure to an elevated temperature releases said second bracket part from said first bracket part, allowing the panel to drop from the support structure;

said first bracket part including a mounting portion for attachment thereof to a support structure, said mounting portion comprising a vertical flange portion attached at a right angle to a horizontal projecting flange portion, one of said flange portions having a tab adapted to engage a slot provided in the support structure to secure said first bracket thereto.

5,619,825

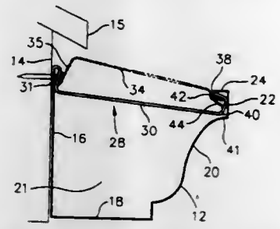
GUTTER SCREEN

David W. Leroney, 412 Lake Shore Dr., and Brad E. Wideman, 414 Park Lane Dr., both of St. Clair, Mo. 63077

Filed Jan. 24, 1996, Ser. No. 590,593

Int. Cl.[6] E04D *13/076*

U.S. Cl. 52—12 **7 Claims**



1. A gutter screen, gutter and gutter support, said gutter having a vertical rear wall adapted to be attached to a wall of a building by said gutter support connecting a front and rear wall of the gutter, said gutter support extending through a longitudinal gutter trough formed in the gutter under an inwardly turned lip of the gutter, said screen having a substantially vertical rear section sloping slightly toward and biased against the rear wall of the gutter and supported on top of said gutter support, a downwardly sloping substantially flat intermediate cover section covering an open portion of the gutter trough and extending to a flush position with said lip of the gutter and a forward section having a shoulder portion formed at a junction with said intermediate section, said shoulder being butted transversely and biased against an edge of said lip and said forward section extending underneath said lip in biased relation thereto.

5,619,826

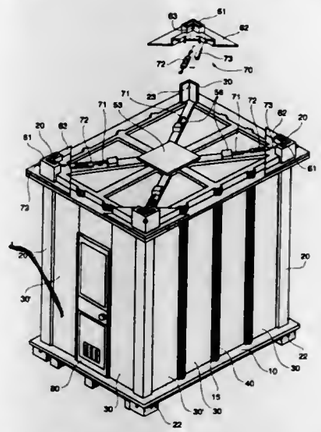
BATHROOM ASSEMBLY CONSTRUCTION

Wan-Kuei Wu, No. 38, Lane 187, Nan Ya Street, Hsinchu City, Taiwan

Filed Dec. 14, 1995, Ser. No. 572,030

Int. Cl.[6] E04H *1/12*; E04B *1/00*; A47K *3/16*

U.S. Cl. 52—35 **4 Claims**



1. An improved bathroom assembly construction comprising:

a base formed of a polygonal pre-cast plate and having a peripheral level flange which has a width and is raised a small distance above a bottom plate of said base, a plurality of mounting grooves disposed in said base intermediate said level flange and said bottom plate at a position lower than that of said bottom plate, said level flange having corner slots and

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a plurality of indentations spaced apart at predetermined distances in a plurality of inner side walls of said level flange, said indentations extending to bottom sides of said mounting grooves, said corner slots extending farther below said mounting grooves into said base than said mounting grooves and each said level flange in the area of said corner slots being provided with, respectively, a through hole in a respective outer side wall thereof, said level flange in the area of each of said indentations further having a plurality of mounting holes in a side wall thereof;

a plurality of corner posts each having a length, each of said corner posts having an angular cross section and being insertably mounted in one of said corner slots of said base, said corner posts being provided, respectively, with a plurality of post holes for matching one of said through holes of one of said corner slots of said base so that pins may be passed through said post holes and through said through holes to secure said corner posts in said corner slots of said base, each of said corner posts further being provided with an internal positioning hole in an angular bend near an upper end thereof;

a plurality of plates of a rectangular shape, a plurality of tiles on each of said plates, a couple of said plates being mounted substantially side by side into one of said mounting grooves in each side of said polygonal base such that a gap may be formed between said couple of plates at a middle portion of the corresponding indentation, a plate adjacent to one of the corners of said base having an outer rim extending sideways to form an extended portion of a size approximately the thickness of said plate itself so that said plate may not only lie close against a first side wall of an adjacent corner post but also touches against a second side wall of said adjacent corner post by means of said outer rim of said extended portion thereof, said extended portion being further joined to an outer rim of another plate which lies close against said second side wall of said adjacent corner post, no plates being mounted in one of said mounting grooves in one specific side of said base so that a conventional bathroom door may be mounted therein instead;

a plurality of partition strips in the form of strip-like plates each having a cross section matching the shape of said indentations of said base, each of said partition plates having a length equivalent to that of said plurality of plates and being provided with a plurality of holes in a lower end portion thereof for matching said mounting holes of each of said indentations so that pins may be inserted into said mounting holes and into said plurality of holes to secure said partition strip to said base as an integral whole;

a roof in the form of a pre-cast plate of a construction substantially the same as that of said base, said roof being provided with a plurality of corners and a peripheral level flange, a plurality of mounting grooves for receiving top end portions of said plates, and a plurality of indentations for receiving top end portions of said partition strips, said level flange of said roof being configured to have hollow corner slots so that the top end portions of said corner posts may penetrate therethrough to be projected therefrom, said roof further having an inspection through hole in a central portion thereof, said inspection through hole being coverable by a removable inspection cover, a plurality of reinforcing ribs extending from said inspection through hole to said corners of said roof and an anchor seat being disposed on each of said reinforcing ribs

a plurality of corner caps each comprising a bottom plate provided with a vertically oriented right-angled through hole, each of said corner caps being configured to have a contour matching that of said corners of said roof so that said bottom plate thereof fits tightly onto an adjacent corner of said roof after the corresponding corner post is fitted with its upper end through said corner slot of said roof and said right-angled through hole of each of said corner caps which are, respectively, provided with an external positioning hole at a bend thereof for matching said internal positioning hole of an adjacent corner post; and

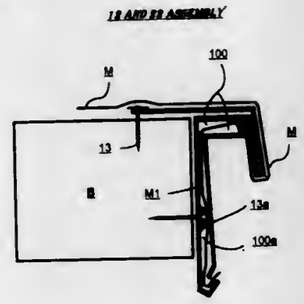
a plurality of securing means each of which comprises a first securing element, a second securing element and a third securing element, said first securing element having one end thereof screwably secured to the corresponding anchor seat while the other end thereof hooks with a first hook of said second securing element, said third securing element having one end thereof screwably secured to both of said external positioning holes of an adjacent corner cap and said internal positioning hole of an adjacent corner post while the other end thereof hooks with a second hook of said securing element having been positioned in place, said gap between said couple of plates may be filled with a sealing agent to accomplish a complete bathroom assembly.

5,619,827

ROOF EDGE FLASHING AND ANCHORING SYSTEM

John E. Church, 6305 Babson Way, Virginia Beach, Va. 23464

Filed Jul. 28, 1995, Ser. No. 508,457
Int. Cl.[6] E04D *1/36*
U.S. Cl. 52—60 **10 Claims**



1. A system for securing a continuous membrane (M) to a roof edge (B), said roof edge having a top surface and a side surface, said side surface being at an elevation below said top surface, comprising:

a first flashing member (**12**) extending between a first flashing edge (**54**) and a second flashing edge (**24**);

said first flashing member having a first portion (**15**) extending from said first flashing edge (**54**) and adapted to be attached said top surface of said roof edge;

and said first flashing member having a second portion (**28**) below said first portion adapted to be attached to said side surface of said roof edge; a second flashing member (**22**) extending between a flashing upper edge (**18**) and a flashing lower edge (**30**);

said second flashing member having a first portion (**61**) adjacent said flashing upper edge, and a second portion (**62**) contiguous with said second flashing member first portion, wherein said second flashing member first portion is oriented at an angle relative to said second flashing member second portion;

said second flashing member further having a third portion (**63**) intermediately disposed between said second flashing member second portion and said flashing lower edge;

and said second flashing member further having a fourth portion (**64**) extending from said second flashing member third portion to said flashing lower edge;

and said first flashing member further having a third portion (**52**), intermediately disposed between said first flashing member first portion and said first flashing member second portion,;

and said first flashing member further having a fourth portion (**53**), intermediately disposed between said first flashing member second portion and said flashing second edge, and wherein said first flashing member second portion and said first flashing member fourth portion partially form an upwardly opening second cavity (**26**) adapted to receive said second flashing member fourth portion and said flashing lower edge;

and further comprising an opening (**100**) between said first flashing member and said second flashing member, said opening being continuous between said second flashing member upper edge and said second flashing member lower edge, and said opening being adapted to receive a membrane disposed between said first flashing member and said second flashing member and extending between said second flashing member upper edge and said second flashing member lower edge;

said first flashing member further having a fifth portion (**50**) intermediately disposed between said first flashing member third portion and said first flashing member second portion;

and wherein said first flashing member second portion, said first flashing member third portion and said first flashing member fifth portion form a downwardly opening first cavity (**16**) adapted to receive said second flashing member first portion and said second flashing member second portion;

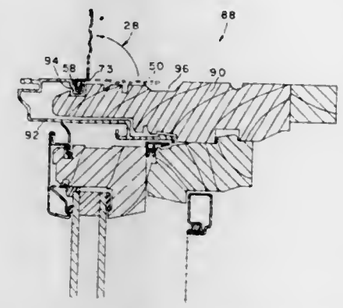
said first flashing member further having a sixth portion (**51**) intermediately disposed between said first flashing member first portion and said first flashing member third portion; said first flashing member further having a first bend (**19**) between said first flashing member sixth portion and said first flashing member third portion, and wherein said first bend is positioned at an elevation below said first flashing member first portion and said first bend is positioned at an elevation below said first flashing member fifth portion.

5,619,828

INSTALLATION FIN FOR WINDOWS AND DOORS

Jim Ver Meer, Pella, Iowa, assignor to Pella Corporation, Pella, Iowa

Filed Dec. 19, 1994, Ser. No. 359,288
Int. Cl.[6] E06B *1/04*
U.S. Cl. 52—213 **58 Claims**



1. An installation fin adapted for attachment to the frame of a fenestration product and comprising:

an elongated thin body presenting a pair of opposed faces and a pair of elongated, opposed, spaced apart, inner and outer side margins, said inner side margin including structure for attachment of the fin to said fenestration product; and

structure defining an elongated fold line generally parallel with and proximal to said inner side margin for permitting selective pivotal movement of an outer section of the fin body about the fold line,

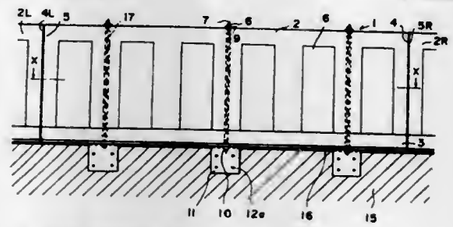
said fold line-defining structure including a plurality of elongated, aligned depressions formed in at least one face of said body, said depressions being oriented with the longitudinal axes thereof at an oblique angle relative to the longitudinal axis of said body to cooperatively define said fold line, said depressions being discrete and axially spaced from each other.

5,619,829

SOUND INSULATING WALL AND METHOD OF INSTALLING THE SAME

Tokio Tan, Tokyo; Kikuo Kazi, Saitama; Shinta Yamamura, Kanagawa; Naoyuki Furuta, and Tadanori Mizukami, both of Tokyo, all of Japan, assignors to Nitto Boseki Co., Ltd, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 377,940
Claims priority, application Japan, Jan. 26, 1994, 6-023526
Int. Cl.[6] E02D *27/00*
U.S. Cl. 52—293.3 **6 Claims**



1. A sound insulating wall comprising:

fixing members mounted, at predetermined intervals, on a top portion of a footing that is built along a road;

a concrete-type board mounted on the footing by the fixing member, the board having through-holes vertically formed therein at the predetermined intervals;

steel rods, each having top and bottom threaded portions and being inserted into the respective through-holes of the board, the bottom threaded portions being threadedly engaged with the respective fixing members; and

upper nuts being threadedly engaged with the top threaded portions of the respective rods, to thereby fix the board onto the footing;

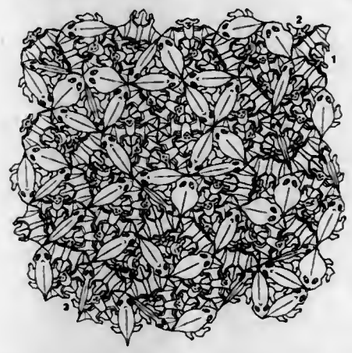
wherein each of the fixing members compries a pair fitting plates clamped to a top end portion of the footing; wherein each said fixing member has a top wall with a hole therethrough; wherein a recess is formed below the top wall of said fixing member and above a top surface of said footing; and wherein a threaded member is fixed to an underside of said top wall within said recess and in alignment with said hole, the bottom threaded portion of a respective one of said steel rods being threadedly engaged in said threaded member.

5,619,830

VARIABLY ASSEMBLABLE FIGURATIVE TILES FOR GAMES, PUZZLES, AND FOR COVERING SURFACES

John A. L. Osborn, 250 Donegal Way, Martinez, Calif. 94553

Filed Mar. 13, 1995, Ser. No. 403,079
Int. Cl.[6] B44F *3/00;* **B44C** *1/25*
U.S. Cl. 52—311.2 **6 Claims**



1. Families of zoomorphic tiles for tiling the plane, comprising:

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at least one set of zoomorphic tiles, said at least one set comprised of two members, said two members having mutually distinct zoomorphic outlines, said mutually distinct zoomorphic outlines having vertices which map onto the respective vertices of a pair of mutually congruent ancestral rhombuses, said pair of mutually congruent ancestral rhombuses being selected from a subset of rhombs that include two squares and two 60°/120° rhombuses;

a first one of said two members corresponding to a first one of said mutually congruent ancestral rhombuses, said first member including a first side comprised of an amphographic line;

said first member including a second side adjacent to said first side, said second side comprising a rotation of said amphographic line about one end of said amphographic line;

said first member including third and fourth sides comprised of a reflection of said first and second sides as an assembly, thereby defining a first zoomorphic outline;

a second one of said two members corresponding to a second one of said mutually congruent ancestral rhombuses, said second member including a first side comprised of said amphographic line;

said second member including a second side adjacent to said first side, said second side comprising a rotation of said amphographic line about the other end of said amphographic line;

said second member including third and fourth sides comprised of a reflection of said first and second sides as an assembly, thereby defining a second zoomorphic outline;

a plurality of first and second members being capable of assembly into tilings displaying an infinite range of periodicities and into tilings displaying no periodicity.

5,619,831

JOINT MEMBERS AND METHOD OF FORMING A JOINT

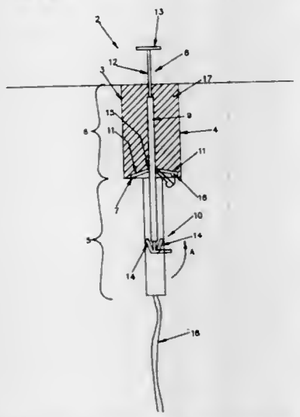
Alan M. Reay, Christchurch, New Zealand, assignor to Engineering Certifiers Limited, Christchurch, New Zealand

Filed Aug. 23, 1995, Ser. No. 518,198

Claims priority, application New Zealand, Aug. 26, 1994, 264318

Int. Cl.[6] E04B *1/68;* **E01C** *11/10*

U.S. Cl. 52—396.04 **10 Claims**



5. A joint member for forming a joint along the length of two confronting cementitious wherein the space between the faces is stepped, of non-uniform cross-section, and is filled with a filler, the joint member comprising:

a central upright portion;

a lower portion attached to the lower end of the central upright portion for the positioning of the joint member relative to the lower walls of the faces;

a flange extending from each side of the central upright portion;

the joint member being positioned such that a part or all of each flange rests at the transition point between two differing widths of the faces;

any part of the central upright portion protubering above the level of the filling being frangible and breakable from the remainder of the central portion.

5,619,832

ARRANGEMENT IN A PROTECTIVE MEMBRANE, ESPECIALLY FOR FLOORS

Egil Myrvold, Oslo, Norway, assignor to Isola AS, Notodden, Norway

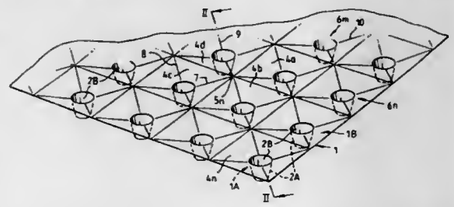
PCT No. PCT/NO93/00125, § 371 Date May 23, 1994, § 102(e) Date May 23, 1994, PCT Pub. No. WO94/06977, PCT Pub. Date Mar. 31, 1994

PCT Filed Aug. 16, 1993, Ser. No. 244,328

Claims priority, application Norway, Sep. 23, 1992, 923693; Feb. 4, 1993, 930392

Int. Cl.[6] E04F *15/16;* **B32B** *3/00;3/28*

U.S. Cl. 52—403.1 **10 Claims**



1. A protective membrane for floors comprising a substantially planar membrane of substantially rigid material, said membrane having top and bottom surfaces; said bottom surface having a plurality of protrusions, wherein each of said protrusions has a root area between said top and bottom surfaces and substantially adjacent to said protrusion; and said top surface having a number of indentations corresponding to said protrusions wherein one or more of said protrusions each have a yielding zone which combines with said top and bottom surfaces to produce a yielding and a load dissipation effect when said membrane is subjected to a load, wherein each of said yielding zones are substantially adjacent to said root area and comprise substantially triangular surfaces which extend at an angle from a reference plane, wherein said reference plane extends substantially through said membrane at substantially each of said root areas, and wherein said triangular surfaces are arranged to form a plurality of common apexes.

5,619,833

SUSPENDED CEILING SYSTEM

Eric S. Neff, R.D. #2, Box 1737, Chicora, Pa. 16025

Filed Jan. 26, 1995, Ser. No. 378,580

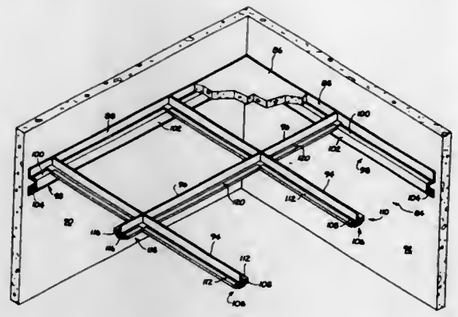
Int. Cl.[6] E04B *9/18*

U.S. Cl. 52—506.07 **13 Claims**

1. In a suspended ceiling framework including a plurality of L-shaped metal wall angles for securement to the walls that form the perimeter of a room, a plurality of elongated, inverted, T-shaped metal main runners supported by and extending from the metal wall angles, and a plurality of elongated, inverted T-shaped metal cross braces which are secured to the metal main runners for forming a grid beneath a ceiling of the room, the improvement comprising:

a plurality of elongated wall trim cover members for resting upon the L-shaped metal wall angles and which include a molded portion for abutting the walls;

a plurality of, elongated, generally V-shaped main runner cover members which include a pair of elongated, opposed, inwardly-turned flanges for snapping and sliding onto and covering the inverted T-shaped main runners;



a plurality of elongated, generally V-shaped cross brace cover members which include a pair of elongated, opposed, inwardly-turned cover flanges for snapping sliding onto covering the inverted T-shaped cross braces; and

a plurality of joint cover members with each joint cover member having four pairs of inwardly-turned cross-T flanges for snapping and sliding onto and covering the end portions of the inverted T-shaped main runners, the inverted T-shaped cross braces, main runner cover members, and cross brace cover members at intersection points in the grid.

5,619,834

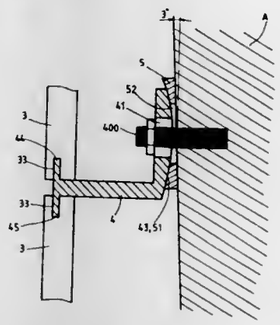
SLATE POSITIONING DEVICE

Laurance Chen, No. 80, Sec. 1, Lin An Road., Tainan, Taiwan

Filed Dec. 5, 1995, Ser. No. 567,514

Int. Cl.[6] E04B *1/38*

U.S. Cl. 52—509 **2 Claims**



1. A slate positioning device comprising:

a positioning plate which has a horizontal plate and a first and a second longitudinal plates at two ends of said horizontal plate;

said first longitudinal plate having a hole and a convex surface;

said second longitudinal plate having an upper convex edge and a lower convex edge;

a pad plate having a slot and a concave surface to cover said convex surface of said first longitudinal plate; and

a screw rod passing through said hole and said slot to fasten said first longitudinal plate and said pad plate together.

5,619,835

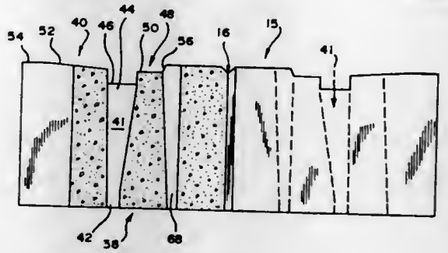
MODULAR BLOCK RETAINING WALL SYSTEM

Joseph S. Bailey, II, Roswell; Robert Miller, Marietta, and Joseph D. Emberson, Roswell, all of Ga., assignors to The Tensar Corporation, Atlanta, Ga.

Filed Jan. 25, 1996, Ser. No. 591,319

Int. Cl.[6] E04C *2/04*

U.S. Cl. 52—606 **22 Claims**



1. A modular wall block comprising:

a front face,

a rear face,

an upper surface,

a lower surface, and

opposed sidewalls defining side faces extending between said upper and lower surfaces and said front and rear faces,

a groove defined in one of said upper and lower surfaces parallel to, and spaced rearwardly of, said front face for receiving portions of a connector device, and

a slot defined in the other of said surfaces parallel to, and spaced rearwardly of, said front face, for receiving other portions of the connector device so as to position the front faces of a superimposed course of wall blocks with respect to each other in one of a vertically aligned and vertically set back orientation,

said groove and said slot being at least partially defined by opposite ends of a through-opening extending from said one surface of said block to said other surface,

said through-opening being tapered so that said groove and said slot are of different front to rear widths,

said groove and said slot each extend only over central portions of said one and said other surfaces of said block, respectively, and stop short of said side faces,

said through opening being T-shaped and defining T-shaped apertures in each of said surfaces, each T-shaped aperture including central stem section extending toward said front and rear faces of said block, and aligned am sections extending outwardly from the rear end of said stem section parallel to said front face and toward respective sidewalls of said block, said arm sections at said one end of said through-opening each defining said groove in said one surface of said block, and said arm sections at said other end of said through-opening each defining said slot in said other surface of said block.

5,619,836

SHEETROCK PATCH FASTENER DEVICE AND METHOD FOR UTILIZING

Duane A. Rouch, c/o Andrews 176 Daly Rd., and Mark S. Andrews, 176 Daly Rd., both of East Northport, N.Y. 11731

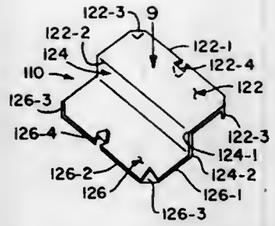
Filed Jul. 21, 1995, Ser. No. 505,681

Int. Cl.[6] E04B *1/38;* **E04G** *23/02*

U.S. Cl. 52—715 **11 Claims**

1. A sheetrock patch fastener that holds a sheetrock patch having a back surface and an end wall in a hole of a sheetrock wall having a front surface without damaging anything within the sheetrock wall and without invading the end wall of the sheetrock patch wherein the hole in the sheetrock wall is defined by a wall, comprising:

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a) a flat and rectangular-shaped wall portion abutable against the front surface of the sheetrock wall and having a proximal edge with ends, a distal edge being parallel to said proximal edge of said flat and rectangular-shaped wall portion and having ends, and a pair of parallel lateral edges; each edge of said pair of parallel lateral edges of said flat and rectangular-shaped wall portion extending perpendicularly from an end of said ends of said proximal edge of said flat and rectangular-shaped wall portion to a respective end of said ends of said distal edge of said flat and rectangular-shaped wall portion and forming therewith square corners both of which being bent perpendicularly upwardly forming triangular-shaped corner teeth being engagable with the front surface of the sheetrock wall, so that said flat and rectangular-shaped wall portion can be easily secured to the front surface of the sheetrock wall by merely pressing on said flat and rectangular-shaped wall portion and causing said triangular-shaped corner teeth of said flat and rectangular-shaped wall portion to pierce the front surface of the sheetrock wall and enter the sheetrock wall;

b) a flat and rectangular-shaped joint portion having an uppermost edge and a lowermost edge being parallel to said uppermost edge of said flat and rectangular-shaped joint portion; said flat and rectangular-shaped joint portion extending perpendicularly upwardly from said flat and rectangular-shaped wall portion with said lowermost edge of said flat and rectangular-shaped joint portion being coincident with said proximal edge of said flat and rectangular-shaped wall portion; said flat and rectangular-shaped joint portion having opposing faces abutable against, without invading, the end wall of the sheetrock patch and the wall defining the hole in the sheetrock wall, so that no damage is done to the end wall of the sheetrock patch and the wall defining the hole in the sheetrock wall, and

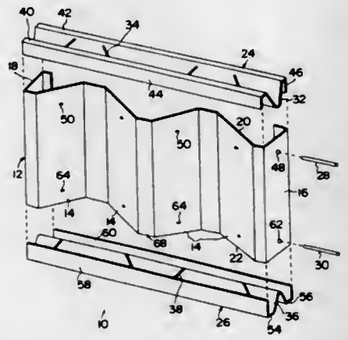
c) a flat and rectangular-shaped patch portion abutable against the back surface of the sheetrock patch and having a proximal edge with ends and a distal edge being parallel to said proximal edge of said flat and rectangular-shaped patch portion and having ends; said flat and rectangular-shaped patch portion extending perpendicularly outwardly from said flat and rectangular-shaped joint portion in a direction opposite to that of said flat and rectangular-shaped wall portion and with said proximal edge of said flat and rectangular shaped patch portion being coincident with said uppermost edge of said flat and rectangular-shaped joint portion; said flat and rectangular-shaped patch portion further having a pair of parallel lateral edges; each edge of said pair of parallel lateral edges of said flat and rectangular-shaped patch portion extending perpendicularly from an end of said ends of said proximal edge of said flat and rectangular-shaped patch portion to a respective end of said ends of said distal edge of said flat and rectangular-shaped patch portion and forming therewith square corners both of which being bent perpendicularly downwardly forming triangular-shaped corner teeth being engagable with the back surface of the sheetrock patch, so that said flat and rectangular-shaped patch portion can be easily secured to the back surface of the sheetrock patch by merely pressing on said flat and rectangular-shaped patch portion and causing said triangular-shaped corner teeth of said flat and rectangular-shaped patch portion to pierce the back surface of the sheetrock patch and enter the sheetrock patch with said flat and rectangular-shaped patch portion not damaging any contents within the sheetrock wall.

5,619,837

CORRUGATED PANEL STRUCTURE

Fabricio N. DiSanto, 3931 Bentley Ave., Culver City, Calif. 90232

Filed Jul. 26, 1995, Ser. No. 506,710
Int. Cl.[6] E04C *2/32*
U.S. Cl. 52—798.1 **6 Claims**



1. A corrugated panel structure comprising the combination of:

a corrugated panel of generally broad, planar configuration and having a plurality of spaced-apart, generally parallel corrugations extending between a pair of opposite edges thereof; and

an elongated cap mounted on one of the pair of opposite edges of the corrugated panel and including a central channel extending in a direction of elongation of the cap and having slots therein receiving the plurality of corrugations of the corrugated panel therein;

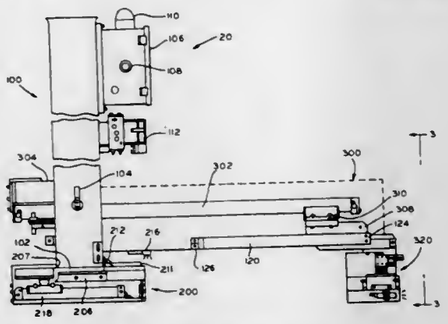
the plurality of corrugations of the corrugated panel having apertures therein adjacent the one of the pair of opposite edges of the corrugated panel, and further including a rod extending through the apertures in the plurality of corrugations and disposed within the central channel of the elongated cap to secure the elongated cap on the corrugated panel.

5,619,838

METHOD ANF APPARATUS FOR APPLYING EDGE PROTECTORS

Calvin E. Kasel, Wauconda, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 489,452, Jun. 12, 1995. This application Mar. 4, 1996, Ser. No. 610,441
Int. Cl.[6] B65B *61/00; 13/04*
U.S. Cl. 53—139.7 **20 Claims**



15. Apparatus for dispensing an edge protector for use in connection with strapped package loads so as to protect edge portions of strapped package load from strap members tensioned thereabout, and for positioning said dispensed edge protector relative to a package load upon which said edge protector is to be mounted, comprising:

a magazine for containing a stack of edge protectors to be dispensed therefrom in a predetermined direction and having a support surface upon which a lowermost one of said edge protectors to be dispensed is supported;

an ejector assembly for engaging said lowermost one of said edge protectors disposed within said magazine, and to be dispensed therefrom, and for ejecting said lowermost one of said edge protectors from said magazine in said predetermined direction such that said ejected lowermost one of said edge protectors can be transferred toward a package load upon which said lowermost one of said edge protectors is to be mounted;

a track disposed adjacent to said ejector assembly and extending in said predetermined direction;

a gripper assembly movably mounted upon said track so as to be reciprocably translatable in said predetermined direction, between said ejector assembly and a package load, for transporting said ejected lowermost one of said edge protectors from said magazine and toward a package load so as to properly position said ejected lowermost one of said edge protectors with respect to a package load upon which said lowermost one of said edge protectors is to be mounted; and

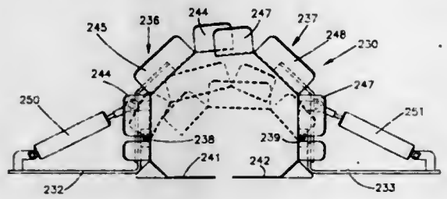
gripper means pivotably mounted upon said gripper assembly for pivotal movement with respect to said gripper assembly between a first position at which said gripper means is oriented with respect to said ejector assembly so as to be able to grip said ejected lowermost one of said edge protectors ejected by said ejector assembly from said magazine, and a second position at which said gripper means is oriented with respect to said gripper assembly such that said ejected lowermost one of said edge protectors, gripped by said gripper means, is able to be transported, by said gripper assembly movable along said track in said predetermined direction, from said ejector assembly toward a package load in said predetermined direction for mounting upon an edge portion of a package load.

5,619,839

PACKAGING MACHINE AND METHOD

James P. Peppard, Newbury, and Anthony H. Gates, Atwater, both of Ohio, assignors to Automated Packaging Systems, Inc., Streetsboro, Ohio

Division of Ser. No. 95,947, Jul. 22, 1993, Pat. No. 5,394,674, which is a division of Ser. No. 877,472, May 1, 1992, Pat. No. 5,259,172, which is a continuation-in-part of Ser. No. 795,669, Nov. 21, 1991, Pat. No. 5,265,402, which is a division of Ser. No. 471,850, Jan. 29, 1990, Pat. No. 5,070,674, which is a continuation-in-part of Ser. No. 395,957, Aug. 18, 1989, Pat. No. 5,077,958. This application Mar. 6, 1995, Ser. No. 398,697
Int. Cl.[6] B65B *39/02; 39/06*
U.S. Cl. 53—260 **9 Claims**



1. A horn assembly for assisting in the loading of bulky products into bags sequentially positioned in a loading station comprising:

a) a mirror image pair of fixed horn sections adapted to be connected to a bagging machine adjacent a loading station;

b) a mirror image pair of moveable horn sections respectively pivotally connected to the fixed sections;

c) the moveable sections having a collapsed partially overlapping position for facile insertion into and removable from a bag positioned in such loading station;

d) the moveable sections having a bag distending position for extending a top opening of such positioned bag;

e) the moveable sections each having a generally curved configuration such that when in the distending position bag engaging surfaces of the moveable sections define a generally "U" shaped configuration; and,

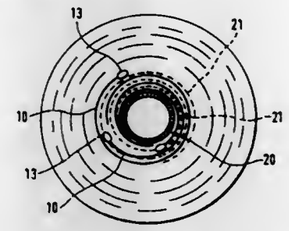
f) a pair of prime movers interposed between the stationary and moveable sections respectively to shift the moveable sections from one position to the other and return.

5,619,840

PACKAGE AND A PROCEDURE FOR PACKING BAGS INTO A ROLL

Per Nyman, Ulvila, and Veikko Koivumäki, Pori, both of Finland, assignors to Oy W. Rosenlew AB, Pori, Finland

PCT No. PCT/FI93/00295, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/02361, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 14, 1990, Ser. No. 373,238
Claims priority, application Finland, Jul. 15, 1992, 923236
Int. Cl.[6] B65B *63/04; 25/14*
U.S. Cl. 53—430 **15 Claims**



10. A process for packing flexible intermediate bulk containers into a delivery package, comprising the steps of:

placing a plurality of flexible intermediate bulk containers on a packing line, each of the containers including a elongate container portion having a first width and a first thickness and a handle part connected to the container portion, the handle part having a second width and a second thickness, the first width of the container portion being larger than the second width of the handle part such that edge portions of the container portion extend beyond the handle part, the second thickness of the handle part being larger than the first thickness of the container portion,

folding the edge portions of the containers such that the thickness of the folded edge portions is substantially equal to the second thickness of the handle part, and

rolling the thus-folded containers in an overlapping relationship in layers about a rolling core into a delivery package.

5,619,841

FIELD PACKING AND COOLING PROCESS FOR FRESH PRODUCE

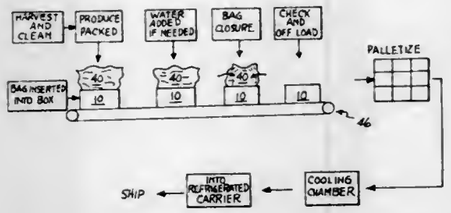
Herbert D. Muise, Tumwater, and Mark A. Stanish, Seattle, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 60,149, May 7, 1993, Pat. No. 5,421,138. This application Jun. 6, 1995, Ser. No. 473,042
Int. Cl.[6] A23B *7/00;* **B65B** *63/08*
U.S. Cl. 53—440 **6 Claims**

1. A process for packing and cooling fresh produce, comprising:

placing a liquid impermeable bag within a paperboard shipping container.

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placing at least one piece of fresh picked produce within the plastic bag,

adding a predetermined amount of evaporative liquid to the produce within the bag and thereafter loosely closing the bag, and

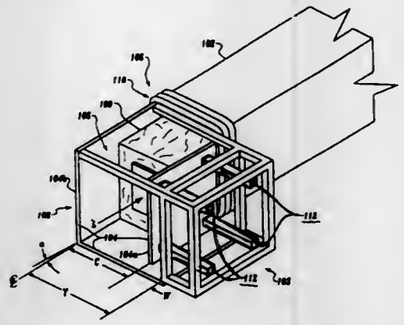
placing the closed bag within the shipping container in a cooling chamber which is substantially free of paperboard degrading moisture and cooling the produce to a predetermined temperature.

5,619,842

METHOD AND APPARATUS FOR STORING BALED PRE-SILAGE

David Brubaker, 1240 W. Fir, and Darin Boone, 3834 Dogwood, both of Pasco, Wash. 99301

Filed Dec. 22, 1995, Ser. No. 577,491
Int. Cl.[6] B65B *1/20*
U.S. Cl. 53—523 **11 Claims**



1. An apparatus for bagging pre-silage, comprising:

(a) a support frame having a plurality of lateral walls surrounding a space for receiving said baled pre-silage, said support frame further defining

(i) a rear opening to which a bag is attached with a receiving opening of said bag supported and held open on said rear opening; and

(ii) a front opening through which is received the baled pre-silage, said received baled pre-silage having at least one transverse dimension larger than at least one corresponding dimension of said rear opening;

(b) at least one of said lateral walls reversibly movable in a direction toward an opposite lateral wall for reducing the larger transverse dimension of the baled pre-silage to a size smaller than the corresponding dimension of the rear opening;

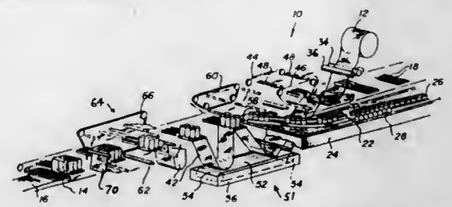
(c) said front opening having a closure moveably attached to said front opening and a ram mounted on said closure for enclosing the baled pre-silage and applying the ram to the reduced dimension baled pre-silage and advancing the reduced dimension baled pre-silage through said rear opening and into said bag, wherein the baled pre-silage is beyond said lateral walls and the reduced dimension is free to expand within the bag.

5,619,843

FILM WRAP MACHINE

Robert H. Ganz, No. 8 Ridgecrest Rd., Saddle River, N.J. 07458

Filed Jun. 8, 1995, Ser. No. 488,965
Int. Cl.[6] B65B *35/30;53/02;27/04*
U.S. Cl. 53—543 **1 Claim**



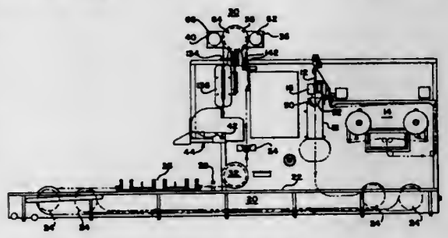
1. A wrapping machine for simultaneously wrapping a plurality of articles, said wrapping machine comprising means for moving plastic film material along a longitudinal extent of said machine; a group of platens extending transversely of said longitudinal extent of said machine and including means for moving said platens through said machine; a first conveyor (**22**) disposed adjacent said platens for feeding in a single file articles which are to be wrapped; a timing gear (**28**) cooperating with said conveyor for grouping the articles into article groups; diagonal guide means (**30**) for moving the article groups diagonally onto said platens and onto the film; feed means for introducing a length of film material into said machine, said feed means including a cutter roll (**34**) and a backup roll (**36**) for passing the film beneath said platens, said cutter roll providing means for partially cutting through the film at intervals thereof; means (**38, 40**) for causing the film to pass from beneath said platens to a position above said platens; conveyor means (**44** and **46**) including draw bars (**48**) for forming the film into loops; pusher bars (**58**) for engaging the article groups and moving them from said diagonal guide into alignment with said platens; film bar means (**62**) for pulling the film between article groups and for draping the film over one article group; means for breaking the film into intervals along the line created by said cutter roll (**34**); an oven conveyor comprising a shrink tunnel for collapsing and shrinking the film about the article groups; and means for moving the article groups from the wrapping machine into said oven conveyor.

5,619,844

METHOD AND APPARATUS FOR FORMING A SLICE OF A FOOD ITEM HAVING A HEAT TACKS SEAL

Vincent A. Meli, and David L. Shaft, both of Green Bay, Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Continuation of Ser. No. 114,981, Aug. 31, 1993, Pat. No. 5,347,792, which is a continuation of Ser. No. 843,503, Feb. 28, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,491
Int. Cl.[6] B65B *9/12;51/30;51/16*
U.S. Cl. 53—550 **137 Claims**



1. A food packaging device for producing individually wrapped slices of a food item from a continuous flattened tube of wrapping material with the food item therein, the flattened tube having a front face and a rear face, the device comprising:

a registration station for producing adjacent sections of said flattened tube separated from each other by registration lines, wherein each of said registration lines are formed by said registration station along an area transverse to the length of the tube by removing said food item from said area;

a conveyor to transport said continuous tube of the food item;

a heating station disposed downstream of the registration station to heat said adjacent sections of said food item from said registration station at said registration lines for a predetermined time and wherein said registration lines are not pressed during said predetermined time; and

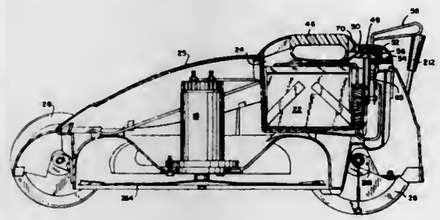
a sealing station to receive said adjacent sections of said food item from said heating station and to heat said registration lines to form a tack seal at said registration lines.

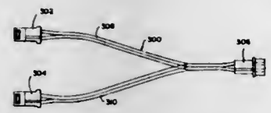
5,619,845

BATTERY-POWERED LAWN CUTTING SYSTEM

Patrick J. Bruener, Hartland; Paul A. Tharman, Pewaukee; John A. Florenza, II, Slinger; Joseph L. Pfaff, Brookfield; Richard A. Dykstra, Cedar Grove, and William H. Reitman, Fox Point, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Division of Ser. No. 543,054, Oct. 13, 1995, which is a continuation of Ser. No. 388,588, Feb. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 125,486, Sep. 22, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 567,897
Int. Cl.[6] A01D *34/78*
U.S. Cl. 56—11.9 **2 Claims**





1. Apparatus that enables first and second rechargeable batteries to be simultaneously recharged, comprising:

a first electrical connector that engages a first charging connector on said first battery;

a second electrical connector that engages a second charging connector on said second battery;

a third electrical connector that engages a connector on a battery charger;

a first conductor interconnected between said first electrical connector and said third electrical connector;

a second conductor interconnected between said second electrical connector and said third electrical connector;

first blocking means for preventing current from leaving said first connector, wherein said blocking means is disposed in said first battery between said first charging connector and a terminal of said first battery; and

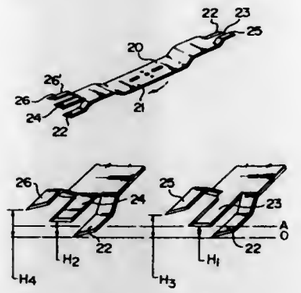
second blocking means for preventing current from leaving said second connector, wherein said second blocking means is disposed in said second battery between said second charging connector and a terminal of said second battery.

5,619,846

LAWN MOWER BLADE

Danny J. Brown, R.R. #2, Ilderton, Ontario, Canada

Filed May 15, 1995, Ser. No. 441,422
Claims priority, application Canada, Mar. 27, 1995, 2145557
Int. Cl.[6] A01D *34/73*
U.S. Cl. 56—255 **7 Claims**



1. A lawnmower cutting blade for rotary lawn mower, having a primer mover with a rotary shaft, the blade comprising:

(a) a single integral elongated member being the blade defining means for attachment of the blade to the rotary shaft of the prime mover, the blade defining;

(i) at each opposite end, at least two spatially disposed tines, one time positioned forward of a rearward tine, each tine having a bevelled leading edge that acts as a cutting element against grass to be cut, during rotation by the prime mover, each of the rearmost tines at opposite ends being relatively co-incident and in a lowest elevational plane;

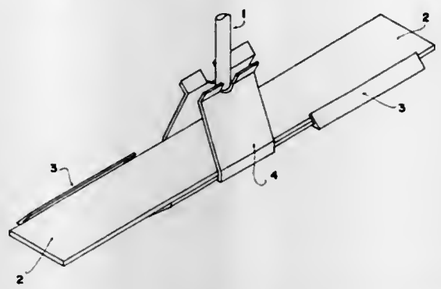
(ii) each forward tine at either end being at different elevational planes above that of the lowest elevational plane.

5,619,847

DISPOSABLE LAWN MOWER BLADE

Clifton A. Cox, Jr., 4537 Auburn Ave., Ft. Myers, Fla. 33905

Filed Dec. 7, 1995, Ser. No. 568,828
Int. Cl.[6] A01D *34/73*
U.S. Cl. 56—255 **1 Claim**



1. A cutting assembly for use in a lawn mower having an original bar-type cutting blade having side edges and a longitudinal center, mounted on a vertical rotatable shaft, comprising:

a disposable blade made of a thin plate, the disposable blade having side edges, each side edge having a cutting portion disposed at opposite longitudinal ends, each cutting portion being V-shaped such that a first leg of the V-shaped cutting portion is co-planar with the plate and the other leg extends at an acute angle with the first leg and the apex creates a cutting edge, the V-shaped cutting portion also having an inner side facing away from the cutting edge; and

a center spring clip having a center hole; wherein

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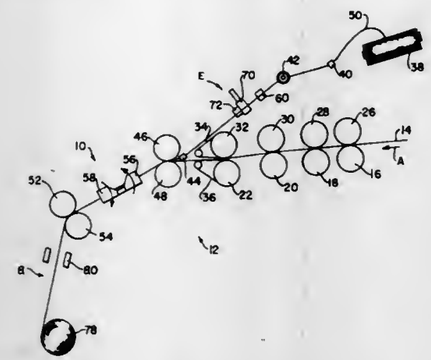
the disposable blade is mounted on the original blade such that the side edges of the original blade abut the inner side of the V-shaped cutting portion and the spring clip is mounted at the longitudinal center of the original blade and the disposable blade to lock the blades from rotational movement relative to each other.

5,619,848

METHOD AND APPARATUS FOR AUTOMATICALLY REMOVING AN IMPERFECTION FROM SPUN FILAMENT YARN AND STAPLE FIBERS

Manual Costales, Belmont, N.C.; Mark J. Yukob, Clover, S.C., and Charles W. Proctor, Greensboro, N.C., assignors to Prospin Industries, Inc., Greensboro, N.C.

Filed Aug. 9, 1995, Ser. No. 512,953
Int. Cl.[6] D01H *11/00;13/04*
U.S. Cl. 57—261 **15 Claims**



1. An apparatus for automating the removal of an imperfection detected while co-spinning of filament yarn and a sliver or roving of staple fibers, said apparatus comprising:

a pretension member selectively applying a predetermined tension to a supply of filament yarn;

a vortex generator disposed downstream from said pretension member, said vortex generator selectively applying a transport driving force to said filament yarn;

a cutting and clamping device disposed downstream from said vortex generator, said cutting and clamping device selectively clamping said filament yarn at a predetermined position and cutting said filament yarn downstream from said predetermined position;

a first pair of rollers selectively applying a driving force to said staple fibers;

a second pair of rollers disposed downstream from said cutting and clamping device and from said first pair of rollers, said second pair of rollers combining said staple fibers and said filament yarn;

a spinner disposed downstream from said second pair of rollers for covering said filament yarn with said staple fiber to form a combined filament yarn and staple fiber;

a sensor disposed downstream from said spinner, said sensor detects imperfections of a predetermined magnitude in said combined filament yarn and staple fiber; and

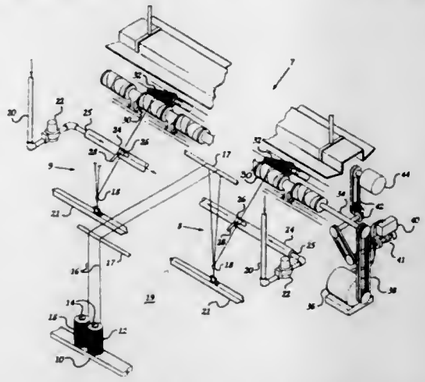
control means being actuated in response to detection of an imperfection for stopping rotation of said first pair of rollers, actuating said cutting and clamping device to clamp said filament yarn and to cut said filament yarn.

5,619,849

METHOD AND APPARATUS FOR PRODUCING RANDOMLY VARIEGATED MULTIPLE STRAND YARN IN TWISTING TOGETHER AT LEAST TWO YARNS AND YARN AND FABRIC MADE BY SAID METHOD

William A. McNeill, Gastonia, N.C., assignor to Caress Yarns, Inc., Charlotte, N.C.

Filed Aug. 26, 1994, Ser. No. 297,252
Int. Cl.[6] D01H *5/00;7/46*
U.S. Cl. 57—333 **44 Claims**



1. A method for producing randomly variegated multiple strand yarn in pneumatically twisting together two or more yarns at a yarn twisting station, comprising:

continuously feeding at least two yarns into a chamber in a pneumatic twisting head;

delivering compressed air to a supply conduit through spaced inlets to create random air turbulence within said supply conduit;

supplying said randomly turbulent air from said supply conduit through an outlet in said supply conduit to said chamber for randomly twisting together the yarns in said chamber; and

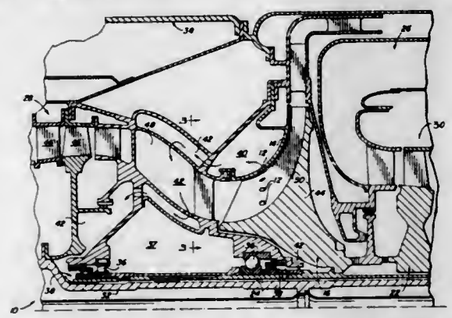
taking up said yarns from the twisting head to form a yarn package.

5,619,850

GAS TURBINE ENGINE WITH BLEED AIR BUFFER SEAL

Donald L. Palmer, Cave Creek, and Gulshan K. Arora, Chandler, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed May 9, 1995, Ser. No. 438,145
Int. Cl.[6] F02C *7/18*
U.S. Cl. 60—39.02 **9 Claims**



1. In a gas turbine engine having a main gas flow path and separately spooled first and second compressor stages for series compression of air flowing through said main gas flow path, bearing means for rotatably supporting rotating components of the engine, sump means including oil flow passages for circulating lubricant to said bearing means, and sump seals for preventing lubricant leakage from said oil flow passages, a bleed air buffer seal arrangement comprising:

housing means defining a buffer chamber in flow communication with said main gas flow path via a bleed port formed at a location spaced aft from an upstream end of said second compressor stage to provide said buffer chamber with a supply of bleed air which has been compressed by said first compressor stage and partially compressed by said second compressor stage; and

said housing means further defining duct means for communicating said bleed air from said buffer chamber to one side of each of said sump seals whereby said bleed air provides a pneumatic buffer to prevent lubricant leakage past said sump seals; and

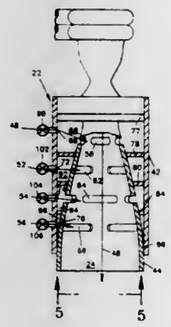
wherein said second compressor stage comprises a centrifugal compressor having a centrifugal impeller rotatably supported within an impeller shroud, said bleed port being formed in said impeller shroud.

5,619,851

ROCKET NOZZLE FOR A ROCKET ENGINE

Donald E. Johnson, Stuart; Rafael A. Bustamante, Jupiter; Edward B. Thayer, Jupiter, and Richard J. Peckham, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 8, 1989, Ser. No. 308,156
Int. Cl.[6] F02K *11/00*
U.S. Cl. 60—267 **9 Claims**



1. A rocket nozzle structure for a rocket engine which has a flowpath for rocket gases extending axially through the nozzle, the nozzle structure including a casing having an exterior and having an interior which bounds the flowpath, the casing having a throat and a divergent region extending downstream from the throat, the divergent region having a high expansion ratio, and which comprises:

a casing having a divergent region, the casing including

an inner wall having a plurality of conduits for coolant which bound the flowpath for rocket gases, at least two of the conduits being spaced apart leaving an opening therebetween,

a plurality of vent passages extending from the exterior of the casing to the interior of the casing each vent passage extending through an associated opening between a pair of conduits;

an outer member attached to the inner wall which is adapted to support a seal element, the outer member being spaced by the conduits from the flowpath for rocket gases,

a plurality of seal elements, each of which is adjacent to at least one vent passage, the seal element extending axially from outer member of the casing and having a first end attached to the outer member and a second end movable between an open position which permits flow through the vent passage from the exterior to the interior and a closed position which blocks flow through the passage from the interior to the exterior, the seal element having a first side facing the exterior of the nozzle and a second side facing the interior of the nozzle;

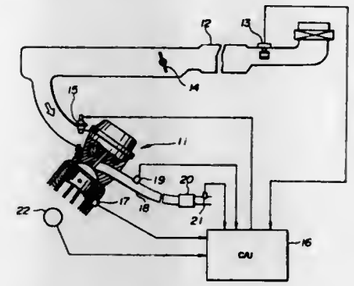
wherein each seal element is movable to the open position to permit flow through the passage under operative conditions having separated flow adjacent the casing at which the pressure in the exterior is greater than the pressure on the interior to stabilize the location of the separated flow and is movable to the closed position to block flow through the passage under operative conditions having full flow adjacent the casing at which the pressure adjacent the casing on the interior is greater than the pressure on the exterior and wherein each seal element at its point of attachment to the outer member is shielded by the coolant conduits from the rocket gases and is cooled by the coolant passing through the coolant conduits.

5,619,852

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Akira Uchikawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jul. 7, 1995, Ser. No. 499,689
Claims priority, application Japan, Jul. 8, 1994, 6-157246
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—276 **4 Claims**



1. An air/fuel ratio control system for an internal combustion engine having an exhaust passage and a catalytic converter provided to the exhaust passage, comprising:

first air/fuel ratio detecting means provided to the exhaust passage at a location upstream of the catalytic converter for producing a variable output in accordance with a density of a particular exhaust gas component which is variable with variation of an air/fuel ratio;

second air/fuel ratio detecting means provided to the exhaust passage at a location downstream of the catalytic converter for producing a variable output in accordance with a density of a particular exhaust gas component which is variable with variation of an air/fuel ratio;

first air/fuel ratio correction quantity computing means for computing a first air/fuel ratio correction quantity in accordance with the output of said first air/fuel ratio detecting means;

second air/fuel ratio correction quantity computing means for computing a second air/fuel ratio correction quantity for correcting said first air/fuel ratio correction quantity in accordance with the output of said second air/fuel ratio detecting means;

final air/fuel ratio correction quantity computing means for computing a final air/fuel ratio correction quantity based on said first air/fuel ratio correction quantity and said second air/fuel ratio correction quantity;

air/fuel ratio control quantity setting means for correcting and setting an air/fuel ratio control quantity based on the final

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air/fuel ratio correction quantity computed by said final air/fuel ratio correction quantity computing means; and

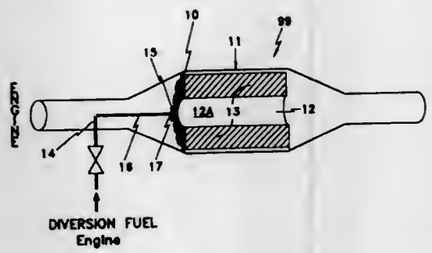
computing type switching means for switching a computing type of said second air/fuel ratio correction quantity computing means in such a manner that said second air/fuel ratio correction quantity is set larger when the output of said second air/fuel ratio detecting means is outside a reference level range than when the output of said second air/fuel ratio detecting means is within the reference level range.

5,619,853

EXHAUST SYSTEM WITH A FLUIDICS APPARATUS DIVERTER BODY HAVING EXTENSIONS

Jacqueline L. Brown, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Dec. 26, 1995, Ser. No. 578,290
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—288 **16 Claims**



1. An engine exhaust system comprising:

a honeycomb structure having an inlet and outlet end disposed in a housing and located in an exhaust gas stream downstream from an engine, the honeycomb structure having a first substantially unobstructed flow region, and a second more obstructed flow region adjacent the first region, the first region being disposed to provide a substantially unobstructed flow path for the exhaust gases in the exhaust gas stream; and,

a fluidics apparatus disposed in the exhaust stream proximate to the center of the first region comprising a diverter body, a diversion fluid source and a conduit possessing an outlet for directing the diversion fluid toward the diverter body, the diverter body exhibiting a main body and at least one pair of extensions.

5,619,854

TURBOCHARGED INTERNAL COMBUSTION ENGINE

John N. Ramsden, Suffolk, and Ian W. Drake, Essex, both of England, assignors to GEC Alsthom Diesels, Ltd., Newton Le Willows, United Kingdom

Continuation of Ser. No. 248,876, May 25, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,788
Int. Cl.[6] F02B *37/00*
U.S. Cl. 60—612 **8 Claims**

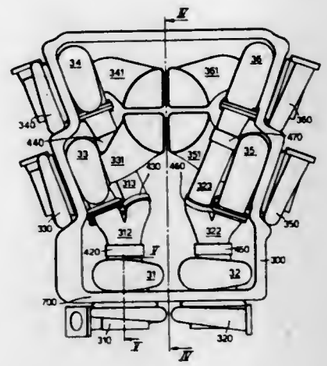
1. A supercharged internal combustion engine comprising two-stage turbocharger means in which said two-stage turbocharger means comprises a high pressure turbocharger and a plurality of low pressure turbochargers,

each said turbocharger comprising a compressor and a turbine,

each compressor comprising an impeller and a compressor housing having an input port and an output port,

each turbine comprising a turbine rotor, and a turbine housing having an input port and an output port,

and exhaust gas conduit means coupling the output port of the high pressure turbine to the input ports of the low pressure turbines in parallel for placing said output and input ports in continual communication unobstructed by valving so that the input ports of all said low pressure turbines are continually supplied with gas from the output port of said high pressure turbine under all operating conditions of the engine.

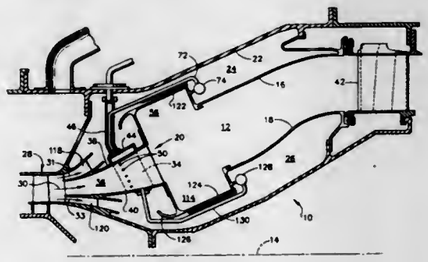


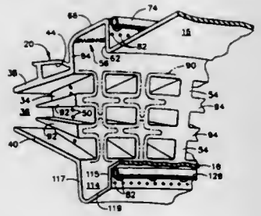
5,619,855

HIGH INLET MACH COMBUSTOR FOR GAS TURBINE ENGINE

David L. Burrus, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 473,804
Int. Cl.[6] F02C *7/08*
U.S. Cl. 60—736 **25 Claims**





1. A combustor for a gas turbine engine having a compressor providing compressed air flow, comprising:

(a) an outer liner;

(b) an inner liner spaced from said outer liner, wherein a combustion chamber is defined therebetween;

(c) a dome inlet module in flow communication with said compressed air flow having an outer member fixed to said outer liner and an inner member fixed to said inner liner, wherein a flow passage is defined therebetween for an air stream to flow from said compressor to said combustion chamber;

(d) means for injecting fuel into said flow passage, wherein said fuel mixes with said air stream to form a fuel/air mixture which enters said combustion chamber; and

(e) means for igniting and stabilizing a flame within said combustion chamber, said igniting and flame stabilizing means further comprising:

(1) a trapped vortex cavity positioned immediately downstream of said dome inlet module;

(2) means for injecting air into said trapped vortex cavity;

(3) means for injecting fuel into said trapped vortex cavity; and

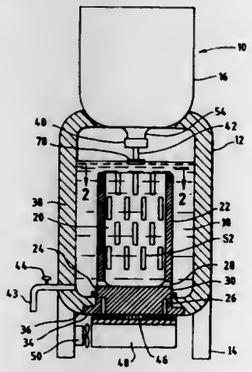
(4) an igniter positioned adjacent to said trapped vortex cavity for igniting said fuel and air therein to produce pilot combustion gases.

5,619,856

APPARATUS FOR DISPENSING COOLED AND HEATED LIQUIDS

Yong N. Lee, 1010 W. Lonnquist Blvd., Mt. Prospect, Ill. 60056

Filed Mar. 20, 1995, Ser. No. 406,838
Int. Cl.[6] F25B *21/02;* **B67D** *5/62*
U.S. Cl. 62—3.64 **24 Claims**



1. An apparatus for dispensing cooled and heated liquids including a thermally insulated liquid tank, a bottle reservoir disposed upon the liquid tank for supplying liquid thereto, and a cold sink member affixed to the liquid tank and submerged in the liquid for controlling the temperature therein, said cold sink member comprising,

upwardly extending, thick wall means formed from thermally conducting material,

thermally conductive, thick bottom wall means integrally joined at a lower side of said thick wall means effective to form therebetween cup-like structure means,

said thick wall means having formed therethrough at least two apertures for exchanging flow of liquid between the liquid surrounding an outer surface of said thick walls means and the space within said cup-like structure means,

heat pump means disposed adjacent a bottom side of said bottom wall means for exchange of thermal energy therebetween, and

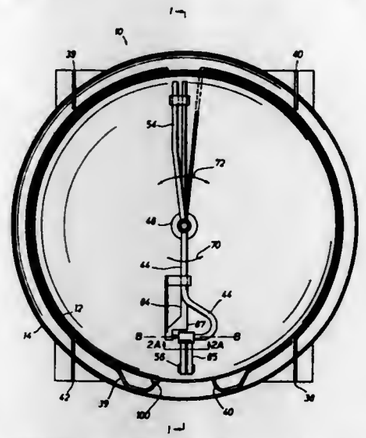
heat sink member means positioned adjacent said heat pump means for absorbing and dissipating said thermal energy to ambient air.

5,619,857

DEWAR FOR STORING AND DELIVERING LIQUID CRYOGEN

Bruce D. Caldwell, Hitchcock; Paul D. Duncan, League City; John H. Fricker, Seabrook, and Rick C. Hunter, Friendswood, all of Tex., assignors to Oceaneering International, Inc.

Continuation-in-part of Ser. No. 957,599, Oct. 6, 1992, Pat. No. 5,438,837. This application Aug. 8, 1995, Ser. No. 512,363
Int. Cl.[6] F17C *13/00;* **F25D** *23/12*
U.S. Cl. 62—50.1 **15 Claims**



1. An apparatus for storing and delivering a liquid cryogenic fluid, comprising:

an insulated pressure vessel;

means through which liquid cryogen may be supplied to and delivered from the pressure vessel;

means through which a gas may be supplied to the pressure vessel and vented from the pressure vessel;

the liquid cryogen supply and delivery means including:

intake means having an open end and extending into the pressure vessel;

first means mounting the internal portion of the liquid cryogen supply and delivery means for rotating in the vessel about a first axis; and

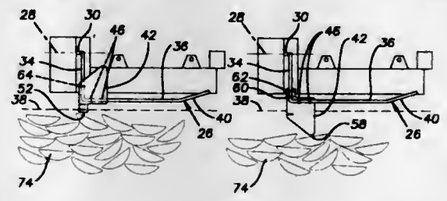
the inner wall of the pressure vessel concentric to the first axis being so formed and the internal portion being of such length that the open end of the intake means passes closely to the interior wall as the pressure vessel is caused to incline with respect to a plane passing through the first axis.

5,619,858

ICE BUCKET DEPTH SENSOR

Richard L. Gunderson, Greenville; Timothy L. Varney, Belding, and Curtis W. Sisson, Sheridan, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 12, 1996, Ser. No. 598,636
Int. Cl.[6] F25C *5/18*
U.S. Cl. 62—137 **15 Claims**



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9. An ice maker which ejects ice pieces into a storage receptacle during an ice harvesting cycle, said ice maker comprising:

a rotatable bail arm which initiates the ice harvesting cycle to supply the ice pieces to the receptacle and has a generally horizontal first portion which extends over the receptacle to control the supply of ice pieces to the receptacle and a second portion which extends at an angle to said first portion; and

a molded plastic sensing element having a pair of spaced apart eyelets adapted to receive said first portion of said bail arm and pivotally support said sensing arm on said bail arm between a first position and a second position, resilient snaps adapted to engage said second portion of said bail arm to removably secure said sensing element to said bail arm in said first and second positions, a first ice engaging surface located a first distance from said bail arm effective for engaging at least one of the ice pieces in the receptacle to stop the supply of ice pieces at a first predetermined level in the receptacle when said sensing element is in said first position, and a second ice engaging surface located a second distance from said bail arm effective for engaging at least one of the ice pieces in the receptacle to stop the supply of ice pieces at a second predetermined level in the receptacle when said sensing element is in said second position.

5,619,859

ABSORPTION REFRIGERATION UNIT

Takatoshi Takigawa, and Mitsuji Kawai, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

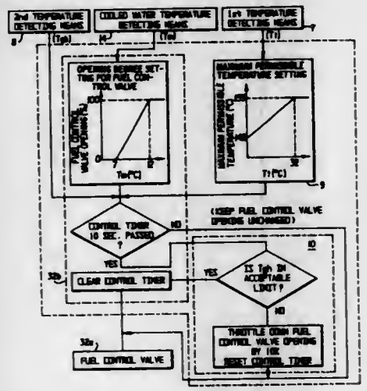
PCT No. PCT/JP94/02218, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO95/18344, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 26, 1994, Ser. No. 507,297

Claims priority, application Japan, Dec. 27, 1993, 5-331279

Int. Cl.[6] F25B *15/00*

U.S. Cl. 62—148 **7 Claims**



1. An absorption refrigeration unit comprising:

an evaporator for evaporating a refrigerant to take out thermal energy to be supplied to a cooling load, said evaporator being provided with a cooled water piping arranged in it;

an absorber for absorbing the refrigerant evaporated by said evaporator into a solution, said absorber being provided with a cooling water piping arranged in it;

a high temperature generator and a low temperature generator both for generating refrigerant vapor from the solution into which the refrigerant was absorbed by said absorber, said high temperature generator comprising a heat source;

a condenser for condensing the refrigerant vapor generated by the generators;

heating control mean for controlling an amount of heat of said heating source in said high temperature generator to increase or decrease according to variations, large and small, of the cooling load indicated by the temperature of the cooled water flowing through said cooled water piping;

a first temperature detecting means comprising a cooling water inlet temperature detecting means for detecting an inlet temperature of the cooling water flowing through said cooling water piping; and

a second temperature detecting means for detecting a temperature of said high temperature generator, said absorption refrigeration unit further comprising:

limit temperature setting means for setting a maximum permissible temperature of said high temperature generator on the basis of only a detected value of the cooling water inlet temperature by said cooling water inlet temperature detecting means in such a manner that within a temperature range of a detected value of the cooling water inlet temperature being below a predetermined value, the maximum permissible temperature is set at a low level when a detected value of the inlet temperature of the cooling water is low and said maximum permissible temperature rises in response to an increase in the detected value of the cooling water inlet temperature; and

heat restraining means for giving a command for reducing the amount of heat to said heating control means when a value of the temperature of said high temperature generator detected by the second temperature detecting means exceeds the maximum permissible temperature set by said limit temperature setting means, the detected value of the temperature of the cooling water overrides the detected value of the temperature of the cooled water to give a command for reducing the amount of heat to said heating control means.

5,619,860

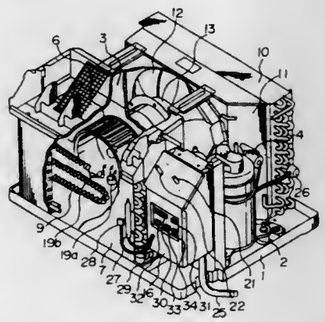
CONTROLLING APPARATUS FOR AN AIR CONDITIONER

Tsuchiyama Yuji, and Shimizu Masayuki, both of Gunma-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Jun. 2, 1994, Ser. No. 253,110

Int. Cl.[6] G05D *23/00*

U.S. Cl. 62—163 **6 Claims**



1. A controlling apparatus for an air conditioner including a compressor, a heat exchanger on a heat source side, an expansion device, and a heat exchanger on a utilization side, comprising:

a relay to be energized to supply electric current from a source to said compressor,

a semiconductor element including a controlling terminal to control the energization of said relay in response to a signal applied to said controlling terminal,

a thermostat for changing the connected state of a contact piece between two terminals depending on a desired temperature and a detected temperature,

a heating section connected to said two terminals of said thermostat in order to have voltage of a first value applied thereto to generate heat, said heating section providing a differential each time the connected state of said contact piece is changed between said two thermostat terminals,

at least one transmitting path for supplying voltage from said contact piece of said thermostat to said controlling terminal of said semiconductor element as a signal to energize said relay to a state to supply current to said compressor, and

an electric circuit in said at least one transmitting path for preventing said voltage of a first value from being supplied to said controlling terminal of said semiconductor element through said at least one transmitting path via said contact piece,

whereby said semiconductor element is prevented from energizing said relay in response to the supply of the voltage of said first value and operation of said compressor.

5,619,861

REFRIGERATION APPARATUS

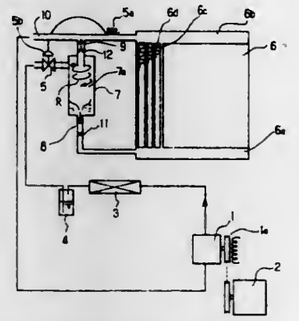
Yasushi Yamanaka, Nakashima-gun; Nobuharu Kakehashi; Hiroshi Kishita, both of Anjo, and Kenichi Fujiwara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 12, 1995, Ser. No. 420,490

Claims priority, application Japan, Apr. 12, 1994, 6-073325; Sep. 22, 1994, 6-228112

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—225 **15 Claims**



9. A refrigeration apparatus, comprising:

a compressor to compress and discharge refrigerant;

a condenser to cool and condense high-temperature, high-pressure gas-phase refrigerant discharged from said compressor;

a temperature-operating type expansion valve having a restricting passage to reduce pressure of liquid-phase refrigerant condensed by said condenser and a valve to regulate a degree of opening of said restricting passage;

a gas-liquid separation means to separate gas-liquid two-phase refrigerant pressure-reduced by said temperature-operating type expansion valve into liquid-phase refrigerant and gas-phase refrigerant;

a liquid-phase refrigerant discharge passage to discharge liquid-phase refrigerant separated by said gas-liquid separation means from said gas-liquid separation means;

a gas-phase refrigerant discharge passage to discharge gas-phase refrigerant separated by said gas-liquid separation means from said gas-liquid separation means;

an auxiliary pressure-reducing means provided in said liquid-phase refrigerant discharge passage to reduce pressure of refrigerant;

an evaporator connected to a downstream side passage of said auxiliary pressure-reducing means and evaporating said refrigerant which is pressure-reduced by said auxiliary pressure-reducing means so that gas-phase refrigerant is generated;

an evaporator outlet side passage to unite gas-phase refrigerant from said gas-phase refrigerant discharge passage with said gas-phase refrigerant evaporated by said evaporator and to lead said gas-phase refrigerant to an intake side of said compressor;

wherein said temperature-operating type expansion valve further includes a temperature-sensing means disposed in a location in said evaporator outlet side passage which is upstream of a union location of gas-phase refrigerant evaporated by said evaporator and gas-phase refrigerant from said gas-phase refrigerant discharge passage, to sense temperature of gas-phase refrigerant evaporated by said evaporator; and

a valve operating means for regulating a degree of opening of said valve in correspondence to said gas-phase refrigerant temperature sensed by means of said temperature-sensing means,

wherein an aperture resistance to reduce pressure of gas-phase refrigerant flow is provided in said gas-phase refrigerant discharge passage.

5,619,862

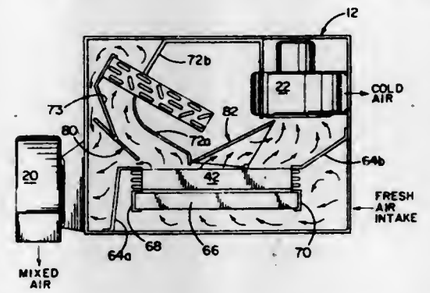
MULTI-CHANNEL MOTOR VEHICLE VENTILATION APPARATUS

Tim Ruger, Rockford; Phillip Evans, Loves Park; Dave Gavin, Rockford, and William G. Guo, Davis Junction, all of Ill., assignors to Bergstrom Manufacturing Co., Rockford, Ill.

Filed Aug. 11, 1995, Ser. No. 513,686

Int. Cl.[6] F25D *17/04*

U.S. Cl. 62—409 **18 Claims**



1. A multi-channel motor vehicle ventilation apparatus comprising:

a housing having at least one air inlet and first and second air outlets;

a heating coil disposed within the housing;

baffles in the housing separating the heating coil into first and second parts interposed in first and second fluid flow paths respectively, the first fluid flow path extending between the at least one air inlet to the first air outlet and including the first part of the heating coil, the second fluid flow path extending between the at least one air inlet to the second air outlet and including the second part of the heating coil;

first and second blowers associated with the first and second air outlets, the first blower disposed to direct air into the at least one air inlet, through the first fluid communication channel, and out the first air outlet, the second blower disposed to direct air into the at least one air inlet, through the second fluid communication channel and out the second air outlet; and

first and second flow valves independently operable to direct a portion of the air flow passing through each fluid flow path across the heating coil, the first and second flow valves being disposed in the first and second fluid flow paths respectively for movement between heat and cool positions, each flow valve being positioned to direct a maximum channel air flow across the associated part of the heating coil, when disposed

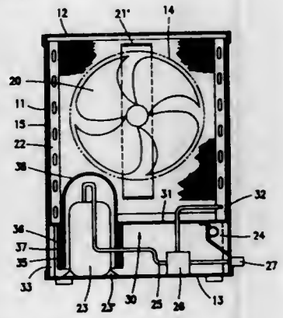
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in the heat position and to direct a minimum channel air flow across the associated part of the heating coil when disposed in the cool position.

5,619,863
OUTDOOR UNIT OF A SEPARATE TYPE AIR CONDITIONER

Yong H. Kil, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 12, 1995, Ser. No. 501,339
Claims priority, application Rep. of Korea, Aug. 20, 1994, 94-20567
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—428 **12 Claims**



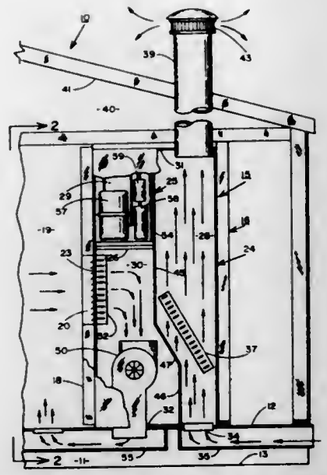
1. An outdoor air conditioning unit for use with a separate indoor air conditioning unit, comprising:
a housing including vertical front and rear walls, vertical side walls interconnecting the front and rear walls, a top wall, and a bottom wall, said housing forming an internal space;
a partition wall extending across said space to divide said space into upper and lower portions;
a fan, defining the only fan in said unit, disposed in said upper portion of said space and mounted to said front wall of said housing, said fan including blades disposed behind an air outlet opening formed in said front wall, and a motor connected to said blades for driving said blades;
a heat exchanger, defining the only heat exchanger in said unit, disposed in said upper space and having a U-shape formed by a rear portion and opposite side portions, said rear portion disposed opposite an air inlet opening in said rear wall of said housing, said side portions disposed opposite air inlet openings in respective side walls of said housing; and
a compressor disposed in said lower portion of said space and mounted on said bottom wall.

5,619,864
COMPACT HEAT PUMP

Wayne R. Reedy, Edwardsville, Ill., assignor to Nordyne, Inc., St. Louis, Mo.

Continuation of Ser. No. 292,731, Aug. 18, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 569,833
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—428 **15 Claims**

13. A heat pump for use in a building having limited space that includes
a housing having spaced apart horizontally disposed top and bottom walls and vertically disposed side walls being arranged for mounting for in a small enclosure that does not have access to an exterior wall of the building,
said housing having a vertically disposed interior wall for forming an outdoor air compartment extending between the top and bottom walls of the housing and an indoor air compartment,

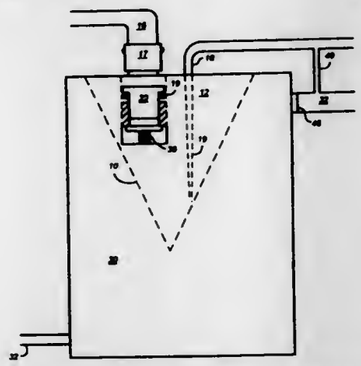


said outdoor air compartment having a first vertical flow path that extends between the top and bottom walls of the housing for passing outdoor air through said outdoor air compartment and an outdoor air coil in said flow path,
a first blower located outside said housing for moving outdoor air through said first air path, and
said indoor air compartment having a second air path for circulating indoor air through said indoor air compartment, an indoor coil and a second blower mounted in said second air path, for circulating outdoor air through said indoor compartment.

5,619,865
REFRIGERATION SUBCOOLER

Ronal J. Maxwell, 15151 Berry Trail, No. 601, Dallas, Tex. 75248

Filed Aug. 22, 1995, Ser. No. 517,790
Int. Cl.[6] F25B *43/00*
U.S. Cl. 62—474 **16 Claims**



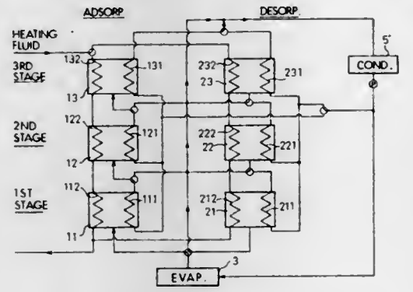
1. An accumulator and receiver apparatus for use in a refrigeration unit or heat pump, comprising:
a. an internal chamber comprising an upper volumetric region and a lower volumetric region, wherein the volume in the upper volumetric region is larger than the volume in the lower volumetric region;
b. a filter housing mounted in the upper volumetric region of said internal chamber, such that the top of the filter housing is substantially flush with the top of said internal chamber;

c. a filter medium comprising desiccant disposed within said filter housing;
d. a filter access port mounted in the top of said filter housing;
e. an internal chamber inlet line connected to said filter access port;
f. an internal chamber outlet line extending into said lower volumetric region;
g. a check valve mounted in the bottom of said filter housing in such a way that fluid cannot flow up from said upper volumetric region into said filter housing;
h. an outer housing surrounding said internal chamber to define an annular region around said internal chamber, said outer housing having a depth that is greater than the depth of said internal chamber;
i. an outer housing inlet line connected to said outer housing; and
j. an outer housing outlet line connected to said outer housing.

5,619,866
ADSORPTIVE TYPE REFRIGERATION APPARATUS

Hideaki Sato, Anjo; Shin Honda, Nagoya; Seiji Inoue, Anjo; Hiroshi Tanaka, and Tadayoshi Terao, both of Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 19, 1995, Ser. No. 530,518
Claims priority, application Japan, Sep. 19, 1994, 6-223461; Jan. 6, 1995, 7-000661; Feb. 8, 1995, 7-020596
Int. Cl.[6] F25B *17/08;7/00*
U.S. Cl. 62—480 **18 Claims**

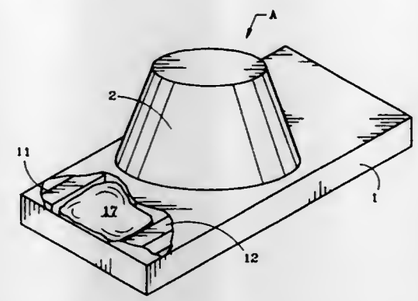


1. An adsorptive type refrigeration apparatus comprising:
a plurality of adsorbers containing adsorbent for adsorbing refrigerant and including heating means for heating said adsorbent and cooling means for cooling said adsorbent;
at least one evaporator for cooling air passing therethrough;
at least one condenser for condensing the refrigerant by the air passing therethrough;
switching means for switching passages connecting between said plurality of adsorbers, said evaporator and said condenser, wherein in an adsorption process, at least an (n)th adsorber and an (n+1)th adsorber among said plurality of adsorbers are thermally connected in series, said adsorbent contained within said (n)th adsorber which is a previous stage is cooled by adsorption of refrigerant by adsorbent contained within said (n+1)th adsorber which is a subsequent stage, wherein refrigerants of at least two systems circulating within mutually independent passages are related thermally.

5,619,867
APPARATUS FOR MAINTAINING LIQUID TEMPERATURE

Marion W. Slaughter, 1902 Spillers, Houston, Tex. 77043

Filed Mar. 12, 1996, Ser. No. 615,050
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—530 **19 Claims**

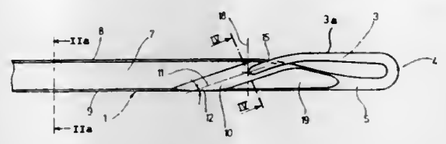


1. I claim apparatus for cooling and retarding an increase in the temperature of a liquid contained in a vessel, said apparatus comprising:
a base the outer perimeter of which, when placed in said vessel, substantially occupies the lower interior of said liquid containing vessel; and
a cooling body for upward projection from said base so that when said base is placed in said vessel said cooling body projects upwardly from said base for submersion in the liquid in said vessel, said cooling body comprising a sealed container substantially filled with a slow-to-freeze, slow-to-thaw gelatinous material which is to be frozen prior to submersion in said liquid;
said apparatus being further characterized in that the specific weight of said base is enough greater than the specific weight of said liquid to keep said base and said cooling body submerged in said liquid.

5,619,868
SPRINGBEARD NEEDLE

Wolfgang Schmoll, Haigerloch-Owingen, and Siegfried Wissmann, Albstadt-Pfeffingen, both of Germany, assignors to Theodor Groz & Söhne & Ernst Beckert, Albstadt, Germany

Filed May 13, 1996, Ser. No. 645,336
Claims priority, application Germany, May 13, 1995, 195 17 602
Int. Cl.[6] D04B *35/08*
U.S. Cl. 66—119 **11 Claims**



1. A springbeard needle comprising
(a) a shank having opposite ends, an upper edge, a lower edge and two opposite side faces;
(b) a head formed at one of said ends;
(c) a springbeard extending from said head and being oriented towards said upper edge; said springbeard having a free end portion; and

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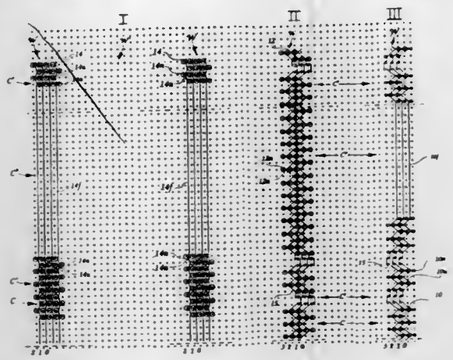
(d) a groove provided in said shank; said groove extending from said upper edge and being open at one of said side faces; said end portion of said springbeard projecting into said groove from said upper edge of said shank; said groove having a longitudinal axis forming an acute angle with said lower edge of said shank and being oriented towards said head as viewed in a direction from said lower edge to said upper edge.

5,619,869

WARP KNITTED TEXTILE FABRIC WITH PATTERN OF PLEATED FABRIC SECTIONS

Stephen L. Tacy, Greensboro, N.C., assignor to Guilford Mills, Inc., Greensboro, N.C.

Filed Mar. 8, 1996, Ser. No. 610,608
Int. Cl.[6] D04B *21/00*
U.S. Cl. 66—195 **9 Claims**



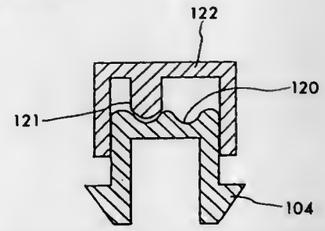
1. A textile fabric of an at least three-bar warp knitted construction characterized by a pattern of pleated fabric sections at one face of the fabric, the fabric comprising a plurality of yarns interknitted with one another in stitches arranged in longitudinally extending fabric wales and transversely extending fabric courses, the yarns comprising a set of ground yarns warp knitted in a stitch pattern forming ground stitches in predominantly every wale of predominantly every course, a set of pleat-forming yarns warp knitted predominantly at the face of the fabric opposite the one face in a stitch pattern forming knitted stitches interknitted with the ground stitches of the ground yarns in predominantly every wale of selected groups of successive courses longitudinally spaced-apart by intervening groups of successive courses and forming longitudinal walewise floats unknitted with the ground stitches of the ground yarns in predominantly every wale of every intervening course for causing the ground stitches in the intervening groups of courses to form into pleats at the one face of the fabric between the selected groups of courses, and a set of tie-down yarns warp knitted predominantly at the one face of the fabric in substantially only selected spaced-apart groups of adjacent wales and in a stitch pattern forming longitudinal walewise floats unknitted with the ground stitches of the ground yarns in the intervening groups of courses to extend across and gather the pleats of the ground stitches thereat, thereby defining the pleats of the ground stitches into a pattern of discrete pleated fabric sections arrayed coursewise and walewise over the one face of the fabric.

5,619,870

WASHING MACHINE HAVING PUNCH-WASHING FUNCTION

Jung H. Kim; Hae Y. Chung; Hyung S. Kim; Byeong H. Lee, and Young H. Roh, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 235,513, Apr. 29, 1994, Pat. No. 5,487,284. This application Nov. 8, 1995, Ser. No. 555,336
Claims priority, application Rep. of Korea, Apr. 29, 1993, 1993-6986; Jul. 26, 1993, 1993-13986; Jul. 26, 1993, 1993-13987; Jul. 28, 1993, 1993-14446; Jan. 26, 1994, 1994-1387; Feb. 18, 1994, 1994-2955
Int. Cl.[6] D06F *37/30*
U.S. Cl. 68—3.55 **6 Claims**



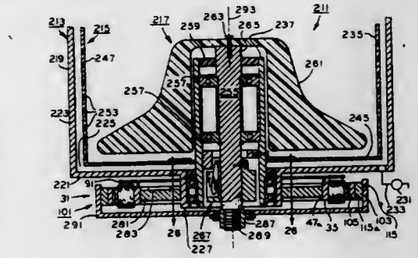
1. A washing machine having a punch-washing function, comprising:
a rotating member having a guiding dimple formed on a top surface thereof; and
an elevating member having a sliding protrusion projecting downwardly from an inner top surface thereof, the sliding protrusion moving substantially vertically by interacting with the guiding dimple of said rotating member so as to move said elevating member substantially vertically.

5,619,871

LAUNDRY MACHINE

Franklin L. Forbes, and Harold B. Harms, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 258,718, Oct. 17, 1988, which is a division of Ser. No. 103,852, Sep. 28, 1987, Pat. No. 4,835,839, which is a division of Ser. No. 796,779, Nov. 12, 1985, Pat. No. 4,712,035. This application Jun. 5, 1995, Ser. No. 462,957
Int. Cl.[6] D06F *37/40*
U.S. Cl. 68—23.7 **30 Claims**



8. Apparatus for laundering fabrics in a fluid comprising:
means for receiving the fluid therein;
spinning means disposed at least in part in said receiving means and operable in a spin mode for spinning the fabrics to effect centrifugal displacement of fluid from the fabrics at least subsequent to the laundering thereof;
an agitator conjointly operable with said spinning means in the spin mode and operable independently of said spinning means in a laundering mode for agitating the fabrics in the fluid in said receiving means; and

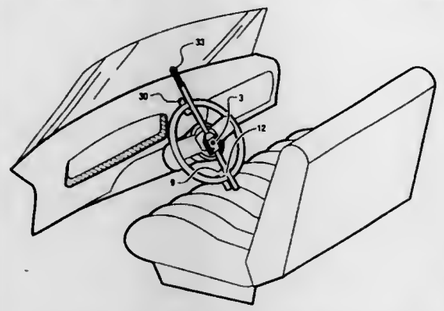
an inside out salient pole electronically commutated motor including a generally annular yoke secured to said receiving means exteriorly thereof, a set of concentrated winding stages adapted to be electronically commutated in a plurality of preselected sequences and defining a set of salient poles generally outwardly of said yoke on preselected pitch axes, respectively, and permanent magnet rotor means arranged generally circumferentially about said salient poles on said yoke and associated in selective magnetic coupling relation with said concentrated winding stages for rotatably driving said agitator in one direction and another direction opposite the one direction to effect the independent operation of said agitator in its laundering mode upon the electronic commutation of said concentrated winding stages in one of the preselected sequences and for rotatably driving said agitator in one of the one and another directions upon the conjoint operation of said agitator and said spinning means in the spin mode operation thereof when at least some of said concentrated winding stages are electronically commutated in another of the preselected sequences.

5,619,872

STEERING WHEEL ANTI-THEFT DEVICE

Philip G. McCarthy, P.O. Box 273, Wye Mills, Md. 21679

Filed Sep. 5, 1995, Ser. No. 523,796
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **13 Claims**



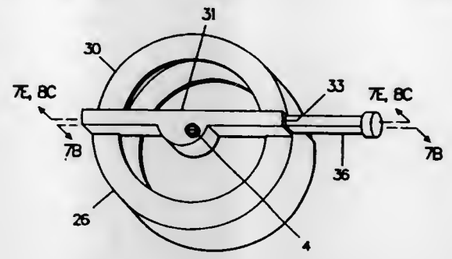
1. An improved steering wheel anti-theft device comprising:
an adjustable bar, said bar having a plurality of locking hooks securable across a diameter of a motor vehicle steering wheel rim and said bar having a hollow internal cavity;
a physically incapacitating compound, said physically incapacitating compound being selected from the group consisting of tear gas, mace, and pepper spray;
a chemical compound canister for containing and storing said physically incapacitating compound, said canister housed within said hollow internal cavity and wherein said chemical compound canister comprises a pressurized vial forming the lower portion of said canister, said vial being of a size and shape compact enough to fit within said hollow cavity, an exterior connection port in fluid communication between the internal volume of said canister and the area external to said canister, and actuation means for selectively blocking and opening said exterior connection port, thereby providing a means to trigger the discharge of said physically incapacitating compound from said chemical compound canisters; and
chemical discharge means for ejecting said physically incapacitating compound in an aerosol manner out from said chemical compound canister to the atmosphere immediately surrounding said adjustable bar, wherein said chemical discharge means comprises a plurality of dispersion ports penetrating through said adjustable bar and providing fluid access to said hollow internal cavity, a dispersion tube having a first end and a second end, said first end in direct connection with said exterior connection port, and said second end in connection with said dispersion ports such that a fluid/gaseous pathway exists for the release of said physically incapacitating chemical compound from said canister through said dispersion ports, a battery for providing actuating energy for said actuation means, a combination electrical arming and mechanical locking switch for providing both means for locking said adjustable bar into a fixed position, and for arming said actuation means by completing an electrical arming circuit connecting said battery to said actuation means an indicating light for illuminating when said actuation means is in connection with said battery and an actuating switch affixed to one said locking hook, said actuating switch for signaling activation of said actuation means when said locking hooks become released from their secured position across the diameter of a motor vehicle steering wheel rim.

5,619,873

ANTI-THEFT STEERING WHEEL LOCKING DEVICE

Thomas W. Wood, 121 Kimberly Dr., American Canyon, Calif. 94589

Continuation of Ser. No. 313,346, Sep. 27, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 666,057
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **12 Claims**



1. A portable housing device for temporary installation on the steering wheel of a parked vehicle to prevent theft, comprising:
(a) a plurality of sections, each section for enclosing a particular portion of the steering wheel;
(b) an axis member fixedly comprised by one of the sections, the axis member being particularly modified to serve as a pivot point around which each remaining section is rotated as a means for installing the device on the steering wheel and removing it therefrom;
(c) a locking means for fixedly joining the sections together so that no section may then be rotated, the locking means employing engagement with the axis member, and
(d) the axis member, comprising a particularly modified portion for engagement with the locking means.

5,619,874

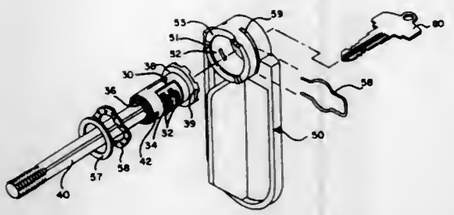
HANDLE LOCK FOR SAFE DOORS AND THE LIKE

Gary L. Myers, Monee, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Continuation of Ser. No. 301,804, Sep. 7, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 659,231
Int. Cl.[6] E05B *15/16*
U.S. Cl. 70—422 **5 Claims**

1. A handle lock for a safe door or the like comprising in combination:
a lock shell having a substantially smooth cylindrical surface, a central throughbore, including longitudinal locking grooves, an annular collar and an annular shoulder;
a lock plug for selective rotation within said lock shell and having a front section including a tumbler-receiving opening,

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a key slot centrally located on an end and an annular flange and a rear section including a shaft receiving means;

a handle for controlling rotation of said lock plug and having a stem portion and a mounting throughbore portion for receiving said lock shell annular collar and said lock plug;

said mounting throughbore having a front section with a first smaller diameter, a rear section with a second greater diameter and an annular ledge between said front and rear sections;

a shaft connecting said lock plug to a door latch actuation means;

a tumbler means disposed in said tumbler-receiving opening for selective engagement with said longitudinal locking grooves, said tumbler means including coding for actuation by a properly coded key for disengagement from said locking grooves to allow for said selective rotation of said lock plug;

a breakaway interlocking connection between the lock plug and the handle, wherein said mounting throughbore annular ledge is formed with connecting splines and said lock plug is formed with complemental connecting splines on said lock plug annular flange, the connecting splines and complemental connecting splines being mutually engageable in order to secure said handle to said lock plug during turning of said handle and being formed with slightly tapered sides whereby said connecting splines and said complmental connecting spines slide out of engagement and allow said handle to rotate relative to said lock plug upon application of an excessive force 10 said handle while said tumbler means are engaged with said locking grooves;

means for biasing said mounting throughbore annular ledge and said lock plug annular flange, and thereby said connecting splines and said complemental connecting splines, into engagement; and

positioning splines formed on said rear face of said mounting throughbore and complemental positioning splines formed on said lock shell shoulder, said positioning splines and complemental positioning splines being adapted such that said positioning splines and complemental positioning splines are mutually engaged when said handle is in either the open or closed position in order to maintain the handle in that position and said positioning splines and complemental positioning splines are mutually disengaged when said handle is being rotated.

5,619,875

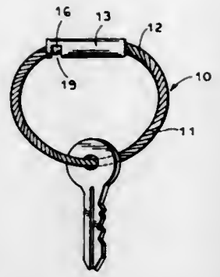
FLEXIBLE RING DEVICE

Pierre Lahaussois, 25-13 Old Kings Hwy. North, Darien, Conn. 06820

Filed Mar. 7, 1995, Ser. No. 399,423
Int. Cl.[6] A44B *15/00*
U.S. Cl. 70—457 **4 Claims**

1. A ring device of the type comprising a section of resilient flexible material having a free end and an anchored end, and a coupling member secured to the anchored end of said flexible section and adapted to releasably secure the free end of said flexible section, characterized by

(a) said coupling member having first and second opposite ends and said first end being connected to the anchored end of said flexible section,



(b) said coupling member being of tubular configuration in a region thereof adjacent to the second end thereof and being open at said second end,

(c) a coupling plug having front and back ends and being secured at its back end to the free end of said flexible section,

(d) said back end of said coupling plug having larger external thickness dimensions than said flexible section forming a locking shoulder at said back end,

(e) the open second end of said coupling member, and said adjacent region of tubular configuration, having internal dimensions larger than the external thickness dimensions of said back end of said coupling plug,

(f) said coupling plug being of a size and cross sectional shape adapted for free axial reception into the open end and adjacent tubular region of said coupling member and for being locked therein, the absence of torsional distortion of said flexible section, whereby said flexible section and coupling member form a closed ring,

(g) said coupling member having a locking notch formed in a side wall portion thereof oriented toward the inside of said closed ring, said locking notch forming an axially inwardly facing abutment surface,

(h) the locking shoulder at the back end of said coupling plug being lockingly engageable with said axially inwardly facing abutment surface when said coupling plug is inserted axially and without torsional distortion into said open end and adjacent tubular region to a position in which said coupling plug locking shoulder is positioned at a greater distance from said coupling member open end than is said axially inwardly facing abutment surface,

(i) said flexible section having characteristics of resilience normally urging said section toward a configuration less curvature than said closed ring, whereby said coupling plug is urged to assume a tilted position within said coupling member, thus causing said locking shoulder to be lockingly engaged with said abutment surface.

5,619,876

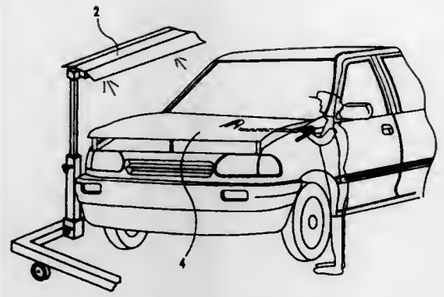
METHOD FOR FLATTENING PARTIALLY DEPRESSED METAL BODY OF AUTOMOBILE

Yoonho Choi, 27-3, Pyolyang-dong, Kwachon-si, Kyongki-do, Rep. of Korea, assignor to Yoonho Choi, and Wounho Choi, both of Kyongki-do, Rep. of Korea

Filed Feb. 1, 1995, Ser. No. 384,330
Claims priority, application Rep. of Korea, Feb. 7, 1994, 94-2225
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—37 **13 Claims**

1. A method for flattening a depressed part of a metal body comprising the steps of:

placing a light source including a difference of brightness of relatively light and shade about the depressed metal body such that the configuration is placed generally parallel to a metal plate of the body including said depressed part and opposed to n flattening worker;



placing a flattening instrument having a charpened and bent tip an a handle at ends hereof under the depressed metal plato such that the tip is placed under said depressed part of the metal plate;

precisely placing the tip of the instrument under the center or deepest point of the depressed part of the metal plate by observing difference between light and shade of a reflection including a distortion of reflection of said pattern due to both said depressed part and contact of said tip of said instrument reflected on the metal plate about the depressed part; and

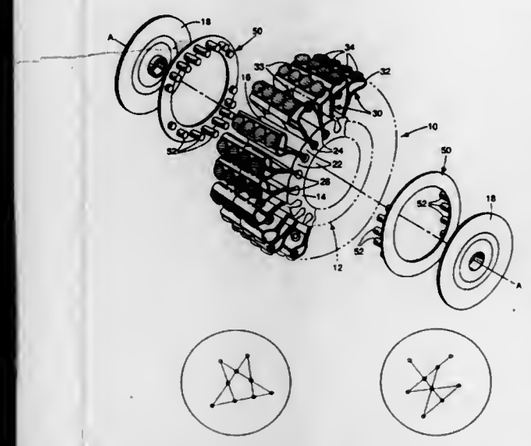
repeatedly, rapidly, slightly and elastically pushing the handle of the instrument about a point of action until the depressed part is repeatedly levered up and flattened by repeated leverage of the instrument about the point of action.

5,619,877

PEENING ARTICLE WITH PEENING PARTICLES ARRANGED TO MINIMIZE TRACKING

Timothy L. Graf, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 26, 1996, Ser. No. 639,140
Int. Cl.[6] B21J *5/00*
U.S. Cl. 72—53 **34 Claims**



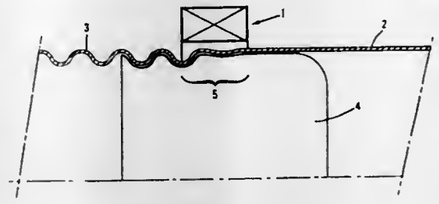
1. A peening particle support having a plurality of peening particles on an exposed surface thereof in an arrangement that minimizes tracking upon a workpiece, the peening particle arrangement comprising three or less peening particles having substantially the same non-zero radial distance from a center of the exposed surface.

5,619,878

METHOD AND DEVICE FOR MANUFACTURING A CORRUGATED METAL PIPE

François Grosjean, Versailles, and Michel Huvey, Bougival, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Aug. 2, 1995, Ser. No. 510,162
Claims priority, application France, Aug. 2, 1994, 94 09680
Int. Cl.[6] B21D *26/14*
U.S. Cl. 72—56 **5 Claims**



1. A method of forming a metal pipe by electromagnetism, comprising the following stages:

placing a length portion of a metal pipe having an outer surface and an inner surface around an undeformable rigid form having a helical shape,

activating a magnetic field located at a position surrounding the outer surface of the pipe proximate the portion of metal pipe and undeformable rigid form to deform said portion and press said portion against said undeformable rigid form to create an initial groove of increasing depth to a final profile, the groove being the length of one pitch thereof,

moving the undeformable rigid form longitudinally with respect to the metal pipe to be placed at another, non-deformed length portion of the pipe by rotating the undeformable rigid form one pitch, and

after moving the undeformable rigid form through a rotation to advance the pipe one pitch, again activating the magnetic field to create a second deformation in the pipe which completes the deformation over at least part of said initial groove to form a complete groove of the final profile.

5,619,879

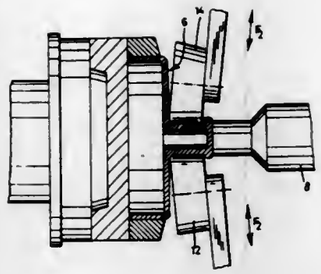
METHOD FOR THE NON-CUTTING PRODUCTION OF A HUB OF A TRANSMISSION COMPONENT POSSESSING THE HUB

Udo Friese, Ahlen, Germany, assignor to WF-Maschinenbau und Blechformtechnik GmbH & Co. KG, Sendenhorst, Germany

PCT No. PCT/DE94/00209, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO94/20235, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 23, 1994, Ser. No. 571,937
Claims priority, application Germany, Dec. 9, 1993, 43 42 086.9; Jan. 7, 1994, 44 00 257.2
Int. Cl.[6] B21H *1/00*
U.S. Cl. 72—82 **8 Claims**

1. Method for the non-cutting production of a hub of a transmission component possessing the hub from a sheet metal blank, the sheet metal blank being formed into a cap, characterized in that the cap (2) is deformed by spinning around a central tool pin (5) into a

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cylindrical projection (7) projecting from a round plate (6) and the cylindrical projection (7) is subsequently opened in order to receive a coaxial shaft.

5,619,880

DEVICE FOR CONTROLLING THE ROTATIONAL SPEED OF THE ROLLS OF A ROLLING MILL

Herbert Polster, and Harald Bax, both of Spardorf, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

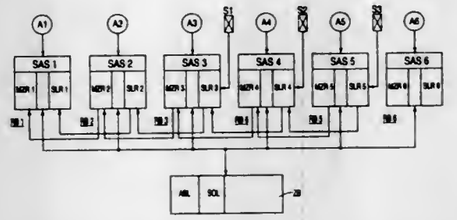
PCT No. PCT/DE93/00826, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO94/07618, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 8, 1993, Ser. No. 406,991

Claims priority, application Germany, Sep. 29, 1992, 42 32 685.0

Int. Cl.[6] B21B *37/00*

U.S. Cl. 72—11.4 **18 Claims**



1. A device for controlling rotational speeds of roll stands of a rolling train for rolled material forming a loop between two roll stands, comprising:

a) a device for determining at least one of a rolled material length affecting the loop and a length of the rolled material between the two roll stands, as an actual value;

b) a loop controller for controlling the rotational speed of a roll stand adjacent to the loop such that the actual value is equal to a predetermined setpoint value; and

c) a setpoint memory, in which, as a bar is processed, the rotational speed of the controlling stand and rotational speed ratios of the roll stands are stored, said setpoint memory providing said stored rotational speed of the controlling stand and said rotational speed ratios of the roll stands as setpoints for each new bar entering the train,

wherein the rotational speeds of each of the roll stands of the rolling train for each new bar entering the train are calculated from said rotational speed of the controlling stand and said rotational speed ratios of the roll stands provided by said setpoint memory, the calculated rotational speeds being used to control the roll stands prior to the entry of the new bar into the rolling train.

5,619,881

DOUBLE-SCISSORS CUTTER

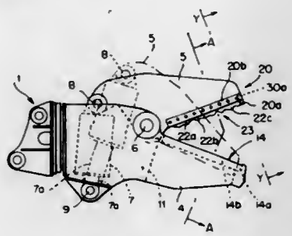
Sumio Morikawa, Sakai; Noboru Nakayama, and Nobuyuki Zakohji, both of Toyonaka, all of Japan, assignors to Ohyodo Diesel Co., Ltd., Osaka, Japan

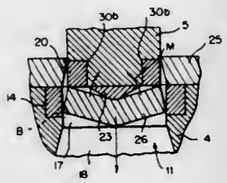
Continuation-in-part of Ser. No. 171,735, Dec. 22, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,803

Claims priority, application Japan, Jul. 16, 1993, 5-176332

Int. Cl.[6] B21D *28/14*

U.S. Cl. 72—330 **3 Claims**





1. A double scissors cutter comprising

a pair of jaw members pivoted together on a pivot shaft at common jaw member ends, one of said jaw members having a through hole, the through hole having a rectangular aperture, the other jaw member being companiony configured with said aperture so that when said jaw members are closed in a scissors cutting movement said other jaw member can enter said through hole to bring a cutting edge carried thereon in cooperative cutting relationship with a cutting edge carried on the said one jaw member adjacent said aperture and thereby effect cutting of a piece from a work component in the course of said scissor movement, the through hole widening from a width thereof at said aperture to a larger width distal said aperture, the cutting edges carried on said one and said other jaw members each

being U-shaped and comprising opposite long side cutting edge parts and a short cutting edge part joining common ends of said long side parts remote from the location of the pivoted ends of the jaw members, the long side cutting edge parts associated with said other jaw member disposing along opposite sides of other jaw member, and

protuberant structure comprising a plurality of longitudinally aligned structure blocks carried on said other jaw member and extending laterally fully between said other jaw member opposite long side cutting edge parts and longitudinally substantially coextensively with the said long side cutting edge parts, each of said blocks being independently removably secured to said other jaw member, said protuberant structure protruding outwardly of a plane in which the cutting edges of the said other jaw member long side cutting edge parts lie, said protuberant structure having a longitudinal side contour profile of irregular undulating shape and comprising a bending member for applying a bending force to a work component part spanning the cutting edge long side cutting edge parts during the scissors cutting movement of the jaw members so as to deform a lateral expanse of said component part to a V-shaped configuration during cutting and thereby facilitating a passage of the cut piece through said through hole, a length of the structure block most proximal the pivoted ends of the jaw members being of substantially straight longitudinal side contour and less protruding than the structure of any other structure block to provide therewith enhanced initial gripping of the work component during cutting.

5,619,882

PROCESS AND DEVICE FOR PRODUCING PHILLIPS-HEAD SCREWING TOOLS OR THE LIKE, ESPECIALLY IN THE FORM OF BITS

Werner Gödtner, Remscheid, Germany, assignor to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Germany

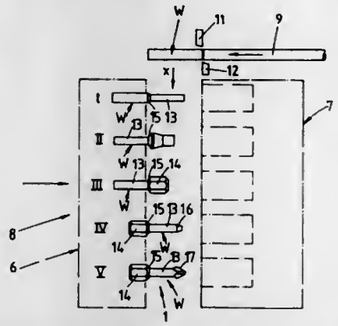
PCT No. PCT/EP93/00530, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/17814, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 9, 1993, Ser. No. 302,859

Claims priority, application Germany, Mar. 13, 1992, 42 07 963.2; Mar. 13, 1992, 42 07 964.0

Int. Cl.[6] B21D *22/00;22/21*

U.S. Cl. 72—356 **21 Claims**



1. A process for producing Phillips-head screwing tools and the like, particularly in the form of bits, by cold forming of a workpiece section which has been cut to length from a profiled rod, comprising the steps of:

developing the workpiece section at one end with a hexagonal section having a profile of a hexagon and adjoining same with a cylindrical section with a supportable front end opposite said one end, and

introducing the workpiece section into a press tool, and providing a first axially resilient support at said one end at an end surface of the hexagonal section and a second axially resistant support at the supportable front end, spring force of said first resilient support differing from a spring force of said second resilient support, whereupon cheek plates of said press tool effect forming to the Phillips-head profile and the like by a displacement towards a center which is controlled by a conical envelope surface which tapers towards the front end, both of said axially resilient support compensating for axial distension of the workpiece section resulting from displacement of the cheek plates.

5,619,883

COMPRESSION TOOL

Helmut Dischler, Droste-Hulshoff-Str. 9, D-4040 Neuss, Germany

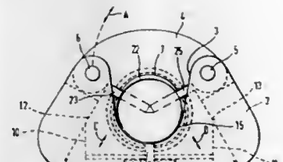
Division of Ser. No. 422,605, Apr. 12, 1995, which is a continuation of Ser. No. 215,969, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 914,237, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 679,943, Apr. 3, 1991, Pat. No. 5,148,698. This application Jun. 6, 1995, Ser. No. 467,385

Claims priority, application Germany, Apr. 20, 1990, 40 11 822.3

Int. Cl.[6] B21D *39/04*

U.S. Cl. 72—400 **8 Claims**

1. A compression tool, comprising:



a) a housing having adjacently disposed legs forming a generally U-shaped clearance therebetween;

b) at least three compression jaws operably associated with said housing and disposed about said clearance, each of said legs carries one of said jaws and said one jaws are slidingly guided along the associated legs both radially and non-radially relative to said third jaw between a first open position and a second compressed position;

c) each of said jaws has a compression surface and said surfaces forming a substantially closed pressing area when said jaws are in said second position;

d) a rest-yoke carries said third jaw and has a first portion pivotally secured to one of said legs and an opposite second portion selectively securable to the other of said legs for closing said clearance; and

e) means operably associated with said two jaws for causing simultaneous movement thereof between said positions.

5,619,884

AUTOMATIC FORMING MACHINE

Horst Endter, Langenfeld, Germany, assignor to Eumuco-Hasenclever GmbH, Leverkusen, Germany

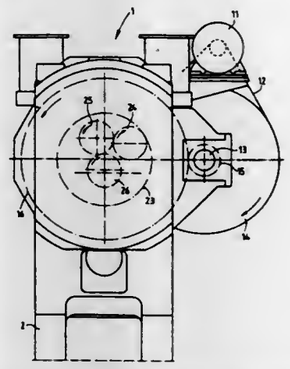
PCT No. PCT/DE93/00480, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO93/25330, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 1, 1993, Ser. No. 351,379

Claims priority, application Germany, Jun. 10, 1992, 42 18 955.1; Nov. 10, 1992, 42 37 898.2

Int. Cl.[6] B21J *9/18*

U.S. Cl. 72—449 **2 Claims**



1. Automatic forming machine for hot forging workpieces which are conveyed stepwise through a forging region, said automatic forming machine comprising:

an eccentric shaft having an eccentric sleeve mounted thereto;

a tool carriage which is reciprocatably movable;

a connecting rod mounted on said eccentric shaft and connected to the tool carriage;

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an irregular drive for driving said eccentric shaft so as to produce a hypocycloidal curve, said irregular drive having a pinion mounted on the eccentric shaft, a planet pinion gear, an intermediate gear, and a stationary, internally toothed hollow gear meshing with the planet pinion gear, said planet pinion gear being in geared connection by way of the intermediate gear with the pinion mounted on the eccentric shaft, wherein said planet pinion gear and the intermediate gear are mounted on bearing axles arranged on said eccentric sleeve and provided with a large toothed wheel at either end, said eccentric shaft being driven indirectly via the large toothed wheel at a driving end and the eccentric sleeve.

5,619,885

UPPER TOOL HOLDER APPARATUS FOR PRESS BRAKE AND METHOD OF HOLDING THE UPPER TOOL

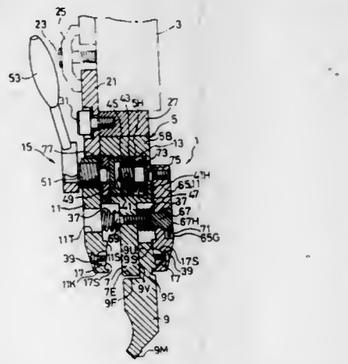
Susumu Kawano; Mamoru Sugimoto, and Toshiro Kawano, all of Kanagawa, Japan, assignors to Amada Metrecs Company, Limited, Kanagawa, Japan

Continuation-in-part of Ser. No. 239,323, May 6, 1994, Pat. No. 5,513,514, and a continuation-in-part of Ser. No. 259,981, Jun. 17, 1994, Pat. No. 5,511,407. This application Apr. 28, 1995, Ser. No. 430,492

Claims priority, application Japan, May 15, 1992, 4-123183; May 26, 1992, 4-133511; Dec. 11, 1992, 4-331318; Jun. 30, 1994, 6-149785; Aug. 19, 1994, 6-195434

Int. Cl.[6] B21D *37/04*

U.S. Cl. 72—481.8 **14 Claims**



1. An upper tool holder apparatus for a press brake comprising:
an upper table;
an upper tool;
an upper tool holder body, including an upper tool support portion, attached to a lower portion of said upper table;
a pivotable upper tool clamp member;
clamping force generating means for generating a predetermined force for clamping said upper tool between said upper tool support portion and said pivotable upper tool clamp member;
an engage projection formed on said pivotable upper tool clamp member, said engage projection engagable with a drop prevention groove formed in said upper tool; and
selectively positionable clamp operating means for selecting a position associated with said predetermined clamping force,
wherein at a clamp position A, said predetermined clamping force is sufficient to tightly clamp said upper tool between said pivotable upper tool clamp member and said upper tool support portion,
wherein at an unclamp position B, said predetermined clamping force is reduced with respect to said predetermined clamping force at position A and sufficient to enable movement of said upper tool in a direction parallel to said lower portion of said upper table, and
wherein at an exchange position C, said predetermined clamping force is reduced with respect to said predetermined clamping force as position B and said pivotable upper tool clamp member releasing said upper tool to move a direction perpendicular to said direction parallel to said lower portion of said upper table to enable said upper tool to be exchanged with a different upper tool;
said clamp operating means comprising:
a pusher member for pushing said clamping force generating means to generate said predetermined clamping force;
an operation lever; and
clamping force control means coupled to said operation lever to be controllably brought into contact with and separated from said pusher member, said clamping force control means for controlling said predetermined clamping force.

5,619,886

OPERABLE ANGLE ADJUSTING STRUCTURE FOR WIPER

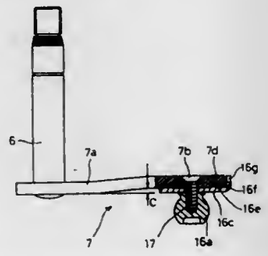
Takashi Hoshino, Gunma, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed May 11, 1995, Ser. No. 439,350

Claims priority, application Japan, Jun. 30, 1994, 6-171715

Int. Cl.[6] G05G *1/04*

U.S. Cl. 74—522 **17 Claims**



1. An operable angle adjusting assembly for a wiper for use on a vehicle to produce a wiping angle initially intended comprising:
a drive link;
a ball joint attached to a first end of the drive link by a pin having an axis such that the ball joint is eccentric relative to the axis of the pin;
a drive rod attached to the first end of the drive link by a ball retainer;
an adjusting member interposed between the ball joint and the first end of the drive link such that rotating the adjusting member adjusts an operating angle between the drive rod and the drive link; and
a rotation prevention assembly that prevents rotation between said adjusting member and said drive link, the rotation prevention assembly including at least one projection extending from one of said drive link and said adjusting member, said at least one projection engaging a complementary recess in the other one of said drive link and said adjusting member opposite said at least one projection.

5,619,887

CAMSHAFT TUNED VIBRATION DAMPER

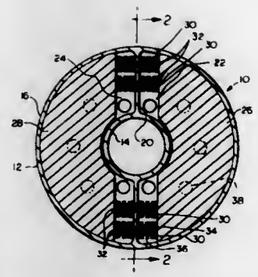
Roger T. Simpson, Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Aug. 28, 1995, Ser. No. 520,352

Int. Cl.[6] F16F *15/123*

U.S. Cl. 74—574 **20 Claims**

1. A friction tuned damper (**10**) for damping the vibrations of a timing drive of an internal combustion engine, the timing drive



including a camshaft (C) and a member (S) secured to the camshaft for rotation therewith, the damper comprising:
an annular housing (**12**) comprising:
an inner annular wall (**14**), said inner annular wall being adapted to be secured to the camshaft to be rotatable therewith,
an outer annular wall (**16**) spaced from and surrounding said inner annular wall, and
a partition (**20**) extending between and connecting said outer annular wall and said inner annular wall and defining, with said inner annular wall and said outer annular wall, an opposed pair of compartments (**22, 24**);
an opposed pair of shoes (**26, 28**), one of said opposed pair of shoes being positioned in each of said opposed pair of compartments; and
compression spring means (**30**) biasing each of said opposed pair of shoes outwardly into frictional engagement with said outer annular wall.

5,619,888

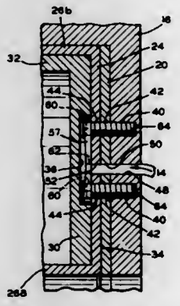
REINFORCEMENT MEMBER FOR PISTON RETAINER IN A VEHICLE AUTOMATIC TRANSMISSION

William L. Anthony, Schaumburg, Ill., assignor to Toledo Trans-Kit, Inc., Toledo, Ohio

Filed Jul. 17, 1995, Ser. No. 503,220

Int. Cl.[6] F16H *57/02*

U.S. Cl. 74—606 R **14 Claims**



1. A fluid actuator for a vehicle automatic transmission comprising:
a transmission case including a wall having a fluid apply opening formed therethrough;
a gasket disposed adjacent to said wall and having a fluid apply opening formed therethrough which is aligned with said fluid apply opening formed through said wall;
a cylinder disposed adjacent to said gasket and having a fluid apply opening
a reinforcement member disposed adjacent to said cylinder and having a fluid apply opening formed therethrough which is aligned with said aligned fluid apply openings formed through said cylinder, said gasket, and said wall; and
a piston disposed within said cylinder and adapted to be moved relative thereto when pressurized fluid is supplied through said aligned fluid apply openings formed through said reinforcement member, said cylinder, said gasket, and said wall.

5,619,889

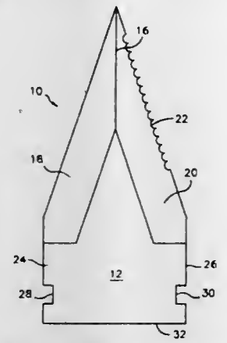
METHOD OF MAKING MICROSTRUCTURAL SURGICAL INSTRUMENTS

Gary W. Jones, Poughkeepsie, and Steven M. Zimmerman, Pleasant Valley, both of N.Y., assignors to FED Corporation, Hopewell Junction, N.Y.

Filed Oct. 11, 1994, Ser. No. 321,089

Int. Cl.[6] B24B *1/04*

U.S. Cl. 76—104.1 **21 Claims**



I. A method of making a microstructural shaped article from a substrate workpiece, comprising the steps of:
(a) providing a metal mold comprising a predetermined shape to be imparted to the substrate workpiece;
(b) securing the metal mold in ultrasonic energy-transmissive relationship to an ultrasonic horn;
(c) providing the substrate workpiece in a fixed position in alignment with metal mold in ultrasonic energy-transmissive relationship to an ultrasonic horn;
(d) disposing directly between the metal mold and the substrate workpiece only a fine grain slurry of solid particles which are energy-transmissive of ultrasonic energy; and
(e) ultrasonically milling the substrate workpiece with the ultrasonic horn energized and the metal mold in direct compressive bearing relationship to the substrate through the fine grain slurry of solid particles disposed directly between the metal mold and the workpiece substrate, for sufficient time to form said predetermined shape in the substrate workpiece.

5,619,890

SPANNER

Shinji Hattori, Tsuyama; Itsuro Kawamae, Mishima-gun, and Yoshihiro Noguchi, Osaka, all of Japan, assignors to Tsubakimoto Emerson Co., Daito, and Tsubakimoto Bulk Systems Corporation, Toyonaka, both of Japan

Filed Aug. 10, 1995, Ser. No. 513,636

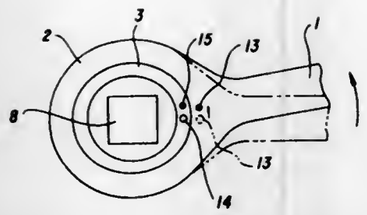
Claims priority, application Japan, Aug. 10, 1994, 6-208193

Int. Cl.[6] B25B *13/00*

U.S. Cl. 81—59.1 **2 Claims**

1. A spanner, comprising:
a lever handle;
an exterior ring connected to an end of said lever hand;
an interior ring coaxially disposed in said exterior ring;
plurality of columned cams with non-circular cross section retained at regular intervals in an annular space formed between an outer peripheral surface of said interior ring and an inner peripheral surface of said exterior ring;

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an annular spring, for rolling each columned cam on said outer peripheral surface and wedging a non-circular surface of each columned cam into said inner peripheral surface, engaged in recessed grooves each formed on said columned cam; and

a shaft, for connecting an adapter which engages a bolt head, nut, or the like, coaxially mounted in said interior ring;

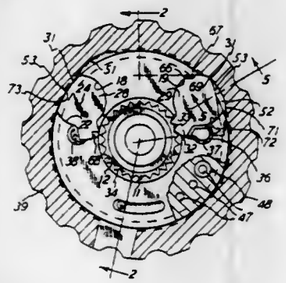
further comprising a standard mark placed on one end of said interior ring, a life mark placed on said one end of said interior ring but apart from said standard mark in a direction of movement of said lever for wedging said columned cams, and a wedging detection mark placed on said one end of said exterior ring.

5,619,891

RATCHETING SCREWDRIVER

Clair L. Tiede, Mukwonago, Wis., assignor to Beere Precision Medical Instruments, Inc., Racine, Wis.

Filed Nov. 6, 1995, Ser. No. 553,866
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—62 **25 Claims**



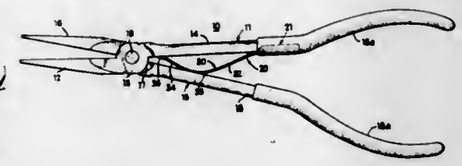
1. A ratcheting screwdriver comprising a handle having a cavity defined by two arcuate walls, a gear rotatably supported on said handle and having teeth facing said arcuate walls and said gear being arranged to receive a screwdriver bit, two pawls with teeth and with each of said pawls being respectively pivotally supported on one of said arcuate walls for pivoting in a plane toward and away from said gear and extending into toothed driving engagement with said gear teeth in one direction of handle rotation and said pawls being in ratcheting relationship with said gear in a direction of handle rotation which is opposite to said one direction, a resilient member operative on said pawls for urging said pawls into tooth engagement with said gear teeth in the rotation drive from said handle to said gear, a ring rotatably supported on said handle and in said pivot plane of said pawls and having a circular wall surrounding said handle, said ring circular wall having two recesses therein adjacent said two pawls, said pawls having portions respectively received in said recesses when said pawls are in tooth engagement with said gear, and said pawls and said ring circular wall having mutually engageable surfaces arranged whereby rotation of said ring alternately pivots said pawls out of engagement with said gear teeth and for ratcheting action on said gear upon rotating said handle relative to said gear.

5,619,892

OPENING SPRING FOR PIVOTING HAND TOOL

Daniel M. Eggert, Kenosha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Continuation of Ser. No. 336,381, Nov. 8, 1994, Pat. No. 5,522,289. This application Apr. 22, 1996, Ser. No. 635,732
Int. Cl.[6] B25B *7/00*
U.S. Cl. 81—417 **2 Claims**



1. A long-reach pliers comprising:

a pair of levers each having a jaw portion and a handle portion which includes an elongated straight neck portion and a grip portion; a joint coupling said levers between said neck and jaw portions for pivotal movement toward and away from each other between closed and open conditions; said grip portions being curved so that they are spaced apart further than said neck portions are spaced apart in all positions of said levers, and a flexible and resilient spring including a coupling channel and a bias leaf, said coupling channel having opposed ends and being generally C-shaped in transverse cross section and having a maximum width, said channel having free distal side edges cooperating to define an opening into said channel and being spaced apart a distance less than the maximum width of said channel, said channel including a plurality of substantially flat panel sections each extending from one end of said channel to the other end thereof and each defining a plane when at rest, said panel sections including a base panel section and a pair of side panel sections with the planes defined by said slide panel sections intersecting the plane defined by said base panel section, each of said side panel sections having one of said side edges disposed thereon and lying in the plane defined by the panel section on which the side edge is disposed, said channel being disposed in a use position receiving therein one of said levers adjacent to the junction between the neck and grip portions thereof, said bias leaf being unitary with one of said panel sections and projecting from one end of said channel, said leaf being curved out of the plane of said one panel section so that when said coupling channel is in its use position said bias leaf engages the neck portion of the other of said levers to bias said levers to the open condition while being yieldable to accommodate movement of said levers to their closed condition, said bias leaf terminating at a distal end portion releasably engageable with the neck portion of the one lever.

5,619,893

TUBE SQUARING MACHINE

Kenneth R. Pierce, Lake Zurich, Ill., assignor to The E. H. Wachs Company, Wheeling, Ill.

Filed Aug. 10, 1995, Ser. No. 513,217
Int. Cl.[6] B23B *5/16*
U.S. Cl. 82—113 **7 Claims**

1. A tube squaring machine comprising in combination,

a housing having a first end, a second end, and a tubular section between said first and second ends,

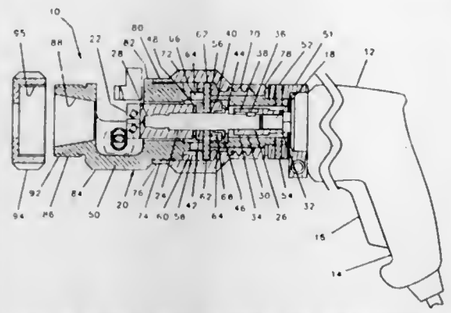
a rotatable shaft within said housing, said shaft axially moveable relative to said housing,

a sleeve non rotatably fitted around said shaft,

means for retaining said sleeve for axial movement with said shaft,

a feed ring non rotatably fitted around said housing, said feed ring axially slideable along said housing,

said feed ring having a cylindrical surface with threads thereon,



a feed nut having a cylindrical surface with threads thereon from mating against said threads of said feed ring,

means for locking said feed nut against axial movement along said housing,

said housing having a longitudinal slot therein,

linkage means extending through said slot in said housing for axially moving said sleeve in unison with axial movement of said feed ring,

means for retaining a work piece at said first end of said housing,

means for attaching a first end of said shaft to an axially aligned rotating member, and

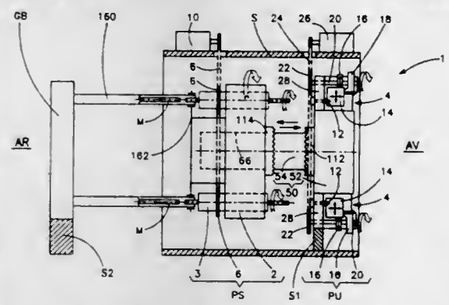
means for attaching a tool to a second end of said shaft.

5,619,894

MULTI-SPINDLE AUTOMATIC LATHE

Harold Habegger, Sous-Graitery 10, CH-2738 Court, Switzerland

PCT No. PCT/CH94/00040, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO94/20245, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 24, 1994, Ser. No. 318,813
Claims priority, application France, Mar. 1, 1993, 93 02428
Int. Cl.[6] B23B *9/04;9/10*
U.S. Cl. 82—129 **29 Claims**



1. A multi-spindle automatic lathe for machining bars of material, said lathe comprising:

a supporting structure,

a spindle carrier having a central bore,

a plurality of spindles for holding bars (M) to be machined, said spindles being supported by said spindle carrier, and

shaping means for shaping bars (M), said shaping means including tool bearing carriages supporting machining tools and being controlled by cams supported and driven in rotation,

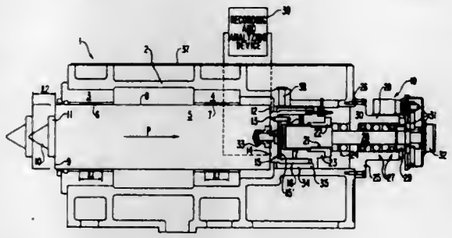
said lathe being characterized in that said supporting structure comprises a rigid central body and a support shaft extending longitudinally therefrom, said support shaft being immovably fixed relative to said central body, said shaping means being mounted on and around said central body, said support shaft being engaged in said central bore so that said spindle carrier is guided both in rotation and in translation in front of said shaping means by engagement of said support shaft with an interior surface of said spindle carrier bounding said central bore, said shaping means and said spindles being actuated by peripheral driving means surrounding said support shaft.

5,619,895

TAILSTOCK FOR A LATHE PROVIDING HYDRAULIC AXIAL LENGTH COMPENSATION

Werner Kronstorfer, Oberstenfeld, Germany, assignor to Maschinenfabrik Ravensburg AG, Ravensburg, Germany

Continuation of Ser. No. 126,719, Sep. 27, 1993, abandoned. This application Nov. 9, 1995, Ser. No. 555,375
Claims priority, application Germany, Oct. 9, 1992, 42 34 049.7
Int. Cl.[6] B23B *23/04*
U.S. Cl. 82—148 **13 Claims**



1. A tailstock for a lathe comprising:

a tailstock housing;

a rigid sleeve mounted in the housing and having outer surface, a rear end and a front end disposed opposite the rear end, the sleeve being both rotatable and axially displaceable with respect to the housing;

a center integral with the sleeve and disposed at the front end thereof for supporting a workpiece;

a spindle operatively connected to the sleeve and adapted to axially displace the sleeve in the housing;

hydrostatic radial bearing means supporting the sleeve for axial and rotational displacement of the sleeve in the housing, the sleeve and the radial bearing means being disposed relative to one another such that no additional structure components are interposed therebetween, the radial bearing means thereby directly contacting the outer surface of the sleeve, and

hydraulic means axially supporting the sleeve for compensating for changes in an axial force applied by the workpiece to the sleeve due to a length change of the workpiece thereby keeping the axial force constant.

5,619,896

BASE OF A SAWING MACHINE

Ruey Z. Chen, No. 261. Jen Hwa Road, Tali, City, Taichung, Taiwan

Filed Jun. 27, 1995, Ser. No. 495,320
Int. Cl.[6] B27B *5/29*
U.S. Cl. 83—477.2 **1 Claim**

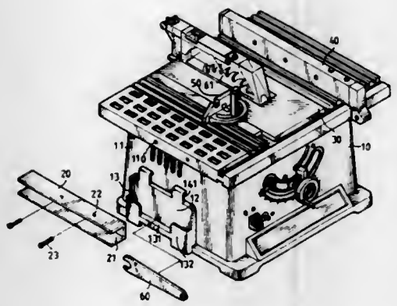
1. A base for a sawing machine, comprising:

a pedestal base formed of a plastic material and having a pair of opposing side walls extending in a longitudinal direction from a lower end thereof to an upper end of said pedestal base;

a bench portion disposed on said upper end of said pedestal base, said bench portion having an aperture formed therethrough for extension of a saw blade therethrough, wherein the saw blade is driven by means disposed on an underside of said bench portion;

a first gauge releasably coupled to said bench portion adjacent a first side of said aperture;

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a second gauge releasably coupled to said bench portion adjacent an opposing second side of said aperture;

a U-shaped frame member fixedly coupled to one of said side walls adjacent said upper end of said pedestal base and having an open channel extending in a direction transverse to said longitudinal direction for receiving and storing said first gauge therein; and,

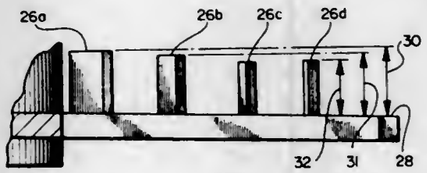
a board member coupled to said one side wall adjacent said lower end of said pedestal base, said board member having a pair of spaced inverted L-shaped arms extending from an upper edge of said board member to form a passage extending in said transverse direction for receiving and storing said second gauge therein, said board member having a bottom portion extending outwardly therefrom and an integrally formed skirt encompassing said bottom to define a pocket for receiving and storing tools therein.

5,619,897

CUTTER BLADE FOR PRODUCING HELICAL VEGETABLE STRIPS

Jocelyn A. Dube, 66 Eleanor Drive, St. Eleanors, PEI, Canada; James D. Arbeau, 143 South Drive, St. Eleanors, PEI, Canada; Micheal D. Ryder, 371 Granville St., Summerside, PEI, Canada; Derek J. Penney, P.O. Box 196, Cornwall, PEI, Canada; Layton D. McInnis, R.R.#1, Albany, PEI, Canada, and Jean L. Lebel, 18 Tanton Drive, St. Eleanors, PEI, Canada

Filed Dec. 23, 1993, Ser. No. 172,550
Int. Cl.[6] B26D *3/11*
U.S. Cl. 83—865 **21 Claims**



1. A rotating cutter for cutting helical vegetable strips comprising:

(a) a disk-shaped body having an upstream surface and an axis of rotation;

(b) a knife blade extending radially from the axis of rotation and being axially displaced from said upstream surface;

(c) a plurality of slitter blades extending substantially perpendicular to said upstream surface;

(d) said slitter blades being spaced apart from one another and located at different distances from the axis of rotation;

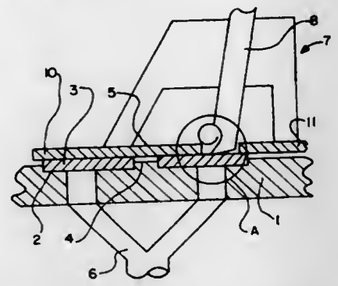
(e) at least two of said slitter blades having different lengths.

5,619,898

PROCESS AND DEVICE FOR MECHANICALLY REMOVING A LAYER FROM THE SUBSTRATE MATERIAL OF A DISK-SHAPED INFORMATION CARRIER

Georg Witt, Helmstedter Str. 58 H, 38126 Braunschweig, Germany

PCT No. PCT/DE92/00803, § 371 Date Jul. 11, 1994, § 102(e) Date Jul. 11, 1994, PCT Pub. No. WO94/06608, PCT Pub. Date Mar. 1, 1994
PCT Filed Sep. 15, 1992, Ser. No. 232,155
Int. Cl.[6] B26D *3/00*
U.S. Cl. 83—870 **19 Claims**



11. A device for mechanically removing a foreign substance-containing layer from a substrate material of a disk-shaped information carrier, comprising:

a tool bottom part having a surface provided with a receiving fixture in a form of an indentation of a shape corresponding to a shape of a disk-shaped information carrier for fixing said disk-shaped information carrier;

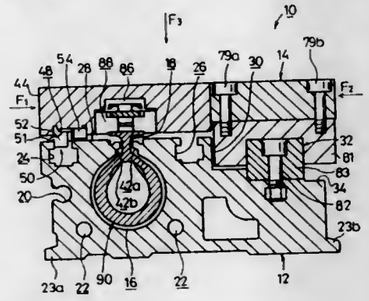
a tool top part having a blade and being displaceable along a path parallel to, and spaced from the surface of the tool bottom part so as to cut the disk-shaped information carrier in a cutting direction parallel to the surface of the tool bottom part by a pre-determined depth of cut, said tool top part being further provided with a hold-down clamp which is guided on the disk-shaped information carrier during a cut and is disposed in front of the blade in the cutting direction.

5,619,899

RODLESS CYLINDER

Go Asai; Kazuhiro Iida, and Michikazu Miyamoto, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 554,404
Claims priority, application Japan, Nov. 14, 1994, 6-279057
Int. Cl.[6] F01B *29/00*
U.S. Cl. 92—88 **17 Claims**



1. A rodless comprising:

a cylinder tube having fluid pressure inlet/outlet ports;

a piston disposed in said cylinder tube and reciprocating therein in response to a fluid under pressure supplied through one of said fluid pressure inlet/outlet ports;

a slide table coupled to said piston and being displaceable in unison with reciprocating of said piston; and

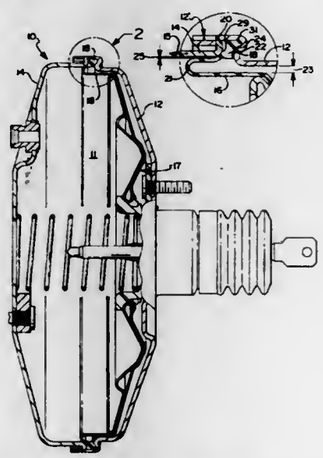
a linear guide and a table guide disposed between said cylinder tube and said slide table for bearing allotted shares of loads acting on said slide table, said table guide comprising a guide centering said slide table.

5,619,900

VACUUM BOOSTER ASSEMBLY

Bernhard Kullmann, Rochester Hills, and Joerg Scheibel, Auburn Hills, both of Mich., assignors to ITT Automotive Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 482,693
Int. Cl.[6] F01B *19/00*; F16J *3/00*
U.S. Cl. 92—98 R **5 Claims**



1. A vacuum booster assembly, comprising:

first and second booster walls defining a vacuum chamber,

a diaphragm disposed within said vacuum chamber, said diaphragm having a peripheral beaded portion and a serpentine portion intermediate its beaded periphery and a central portion,

wherein said first and second booster walls include bead engaging surfaces for sealingly engaging said diaphragm bead,

wherein said diaphragm bead is compressingly disposed between said bead engaging surfaces of said first and second walls,

an adhesive disposed between said beaded portions of said diaphragm and a bead engaging portion of at least one of said booster walls, and

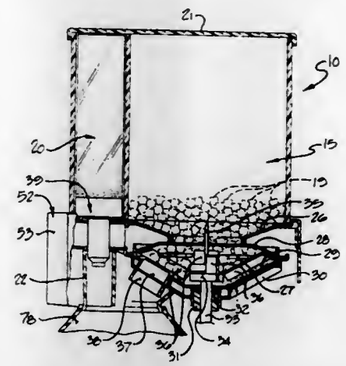
means for preventing separation of said booster walls and for maintain the diaphragm bead compressingly disposed between the bead engaging surfaces of the diaphragm walls.

5,619,901

BEVERAGE DISPENSING MACHINE

Joseph J. Reese, 2578 Thompson Dr., Marriottsville, Md. 21104, and John F. Hasson, 608-A Knollcrest Pl., Cockeysville, Md. 21030

Continuation-in-part of Ser. No. 266,502, Jun. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 959,100, Oct. 9, 1992, Pat. No. 5,323,691. This application Oct. 4, 1994, Ser. No. 317,709
Int. Cl.[6] A23L *2/00*
U.S. Cl. 99—275 **5 Claims**



1. In a beverage dispensing machine including a blender having a motor, wherein a drink mix is blended with shaved ice in the blender during a blending cycle, the improvement which comprises a plurality of beverage receptacles for a variety of respective drink mixes, means for starting the blender motor upon initiation of the blending cycle, means for dispensing a measured amount of a respective drink mix upon a first time delay following the start of the blender motor, the measured amount of the respective drink mix continuing for a first time period, thereby facilitating precise portion control, means for delivering shaved ice upon a second time delay following the start of the discharge of the measured amount of the respective drink mix, means for continuing the delivery of the shaved ice for a second time period, and means for continuing the operation of the blender motor for a predetermined duration following cut-off of the dispensing of the drink mix and the delivery of the shaved ice.

5,619,902

METHOD FOR CONTROLLING A PUMP FOR DELIVERING THE WATER IN AN APPARATUS FOR THE PRODUCTION OF BREWED BEVERAGES, AS WELL AS SUCH AN APPARATUS

Dietwald Schotte, Eschborn, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed Jun. 30, 1995, Ser. No. 497,644
Claims priority, application Germany, Jul. 29, 1994, 44 26 983.8; Sep. 23, 1994, 94 15 400.7 U
Int. Cl.[6] A47J *31/00*
U.S. Cl. 99—281 **5 Claims**

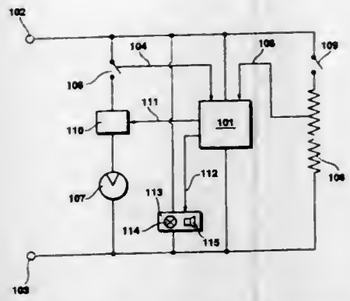
1. A machine for the production of brewed beverages, comprising:

a pump for delivering a liquid to a brewing device,

a user controlled switch which during activation generates a switch signal,

a temperature sensor which measures the liquid temperature, said temperature sensor providing a temperature signal related to the liquid temperature, and

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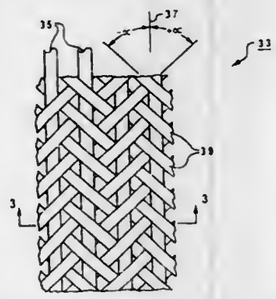
a controller which during operation receives said switch signal and said temperature signal, said controller starting said pump only if said switch signal is received after said temperature signal indicates a desired minimum temperature of the liquid.

5,619,903

BRAIDED PREFORM FOR COMPOSITE BODIES

Charles W. Rogers, Fort Worth, and Steven R. Crist, Arlington, both of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Filed Nov. 30, 1994, Ser. No. 346,742
Int. Cl.[6] D04C *1/00*
U.S. Cl. 87—7 **12 Claims**



1. A braided preform for use in a composite molding process, the preform comprising:
a braided member having a longitudinal axis and a plurality of braided axial and oblique strands of structural fiber; and
at least one elongate member having a rigidity greater than that of the strands of structural fiber, the elongate member replacing at least one of the axial strands and being intertwined into the braided strands parallel to the longitudinal axis of the braided member.

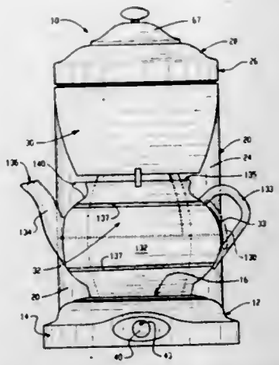
5,619,904

AUTOMATIC TEA BREWING DEVICE AND TEA POT RECEPTACLE

David Di Nunzio, Mentor, Ohio; Joseph F. Moore, Richmond, Va.; Phillip L. Brookshire, Cincinnati, Ohio; Robert A. DeMars, Woodland Hills; Spencer L. Mackay, Agoura Hills, both of Calif., and Craig Weidman, Aurora, Ohio, assignors to Healthometer, Inc., Bedford Heights, Ohio

Filed Sep. 8, 1995, Ser. No. 525,461
Int. Cl.[6] A47J *31/00*
U.S. Cl. 99—295 **30 Claims**

1. A device for brewing hot tea comprising:
a water reservoir,



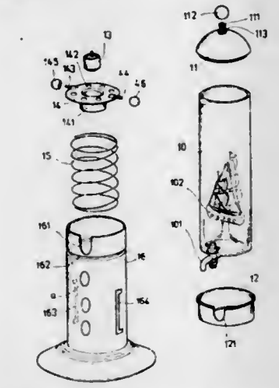
a combined water reservoir inlet and heated water distributor structure connected to and extending from of the water reservoir,
a steeping chamber supported by a swing arm hinge mounted to the water reservoir and positionable under the combined water inlet and heated water distributor structure, and
a base for a brewed tea receptacle, the base positioned forward of the water reservoir and under a brewed tea exit port in the steeping chamber.

5,619,905

APPARATUS FOR WARMING UP WINE

Sheng-Yuan Wu, P.O. Box 82-144, Taipei, Taiwan

Filed Feb. 16, 1996, Ser. No. 602,306
Int. Cl.[6] C12C *13/00*; B01F *3/12*
U.S. Cl. 99—323.3 **6 Claims**



1. An apparatus for warming up wine, comprising:
a receptacle, said receptacle comprising a peripheral top notch, an outside annular groove around the periphery adjacent to said top notch, a plurality of vertically spaced air vents and two opposite retaining slots through the periphery, and a stepped hollow base;
a spring mounted inside said receptacle and fixed to said stepped hollow base;
a cylindrical packing rubber mounted around said receptacle and fastened to the outside annular groove of said receptacle;
a glass container mounted on said cylindrical packing rubber above said receptacle for holding wine, said glass container having a tap at a bottom end thereof extending out of the side opening of said packing rubber and the top notch of said receptacle for regulating the flow of wine from said glass container;

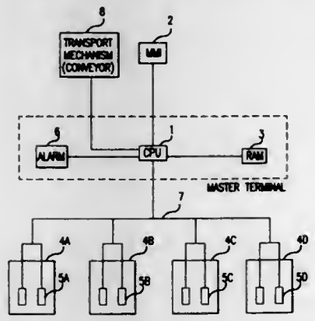
a cover covered on said glass container, said cover having a hollow upright screw rod at a top side thereof, an air vent through said upright screw rod for guiding hot air out of said glass container, and a knob threaded onto said hollow upright screw rod;
a heat source holder mounted within said receptacle and supported on said spring, said heat source holder comprising a center holding chamber, a plurality of air vents spaced around said center holding chamber, two horizontal screw rods at two opposite sides in reversed directions respectively extending out of the retaining slots of said receptacle, and two rounded nuts respectively threaded onto said horizontal screw rods to fix said heat source holder in place; and
a heat source mounted in the center holding chamber of said heat source holder and controlled to heat wine in said glass container.

5,619,906

CONTROL APPARATUS FOR AUTOMATIC COOKING APPARATUS

Takashi Ishida, Mie, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 20, 1996, Ser. No. 603,249
Claims priority, application Japan, Feb. 23, 1995, 7-034958
Int. Cl.[6] A23L *1/00*; A47J *27/62*; H05B *1/02*; G06F *17/100*
U.S. Cl. 99—344 **6 Claims**



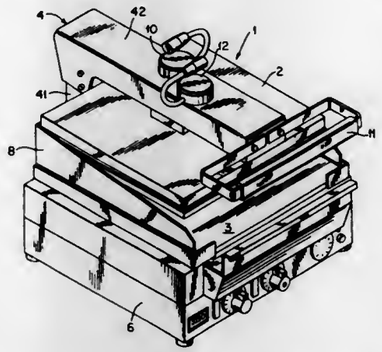
1. An automatic cooking apparatus for preparing various food items by combining plural kinds of food stuffs, comprising:
a plurality of delivery means, each delivery means storing one kind of food stuff and delivering the same;
transport means situated under the delivery means, said transport means transporting a food item during preparation to the delivery means;
input means for inputting data including a menu, combination ratios of the food stuffs for various food items and number of food item to be prepared;
storage means for storing the input data and electrically connected to the input means;
transmitting means electrically connected between the storage means and said plurality of delivery means for transmitting the input data to the delivery means;
sensors situated in the respective delivery means and electrically connected to the input means, each sensor detecting deficiency of the food stuff stored in each delivery means;
alarm means electrically connected to the input means for alarming the deficiency of the food stuff; and
control means connected to the delivery means, the transport means, the input means, the storage means and the transmitting means for controlling the same.

5,619,907

CONTACT GRILL APPARATUS

Friedhelm Orgelmacher, Soest, Germany, assignor to H. H. Scholz KG, Hamburg, Germany

Filed Jan. 5, 1995, Ser. No. 368,959
Claims priority, application Germany, Jan. 8, 1994, 9488467 U
Int. Cl.[6] A47J *37/06*
U.S. Cl. 99—351 **25 Claims**



1. An electrical contact grill apparatus for grilling food, comprising:
a fixed lower contact plate and an upper contact plate;
a central arm having a pivot axle, defining a pivot axis, and having an essentially vertical fixed portion and a pivotable portion mounted on said fixed portion, said upper contact plate being arranged on said pivotable central arm portion so as to be movable between a raised position and a lowered position; and
first and second adjustable load relieving means for relieving the weight of said upper contact plate, said first load relieving means being arranged in said fixed central arm portion and comprising at least one lever arm, one end of said lever arm being fixed to said pivot axle and pivoting about said pivot axis and the other end being attached to resilient force means including at least one spring, said lever arm being arranged to provide a maximum load relieving effect when the upper contact plate is in said raised position and a minimum load relieving effect when said upper contact plate is in said lowered position, and said second load relieving means being arranged in said pivotable central arm portion to provide a maximum load relieving affect when said upper contact plate is in the lowered position and a minimum load relieving affect when said upper contact plate is in the raised position.

5,619,908

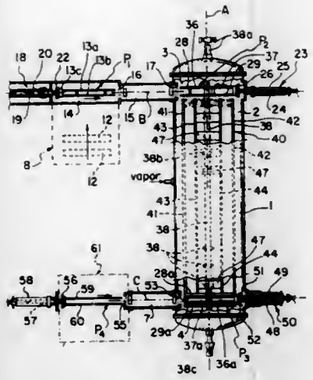
AUTOCLAVE FOR THE CONTINUOUS COOKING AND STERILIZING OF FOOD PRODUCTS IN GENERAL

Camillo Catelli, and Roberto Notari, both of Parma, Italy, assignors to Rossi & Catelli, S.p.A., Parma, Italy

Continuation of Ser. No. 479,944, Jun. 7, 1995, abandoned.
This application Jan. 24, 1996, Ser. No. 590,617
Claims priority, application Italy, Jul. 4, 1994, MI94A1392
Int. Cl.[6] A23L *3/00*;*3/02*
U.S. Cl. 99—366 **19 Claims**

1. An autoclave for continuously heat-processing food in open containers comprising: an autoclave body (1) defining a processing chamber (2) for processing the food within said body (1); said processing chamber (2) including a food inlet region (3), a food heat-processing region and a processed food outlet region (4); an aperture (17, 53) formed in each of said inlet region (3) and said outlet region (4); first and second air-lock chambers (15, 7) arranged externally of said autoclave body (1) and communicating

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through said apertures (17, 53) with said inlet region (3) and said outlet region (4) respectively; said apertures (17, 53) being fitted with valve closure members (26, 52); a conveyor (40) inside the processing chamber (2) for transferring the open containers of food from said inlet region (3) through said heat-processing region to said outlet region (4) whereby the food in the open containers is processed; a first transfer device (P_1) in communication with said first air-lock chamber (15) for introducing the open containers of food into the first air lock chamber (15); a second transfer device (P_2) in said processing chamber (2) for transferring the open containers of food from said first air-lock chamber (15) to said inlet region (3); a third transfer device (P_3) in said processing chamber (2) for transferring the open containers of processed food from said outlet region (4) to said second air-lock chamber (7); and a fourth transfer device (P_4) in communication with said second air-lock chamber (7) for withdrawing the open containers of processed food from the second air-lock chamber (7).

5,619,909

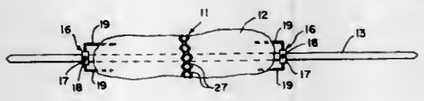
FASTENER FOR SECURING MEAT TO A ROTISSERIE SPIT

Daniel J. Volk, Alpharetta, Ga., assignor to Volk Enterprises, Inc., Turlock, Calif.

Filed Dec. 1, 1995, Ser. No. 566,127

Int. Cl.[6] A47J *37/04*

U.S. Cl. 99—419 **20 Claims**



1. A fastener for securing meat to a rotisserie spit comprising a thin elongate strap made from flexible plastic, the thin elongate strap having first and second end portions and a central portion extending between the end portions, the central portion having a large transverse dimension relative to the meat to provide a surface with a significant area for engaging the meat and inhibiting the central portion from embedding in the meat during cooking and cooperative interengaging means carried by the end portions for quickly securing the end portions together to retain the meat on the rotisserie spit during cooking.

5,619,910

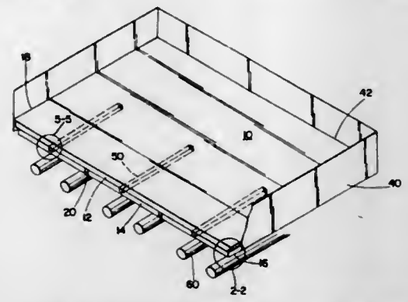
LAMINATED GRIDDLE TOP

Craig A. Farnsworth, Chagrin Falls; Michael A. Aronov, Beachwood; Jeff J. Verlinden, Parma; Roger D. Sheridan, Wadsworth, all of Ohio; Douglas J. Horton, Lombard, and Charles W. Herring, Capron, both of Ill., assignors to Keating of Chicago, Inc., Capron, Ill.

Filed Jan. 4, 1996, Ser. No. 582,873

Int. Cl.[6] A47J *37/10;* **H05B** *3/00*

U.S. Cl. 99—422 **9 Claims**



1. A griddle top structure comprising an upper plate formed from a substantially heavy gauge ferrous material, a plurality of lower plates each formed from a substantially heavy gauge material dissimilar from the material comprising said upper plate and having a substantially high thermal conductivity, said plurality of lower plates being operatively attached to said upper plate and arranged in a side by side relationship so as to be substantially parallel to one another with a gap between the edges of adjacent lower plates, at least one of said lower plates within said plurality of lower plates having a channel formed therein, said channel being positioned adjacent the upper surface of said at least one of said lower plates within said plurality of lower plates, a temperature sensing device received within said channel within said at least one of said lower plates within said plurality of lower plates, means for biasing said temperature sensing device within said channel against the lower surface of said upper plate, and at least one gas-fired burner positioned in a spaced-apart relationship with respect to said plurality of lower plates.

5,619,911

OVEN FOR CONTINOUS BAKING OF BREAD, VIENNESE BREAD, PASTRY PRODUCTS AND THE LIKE

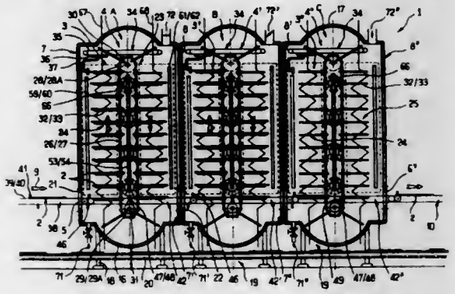
René Voegtlin, Oberhausbergen, France, assignor to Mecatherm, Schirmeck, France

Filed Oct. 31, 1995, Ser. No. 550,792

Claims priority, application France, Nov. 7, 1994, 94 13506

Int. Cl.[6] A21B *1/46;1/24;* **A21D** *8/00;* **A21C** *11/00*

U.S. Cl. 99—443 C **13 Claims**



1. An oven for continuous baking of baked goods, said oven comprising:

(A) a plurality of juxtaposed modules, each of said modules comprising:
- (1) a baking chamber, said baking chamber having an inlet opening and an outlet opening;
- (2) a plurality of holders for holding the baked goods thereon;
- (3) means for conveying said plurality of holders within said baking chamber from a position proximate said inlet opening to a position proximate said outlet opening, said means for conveying comprising:
  - (a) a noria, said plurality of holders being arranged on said noria, said noria comprising an ascending path and a descending path, each of said ascending path and said descending path comprising an upper end and a lower end;
  - (b) means for intermittently driving said noria within said baking chamber;
  - (c) means for transferring holders from a location proximate the upper end of the ascending path of said noria to a location proximate the upper end of the descending path of said noria;
  - (d) a transfer conveyor simultaneously extending under said ascending path of holders and under said descending path of holders;

(B) a said inlet opening of said plurality of modules being dimensioned and positioned to coincide with a respective one of a said outlet opening of a preceding one of said plurality of juxtaposed modules, said inlet openings and said outlet openings having minimal dimensions to enable supplying a said module with said holders, to enable transferring said holders from a said module to another said module and to enable feeding out said holders at said outlet opening of a most downstream module;

(C) means surrounding said inlet openings and said outlet openings of said modules for connecting each said module to be integral with a preceding and/or following module of said plurality of juxtaposed modules; and

(D) a feed-in conveyor for feeding said holders to said inlet opening of a most upstream module for enabling said holders to be taken over by said means for conveying said holders within said baking chamber of said most upstream module;

wherein said transfer conveyor of each of said modules is configured and arranged to selectively:

receive holders from said noria at the bottom of said descending path of said noria of a given module and to evacuate said holders from said baking chamber of said given module; and

receive holders from said feed-in conveyor, or from an upstream transfer conveyor of a juxtaposed module, and to evacuate said holders from said baking chamber of said given module without being conveyed by said noria of said given module.

5,619,912

PITTING KNIFE DRIVE ASSEMBLY WITH BOX CAM AND CHERRY PITTING APPARATUS INCLUDING SAME

Klaus Silbermann, Sunol, Calif., assignor to Ashlock Company, a Division of Vistan Corporation, San Leandro, Calif.

Filed Apr. 26, 1996, Ser. No. 634,896

Int. Cl.[6] A23N *3/00;4/00;4/02;4/08*

U.S. Cl. 99—559 **16 Claims**

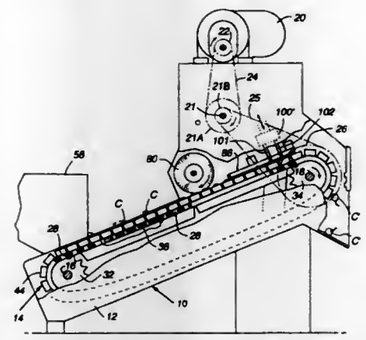
1. A pitting knife drive assembly for driving pitting knives of a fruit pitting apparatus, said pitting knife drive assembly including:

a box cam;

a means for rotating the box cam;

a pivot unit engaged with the box cam so that the pivot unit undergoes reciprocating pivoting motion in response to rotation of the box cam; and

a set of one or more pitting knife mounting shafts, wherein each of the pitting knife mounting shafts has a longitudinal axis



and is engaged with the pivot unit so as to reciprocate longitudinally in response to the reciprocating pivoting motion of the pivot unit.

5,619,913

METHOD AND APPARATUS FOR CHANGING DIES IN THERMOFORMING PRESSES

Pietro Padovani, Verona, Italy, assignor to Isap Omv Group SPA, Parona, Italy

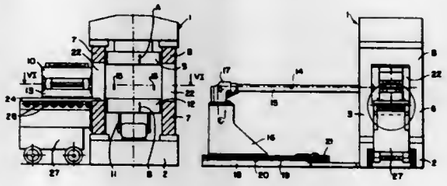
PCT No. PCT/EP93/03699, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO94/26509, PCT Pub. Date Nov. 24, 1994

PCT Filed Dec. 27, 1993, Ser. No. 537,808

Claims priority, application Italy, May 11, 1993, 93A044

Int. Cl.[6] B30B *15/30*

U.S. Cl. 100—35 **22 Claims**



1. A method for fitting or replacing dies in thermoforming equipment provided with a base, a supporting structure supported by the base, a supporting head for at least one counter-die supported by the supporting structure, a supporting table for at least one die supported by the base beneath the supporting head, actuation means for the head and for the supporting table to control a sequence of controlled insertion and withdrawal movements between the head and the supporting table to cause said at least one die to move relative to the corresponding counter-die, feed means for a sheet of thermoformable material for said at least one die designed to operate synchronously with said actuation means and including a pair of longitudinal members to advance the sheet in a transverse direction with respect to the direction of relative movement of the said at least one comprising withdrawing the longitudinal members into a waiting position, laterally displacing said at least one counter-die closed against the said at least one die in a direction transverse to that of the longitudinal members advancing the longitudinal members from the waiting position to a working position.

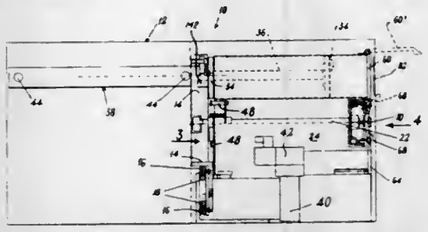
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5,619,914

SORTER-COMPACTOR FOR URBAN REFUSE

Jean P. Pontarollo, 32, Via Manzoni - 20091 Bresso, Milan, Italy

Filed Aug. 16, 1995, Ser. No. 515,810
Claims priority, application Italy, Aug. 18, 1994, MI94A1754
Int. Cl.[6] B30B *15/14;9/30*
U.S. Cl. 100—49 20 Claims



1. A sorter-compactor (**10**;**110**) for urban refuse, comprising:

a sorting drum (**24**;**124**) rotatable about its axis (**22**), the drum being provided with at least two compartments (**26**,**28**,**30**,**32**) of identical shape and dimensions, of which each compartment, intended to receive one type of refuse, extends parallel to the axis of rotation (**22**) of the drum (**24**;**124**), has a constant cross-section along its entire length and has at least one of its two open ends closable by a relative cover (**60**,**62**,**64**,**66**;**160**,**162**,**164**,**166**); and

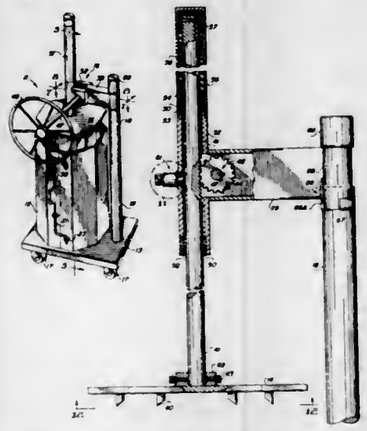
a compacting device (**34**,**38**;**138**) comprising a presser plate (**34**) slidable in two directions within any one of the compartments (**26**,**28**,**30**,**32**) when the presser plate (**34**) is located in correspondence with that compartment, and an actuator (**38**;**138**) for operating the presser plate (**34**) in the two directions so as to cause said presser plate (**34**) to move within said compartments (**26**,**28**,**30**,**32**) and compress the refuse contained in the relative compartment against the corresponding closure cover (**60**,**62**,**64**,**66**;**160**,**162**,**164**,**166**).

5,619,915

MANUAL TRASH COMPACTOR

William E. Wagner, Satellite Beach, and K. N. Singh Chhatwal, West Melbourne, both of Fla., assignors to Pack-A-Drum, Inc., Satellite Beach, Fla.

Filed Sep. 29, 1995, Ser. No. 536,528
Int. Cl.[6] B30B *9/30*
U.S. Cl. 100—98 R 22 Claims



1. A manually operated trash compactor, comprising:

(a) a refuse container with vertically disposed sides forming an opening, said container mounted on a platform;

(b) a compaction plate disposed over the opening of the container, said compaction plate selectively adjustable downward into the container from a starting position;

(c) a rack gear and pinion gear assembly with said compaction plate mounted to the rack gear;

(d) means, connected to the rack gear and pinion gear assembly, for actuating the pinion gear in a direction to drive the rack gear and compaction plate downward into the container;

(e) means, mounted in the rack gear and pinion gear assembly, for automated retraction of the rack gear and compaction plate to a starting position;

(f) said refuse container includes a first section fixed to the platform and a second section pivotally attached to said first section;

(g) latch means mounted on the container for maintaining the first and second container section in a closed position; and

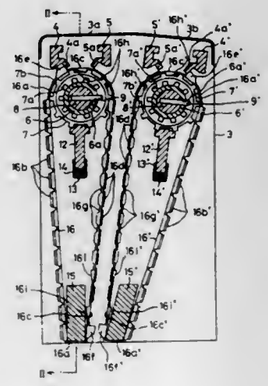
(h) said latch means includes a pair of brackets vertically aligned on the container first section and a pair of brackets vertically aligned on the second section, and a handle integral with an upper bar member and lower bar member, with said disposed intermediate the brackets on the second section and each said bar member extending through a bracket on the second section of the container, and each said bar member having an L-shaped member for engagement with a corresponding bracket on the first section of the container.

5,619,916

PRINTER WITH A MECHANISM FOR IDLING SETTING WHEELS

Kiyoyuki Sekine, Ageo, Japan, assignor to Shinsei Industries Co., Ltd., Japan

PCT No. PCT/JP93/01681, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO94/12350, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 17, 1993, Ser. No. 256,116
Claims priority, application Japan, Nov. 20, 1992, 4-352262
Int. Cl.[6] B41J *1/60*
U.S. Cl. 101—111 8 Claims



1. A printer comprising:

a display window;

a plurality of setting wheels rotatably disposed adjacent to said display window, each of said plurality of setting wheels having teeth formed at equal intervals on respective outer circumferential surfaces thereof;

a printing type receiver opposingly arranged in spaced relation to said setting wheels;

a plurality of endless printing type belts, each printing type belt being stretched around one of said plurality of setting wheels and said printing type receiver, each of said plurality of endless printing type belts including:

a first convexity and a second convexity protruding from separate locations on an outer circumferential surface of said endless printing type belt, said first and second convexities dividing said outer circumferential surface of said endless printing type belt into first and second regions;

a plurality of printing types disposed on an outer circumferential surface in said first region;

a plurality of indicating types disposed on an outer circumferential surface in said second region; and

a plurality of recesses, disposed on an inner circumferential surface in said second region, for respectively engaging the teeth of each of said setting wheels, each of said endless printing type belts being rotatable in accordance with a rotation of a corresponding setting wheel;

a setting shaft for selectively engaging at least one of said plurality of setting wheels;

a knob coupled with said setting shaft for maneuvering said setting shaft; and

stop means, engageable with said convexities, for preventing said printing type belts from rotating when one of said two convexities meets said stop means in accordance with a rotation of each of said endless printing type belts;

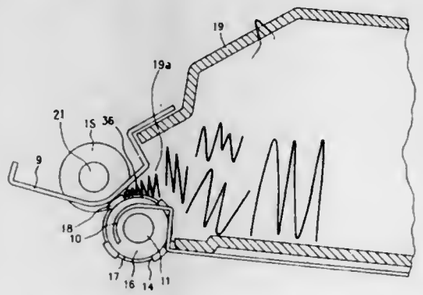
wherein said plurality of recesses disposed in said second region, includes at least one recess located adjacent to a respective longitudinal end of said second region, said at least one recess having a wall formed as a slanted surface rising gradually in a longitudinally inward direction relative to said second region to allow the teeth of one of said setting wheels to slide thereon, thereby causing said one setting wheel to rotate idly in response to a rotating force applied thereto in one direction.

5,619,917

STENCIL DISCHARGE APPARATUS

Shinichi Takahira, Ryugasaki, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Continuation of Ser. No. 352,769, Dec. 2, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,553
Claims priority, application Japan, Dec. 6, 1993, 5-305435
Int. Cl.[6] B41L *13/04*
U.S. Cl. 101—116 11 Claims



1. A combination comprising a stencil discharge apparatus, a stencil with side ends and lateral end portions arranged on both sides of the side ends, and a printing drum, said stencil discharge apparatus discharging the stencil mounted on the printing drum and comprising:

two shafts arranged at a predetermined distance away from each other and situated near and parallel to the printing drum,

a plurality of rotators mounted in pairs on said two shafts, said rotators, when rotated, gripping one of the side ends of the stencil to remove the stencil from the printing drum and carrying the stencil therefrom,

a receiving section situated near the shafts for receiving the stencil removed from the printing drum and carried by the rotators, and

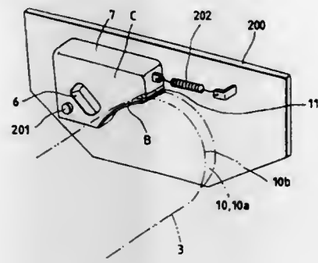
different-diameter rotators mounted on both ends of one of said two shafts outside the rotators and facing the lateral end portions of the stencil disposed on the printing drum in a direction of width of the stencil to be conveyed, each different-diameter rotator including a small diameter portion having an outside diameter not larger than that of one of the rotators, and a large-diameter portion having an outside diameter larger than that of the small-diameter portion and less than a distance to the shaft facing thereto, said small and large diameter portions having sections alternately arranged on an outer surface of the different-diameter rotator so that the lateral end portions of the removed stencil do not remain on the different-diameter rotators when a subsequent stencil is newly discharged into the receiving section.

5,619,918

STENCIL PRINTING DRUM STRUCTURE

Hideo Negishi; Toshimitsu Sakai, and Yasuhiro Takahashi, all of Ibaraki, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 627,092
Claims priority, application Japan, Apr. 3, 1995, 7-077772; Jul. 28, 1995, 7-193372
Int. Cl.[6] B41L *13/00*
U.S. Cl. 101—120 9 Claims



1. A stencil printing drum structure comprising:

a drum including a cylindrical wall portion having an ink-permeable region;

an ink supply roller provided in parallel to said drum, said ink supply roller being rotating around an axis parallel to the center axis of said drum and in contact with the inner circumferential surface of said drum;

an ink application roller provided in parallel to said ink supply roller to form an ink reservoir portion between said ink application roller and said ink supply roller, for applying ink onto a surface of said ink supply roller in accordance with rotating said ink supply roller;

a pair of strap-like step portions including cylindrical surfaces extending from opposite ends of said ink supply roller respectively along the whole circumference of said ink supply roller, each of said cylindrical surface having an external diameter smaller than the external diameter of said ink supply roller;

a pair of ink dams each of which has a first inclined surface slidably touching said cylindrical surface of corresponding one of said strap-like step portions for leading ink leaking onto the strap-like step portion into said ink reservoir portion; and

pressing means having elastic force for urging said ink dams against said cylindrical surfaces of said strap-like step portions respectively.

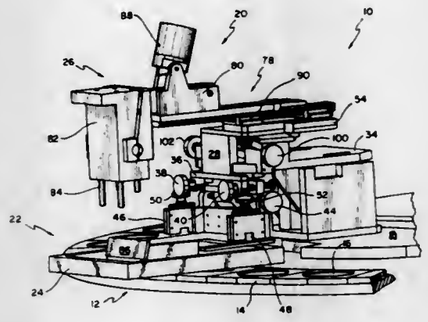
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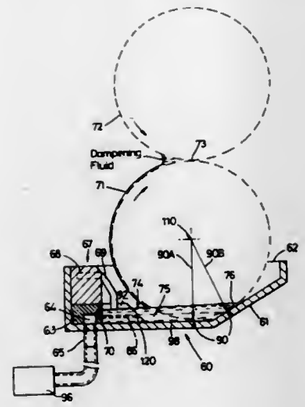
5,619,919

SILK-SCREEN PRINT HEAD FOR THE PRINTING OF HALFTONES ON THE SURFACE OF A SUBSTRATE

William M. Karlyn, Lynnfield; Edward J. Berry, Revere, and James J. McGrath, Townsend, all of Mass., assignors to Autoroll Machine Corporation, Middleton, Mass.

Filed Feb. 13, 1995, Ser. No. 388,105
Int. Cl.[6] B41F *15/08*
U.S. Cl. 101—123 **14 Claims**





1. A print head for use in the silk-screen printing of halftones on the surface of a circular-shaped compact disc, an annular-shaped rotatable transport member defined by a top surface, a compact disc fixture being provided on said top surface, a well being provided in said compact disc fixture, said well being defined by a circular-shaped peripheral surface and a centerpoint comprising:

(a) a squeegee assembly comprising a horizontally disposed elongated slide member defined by a front end and a back end and a squeegee being mounted to the front end of the slide member;

(b) a horizontally disposed silk-screen frame, and a mounting means for said silk-screen frame comprising a horizontally disposed mount plate defined by a front edge;

(c) a horizontally disposed skew plate defined by top and bottom planar surfaces and by a front edge, the top surface of said skew plate being connected to the slide member;

(d) a vertically disposed hangar plate defined by top and bottom edges and by a front side and a back side, said top edge of the hangar plate being fixedly connected to said skew plate and the bottom edge of the hangar plate being fixedly connected to the mount plate of the silk-screen frame mounting means whereby the squeegee assembly and silk-screen frame are fixedly connected together and will on rotation of said squeegee assembly cause the same rotation in said silk-screen frame; and

(e) means for causing rotation of said squeegee assembly.

5,619,920

FOUNTAIN SOLUTION SUPPLY SYSTEM

John MacPhee, Rowayton, Conn., assignor to Baldwin Graphic Systems, Inc., Shelton, Conn.

Continuation of Ser. No. 184,775, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 876,961, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 711,314, Jun. 6, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,706
Int. Cl.[6] B41F *7/02;7/26;7/32*
U.S. Cl. 101—141 **8 Claims**

1. A dampening system for minimizing contamination of dampening fluid in a lithographic press by minimizing the residence time of the dampening fluid in the dampening system, comprising:

(a) a rotating plate cylinder on said lithographic press,

(b) dampening fluid applying means for applying dampening fluid to said plate cylinder at a pre-determined rate,

(c) said dampening fluid applying means consisting of a pair of rotating rollers which rotate at a slower speed than said plate cylinder, said pair of rollers defining a nip therebetween,

(d) a fluid collection pan positioned so that one of said pair of rollers is at least partially immersed within a volume of fluid in said fluid collection pan wherein said pan contains a volume of dampening fluid which is a small fraction of the volume of dampening fluid which is consumed by said press at said pre-determined rate over one hour, said fluid collection pan having communicating back and front regions,

(e) means for rotating said partially immersed roller to cause dampening fluid flow to said nip and flooding of said nip sufficient to supply said pre-determined rate of fluid,

(f) means for maintaining a pre-determined distance relationship between the surface of said partially immersed roller and at least two surfaces of said fluid collection pan, said pre-determined distance being the minimum necessary to permit contaminating ink particles to be moved from said back to said front regions of said collection pan for removal by said partially immersed roller,

(g) dampening fluid supply means for supplying a pre-determined supply of dampening fluid at said pre-determined rate to said collection pan, and

(h) sensor means extending into said fluid collection pan to control said fluid supply means, said sensor means determining the proper level of fluid within said collection pan to avoid nip starvation at said nip while supplying dampening fluid at said pre-determined rate.

5,619,921

WIDTH ADJUSTING DEVICE AND METHOD FOR A PAPER WEB

Takashi Iijima, Yokosuka, and Hideo Ohta, Tokyo, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 41,195, Apr. 1, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,155
Claims priority, application Japan, Jul. 28, 1992, 4-220867
Int. Cl.[6] B41F *5/06*
U.S. Cl. 101—181 **22 Claims**

1. A printing system comprising:

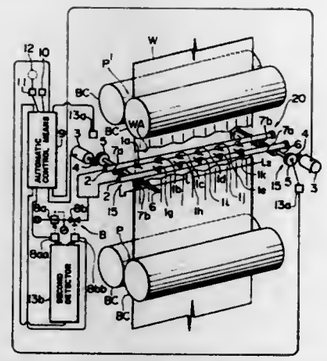
dampening means for applying water to a paper web to be printed.

first and second vertically arranged printing sections for successively printing an image on the paper web; and

a web width adjusting device including a wave forming means between which the paper web vertically travels from the first to the second printing section, said wave forming means including a first support member operatively connected to a second support member by at least one guide member, said first support member and said second support member, respectively, having a first and second plurality of fluid ejectors which are located in substantially the same position in a longitudinal direction of the paper web and which are aligned in the width direction of the paper web;

wherein said first plurality of fluid ejectors have one alignment having a given interval between the fluid ejectors, and face alternately said second plurality of fluid ejectors which have another alignment so that each fluid ejector of the second plurality is positioned at the center of the interval between a respective pair of fluid ejectors of the first plurality; and

wherein every fluid ejector of the first plurality and the second plurality applies an operative force to the paper web at a different position along said width direction of the paper web.

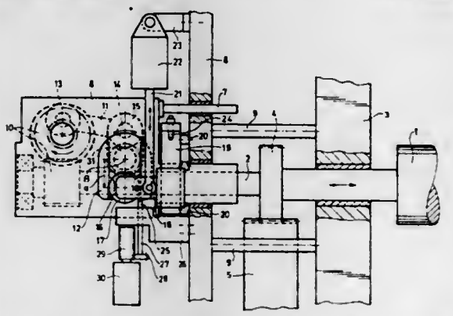


5,619,922

DEVICE FOR MOVING ROLLERS IN A PRINTING PRESS

Carsten Kelm, Mannheim, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 27, 1995, Ser. No. 563,060
Claims priority, application Germany, Nov. 28, 1994, 44 42 302.0
Int. Cl.[6] B41F *5/00*
U.S. Cl. 101—216 **24 Claims**



1. In a printing press comprising a frame, a plate cylinder being rotatably mounted with respect to said frame, a blanket cylinder being rotatably mounted with respect to said frame and having means for being engaged with said plate cylinder during operation of said printing press, at least one roller having a rotational axis and being mounted, with respect to said frame, for rotation about the rotational axis, and means for rotating said at least one roller about the rotational axis, apparatus for displacing said at least one roller, said apparatus comprising:

means for displacing said at least one roller, simultaneously with the rotation of said at least one roller, in a direction substantially parallel to the rotational axis of said at least one roller, to laterally oscillate said at least one roller over a determinable lateral stroke;

said means for displacing comprising:

means for varying the determinable lateral stroke of said at least one roller during the running of said printing press and the rotation of said at least one roller;

said means for varying the determinable lateral stroke comprising means for determining the determinable lateral stroke;

said varying means comprising means for varying the stroke of said at least one roller over a substantial portion of a maximum stroke of said at least one roller during the running of said printing press and rotation of said at least one roller, and changing the stroke of said at least one roller from a minimal stroke to a maximum stroke; and

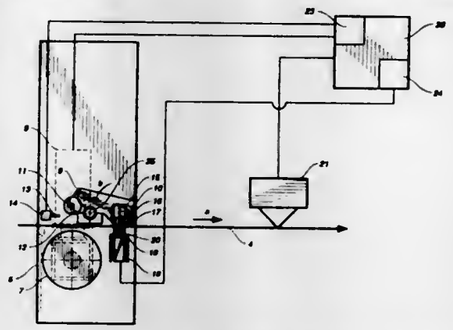
said varying means comprising means for transmitting a pendulum motion to at least one portion of said means for displacing during the running of said printing press and rotation of said at least one roller.

5,619,923

DEVICE FOR PREVENTING DAMAGE IN PRINTING UNITS

Werner J. Kotterer, Diedorf, Germany, assignor to Acrotec GmbH, Diedorf, Germany

Filed Aug. 3, 1995, Ser. No. 511,071
Claims priority, application Germany, Sep. 14, 1994, 44 32 659.9
Int. Cl.[6] B41F *13/60*
U.S. Cl. 101—226 **6 Claims**



1. An apparatus for preventing damage to a rotary printing press having a web passing at a speed and in a direction therethrough, the apparatus comprising:

a printing unit;

a dryer;

a web catcher having a take up roll and a motor means, said motor means for driving said take up roll at a peripheral speed in excess of the speed of the web;

a severing and halting means positioned on a side of said web catcher between said web catcher and said dryer, said web catcher and said severing and halting means positioned between said printing unit and said dryer; and

web tear detector means positioned on a side of said severing and halting means opposite said web catcher, said web tear detector means for transmitting a signal to said web catcher and to said severing and halting means upon detecting a tear in the web, said severing and halting means for severing the web upon receipt of the signal from said web tear detector means, said take-up roll receiving the web thereon upon receipt of the signal, said web detector means further comprising:

a sensor means positioned adjacent the web for scanning the web without contact therewith; and

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control means electricity connected to said sensor means and to said web catcher and said severing and halting means, said control means for actuating said web catcher and said severing and halting means upon receiving the signal from said sensor means; and

time delay means electricity connected to said control means, said time delay means for delaying the actuation of said severing and halting means until after the actuation of said web catcher.

5,619,924

Patent Not Issued For This Number

5,619,925

CLEANING DEVICE FOR CYLINDERS OF A PRINTING PRESS

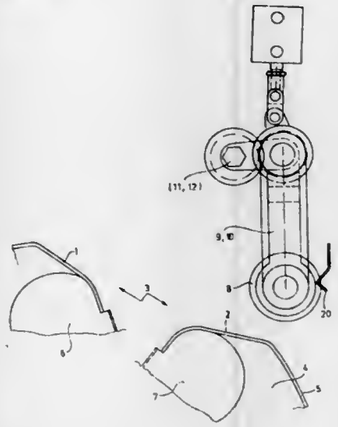
Kari-Heinz Seefried, Zuzenhausen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 8, 1995, Ser. No. 437,277

Claims priority, application Germany, May 6, 1994, 44 16 127.1

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—423 **5 Claims**



1. Cleaning device for a cylinder of a printing press wherein the cylinder is formed with at least one cylinder gap open at the cylinder circumference and extending in the direction of the cylinder axis, the cleaning device including a beam and a cleaning tool mounted on said beam extending over the length of the cylinder gap, and said tool being mounted to be movable transversely to the cylinder axis against the cylinder and into the cylinder gap, comprising a swivel shaft disposed parallel to the axis of the cylinder, said cleaning tool being connected to said swivel shaft so as to be swivelable thereabout into engagement with the cylinder and into said cylinder gap for brushing against walls defining the cylinder gap and removing adhering dirtied cleaning liquid therefrom

5,619,926

DEVICE FOR SUPPLYING PRINTING PLATES IN A PRINTING MACHINE

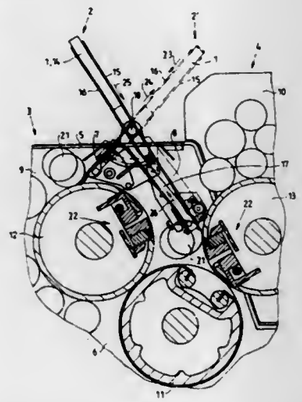
Rüdiger Engelmann, Rauenberg; Hans-Jürgen Kusch, Neckargemünd; Paul Nicola; Peter Marten, both of Heidelberg; Rudi Stelzberger, Kronau; Volker Bergen, Wiesloch, and Bernd Ruf, Weiterstadt, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Oct. 13, 1995, Ser. No. 543,158

Claims priority, application Germany, Oct. 13, 1994, 44 36 559.4

Int. Cl.[6] B41F *27/06*

U.S. Cl. 101—477 **16 Claims**



1. In combination with a printing press having a plurality of plate cylinders, a device for supplying printing plates to the plate cylinders of the printing press, comprising:

a plate-holding device disposed at the printing press for holding and guiding a printing plate, and means operatively associated with said plate-holding device for allowing said plate-holding device to be brought into different plate-changing positions at least two printing units, for selectively supplying printing plates to the at least two printing units, wherein the printing cylinders of the printing press have a cylinder guard, and said plate-holding device is swivellably mounted on said cylinder guard.

5,619,927

METHOD OF PRINTING A MATERIAL WEB

Stefan Winhein, Frankfurt, Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Germany

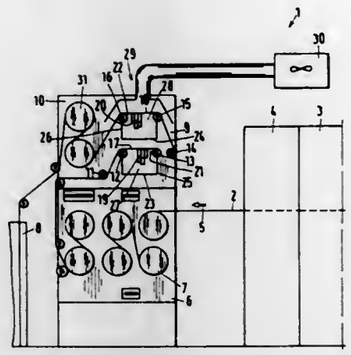
Filed Aug. 30, 1995, Ser. No. 521,306

Claims priority, application Germany, Sep. 2, 1994, 44 31 252.0

Int. Cl.[6] B41F *23/04*

U.S. Cl. 101—487 **7 Claims**

1. A method of printing a paper web the method comprising applying ink to the paper web, subsequently drying the paper web with the use of heat and subsequently cooling the paper web, further comprising, after cooling and prior to further processing, moistening the paper web while simultaneously applying heat to the paper web, and subsequently once again cooling the paper web.



5,619,928

APPARATUS FOR TRANSPORTING AN ASSEMBLED TRACK SECTION

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed May 5, 1995, Ser. No. 435,545

Claims priority, application Austria, May 10, 1994, 978/94

Int. Cl.[6] E01B *29/02*

U.S. Cl. 104—3 **10 Claims**



1. A mobile apparatus for loading and transporting an assembled track section consisting of rails fastened to ties and for laying the track section on a track bed, which comprises

(a) a track section hoisting device comprising

(1) an elongated carrier frame extending in the longitudinal direction of the track bed,

(2) pairs of lifting jacks spaced from each other in said direction, and

(3) drive means for vertically adjusting the lifting jacks between a retracted position and an extended position in which the lifting jacks support the carrier frame on the track bed,

(b) an elongated transport car for supporting an assembled track section and the hoisting device, the transport car being movable in said direction independently of the hoisting device and having two opposite ends spaced from each other in said direction,

(c) the elongated carrier frame and transport car each being comprised of two parts connected by a pivot between the opposite ends for pivoting the parts relative to each other about a vertical axis,

(d) track-bound undercarriages and vertically adjustable off-track undercarriages adjacent each end and the pivot of the transport car, and

(e) one of the pairs of lifting jacks being arranged adjacent the pivot of the carrier frame.

5,619,929

TRACK TAMPING MACHINE, MACHINE ARRANGEMENT AND METHOD

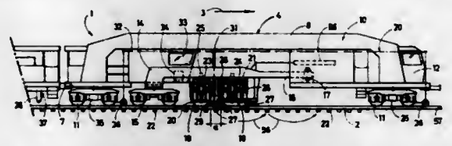
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 21, 1996, Ser. No. 604,662

Claims priority, application Austria, Mar. 7, 1995, 397/95

Int. Cl.[6] E01B *27/17*

U.S. Cl. 104—12 **22 Claims**



1. A track working system comprising a machine arrangement riding on rails fastened to ties embedded in ballast and defining a distance therebetween, which comprises

(a) a machine frame extending in a longitudinal direction and supported on undercarriages on the rails for movement in an operating direction,

(b) two successive tamping tool assemblies spaced from each other in the longitudinal direction so that each respectively tamps the ballast under two successive ties of a pair of ties while leaving a single untamped central tie located between the respective pairs of ties being tamped by the two tamping assemblies, each tamping tool assembly comprising

(1) two tamping tools adjacent each other in the longitudinal direction and reciprocable in said direction from an initial position to a tamping position, the two tamping tools defining the distance between the ties in the initial position, and the tamping tools of the two tamping tool assemblies adjacent each other being spaced a fixed distance corresponding to the distance between the ties, and

(2) a reciprocating drive connected to the two tamping tools,

(c) a track lifting and lining unit, and

(d) a reference system for controlling a correction of the position of the track.

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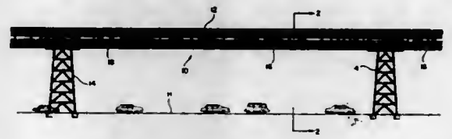
HIGH SPEED TRANSPORTATION SYSTEM

Constantin Alimanestiano, 2015 Blowing Rock Rd., Boone, N.C. 28607

Continuation-in-part of Ser. No. 314,283, Sep. 30, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,910

Int. Cl.[6] B61B *13/10*

U.S. Cl. 104—138.1 **20 Claims**



1. A high speed transportation system comprising: a self-supporting tubular conduit and a train, said train formed of a plurality of units, including at least one transport capsule and a drive vehicle for propelling the train through said tubular conduit;

said conduit including longitudinal bearing surfaces extending the length thereof;

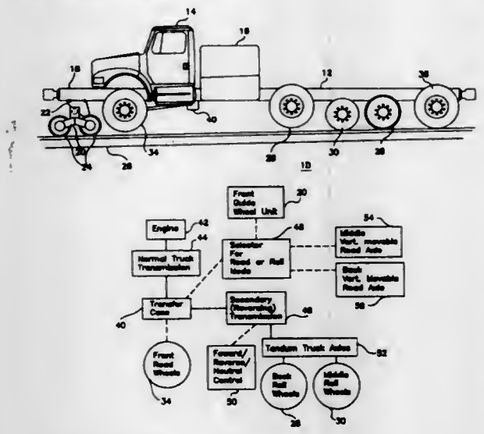
said transport capsule and said drive vehicle including anti-friction bearing members formed on outer surfaces thereof and structured to engage said longitudinal bearing surfaces on said conduit;

said longitudinal bearing surfaces and said anti-friction bearing members being complimentary and aligned for guiding said train through said conduit; and,

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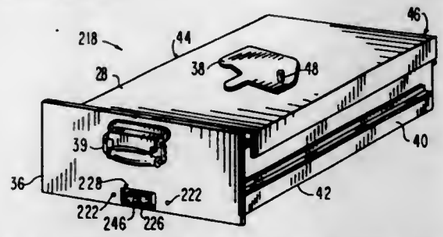
said longitudinal bearing surfaces being further defined by having a concave shape corresponding to the inner diameter of said tubular conduit and said anti-friction bearing members being further defined by having a semi-hemispherical convex shape for cooperation with said longitudinal bearing surfaces.

5,619,931
ROAD AND RAIL USING RAIL WHEEL DRIVE AND APPARATUS
Harry Madison, Memphis, Tenn., assignor to Harsco Corporation, Wormleysburg, Pa.
Filed Jul. 21, 1995, Ser. No. 505,025
Int. Cl.[6] B61C *11/00*
U.S. Cl. 105—72.2 **19 Claims**



1. A road and rail vehicle comprising:
a vehicle frame;
at least a first right front road wheel selectively supporting a portion of the vehicle frame;
at least a first left front road wheel selectively supporting a portion of the vehicle frame;
at least a first right front rail engagement wheel selectively supporting a portion of the vehicle frame;
at least a first left front rail engagement wheel selectively supporting a portion of the vehicle frame;
at least a first right back road wheel selectively supporting a portion of the vehicle frame;
at least a first left back road wheel selectively supporting a portion of the vehicle frame;
at least a first right back rail engagement wheel selectively supporting a portion of the vehicle frame;
at least a first left back rail engagement wheel selectively supporting a portion of the vehicle frame; and
a mode controller operable to select between:
a road mode in which the road wheels engage a road and the vehicle is driven by driving road wheels of the road wheels independent of the rail wheels; and
a rail mode in which the rail engagement wheels engage rails of a railroad track, the vehicle is driven by driving rail engagement wheels of the rail engagement wheels, and all of the road wheels are offset from any surfaces therebelow; and
wherein at least some of the rail engagement wheels are flanged rail engagement wheels and wherein, in the rail mode, the vehicle is driven by driving at least some flanged rail engagement wheels; and further comprising a rail wheel unit operatively connected to the mode controller for movably supporting the right and left front rail engagement wheels for movement relative to the vehicle frame between an upper road position corresponding to the road mode and a lower rail position corresponding to a rail mode and further comprising a back road axle having the right and left back road wheels thereon and wherein the back road axle is operatively connected to the mode controller and to the vehicle frame for moving the back road wheels relative to the vehicle frame between an upper rail position and a lower road position; and wherein operation of the mode controller does not move the driving road wheels and does not move the driving rail engagement wheels.

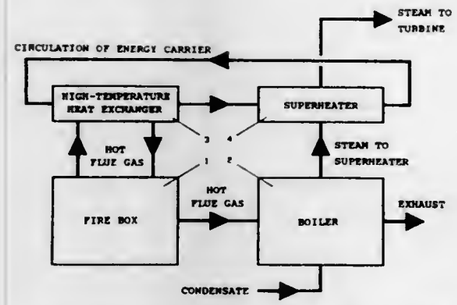
5,619,932
VAULT FOR STORING COINS AND/OR TOKENS
Richard A. Efland, Escondido, Calif., and Lawrence Ames, Ramsey, N.J., assignors to Cubic Toll Systems, Inc., Hauppauge, N.Y.
Filed Sep. 30, 1993, Ser. No. 129,435
Int. Cl.[6] G07G *5/00*
U.S. Cl. 109—24.1 **17 Claims**



1. An apparatus insertable into a coin and/or token collecting device for storing said coins and/or tokens therein, said collecting device being in communication with a central computer for transferring information relating to said apparatus and information concerning the operation of said collecting device directly to said central computer, said apparatus comprising:
a vault having a portion which is openable upon insertion into said collecting device and closeable and lockable upon removal therefrom so as to enable said coins and/or tokens to be received and stored therein;
electronic memory means including a touch memory device for storing information including the apparatus information and for supplying the apparatus information to said collecting device and to said central computer upon insertion of said apparatus into said collecting device, said touch memory device having a maximum height and being located in a recess portion on an outer surface of said vault and wherein said recess portion has a depth having a value at least equal to said maximum height.

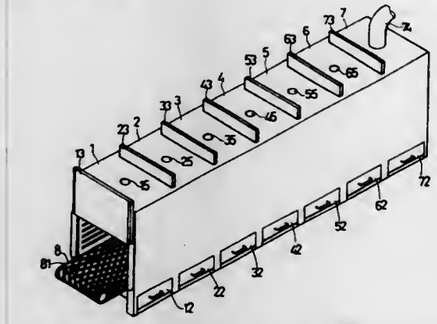
5,619,933
METHOD AND PLANT FOR PRODUCING HIGH STEAM TEMPERATURES WHEN BURNING PROBLEMATIC FUELS
Ole S. Kristensen, Kolding, Denmark, assignor to Ansaldo Volund A/S, Denmark
PCT No. PCT/DK93/00300, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO94/07006, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 17, 1993, Ser. No. 403,793
Claims priority, application Denmark, Sep. 17, 1992, 1147/92
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—234 **1 Claim**

1. Plant for producing high steam temperatures when burning fuels comprising:
a combustion space for producing hot flue gas,
a boiler adapted to be heated by the hot flue gas from the combustion space and to deliver steam to an external superheater,



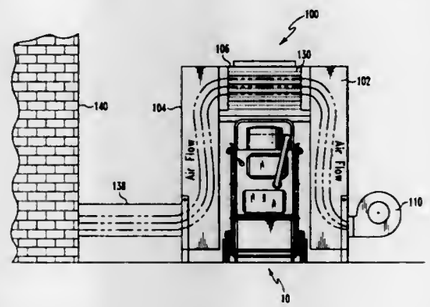
a heat exchanger having a heat-receiving side which is adapted to be heated by radiation and by the hot flue gases from the combustion space, and a heat-delivering side which is adapted to supply heat to said external superheater through a separate heat-exchange medium, the heat exchanger being built into the combustion space.
a first path for the transfer of heat from the combustion space to the boiler, and
a second path for the transfer of heat directly from the combustion space to the heat exchanger.

5,619,934
WASTE CAR DISPOSER
Chin-Ching Yen, No. 232, Sec. 2, Lu-Tsao Road, Lu-Kang, Chang-Hua Hsien, Taiwan
Filed Feb. 8, 1996, Ser. No. 598,542
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—235 **1 Claim**



1. A waste car disposing system for collecting and categorizing waste products from waste cars passing therethrough, comprising:
(a) a plurality of furnaces adjacently mounted each to the other in open series relation, said furnaces including a first furnace having an operating temperature within the range of 280° C. –300° C., a second furnace having an operating temperature within the approximating range of 320° C. –330° C., a third furnace having an operating temperature within the range of 440° C. –450° C., a fourth furnace having an operating temperature within the range of 655° C. –665° C., a fifth furnace having an operating temperature within the range of 900° C. –1,000° C., a sixth furnace having an operating temperature within the approximating range of 1,000° C. –1,100° C., and a seventh furnace having an operating temperature within the range of 1,300° C. –1,600° C. for passage of waste cars consecutively through said first through said seventh furnace, said first to sixth furnaces being filled with nitrogen;
(b) a plurality of displaceable heat insulative gate members located between said adjacently mounted furnaces;
(c) drive means coupled to each of said heat insulative gate members for reversibly displacing each of said heat insulative member to (1) an open position and (2) a closed position;
(d) a conveyor extending through said first to seventh furnaces for carrying said waste cars through said plurality of furnaces, said conveyor being formed of an open gridwork construction;
(e) a plurality of individually controlled heating elements positioned in each of said furnaces for heating said waste cars;
(f) a plurality of side-loading collecting trays slidingly mounted beneath said conveyor within each of said furnaces for collection of melted compounds of said waste cars carried by said conveyor through each of said furnaces, each of said collecting trays being covered with a screen located below said conveyor;
(g) a plurality of pressure regulators respectively coupled to said first through said sixth furnaces for controlling the internal pressure of each of said furnaces; and,
(h) a plurality of fuel injectors coupled to said seventh furnace for insert of fuel therein, said seventh furnace being coupled to a waste gas processing unit by an exhaust pipe, said waste gas processing unit including a rinse mechanism, a dust collector and a chimney.

5,619,935
PORTABLE INCINERATOR HEAT RECOVERY DEVICE AND METHOD OF USE
Donald L. Wilson, Carmi, Ill., assignor to Elastec, Inc., Carmi, Ill.
Filed Jan. 11, 1996, Ser. No. 583,826
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—241 **15 Claims**



13. A method for recovering heat from a portable incinerator, comprising the steps of:
(a) collecting material to be burned within the portable incinerator;
(b) moving the portable incinerator in order to position the portable incinerator within a heat recovery device, wherein the heat recovery device includes a heat exchanger positioned substantially over an exhaust port of the portable incinerator;
(c) igniting the material with the portable incinerator;
(d) causing the air to flow through the heat exchanger, wherein the air is heated; and
(e) causing the heated air to flow into an interior of a space to be heated.

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5,619,936

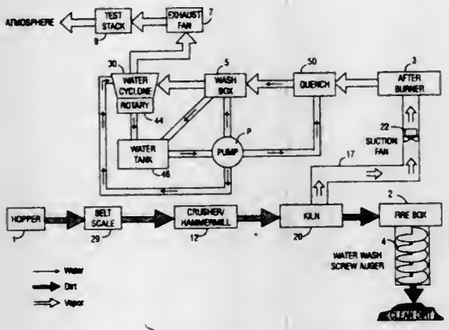
THERMAL DESORPTION UNIT AND PROCESSES

Clyde R. Veltmann, Boerne, Tex., assignor to Kleen Soil Technologies, L.C., San Antonio, Tex.

Division of Ser. No. 68,556, May 28, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,433

Int. Cl.[6] F23J *11/00;15/00*

U.S. Cl. 110—345 **26 Claims**



1. A thermal desorption process for removing contaminants from contaminated material, said process comprising the steps of:

a) providing a thermal desorption apparatus comprising:

a rotating kiln having an entrance port disposed in a front end of said rotating kiln, an exit port disposed in a rear end of said rotating kiln, and a vapor port disposed toward the top of at least one of the front or rear ends of said rotating kiln;

a quench tube having first and second ends, an interior chamber with at least one spray nozzle disposed within, an inlet disposed in said first end of said quench tube, and an outlet disposed in said second end of said quench tube, wherein said inlet is in communication with the vapor port of the rotating kiln, and wherein at least one spray nozzle is oriented in said interior chamber to face the inlet of said quench tube;

a water cyclone comprising:

an outer chamber having a perimeter, a first end, a second end, and at least one water nozzle disposed within,

an inlet tube disposed in the perimeter of said outer chamber and being in communication with the quench tube outlet,

a vapor outlet tube disposed in the first end of said water cyclone outer chamber,

an interior vapor outlet tube connected to said vapor outlet tube and being disposed within said water cylcone outer chamber, and having at least one water nozzle disposed within, said at least one water nozzle oriented to face the second end of said water cyclone outer chamber, and

a bottom outlet disposed in said second end of said water cyclone outer chamber;

b) introducing contaminated material into the rotating kiln;

c) heating the contaminated material inside the rotating kiln with a burner flame to vaporize contaminants and form particulate exit materials;

d) removing the particulate exit materials from the exit port of the rotating kiln, and removing the vaporized contaminants from the vapor port of the rotating kiln;

e) measuring at least one of the temperature of the particulate exit materials, the temperature of the kiln, or the presence of contaminants in the particulate exit materials;

f) adjusting at least one of a burner flame temperature, rotation speed of the kiln, or a relative elevation of the front end of said rotating kiln with respect to the rear end of said rotating kiln based on at least one of the measurement of the temperature of the particulate exit materials, the temperature of the kiln, or the presence of contaminants in the particulate exit materials;

g) oxidizing the vaporized contaminants to form a gas;

h) introducing the gas into the inlet of the quench tube and subjecting the gas to a spray of water from the at least one water nozzle disposed in said interior chamber and oriented to face the inlet of said quench tube;

i) removing the gas from the outlet of the quench tube, introducing the gas into the inlet tube of the water cyclone, and subjecting the gas to a spray of water from the at least one water nozzle located in the outer chamber of the water cyclone;

j) removing the gas from the vapor outlet tube of the water cylcone, wherein the gas is subjected to a spray of water from the at least one spray nozzle disposed in the interior vapor outlet tube and oriented to face the second end of the water cyclone outer chamber.

5,619,937

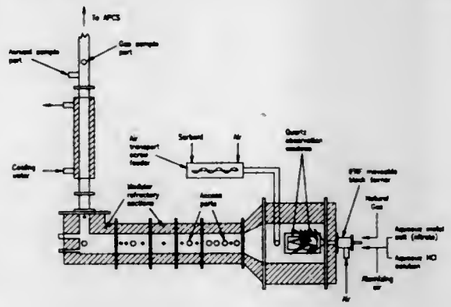
SORBENT MELTS FOR CAPTURE OF METALS FROM COMBUSTION GASES

William P. Linak, Research Triangle Park, N.C.; Ravi K. Srivastava, Washington, D.C., and Jost O. L. Wendt, Tucson, Ariz., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Dec. 1, 1994, Ser. No. 352,119

Int. Cl.[6] F23J *11/00*

U.S. Cl. 110—345 **18 Claims**



1. A process for removal of vapor phase metals from a combustion gas, said process comprising:

contacting the combustion gas with a particulate fluxing agent capable of forming a eutectic melt in combination with at least one of the vapor phase metals; and

heating the particulate fluxing agent to a temperature sufficient to form a melt of a eutectic of said fluxing agent and at least one of the vapor phase metals, at least at surface portions of the fluxing agent particles, and to capture the vapor phase metals in the eutectic melt.

5,619,938

METHOD OF INCINERATING WASTE MATERIAL BY WAY OF DRY DISTILLATION AND GASIFICATION

Masamoto Kaneko, Takasaki, Japan, assignor to Kinsel Sangyo Co., Ltd., Takasaki, Japan

Filed Sep. 22, 1995, Ser. No. 532,523

Claims priority, application Japan, Sep. 22, 1994, 6-228044

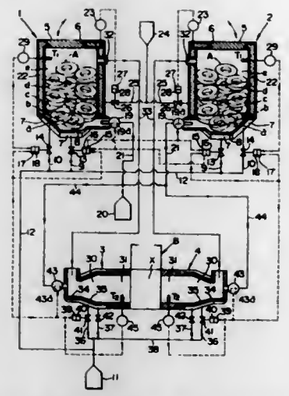
Int. Cl.[6] F23G *5/12*

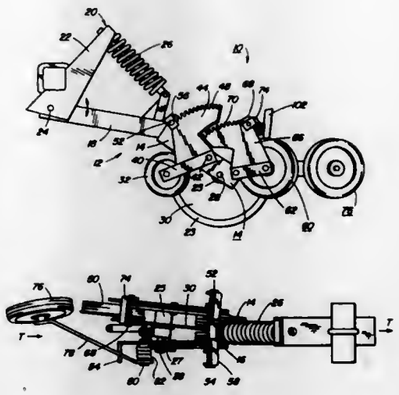
U.S. Cl. 110—346 **8 Claims**

1. A method of incinerating a waste material through dry distillation and gasification, comprising the steps of:

(a) thermally decomposing a waste material stored in a first gasification furnace through dry distillation;

(b) introducing a combustible gas produced in the first gasification furnace by the dry distillation into a first combustion furnace, combusting the combustible gas in the first combustion furnace, and imparting the heat of combustion to a heat source of an object to be heated;





(c) controlling the opening of a valve disposed in an oxygen supply passage connected to the first gasification furnace to supply an amount of oxygen required to thermally decompose the waste material in the first gasification furnace through dry distillation in order to keep the combustion temperature of the combustible gas in the first combustion furnace at a substantially constant combustion temperature upon the dry distillation of the waste material in the first gasification furnace;

(d) starting to thermally decompose a waste material stored in a second gasification furnace through dry distillation when the opening of the valve disposed in the oxygen supply passage connected to the first gasification furnace increases and becomes greater than a predetermined opening at an ending stage of the dry distillation of the waste material in the first gasification furnace;

(e) introducing a combustible gas produced in the second gasification furnace by the dry-distillation into a second combustion furnace, combusting the combustible gas in the second combustion furnace, and imparting the heat of combustion to the heat source of the object to be heated; and

(f) controlling the opening of a valve disposed in an oxygen supply passage connected to the second gasification furnace to supply an amount of oxygen required to thermally decompose the waste material in the second gasification furnace through dry distillation in order to keep the combustion temperature of the combustible gas in the second combustion furnace at said substantially constant combustion temperature upon the dry distillation of the waste material in the second gasification furnace.

5,619,939

DISC OPENER

Alvin Herman, 3105 Taylor Street E., Saskatoon, Saskatchewan, Canada, and Rubien Herman, Box 567, Outlook, Saskatchewan, Canada

Filed Apr. 28, 1995, Ser. No. 431,116

Int. Cl.[6] A01C *5/00*

U.S. Cl. 111—163 **25 Claims**

1. A disc opener for zero or low tillage operations including a main frame adapted to be moved along a forward travel path and having an opener disc rotatably mounted thereon and arranged to open a narrow furrow in the soil, a pair of wheels mounted to said frame on opposing sides of said disc and arranged to press and hold straw, trash or crop residue against the soil surface at a location where said disc is cutting into the soil surface thereby to enhance the cutting action of said disc and to alleviate hairpinning; a soil retainer wheel arranged to contact the soil in close proximity to a trailing edge portion of the disc to replace soil into the furrow made by said disc and to assist in closing the furrow; said soil retainer wheel being parallel to said disc with both of the latter being angularly offset to the normal forward path of travel of the main frame during use so as to cut a seed furrow of the desired width, and a seed placement device adjacent said disc for placing seeds into the seed furrow with said soil retainer wheel assisting in closing said furrow with minimal soil disturbance; said wheels of said pair being each provided with an adjustment mechanism to permit the heights of said wheels relative to said main frame and said disc to be adjusted to adjust the depth of the furrow cut by said disc while maintaining the hairpin-alleviating action of said pair of wheels; and a mechanism for adjusting the height of said retainer wheel relative to said main frame while maintaining the close proximity between the disc and said retainer wheel at the selected cutting depth; and wherein one of said pair of wheels is parallel to said disc and the other is parallel to the forward path of travel when in use to tension the straw, trash or crop residue contacted thereby during forward movement along the path of travel and further enhance the cutting action of said disc.

5,619,940

AUTOMATIC SANDWICH LINKING METHOD AND MACHINE

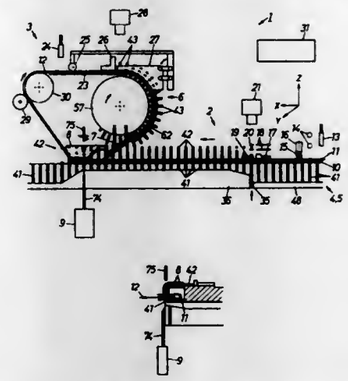
Saichiro Moriguchi, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Ishikawa-ken, Japan

Filed Dec. 6, 1995, Ser. No. 568,228

Claims priority, application Japan, Dec. 29, 1994, 6-338629

Int. Cl.[6] D05B *7/00;* **D04B** *15/02*

U.S. Cl. 112—27 **6 Claims**

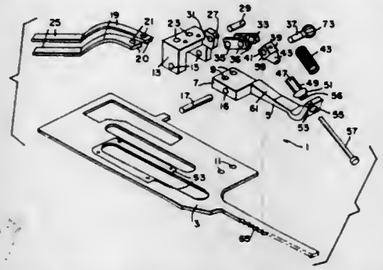


1. A sandwich linking method, which folds a first knitted fabric in two to sandwich an edge portion of a second knitted fabric between a first and a second edge portion of the first knitted fabric for linking, and uses first point needles, second point needles and third point needles arranged along a linking line, held so as to be advanced and retracted and controlled so that the tips of the first

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and the third point needles are disposed opposite to each other at a first transfer position and the tips of the first and the second point needles are disposed opposite to each other at a second transfer position, said sandwich linking method comprising: guiding a first and a second edge portion of the first knitted fabric to a first and a second needling position, respectively; hooking the first and the second edge portion of the first knitted fabric over the first and the second point needles, respectively; guiding an edge portion of the second knitted fabric to a third needling position; hooking the edge portion of the second knitted fabric over the third point needles; transferring the edge portion of the second knitted fabric from the third point needles to the first point needles; transferring the first edge portion of the first knitted fabric and the edge portion of the second knitted fabric from the first point needles to the second point needles or transferring the second edge portion of the first knitted fabric from the second point needles to the first point needles to sandwich the edge portion of the second knitted fabric between the first and the second edge portion of the first knitted fabric; and linking the superposed edge portions of the first and the second knitted fabric together by a sewing machine.

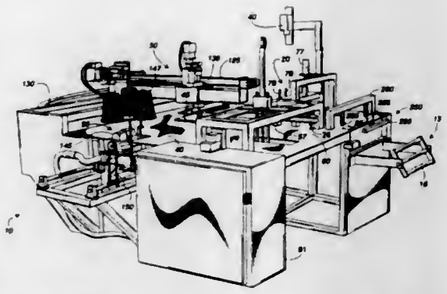
5,619,941
CLAMP FOR A BUTTONHOLE SEWING MACHINE
Gerd Papajewski, deceased, late of Stutensee, Germany, assignor to AMF Reece, Inc., Mechanicsville, Va.
Filed Feb. 21, 1996, Ser. No. 604,250
Int. Cl.[6] D05B *3/06*
U.S. Cl. 112—76 **12 Claims**



1. A clamp apparatus for a buttonhole sewing machine comprising a movable clamping plate for mounting on a sewing machine, a tail bracket mounted on the clamping plate, a tail pivot, a tail pivot pin connecting the tail pivot to the tail bracket, a clamp having curved cantilevered clamp arms and having shoulders, the shoulders interconnecting first ends of the arms and being connected to the tail pivot for pivoting the clamp with the tail pivot on the tail pivot pin between a closed, clamped position and an open, unclamped position, said arms arching forwardly and downwardly to parallel feet at second ends of the arms for clamping a work piece between the feet and the clamping plate, a connecting link, a clamp toggle pivot pin connecting the tail pivot and the connecting link, a toggle, a clamping ball stud pivotally connecting the connecting link to the toggle, and a spring connected to the tail bracket and to the toggle for restoring the clamp to the unclamped position and maintaining the toggle in the clamped position.

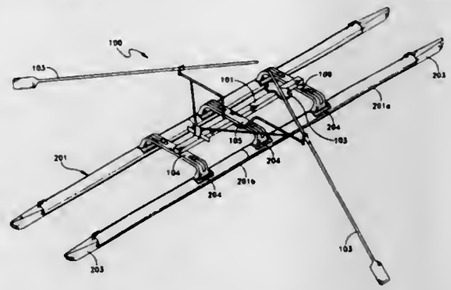
5,619,942
METHOD AND APPARATUS FOR FINISHING THE EDGES OF A TEXTILE PRODUCT
Parks C. Stewart, and Robert A. Trobaugh, III, both of Duluth, Ga., assignors to Phoenix Automation, Inc., Atlanta, Ga.
Filed Apr. 14, 1995, Ser. No. 422,358
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.07 **34 Claims**

1. An apparatus for finishing a textile product from a continuous strip of material having a plurality of transverse borders positioned at equally spaced intervals so as to form a plurality of discrete panels, comprising:



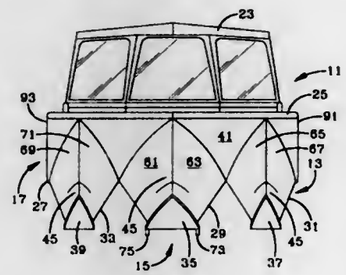
pulling means disposed along a predetermined path for pulling said continuous strip along said predetermined path to a predetermined location;
detecting means disposed along said predetermined path for determining the position of said transverse border for each of said discrete panels on said continuous strip;
calculating means operatively associated with said detecting means and said pulling means for determining the length of each of said discrete panels on said continuous strip;
measuring means disposed on said predetermined path for determining the width of each of said discrete panels;
straightening means disposed along said predetermined path for straightening each of said discrete panels;
cutting means disposed along said predetermined path for separating each of said discrete panels from said continuous strip based upon said detection of said transverse borders;
finishing means disposed along a calculated path for finishing the edges of each of said discrete panels; and
maneuvering means disposed along said calculated path for maneuvering each of said discrete panels from said predetermined location through said finishing means based upon said calculations of length and said measurements of width.

5,619,943
PORTABLE WATERCRAFT WITH IMPROVED PONTOON CONNECTION
Robert V. Kieronski, 37 Catherine St., Newport, R.I. 02840
Filed Apr. 5, 1996, Ser. No. 628,310
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **7 Claims**



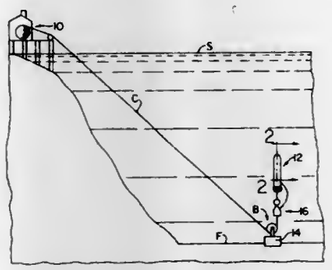
1. A watercraft, comprising:
two elongated floatation members; said elongated floatation members being positioned substantially parallel to one another;
a plurality of mounting pads connected to said floatation members; each of said mounting pads including a handle;
a plurality of cross-arms spanning between said floatation members in substantially spaced and parallel relation to one another; each cross-arm including a central support region and two connector regions located at opposing sides thereof; said connector regions being tapered approximately 90 degrees relative to said central support region; said connector regions each including a handle aperture means for receiving and containing said handle;
a frame assembly positioned on said support regions of said cross-arms;
a seat slidably connected to said frame assembly;
a pair of oars pivotally connected to said frame assembly;
a strap having an anchor end and a free end; said anchor end of said strap being connected to said central support region of each cross-arm proximal to said connector regions;
fastener means for securing said free end of said strap in relation to said cross-arm; said fastener means being positioned on said central support region proximal said anchor end of said strap;
each of said connector regions including a strap aperture means for receiving said free end of said strap therethrough;
whereby said connector regions of said cross-arms are placed over said handles, respectively, for said handles to reside within said handle aperture means, respectively, and said free end of said strap is routed through said strap aperture means and underneath said handle and back through said strap aperture means to be secured in place by said fastener means to releasable secure each of said cross-arms to said floatation members.

5,619,944
WATERCRAFT HULL
Elbert H. Baker, 21 Baldwin St., Hudson, Ohio 44236
Filed Jul. 15, 1996, Ser. No. 679,856
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **20 Claims**



1. A ski-toon boat comprising:
A. a hull assembly, said hull assembly comprising a ski platform assembly, mounted to the bottom of said hull assembly;
B. a core frame to which the top of said hull assembly is mounted, said core frame extending longitudinally substantially from the bow end to the stern end of said ski-toon boat, said core frame extending laterally substantially from side to side of said ski-toon boat;
C. a gunwale assembly comprising:
(i) a pair of spray shield sides, mounted to said core frame and extending upwardly therefrom;
(ii) a side rail assembly, mounted to the top edges of said pair of spray shield sides;
(iii) a bumper rail assembly, mounted to and surrounding said mounting of said pair of said spray shield sides to said core frame; and
(iv) a transom mounted to said core frame and extending upwardly therefrom, said transom also mounted to each of said pair of spray shield sides;
wherein said core frame, said pair of spray shield sides and said transom form a cockpit within said ski-toon boat;
wherein said hull assembly comprises:
A. a center hull mounted longitudinally beneath the longitudinal center line of said core frame, said center hull comprising a pair of center hull sides, said pair of center hull sides are formed into a center prow at the bow end of said ski-toon boat, said center hull including, at the stern end thereof, a center hull end, the top edges of said center hull being fixed to said core frame;
B. a pair of outer hulls, each of said pair of outer hulls being mounted adjacent to and beneath a side edge, respectively, of said core frame, each of said pair of outer hulls extending longitudinally substantially from bow to stern of said core frame, each of said pair of outer hulls comprising a pair of outer hull sides, each pair of said outer hull sides are formed into an outer prow at the bow end of said ski-toon boat, each of said pair of outer hulls including, at the stern ends thereof, an outer hull end, the top edges of each of said pair of outer hulls being fixed to said core frame; and
C. a ski platform assembly comprising:
(i) a center ski longitudinally mounted and fixed to the bottom edge of said center hull; and
(ii) a pair of outer skis, each of said pair of outer skis being respectively longitudinally mounted and fixed to a bottom edge of each of said pair of outer hulls;
wherein the bottom edges of said center hull and the bottom edges of each of said pair of outer hulls are curved upwardly at the bow ends thereof, wherein said center ski is curved upwardly at the bow end thereof to match said upward curvature of said bottom edge of said center hull, and wherein each of said pair of outer skis is curved upwardly to match said upward curvatures respectively of said bottom edge of each of said pair of outer hulls; and
(iii) a pair of strakes, each of which is mounted to the bottom of said center ski, each strake being fixed to said bottom of said center ski at a position adjacent to the side edges of said center ski and extending downwardly therefrom, said pair of strakes extending longitudinally and parallel to each other from the stern end of said center ski toward the bow end of said center ski for a distance not exceeding one half the length of said center ski.

5,619,945
DRAG REDUCTION POLYMER EJECTION SYSTEM FOR UNDERWATER VEHICLE
William H. Nedderman, Middletown; Robert Meunier, and Laurent C. Bissonnette, both of Portsmouth, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 16, 1996, Ser. No. 591,181
Int. Cl.[6] B63B *1/34*
U.S. Cl. 114—67 A **12 Claims**



1. A polymer ejection system for an underwater vehicle having an elongated body portion and a nose portion of dome shaped design and further having boundary layer polymer fluid ejection port means for reducing the drag forces on the vehicle as it travels through a first fluid medium, the system comprising:

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means for providing a delivery passageway having one end communicating with said ejection port means;

boundary layer fluid reservoir means communicating with another end of the said passageway, said reservoir means having at least one wall portion defined by a resiliently flexible bladder material and having a second wall portion generally coextensive with said first wall portion;

peripherally extending bladder separator means maintaining said bladder wall portions in spaced relationship to one another;

mounting means for supporting said reservoir means from said bladder separator means; and

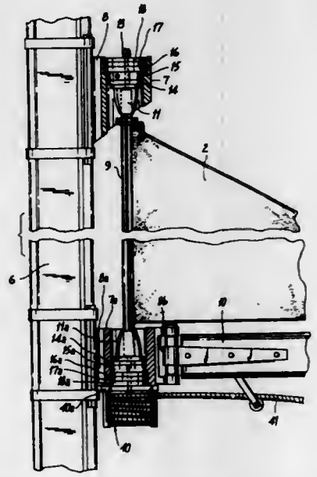
means defining a fluid chamber within the vehicle, said at least one wall portion provided adjacent thereto whereby pressurizing the fluid in said fluid reservoir relative to the fluid pressure in said chamber causes said one wall portion to deform outwardly towards said chamber and pressurizing said fluid in said chamber relative to said boundary layer fluid in the reservoir causes said one wall portion to deform inwardly away from said chamber.

5,619,946

SAIL FURLING DEVICE WITH BEARINGS TO PERMIT SIMULTANEOUS CABLE AND EXTRUSION ROTATION

Lutz Wallasch, 1036 Archer Pl., Baldwin, N.Y. 11510

Filed Nov. 29, 1995, Ser. No. 564,627
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—106 **11 Claims**



1. The sail furling apparatus comprising

A maritime sail furling apparatus which furls a sail comprising a rotating luff extrusion enclosing a cable wire therein, said cable wire attachable to a mast head of a mast of the sailboat, a pair of rotating bearing portions accommodating static and horizontal loads, said bearing portions disposed to rotating said luff extrusion and said cable wire, wherein the main sail is wound while the sailboat is under motor power;

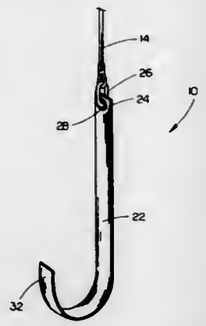
each said bearing portion including a plurality of rotatable cylindrical hollow members, one middle member of said members being a freely rotatable roller cage enclosing a circular array of tapered roller bearings, said tapered roller bearings being rotatable with their respective tip ends at a center of a sunburst pattern of radiating arms of said roller cage, said tapered roller bearings rotatable axially, said tapered roller bearings having concave ends opposite said tip ends, each said concave ends having a spherical roller bearing rotating therein against a freely rotatable outer race ring, said outer race ring enclosing said roller cage therein.

5,619,947

RELEASABLE ANCHOR

J. Douglas Lewis, HC 79, Box 20, Burwell, Nebr. 68823-9602

Filed Jul. 7, 1995, Ser. No. 499,350
Int. Cl.[6] B63B *21/32*
U.S. Cl. 114—297 **7 Claims**



1. A releasable anchor, comprising:

an elongated generally J-shaped fluke having an upper crown end and a lower free end, formed of a resilient spring steel material which has sufficient resilience to permit the fluke to be substantially straightened and which has memory to return the fluke to a J-shape after being substantially straightened

said fluke formed of an elongated strap having a width greater than a thickness; and

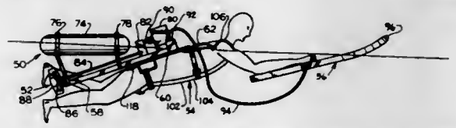
said strap being curved in a plane orthogonal to the thickness to form the J-shape.

5,619,948

POWERED SWIMMING AID

Daryoush Keyvani, 321 S. San Vicente Blvd., Apartment No. # 601, Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 598,481, Oct. 8, 1990, Pat. No. 5,188,552. This application Feb. 22, 1993, Ser. No. 21,182
Int. Cl.[6] B63C *11/46*
U.S. Cl. 114—315 **16 Claims**



1. A powered swimming aid to be worn on the body of a person comprising:

a lower torso buoyancy assembly attachable to the back of a person's torso having a lower stabilizing member for placement proximate a person's lower torso and being a rigid member extending substantially across the body of the user and an upper stabilizing member rigidly attached to the lower stabilizing member and located spaced above the lower stabilizing member for placement proximate the user's shoulders and a buoyancy device being a rigid elongate buoyancy member rigidly attached to the lower stabilizing member to form therewith a single rigid structure, the buoyancy device being located below the lower abilizing member and means for attaching the lower stabilizing member and the upper stabilizing member to the person's torso;

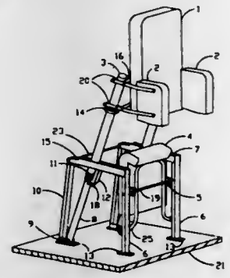
and a drive assembly mounted on the lower torso buoyancy assembly comprising a rotational power train terminating in a propeller which propeller is located below the knees of the user; and the drive assembly being incorporated as a part of the aforesaid single rigid structure and the buoyancy member being displaced from the propeller away from a user's body.

5,619,949

MULTI-POSITIONAL MARINE SEAT BOLSTER

Edward F. Dick, Jr., 5188 Chesapeak Ave., Shadyside, Md. 20764

Filed Sep. 6, 1995, Ser. No. 524,347
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—363 **5 Claims**



1. A seat apparatus comprising:

a frame;

a seat back assembly;

a telescoping support member having one end rotatably attached to said frame and the other end attached to said seat back assembly for adjusting the position of the seat back assembly from a lower aft position with the seat back assembly sloped backward to an upper forward position with the seat back assembly generally vertical; and

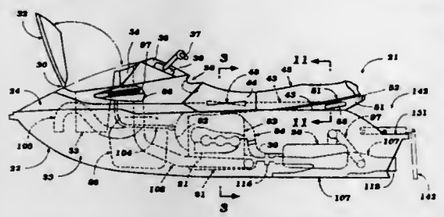
a seat base assembly, rotatably attached to said frame and moveable between a seat-down position with the seat base assembly slightly sloped backward and a seatup position with the seat base assembly generally vertical.

5,619,950

WATERCRAFT

Keijiroh Ikeda, Shizuoka-ken, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 231,337, Apr. 22, 1994, Pat. No. 5,490,474. This application Jan. 11, 1996, Ser. No. 584,447
Claims priority, application Japan, Apr. 27, 1993, 5-100954; Apr. 28, 1993, 5-103100
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—363 **11 Claims**



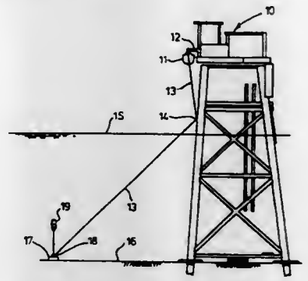
1. A watercraft comprised of a hull, a rider's area formed by said hull and including an elevated seating portion for accommodating a rider seated therein in straddle position, a pair of foot areas disposed in said rider's area on opposite sides of said elevated seating portion, a propulsion system for said hull and contained at least in part therein, said propulsion system comprising a propulsion device for propelling said hull, an internal combustion engine and a transmission for driving said propulsion device from said internal combustion engine, the upper surface of said elevated seating portion defining an access opening through which at least a portion to said propulsion device may be accessed, and a longitudinally extending seat covering at least a portion of said upper surface, said seat being comprised of a first portion affixed to said hull and spaced from said access opening and a second portion longitudinally spaced from said first portion and detachably connected to said hull and covering and closing said access opening.

5,619,951

SYSTEM FOR LAUNCHING A LIFEBOAT

Daniel A. Constantinis, Wilmslow, England, assignor to E M & I (Safety Systems) Limited, Cheshire, England

PCT No. PCT/GB93/02200, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/10028, PCT Pub. Date May 11, 1994
PCT Filed Oct. 25, 1993, Ser. No. 464,821
Claims priority, application United Kingdom, Oct. 27, 1992, 9222517
Int. Cl.[6] B63B *23/30*
U.S. Cl. 114—365 **7 Claims**



1. A system for launching a lifeboat from an elevated position on an offshore structure, and for towing the lifeboat to a distant position away from the structure, the system comprising a submerged buoyancy device tethered to the lifeboat by means of a towing cable which is attached to and passes between the lifeboat and the submerged buoyancy device, a submerged guide member fixed to the seabed at or in the region of the distant position to which the lifeboat is to be towed, said towing cable passing around said guide member between the lifeboat and the buoyancy device, and a release mechanism fixed with respect to the structure to retain the towing cable before launch, said release mechanism being disposed at a position to be exposed above the water line; characterized in that the towing cable extends upwardly directly from the guide member towards the surface and towards the lifeboat, and in that the release mechanism includes means to release the towing cable completely from the structure as the lifeboat descends from the elevated position such that no Connection remains between the structure and the towing cable and between the structure and the buoyancy device.

5,619,952

PEST BARRICADED ANIMAL FEEDER

Robert T. Walker, 13027 Blairwood Dr., Studio City, Calif. 91604

Filed Feb. 7, 1995, Ser. No. 384,745
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—61 **9 Claims**

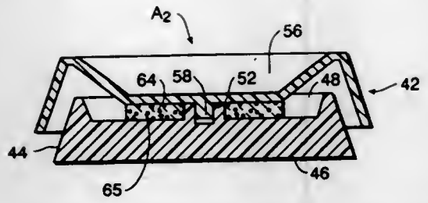
1. An animal feeder having a barrier means to preclude infestation by crawling insects of a food or beverage to be consumed by an animal:

a) a food or beverage receiving bowl adapted to receive a food or beverage to be consumed by an animal;

b) an insect barrier receptacle located between said bowl and a ground surface and which must be crossed by a crawling insert to reach the bowl having the food or beverage; and

c) a cavity in said insect barrier receptacle to receive an insect barricade to preclude insect transversal to the bowl, and which insect barricade comprises a chemical insect repellent and an insect entrapping composition which causes the insect to be

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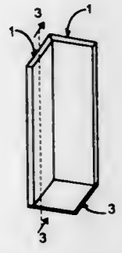
permanently entrapped in the composition, said repellant being impregnated in the composition such that the composition holds the repellent.

5,619,953

CAT SCRATCHING POST FOR USE WITH FURNITURE

Kelli A. Griffin, 6708 S. Turkey Creek Rd., Morrison, Colo. 80465

Filed Mar. 6, 1995, Ser. No. 398,756
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—706 **5 Claims**



1. A cat scratching post for use with a furniture item comprising:
(a) a horizontal base member wherein said horizontal base is adapted to be placed under the furniture item;
(b) first and second vertical members attached to and extending upward from said base member, at least one of said vertical members having a vertical dimension greater than ten (10) times the thickness of said base member, wherein a partially enclosed column adapted to abut a corner of the furniture item is formed, and an essentially vertical surface suitable for scratching by cats is provided.

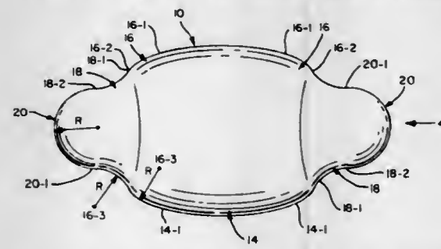
5,619,954

SELF PROJECTING PET TOY

Paul A. Rotondi, P.O. Box 299, Commack, N.Y. 11725

Filed Oct. 2, 1995, Ser. No. 537,620
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—707 **5 Claims**

1. A self projecting pet toy that cannot be grabbed in a mouth of



a pet while allowing the pet to play therewith without damage thereto from teeth of the pet, comprising:

a) a hollow and barrel-shaped body portion having a barrel shape and a pair of body portion ends;
b) a pair of hollow first collar arcuate shaped portions, each of which having a first collar portion first end disposed at, and integrally formed with, each of said pair of body portion ends and communicating smoothly therewith; each of said pair of hollow first collar arcuate shaped portions further having a first collar portion second end disposed a distance from each said first collar portion first end and curving inwardly therefrom in a convex arc having a radius;
c) a pair of hollow second collar arcuate shaped portions, each of which having a second collar portion first end disposed at, and integrally formed with, each said first collar portion second end of and communicating smoothly therewith; each of said pair of hollow second collar arcuate shaped portions further having a second collar portion second end disposed a distance from each said second collar portion first end and curving inward therefrom in a concave arc having a radius; and
d) a pair of hollow end cap hemispherical shaped and closed portions being closed, each of which having an end cap base disposed at, and integrally formed with, each said second collar portion second end and communicating smoothly therewith; each of said pair of hollow end cap hemispherical shaped and closed portions further having a radius; said radius of said pair of hollow first collar arcuate shaped portions, said radius of said pair of hollow second collar arcuate shaped portions, and said radius of said pair of hollow end cap hemispherical shaped and closed portions being equal; said hollow and barrel-shaped body portion, said pair of hollow first collar arcuate shaped portions, said pair of hollow second collar arcuate shaped portions, and said pair of hollow end cap hemispherical shaped and closed portions being thermoplastic which is inherently hard and non-pliable unless heated; said thermoplastic being acetate so as to form a smooth surface; said equal radii of said pair of hollow first collar arcuate shaped portions, and said pair of hollow second collar arcuate shaped portions, and said pair of hollow end cap hemispherical shaped and closed portions together with said barrel shape of said hollow and barrel-shaped body portion providing a shape that prevents said self projecting pet toy from being grabbed in the mouth of the pet while said acetate thermoplastic allows the pet to play with said self projecting pet toy without damage thereto from the teeth of the pet as a result of said smooth surface formed by said acetate and said thermoplastic being hard and non-pliable unless heated preventing the teeth of the pet from grabbing said self projecting pet toy.

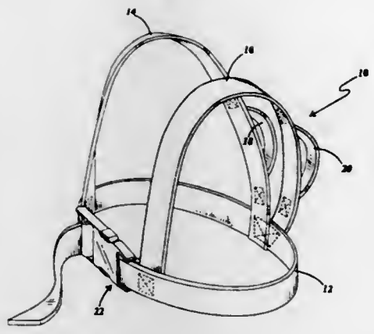
5,619,955

HARNESS GRIPPING AID FOR TANDEM RIDERS

Randall J. Nelson, Jordan, Minn., assignor to Stone Products, Inc., Prior Lake, Minn.

Filed Jun. 29, 1995, Ser. No. 496,451
Int. Cl.[6] A62B *35/00*
U.S. Cl. 119—857 **7 Claims**

1. A harness gripping aid for tandem riders worn by the driver of a vehicle, comprising:
(a) a torso belt worn around a driver's upper torso region, having a first and second end;
(b) a shoulder strap having a mid region affixed to a middle portion of said torso belt, a first end of said shoulder strap being affixed to said torso belt proximate said first end of said torso belt, and a second end of said shoulder strap being affixed to said torso belt proximate said second end of said torso belt;
(c) handles attached and extending from said shoulder strap, each of said handles extending from said shoulder strap proximate the middle portion of said torso belt; and



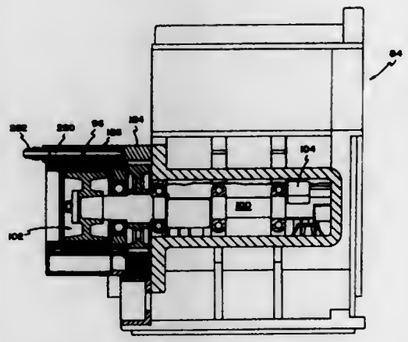
(d) a clasp to hold the first and second ends of said torso belt together, thereby allowing a length of the torso belt to be adjusted.

5,619,956

AUXILIARY POWER UNIT FOR HYBRID ELECTRIC VEHICLE

Robert P. Koziara, Lake Elmo; Eugene G. Shanks, Blaine, and Daniel A. Norrick, Anoka, all of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Division of Ser. No. 376,043, Jan. 20, 1995, Pat. No. 5,469,820, which is a continuation of Ser. No. 93,536, Jul. 15, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,183
Int. Cl.[6] F01P *1/06*
U.S. Cl. 123—41.31 **29 Claims**



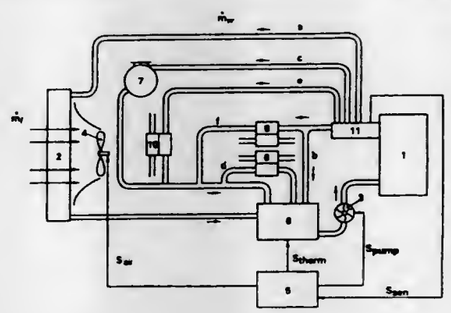
1. An alternator/starter oil cooling system for a hybrid electric vehicle having an auxiliary power unit, comprising:
an alternator/starter of the auxiliary power unit having a rotor and a stator, the rotor being mounted onto a drive shaft of the hybrid electric vehicle, the stator having a winding stack on a core of the stator;
a housing containing the alternator/starter;
means for conducting heat from inside the alternator/starter, the alternator/starter being cooled at an outside of the alternator/starter, the conducting heat means being disposed at an end of the winding stack of the stator;
first cooling means for cooling heat on the outside of the alternator/starter, the first cooling means being disposed around the conducting heat means;
second cooling means, disposed around the winding stack of the stator, for cooling heat on the winding stack of the stator;
first seal means, disposed between the housing and the alternator/starter, for sealing the first cooling means to prevent a cooling material from leaking into the alternator/starter, cooling contaminations are eliminated inside the alternator/starter;
second seal means, disposed around the first cooling means, having a wall for sealing the second cooling means to prevent the cooling material from leaking into the alternator/starter;
cooling material inlet means, mounted on the housing and connected to a pipe, for allowing the cooling material to flow into the pipe which is in a fluid communication with the first and second cooling means;
cooling material collecting means, mounted to an end of the first and second cooling means, for collecting the cooling material after passing through the first and second cooling means; and
cooling material outlet means, disposed at an end of the cooling material collecting means, for allowing the cooling material to flow out of the housing.

5,619,957

METHOD FOR CONTROLLING A COOLING CIRCUIT FOR AN INTERNAL-COMBUSTION ENGINE

Karsten Michels, Braunschweig, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Mar. 6, 1996, Ser. No. 611,345
Claims priority, application Germany, Mar. 8, 1995, 195 08 102.1
Int. Cl.[6] F01P *5/10*
U.S. Cl. 123—41.44 **9 Claims**



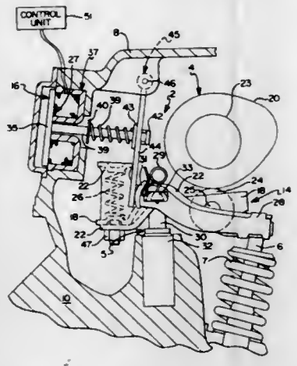
1. A method for controlling a cooling circuit of an internal combustion engine having at least one coolant pump for controlling the rate of flow of coolant in the coolant circuit, a radiator in which heat is exchanged between air passing through the radiator and coolant in the radiator, a fan for controlling the flow of air through the radiator, and a control unit for controlling the speed of the coolant pump and the speed of the fan as a function of a required temperature of the coolant comprising the steps of determining the heat transfer time efficiencies in the radiator for coolant circulated through the radiator by the coolant pump and air driven through the radiator by the fan and controlling the speed of the coolant pump and the speed of the fan as a result of the heat transfer efficiency determination.

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5,619,958
ENGINE VALVE CONTROL SYSTEM USING A LATCHABLE ROCKER ARM

Keith Hampton, Ann Arbor, and David M. Preston, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 540,280, Oct. 6, 1995, abandoned. This application Jul. 22, 1996, Ser. No. 681,319
Int. Cl.[6] F01L *1/18;13/00;* **F02D** *13/06*
U.S. Cl. 123—90.16 **9 Claims**



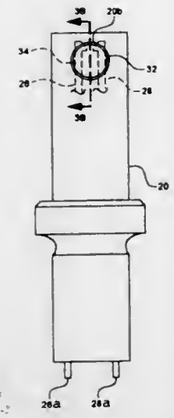
1. A vane control system for an internal combustion engine including a cylinder head, an engine poppet valve, and a camshaft having a cam lobe formed thereon said control system comprising:
means on said cylinder head defining a pivot point;
a link pin adapted to rotate about said pivot point;
an outer rocker arm nonrotatably supported on said link pin and engageable with said engine poppet valve;
an inner rocker arm having a saddle portion for rotatably contacting said link pin and adapted to rotate relative to said outer rocker arm, said inner rocker arm engaging said cam lobe;
a biasing spring for forcing said outer rocker arm into engagement with said engine poppet valve and said inner rocker arm into engagement with said cam lobe;
a slidable latch member for selectively linking said inner and said outer rocker arms for rotation in unison with said link pin about said pivot point in response to a force applied by said cam lobe to said inner rocker arm, and for selectively unlinking said inner and said outer rocker arms for independent rotation, said latch member extending from approximately one end of said outer rocker arm at said poppet valve along said outer rocker arm toward said link pin;
actuation means for applying a force to said latch member in response to an activation signal from a control unit for selectively unlinking said inner and said outer rocker arms; and
a latch spring disposed to apply a separation force between said link pin and said latch member for maintaining engagement of said inner rocker arm with said latch member and said outer rocker arm when said activation means is nonenergized.

5,619,959
SPARK PLUG INCLUDING MAGNETIC FIELD PRODUCING MEANS FOR GENERATING A VARIABLE LENGTH ARC

Luigi P. Tozzi, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Division of Ser. No. 277,197, Jul. 19, 1994. This application Jan. 30, 1996, Ser. No. 593,933
Int. Cl.[6] F02P *23/00*
U.S. Cl. 123—143 B **17 Claims**

1. A plasma ignition apparatus for generating plasma and for propelling said plasma from said ignition apparatus, said ignition apparatus comprising:



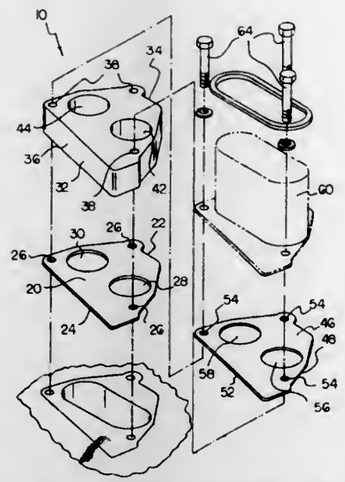
insulation means defining a cavity;
electrical energy discharge means cooperatively arranged with said cavity and arranged for generating an electrical energy discharge in said cavity, said electrical energy discharge being at a level sufficient to generate plasma within said cavity and below a level at which the generated plasma is propelled from the cavity and capable of ignition external to the cavity, said discharge means including a first electrode means situated within said cavity and a second electrode means situated within said cavity and in close proximity with said first electrode means, said first and second electrode means defining a diverging gap therebetween; and
magnetic field generation means establishing a magnetic field within said cavity in said diverging gap, said magnetic field providing a supplemental propelling force on said generated plasma, said magnetic field generation means situated so that said insulation means provides an electrical insulator between said electrical energy discharge means and said magnetic field generation means.

5,619,960
SPACING BLOCK

Tyler C. Funk, P.O. Box 1043, Santa Ynez, Calif. 93460

Filed Mar. 19, 1996, Ser. No. 618,123
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—184.46 **1 Claim**

1. A spacing block kit which is adapted to increase the distance between the intake manifold and the throttle body injection unit of an internal combustion engine, the spacing block kit comprising, in combination:
a lower gasket formed of a resilient material, the gasket having a lower surface, an upper surface and a peripheral edge therebetween, the peripheral edge having a rearward arcuate portion and a forward linear portion, three circular mounting holes formed about the periphery of the gasket, a first circular intake aperture formed through the gasket, a second circular intake aperture formed through the gasket, the lower surface of the gasket adapted to be positioned upon the intake manifold of an internal combustion engine;
an aluminum spacing block having a thickness of approximately 1.25 inches, the spacing block having a lower surface, an upper surface and a peripheral edge therebetween, the peripheral edge baving an arcuate rearward portion and a linear forward portion, three circular mounting holes formed through the spacing block about the periphery, a first circular intake aperture formed through the block, the lower surface of the block adapted to be positioned upon the upper surface of the lower gasket such that the mounting holes and intake apertures of the gasket are in alignment with the mounting holes and intake apertures of the block;

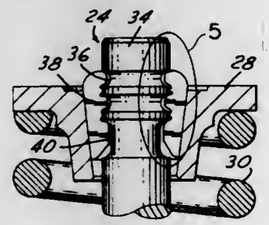


an upper gasket formed of a resilient material, the gasket having a lower surface, an upper surface and a peripheral edge therebetween, the peripheral edge having a rearward arcuate portion and a forward linear portion, three circular mounting holes formed about the periphery of the gasket, a first circular intake aperture formed through the gasket, a second circular intake aperture formed through the gasket, the lower surface of the gasket adapted to be positioned upon the upper surface of the block such that mounting holes and intake apertures of the gasket are in registration with the mounting holes and intake apertures of the block;
a throttle body injection unit having a lower surface which is adapted to be positioned upon the upper surface of the upper gasket, the throttle body having three mounting holes; and
three bolt and washer assemblies, each assembly adapted to be positioned within one of the mounting holes of the lower gasket, block, upper gasket and throttle body injection unit, the three bolt and washer assemblies adapted to secure the lower gasket, block, upper gasket and throttle body injection unit to the intake manifold of an internal combustion engine.

5,619,961
POPPET VALVE RETAINER SYSTEM FOR INTERNAL COMBUSTION ENGINE

Matthew B. Diggs, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 1, 1996, Ser. No. 691,126
Int. Cl.[6] F01L *3/10*
U.S. Cl. 123—188.13 **11 Claims**

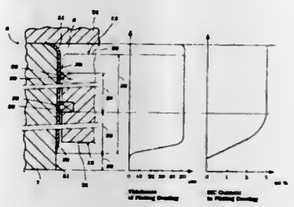


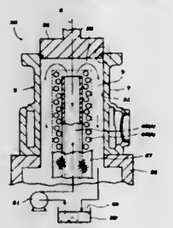
1. A retainer system for securing a popper valve within a cylinder head of an internal combustion engine, comprising:
a retainer washer adapted for assembly upon a valve stem, with said washer having a tapered bore therethrough for accepting a wedge type keeper assembly, and an abutment surface for contacting an end coil of a valve spring;
a valve stem having a plurality of annular grooves therein, with at least two of said grooves having different axial lengths extending along the longitudinal direction of the valve stem, with a key groove having the greatest axial length being located closest to the head end of the valve; and
a keeper assembly comprising a generally conical body having a tapered outer surface sized for a plug fit into the tapered bore of the retainer washer and an inner surface having at least two annular lands adapted for mating engagement with said annular grooves, with the lands having different axial lengths, and with a key land located at the smallest diameter of the keeper having the greatest axial length.

5,619,962
SLIDING CONTACT-MAKING STRUCTURES IN INTERNAL COMBUSTION ENGINE

Hirohiko Ikegaya, and Yasuyuki Murase, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 7, 1995, Ser. No. 480,451
Claims priority, application Japan, Dec. 26, 1994, 6-337889
Int. Cl.[6] F02F *5/00*
U.S. Cl. 123—193.7 **32 Claims**





1. Sliding contact-making structures in an internal combustion engine, comprising:
a cylinder unit having an inner plating coating containing a dispersoid substance; and
a piston provided with at least one piston ring, fitted into the inside of said cylinder unit in the axial direction so as to freely slide upon the inside surface thereof,
wherein the thickness of said plating coating is tapered off at a slant in the axial direction at the edge of said plating coating on the side of a crankshaft, said tapering reduction of the thickness starts approximately at the lower dead point position of said piston.

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5,619,963

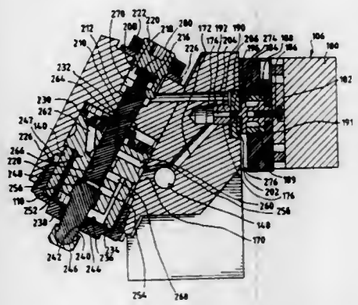
DUAL FORCE ACTUATOR FOR USE IN ENGINE RETARDING SYSTEMS

James J. Faletti, Spring Valley; Dennis D. Feucht, and Scott G. Sinn, both of Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 468,937, Jun. 6, 1995, Pat. No. 5,540,201, which is a continuation of Ser. No. 282,573, Jul. 29, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,134

Int. Cl.[6] F02D *13/04*

U.S. Cl. 123—321 **21 Claims**



1. An actuator for moving an exhaust valve to an open position, comprising:

a piston having a central bore therethrough and engageable with the exhaust valve;

a valve spool disposed in the central bore and movable therein relative to the piston, the piston and valve spool being disposed in an actuator receiving bore;

means for resiliently interconnecting the piston and the valve spool; and

means for admitting pressurized fluid into the actuator receiving bore to act against the piston and valve spool so that the piston engages the exhaust valve with a first force exerted by the interconnecting means and so that the piston thereafter engages the exhaust valve with a second force exerted by the pressurized fluid.

5,619,964

ACTUATOR WITH CONCENTRIC PARTS FOR USE IN ENGINE RETARDING SYSTEMS

Dennis D. Feucht, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 468,937, Jun. 6, 1995, Pat. No. 5,540,201, which is a continuation of Ser. No. 282,573, Jul. 29, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,271

Int. Cl.[6] F02D *13/04*

U.S. Cl. 123—321 **19 Claims**

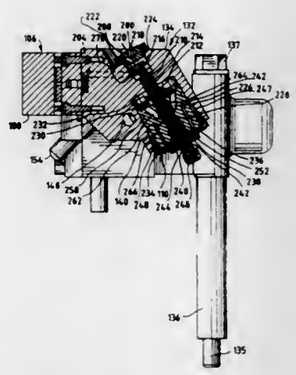
1. An actuator for an engine braking system for moving an exhaust valve between open and closed positions, comprising:

a main body having an actuator receiving bore therein;

a three-way fluid control valve disposed in the main body in fluid communication with the actuator receiving bore and electrically operable to selectively pass fluid into or drain fluid from the actuator receiving bore;

a slave fluid control device engagable with the exhaust valve and having a further bore therethrough and disposed in the actuator receiving bore; and

a master fluid control device concentrically disposed within the bore of the slave fluid control device and movable to apply high fluid pressure to said the slave fluid control device, said master fluid control device and the slave fluid control device being responsive to fluid passed into the actuator receiving bore by the control valve to move the exhaust valve to the open position and are further responsive to draining of fluid from the actuator receiving bore by the control valve to move the exhaust valve to the closed position.



5,619,965

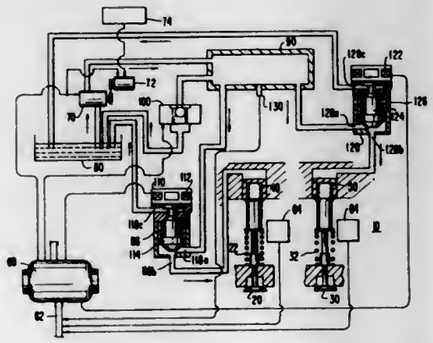
CAMLESS ENGINES WITH COMPRESSION RELEASE BRAKING

Gheorghe Cosma, Windsor, and James Usko, North Granby, both of Conn., assignors to Diesel Engine Retarders, Inc., Wilmington, Del.

Filed Mar. 24, 1995, Ser. No. 409,646

Int. Cl.[6] F02D *13/04;* **F01L** *9/02*

U.S. Cl. 123—322 **27 Claims**



1. Internal combustion engine apparatus capable of operating in either positive power mode or compression release engine braking mode, said engine including engine cylinder valves, a hydraulic actuator respectively associated with each of said valves for selectively opening at least some of said valves during positive power mode and compression release engine braking mode, a source of pressurized hydraulic fluid for selective application to said hydraulic actuators, and hydraulic fluid pressure controls for controlling the pressure of said hydraulic fluid from said source so that said pressure is relatively low during positive power mode and relatively high during compression release engine braking mode.

5,619,966

METHOD FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE AS IT ENTERS LOW-IDLE SPEED

Alain Aubourg, Saint-Jean, and Jean Cosault, Muret, both of France, assignors to Siemens Automotive, S.A., Toulouse Cedex, France

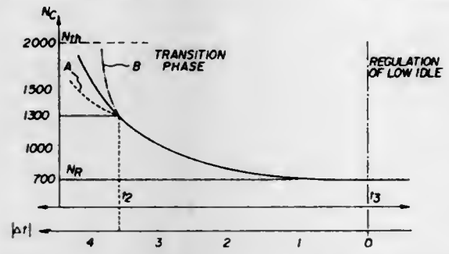
PCT No. PCT/EP94/01053, § 371 Date Oct. 16, 1995, § 102(e) Date Oct. 16, 1995, PCT Pub. No. WO94/24429, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 5, 1994, Ser. No. 535,222

Claims priority, application France, Apr. 14, 1993, 93 04372

Int. Cl.[6] F02D *41/16*

U.S. Cl. 123—339.22 **7 Claims**



1. An apparatus for controlling a speed of an internal combustion engine during an entry thereof into low-idle speed operation, comprising:

a device connected to an internal combustion engine for measuring the speed of the engine and for monitoring a state of the engine;

means connected to receive signals from said device concerning the speed and the state of the engine, said means being operatively connected with the engine for slaving the engine speed to a predetermined reference point value, said means being programmed to

(a) determine a low-idle speed of the engine;

(b) monitor the engine for the possible appearance of a predetermined running state calling for an entry into low-idle speed operation and, when such a state is detected,

(c) gradually decrease said reference point value according to a predetermined time law independently of a rate of decrease in the speed beginning when the predetermined running state occurs, to the predetermined low-idle speed.

5,619,967

METHOD AND ARRANGEMENT FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE OF A VEHICLE

Martin Streib, Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

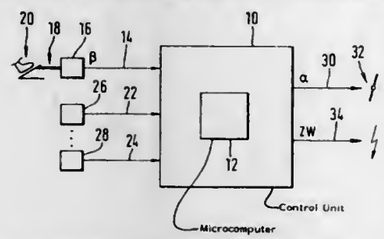
Filed Jan. 18, 1996, Ser. No. 588,437

Claims priority, application Germany, Jan. 18, 1995, 195 01 299.2

Int. Cl.[6] F02D *37/02;41/06;43/04*

U.S. Cl. 123—399 **8 Claims**

1. A method for controlling an internal combustion engine of a motor vehicle, the engine being supplied with air and having an ignition angle, the engine being equipped with a control unit for adjusting at least said air supplied to the engine and said ignition angle, the method comprising the steps of:



detecting a driver command for said control unit which can be realized by effecting a change of said air supplied to said engine;

adjusting said air supplied to said engine and said ignition angle during at least one operating state of said engine in dependence upon said driver command so as to at least reduce said change of said air supplied to said engine required to fulfill said driver command; and,

said engine undergoing a warm-up phase of operation before reaching normal operation and said operating state being a warm-up phase.

5,619,968

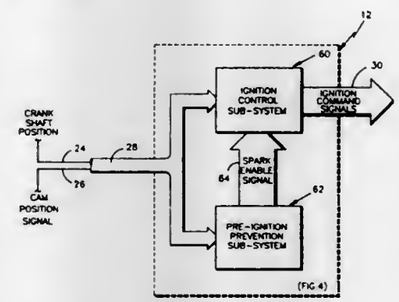
ELECTRONIC IGNITION SYSTEM WITH PRE-IGNITION PREVENTION APPARATUS AND METHOD

Mitchell C. Hillsberg, Burlington, and Paul J. Rothman, Windsor, both of Conn., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Jul. 28, 1994, Ser. No. 282,422

Int. Cl.[6] F02P *3/055*

U.S. Cl. 123—417 **13 Claims**



1. An ignition control system for preventing pre-ignition of a reciprocating engine having a plurality of cylinder banks, wherein each cylinder bank includes a plurality of cylinders and each cylinder has an independent ignition module and an ignition coil, said ignition control system comprising:

a control means for generating a spark command signal which has both an active state and an inactive state wherein said spark command signal has a rising leading edge and a falling trailing edge and wherein the rising leading edge indicates the time for the initiation of charging of an ignition coil;

a pre-ignition prevention means for generating a spark enable signal which has both an active state and an inactive state wherein said pre-ignition prevention means for generating said spark enable signal is independent and isolated from said control means for generating said spark command signal;

an ignition enable means responsive to said spark command signal and said spark enable signal for providing an ignition command signal to the independent ignition module for initiating charging the ignition coil of a next cylinder to fire upon detection of the rising leading edge of said spark command signal, and for firing the ignition coil in the next cylinder to fire upon both detection of the falling trailing edge of said spark command signal and said spark enable means being active during or subsequent to said detection of the falling trailing edge of said spark command signal.

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5,619,969

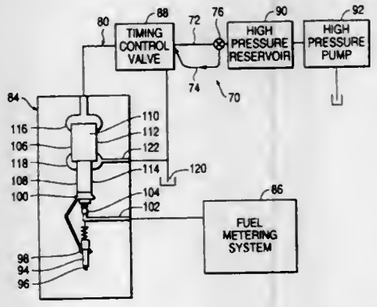
FUEL INJECTION RATE SHAPING CONTROL SYSTEM

Chung Y. Liu; Benjamin M. Yen; Lester L. Peters; Julius P. Perr; Russ P. Durrett, all of Columbus; Donald N. Case, Deputy; Dennis Ashwill, Columbus; Chris Sorg, Columbus; John Lane, Columbus, and Mark Cavanagh, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 489,450, Jun. 12, 1995, abandoned. This application Nov. 28, 1995, Ser. No. 563,344

Int. Cl.[6] F02M 7/00;37/04

U.S. Cl. 123—447 20 Claims



1. A fuel system for supplying fuel at a predetermined pressure through plural fuel injection lines to the corresponding cylinders of a multi-cylinder internal combustion engine, comprising:

a fuel supply means for supplying fuel for delivery to the internal combustion engine, said fuel supply means including a fuel transfer circuit;

a pump means for pressurizing fuel above the predetermined pressure;

an accumulator means for accumulating and temporarily storing fuel at high pressure received from said pump means;

a fuel distributor means fluidically connected with said accumulator means through said fuel transfer circuit for enabling sequential periodic fluidic communication with the engine cylinders through the corresponding fuel injection lines;

a solenoid operated injection control valve positioned within said fuel transfer circuit between said accumulator means and said fuel distributor means for controlling the fuel injected into each engine cylinder during each of the sequential periods of communication enabled by said fuel distributor means to thereby define sequential injection events, said solenoid operated injection control valve movable between an open position permitting fuel flow from said accumulator means to said fuel distributor means and a closed position blocking fuel flow from said accumulator means to said fuel distributor means; and

a rate shaping control means positioned within said fuel transfer circuit between said accumulator means and said fuel distributor means for producing a predetermined time varying change in the pressure of fuel occurring sequentially at each engine cylinder to effect injection, wherein fuel from said accumulator means is capable of reaching a maximum unrestricted flow rate corresponding to a maximum pressure in each of said fuel injection lines adjacent the respective engine cylinder during said injection event, said rate shaping control means including a rate shaping transfer passage positioned between said accumulator means and said injection control valve, said rate shaping transfer passage having a predetermined length and a predetermined cross sectional flow area sufficient to cause a predetermined time delay between the movement of said solenoid operated injection control valve to the open position and the attainment of said maximum pressure, wherein said predetermined cross sectional flow area of said rate shaping transfer passage is selected to cause said maximum pressure to reach a predetermined level.

5,619,970

FUEL PUMPING APPARATUS

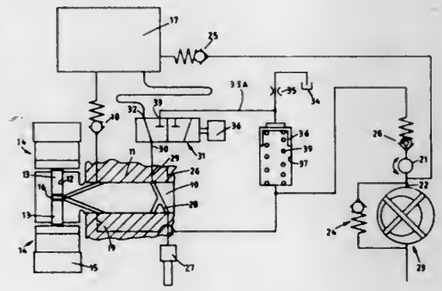
Peter A. G. Collingborn, Kent, England, assignor to Lucas Industries, Public. Limited Company, England

Filed May 10, 1996, Ser. No. 644,321

Claims priority, application United Kingdom, May 13, 1995, 9509733

Int. Cl.[6] F02M 41/00;7/00

U.S. Cl. 123—447 6 Claims



1. A fuel pumping apparatus for supplying fuel to an internal combustion engine comprising an accumulator chamber, a rotary distributor member housed within a body, a delivery passage formed in the distributor member, the delivery passage registering with outlet ports in turn as the distributor member rotates, valve means positioned in a passage connecting said delivery passage with the accumulator chamber, said valve means in a first position connecting the accumulator chamber to the delivery passage to cause delivery of fuel through one of said outlet ports and in a second position breaking the communication with the accumulator chamber and establishing communication between the delivery passage and a drain channel, a cam actuated plunger pump for charging the accumulator chamber with fuel under pressure, a first valve connecting the plunger pump to the accumulator chamber, a second valve through which fuel can be supplied to the plunger pump from a low pressure pump and means for varying the quantity of fuel which is supplied to the plunger pump, a cylinder, a piston slidable in the cylinder, one end of the cylinder being connected to the plunger pump through said second valve and the other end of said cylinder being connected to said drain channel, flow restricting means in said drain channel downstream of the connection with the other end of the cylinder, said valve means being arranged to be moved from its first position to its second position to terminate delivery of fuel to the engine during the period said second valve is open.

5,619,971

DISTRIBUTOR-TYPE FUEL INJECTION PUMP

Kenichi Kubo; Tsunayoshi Motoyoshi; Jun Matsubara; Kazuaki Narikiyo, and Kazuo Inoue, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,839

Claims priority, application Japan, Jun. 16, 1994, 6-157985; Nov. 28, 1994, 6-317567

Int. Cl.[6] F02M 37/04

U.S. Cl. 123—450 17 Claims

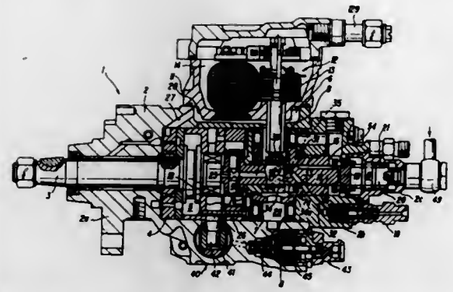
1. A distributor-type fuel injection pump comprising;

a rotor that rotates in synchronization with the engine,

plungers that are provided in the direction of the radius of said rotor, which change the volumetric capacity of a compression space formed in said rotor,

a cam ring that is provided concentrically to, and around said rotor which regulates the movement of said plungers,

a housing for accommodating said rotor, said plungers and said cam ring, and



ports that are formed in said rotor, which take in, distribute and cutoff fuel by communicating with said compression space, wherein;

the inside of said housing partitioned into a low pressure fuel area that is formed extending from a fuel inflow port toward the upstream side of a feed pump and a high pressure fuel area, into which fuel pressurized by said feed pump may be introduced and which can communicate with said ports for taking in and cutting off fuel, and

a fuel flow path for cooling the area where said rotor slides in contact with a rotor support member that is formed extending from said high pressure fuel area through said low pressure fuel area.

5,619,972

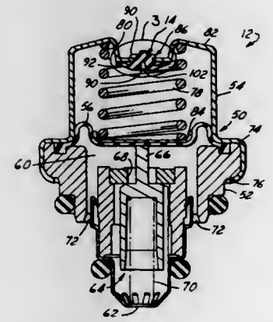
DEMAND PRESSURE REGULATOR

Ronald B. Kuenzli, Deford, and Charles H. Tuckey, Cass City, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jul. 3, 1996, Ser. No. 674,892

Int. Cl.[6] F02M 37/04

U.S. Cl. 123—497 14 Claims



1. A fuel pressure regulator for a no-return fuel delivery system for an internal combustion engine with an air intake manifold and at least one fuel injector comprising:

a housing;

a flexible diaphragm defining in cooperation with the housing, first and second chambers and having generally opposed faces with one face communicating with only the first chamber and the other face communicating with only the second chamber;

an inlet in the first chamber for supplying fuel to the first chamber;

a first valve associated with the inlet and movable to open and closed positions to control the flow of fuel through the inlet;

an outlet in the first chamber for continuously communicating the first chamber with at least one fuel injector to supply fuel thereto;

at least one opening communicating the interior of the second chamber with the exterior of the housing; and

a second valve associated with said at least one opening to prevent any liquid in the second chamber from passing through the opening to the exterior of the housing.

5,619,973

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

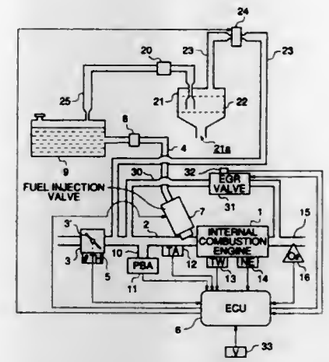
Fumio Hara; Akira Fujimura; Yoshihisa Hara, and Masahiro Sakanushi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 526,563, Sep. 12, 1995, Pat. No. 5,546,922, which is a division of Ser. No. 187,469, Jan. 28, 1994, Pat. No. 5,469,833. This application May 28, 1996, Ser. No. 654,387

Claims priority, application Japan, Feb. 1, 1993, 5-36094

Int. Cl.[6] F02M 25/08

U.S. Cl. 123—520 1 Claim



1. In a control system for an internal combustion engine having an intake passage, an exhaust passage, a fuel tank, a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting said canister and said intake passage for allowing said evaporative fuel to be purged therethrough into said intake passage, and an exhaust gas recirculation passage connecting said exhaust passage and said intake passage for recirculation of exhaust gases, said control system including a purge control valve arranged in said purging passage for controlling a flow rate of said evaporative fuel purged through said purging passage into said intake passage, operating condition-detecting means for detecting operating conditions of said engine, purging flow rate-controlling means for controlling said purge control valve depending on said operating conditions of said engine detected by said operating condition-detecting means, an exhaust gas recirculation control valve arranged in said exhaust gas recirculation passage, and exhaust gas recirculation control means for controlling said exhaust gas recirculation valve based on an amount of exhaust gas recirculation determined depending on said operating conditions of said engine detected by said operating condition-detecting means,

the improvement comprising purging flow rate-correcting means for correcting said flow rate of said evaporative fuel purged, depending on said amount of exhaust gas recirculation.

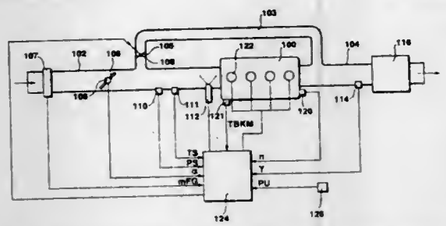
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5,619,974

METHOD FOR FORMING A SIGNAL RELATING TO THE QUANTITY OF EXHAUST GAS RECIRCULATED IN AN INTERNAL COMBUSTION ENGINE

Frank Rodefeld, Lenting, and Nikolaus Benninger, Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 16, 1996, Ser. No. 587,080
Claims priority, application Germany, Jan. 26, 1995, 195 02 368.4
Int. Cl.[6] F02M 25/07
U.S. Cl. 123—571 **10 Claims**



1. A method for controlling an internal-combustion engine, comprising the steps of:
providing a first signal indicative of a fresh gas stream sucked in by the internal-combustion engine;
providing a second signal indicative of an entire gas stream sucked in by the internal-combustion engine as a function of at least one of a pressure prevailing in an intake tract, a temperature prevailing in the intake tract, and rotational speed of the internal-combustion engine;
forming a third signal indicative of a quantity of exhaust gas recirculated in the internal-combustion engine as a function of the first and second signals; and
controlling the internal-combustion engine as a function of the third signal.

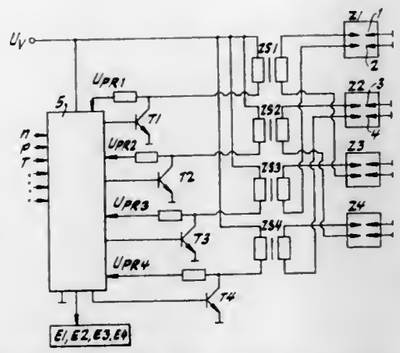
5,619,975

METHOD FOR MONITORING OPERATIONS OF AN INTERNAL COMBUSTION ENGINE TO DETECT COMBUSTION MISSES

Peter-Jürgen Schmidt, Schwieberdingen; Manfred Mezger, Markgroeningen; Walter Gollin, Sachsenheim; Arnd-Matthias Langner, Kornwesthelm, and Klaus Ries-Mueller, Bad Rappenau, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/01406, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO96/12887, PCT Pub. Date May 2, 1996
PCT Filed Oct. 13, 1995, Ser. No. 666,361
Claims priority, application Germany, Oct. 20, 1994, 44 37 480.1
Int. Cl.[6] F02P 3/12
U.S. Cl. 123—644 **3 Claims**

1. A method for monitoring operation of an internal combustion engine to detect combustion misses, the internal combustion engine including at least one ignition coil, at least one cylinder and at least two spark plugs, first and second of the at least two spark plugs being associated with one of the at least one cylinder, the method comprising the steps of:
monitoring at least one of a spark voltage and a spark duration to detect an ignition misfire in the internal combustion engine;
supplying a high secondary voltage using the at least one ignition coil;
switching off a first ignition coil of the at least one ignition coil when the ignition misfire is detected at the first spark plug of the one of the at least one cylinder during an ignition cycle, the at least one ignition coil supplying the high secondary voltage to the second spark plug of the one of the at least one cylinder;



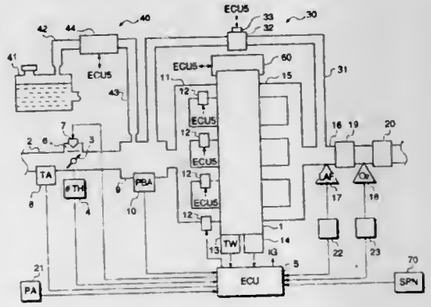
activating an irregular operation monitoring of the internal combustion engine; and
detecting the ignition misfire of the first spark plug when irregular operation of the internal combustion engine is detected.

5,619,976

CONTROL SYSTEM EMPLOYING CONTROLLER OF RECURRENCE FORMULA TYPE FOR INTERNAL COMBUSTION ENGINES

Hiroshi Kitagawa; Hidetaka Maki, and Norio Suzuki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 602,115
Claims priority, application Japan, Feb. 24, 1995, 7-061776; Feb. 24, 1995, 7-061781; Feb. 24, 1995, 7-061783
Int. Cl.[6] F02D 41/00;41/14
U.S. Cl. 123—679 **25 Claims**



1. A control system for an internal combustion engine having an exhaust system, said engine being installed on an automotive vehicle, comprising:
an air-fuel ratio sensor arranged in said exhaust system;
first control means for controlling an amount of fuel to be supplied to said engine in a feedback manner based on an output from said air-fuel ratio sensor by using an adaptive controller of a recurrence formula type, such that an air-fuel ratio of an air-fuel mixture supplied to said engine is converged to a desired air-fuel ratio;
second control means for controlling said amount of said fuel to be supplied to said engine in a feedback manner with a response speed lower than a response speed of said first control means, based on said output from said air-fuel ratio sensor, such that said air-fuel ratio of said air-fuel mixture supplied to said engine is converged to said desired air-fuel ratio;
operating condition-detecting means for detecting operating conditions of at least one of said engine and said vehicle;

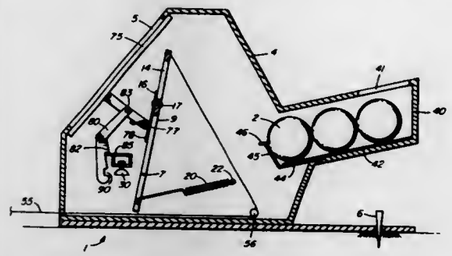
unsteady condition-determining means for determining whether or not said engine is in an unsteady operating condition in which combustion of said engine undergoes a variation, based on an output from said operating condition-detecting means; and
selecting means for selecting between said first control means and said second control means for controlling said amount of fuel to be supplied to said engine, said selecting means selecting said second control means at least when said unsteady condition-determining means determines that said engine is in said unsteady operating condition.

5,619,977

BALL THROWING APPARATUS WITH SAFETY FEATURE

Walter L. Gatin, RR1 S12 C64, Chase, B.C., Canada

Filed Nov. 1, 1995, Ser. No. 548,797
Int. Cl.[6] A63B 69/40; F41B 3/03
U.S. Cl. 124—7 **28 Claims**



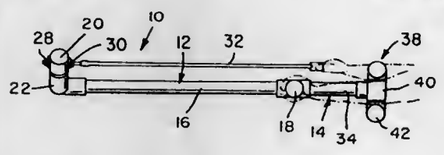
1. A ball throwing apparatus comprising:
an enclosure formed with an aperture;
a pivotable gate including biasing means to pivot the gate to cover the aperture;
a throwing arm adapted to receive a ball pivotally mounted within the enclosure for movement between a ball loading position and a released position,
means for releasably holding the throwing arm in the ball loading position;
means for releasing the throwing arm from the ball loading position;
actuating means for moving the throwing arm from the ball loading position to the released position to throw the ball; and
means to open the gate to allow discharge of the ball from the enclosure.

5,619,978

SLINGSHOT

Jerry Flournoy, HC 2, Box 77N, Spicewood, Tex. 78669

Filed May 14, 1996, Ser. No. 645,506
Int. Cl.[6] F41B 3/02
U.S. Cl. 124—20.1 **18 Claims**



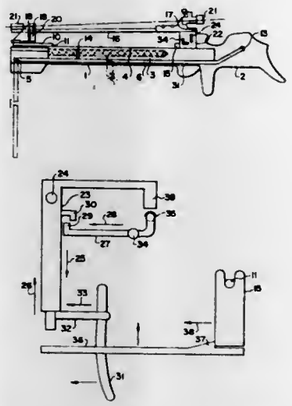
1. A slingshot, comprising:
a projectile launching portion including:
a first elongated member having a forward end and a rearward end;
a fork secured to the forward end of said first elongated member, said fork adapted for attachment of elastomeric tubes;
a crossmember secured to the rearward end of said first elongated member and having a terminal end remote therefrom defining a handgrip; and,
a forearm supporting portion secured to said crossmember, between said first elongated member and said terminal end, and extending rearwardly therefrom.

5,619,979

CROSSBOW FOR THE SHOOTING OF ARROWS, BOLTS, HARPOONS OR FOR NARCOTICIZING PURPOSES

Johannes Ossege, Bad Iburg-Ostenfelde, Germany, assignor to DOHT GmbH, Lengerich, Germany

Filed Jan. 4, 1995, Ser. No. 368,800
Claims priority, application Germany, Jan. 7, 1994, 44 00 290.4
Int. Cl.[6] F41B 5/12
U.S. Cl. 124—25 **16 Claims**



1. In a crossbow for shooting any of arrows, bolts and harpoons or for narcoticizing purposes comprising:
a base frame;
a shaft with a support for a projectile to be shot;
two rigid propelling arms articulated on the base frame;
a string extending between ends of said propelling arms; and
a spring assembly, including a tensioning spring, for applying a spring force against which said string is tensioned by said propelling arms;
the improvement wherein the tensioning spring is mounted in the base frame under the support for the projectile and is connected to the two propelling arms by deflected cords and wherein, on both sides of the base frame, respective tensioning members are articulated and provided with elements which engage behind the propelling arms.

5,619,980

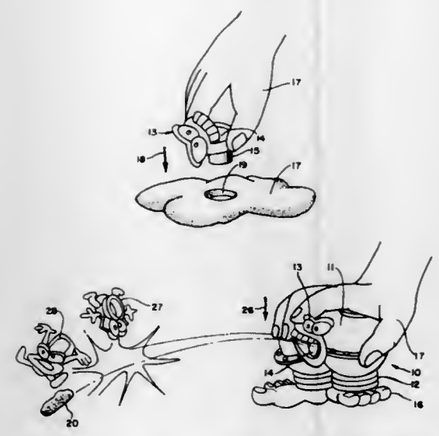
PLAY MATERIAL SHOOTING TOY

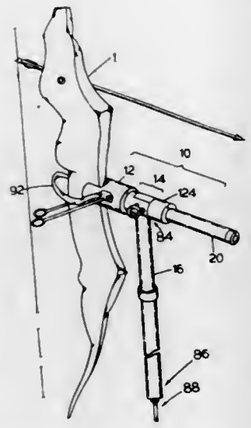
Sean S. Lee, Hermosa Beach, and Mark Barthold, Redondo Beach, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 292,914, Aug. 19, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,437
Int. Cl.[6] F41B 11/24
U.S. Cl. 124—64 **10 Claims**

1. A play material toy comprising:
a quantity of amorphous play material;

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a hollow housing having a collapsible portion and defining an aperture therein; and

means for forming a plug of said play material including a play material sleeve removably securable to said housing and at least partially received within said aperture, said sleeve defining a bore therein,

said sleeve being applied to said play material so as to form and lodge a plug of play material within said bore and thereafter reinstalled in said aperture and said hollow housing being rapidly collapsed to pressurize the air within said hollow housing and expel said plug of play material.

10. A method of playing an amorphous-material plug-shooting game comprising the steps of:

providing a pressurizable housing having a collapsible portion and an aperture formed therein;

providing a quantity of amorphous play material;

providing a plug shooting member having a sleeve and an open plug bore therein;

removably supporting said plug shooting member within said aperture;

removing said plug shooting member from said aperture;

forcing said sleeve into said amorphous play material to separate a portion of said play material from said quantity of amorphous play material and form a plug within said plug bore;

installing said plug shooting member, bearing said plug in said plug bore, into said aperture; and

rapidly collapsing at least a portion of said housing to force said plug from said plug bore.

5,619,981

ARCHERY BOW STABILIZER AND PROP

Charles E. Breedlove, 1708 S. Fairview Rd., Columbia, Mo. 65203

Filed Feb. 5, 1996, Ser. No. 596,736

Int. Cl.[6] F41B *5/20;5/14*

U.S. Cl. 124—89 **32 Claims**

1. An archery bow stabilizer and prop comprising:

a locking adapter having a first end and a second end, said first end having parallel extensions for fitting over a handle of a bow;

a transition elbow having a body and a shaft, said body attachable to said second end of said locking adapter, a longitudinal bore extends through said body for receiving a bolt, said bolt attaches and secures said archery bow stabilizer and prop to the bow, said shaft having a first threaded bore and a second threaded bore in a perpendicular relationship; and

a stabilizer-prop having a first end and a second end, said first end attached to either said first or said second threaded bore on said shaft of said transition elbow, said stabilizer-prop extending outward in a horizontal position for use as a stabilizer when attached to said first threaded bore; and said stabilizer-prop extending downward in a vertical position for said stabilizer-prop to function as a bow prop when attached to said second threaded bore.

5,619,982

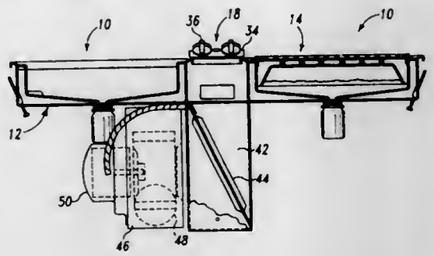
METHOD AND APPARATUS FOR OPERATING A DOWNDRAFT COOKING VAPOR WITHDRAWAL SYSTEM

Paul H. Kelly, and Ranya C. Hibbler, both of Indianapolis, Ind., assignors to Maytag Corporation, Newton, Iowa

Filed Jul. 31, 1995, Ser. No. 509,358

Int. Cl.[6] A47J *27/12;37/00;* **F24C** *7/04;15/20*

U.S. Cl. 126—299 D **6 Claims**



1. An apparatus for sensing grill operations in a cooktop and automatically adjusting the speed of a fan to withdraw vapors from adjacent the grill, the apparatus comprising:

a grill element;

means for operating the grill element;

a withdrawal fan with selectable high and low speed operation for removing vapors from adjacent the cooktop;

means for sensing the presence of the grill element in the cooktop;

means for sensing the operation of the grill element; and

means for automatically selecting the high speed fan operation in response to detection of grill element operation.

5,619,983

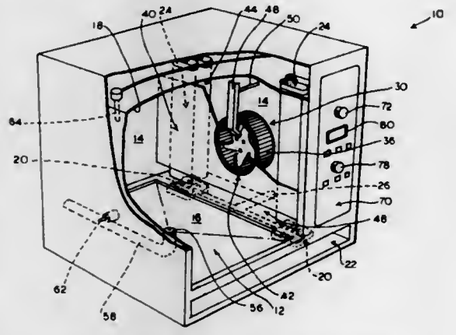
COMBINATION CONVECTION STEAMER OVEN

Mark J. Smith, Fuquay-Varina, N.C., assignor to Middleby Marshall, Inc., Elgin, Ill.

Filed May 5, 1995, Ser. No. 435,303

Int. Cl.[6] F24H *1/18*

U.S. Cl. 126—348 **20 Claims**



1. A combination convection/steamer oven, comprising:

a) a cooking cavity having side walls, a ceiling, and a floor;

b) a drain channel disposed beneath the cooking cavity and communicating with a drain opening in the cooking cavity;

c) a heating apparatus for heating the cooking cavity;

d) a steam generating system for supplying steam to the cooking cavity and including a water supply source having an adjustable water flow regulator;

e) a blower for circulating cooking gases inside the cooking cavity; and

f) a controller operably connected to the steam generating system for adjusting the rate of water flowing to the steam generating system so as to maintain a predetermined steam saturation level inside the cooking cavity, the controller including:

i) a temperature sensor disposed in the cooking cavity for detecting the cooking cavity temperature and the rate of cooking cavity temperature change,

ii) a processor connected to the temperature sensor for comparing the detected rate of cooking cavity temperature change to a predetermined cooking cavity temperature change rate and for calculating the water flow rate required to maintain the predetermined steam saturation level inside the cooking cavity, and

iii) wherein the water flow regulator is responsive to a signal output from the processor setting the rate of water flowing to the steam generating system.

5,619,984

DRY POWDER INHALATION DEVICE HAVING A POWDER-LOADED ELONGATE CARRIER

Peter D. Hodson; David K. Smith; David J. Velasquez, and Anthony C. L. Wass, all of St. Paul, Minn., assignors to Astra Aktiebolag, Sodertalje, Sweden

Continuation of Ser. No. 103,411, Aug. 6, 1993, which is a continuation of Ser. No. 933,882, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 516,328, Apr. 30, 1990, abandoned. This application May 8, 1995, Ser. No. 437,291

Claims priority, application United Kingdom, Apr. 28, 1989, 8909891

Int. Cl.[6] A61M *15/00;16/00;* **B05D** *7/14;* **B65D** *83/06*

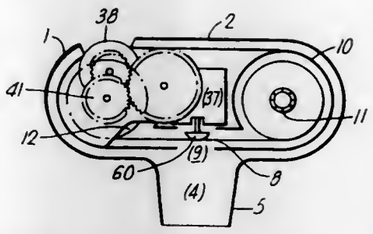
U.S. Cl. 128—203.15 **21 Claims**

1. A dry powder inhalation device comprising:

a housing defining a chamber, a patient port in communication with said chamber, and one or more air inlets in communication with said chamber so that when a patient inhales through said patient port an air flow is established from the air inlets to the patient port through the chamber;

an elongate carrier disposed within said housing, preloaded with a plurality of doses of medicament, said medicament being in the form of a plurality of finely divided powder particles having a particle size in the range of from 1 to 10 μm, said finely divided powder particles being releasably retained directly on a surface of the carrier, without the presence of an adhesive between the carrier and powder particles by an attractive force between said carrier and said powder; and

an advancement mechanism for exposing an area of predetermined size of the elongate carrier within the chamber so that the powder particles in said area are exposed to said air flow during inhalation and can be released from said carrier and entrained into said airflow.



5,619,985

INHALER TYPE MEDICINE ADMINISTERING DEVICE

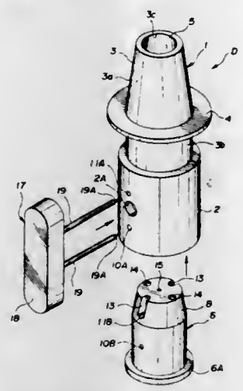
Hisatomo Ohki; Shigemi Nakamura; Kazunori Ishizeki; Atsuo Wakayama, all of Atsugi, and Akira Yanagawa, Yokohama, all of Japan, assignors to Unisia Jecs Corporation, Atsugi, and Dott Limited Company, Yokohama, both of Japan

Filed Aug. 3, 1995, Ser. No. 510,850

Claims priority, application Japan, Aug. 8, 1994, 6-206056

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.21 **12 Claims**



1. An inhaler type medicine administering device comprising:

a main body having first and second end sections which are axially opposite, said main body including

means defining a capsule accommodating hole opened to the first end section for accommodating a capsule containing medicine,

means defining an inhaling opening opened to the second end section,

means defining first and second pin insertion holes formed extending in a diametrical direction of said main body so as to pass through said capsule accommodating hole, each pin insertion hole having first and second sections which are

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located respectively at opposite sides of axis of said capsule accommodating hole, and

means defining an air flow passage located radially outward of said capsule accommodating hole and having a first end opened to said first end section of said main body and located near said capsule accommodating hole, and a second end opened to be in communication with said inhaling opening, said air flow passage extending through said capsule accommodating hole and through said first and second pin insertion holes; and

a perforator including first and second pins which are insertable respectively into said first and second pin insertion holes to form holes in the capsule accommodated in said capsule accommodating hole.

5,619,986

METHOD AND APPARATUS FOR CONTROLLING THE CONCENTRATION OF AT LEAST ONE COMPONENT IN A GAS MIXTURE IN AN ANAESTHETIC SYSTEM

Olof Werner, Stadsbudsgatan 10, S-222 36 Lund, and Janne Persson, S-242 92 Horby, both of Sweden, assignors to Olof Werner, Lund, Sweden

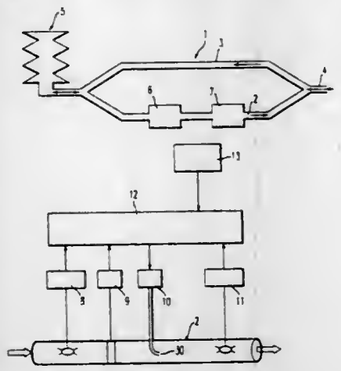
PCT No. PCT/SE91/00904, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO92/11887, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 23, 1991, Ser. No. 78,200

Claims priority, application Sweden, Jan. 3, 1991, 9100016

Int. Cl.[6] A61M *16/10;* **A62B** *7/00;* **F16K** *31/02*

U.S. Cl. 128—204.21 **23 Claims**



1. A reinhalation system of an anesthetic apparatus, comprising

a breathing element of a patient;

a ventilating source;

an exhalation branch and an inhalation branch, said exhalation and inhalation branches being directly connected to each other and each of said exhalation and inhalation branches interconnecting said ventilating source with said breathing element;

a gas mixture containing at least a first component, said first component being at least partially introduced into said inhalation system at said inhalation branch;

said inhalation branch being located downstream of said ventilating source and comprising a dosing unit supplying said first component to said inhalation branch, a control unit including a computer controlling said dosing unit, a first gas-concentration meter provided in the inhalation branch and measuring the concentration of said first component in the inhalation branch, a flow meter located in the inhalation branch, said flow meter determining a flow rate of said gas mixture in the inhalation branch, said dosing unit supplying at least said first component to said inhalation branch at a dosing point located downstream of said first concentration meter, said control unit controlling said supply of said first component as a function of the concentration of said first component measured by said first concentration meter and the flow rate of the gas mixture measured by said flow meter;

a feed forward control system which includes said flow meter located in said inhalation branch upstream of said dosing point and said gas concentration meter wherein said gas concentration meter is located upstream of said dosing point, said flow meter and said gas concentration meter generating/sending signals to said computer, wherein said computer is responsive to signals received from said flow meter and gas concentration meter and said computer determines a required gas flow rate to achieve a desired gas concentration for patient delivery; and

an adjustment mechanism achieving high-speed gas concentration adjustments which comprises said dosing point and said gas concentration meter being positioned very close together such that the volume of gas and the system between said dosing point and said gas concentration meter are minimized;

wherein said rate of flow of the gas mixture and concentration of said first component in said inhalation branch vary with breathing of a patient into said breathing element.

5,619,987

SEMI-CLOSED REBREATHING APPARATUS WITH WATER REMOVING PUMP

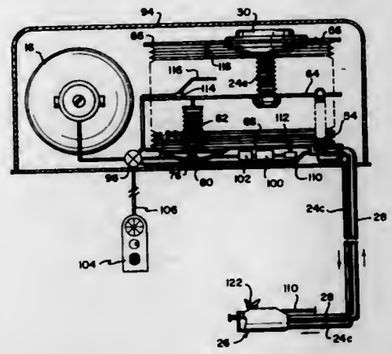
Shunsuke Matsuoka, Chiba, Japan, assignor to Grand Bleu International, Inc., New York, N.Y.

Continuation of Ser. No. 33,649, Mar. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 862,207, Apr. 2, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,875

Claims priority, application Japan, Sep. 24, 1991, 3-270442

Int. Cl.[6] A61M *16/00;* **A62B** *7/04;9/02;* **F16K** *31/26*

U.S. Cl. 128—204.29 **4 Claims**



1. A respiration system wherein a first waste gas portion of a user's exhaled breath is removed from the exhaled breath within the system, thereby leaving a second portion of the exhaled breath suitable for rebreathing, said respiration system comprising:

a pressurized breathable gas supply;

a first expansion chamber;

a mouthpiece for providing breathable gas to and receiving exhaled breath from the user, said mouthpiece having an inlet and an outlet, said outlet being connected to said first expansion chamber, said exhaled breath including water;

means for mixing within said first expansion chamber said exhaled breath with breathable gas from said pressurized breathable gas supply to form a gas mixture;

means for separating said water from said exhaled breath;

means for substantially eliminating said separated water from said respiration system, said elimination means including a water pump located within said first expansion chamber, said water pump removing water that has been separated from said exhaled breath from said respiration system;

an inhalation tube connected between said first expansion chamber and said inlet of said mouthpiece, said inhalation tube providing communication of said gas mixture of said first expansion chamber and said mouthpiece; and

means for removing at least some of the first waste gas portion from said gas mixture, said removing means being located along said inhalation tube between said first expansion chamber and said mouthpiece.

5,619,988

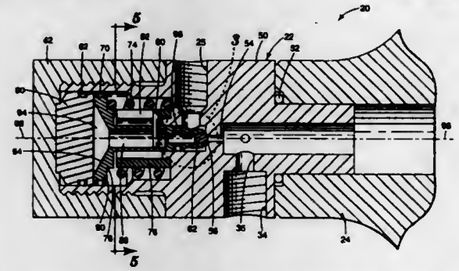
FIRST STAGE PRESSURE REGULATOR FOR EMERGENCY BREATHING APPARATUS

Robert J. Mattila, and Frank J. Fabin, both of Eagan, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 5, 1995, Ser. No. 539,535

Int. Cl.[6] A62B *9/02*

U.S. Cl. 128—205.24 **10 Claims**



1. A pressure regulator valve with a self-registering piston connectable to a portable air cylinder and an external compressed air source, the pressure regulating valve comprising:

a valve body having a valve seat interposed between an inlet port receiving unregulated air pressure from the portable air cylinder and an outlet port;

a secondary air inlet port on the valve body releasably connectable to the external compressed air source;

a removable piston having a piston seat at a first end and a counter-force surface at a second end, the piston being biased along an axis of travel by the unregulated pressure from an engaged position where the piston seat is engaged with the valve seat and a disengaged position;

biasing means for biasing the piston toward the disengaged position;

a passageway fluidly coupling the counter-force surface with the regulated pressure for biasing the piston toward the engaged position so that a target regulated pressure is maintained; and

guide means for maintaining a fixed rotational orientation of the piston seat with respect to the valve seat so that a substantially identical rotational orientation is achieved when the piston is removed and reinserted into the valve body.

5,619,989

RESPIRATOR FILTER

Jens Krüger, Lübeck, Germany, assignor to Drägerwerk AG, Lübeck, Germany

Filed Mar. 7, 1995, Ser. No. 399,856

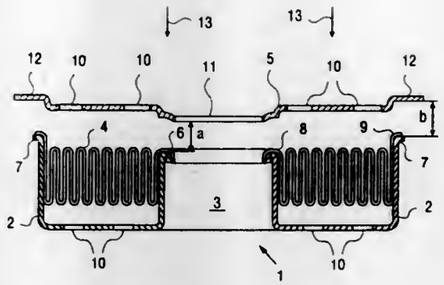
Claims priority, application Germany, Mar. 26, 1994, 44 10 582.7

Int. Cl.[6] A62B *7/00*

U.S. Cl. 128—206.17 **6 Claims**

1. A respirator filter comprising:

a substantially pot-shaped filter housing including an outer wall with a flange at an outer edge thereof and an inner wall defining a flow channel passing through the filter housing, said inner wall having an outer edge defining a sealing surface;



a filter element disposed in said filter housing; and

an elastic housing cover for closing the filter housing, said housing cover having a sealing surface engaging portion and a flange engaging portion, when said housing cover is located at a spaced location from said housing parallel to said sealing surface, a distance (a) is defined between said sealing surface and said sealing surface engaging part of said housing cover and a distance (b) is defined between said flange and said flange engaging part of said housing cover, said distance (a) being smaller than said distance (b), said housing cover being placed on to said filter housing with said sealing surface engaging part engaging said sealing surface and said flange engaging part engaging said flange, to warp said housing cover, said housing cover pressing said filter element against said flange and said sealing surface, said housing having a spacer section defining an air distribution space between said filter element and said housing cover.

5,619,990

APPARATUS AND METHOD FOR MAKING A MEDICAL DIAGNOSIS BY DISCRIMINATING ATTRIBUTION DEGREES

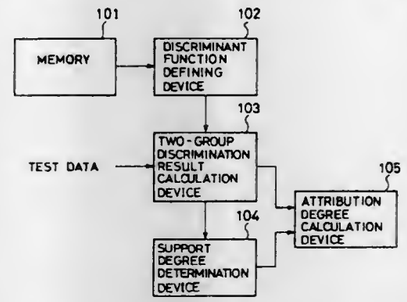
Kazuyuki Kanai, Kasai, Japan, assignor to TOA Medical Electronics Co., Ltd., Hyogo-ken, Japan

Filed Sep. 28, 1994, Ser. No. 314,008

Claims priority, application Japan, Sep. 30, 1993, 5-245618

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—630 **30 Claims**



1. An apparatus for analyzing a plurality of blood samples to determine a most probable disease from one of a plurality of diseases for each of the plurality of blood samples by discriminating attribution degrees, said apparatus comprising:

input means for inputting blood sample test data, including a plurality of blood parameters for each of the plurality of blood samples,

memory means for storing a plurality of characteristic values for each of the plurality of diseases;

discriminant function defining means for defining for every combination of two diseases of the plurality of diseases stored

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in said memory means a two-disease linear discriminant function which provides a borderline, bisecting each combination of two diseases;

two-disease discrimination result calculation means for calculating a two-disease discrimination result to which each of the plurality of blood samples may be attributed for each combination of two diseases using the two-disease linear discriminant function defined by said discriminant function defining means;

support degree determination means for determining a support degree of the two-disease discrimination result obtained by said two-disease discrimination result calculation means for each combination of two diseases; and

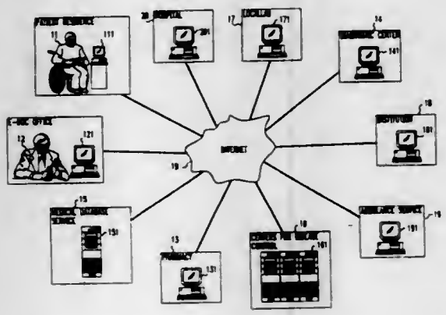
attribution degree calculation means for calculating attribution degrees indicating to what extent on the blood sample test data is attributed to each of the plurality of diseases, based on the two-disease discrimination result and support degree for each combination of two diseases, in order to determine the most probable disease for each of the plurality of blood samples.

5,619,991

DELIVERY OF MEDICAL SERVICES USING ELECTRONIC DATA COMMUNICATIONS

Neil J. A. Sloane, Highland Park, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 26, 1995, Ser. No. 429,419
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—630 **7 Claims**



1. A method for use by a medical office, said method comprising the steps of

receiving from a patient a description of medical symptoms experienced by that patient,

creating, and storing in a memory of a computer, a patient transaction record, said patient transaction record including symptom information indicative of medical symptoms described by said patient,

transmitting to a medical testing facility a first outgoing electronic data communication which specifies at least one selected diagnostic test to be performed on said patient, said one diagnostic test being selected in response to at least a first portion of the medical symptoms stored in said memory,

receiving from said medical testing facility a first incoming electronic data communication which includes results of said at least one diagnostic test,

adding said test results to said patient transaction record stored in said memory, and

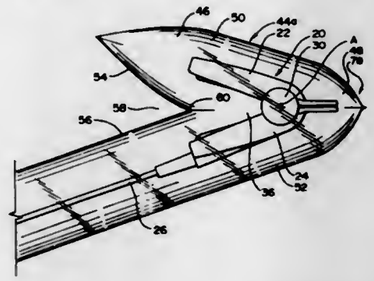
communicating to said patient information describing a selected course of medical treatment, said course of medical treatment being selected in response to at least a second portion of the information in said patient transaction record, said second portion including said test results and said symptom information.

5,619,992

METHODS AND APPARATUS FOR INHIBITING CONTAMINATION OF REUSABLE PULSE OXIMETRY SENSORS

Robert B. Guthrie, 1027 Church St., Ventura, Calif. 93001, and Richard A. Potts, 7322 36th Ave. SW., Seattle, Wash. 98126

Filed Apr. 6, 1995, Ser. No. 417,975
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—633 **15 Claims**



2. A combination of:

a pulse oximetry sensor comprising a cable and a sensor assembly formed by first and second sensor members mounted to the end of the cable, the sensor members being pivotally connected to move between a closed position and an open position in which a digit receiving region is defined therebetween;

a protective sheath comprising an envelope having an interior chamber comprising a first chamber portion and a second chamber portion and having a cable opening formed therein to allow access to the interior chamber, the envelope being made of fluid impermeable material and having a first envelope section adjacent to the first chamber portion and a second envelope section adjacent to the second chamber portion; wherein

the protective sheath is placed over the pulse oximetry sensor such that the first sensor member is received in the first chamber portion, the second sensor member is received in the second chamber portion, and the cable extends through the cable opening; and

the first and second envelope sections are adjacent to the first and second sensor members, respectively, such that access to the digit receiving region is substantially unhindered.

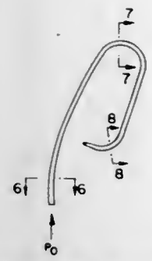
5,619,993

METHOD OF CONTROLLING CURVATURE OF A MEDICAL DEVICE

Haojun Lee, The First People's Hospital of Shaoguan City 33 Dongti Rd., Shaoguan City, Guangdong, China

Continuation of Ser. No. 126,749, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 798,549, Nov. 26, 1991, abandoned. This application Mar. 10, 1995, Ser. No. 402,319
Claims priority, application China, Nov. 30, 1990, 901094811
Int. Cl.[6] A61M 25/092
U.S. Cl. 128—642 **3 Claims**

1. A method for controlling curvature of a medical device which is used as a catheter as the medical device is inserted into the body of a patient which comprises controlling the curvature by using a pressure source, a pressure control unit connected to the source, a fluid pressure-transmitting medium and a pressure control cavity along the entire length of the medical device and containing the medium and connected to the source and unit, wherein the medical device is curved prior to the fluid pressure transmitting medium being supplied from the source and is straightened by the medium from the source, wherein the pressure control cavity has at least three parts with different cross-sections along the length of the medical device which are straightened at different pressures wherein the different parts curve to differing extents due to the



different cross-sections allowing the medical device to have different curvatures at the different parts at a given pressure of the pressure transmitting medium and wherein the inner pressure of the cavity can be used to change the curvature of the medical device controlled by a specific functional relationship between the curvature in the medical device and the pressure inside the part of the pressure control cavity, thus making the curvature suit each position in the course that the medical device takes into the body.

5,619,994

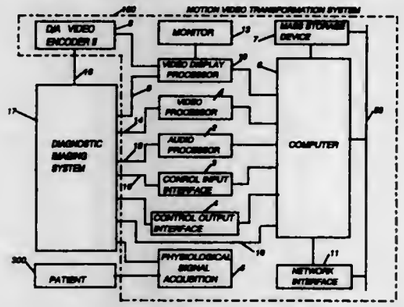
Patent Not Issued For This Number

5,619,995

MOTION VIDEO TRANSFORMATION SYSTEM AND METHOD

Suave M. Lobodzinski, 5560 St. Irmo Walk, Long Beach, Calif. 90803

Continuation-in-part of Ser. No. 158,157, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 791,962, Nov. 12, 1991, abandoned. This application Jun. 14, 1994, Ser. No. 259,789
Int. Cl.[6] A61B 5/05
U.S. Cl. 128—653.1 **18 Claims**



1. A motion video transformation system for communication with a diagnostic imaging system, said motion video transformation system comprising:

a computer;

a video processor in communication with said computer, said video processor for receiving and compressing a video signal generated by the diagnostic imaging system, thereby producing a compressed video signal;

a physiological signal acquisition circuit in communication with said computer, said physiological signal acquisition circuit for receiving physiological signals from a patient,

said computer being programmed for combining and synchronizing in real-time said compressed video signal with said physiological signals to create a compressed indexed video signal, said physiological signals for providing a reference index in said compressed video signal via computer synchronization by correlating an event in said compressed video signal to a corresponding event in said physiological signals; and

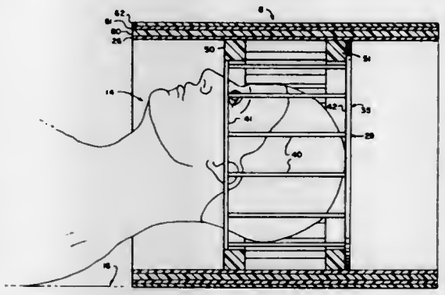
a mass storage device in communication with said computer, said computer being programmed for storing said compressed indexed video signal to said mass storage device.

5,619,996

NMR LOCAL COIL PROVIDING IMPROVED LOWER BRAIN IMAGING

Konstantin Beresten, Mequon, Wis., assignor to Medical Advances, Inc., Milwaukee, Wis.

Filed Mar. 15, 1995, Ser. No. 404,804
Int. Cl.[6] A61B 5/055
U.S. Cl. 128—653.5 **4 Claims**



1. A local RF and gradient field coil for acquiring NMR data, which comprises:

an RF coil having a plurality of conductive linear elements arranged parallel to each other and distributed about a coil axis, first ends of the conductive linear elements attached to a physically continuous conductive end cap and second ends of the conductive linear elements attached to a conductive end ring through which a head of a patient may be inserted, wherein the conductive linear elements near a top of the RF coil are shorter than all other conductive linear elements and wherein the conductive linear elements near a bottom of the RF coil are longer than all other conductive linear elements so that the RF coil provides an outwardly extending lip that underlies a portion of a neck of the patient when the rear of the patient's head is proximate to the conductive linear elements at the bottom of the RF coil and so that an RF coil structure overlying the face is minimized;

a cylindrical RF shield disposed around and fastened to the RF coil;

a cylindrical gradient coil assembly disposed around and fastened to the cylindrical RF shield, and including coils for producing three orthogonal magnetic field gradients; and

in which the conductive linear elements near the top of the RF coil are substantially equal in length to a distance between the top of an average human patient's head and the patient's eyes and in which the conductive linear elements near the bottom of the RF coil are substantially equal in length to a distance between the top of an average patient's head and the patient's neck.

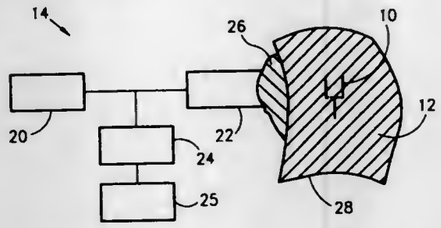
VOL 1197 ISS 3 AP 15 1997 UMI

5,619,997

PASSIVE SENSOR SYSTEM USING ULTRASONIC ENERGY

Shay Kaplan, Givat Elah, Israel, assignor to Mizur Technology Ltd., Givat Elah, Israel

Filed Jan. 27, 1995, Ser. No. 379,396
Claims priority, application Israel, Jan. 28, 1994, 108470
Int. Cl.[6] A61B *8/00; G01K 11/22; G01N 11/10*
U.S. Cl. 128—660.02 **10 Claims**



1. A passive sensor system utilizing ultrasonic energy, the system comprising:

at least one ultrasonically vibratable sensor having at least one vibration frequency, each vibration frequency being a function of a physical variable to be sensed, said physical variable being selected from the group consisting of temperature and viscosity; and

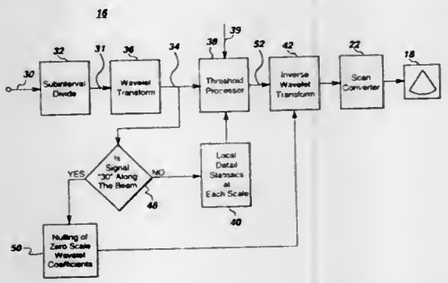
an ultrasonic activation and detection system for exciting said sensor and for detecting said at least one vibration frequency thereby to determine a value of said physical variable.

5,619,998

ENHANCED METHOD FOR REDUCING ULTRASOUND SPECKLE NOISE USING WAVELET TRANSFORM

Aiman A. Abdel-Malek, Schenectady, and Kenneth W. Rigby, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 311,698, Sep. 23, 1994, Pat. No. 5,497,777. This application Mar. 11, 1996, Ser. No. 613,552
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 **11 Claims**



1. An adaptive method for reducing signal-dependent noise mixed with a true signal in a coherent imaging system signal, comprising the steps of:

for sampled amplitudes at each beam angle:

(a) dividing a sampled range amplitude signal into a number of first subinterval signals of equal length:

(b) transforming each of said first subinterval signals using discrete wavelet transformation to provide first wavelet transform coefficients for each of a plurality of first wavelet scales having different levels of resolution ranging from a first finest wavelet scale to a first coarsest wavelet scale:

(c) for each transformed beam subinterval, deleting all of the first wavelet transform coefficients representing said finest first wavelet scale;

(d) for each said first wavelet scale other than said finest first wavelet scale, identifying for each of said first subinterval signals which of said first wavelet transform coefficients are related to noise and which are related to a true signal through use of adaptive nonlinear thresholding;

(e) setting to zero those first wavelet transform coefficients which are identified as being related to noise:

(f) inverse transforming the so modified first wavelet transform coefficients using an inverse discrete wavelet transformation to provide a filtered range amplitude signal;

repeating steps (b)–(f) for each subinterval signal comprising said sampled range amplitude signal: and

for filtered amplitudes at each range:

(g) dividing a sampled beam angle amplitude signal into a number of second subinterval signals of equal length:

(h) transforming each of said second subinterval signals using discrete wavelet transformation to provide second wavelet transform coefficients for each of a plurality of second wavelet scales having different levels of resolution ranging from a finest second wavelet scale to a coarsest second wavelet scale;

(i) for each second wavelet scale, identifying for each of said second subinterval signals which of said second wavelet transform coefficients are related to noise and which are related to a true signal through the use of adaptive nonlinear thresholding;

(j) setting to zero those second wavelet transform coefficients which are identified as being related to noise;

(k) inverse transforming the so modified second wavelet transform coefficients using an inverse discrete wavelet transformation to provide a speckle-reduced beam angle amplitude signal; and

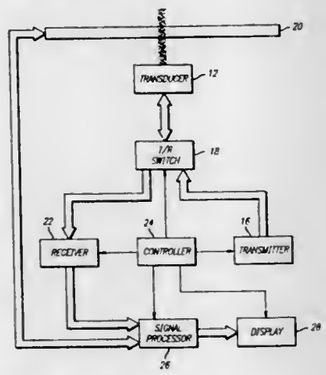
repeating steps (h)–(k) for each subinterval signal comprising said sampled beam angle amplitude signal to provide a speckle-reduced range-beam angle image.

5,619,999

BODY SURFACE POSITION LOCATOR FOR ULTRASOUND TRANSDUCER

Patrick L. Von Bebren, Bellevue, and David J. Thomas, Issaquah, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Dec. 28, 1995, Ser. No. 580,147
Int. Cl.[6] G03B *42/00*
U.S. Cl. 128—661.01 **20 Claims**



1. An imaging system, comprising:

a position location array adapted to be affixed to a surface layer of an imaging subject, said position location array comprising a plurality of electrodes disposed in a grid pattern within a flexible substrate;

a transducer having at least one element operable to provide an acoustic pulse through said position location array and said surface layer in response to a driving signal and to provide a corresponding return signal in response thereto;

a receiver coupled to said transducer to receive said return signal from said at least one element and provide a beamformed signal; and

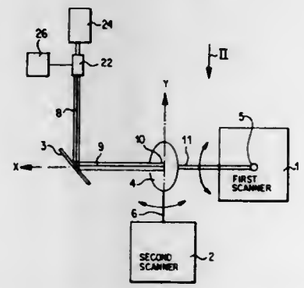
processor means coupled to said receiver and said position location array for forming an image from said beamformed signal that includes position coordinates that correspond to an intersection between said acoustic pulse and associated ones of said plurality of electrodes.

5,620,000

METHOD AND APPARATUS FOR MEASURING FLOW RATE, PARTICULARLY OF BLOOD

Gerhard Zinser, Speyer; Georg Michelson, Baiersdorf-Hagenau, and Bernhard Schmauss, Erlangen, all of Germany, assignors to Heidelberg Engineering, Optische Messsysteme GmbH, Heidelberg, Germany

Continuation of Ser. No. 267,742, Jul. 5, 1994, abandoned. This application Aug. 2, 1995, Ser. No. 510,280
Claims priority, application Germany, Jul. 2, 1993, 43 22 043.6
Int. Cl.[6] A61B *5/026*
U.S. Cl. 128—666 **25 Claims**



1. A method of measuring a flow rate of a flowing liquid from a frequency shift of a laser beam reflected from the liquid according to an optical Doppler effect, said method comprising:

scanning a flow area to be measured with a laser beam in a two-dimensional grid pattern of M×L scanning points, where M and L each represent a whole number, said scanning being carried out by

scanning a series of M individual scanning points along a first scan line and measuring an intensity of reflected light from each of said series of M scanning points, whereby M measured values are detected and stored, and

repeating the scanning along said first scan line N times, whereby a series of N measured values representing an intensity of reflected light is collected for each of said M scanning points at successive time intervals, where N represents a whole number equal to or greater than 2, and

thereafter successively scanning in the same manner as said first scan line, a series of (L-1) additional scan lines parallel to said first scan line;

determining a frequency shift of the reflected light due to the Doppler effect from a time variation of the measured reflected light intensities for each of said M×L scanning points; and

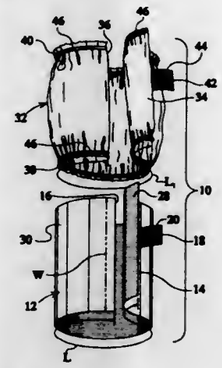
determining the flow rate of each of said M×L points of the scanning pattern from the frequency shift.

5,620,001

UNIVERSAL BLOOD-PRESSURE CUFF COVER

Timothy N. Byrd, and Janice A. Byrd, both of 1267 Old Cades Cove Rd., Townsend, Tenn. 37882

Filed Apr. 26, 1994, Ser. No. 233,060
Int. Cl.[6] A61B *5/022*
U.S. Cl. 128—686 **19 Claims**



1. A blood-pressure cuff cover, said cover comprising a top band for being releasably received about the appendage of a patient and around a blood-pressure cuff secured about the appendage, said top band being fabricated from a flexible material and defining first and second edge portions for being positioned on opposite sides of the blood-pressure cuff as the blood-pressure cuff is received around the appendage, at least said first edge portion being provided with a draw member for drawing together said flexible material of said top band proximate said first edge portion and for biasing said first edge portion toward the appendage of the patient to prohibit contaminants from being communicated between said first edge portion and the appendage of the patient, whereby said top band forms a bloused protective barrier over the blood-pressure cuff which accommodates expansion of the blood-pressure cuff during use.

5,620,002

METHOD FOR CORRECTING THERMAL DRIFT IN CARDIAC OUTPUT DETERMINATION

Timothy J. Hughes, Palo Alto, Calif., assignor to Abbott Critical Care Systems, Abbott Park, Ill.

Filed Dec. 22, 1995, Ser. No. 577,629
Int. Cl.[6] A61B *5/02; 5/00*
U.S. Cl. 128—713 **28 Claims**

1. A method for determining a cardiac output of a heart with reduced dependence on thermal drift, comprising the steps of:

(a) providing an input signal that changes a temperature of blood within the heart so that it varies periodically;

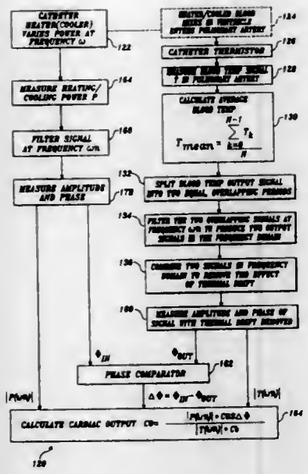
(b) sensing a temperature of blood leaving the heart, producing a blood temperature output signal that varies periodically;

(c) splitting the blood temperature output signal into two overlapping measurement time periods;

(d) producing two separate output signals in the frequency domain using the two overlapping measurement time periods;

(e) combining the two separate output signals into a single corrected frequency domain output signal with a reduced effect of thermal drift; and

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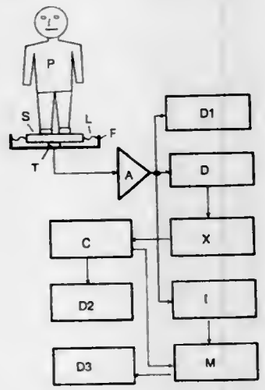
(f) determining cardiac output as a function of the corrected frequency domain output signal, said cardiac output thus determined having a reduced dependence on thermal drift.

5,620,003

METHOD AND APPARATUS FOR MEASURING QUANTITIES RELATING TO A PERSONS CARDIAC ACTIVITY

Ulla K. Sepponen, Helsinki, Finland, assignor to Increa Oy, Helsinki, Finland

PCT No. PCT/FI93/00370, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO94/06348, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 15, 1993, Ser. No. 367,349
Claims priority, application Finland, Sep. 15, 1992, 924117
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—714 **20 Claims**



1. A method for measuring quantities relating to a person's physical condition and cardiac activity, such as a person's weight and quantities proportional to heart rate, cardiac stroke volume, and cardiac output, characterized by:

positioning a person on a measuring support so that a blood flow pulse caused by a stroke of the heart is matched by a change in the weight;

recording the person's weight and changes in the weight;

using time related characteristics of the recorded changes in the weight to determine information about the person's cardiac activity including at least one of the quantities proportional to heart rate, cardiac stroke volume, and cardiac output; and,

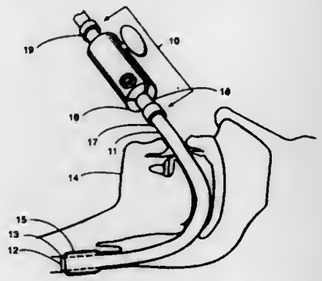
deriving said quantity related to the person's physical condition from said weight and said at least one of the quantities proportional to heart rate, cardiac stroke volume, and cardiac output.

5,620,004

AIRWAY INDICATOR DEVICE

Aaron Johansen, 206 E. 95th St., New York, N.Y. 10128

Filed Oct. 23, 1995, Ser. No. 546,669
Int. Cl.[6] A61B *5/07;* **A61M** *29/00*
U.S. Cl. 128—716 **6 Claims**



1. A method for determining a presence of an impaired lung within an intubated patient comprising the steps of:

(a) inserting an endotracheal tube into the patient's airway;

(b) presenting a sound generator operable for generating an audible sound;

(c) attaching a means for vibrationally coupling the audible sound generated by the sound generator into the patient's airway to the endotracheal tube;

(d) activating the sound generator thereby causing production of an audible sound; and

(e) measuring intensity of the audible sound conducted to the chest wall, the intensity of the sound providing a measure of the impairment.

5,620,005

CALIBRATION APPARATUS FOR THE PRESSURE GAUGES OF A WHOLE-BODY PLETHYSMOGRAPH

Peter Ganshorn, Goldgrund 5, D-97702 Münnerstadt, Germany

Filed Nov. 13, 1995, Ser. No. 557,779
Claims priority, application Germany, Nov. 12, 1994, 44 40 482.4
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **7 Claims**

1. A whole-body plethysmograph having calibration of a pressure gauge, comprising:

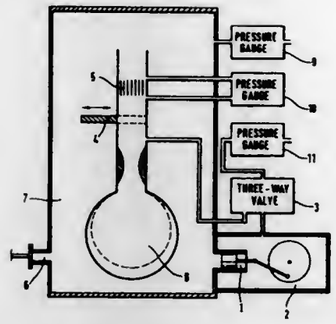
an air tight, lockable cubicle for reception of a person to be examined;

a cubicle-pressure pressure gauge which responds to an interior pressure of said lockable cubicle;

a mouthpiece having a valve, by which respiratory air flow is capable of being barred;

a closure-pressure pressure gauge connected to said mouthpiece for measuring pressure in a mouth of the person being examined;

an evaluation unit connected to said cubicle-pressure pressure gauge and said closure-pressure pressure gauge for evaluating a volume of a person's lungs based upon a measured pressure value;



an air tight box being affixed, via a cylindrical opening, to said lockable cubicle; and,

a piston pump connected in an air-tight manner to said lockable cubicle, said piston pump being surrounded by said air tight box, to which said closure-pressure pressure gauge is, during certain time intervals, connected for calibration with pressure fluctuations generated by said piston pump being used to calibrate said cubicle-pressure pressure gauge and said closure-pressure pressure gauge.

5,620,006

Patent Not Issued For This Number

5,620,007

Patent Not Issued For This Number

5,620,008

FLUID COUPLING DEVICE FOR A BLOOD SAMPLING UNIT

Eilat Shinar, Zion; Eli Shemesh, Ashdod; Sarit Rotem, Givatayim; Menashe Choori, Hod Hasharon, and Ellen Tobe, Tel Aviv, all of Israel, assignors to Migada Inc., Englewood Cliffs, N.J.

PCT No. PCT/US93/03787, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO93/21821, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 21, 1993, Ser. No. 356,290
Claims priority, application Israel, Apr. 23, 1992, 101680
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—764 **7 Claims**

1. A blood sampling system comprising:

a blood collecting assembly having an in-line blood sampling unit:

a blood sampling container; and

a fluid coupling device coupled to said in-line blood sampling unit for coupling said in-line blood sampling unit to said blood sampling container, said fluid coupling device comprising:

a housing having an anterior section formed with an open end capable of being applied to the blood sampling unit, a posterior section formed with an open end capable of receiving the blood sampling container, and a transversely-extending member between said anterior and posterior sections;

a needle secured to said transversely-extending member so as to extend axially of said housing; said needle having anterior and posterior sections extending within said anterior and posterior sections of the housing, respectively; both the anterior and posterior sections of the needle terminating sufficiently short of the open ends of the anterior and posterior sections of the housing such as to be protected against accidentally puncturing a user's skin; and

attaching means formed on said housing for attaching said housing to the blood sampling unit with the anterior section of the needle penetrating the blood sampling unit perpendicularly to the flow of blood therethrough;

wherein said in-line sampling unit includes a sampling unit housing having two ports, a tube threaded through the bousing such that a portion of the tube is located within said sampling unit housing between said two ports, and a plug closing said sampling unit housing and aligned with the portion of the tube located within the sampling unit housing between said two ports, such that said portion of the tube is penetrated by the anterior section of the needle when penetrating the blood sampling unit.

5,620,009

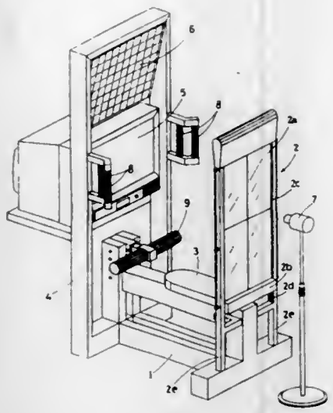
APPLIANCE AND METHOD FOR THE DIAGNOSIS AND TREATMENT OF SCOLIOSIS

Carmelo DePasquale, Via Pappa Giovanni XXIII, 160, Barcellona Pozzo Di Gotto (ME), Italy

Filed Jul. 20, 1995, Ser. No. 504,913
Claims priority, application Italy, Jul. 28, 1994, ME94A0013
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—781 **19 Claims**

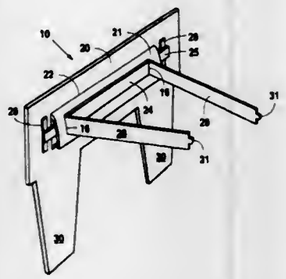
1. An appliance for the diagnosis and treatment of scoliosis of a patient, characterized by a supporting base (1) sustaining a polarized light screen (2) at one end positioned vertically at the back of a seat (3) and by a supporting frame (4) at the other end, sustaining a monitor (5) facing the seat (3); the back of the screen (2) being equipped with a closed circuit camera (7) for filming a picture appearing on the screen (2) and connected to the above monitor (5) for visualization of said picture thereon; a pair of rigid handles (8) being applied to the uprights of the supporting frame (4) as well as r handlebars (9) having a horizontal axis positioned opposite the seat (3), wherein the patient, being seated on the seat (3), touches the polarized light screen (2) with his (or her back, such that the picture of the patient's spine appears on the screen (2), and such that the patient watches, in real time, a visualization of his (or her) spine on the monitor (5), thereby allowing the patient to identify

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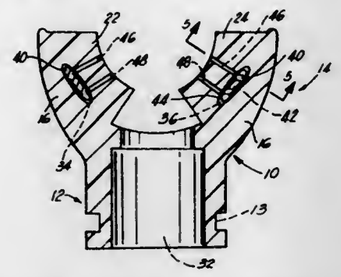
the precise location of the scoliosis and thereby facilitating in performing corrective exercises as the patient pushes against the handles.

5,620,010
DISPOSABLE SURGICAL DRAPE
Thierry G. Vancaillie, San Antonio, Tex., and Robert K. Mitchiner, Longmont, Colo., assignors to Aquintel, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 109,121, Aug. 19, 1993, Pat. No. 5,395,354. This application Mar. 18, 1996, Ser. No. 617,352
Int. Cl.[6] A61G *15/00*
U.S. Cl. 128—845 **6 Claims**



1. Folding frame means, comprising
a base having a first end, a second end, a substantially centered longitudinal axis extending between said first and second ends, and a longitudinal bending compliance along said longitudinal axis;
at least one resilient elongated strut, each strut having a proximal end and a distal end and a longitudinal bending compliance greater than said base longitudinal bending compliance, each said strut proximal end being coupled to said base, wherein each said strut distal end comprises edge coupling means for coupling said strut to a funnel mouth edge; and
hinge means for coupling each said strut to said base.

5,620,011
DIVER'S IMPROVED MOUTHPIECE APPARATUS
Damian T. Flowers, 9389 Halsell, Gulfport, Miss. 39503
Filed Jul. 18, 1996, Ser. No. 684,304
Int. Cl.[6] A61C *5/14*
U.S. Cl. 128—859 **8 Claims**



1. An improved diver's mouthpiece comprising:
a) a mouthpiece potion, having a forward portion for connecting to an air tube, and the rear portion for fitting into a diver's mouth;
b) a pair of teething members formed on the inner wall of the rear portion, the teething members positioned between the upper and lower teeth of a diver for securing the mouthpiece in place;
c) a pocket formed in each of the teething members, the pocket sized and shaped to receive a mint gel capsule therein; and
d) at least one duct extending from the pocket of each of the teething members to an inner surface of the teething members, so as to define a means for allowing gel to flow from the pocket containing the gel capsule to the mouth of the diver when sufficient force is placed on the capsule by the diver.

5,620,012
METHOD OF PERCUTANEOUSLY ANCHORING A SUTURE TO A BONE
Theodore V. Benderev, 27748 Sommerset La., San Juan Capistrano, Calif. 92675; Neil H. Naves, 28852 Woodcreek, Mission Viejo, Calif. 92692, and Mark J. Legome, 28255 Driza, Mission Viejo, Calif. 92692
Division of Ser. No. 42,739, Apr. 5, 1993, which is a continuation-in-part of Ser. No. 801,747, Dec. 3, 1991, abandoned. This application May 16, 1994, Ser. No. 243,414
Int. Cl.[6] H61B *19/00*
U.S. Cl. 128—898 **4 Claims**



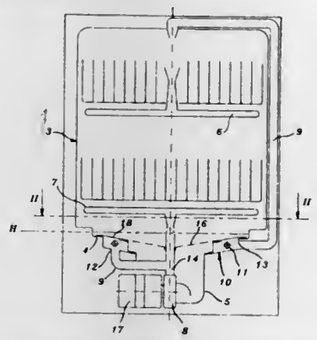
1. A method of percutaneously securing an anchor in to a bone while minimizing invasion of an adjacent tissue, comprising the steps of:
percutaneously locating an anchoring site on a bone without exposing the bone in an open surgical procedure;
advancing a drill through the adjacent tissue and into the bone to provide a recess therein;

advancing a bone anchor through the adjacent tissue and into the recess; and thereafter
securing the anchor within the recess.

5,620,013
METHOD FOR DESTROYING RESIDUAL LENS EPITHELIAL CELLS
Randolph H. Bretton, Maryland Heights, Mo., assignor to American Cyanamid Company, Wayne, N.J.
Filed Oct. 21, 1994, Ser. No. 326,991
Int. Cl.[6] A61B *19/00*; **A61K** *38/00*
U.S. Cl. 128—898 **11 Claims**

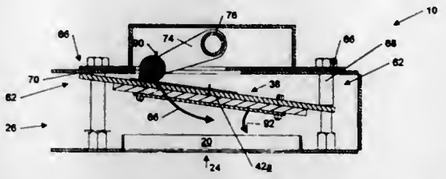
1. A method for destroying residual lens epithelial cells in a lens capsule of an eye following extracapsular cataract extraction, said method comprising:
providing a first solution containing a first basement membrane binding agent, polylysine, conjugated to a cytotoxic agent, saporin;
introducing said first solution into said lens capsule;
maintaining said first solution in said lens capsule for a predetermined period of time sufficient for said first basement membrane binding agent to bind to a basement membrane within said lens capsule; and
removing said first solution from said lens capsule, whereby residual lens epithelial cells on said basement membrane within said lens capsule are exposed to said first basement membrane binding agent conjugated to a cytotoxic agent such that said residual lens epithelial cells internalize said first basement membrane binding agent conjugated to a cytotoxic agent, and whereby said residual lens epithelial cells are destroyed by said cytotoxic agent.

5,620,014
DISHWASHING MACHINE WITH ELECTRIC HEATING MEANS
Claudio Milocco, Trieste, and Giovanni Centis, Pordenone, both of Italy, assignors to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy
Filed Dec. 29, 1995, Ser. No. 581,326
Claims priority, application Italy, Jan. 9, 1995, PN95A0004
Int. Cl.[6] A47L *15/42*
U.S. Cl. 134—108 **6 Claims**



1. A dishwashing machine comprising a washing tank defining a sump in a bottom part of the tank; a water circulation circuit; at least one rotating spray arm arranged in the tank and connected in the water circulation circuit; a circulation pump adapted for supplying water collecting in the sump to the spray arm through the water circulation circuit; an electric heater adapted for heating the water; and a substantially sealed casing defining a part of the water circulation circuit and housing the heater, characterized in that the casing (**10**) is arranged within the washing tank (**3**) such that the heater (**11**) is in heat-exchange relationship with an interior of the washing tank and the water collecting in the sump (**5**) through at least part (**18**) of a surface of the casing.

5,620,015
FLUSH VALVE
Donald L. Gribble, and Ted A. Gribble, both of Molalla, Oreg., assignors to Agpro, Inc., Paris, Tex.
Filed Sep. 27, 1995, Ser. No. 534,666
Int. Cl.[6] F16K *1/24*
U.S. Cl. 137—1 **42 Claims**

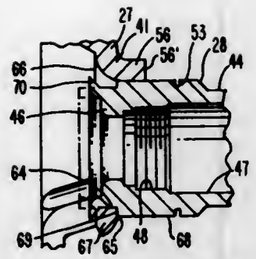


13. A valve for sealing a substantially planar pipe opening, the valve comprising:
a seal plate movably attached to the pipe opening so that moving the seal plate towards the pipe opening closes the valve, and moving the seal plate away from the pipe opening opens the valve;
a valve body fixed relative to the pipe opening, the valve body including a plate stop to limit the movement of the seal plate relative to the pipe opening so that the seal plate, when forced fully away from the pipe opening, defines an oblique plane that is oblique to a plane defined by the pipe opening; and
a lever arm having a pivot and a distal end, wherein:
the lever arm is rotatably attached to the valve body about the pivot so that rotating the lever arm about the pivot in a first direction moves the distal end toward the pipe opening, and rotating the lever arm about the pivot in a second direction moves the distal end away from the pipe opening;
the distal end of the lever arm is exposed to engage the seal plate;
rotating the lever arm about the pivot in the first direction forces the distal end against the seal plate, thereby forcing the seal plate into contact with the pipe opening to close the valve; and
rotating the lever arm about the pivot in the second direction releases the distal end from the seal plate, thereby allowing the seal plate to move away from the pipe opening to open the valve.

5,620,016
FUEL CONTROL DEVICE, PARTS THEREFOR AND METHODS OF MAKING THE SAME
Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Sep. 8, 1994, Ser. No. 303,157
Int. Cl.[6] F16L *55/18*
U.S. Cl. 137—15 **8 Claims**

1. A method of making a hot water tank, comprising the steps of:
providing a tank housing, said tank housing including an opening therethrough;
attaching a spud to said tank housing about said opening;
engaging an annular shank fitting to said spud, said shank fitting including a tab receiving opening;
securing one end of a tubular means into an opening in a flange means, said flange means having a tab extending therefrom, said securing step involving swedging said one end of said tubular means to said flange means;
attaching said flange means to a housing means;
engaging a temperature control means within said tubular means;

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inserting a portion of said tubular means opposite said one end means in said annular shank fitting, said inserting step positioning said temperature control means within said tank housing;

positioning said tab in said tab receiving opening; and

securing said tubular means to said annular shank fitting.

3. A hot water tank construction, comprising:

a tank housing, said tank housing including an opening therethrough;

a spud attached to said tank housing about said opening;

an annular shank fitting engaged to said spud and including an annular groove and a tab receiving opening; and

a fuel control housing means;

a shank portion extending from said housing means, said shank portion including a flange means having a tab extending therefrom and a separate tubular means having an external surface containing an annular groove, one end of said tubular means being swedged to said flange means and a portion of said tubular means opposite said one end means being disposed in said annular shank fitting and said tab being received in said tab receiving opening;

a split-retaining ring positioned in said external surface annular groove and engaging said shank fitting annular groove; and

temperature control means engaged within said tubular means and extending through said opening of said tank housing.

5,620,017

PRESSURE REGULATING SYSTEM FOR A FIRE EXTINGUISHING FACILITY

Hitoshi Yamada, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan

PCT No. PCT/JP94/00244, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/19632, PCT Pub. Date Sep. 1, 1994

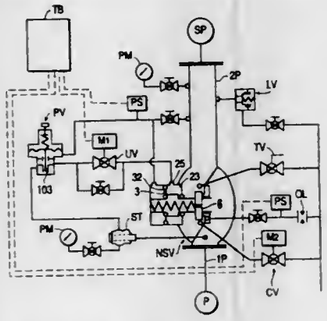
PCT Filed Feb. 17, 1994, Ser. No. 325,204

Claims priority, application Japan, Feb. 18, 1993, 5-029464

Int. Cl.[6] F16K *17/30*

U.S. Cl. 137—312 **18 Claims**

1. A pressure regulating system comprising a pressure regulating



valve and a pressure regulating pilot valve,

said pressure regulating valve including:

a valve body having a primary side and a secondary side,

a main valve isolating said primary side from said secondary side,

a piston having a through hole and being fixed on a secondary side of said main valve, and

a tubular guide portion formed within said valve body and to which said piston is slidably fitted so that an internal valve chamber on said secondary side of said main valve is defined by said piston and said tubular guide; and

wherein said main valve has a through hole communicating with said through hole in said piston for permitting communication between said primary side of said valve body and said internal valve chamber, and said main valve has a first surface area that receives pressure in a main valve closing direction from said internal valve chamber and a second pressure receiving surface area which is smaller than said first surface area and receives pressure in a main valve opening direction.

5,620,018

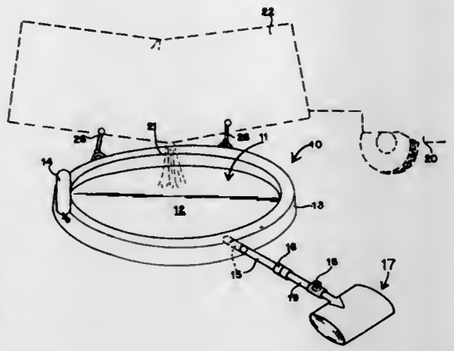
EMERGENCY SPILL COLLECTOR

Wade I. D. Carpenter, 4285 S. 18th St. West, and Raymond G. Corbus, R.R. 2, Box 459, both of Mountain Home, Id. 83647

Filed Jan. 31, 1995, Ser. No. 382,291

Int. Cl.[6] B65B *39/02;3/00;* **F16K** *51/00*

U.S. Cl. 137—312 **7 Claims**



1. A collector/reservoir for collecting spilling material, the collector/reservoir being made of flexible and chemically-resistant material, and having an interior reservoir volume and an outside surface, said collector/reservoir comprising:

a bottom;

hollow side walls connected to said bottom, said side walls having interior wall volumes interconnected with fluid passage-ways, said side walls being inflatable in less than 20 seconds, and, when inflated, said side walls giving shape and increased rigidity to said interior volume created by said bottom and said side walls;

an auto-inflator for inflating said side walls in less than 20 seconds;

a conduit from said interior volume to said outside surface of said collector/reservoir, said conduit having a quick-connect fitting.

5,620,019

OPERATING DEVICE

Holger Nicolaisen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

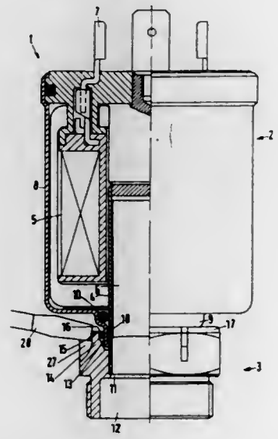
PCT No. PCT/DK93/00019, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO93/15326, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 21, 1993, Ser. No. 256,304

Claims priority, application Germany, Jan. 22, 1992, 42 01 570.7

Int. Cl.[6] F16K *31/02;51/00*

U.S. Cl. 137—315 **16 Claims**



1. In an operating device with a top part having an actuating arrangement for driving a control member, and a bottom part carrying the top part, wherein the top part and the bottom part are releasably connected with one another by means of a bayonet lock wherein essentially radial projections on one of the parts are held in the other part, the connection being effected by inserting the projections into recesses in the other part and turning the two parts in relation to each other, the improvement comprising the radial projections being essentially pimple-like projections, the recesses being formed in a resilient locking ring held in the other part, and the projections being formed to slide in beneath the locking ring when the top part and the bottom part are turned, the part carrying the radial projections comprising a beaker-shaped housing which continues in a sleeve-like foot of circular cross-section that carries the projections, the housing and the foot being of integral construction and being made of metal.

5,620,020

PLUMBING APPARATUS

John W. Collins, The Barn, Mill Lane, Castleton, Gwent, United Kingdom

Continuation-in-part of Ser. No. 133,006, Nov. 9, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 401,888

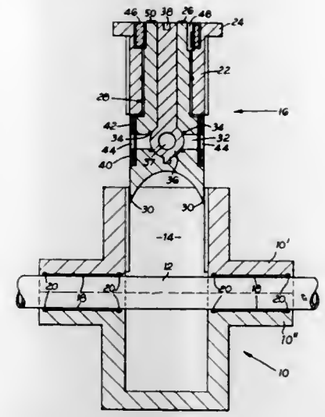
Claims priority, application United Kingdom, Apr. 9, 1991, 9107505; WIPO, Apr. 8, 1992, PCT/GB92/00629

Int. Cl.[6] F16K *43/00;* **F16L** *41/06;* **B23B** *41/08*

U.S. Cl. 137—318 **16 Claims**

1. Plumbing apparatus for being attached to a tubular element and being operable to interpose in said tubular element externally operable means for opening and closing the flow therealong, said apparatus comprising:

first means for being secured to said tubular element, and second means engageable with said first means for being advanced towards said tubular element in a generally transverse advancement direction,



said second means including a distal cutter means for removing a portion of said tubular element and, adjacent said cutter means, a valve arrangement disposed within said second means, said valve arrangement in use being interposed in alignment with said tubular element following removal of said portion,

said valve arrangement including a valve body portion extending across substantially the whole of the cross-section of said tubular element, said valve body portion defining a passage means extending generally transversely to said advancement direction, whereby substantially all of the fluid flowing along said tubular element passes through said passage means, and said valve arrangement including a valve control element located in said passage means selectively operable to open and close the flow of fluid along said tubular element.

5,620,021

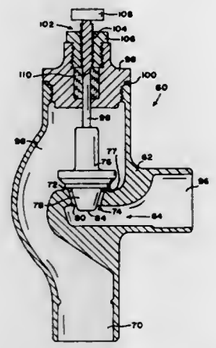
THERMAL CHECK VALVE

Richard J. Hugo, Bartlett, Tenn., assignor to Grav-Flow, Inc., Bartlett, Tenn.

Filed Sep. 6, 1995, Ser. No. 524,237

Int. Cl.[6] F16K *49/00*

U.S. Cl. 137—337 **15 Claims**



1. A thermal check valve for selectively gating a liquid flowing therethrough, said check valve comprising a valve body, said valve body having:

(a) an inlet chamber formed within said valve body;

(b) an inlet port in communication with said inlet chamber;

(c) an outlet chamber formed within said valve body; and

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(d) an outlet port in communication with said outlet chamber, said outlet port being below said inlet port;

said valve body including:

(e) a valve seat interposed between said inlet chamber and said outlet chamber;

and said check valve further comprising:

(f) a float within said outlet chamber, said float being vertically movable onto and off of said valve seat within said outlet chamber so that said float seals said outlet chamber from said inlet chamber when said float rests upon said valve seat, said float having a specific gravity in the range of 1.05 to 2.0 relative to said liquid.

5,620,022

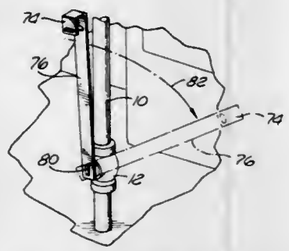
SEISMIC GAS SHUT-OFF VALVE WITH SAFETY LOCK

Ara K. Manoogian, Burbank, Calif., assignor to Khachig Evan Manoogian, Burbank, Calif.

Filed Dec. 13, 1995, Ser. No. 571,356

Int. Cl.[6] F16K *17/36*

U.S. Cl. 137—383 **9 Claims**



1. A lock comprising, in combination:

a) a bracket, said bracket comprising an integral member comprising two planar wings of unequal heights and a planar central spacer therebetween;

b) each of said wings having at least one transversely elongated aperture;

c) a lock of the type that includes a lock body and a shackle;

d) one aperture of each wing being mutually aligned to receive said shackle; and

e) the longer of said wings has an aperture within the region exceeding the height of the other wing for engaging a valve.

5,620,023

EXHAUST-CONTROL VALVE FOR AN ELECTROMAGNETIC PUMP

Sung-Dai Moon, Kyeongsangbuk-do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed May 15, 1995, Ser. No. 440,978

Claims priority, application Rep. of Korea, Jul. 23, 1994, 94-17866

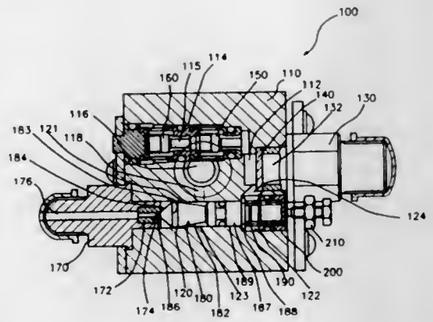
Int. Cl.[6] G05D *16/10*

U.S. Cl. 137—509 **12 Claims**

1. An exhaust control valve for an electromagnetic pump, the exhaust control valve comprising:

a valve body having a cylindrical shape which is tapered toward a rear end thereof, and is disposed in an exhaust chamber so as to move forwards and backwards in the exhaust chamber, the exhaust chamber being defined in the electromagnetic pump for receiving a pressurized oil and then exhausting the pressurized oil through a first oil exhaust path, the exhaust chamber having a gap defined between the valve body and an inner wall of the exhaust chamber so that the pressurized oil passes through the gap;

a first means for sensing a pressure of the pressurized oil and for transferring the pressure to the valve body, wherein the first



means is a frustoconical head which is tapered towards a front end thereof and is formed integrally with one end of the valve body;

a second means for opening and closing the first oil exhaust path interconnected to the exhaust chamber, and for reducing the pressure of the pressurized oil passing through the first oil exhaust path as the first oil exhaust path is opened, the second means delaying an exhaust of a pressurized oil having a normal exhaust pressure and formed integrally with the first means;

a third means for applying a forward biasing force to the valve body, wherein the third means includes a spring disposed in a back pressure chamber, the back pressure chamber being formed at the rear of the exhaust chamber, and the back pressure chamber and the exhaust chamber being isolated from each other; and

a threshold disposed between the cylindrical valve body and the frustoconical head, the threshold having a diameter larger than a remaining portion of the exhaust control valve,

wherein the valve body moves forwards and backwards according to interaction between the pressure sensed by the first means and the forward biasing force by the third means, the gap has a sectional area varying according to the forwards and backwards movement of the valve body, so that a pressure of an oil exhausted from the exhaust chamber is controlled according to the movement, wherein the exhaust chamber has a neck portion surrounding the rear end of the valve body, the neck portion has a smaller diameter with respect to a remaining portion of the exhaust chamber so that the sectional area of the gap formed between the neck portion and the tapered valve body is varied according to the forward and backward movement of the tapered valve body.

5,620,024

RELIEF VALVE OPERATION DETECTOR

Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha KOSMEK, Hyogo, Japan

Filed Nov. 28, 1995, Ser. No. 563,294

Claims priority, application Japan, Dec. 13, 1994, 6-308595

Int. Cl.[6] F16K *37/00*

U.S. Cl. 137—554 **8 Claims**

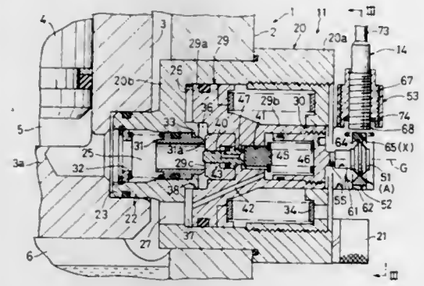
1. A relief valve operation detector comprising:

a housing (**20**) having a relief valve chamber (**26**);

a relief valve member (**29**) inserted into the relief valve chamber (**26**), said relief valve member moveable between opened and closed positions;

an operation member (**51**) having an axis of motion (G) and being always connected to the relief valve member (**29**) for movement therewith;

a transmission member (**52**) having an operated portion (**64**) to be engaged with the operation member (**51**) and a detected portion (**65**), the detected portion (**65**) being moveable between at least two positions including a first position (X) spaced apart from the axis (G) of the operation member (**51**)



by a first distance and a second position (Y) spaced more closely adjacent to the axis (G) thereof by a second distance;

an elastic means (**74**) for urging the operated portion (**64**) into engagement with the operation member (**51**);

a detecting means (**14**) having a detecting portion (**68**) facing the detected portion (**65**); and

said transmission member (**52**) arranged to be moved between said first position (X) and said second position (Y) upon movement of said operation member (**51**) along the axis of motion (G) in response to corresponding motion of said relief valve member (**29**);

whereby said movement of the transmission member (**52**) is detectable by said detecting means (**14**) to detect the motion of the relief valve member (**29**).

5,620,025

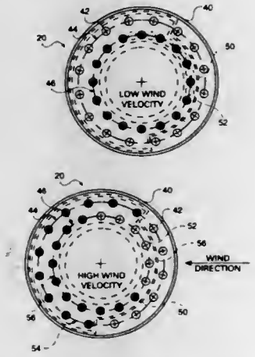
MULTI-PORT VALVE

Keith F. Lewin, Calverton, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Dec. 1, 1994, Ser. No. 347,685

Int. Cl.[6] F16K *11/07*

U.S. Cl. 137—625.15 **7 Claims**



1. A valve for regulating, as a function of ambient air having varying wind velocity and wind direction in an open-field control area, the distribution in a variety of patterns of a fluid in a fluid distribution system, the valve comprising:

a multi-port housing having an inlet for receiving a fluid, said inlet being in fluid communication with a stationary plate that cooperates with said housing to form a chamber, said stationary plate having a plurality of outlets therethrough disposed in a first pattern of outlets and at least one second pattern of outlets, said stationary plate further including attachment means for connecting each of the outlets in said first and second patterns, respectively, to a separate one of a plurality of tubes each having a respective distal end disposed adjacent the circumference of said open-field control area at a point spaced from other tubes in the plurality of tubes;

a movable plate disposed in facing relationship with said stationary plate, said movable plate having a plurality of apertures extending therethrough disposed in a first pattern of apertures and at least one second pattern of apertures, said first pattern of apertures being selectively alignable relative to said first pattern of outlets and said at least one second pattern of apertures being selectively alignable relative to said second pattern of outlets, said first pattern of apertures having a predetermined orientation with said at least one second pattern of apertures;

said valve further including rotatable means operatively connected to selectively rotate said movable plate to a predetermined number of positions relative to said plurality of outlets, whereby in a first of such positions all of the outlets in the first pattern of outlets are open and all of the outlets in the second pattern are closed thereby to equally distribute fluid to the open-field control area.

5,620,026

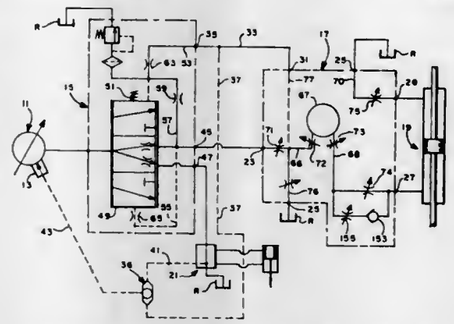
FLUID CONTROLLER AND IMPROVED BACKFLOW PREVENTION THEREFOR

Dwight B. Stephenson, Burnsville, and Kenneth G. Rasmussen, Maple Grove, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 17, 1995, Ser. No. 405,665

Int. Cl.[6] F15B *13/06*

U.S. Cl. 137—625.24 **12 Claims**



1. A fluid controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device, the controller being of the type including housing means including an inlet port for connection to the source of fluid, a return port for connection to a reservoir, first and second control fluid ports for connection to the fluid pressure operated device, valve means disposed in said housing means and defining a neutral position (FIG. 3) and at least one operating position (FIG. 5); means for imparting follow up movement to bias said valve means toward said neutral position in response to the flow of fluid to or from the fluid pressure operated device; said valve means cooperating with said housing means to define a first flow path communicating between said inlet port and said follow up means, a second flow path communicating between said follow up means and one of said control fluid ports, and a third flow path communicating between the other of said control fluid ports and said return port, said first, second, and third flow paths including first, second, and third variable flow control orifices, respectively, having a gradually increasing flow area as said valve means is moved towards said operating position (FIG. 5); said first variable orifice begins to open at a displacement X, and said second variable orifice begins to open at a displacement Y as said valve means moves from said neutral position toward said operating position, Y being greater than X; characterized by:

(a) said valve means defines an additional second variable orifice disposed in said second fluid path, said additional

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second variable orifice begins to open at a displacement Y', said displacement Y' being less than said displacement X; and

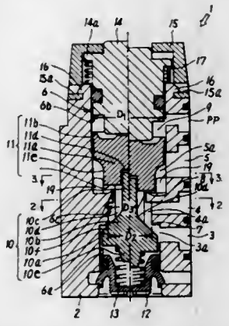
(b) said valve means including means operable to prevent fluid flow through said additional second variable orifice unless the fluid pressure in said first flow path is greater than the fluid pressure in said first control fluid port, said flow prevention means being operable to prevent reverse fluid flow from said first control fluid port through said additional second variable orifice to said follow up means.

5,620,027

POPPET TYPE DIRECTIONAL CONTROL VALVE

Hideharu Sato, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 560,976
Claims priority, application Japan, Dec. 29, 1994, 6-339640
Int. Cl.[6] F15B *13/042*
U.S. Cl. 137—625.66 **3 Claims**



1. A poppet type directional control valve, comprising:

a valve body which includes a valve bore, a supply port for pressure fluid opened to said valve bore, a valve disc inserted in said valve bore, an output port opened to said valve bore and in communication with said supply port so as to be blocked by switchover operation of the valve disc, a discharge port opened to said valve bore and communicated with the output port when communication between said supply port and said output port is blocked, and a pilot port opened to pilot chamber at one end of said valve bore, wherein a first valve seat and a second valve seat are provided between the supply port and the output port and between the output port and the discharge port in said valve bore;

a poppet type valve disc inserted into said valve bore, said poppet type valve disc opening and closing the first valve seat and the second valve seat wherein said valve disc is switched over and driven by pilot fluid pressure supplied from or discharged to the pilot chamber to open or close the first valve seat and the second valve seat;

the valve bore of said valve body comprises a first valve bore formed from one end in an axial direction of the valve body via an opening of the supply port toward the first valve seat, a second valve bore formed from the other end in the axial direction of the valve body via the pilot chamber and an opening of the discharge port toward the second valve seat, and a communicating valve bore located between the first valve seat and the second valve seat, formed from the first valve bore and the second valve bore via the opening of the output port and communicating said first valve bore with said second valve bore;

said poppet type valve disc comprising a first valve disc inserted into the first valve bore, said first valve disc opening and closing the first valve seat and a second valve disc inserted through the second valve bore and connected integrally with the first valve disc to open or close the second valve seat wherein said first and second valve discs are made of a elastic material having a sealing property, and each of said first and second valve discs are integrally molded;

said pilot chamber is formed between the second valve disc, said second valve disc being airtightly inserted into the second valve bore, and a closing member closing an opening of the second valve bore wherein:

each of said suddenly port, output port and discharge port as well as each of said first and second valve seats are located in said valve body;

said first valve bore is formed without the diameter thereof being enlarged from one end of the valve body toward said first seat and said second valve bore is formed without the diameter thereof being enlarged from the other end of the valve body towards said second valve seat, and said communicating valve bore is formed without the diameter thereof being enlarged in a direction from the first valve seat toward the second valve seat;

an inner diameter D1 of the second valve bore, a diameter D2 of the first valve seat and a diameter D3 of a second valve seat have a relationship such that D1>D2>D3; and

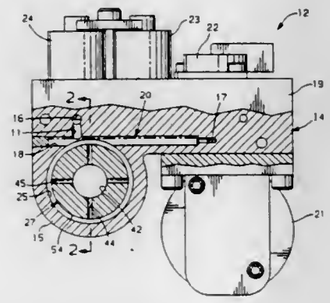
wherein the supply port is opened and closed solely by contact of the first valve disc with said first valve seat and the output port is opened and closed solely by contact of the second valve disc with said second valve seat.

5,620,028

BRAKE MODULE WITH INTEGRATED ACCUMULATOR

Gary L. Johnston, Pleasant Hill; James W. Zehnder, II, Huber Heights; Richard E. Longhouse, Dayton; William C. Kruckemeyer, Beaver Creek, and Michael L. Oliver, Xenia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1995, Ser. No. 407,122
Int. Cl.[6] F16L *55/04;* **B60T** *8/34*
U.S. Cl. 138—31 **6 Claims**



1. A brake module comprising:

a manifold having a body and having a system of communicative passageways extending at least partially through the body;

a valve mounted on the manifold; and

an accumulator formed with the manifold including a bore formed in the manifold by a wall and the body, the bore communicating with the system of communicative passageways, a piston slidably retained in the bore and a sealed gas charging passage communicating with the bore;

wherein the manifold is formed by a process including the steps of:

extruding the manifold with the body and the wall formed together so that the bore extends completely through the manifold and has a constant diameter;

cutting the manifold to a predetermined length; and

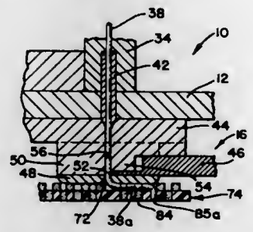
finishing the bore.

5,620,029

NON-ROTATING WIRE ROUTING DEVICE

Alan C. Van Zeeland, Cortland, and Louis J. Liguore, Poland, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 937,027, Aug. 31, 1992, Pat. No. 5,482,092. This application Aug. 21, 1995, Ser. No. 517,487
The portion of the term of this patent subsequent to Jan. 9, 2013, has been disclaimed.
Int. Cl.[6] B21F *33/02*
U.S. Cl. 140—92.1 **1 Claim**



1. A wire routing device (**10**) for routing wire onto a support comprising:

a base plate (**12**) supporting a wire feed mechanism (**14**) and a wire routing head (**16**),

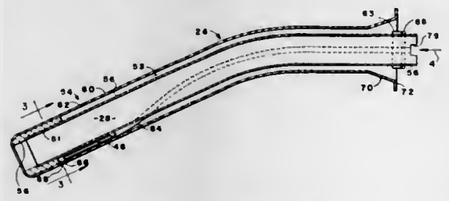
the wiring routing head (**16**) having a horn (**48**) that is non-rotatably secured to the base plate (**12**), said horn having an inverted funnel shaped orifice (**72**) including an inverted funnel shaped portion (**72***f*) whose diameter progressively increases toward an exit end located adjacent a bottom of said horn and adjacent said support for routing and guiding wire (**38**) onto said support in a non-linear pattern without any need for rotating the horn with respect to the support, said bottom of the horn (**48**) comprises a flat bottom face (**71**) that surrounds said exit of the funnel shaped portion (**72***f*).

5,620,030

VAPOR RECOVERY FUEL NOZZLES

Mark D. Dalhart, Hamilton; Paul B. Anderson, Cincinnati, and David A. Damico, Lebanon, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 986,521, Dec. 7, 1992. This application Jun. 7, 1995, Ser. No. 476,503
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—206 **18 Claims**



1. A vapor recovery fuel nozzle comprising

a nozzle body and

a spout projecting therefrom,

said nozzle body and spout each having communicating fuel passages for directing pressurized fuel through the nozzle and discharging it from the spout,

said nozzle body and spout each having communicating vapor return passages for directing vapors from the distal end of said spout, through the spout and nozzle body for disposal at a remote location,

wherein the spout comprises

an outer tube, and

an inner tube,

said inner tube defining the spout fuel passage,

said inner and outer tubes, being radially spaced to define the spout vapor return passage, and

means, for joining and reenforcing the distal end portions of the tubes, comprising

a ferrule telescoped into and positioned within the distalmost end of the outer tube,

said ferrule having a counterbore into which the distal end portion of the inner tube is telescoped,

characterized in that

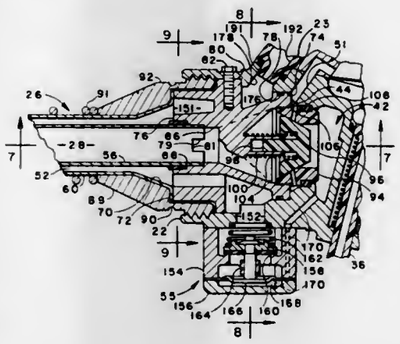
there is an interference fit between the telescoped portions of the ferrule and the outer tube and between the ferrule and the telescoped portions of the inner tube, thereby holding the inner and outer tubes in assembled relation.

5,620,031

VAPOR RECOVERY FUEL NOZZLES

Mark D. Dalhart, Hamilton; Paul B. Anderson, Cincinnati, and David A. Damico, Lebanon, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 986,521, Dec. 7, 1992. This application Jun. 7, 1995, Ser. No. 486,102
Int. Cl.[6] B65B *1/30;3/28*
U.S. Cl. 141—206 **1 Claim**



1. A vapor recover, fuel dispensing nozzle comprising

a nozzle body,

a spout projecting from the downstream end of the nozzle body,

an adapter received in a bore in the downstream end of the nozzle body, and secured therein in predetermined angular relation thereto,

fuel passageway means extending from an inlet end of the nozzle body, through and including a bore in the adapter, to a discharge end of the spout,

vapor return passageway mean, including a portion extending lengthwise of the spout and a portion defined at least in part by the adapter,

means for mounting the spout on the nozzle body in projecting relation from the downstream end of the nozzle body,

said spout comprising

an inner tube defining fuel passageways means through the spout, and

an outer tube defining, in combination with the inner tube, the vapor return passageway means of the spout,

said inner and outer tubes being joined in fixed angular relation, with the distal end portions of said tubes being angled downwardly from their upstream portions,

said mounting means including means for clamping the outer tube in sealed relation to the adapter and for providing a sealed connection between the inner tube and the bore of the adapter,

characterized by

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means for establishing a predetermined angular relation between the inner tube and the adapter to thereby establish a desired angular relation between the spout and the nozzle body, and

further characterized in that

the means for establishing a predetermined angular relation between the inner tube and the adapter bore comprise

interfitting notch and lug means at the upstream end of the inner spout tube, and

the means for providing a sealed connection between the adapter and the inner tube comprise

a counter bore opening on the downstream end of the adapter,

a backup ring disposed outwardly of the bottom of the counter bore, and

a sealing ring disposed between the backup ring and the bottom of the counterbore,

said backup ring forcing the sealing ring into the counter bore when the inner tube is mounted in sealed relation to the adapter bore.

5,620,032

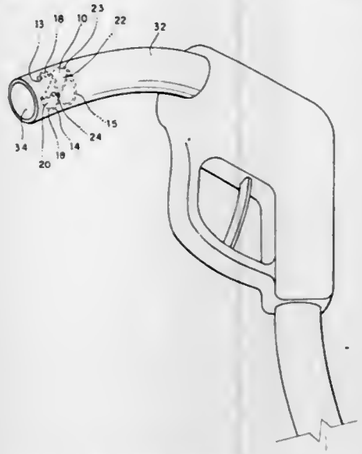
GAS NOZZLE VALVE

Curtis E. Dame, 3268 Saint Anthony Dr., Portage, Mich. 49081

Filed Apr. 11, 1995, Ser. No. 420,345

Int. Cl.[6] B65B *1/04;3/04;* **B67C** *3/00*

U.S. Cl. 141—311 A **7 Claims**



1. A valve for a fuel nozzle comprising:

two C-shaped springs dimensioned and configured to frictionally engage an inner surface of a fuel nozzle, said C-shaped springs including a forward spring and a rear spring oriented in parallel and attached to one another by means for attachment; and

valve portions attached to said springs and disposed between said springs.

5,620,033

WORKPIECE DELIVERING DEVICE USABLE AS A HANDLE FOR A MACHINE

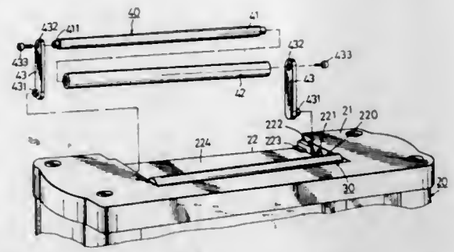
Bor-Yann Chuang, Taichung Hsien, Taiwan, assignor to Chiu Ting Machinery Co., Ltd, Taichung Hsien, Taiwan

Filed Dec. 21, 1995, Ser. No. 576,309

Int. Cl.[6] B27C *1/12*

U.S. Cl. 144—246.1 **3 Claims**

1. A workpiece delivering device for a machine, the machine having a top face formed with a channel that extends between



input and output ends of the machine and that has opposite channel walls and a channel bottom, the workpiece delivering device being adapted to be installed in the channel and comprising:

a first rotatable cylinder to be disposed in the channel and having two ends adapted to be mounted rotatably and respectively on the channel walls such that said first rotatable cylinder projects upwardly relative to the top face of the machine;

a second rotatable cylinder; and

a pair of pivot arms, each of said pivot arms having a cylinder supporting end and an opposite pivot end which extends into the channel on one side of said first rotatable cylinder and which is adapted to be mounted pivotally on a respective one of the channel walls, said second rotatable cylinder being mounted rotatably on said cylinder supporting ends of said pivot arms, said pivot arms being movable between a first position, wherein said pivot arms lie in substantially horizontal positions such that said second rotatable cylinder is disposed in the channel and projects upwardly relative to the top face of the machine so that a workpiece can be delivered by said first and second rotatable cylinders between the input and output ends of the machine, and a second position, wherein said pivot arms extend vertically upward to permit lifting of the machine when said second rotatable cylinder is grasped.

5,620,034

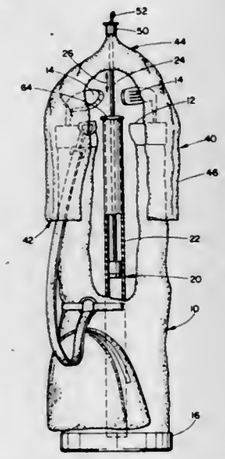
FOLDABLE COVERING DEVICES FOR GOLF BAGS

Albert J. Flis, 11427 Blodgette Creek Trail, Strongsville, Ohio 44136

Filed Dec. 21, 1994, Ser. No. 360,385

Int. Cl.[6] A63B *57/00*

U.S. Cl. 150—159 **14 Claims**



1. An engageable device for protecting an open upper end of a golf bag from descending precipitation, comprising:

a vertically arranged, elongated tubular housing member adapted to fit within the golf bag along with one or more golf clubs, said tubular housing member having a smooth inner cylindrical surface extending along a longitudinal axis and an opened upper end portion and a lower end portion;

an elongated rigid support member contained in and aligned coaxially with the elongated tubular housing member and movable along the longitudinal axis, said elongated rigid support member having a diameter substantially less than an inner diameter of the tubular housing member, and upper end portion and lower end portion; and

a flexible, ribless, water impervious member for substantially covering the open end of the golf bag, said flexible, ribless, water impervious member having a central closed end portion positioned between a retaining cap and shoulder supported by the upper end portion of the elongated rigid support member and a peripheral open end portion extending from the closed end, wherein during non-use the flexible, ribless, water impervious member is positioned in a foldable condition in the tubular housing member between the inner surface of the tubular housing member and the rigid support member and wherein during use the flexible, ribless water impervious member is positioned exterior the tubular housing member in an unfolded condition.

5,620,035

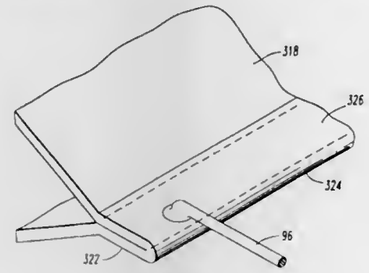
MATERIAL UTILIZING FLEXIBLE STRANDS

Ren Judkins, 46 Newgate Rd., Pittsburgh, Pa. 15202

Continuation-in-part of Ser. No. 952,645, Sep. 28, 1992, Pat. No. 5,339,882, which is a continuation-in-part of Ser. No. 624,312, Dec. 4, 1990, Pat. No. 5,176,192, which is a continuation-in-part of Ser. No. 340,301, Apr. 19, 1989, Pat. No. 4,974,656, which is a continuation-in-part of Ser. No. 30,167, Mar. 25, 1987, abandoned. This application Aug. 22, 1994, Ser. No. 293,751

Int. Cl.[6] A47H *5/00*

U.S. Cl. 160—84.05 **46 Claims**



1. A material structure comprising:

at least one front section of material;

at least one rear section of material;

a plurality of discrete lengths of strand, wherein said strand lengths are adhered at one end to said at least one front section of material and are adhered at an opposite end to said at least one rear section of material.

5,620,036

CHILD SAVER SCREEN APPARATUS

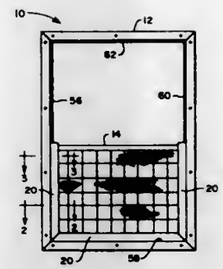
David E. Grous, 84 Laurel La., Ashford, Conn. 06278

Filed Jul. 14, 1995, Ser. No. 502,726

Int. Cl.[6] A47H *1/00*

U.S. Cl. 160—89 **11 Claims**

1. A child saver safety screen apparatus for use with an associated window casing which comprises:



a first generally rectangular frame having a first side, a second side, a third side and a fourth side, said first side, second side, third side and fourth side each have respective outside edges and inside edges;

a second generally rectangular frame having a first side, a second side, a third side and a fourth side, said first side, second side, third side and fourth side are joined together with respective corner splines;

a plurality of fiber strands;

a generally rectangular conventional window screen;

means for interlocking said second frame to said first frame, said means for interlocking said second frame to said first frame includes a first channel, said first channel connects to said inside edges of said first, second, and third sides of said first frame, said first channel has a C-shape cross section and a first end and a second end, said first channel having a C-shape cross section and a first end and a second end;

means for mounting said plurality of fiber strands in substantially parallel relationship in said second frame; and

means for connecting the conventional window screen to said second frame, said first C-shaped channel including spurs located on said first end and said second end thereof, said spurs extend inwardly toward said first C-shaped channel, said second frame including a first J-shaped member and a second J-shaped member, each said J-shaped member includes an elongated stem and an arcuate portion, said stems being fixed in closely spaced relationship with said arcuate portions spaced farther apart as viewed in cross section, said first and second J-shaped members forming a second C-shaped channel.

5,620,037

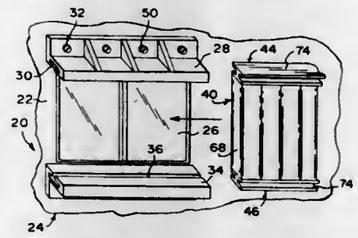
MORTISED REMOVABLE STORM SHUTTER

Mauricio C. Apostolo, 5711 SW. 88th St., Miami, Fla. 33173

Filed May 8, 1995, Ser. No. 438,106

Int. Cl.[6] E06B *3/48;* **E04D** *15/06*

U.S. Cl. 160—118 **11 Claims**



1. A mortised removable storm shutter for installation onto an exterior wall of a building over a window comprising:

a) an elongated, substantially L-shaped, and horizontally-disposed top bracket having a pair of ends; said elongated, substantially L-shaped, and horizontally-disposed top bracket further having an elongated vertical portion with a lower edge and a plurality of longitudinally-disposed and spaced-apart

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throughbores extending longitudinally therealong; said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket being mountable horizontally above the window onto the exterior wall of the building; said elongated, substantially L-shaped, and horizontally-disposed top bracket further having an elongated horizontal portion extending normally outwardly from said lower edge of said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket; said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket having a lower surface with a longitudinally-disposed and substantially T-shaped track extending therealong from one end of said pair of ends of said elongated, substantially L-shaped, and horizontally-disposed top bracket to another end of said pair of ends of said elongated, substantially L-shaped, and horizontally-disposed top bracket;

b) means for mounting said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket horizontally above the window onto the exterior wall of the building with said longitudinally-disposed and substantially T-shaped track of said lower surface of said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket facing downwardly;

c) an elongated, substantially L-shaped, and horizontally-disposed bottom bracket having a pair of ends; said elongated, substantially L-shaped, and horizontally-disposed bottom bracket further having an elongated vertical portion with an upper edge and a plurality of longitudinally-disposed and spaced-apart throughbores extending longitudinally therealong; said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket being mountable horizontally below the window onto the exterior wall of the building; said elongated, substantially L-shaped, and horizontally-disposed bottom bracket further having an elongated horizontal portion extending normally outwardly from said upper edge of said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket; said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket having an upper surface with a longitudinally-disposed and substantially T-shaped track extending therealong from one end of said pair of ends of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket to another end of said pair of ends of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket;

d) means for mounting said elongated vertical portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket horizontally below the window onto the exterior wall of the building with said longitudinally-disposed and substantially T-shaped track of said upper surface of said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket facing upwardly;

e) a plurality of interlocked and vertically extending barrier members; each member of said plurality of interlocked and vertically extending barrier members having sides, a top end, and a bottom end and being non-pivotally interlocked with each other so as to form a rigid barrier;

f) means for non-pivotally interlocking one side of said sides of one member of said plurality of interlocked and vertically extending barrier members to one side of said sides of an adjacent member of said plurality of interlocked and vertically extending barrier members said means comprising complimentary interlocking elements on respective sides of each barrier member;

g) a top slide assembly engaging said top end of each member of said plurality of interlocked and vertically extending barrier members, so that said top slide assembly can slide across said longitudinally-disposed and substantially T-shaped track in said lower surface of said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed top bracket; and

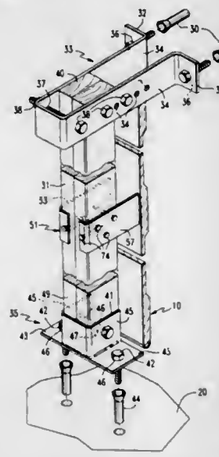
h) a bottom slide assembly engaging said bottom end of each member of said plurality of interlocked and vertically extending barrier members, so that said bottom slide assembly can slide across said longitudinally-disposed and substantially T-shaped track in said upper surface of said elongated horizontal portion of said elongated, substantially L-shaped, and horizontally-disposed bottom bracket, so that said rigid and non-pivoting barrier formed by said plurality of interlocked and vertically extending barrier members can slide in said top and bottom elongated, substantially L-shaped, and horizontally-disposed bottom brackets and provide a complete protective barricade for the window when in place and slide out of said top and bottom elongated, substantially L-shaped, and horizontally-disposed bottom brackets when not in use and be dissembled for storage.

5,620,038

SYSTEM FOR BRACING GARAGE DOOR AGAINST HURRICANE FORCE WINDS

Salvatore M. DeCola, Rockledge, and Vernon Back, Cocoa, both of Fla., assignors to Secure Door, Vertical Bracing Components Company, Inc., Rockledge, Fla.

Filed Sep. 29, 1995, Ser. No. 536,053
Int. Cl.[6] E05D *15/26*
U.S. Cl. 160—209 **6 Claims**



1. A bracing arrangement for bracing a multi-panel garage door against separation from guide tracks installed along side portions of a garage building structure adjacent to an opening for said multi-panel garage door, said multi-panel garage door having hinge joints between respective panels of said multi-panel garage door, said bracing arrangement comprising:

a plurality of door-stiffening column members, a respective column member having a first end thereof attached to a respective upper mounting bracket that is adapted to be affixed to said garage building structure above said opening for said multi-panel garage door;

a respective upper mounting bracket having a pair of side channel wall portions which receive said respective column member therebetween, each side channel wall portion having an element for fastening said respective upper mounting bracket to said garage building structure above said opening for said multi-panel garage door, and a plurality of spaced apart holes through said each side channel wall portion that are sized to receive one or more fasteners for securely attaching said each side wall channel portion to said column member at a selected one of a plurality of respectively different positions relative to said garage building structure without play therebetween;

one or more deflection brackets adapted to respectively attach one or more door panel hinge joints to said respective column member, a respective deflection bracket having a pair of sidewall deflection members that extend alongside said respective column member, so as to be generally parallel to said pair of sidewall channel portions of said respective upper mounting bracket, said sidewall deflection members having a plurality of spaced apart holes therethrough for receiving one or more fasteners for securely attaching said respective column member to said deflection brackets at a selected one of a plurality of different separations between said respective column member and a respective panel hinge joint, and wherein said pair of sidewall deflection members includes holes alignable with a passageway through a respective door panel hinge joint, receiving a fastener therethrough which is adapted to securely attach said pair of deflection members to said respective door panel hinge joint; and

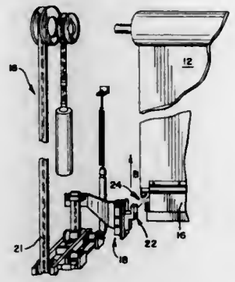
a lower mounting bracket affixed to a second end of said respective column member and having a floor anchoring portion by way of which said column member is adapted to be anchored to a garage floor beneath an attachment location of said respective upper mounting bracket to said garage building structure.

5,620,039

APPARATUS FOR PROVIDING A SLIDINGLY-SEPARABLE CONNECTION BETWEEN A MOVABLE BARRIER AND A MEANS FOR GUIDING THE BARRIER

Joe M. Delgado, Hartford, and Walenty Kalempa, Slinger, both of Wis., assignors to Rytec Corporation, Jackson, Wis.

Filed Feb. 10, 1995, Ser. No. 387,411
Int. Cl.[6] E06B *9/17*
U.S. Cl. 160—265 **24 Claims**



1. Apparatus for connecting a movable barrier to a means for guiding the barrier during operation to selectively block an opening, the connection separating upon impact in excess of a predetermined magnitude, comprising:

a lateral connecting member extending laterally and having opposed first and second ends, the first end being attachable to one of either the means for guiding the barrier or the movable barrier and the second end being adapted to be received by a receptacle;

the receptacle being attachable to the other of the means for guiding the barrier or the movable barrier and being adapted to receive the second end of the lateral connecting member; and,

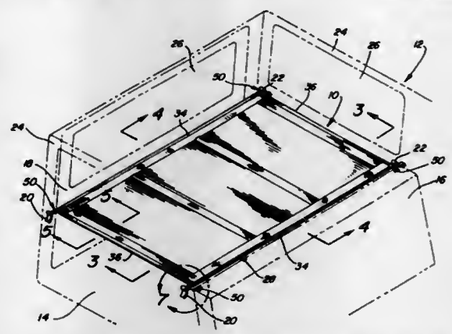
the lateral connecting member and the receptacle being cooperatively dimensioned so that, over a predetermined range of accommodatable relative rotation between the receptacle and the lateral connecting member, the rotation being in a plane other than the plane of the barrier, the connecting member and the receptacle are separable upon impact in excess of a predetermined magnitude.

5,620,040

FOLDABLE CARGO COVER

James A. Swanner, Laguna Niguel, Calif., assignor to Performance Marketing, Inc., Santa Ana, Calif.

Continuation of Ser. No. 311,388, Sep. 22, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 626,912
Int. Cl.[6] A47H *23/00;* **B60P** *7/02*
U.S. Cl. 160—354 **13 Claims**



1. A cover releasably attached to an internal cargo area of a vehicle, comprising:

a plurality of stationary members attached along a perimeter of internal walls of said vehicle cargo area;

a pliable sheet having a substantially rectangular configuration defining opposed longitudinal side edges and opposed lateral side edges;

a first pair of stiffener members extending along respective longitudinal side edges of said sheet, each said longitudinal stiffener member having an arcuately contoured cross-section;

a second pair of stiffener members extending along respective lateral side edges of said sheet, each said lateral stiffener member having an arcuately contoured cross-section;

elongated pocket defined in said sheet for each one of said first and second pair of stiffener members, each pocket sized and configured to receive one stiffener member and seal the stiffener member within said pocket; and

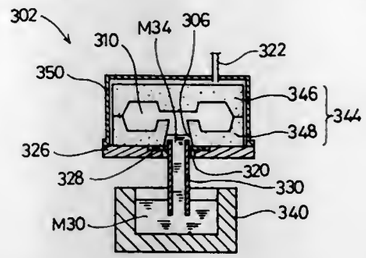
a plurality of fastener members attached to said pliable sheet for attaching to respective ones of said stationary members.

5,620,041

VACUUM CASTING APPARATUS AND METHOD USING FLANGE-FREE STALK

Mituyoshi Sato, Toyota; Minoru Uozumi, Aichi-gun, and Masao Nakayama, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 307,424, Sep. 19, 1990, Pat. No. 5,555,925. This application Apr. 4, 1996, Ser. No. 627,329
Claims priority, application Japan, Oct. 12, 1993, 5-254408
Int. Cl.[6] B22D *18/06*
U.S. Cl. 164—63 **6 Claims**



1. A method for vacuum casting, comprising:

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providing a gas-tight chamber having an insertion hole for inserting a straight tubular stalk and evacuated when performing vacuum casting;

providing a die accommodated in the gas-tight chamber and having an inlet to a cavity within the die;

inserting the stalk through the insertion hole of the gas-tight chamber for leading molten metal into the die;

providing a flange mounted on a periphery of an insertion side end of the stalk;

forming a recess bounded by a surface of the die, a surface of the stalk, and a surface of the flange;

providing a first degree of vacuum in the gas-tight chamber to withdraw the molten metal into the stalk to a level above a die side end of the stalk and below the inlet of the cavity of the die, until the molten metal overflowing from the die side end of the stalk is introduced into the recess;

allowing the molten metal in the recess to cool and solidify to form a seal between the stalk and the flange; and

after the molten metal in the recess has cooled and solidified to form a seal between the stalk and the flange, providing a second degree of vacuum in the gas-tight chamber to withdraw the molten metal into the die cavity.

4. A vacuum casting apparatus comprising:

a gas-tight chamber having an insertion hole for inserting a straight tubular stalk and evacuated when performing vacuum casting;

a die accommodated in said gas-tight chamber and having an inlet to a cavity within the die;

said stalk inserted through the insertion hole of said gas-tight chamber for leading molten metal into said die;

a flange mounted on a periphery of an insertion side end of said stalk;

a recess formed by a surface of the die, a surface of the stalk, and a surface of the flange; and

preliminary evacuation means for provisionally providing a first degree of vacuum in said gas-tight chamber to withdraw the molten metal into said stalk to a level above a die side end of said stalk and below the inlet of a cavity of said die, until the molten metal overflowing from the die side end of said stalk is introduced into the recess and the molten metal in the recess cools and solidifies to form a seal between the stalk and the flange, before providing a second degree of vacuum in said gas-tight chamber to withdraw the molten metal into the cavity of said die.

5,620,042

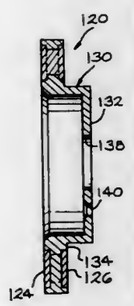
METHOD OF CASTING A COMPOSITE DISC BRAKE ROTOR

Mark K. Ihm, Mt. Clemens, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 356,031, Dec. 14, 1994, Pat. No. 5,509,510, which is a continuation of Ser. No. 85,712, Jun. 30, 1993, abandoned. This application Apr. 23, 1996, Ser. No. 636,255

Int. Cl.[6] B22D *19/00*

U.S. Cl. 164—95 **9 Claims**



1. A method for producing a solid composite disc brake rotor adapted for use in a disc brake assembly having a pair of friction pads comprising the steps of:

(a) casting a generally annular rotor insert formed from a first material, the rotor insert including a pair of brake friction plates and a plurality of circumferential spacing elements, the brake friction plates including inner surfaces and generally parallel outer surfaces which define a pair of brake friction surfaces adapted to be frictionally engaged by the pair of friction pads of the disc brake assembly, the circumferential spacing elements disposed and extending only between the inner surfaces of the brake friction plates for maintaining the brake friction plates in a spaced apart relationship, a plurality of interspaces being defined between the circumferential spacing elements,

(b) placing the rotor insert in a mold; and

(c) casting a rotor body formed from a second material in situ therewith, the rotor body including a mounting surface and an annular portion extending directly through the interspaces and completely filling and occupying the interspaces to secure the rotor insert to the rotor body.

5,620,043

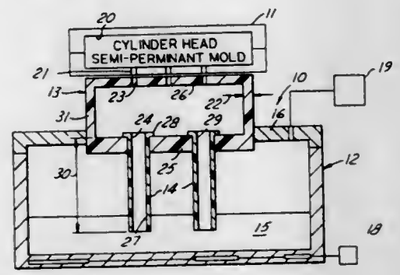
TRANSFERRING MOLTEN METAL FOR LOW PRESSURE CASTING

Mark A. Chamarro, Oxford, Mich., and Kenneth D. Clark, Santa Rosa, Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 488,890

Int. Cl.[6] B22D *18/04;17/06*

U.S. Cl. 164—119 **7 Claims**



1. A transfer system for delivering molten metal against gravity from a pressurized furnace to a mold, comprising:

(a) ceramic lined refractory metal gatebox adapted to sit on or above said furnace, said gatebox having one or more openings at its top for communication with the mold and having a plurality of metal transfer openings along its bottom;

(b) a stalk tube depending from each of said gatebox bottom openings, each stalk tube being effective to extend into at least the upper region of the molten metal within said furnace;

(c) a sealing gasket between said stalk tube and gatebox;

(d) means for imposing a first fluid pressure on said molten metal in the furnace to gradually force such molten metal up through said stalk tubes into said gatebox to substantially fill same and keep said gatebox continuously filled, said stalk tube promoting a convection circulation of metal between said furnace and gatebox to retain the temperature of the molten metal in the gatebox at a temperature differential no greater than 5°–15° F. without the need for external heating, and

(e) means for imposing a second fluid pressure on the molten metal in the furnace to quiescently force the molten metal of said gatebox into the mold with little or no momentum effect.

5,620,044

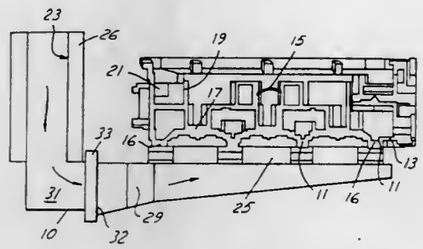
GRAVITY PRECISION SAND CASTING OF ALUMINUM AND EQUIVALENT METALS

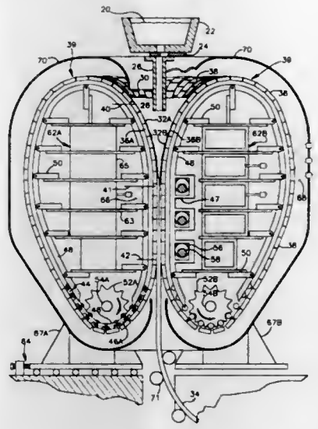
Robert W. Grenkowitz, Washington; Michael J. Braskich, Grosse Ile, and Allen D. Ackerman, Troy, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 7, 1994, Ser. No. 319,901

Int. Cl.[6] B22D *37/00*

U.S. Cl. 164—134 **9 Claims**





1. A method of casting aluminum products, comprising:

(a) forming a precision sand mold devoid of at least one of risers and vents, and a gating system consisting of a gravity feeding sprue and one or more runners effective to carry molten metal from said sprue only to the bottom of the mold cavity;

(b) planting a flow modifier in said gating system between the sprue and mold cavity to convert said flow into laminar flow, said modifier having an open porous area and a total frontal exposed area, wherein said open porous area is 50–80% of said total frontal exposed area; and

(c) filling said gating system with molten aluminum metal at an enhanced pour rate permitted by said modifier that allows laminar flow to more readily fill the mold and that acts as a heat retaining insulator to keep the incoming molten metal at a higher temperature level thereby to minimize cycle time and improve the yield of the casting process.

8. An improved molding apparatus for casting aluminum products, comprising:

(a) a precision sand mold devoid of risers and vents;

(b) a runner system feeding the bottom of said mold at the largest metal mass zones of the mold cavity;

(c) a sprue for gravity feeding of molten metal to the runners and;

(d) a flow modifier between said sprue and runners to effect laminar quiescent flow of the molten aluminum metal, to filter said molten metal of dross, slag and non-metallic inclusions from the molten aluminum metal, and to retain heat as an insulator to permit lowering the pouring temperature of the molten metal wherein said modifier having an open porous area and a total frontal exposed area, wherein said open porous area is 50–80% of said total frontal exposed area.

5,620,045

CONTINUOUS CASTING MOLD FORMED OF PLATE ELEMENTS

Charles C. Gerding, 8428 Wiese Rd., Brecksville, Ohio 44141

Filed Apr. 24, 1995, Ser. No. 426,708

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—430 **15 Claims**

1. A continuous strip casting machine comprising

(a) two wide and downwardly moving casting surfaces facing each other, each of said surfaces being comprised of the faces of a plurality of closely nested casting plates forming in their aggregate a matrix, each said matrix being a facetted approximation of a smooth doubly curved surface, said matrices delimiting the wide sides or a casting cavity that contains a pool of molten metal and a casting being continuously frozen therefrom, and constraining the edges of said pool so that the surface of said pool has an elongated shape with a broad thickness at the center region which gradually converges to a narrow thickness at each end, said broader portions at the surface gradually diminishing in thickness with depth so as to converge to a narrow and essentially constant thickness across the entire width of said pool at a distance below the said pool surface thereby defining a converging section, said cavity also having a section of approximately constant thickness for an additional distance therebelow thereby defining a constant thickness section, and

(b) two narrow end containment means delimiting the said approximately constant thickness spacing between the edges of the two said matrices, and retaining said pool and casting therein, and

(c) driving means to advance said casting plates and solidified portions of said casting adjacent thereto downwardly at an essentially constant velocity, and

(d) recirculating means for returning said casting plates from the bottom of said casting cavity so as to re-enter the matrices at the top, and

(e) cooling mean to extract heat absorbed by said casting plates from said casting.

5,620,046

HEAT EXCHANGER, PARTICULARLY A REFRIGERANT EVAPORATOR

Thorsten Waldhelm, and Christoph Walter, both of Stuttgart, Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Jan. 13, 1995, Ser. No. 372,364

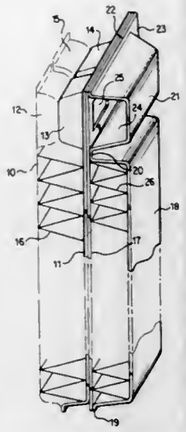
Claims priority, application Germany, Jan. 13, 1994, 9400502 U

Int. Cl.[6] F28D *1/02*

U.S. Cl. 165—153 **7 Claims**

1. A heat exchanger, particularly a refrigerant evaporator, comprising a soldered block of stamped plates having front ends, which stamped plates, in pairs, form a U-shaped guide and collecting ducts for a heat exchange medium, comprising corrugated ribs arranged between the plate pairs, and comprising plate-shaped lateral parts arranged on the front ends of the block and having further corrugated ribs arranged therebetween, wherein the lateral parts are provided in the area of the collecting ducts with at least

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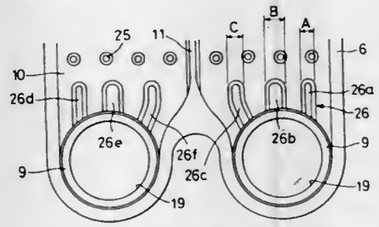
one profiling, which forms a chamber with a covering sheet closing off an exterior one of said stamped plates, which chamber has a connection to at least one of the collecting ducts.

5,620,047

LAMINATED HEAT EXCHANGER

Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,290
Claims priority, application Japan, Nov. 4, 1994, 6-295862
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—153 **12 Claims**



1. A tube element for a laminated heat exchanger, said tube element comprising:

a first tank portion, formed in a first end of said tube element, said first tank portion being provided with communicating holes to permit flow of heat exchanging medium therethrough;

a second tank portion, formed in a first end of said tube element, said second tank portion being provided with communicating holes to permit flow of heat exchanging medium therethrough;

a projection extending from a location between said tank portions toward a second end of said tube element to define a U-shaped passageway communicating between said tank portions;

an outer bead having a width, an inner bead having a width, and at least one intermediate bead having a width and being positioned between said outer bead and said inner bead, are formed in a first area between said first tank portion and said passageway; and

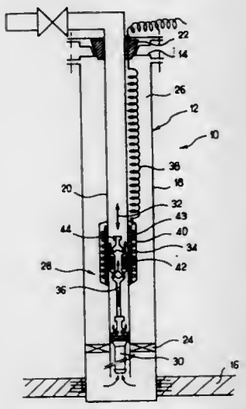
an outer bead having a width, an inner bead having a width, and at least one intermediate bead having a width and being positioned between said outer bead and said inner bead, are formed in a second area between said second tank portion and said passageway, wherein the width of said at least one intermediate bead formed in said first area is greater than the widths of said inner and outer beads formed in said first area and the width of said at least one intermediate bead formed in said second area is greater than the widths of said inner and outer beads formed in said second area, wherein in both of said first and second areas said outer bead and said at least one intermediate bead extends linearly in a direction parallel to linear portions of said U-shaped passage, and said inner bead is formed with a portion which is angled relative to said linear portions of said U-shaped passageway.

5,620,048

OIL-WELL INSTALLATION FITTED WITH A BOTTOM-WELL ELECTRIC PUMP

Jean-Louis Beauquin, Saint Faust, France, assignor to Elf Aquitaine Production, France

Filed Sep. 29, 1995, Ser. No. 536,790
Claims priority, application France, Sep. 30, 1994, 94 11750
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—62 **7 Claims**



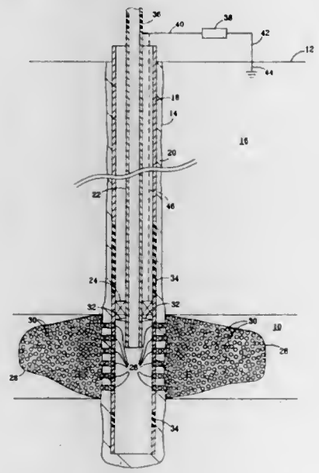
1. Oil-well installation extending from the surface to an oil-bearing rock stratum comprising a tubing arranged in the well and forming a flow channel to the surface for hydrocarbons originating from the oil-bearing rock stratum, a casing delimiting the wall of the well, a seal arranged at the well bottom between the tubing and the casing so as to form a chamber isolated from the hydrocarbons, a pump and an electric motor which actuates the pump in the well, said electric motor comprising an electrical portion including a stator and a cable supplying electrical power from the surface and a mechanical portion including a mobile part which is movable under the effect of the magnetic field generated by the stator, wherein the stator and the cable of the electric motor are arranged in the chamber isolated from the hydrocarbons and wherein the chamber contains a dielectric substance in the form of a liquid or gel.

5,620,049

METHOD FOR INCREASING THE PRODUCTION OF PETROLEUM FROM A SUBTERRANEAN FORMATION PENETRATED BY A WELLBORE

Larry J. Gipson, Anchorage, Ak., and Carl T. Montgomery, Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1995, Ser. No. 572,630
Int. Cl.[6] F21B *43/24;43/25;43/267*
U.S. Cl. 166—248 **15 Claims**



1. A method for increasing the production of petroleum from a petroleum containing subterranean formation penetrated by a wellbore, the method comprising

a) fracturing the subterranean formation and injecting an electrically conductive proppant into the fracture, the conductive proppant comprising particles which are at least partially coated with a heat hardenable, conductive resin to create a fluidly and electrically conductive fracture in the formation;and

b) passing an electrical current into the formation through the wellbore to heat the formation and harden the conductive resin thereby at least partially aggregating the particles and retaining the particles in the fracture and heating the subterranean formation in the vicinity of the fracture.

5,620,050

METHOD FOR SETTING HYDRAULIC PACKERS THAT ENABLE PLACEMENT OF GRAVEL PACK IN A DOWNHOLE OIL AND GAS WELL

Phil Barbee, P.O. Box 2005, Gretna, La. 70054-2005

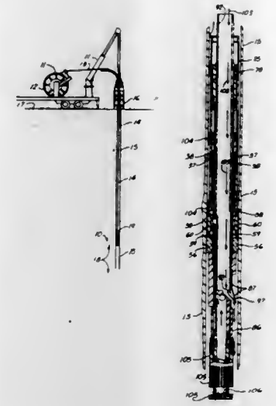
Division of Ser. No. 106,348, Aug. 12, 1993, Pat. No. 5,377,748. This application Dec. 28, 1994, Ser. No. 365,357
Int. Cl.[6] E21B *43/04;33/1295*
U.S. Cl. 166—278 **16 Claims**

1. A method of gravel packing an oil and gas well with a circulating gravel pack, said well having a wellhead at the earth's surface, a well annulus, and a well casing, comprising the steps of:

a) lowering a tool body having a packer and a valving member into the well casing on a coil tubing string that includes a straight portion disposed in the well casing and a coiled portion on a reel that is positioned at the wellhead;

b) placing the tool body in the well casing and at a selected elevational position of the well casing to be packed with gravel or coarse sand;

c) activating the packer to form an annular seal against the casing by elevating pressure in the coil tubing;



d) opening the valving member at a position below the annular seal;

e) transmitting gravel or coarse sand in a carrying fluid via the coil tubing and packer bore to the opened valving member so that the gravel or coarse sand and carrying fluid enters the well annulus below the seal;

f) circulating the carrying fluid back to the earth's surface via a channel that extends through the tool body from below the packer to a position above the packer;

g) wherein in step "d" the valving member is a flapper type valve; and

h) further comprising the step of anchoring the packer to the casing with slips before transmitting gravel or coarse sand to the packer.

11. A method of gravel packing an oil and gas well having a wellhead at the earth's surface, a well annulus, and a well casing, with a circulating gravel pack comprising the steps of:

a) lowering a tool body having a packer and a valving member into the well casing on a coil tubing string that includes a straight portion disposed in the well casing and a coiled portion on a reel that is positioned at the wellhead;

b) placing the tool body in the well casing and at a selected elevational position of the well casing to be packed with gravel or coarse sand;

c) activating the packer to form an annular seal against the casing by elevating pressure in the coil tubing;

d) opening the valving member at a position below the annular seal;

e) transmitting gravel or coarse sand in a carrying fluid via the coil tubing and packer bore to the opened valving member so that the gravel or coarse sand and carrying fluid enters the well annulus below the seal; and

f) using a return channel within the tool body and that extends above the seal to recirculate the carrying fluid from the bottom of the tool body back to the earth's surface.

5,620,051

WHIPSTOCK

Thurman B. Carter, Pearland, and John D. Roberts, Spring, both of Tex., assignors to Weatherford U.S., Inc., Houston, Tex.

Division of Ser. No. 414,338, Mar. 31, 1995, Pat. No. 5,522,461. This application Jun. 3, 1996, Ser. No. 655,087
Int. Cl.[6] E21B *29/00*
U.S. Cl. 166—298 **20 Claims**

1. A whipstock comprising

a body with a concave portion, and

lug apparatus on the concave portion, the lug apparatus disposed for milling by a mill moving adjacent the concave portion to inhibit the mill from milling the concave portion, the lug



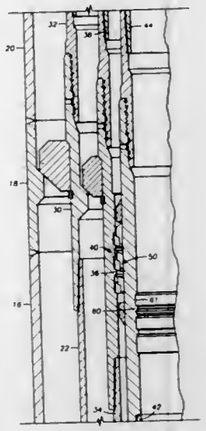
apparatus is disposed so that the lug apparatus does not stop movement of the mill.

5,620,052

HANGER SUSPENSION SYSTEM

Edwin C. Turner, 7500 Pinemont, #2110, Houston, Tex. 77040-6431

Filed Jun. 7, 1995, Ser. No. 473,443
Int. Cl.[6] E21B *43/01*
U.S. Cl. 166—348 **10 Claims**



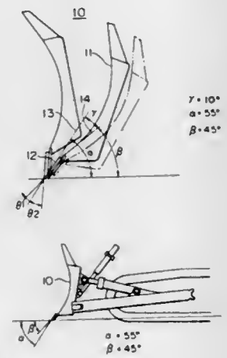
1. A suspension system allowing reciprocation of an inner pipe string within an outer pipe string, comprising:
a hanger for suspending the inner pipe string;
a head on the outer string including a non-restrictive bore having tapering surfaces and load bearing surfaces in recessed circumferential grooves;
said hanger having outwardly extending load bearing members;
a hanger assembly mounted on said hanger, said hanger assembly including a plurality of expandable and contractible support members;
said support members having inner load bearing shoulders engaging said load bearing members and outer load bearing shoulders engaging said load bearing surfaces for suspending said hanger within said head in an expanded position, said support members having camming shoulders for engaging said tapering surfaces for releasing said hanger from said head in a contracted position;
whereby said hanger and inner pipe string may have reciprocable movement within said head and outer pipe in said contracted position.

5,620,053

BLADE APPARATUS AND ITS CONTROL METHOD IN BULLDOZER

Nobubisa Kamikawa; Toshikazu Okada; Hidekazu Nagase; Naomi Kobayashi, all of Hirakata; Hiroshi Itogawa; Noriaki Namiki, both of Kyoto; Norihisa Matsumoto, and Shigeru Yamamoto, both of Hirakata, all of Japan, assignors to Komatsu, Ltd., Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,839
Claims priority, application Japan, Jan. 28, 1994, 6-026136
Int. Cl.[6] E02F *3/76*
U.S. Cl. 172—4 **74 Claims**



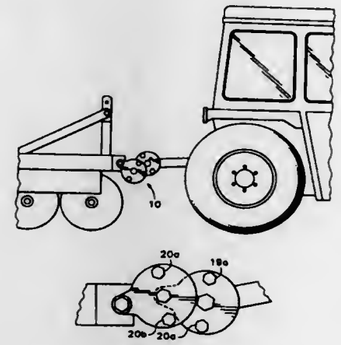
1. An apparatus comprising:
a bulldozer body;
first and second frame members, each of said first and second frame members having a first end and a distal end, with each said first end being pivotally attached to a respective opposite side of said bulldozer body;
a blade pivotally attached to the distal ends of said frame members, said blade having opposite transverse ends;
first and second hydraulic cylinders, each of said first and second hydraulic cylinders pivotally coupling between a respective transverse end of said blade and an intermediate portion of a respective one of said first and second frame members; and
a hydraulic drive system for said first and second hydraulic cylinders, said hydraulic drive system comprising a hydraulic pump for supplying a hydraulic fluid to said first and second hydraulic cylinders, directional control valves for controlling the supply of the hydraulic fluid from said hydraulic pump to said first and second hydraulic cylinders, and a changeover control means for changing between a tilt mode and a pitch mode, whereby said first and second hydraulic cylinders can be extended or contracted by said hydraulic drive system so that said blade can be tilted in the right-hand or left-hand direction and inclined forwardly or rearwardly such that said first and second hydraulic cylinders are able to control said blade at a rearwardly inclined angle of said blade in the range of about 5° to about 20° with respect to the posture of said blade in digging work;
wherein said first and second hydraulic cylinders are also able to control said blade at a forwardly inclined angle of said blade in the range of about 5° to about 45° with respect to the posture of said blade in digging work, and
wherein said hydraulic pump is a variable displacement hydraulic pump which is controlled by an external signal.

5,620,054

THREE POINT HITCH FOR AGRICULTURE EQUIPMENT

Charles L. Dannar, 8102 SE. 242nd, Gresham, Oreg. 97080

Filed May 17, 1995, Ser. No. 471,306
Int. Cl.[6] A01B *51/00*
U.S. Cl. 172—272 **1 Claim**



1. A three point hitch comprising:
first and second lower link arms and an upper link arm, each said link arm having forward and rearward ends;
first and second articulated linkages connected to the respective rearward ends of the first and second lower link arms
each said articulated linkage including a first connector having first and second transverse holes and first and second raised stops; and a second connector having first and second transverse holes and first and second raised stops, each said first connector rotatably connected to a respective link arm rearward end, and each said second connector rotatably connected to a respective first connector;
each first connector rotatable about its respective first transverse hole between a first position where its respective first raised stop engages an edge of the connected link arm, and a second position where the second raised stop engages an edge of the connected link arm;
each second connector rotatable between a first position where its first raised stop engages an edge of the first connector and a second position where its second raised stop engages an edge of the first connector.

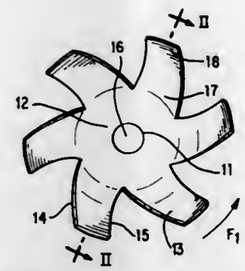
5,620,055

PLOW DISK OF THE TYPE INTENDED TO BE MOUNTED FREE IN ROTATION ON A SHAFT INTEGRAL WITH THE FRAME OF A PLOW

Jean-Charles Javerlhac, Les Rosiers - Guimps, 16300 - Barbezieux, France

Continuation of Ser. No. 104,476, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 773,880, Dec. 30, 1991, abandoned. This application Aug. 16, 1995, Ser. No. 524,155
Claims priority, application France, May 2, 1989, 89 05815; Nov. 27, 1989, 89 15558
Int. Cl.[6] A01B *15/16*
U.S. Cl. 172—604 **10 Claims**

1. A plow disk for mounting with a plurality of disks of the same nature on a frame of a plow, free in rotation about an axis parallel to the ground, but angled relative to a direction of advance of said plow in order to impart a movement of rotation to said plurality of disks during advance of said plow, each of said disks having a periphery constituted by a plurality of blades each comprising:
a first convex leading cutting edge having an inner extremity directed toward a center of said disk and an outer extremity at said periphery of said disk, a shape of said first convex leading cutting edge being such that when going from said inner extremity to said outer extremity a radial line toward said center of said disk is always moving angularly in a same direction,
a second cutting edge adjacent to said first convex leading cutting edge, a shape of which is substantially arcuate with its center located at said center of said disk, the length of said second arcuate cutting edge being substantially shorter than the length of said first convex leading cutting edge,
a back concave trailing edge adjacent to said second arcuate cutting edge which is directed substantially in the direction of said center of said disk,
the length of said second cutting edge being substantially smaller than a distance between said second cutting edges of two adjacent blades,
each blade having a crosswise dimension which decreases while moving away from said axis of rotation, and
a position of said disk on said plow being such that a first convex leading cutting edge of each blade is directed toward said direction of advance of said plow when said blade enters the ground.

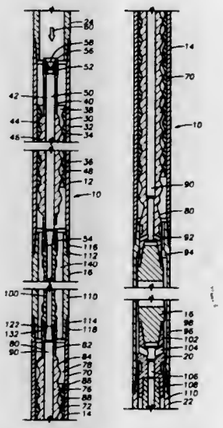


5,620,056

COUPLING FOR A DOWNHOLE TANDEM DRILLING MOTOR

Jay M. Eppink, Spring, Tex., assignor to Halliburton Company, Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 476,972
Int. Cl.[6] E21B *3/00*
U.S. Cl. 175—95 **15 Claims**

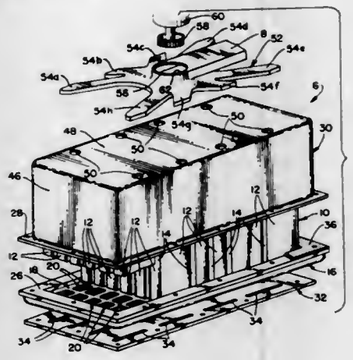


1. A coupling for connecting adjacent hollow rotors rotatably mounted within adjacent stators of a drilling motor, the rotors and stators forming an annular area, comprising:
a member having a flowbore therethrough for the passage of drilling fluid; and

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said member being adapted for connection to one end of each of the hollow rotors to form a common fluid passageway through said member and the hollow rotors whereby drilling fluid may flow through the common fluid passageway and through the annular area.

5,620,057
ELECTRIC VEHICLE BATTERY ENCLOSURE
Donald Klemen, Carmel, and Steven R. McMullen, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 19, 1994, Ser. No. 358,277
Int. Cl.[6] B60R *16/04*
U.S. Cl. 180—68.5 **13 Claims**



1. An electric vehicle having an underbody and an assembly for the forced convective thermal management of a battery pack and protection thereof from road water, characterized in that said assembly comprises:

a tray secured to said underbody and supporting a plurality of batteries each spaced one from the next by a gap therebetween, said tray having a floor supporting said batteries and a plurality of vents extending through said floor beneath said batteries;

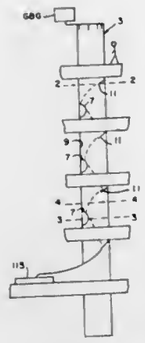
a housing enclosing said batteries and secured to said tray, said housing having side walls encircling said batteries and a ceiling overlying said batteries;

a fan operatively associated with said housing for pressurizing said housing with air, and flowing such air through each said gap and out of said housing via said vents; and

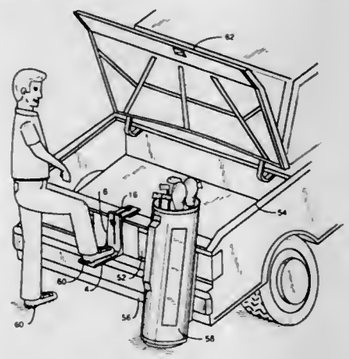
a splash guard underlying said tray for preventing road water from splashing up in said housing via said veins, said splash guard comprising a shield having a plurality of apertures therein offset from said vents and through which air exhausted through said vents flows to beneath said vehicle.

5,620,058
EMERGENCY EVACUATION SYSTEM
David J. Forrester, Jacksonville, Ala., assignor to Cerberus Institute for Research and Development, Inc., Warner Robins, Ga.
Filed Apr. 4, 1995, Ser. No. 416,367
Int. Cl.[6] A62B *3/00*
U.S. Cl. 182—48 **43 Claims**

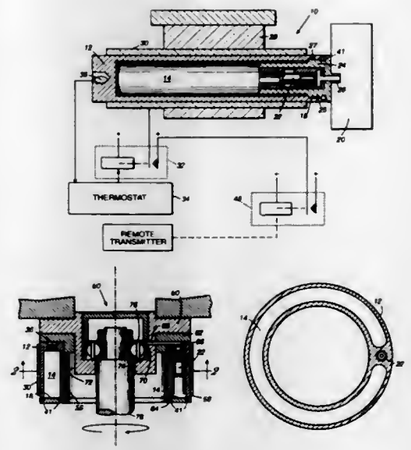
1. An emergency evacuation system comprising an inflatable tube having an inner surface, an outer surface, a top end and an open bottom end, an inflatable exit slide positioned at the open bottom end of the tube, a gas generator connected to the tube and the exit slide for inflating the tube and the slide to an optimum pressure, and plural connectors positioned on the tube for connecting the tube to a structure, at least one entry port leading into the tube, and multiple inflatable structures extending inward from the inner surface of the tube.



5,620,059
VEHICLE BUMPER PROTECTOR FOR GOLF SPIKES
Carmen C. Crispeno, 110 Tenth St., Conway, Pa. 15027
Filed Aug. 9, 1994, Ser. No. 287,858
Int. Cl.[6] E06C *5/00*
U.S. Cl. 182—127 **4 Claims**



1. A vehicle bumper protector for golf spikes comprising an L-shaped base including a footrest connected to an outer surface of a vertical back plate, an inverted U-shaped trunk support bracket including first and second right angle L-shaped members connected together, with a horizontal leg of said first L-shaped member located above, abutting and connected to a horizontal leg of said second L-shaped member, with an inner surface of said back plate abutting and connected to an outer surface of a vertical leg of said first L-shaped member, with the horizontal legs of said L-shaped members forming a horizontal brace of said trunk support bracket, with the vertical leg of said first L-shaped member forming an outer vertical leg of said trunk support bracket, and with a vertical leg of said second L-shaped member forming an inner vertical leg of said trunk support bracket, with the inner and outer vertical legs of said trunk support bracket spaced from and parallel to each other, wherein said back plate includes an elongated first adjustment slot therethrough and extending substantially vertically therealong, and further including a first releasable fastener passing through the vertical leg of said first L-shaped member and through said first adjustment slot, with said first releasable fastener connecting said back plate to the vertical leg of said first L-shaped member and, along with said first adjustment slot, permitting the vertical position of said footrest to be adjusted along said trunk support bracket, wherein the horizontal leg of the first L-shaped member includes an elongated second adjustment slot therethrough and extending substantially horizontal and perpendicular to said first adjustment slot, and further including a second releasable fastener passing through the horizontal leg of the second L-shaped member and through said second adjustment slot, with said second releasable fastener connecting together the horizontal legs of said L-shaped members and, along with said second adjustment slot, permitting the width of said trunk support bracket between said inner and outer vertical legs to be adjusted, with the width of said trunk support bracket adjusted to straddle a rear wall of a vehicle trunk and with the vertical position of the footrest adjusted to allow a lower surface of said footrest to contact an upper surface of a vehicle bumper when the horizontal brace of said trunk support bracket contacts an upper surface of the rear wall of the vehicle trunk, with said vehicle bumper protector further including a first raised guide ridge spaced from and extending parallel to said first adjustment slot and located on the outer surface of the vertical leg of said first L-shaped member, further including an elongated first guide groove complementary to said first guide ridge, spaced from and extending parallel to said first adjustment slot and located in the inner surface of said back plate, with said first guide ridge fitting in and slideable along said first guide groove when said back plate is connected to the vertical leg of said first L-shaped member, further including a second raised guide ridge spaced from and extending parallel to said second adjustment slot and located on an outer surface of the horizontal leg of said second L-shaped member, and further including an elongated second guide groove complementary to said second guide ridge, spaced from and extending parallel to said second adjustment slot and located in the inner surface of the horizontal leg of said first L-shaped member, with the second guide ridge fitting in and slideable along said second guide groove when said L-shaped members are connected together, wherein said first releasable fastener has a head which is recessed within and does not protrude above an outer surface of the vertical leg of said first L-shaped member and a releasable nut means adjacent the outer surface of the vertical back plate, and wherein said second releasable fastener has a head which is recessed within and does not protrude above an inner surface of the horizontal leg of said second L-shaped member and a releasable nut means adjacent the outer surface of the horizontal leg of said first L-shaped member.



5,620,060
LUBRICANT REPLENISHMENT SYSTEM
William E. Bialke, Ithaca, N.Y., assignor to Ithaco, Inc., Ithaca, N.Y.
Filed Feb. 6, 1996, Ser. No. 597,614
Int. Cl.[6] F01M *5/00*
U.S. Cl. 184—104.1 **20 Claims**

1. A system for providing an equipment article with a supply of lubricant, said article adapted for operating in an operating range of temperatures, said system comprising:

a housing defining a reservoir, said reservoir having a reservoir volume, said housing having an open end;

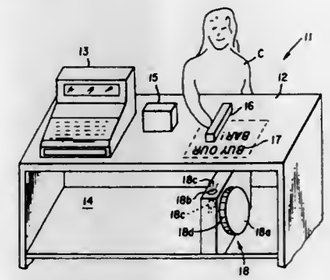
a lubricant disposed in said reservoir, said lubricant having an operating volume no larger than said reservoir volume when said lubricant is in said operating range of temperatures;

valve means disposed at said open end of said housing and in fluid communication with said equipment article, said valve means allowing one-way movement of lubricant out of said housing;

heating means in thermal contact with said housing for heating said lubricant, said heating means expanding the volume of said lubricant to a volume larger than said reservoir volume so that a percentage of said lubricant is forced out of said reservoir and into said equipment article upon activation of said heating means; and

selective activation means in communication with said heating means for selectively activating said heating means.

5,620,061
CHECKOUT COUNTER ADVERTISING DISPLAY
William A. Fraser, 3001 Audubon Ter. NW., Washington, D.C. 20098
Continuation of Ser. No. 518,346, Aug. 23, 1995, abandoned. This application Jul. 16, 1996, Ser. No. 682,052
Int. Cl.[6] A47F *10/02*; **G09F** *11/12*
U.S. Cl. 186—68 **44 Claims**



41. An apparatus for displaying visual information at a checkout counter, comprising:

a) a horizontal checkout counter having a display surface, said display surface being immobile

b) means for displaying visual information on the display surface of the checkout counter; and

c) a substantially transparent conveyer above the display surface of the checkout counter, said conveyer being adapted to convey articles along the display surface of the checkout counter;

wherein said visual information is viewable through the conveyer.

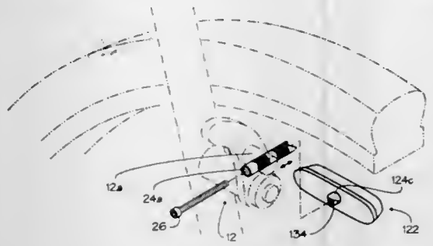
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5,620,062

BICYCLE BRAKE SHOE ASSEMBLY

Richard C. Everett, 225 Sunshine La., West Linn, Oreg. 97068, and Mark Rosenberger, 13235-116 St., Edmonton, Alberta, Canada

Filed Apr. 5, 1996, Ser. No. 627,361
Int. Cl.[6] F16D *65/78*
U.S. Cl. 188—24.12 **8 Claims**



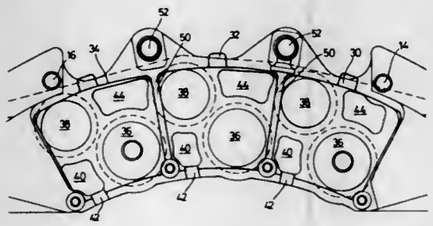
6. A brake shoe assembly for attachment through an opening in a clamp device of a bicycle brake lever, the assembly comprising:
- an elongate tubular stem having an outer surface configured for frictional engagement within said opening and an end having an irregular configuration;
- a brake pad having a rim engaging surface and a portion on the surface opposite said rim engaging surface said portion being matingly configured to said irregular configuration of said end so that when matingly adjoined, an orientation of said pad is defined relative to said axis; and
- a fastener member configured for passing through said opening and said tubular stem into engagement with an opening generally centrally positioned within said portion for enabling fixing said pad in said orientation thereby to eliminate readjustment of a brake pad relative to the rim upon replacement with a like brake pad.

5,620,063

THREE SECTION PAD IN CALIPER DISC BRAKES

Philip J. Smith, West Midlands, United Kingdom, assignor to Alcon Components Limited, Tamworth Staffs, Great Britain

Filed Oct. 30, 1995, Ser. No. 550,070
Claims priority, application United Kingdom, Nov. 2, 1994, 9422056
Int. Cl.[6] F16D *65/04*
U.S. Cl. 188—73.2 **6 Claims**



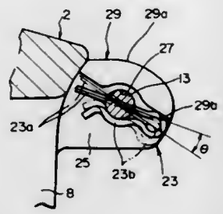
1. A racing brake caliper comprising a pair of limbs, having an opening for pad insertion and having a series of more than two pads in each limb, said opening having a peripheral length less than the equivalent dimension of the series of pads, the first and last pads in the series extending beyond the opening at opposite ends thereof, whereby first and last pads of the series are inserted through said opening and then moved circumferentially in opposite directions into the required positions before inserting the intermediate pads in the series into position.

5,620,064

DISK BRAKE HAVING A HIDDEN CLIP FOR A BRAKE PAD PIN

Takashi Sano, Yamanashi-ken, Japan, assignor to Tokico Ltd., Kanagawa-ken, Japan

Filed May 30, 1995, Ser. No. 454,530
Claims priority, application Japan, May 31, 1994, 6-141154
Int. Cl.[6] F16D *55/22;65/04*
U.S. Cl. 188—73.44 **14 Claims**



1. A disk brake for a two-wheeled vehicle, comprising:
- a caliper, said caliper comprising a claw portion, said claw portion having a side end, and said side end comprising a first extension that extends outwardly from said side end;
- a pair of pads, said pads comprising back plates, one of said back plates having a back plate side end, and said back plate side end comprising a second extension that extends outwardly from said back plate side end;
- a pin slidably supporting said pads, said pin being received in said first and second extensions, and said pin having an axis; and
- a clip provided between said first and second extensions for preventing removal of said pin from said first and second extensions;

wherein said first and second extensions are sized so as to cover opposed lateral sides of said clip that extend in a direction transverse to the axis of said pin; and

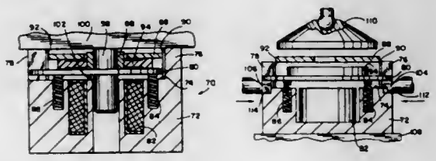
wherein said first extension further comprises a projecting portion that extends along the axis of said pin so as to cover the outside of said clip.

5,620,065

SPRING SET BRAKE

William A. Baker, St. Francis, and Thomas M. Zwitter, Thiensville, both of Wis., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Aug. 1, 1994, Ser. No. 283,649
Int. Cl.[6] F16D *65/12*
U.S. Cl. 188—171 **34 Claims**



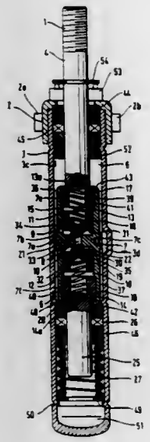
1. A spring set brake, comprising:
- a magnetically permeable body having a pole face and a plurality of legs extending axially therefrom in integral fixed relation and axially immovable relative thereto, said legs having mounting surfaces extending axially therealong;
- an armature axially movable toward and away from said pole face;
- an energization coil energizable to magnetically attract said armature toward said pole face;
- at least one biasing member biasing said armature away from said pole face;
- a pressure plate mounted to said mounting surfaces;
- a friction disc between said armature and said pressure plate and keyable to an axially extending rotary shaft such that upon de-energization of said coil, said biasing member biases said armature to a braking position pushing said friction disc against said pressure plate to stop rotation of said disc and said shaft, and such that upon energization of said coil, said armature is pulled toward said pole face to a released position releasing said disc and permitting rotation of said shaft, wherein said armature in said braking position defines an air gap between said pole face and said armature, and wherein said air gap is adjustable by sliding said pressure plate axially along said mounting surfaces of said legs toward said pole face without axially moving said legs relative to said pole face.

5,620,066

LOCKING DEVICE FOR SECURING OBJECTS WHICH ARE MOVEABLE RELATIVELY TO ONE ANOTHER

Oliver Schüttler, Monreal, Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Germany

Continuation of Ser. No. 213,692, Mar. 15, 1994, Pat. No. 5,450,933. This application Jul. 5, 1995, Ser. No. 498,044
Claims priority, application Germany, Mar. 18, 1993, 43 08 669.1; Aug. 11, 1993, 43 26 968.0
Int. Cl.[6] F16F *9/32*
U.S. Cl. 188—300 **22 Claims**



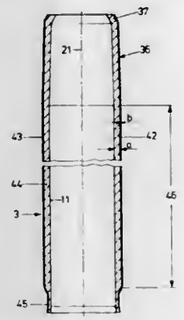
1. A system for fluid exchange between two working chambers, comprising:
- a fluid conducting member in series between said two working chambers and containing a through flow chamber;
- a movable sealing piston sealingly confining said through flow chamber adjacent one end thereof;
- a first connection for connecting said through flow chamber to one of said working chambers;
- a second connection for connecting said through flow chamber to the other-of said working chambers;
- sealing piston pretensioning means for pretensioning a first connection side end face of the sealing piston adjacent said one end of said through flow chamber into a closed position against the first connection;
- the first connection side end face, when in the closed position, (i) presenting a smaller fluid-exposed cross section to a fluid pressure acting on it through the first connection and (ii) having a larger fluid-exposable cross section not always exposed to said fluid pressure acting through the first connection;
- said second connection communicating with the other working chamber via a pressure drop path;
- said through flow chamber permitting the establishment of a flow path therethrough extending from said one working chamber to said other working chamber, said flow path through said through flow chamber being the sole flow path permitting fluid flow between said working chambers in the fluid exchange direction from said one chamber to said other working chamber so that, at a predetermined minimum pressure acting on the smaller fluid-exposed cross section of the first connection side end face, the first connection is opened, and subsequently the larger fluid-exposable cross section within the through flow chamber is exposed to a pressure which is dependent upon the rate of flow (mass per time unit) through the through flow chamber and maintains the first connection open until the through flow rate falls below a predetermined minimum.

5,620,067

LONGITUDINALLY ADJUSTABLE GAS SPRING WITH DUAL LAYERED CYLINDER

Hans-Jürgen Bauer, Altdorf, and Walter Böhm, Feucht, both of Germany, assignors to Suspa Compart Aktiengesellschaft, Altdorf, Germany

Filed Jul. 28, 1995, Ser. No. 508,542
Claims priority, application Germany, Jul. 28, 1994, 44 26 846.7; Dec. 17, 1994, 44 45 190.3
Int. Cl.[6] A47C *3/30;* **F16F** *9/02;* **C23C** *8/26*
U.S. Cl. 188—322.19 **7 Claims**

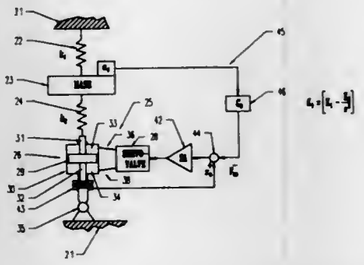


1. A longitudinally adjustable gas spring for adjustable-height chairs, tables, comprising
- a housing (**1**, **1'**) with a central longitudinal axis (**21**), defined by an exterior cylinder (**3**, **3'**) having an outside (**42**) and an inside wall (**11**), and a first end and a second end,
- a piston (**5**) disposed in the housing (**1**, **1'**) for displacement in the direction of the central longitudinal axis (**21**),
- a piston rod (**8**, **8'**) disposed concentrically of the central longitudinal axis (**21**) and secured to the piston (**5**) and guided out of said first end of the exterior cylinder (**3**, **3'**),
- a valve (**19**) for effecting a longitudinal adjustment of the gas spring, and
- a mounting section (**36**, **36'**) at said second end of the exterior cylinder (**3**, **3'**),

wherein the exterior cylinder (**3**, **3'**) has a thin hard external nitrided layer (**43**, **43'**) and a considerably softer core layer (**44**) enclosing the inside wall (**11**).

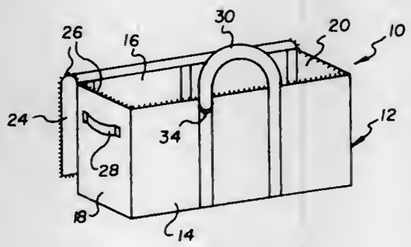
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5,620,068
METHOD AND APPARATUS FOR ACTIVELY ADJUSTING AND CONTROLLING A RESONANT MASS-SPRING SYSTEM
Kenneth D. Garnjost, Buffalo; Christopher A. Rauch, Holland, and Gonzalo J. Rey, Batavia, all of N.Y., assignors to Moog Inc., East Aurora, N.Y.
Division of Ser. No. 52,474, Apr. 23, 1993, Pat. No. 5,456,341. This application Jul. 17, 1995, Ser. No. 450,545
Int. Cl.[6] F16F *15/04*
U.S. Cl. 188—378 **19 Claims**



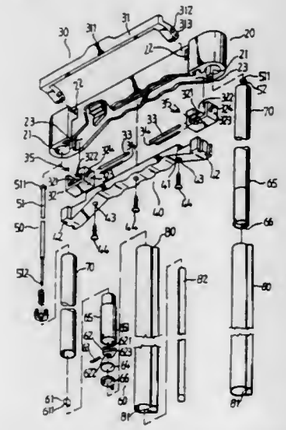
1. A vibration absorber including an actively-controlled mass-spring system arranged to be resonantly excited so as to exert a vibratory reaction force on a structure, said system having a mass mounted for movement relative to said structure and having a spring arranged between said mass and structure, wherein the improvement comprises:
an externally-powered servoactuator mounted on one of said mass and structure and arranged to modulate the vibratory reaction force transmitted from said mass to said structure as a function of the acceleration of said mass so as to controllably modify the resonant frequency of said system.

5,620,069
SOFT-SIDED LUGGAGE WITH COLLAPSIBLE FRAME
Gregory J. Hurwitz, 38 Cecelia Terr., Rochester, N.Y. 14622
Filed Apr. 12, 1995, Ser. No. 421,428
Int. Cl.[6] A45C *7/00;13/04;13/26;13/30*
U.S. Cl. 190—107 **20 Claims**



1. A soft-sided article of luggage comprising:
a fabric shell having a box shape with four sides joined by a bottom and a top;
framing members for holding said four sides erect;
at least one of said framing members being formed from a strip of resilient material;
said strip of resilient material having two bends that separate a base from two arms;
said base being attached to said bottom of the shell and said arms being attached to two of said sides of the shell;
a first of said two sides being foldable together with one of said arms against said bottom of the shell, and a second of said two sides being foldable together with the other of said arms against said first side for collapsing said shell into a substantially flat shape;
said two arms being resiliently opposed to being folded together for re-erecting said four sides of the shell;
a cinch for holding said two arms folded together; and
said cinch being a strap for carrying the article.

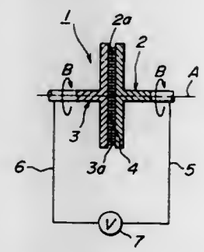
5,620,070
PULL HANDLE STRUCTURE FOR A TRUNK
Chien-Shan Wang, No.80, Tien Hsin Li, Yuan Li Chen, Miao-Li Hsien, Taiwan
Filed Nov. 14, 1995, Ser. No. 555,705
Int. Cl.[6] A45C *13/26;* **B25G** *1/04*
U.S. Cl. 190—115 **1 Claim**



1. An improved pull handle for a trunk comprising:
a handle portion;
a spring biased control means pivotally engaged with said handle portion;
a lower lid fixedly engaged with said handle portion;
first and second inner tubes attached to and extending from the handle portion;
a pair of outer sleeves in each of which one of said inner tubes is slidably housed;
first and second driving linkage rods, one housed in each of said first and second inner tubes;
first and second latch means one latch means located in each of said first and second inner tubes, each latch means having a tapered push block secured to a bottom end of one of said first and second driving linkage rods, a latch slidably supported by a disc plate disposed in a bottom end of each inner tube, the latch having a protrusion thereon, the latch being movable between an extended position wherein the protrusion extends exteriorly of the inner tube and a retracted position wherein the protrusion is located within the inner tube, and a spring acting on the latch so as to bias the latch toward the extended position;
said driving linkage rods each having a flat abutment head at a top end thereof;
first and second guide blocks housed in said handle portion,
each of said guide blocks having a curved guide slot in which a horizontally disposed driving rod is movably located,
one end of said driving rod extending out of said guide block and being in abutment with said flat abutment head of one of said first and second driving linkage rods;
said spring biased control means having two ends each of which is fixedly engaged with one of said horizontal driving rods and is pivotally attached to said handle portion and said guide blocks such that pivoting movement of said control means

relative to said guide blocks causes said driving rods to move along said curved guide slot and move said driving linkage rods which, in turn, causes the latch means to move between its extended and retracted positions;
each of said outer sleeves having an integrally formed side groove extending the full length of said outer sleeves in which a retaining post having a plurality a closely spaced locking recesses is housed whereby said protrusions of each of said latch means sticking out of said inner tubes engages one of said closely spaced locking recesses for varying the length of said pull handle of a trunk.

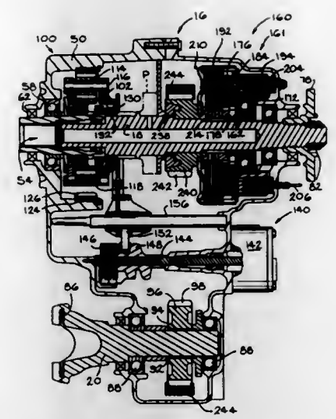
5,620,071
ELECTRICALLY CONTROLLED FORCE TRANSMITTING METHOD AND ELECTRICALLY CONTROLLED FORCE TRANSMITTING APPARATUS
Masazumi Ishikawa, Yokosuka; Katsunori Aoki, Tokyo; Yasuhiko Ohsawa, Yokosuka; Junichi Takimoto, Yonezawa; Keishi Negita, Yokohama, and Hiroshi Takao, Kamakura, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 10, 1995, Ser. No. 401,500
Claims priority, application Japan, Mar. 11, 1994, 6-041126
Int. Cl.[6] F16D *28/00*
U.S. Cl. 192—21.5 **20 Claims**



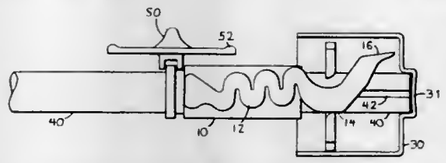
1. A method of transmitting force from a drive member to a driven member in an electrically controllable manner comprising the steps of:
arranging a drive member having an electrically conductive surface and a driven member having an electrically conductive surface such that said electrically conductive surfaces of the drive and driven members are opposed to each other with a small space;
providing a fibrous member in said space formed between said opposed electrically conductive surfaces of the drive and driven members; and
adjusting a voltage applied across said opposed electrically conductive surfaces of the drive and driven members.

5,620,072
TRANSFER CASE HAVING DISC PACK AND CONE CLUTCH
Jack F. Engle, Muncie, Ind., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Feb. 3, 1995, Ser. No. 383,802
Int. Cl.[6] B60K *23/08*
U.S. Cl. 192—35 **20 Claims**

1. A driveline clutch assembly comprising, in combination,
a first output shaft for providing power to a first driveline,
a second output shaft for providing power to a second driveline,
a disc pack clutch operably disposed between said first output shaft and said second output shaft,
a cone clutch operably disposed between said first output shaft and said second output shaft, said cone clutch including a first member driven by said first output shaft and a second member driving said second output shaft, and
an actuator for engaging said disc pack clutch and said cone clutch and controlling power transfer from said primary output shaft to said secondary output member
whereby power transferred from said first output shaft to said second output shaft is the sum of power transferred through said disc pack clutch and said cone clutch.



5,620,073
ROLLERLESS SLIDE SWITCH SELECTABLE RATCHET
Joel S. Marks, Los Angeles, Calif., assignor to WorkTools, Inc., Chatsworth, Calif.
Continuation of Ser. No. 105,125, Aug. 12, 1993. This application Mar. 5, 1996, Ser. No. 610,846
Int. Cl.[6] F16D *13/06*
U.S. Cl. 192—43.2 **17 Claims**



1. A reversible stepless one-way clutch assembly comprising:
a molded outer housing body;
a hollow cylinder fitted within said housing body and having a center axis and an inner circumference, drawn from sheet metal, open at a first end and closed at a second end, said first and second ends substantially perpendicular to the axial length of said cylinder;
an elongated metal shaft along said axis and rotatable within said cylinder, one end of said shaft terminating at said second end of said cylinder, said shaft thus extending from said second end through and beyond said first end of said cylinder, said shaft further extending through an orifice of said housing so that said shaft protrudes from said housing;
a molded, tubular, element coaxially around said shaft, said tubular element movable longitudinally along said shaft and fixed rotationally upon said shaft;
a spring member attached at one end to said tubular element and cantilevered toward said second end of said cylinder to form a distal end of the spring member;
said distal end resilient against a force applied perpendicular to the length of said shaft;
a notch across a portion of said shaft between said first and said second ends of said cylinder;

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said notch elongated perpendicular to the length of said shaft and of a depth of substantially one-half the diameter of said shaft;

a partially circular metal plate fitted within said notch and partially around said shaft such that said plate is within said cylinder, oriented parallel to said second end of said cylinder;

said distal end of said spring member pressing a first portion of said plate to bias said plate in a first rotational direction around said shaft when said tubular element is in a first position along said shaft;

a further surface of said spring member between said distal end and the attachment location of said spring to said tubular element, said further surface resilient against a force applied perpendicular to the length of said shaft, said further surface pressing said plate at a second portion of said plate when said tubular element is in a second position along said shaft, causing a bias upon said plate in a second rotational direction around said shaft;

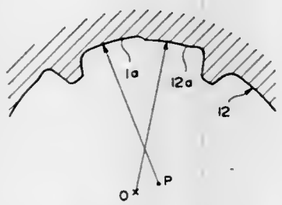
said plate becoming wedged between said notch and the inner circumference of said cylinder when said shaft is urged to rotate said second rotational direction and when said tubular element is in said first position, said plate further free to rotate with said shaft within said cylinder when said tubular element remains in said first position and said shaft rotates in said first direction;

said plate becoming wedged between said notch and the inner circumference of said cylinder when said shaft is urged to rotate in said first rotational direction and when said tubular element is in said second position, said plate further free to rotate with said shaft within said cylinder when said tubular element remains in said second position and said shaft rotates in said second direction.

5,620,074
ONE WAY CLUTCH

Keisaku Zenmei, and Shuzo Isozumi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1995, Ser. No. 521,296
Claims priority, application Japan, Jul. 25, 1995, 7-189502
Int. Cl.[6] F16D *41/066*
U.S. Cl. 192—45 **2 Claims**



1. A one way clutch, comprising:

a) a cylindrical, outer driving member (**12**) having a plurality of taper-shaped cutouts (**1***a*) and arc-shaped support surfaces (**12***a*) serving as machining chuck reference surfaces each defined on the inner periphery of said driving member;

b) a driven member (**2**) disposed to form wedge-shaped spaces between said driven member and the inner periphery of said driving member; and

c) a plurality of rollers movably and individually disposed in said wedge-shaped spaces,

d) wherein power is transmitted only in one rotational direction from said driving member to said driven member through said rollers,

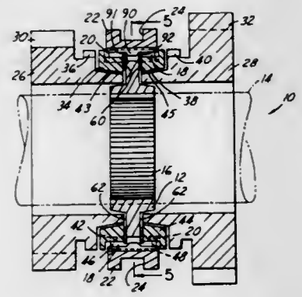
e) wherein said support surfaces define segments of a circle whose center coincides with the axial center of said driving member such that arc-shaped distal ends (**20***a*) of machining chucks (**20**) matingly and grippingly engage said circle segments, and

f) wherein said cutouts and support surfaces are integrally formed.

5,620,075
C-SHAPED SYNCHRONIZER SPRING

Jonathan G. Larsen, Sarn; Keith Roberts, Maesteg, and Gary I. Skipper, Morriston, all of Wales, assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jul. 28, 1995, Ser. No. 508,612
Int. Cl.[6] F16D *23/06*
U.S. Cl. 192—53.34 **6 Claims**



1. A synchronizer clutch assembly for a manual transmission having at least one torque transfer gear and a torque delivery shaft, said clutch assembly comprising:

a clutch hub adapted to be secured to said shaft,

a clutch sleeve secured to said hub and adapted for axial shifting movement relative to said hub, said clutch sleeve having a plurality of clutch teeth;

a blocker ring adapted to be positioned between said gear and said hub, said blocker ring having an engageable friction clutch surface; and

a flat C-shaped spring member positioned between said blocker ring and said hub, said spring member having a plurality of projecting lugs engageable with at least one of said clutch sleeve teeth as said sleeve is moved toward said blocker ring, whereby a clutch surface engaging force is developed on said blocker ring by said spring member.

5,620,076
HYDRAULICALLY ACTUATED CLUTCH RELEASE SYSTEM

Herbert Voit; Wolfgang Grosspietsch, both of Schweinfurt, and Boleslaw Tulaczko, Niederwerrn, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Mar. 9, 1995, Ser. No. 400,996
Claims priority, application Germany, Mar. 9, 1994, 44 07 665.7
Int. Cl.[6] F16D *13/75;25/08*
U.S. Cl. 192—70.25 **22 Claims**

1. A piston-cylinder arrangement for a hydraulic system in a motor vehicle, said piston-cylinder arrangement comprising:

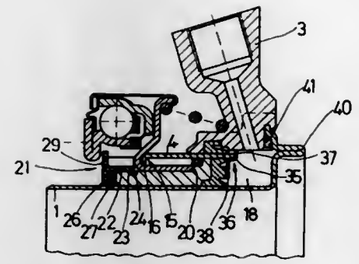
hydraulic actuating means;

said hydraulic actuating means comprising:

cylinder means, said cylinder means having a first end and a second end, said cylinder means defining a chamber therein;

at least a portion of said chamber having hydraulic fluid disposed therein;

piston means being disposed within said chamber;



said piston means being axially displaceable with respect to said cylinder means;

means for operatively connecting one of: said cylinder means and said piston means to a pressure plate of a motor vehicle clutch assembly;

means for providing hydraulic fluid into and out of said chamber;

means for guiding the axial displacement of said piston means;

a seal being disposed to seal at least a portion of said chamber from the external environment;

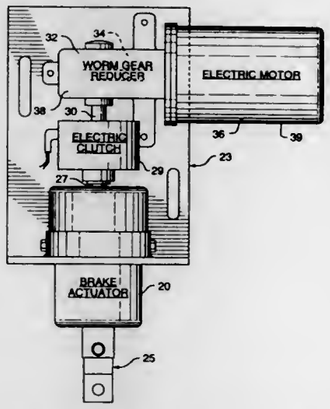
said seal comprising means for retaining said guiding means in a fixed position during pressurization of said cylinder means; and

said seal being configured for permitting movement of said guiding means upon wear of friction linings of a motor vehicle friction clutch when said cylinder means is unpressurized.

5,620,077
FAIL-SAFE BRAKE ACTUATION SYSTEM

Arthur L. Richard, Sudbury, Canada, assignor to Electric Vehicle Controllers Ltd., Ontario, Canada

Filed May 31, 1995, Ser. No. 454,627
Claims priority, application United Kingdom, Jun. 1, 1994, 9410962
Int. Cl.[6] B60K *41/24*
U.S. Cl. 192—120 **5 Claims**



1. Apparatus for fail-safe operation of a brake, wherein:

the apparatus includes a brake-applying spring, which is capable of exerting braking force;

the apparatus includes a pair of members arranged in a rotor-and-stator, screw-thread relationship, the arrangement being such that rotation of the rotor-member is effective to change the level of mechanical energy stored in the spring;

screw-thread relationship is of the type which is non-self-sustaining, but in which an axial force applied between the members generates a positive and substantial torque tending to turn the rotor-member;

the apparatus includes a drive-shaft for transmitting rotational mechanical energy to the rotor-member;

the apparatus includes a gear-drive-mechanism, having an input-shaft and an output-shaft;

the gear-drive-mechanism is of the non-reversible type, in that a torque applied to the input-shaft is effective to cause a corresponding rotation of the output-shaft, but a torque applied to the output-shaft cannot effect a corresponding rotation of the input-shaft, whereby the output-shaft remains locked against rotation unless the input-shaft is driven to rotate;

the apparatus includes an operable electric motor, connected to the input-shaft;

the apparatus includes a clutch, which is connected in a drive-transmitting relationship between the drive-shaft and the output-shaft, and which is operable between a drive-transmitting or locked condition and a non-drive-transmitting or free condition;

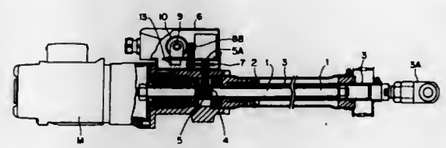
the apparatus includes an electrically operable clutch-operating means, which is responsive to the receipt of an electrical signal, for operating the clutch between the two conditions;

the arrangement of the apparatus is such that when the clutch is operated to the drive-transmitting condition, the clutch holds the drive-shaft rotationally-locked to the output-shaft.

5,620,078
STROKE CONTROL DEVICE FOR AN ACTUATOR ROD OF A LINEAR ACTUATOR

Kenichiro Nakamura, Otsu; Toshio Mitsuyama, Hirakata, and Makoto Kishida, Kyoto, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Dec. 8, 1995, Ser. No. 569,448
Claims priority, application Japan, Dec. 9, 1994, 6-331008
Int. Cl.[6] F16D *71/00*
U.S. Cl. 192—142 R **1 Claim**

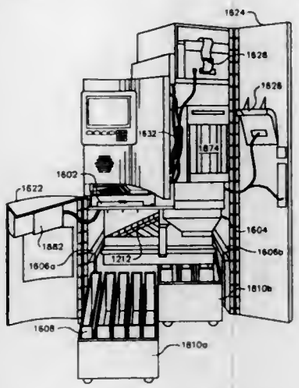


1. In a linear actuator having an actuating rod threaded with a rotating drive screw shaft and movable back and forth along the rotating drive screw shaft, a stroke control device for controlling a stroke of the actuating rod, said stroke control device comprising in combination:

a worm formed on an outer peripheral surface of the rotating drive screw shaft, a worm gear externally meshing with said worm and having a vertical worm gear shaft projecting into a limit switch box, a cam plate mounting shaft rotatably supported within said limit switch box for rotation about a substantially horizontal axis, a plurality of limit-switch actuating cam plates rotatably and adjustably mounted on an outer peripheral surface of said cam-plate mounting shaft for adjustment of the back and forth movement stroke of the actuating rod, a second worm gear fixed to said cam-plate mounting shaft, speed reducing means drivingly engaging said worm gear shaft and said second worm gear to transmit rotation of said worm gear shaft to said cam plate mounting shaft, and a plurality of limit switches mounted within said limit switch box in locations corresponding to each respective limit-switch actuating cam plate.

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5,620,079
COIN COUNTER/SORTER AND COUPON/VOUCHER DISPENSING MACHINE AND METHOD
Jens H. Molbak, Bellevue, Wash., assignor to Coinstar, Inc., Bellevue, Wash.
Continuation-in-part of Ser. No. 940,931, Sep. 4, 1992, abandoned. This application May 3, 1994, Ser. No. 237,486
Int. Cl.[6] G07D *3/16*
U.S. Cl. 194—217 **39 Claims**



39. An apparatus for allowing untrained users to obtain a voucher for coins comprising:

coin-counting means for discriminating among coin denominations and determining a total mount of said coins;

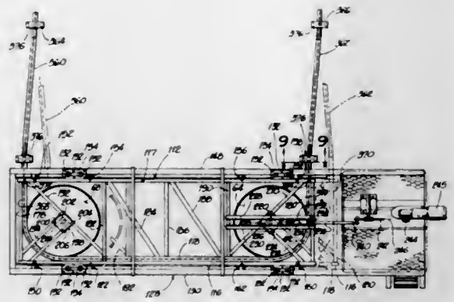
means for receiving in a first location, a plurality of coins of arbitrary denomination from said untrained user, said means for receiving including a first tray pivotable from a first holding position to a second delivery position for delivering said plurality of coins to said coin-counting means said means for receiving further comprising a transport tray for conveying coins from said first tray toward said coin-counting means wherein said first tray is pivotable about an axis located between said first tray and said transport tray and wherein a peak is defined between said first tray and said transfer tray while said coins are being transferred from said first tray and wherein said peak defines an angle greater than about 135°;

means, coupled to said means for receiving, for removing waste included among said plurality of coins; and

means, coupled to said coin-counting means, for dispensing a voucher redeemable in cash or merchandise for a value relate to said total amount wherein said value is determined only after said coin-counting means has determined said total amount.

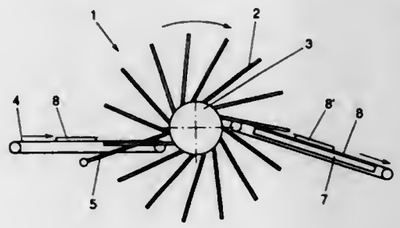
5,620,080
LOAD STATION FOR CONTINUOUSLY MOVING CONVEYOR
Steven M. Kassuba, Gaylord, Mich., assignor to CSI Industrial Systems Corp., Grayling, Mich.
Filed Feb. 13, 1995, Ser. No. 387,552
Int. Cl.[6] A65G *17/00*
U.S. Cl. 198—343.1 **64 Claims**

1. Apparatus for causing a continuously moving conveyor to have a portion of said conveyor become functionally standing still with respect to a selected area for a selected span of time, comprising body means, a first rotatable wheel carried by said body means, a second rotatable wheel carried by said body means, wherein said first and second rotatable wheels are each suitably secured to said body means for rotatable motion with respect to said body means, wherein said first and second rotatable wheels are so situated as to be substantially spaced from each other a preselected distance, wherein the planes of rotation of said first and



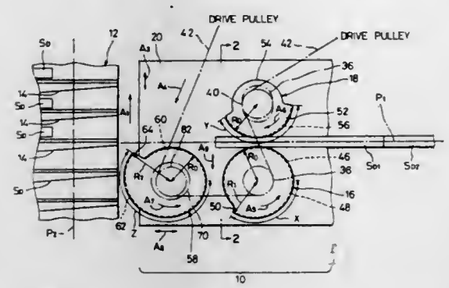
second rotatable wheels are generally coplanar, wherein said continuously moving conveyor in its course of movement first operatively engages a portion of said first rotatable wheel and continues in a first direction generally tangentially from said first rotatable wheel to operative engagement with said second rotatable wheel tangentially thereof, wherein that portion of said moving conveyor which leaves tangentsally from said first rotatable wheel and first tangentially engages said second rotatable wheel operatively carries a carrier and moves at the same speed as the overall continuously moving conveyor, motor means operatively connected to said body means, said motor means being at times effective to move said body means and said first rotatable wheel and said second rotatable wheel in a second direction opposite to said first direction and at a speed which is substantially equal to the speed of said continuously moving conveyor, deflectable suspension means operatively supporting said body means and said first and second wheels, wherein said first and second wheels define a line of centers, and wherein said deflectable suspension means enables said body means and said first and second wheels to undergo motion transverse to said line of centers.

5,620,081
TURNOVER DEVICE FOR GRAPHIC PRODUCTS
Petrus F. Kivits, Em Schiedam, Netherlands, assignor to Buhrs-Zaandam B.V., Zaandam, Netherlands
Filed Apr. 4, 1995, Ser. No. 416,231
Claims priority, application Netherlands, Apr. 6, 1994, 9400542
Int. Cl.[6] B65G *49/05*
U.S. Cl. 198—404 **10 Claims**



1. In a turnover device for turning over products comprising a feed assembly (**4**) and a discharge assembly (**6**) each made up of a number of spaced apart parallel conveyors (**4**, **6**) arranged side by side with an interspace therebetween, a turnover rack (**1**) being arranged between the feed and discharge assemblies, which turnover rack (**1**) comprises outwardly extending product carriers (**2**) movable through the interspace of the conveyors, the improvement wherein adjacent a discharge end of the feed assembly (**4**) an adjustable decelerating means (**5**) is provided for decelerating the products (**8**) to be turned over and the discharge assembly (**6**) has a driver means (**7**) for accelerating the turned-over products (**8'**).

5,620,082
APPARATUS FOR CHANGING THE DIRECTION OF TRANSPORTATION OF ROD MEMBERS
Masayoshi Saito, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan
Filed Jun. 29, 1995, Ser. No. 496,758
Claims priority, application Japan, Jun. 29, 1994, 6-147464
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—624 **10 Claims**



1. An apparatus for feeding rod members from a first transportation path onto a second transportation path which crosses the first transportation path and changing the direction of transportation of the rod members, in which the rod members are transported along the first transportation path in a manner such that the respective end faces of two adjacent rod members abut against each other on the first transportation path, and are transported on the second transportation path in a manner such that their respective axes extend at right angles to the second transportation path, said apparatus comprising:

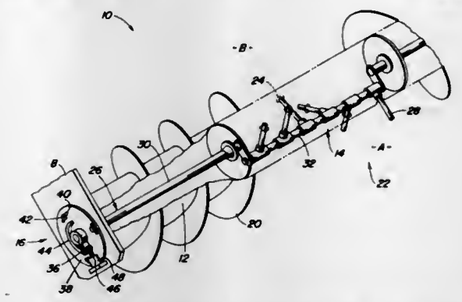
first and second rotating members arranged at a terminal end portion of the first transportation path and rotatable in opposite directions, said first and second rotating members individually having peripheral surfaces facing each other such that the opposite peripheral surfaces move in the direction of transportation of the rod members on the first transportation path;

accelerating means for accelerating a leading rod member on the first transportation path, thereby separating said leading rod member from a succeeding rod member, as said first and second rotating members rotate, said accelerating means including first and second pinch faces formed on part of the peripheral surfaces of said first and second rotating members, respectively, the first and second pinch faces being adapted cyclically to face each other across the first transportation path, thereby defining an acceleration hole for seizing the leading rod member, and having a moving speed higher than the speed of transportation of the rod members on the first transportation path; and

deflecting means for subjecting the accelerated rod member to a transverse kinetic component along the second transportation path as said first and second rotating members rotate, said deflecting means including a push face formed on the remaining portion of the peripheral surface of the first rotating member and a relief face formed on the remaining portion of the peripheral surface of the second rotating member, the push face being adapted to force out the accelerated rod member in the transportation direction of the second transportation path, the relief face allowing the accelerated rod member to be forced out,

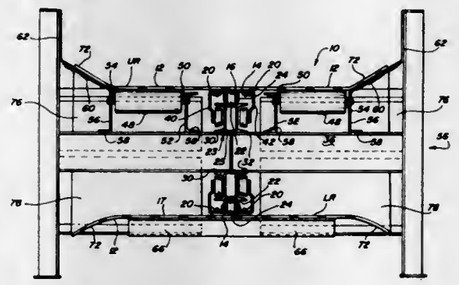
wherein said first rotating member has a first circumferential groove with an arcuate cross section on the peripheral surface thereof, the first circumferential groove forming the first pinch face and the push face, and said second rotating member has a second circumferential groove on part of the peripheral surface thereof, the second circumferential groove forming the second pinch face.

5,620,083
CONTROL ARRANGEMENT FOR FINGERS OF A ROTARY CONVEYOR
Claus-Joseph Vogelgesang, Mandelbachtal, Germany, assignor to Deere & Company, Moline, Ill.
Filed Jul. 10, 1995, Ser. No. 500,291
Claims priority, application Germany, Jul. 15, 1994, 44 25 142.4
Int. Cl.[6] B65G *35/00*
U.S. Cl. 198—722 **9 Claims**



1. In a rotary conveyor of the type including a cylindrical housing extending between and being mounted in a pair of supports for rotation about a horizontal axis, a finger assembly being located within said housing and including a crankshaft having end portions supported for pivoting about said axis and a crank portion disposed eccentrically to said axis and at least one finger being mounted for swivelling about said crank portion of the crankshaft and being located for sliding freely in an opening provided in said housing, the improvement comprising: said crankshaft being free to pivot between two angularly spaced end positions upon the direction of rotation of said housing being reversed and a resistive forcebeing applied, in a direction opposite to the direction of rotation of the housing, to an end portion of said intake finger projecting outwardly from said housing.

5,620,084
CHAIN PROPELLED BELT CONVEYOR
William A. Mensch, Farmington, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.
Filed Mar. 30, 1995, Ser. No. 413,597
Int. Cl.[6] B65G *23/06*
U.S. Cl. 198—834 **14 Claims**



1. A belt conveyor comprising:

a frame:

a conveyor belt;

a drive assembly having a chain and a pair of trolley wheels, said chain centrally mounted to an underside of said belt, said chain further having a plurality of spaced apart rollers mounted for rotation about a horizontal axis;

a track having a rail for supporting said plurality of rollers of said chain and said belt during an upper run of said belt;

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means for supporting said trolley wheels and said belt along a lower run of said belt; and

means for driving said chain to propel said conveyor belt.

5,620,085

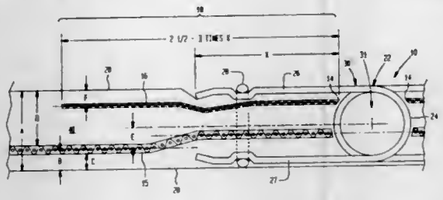
SPLICED CONVEYER BELT ASSEMBLY

Peter B. Cadou, Chagrin Falls; John C. Homer, III, Newbury; Robert J. Torok, Kirtland, all of Ohio; William J. Nissen, and Lloyd T. Ludolph, both of Cedar Rapids, Iowa, assignors to General Signal Corporation, Stamford, Conn.

Filed Feb. 2, 1996, Ser. No. 596,453

Int. Cl.[6] B65G *15/30*

U.S. Cl. 198—844.2 **18 Claims**



1. A spliced conveyer belt assembly which comprises:

a belt comprising: first and second belt ends; a load carrying ply which is coextensive with the full length of said belt; first and second reinforcing plies spaced from said load carrying ply, said first and second reinforcing plies being disposed substantially adjacent to said first and second belt ends, respectively; a first elastomeric layer disposed between said load carrying ply and said reinforcing plies, wherein said first elastomeric layer also acts to encapsulate said first and second reinforcing plies; and a second elastomeric layer disposed about the surface of said load carrying ply opposite said first and second reinforcing plies; and

a hinged joint comprising: a plurality of first belt end fasteners and second belt end fasteners, wherein each said belt end fastener comprises first and second apertured plates disposed respectively adjacent to the respective sides of said belt at the respective first and second belt ends, and a bight capable of connecting said first apertured plate to second apertured plate; at least one securing means which is capable of extending through the apertures in said first and second apertured plates and through said belt; and a hinge pin extending through said bights of said first and second belt end fasteners.

5,620,086

MINIATURE JUMPER SWITCH

Giuseppe Bianca, Escondido, and Robert M. Bogursky, Encintas, both of Calif., assignors to Autosplice Systems, Inc., San Diego, Calif.

Filed Feb. 23, 1996, Ser. No. 606,368

Int. Cl.[6] H01H *15/06*

U.S. Cl. 200—542 **22 Claims**

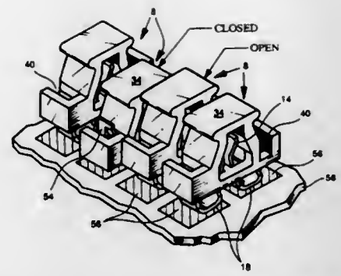
1. A jumper switch comprising:

a) a pair of contact members each having a first contact portion and a second solderable portion,

b) a switch housing mounted on the contact members and movable on the contact members from a first switch position to a second switch position to break and make, respectively, an electrical connection between the first contact portions of the two contact members,

c) said second solderable portions extending out from the housing and configured for being soldered to conductive areas of external pads or through-holes,

d) first means for maintaining separated the first contact portions of the contact members when the housing is in its first position,



e) second means for camming into contact the first contact portions of the two contact members when the housing is in its second position.

5,620,087

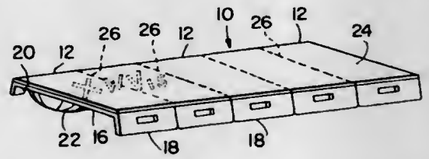
PRINTED LABEL STRUCTURE FOR PACKAGING ARRANGEMENTS

Wallace A. Martin, Orange Park; Richard W. Abrams, Jacksonville, both of Fla.; Ture Kindt-Larsen, Holte, Denmark, and Daniel T.-F. Wang, Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Jun. 10, 1994, Ser. No. 257,795

Int. Cl.[6] B65D *81/24*

U.S. Cl. 206—5.1 **39 Claims**



1. A laminated material structure comprising a unitary label, a covering, and an array of a plurality of contiguously arranged containers, said covering being coextensive with at least one side of said array, said laminated structure being separable into a plurality of segments each forming a separately sealed container, and said covering having an outer layer with a surface facing away from said side of said array and being imprinted with a specified pattern of indicia and legends extending over at least two contiguously arranged containers, said pattern consisting grammatical constructs which are indivisible without loss of meaning, such that separation of at least one said segment from said laminated structure divides said grammatical constructs and thereby provides visual evidence of separation from said laminated structure upon inspection of said pattern.

21. A packaging arrangement for the sealed containment of a plurality of hydrophilic contact lenses each in a sterile aqueous solution; comprising:

a) a plurality of molded plastic base members contiguously positioned in an array, each said base member having a cavity for containing one contact lens immersed in an aqueous solution, each said base member including a flange extending outwardly about the periphery of said cavity, and a flap extending from said flange; and

b) a laminate comprising a unitary flexible cover sheet extending superimposed over said plurality of base members and detachably sealed to the surface of said flanges at least about the rim of each said cavity, said cover sheet comprising an outer layer imprinted to define a specified pattern of indicia and legends extending over a surface thereof, said laminate being separable into segments each forming respectively a cover for one associated base member, said pattern consisting of grammatical constructs which are indivisible without loss of meaning whereby separation of at least one said segment from the remaining laminate divides said grammatical constructs and thereby provides visual evidence of separation from said array upon inspection of said pattern.

5,620,088

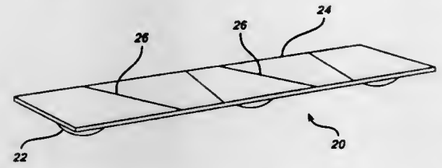
PACKAGING ARRANGEMENT FOR CONTACT LENSES

Wallace A. Martin, Orange Park; Kornelis Renkema, and Victor Lust, both of Jacksonville, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 257,796, Jun. 10, 1994, which is a continuation-in-part of Ser. No. 146,754, Nov. 2, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 414,515

Int. Cl.[6] A45C *11/04;* **B65D** *85/00*

U.S. Cl. 206—5.1 **29 Claims**



1. A packaging arrangement for the sealed containment of at least one hydrophilic contact lens in a sterile aqueous solution; comprising:

a) a plurality of injection molded or thermoformed plastic base members each having a cavity for containing contact lenses immersed in a solution, each base member including a flange extending outwardly about the periphery of the cavity, the flange having opposite side walls extending between wider and narrower flange ends, the cavity consisting of a generally curvilinear concave indentation in the base member proximate the wider end of the planar flange and having a shape in substantial conformance with the shape of a contact lens adapted to be contained therein; and

b) a flexible cover sheet superimposed over the plurality of base members and dimensioned to be detachably sealed to a seal area on the surface of each flange, the cover sheet sealingly extending about each cavity and having unsealed edge portions providing gripping means engageable for enabling separating the cover sheet from each flange so as to expose each cavity and to facilitate external access to the contact lens in each cavity;

wherein the plurality of base members are contiguously arranged and interconnected in an array such that the wider end of respectively one flange is alternatingly positioned adjacent a narrower end of a contiguously located adjacent flange of an adjoiningly located base member, the base members being interconnected by the flexible cover sheet for the containment of a specified number of contact lenses arranged in respectively each cavity of each base member.

5,620,089

MAGNETIC KEY HOLDING PLAQUE

Glenn A. Mills, 3479 N. Maple Grove, Boise, Id. 83704

Filed Nov. 9, 1995, Ser. No. 556,169

Int. Cl.[6] A45C *11/32*

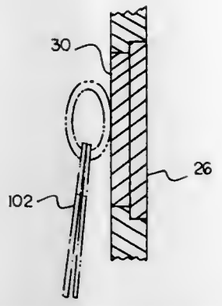
U.S. Cl. 206—37.8 **4 Claims**

1. A magnetic key holding plaque for holding keys with aid of magnets comprising, in combination:

a plaque having an inner surface and an outer surface, the outer surface having a plurality of recesses formed therein;

a plurality of clear windows removably coupled within the plurality of recesses of the plaque;

a plurality of magnets secured within the inner surface of the plaque;



a plurality of magnetic pendants secured within the outer surface of the plaque opposed from the plurality of magnets, the plurality of magnetic pendants each having indicia thereon.

5,620,090

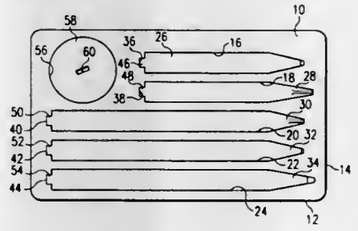
SCREWDRIVER KIT

Robert A. Beeley, P.O. Box 55549, Houston, Tex. 77255

Filed Mar. 30, 1995, Ser. No. 413,896

Int. Cl.[6] A45C *11/00;* **B65D** *69/00*

U.S. Cl. 206—234 **3 Claims**



1. A screwdriver kit comprising

a flat card member having exterior edges;

said flat card member having a first pocket and a second pocket located interior of the edges wherein the first pocket has a wheel shape;

a support member attachable to the flat card member, said support member having generally the same length and width as the flat card member;

a screwdriver handle retained in the first pocket of the flat card member, the screwdriver handle having a wheel shape; and

a screwdriver blade having a straight tip at one end retained in the second pocket of the flat card member.

5,620,091

GOLF BAG CLUB HOLDER

Gordon E. Larson, 10828 Spyglass Dr., Rancho Cucamonga, Calif. 91730

Filed Sep. 29, 1993, Ser. No. 128,118

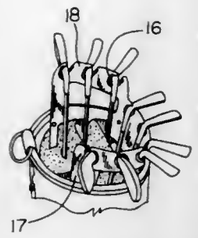
Int. Cl.[6] A63B *55/00*

U.S. Cl. 206—315.6 **6 Claims**

1. Apparatus for holding golf clubs in a bag, comprising:

golf club holding means extending outwardly from the open end of a golf bag, said means having side, top and bottom edge portions, said top edge portion of said holding means having a plurality of spaced apart side apertures, said side apertures including notches angulated in accordance with the pitch of each of the club heads, each said side aperture having a top opening for receiving heads of golf clubs, each of said side apertures further being resiliently lined to cushion club contact therein;

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top restraining means over each said side aperture for restricting vertical club head motion, said top restraining means including a first protrusion flexibly cantilevered in a single plane approximately parallel to the plane of a said side aperture so as to define a top entrance opening over each said aperture through which a golf club head may be laterally pushed, wherein each said first protrusions are integrally formed over the top opening of each said side aperture, each said first protrusion further being stiffly cantilevered in a vertical plane approximately parallel to the longitudinal axis of the golf bag, and wherein said first protrusions continuously bear upon the outside surfaces of the club heads when the club heads are moved radially inwardly toward the centerline of the golf bag opening, so as to enable a golf bag cover to be placed over all clubs in the bag, whereby each golf club may be axially restrained from falling out of the golf bag when the bag is turned over; and

means for attaching said golf club holding means to the open end of the golf bag.

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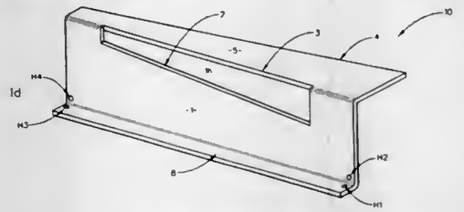
WRENCH SET HOLDING SYSTEM

Lyle V. Meisinger, 5311 Highway 66, Plattsmouth, Nebr. 68048

Filed Apr. 19, 1996, Ser. No. 634,962

Int. Cl.[6] B65D *85/28*; **A47F** *7/00*

U.S. Cl. 206—376 **8 Claims**



1. A wrench set holding system comprising a top element, a primary body element and a bottom element, said top element, primary body element and bottom element being merged into a continuous system, such that said bottom and top elements project essentially perpendicularly from said primary body element and such that when an essentially downward facing surface area of said bottom element is set upon an underlying upward facing essentially horizontally oriented surface, said top element, which is offset from said bottom element by said primary body element, projects essentially parallel to said underlying essentially horizontally oriented surface while said primary body element projects essentially vertically; an upward facing surface of said top element of said wrench set holding system oriented as described, being of a gradually increasing dimension as said wrench set holding system is transversed from one side thereof to another; which primary body element contains a gradually increasing dimension opening below a locus of merger between said primary body element and said top element, with a larger dimension of said gradually increasing dimension opening being located at the same side of said wrench set holding system as is located the larger dimension of said top element; such that when each open wrench jaw in a set of wrenches is caused to project through said gradually increasing dimension opening in said primary body element and each said open wrench jaw grasps therewithin a portion of said gradually increasing dimension top element at a location therealong at which the dimension of said increasing dimension top element is equivalent to an opening dimension of said open wrench jaw, a lower aspect of each of said open wrench jaws simultaneously contacts a lower edge of said gradually increasing dimension opening in said primary body element; with the result being that when a set of wrenches is positioned within said wrench set holding systems, each wrench of said set of wrenches is held therewithin.

5,620,093

END WALL MADE FROM FORMABLE MATERIAL

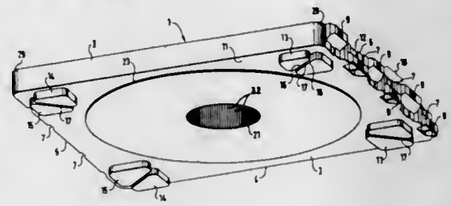
Norbert Born, Blieskastel, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jul. 8, 1996, Ser. No. 676,811

Claims priority, application Germany, Jul. 8, 1995, 195 24 954.2

Int. Cl.[6] B65D *85/671*

U.S. Cl. 206—416 **12 Claims**



1. An end wall of formable material for a reel, comprising:

a rectangular plate having first and second rounded corner faces, said first face facing the reel and having an annular cap, said second face facing outwardly from the reel and being stiffened by ribs,

a first, a second, a third, and a fourth sidewall, said side walls extending around said plate at right angles to the first face thereof, said first and said third side walls being oppositely disposed and substantially smooth, said second side wall having a plurality of grooves provided continuously over the length thereof, said grooves being perpendicular to the first face of the plate, and said fourth side wall having stacking bosses with central grooved portions on the surface thereof, and said fourth side wall further having recessed stacking pockets which alternate with said grooved stacking bosses.

5,620,094

WRAP-AROUND CARRIER WITH TOP DIVIDER TAB

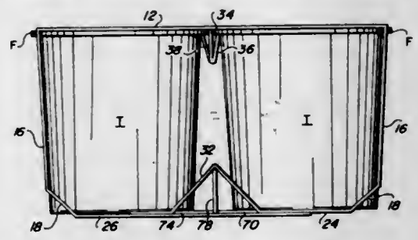
Frederick Naumann, Old Tappan, N.J., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed May 21, 1996, Ser. No. 651,072

Int. Cl.[6] B65D *71/18*

U.S. Cl. 206—434 **18 Claims**

1. A package comprised of a wrap-around article carrier containing a plurality of adjacent rows of adjacent articles, each article having an upper portion including a flange, comprising:



a top panel;

a bottom panel;

opposite side panels connected to the top and bottom panels; and

a divider panel flap connected to the top panel by a first fold line and extending downwardly therefrom;

the divider panel flap being comprised of an upper second and a lower section;

the upper section of the divider panel flap including a divider tab extending downwardly between the flanges of articles in adjacent rows and a first locking tab extending upwardly and engaging the underside of the flange of an associated article in one of the rows; and

the lower section of the divider panel flap being comprised of a second locking tab extending upwardly and engaging the underside of the flange of an associated article in the adjacent row.

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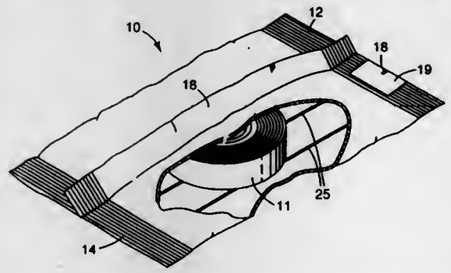
ORTHOPEDIC CASTING MATERIAL AND HERMETIC PACKAGE

Michael D. Delmore, Moundsview, Minn.; Peter T. Dietz, Lake Forrest, Calif., and Rafael M. Yasis, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 75,815, Jun. 11, 1993, abandoned, and Ser. No. 75,663, Jun. 11, 1993. This application Mar. 10, 1995, Ser. No. 402,512

Int. Cl.[6] B65D *65/36*

U.S. Cl. 206—438 **37 Claims**



1. A kit of orthopedic casting/splinting materials comprising:

a) a sheet of curable casting/splinting material;

b) a substantially hermetic pouch containing the curable casting/splinting material, the pouch comprising:

1) laminate sheet material having opposite side edges, and an outer layer and a heat sealable inner layer bonded to the outer layer;

2) a heat seal bonding at least a portion of the inner layer of the laminate sheet material to form the pouch, the heat seal bonding the laminate material to form opposite ends of the pouch, the ends of pouch defining a first direction extending between the ends and a second direction extending generally perpendicularly with respect to the first direction; and

3) means for facilitating tearing of the laminate sheet material in the first direction, the means comprising at least three generally parallel fibers substantially equally spaced apart and disposed between the inner and outer layers, the fibers extending substantially along the first direction to guide tearing the pouch along the first direction, the fibers being substantially equally spaced apart along the laminate sheet material across substantially the entire extent of the laminate sheet material in the second direction such that the distance between either side edge of the laminate sheet material and at least one fiber is no greater than the distance the fibers are spaced apart.

15. A kit of orthopedic casting/splinting materials comprising:

a) a sheet of moisture-curable casting/splinting material and a lubricant; and

b) a substantially hermetic heat sealed pouch containing the curable casting/splinting material and lubricant, the pouch comprising:

1) laminate sheet material having opposite side edges, and further comprising a heat sealable resin film inner layer bonded to a first major surface of a vapor barrier layer and an outer layer bonded to a second major surface of the vapor barrier layer;

2) a heat seal bonding at least a portion of the inner layer of the laminate sheet material together to form the pouch, the heat seal bonding the laminate material to form opposite ends of the pouch, the ends of the pouch defining a first direction extending between the ends and a second direction extending generally perpendicularly with respect to the first direction; and

3) means for facilitating tearing of the laminate sheet material, the means comprising:

at least three generally parallel fibers substantially equally spaced apart and disposed between the inner and outer layers, the fibers extending substantially along the first direction to guide tearing the pouch along the first direction, the fibers being substantially equally spaced apart along the laminate sheet material across substantially the entire extent of the laminate sheet material in the second direction such that the distance between either side edge of the laminate sheet material and at least one fiber is no greater than the distance the fibers are spaced apart;

at least one friction region positioned on the outer layer generally adjacent one of the opposite ends of the pouch adjacent the heat seal, the friction region comprising an adhesively backed paper material adhered to the outer layer; and

a notch extending inwardly from the end of the pouch generally adjacent the friction region.

29. A substantially hermetic heat sealed pouch comprising:

a) laminate sheet material having opposite side edges, and a heat sealable inner layer bonded to an outer layer;

b) a heat seal bonding at least a portion of the inner layer of the laminate sheet material to form the pouch, the heat seal bonding the laminate material to form opposite ends of the pouch, the ends of the pouch defining a first direction extending between the ends and a second direction extending generally perpendicularly with respect to the first direction; and

c) means for facilitating tearing of the laminate sheet material in the first direction, the means comprising at least three generally parallel fibers substantially equally spaced apart and disposed between the inner and outer layers, the fibers extending substantially along the first direction to guide tearing the pouch in the first direction, the fibers being substantially equally spaced apart along the laminate sheet material across substantially the entire extent of the laminate sheet material in the second direction such that the distance between either side edges of the laminate sheet material and at least one fiber is no greater than the distance the fibers are spaced apart.

5,620,096

INFLATABLE PACKAGING CUSHION WITH POCKET

Michel Pozzo, Neuilly S/Seine, France, assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed May 21, 1996, Ser. No. 651,860

Int. Cl.[6] B65D *81/03*

U.S. Cl. 206—450 **10 Claims**

1. An inflatable packaging cushion of flexible material adapted to be at least partially charged with filler medium comprising:

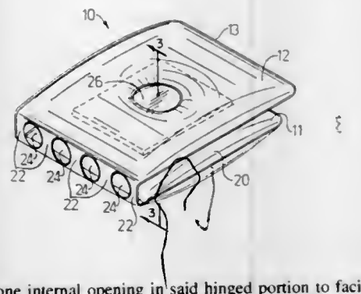
a containment portion;

an article-holding portion;

a hinged portion interconnected to said article-holding portion and said containment portion;

a pocket formed integrally with said article-holding portion for holding an article;

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at least one internal opening in said hinged portion to facilitate said containment portion being folded over said article-holding portion; and

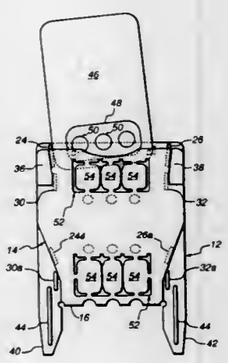
filling means for at least partially charging said cushion with filler medium.

5,620,097

PROTECTIVE PACKAGING SYSTEM

Dicky D. Timmons, II, Somerville, N.J., and E. Hubbard Yonkers, Contoocook, N.H., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 30, 1994, Ser. No. 367,043
Int. Cl.[6] B65D *81/02*
U.S. Cl. 206—521 **79 Claims**



1. A receptacle member adapted to receive an object, said receptacle member comprising:

a first panel;

a second panel;

means for securing said first and second panels in spaced apart, substantially facing relation to establish an insertion axis and an object receiving pocket between said first and second panels; and

means carried by at least one of said first and second panels for facilitating insertion of an object into said object receiving pocket;

said means for facilitating insertion comprising means for displacing an object into a position substantially parallel to said insertion axis during insertion of an object into said object receiving pocket; and

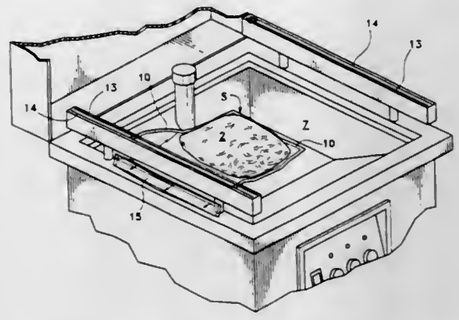
wherein said means for displacing comprise at least one pair of opposed guide members carried by at least one of said first and second panels, said guide members being angled inwardly toward said insertion axis in a direction of insertion of an object into said object receiving pocket.

5,620,098

FULL RECOVERY REDUCED-VOLUME PACKAGING SYSTEM

Chris M. Boos, Studio City, and Dennis M. Curley, Brea, both of Calif., assignors to Southern California Foam, Inc.

Continuation of Ser. No. 255,483, Jun. 8, 1994, Pat. No. 5,445,275. This application Aug. 25, 1995, Ser. No. 519,529
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—525 **7 Claims**



1. A reduced-volume package for shipment at an ambient pressure comprising:

a. a compressible item having an initial volume wherein the compressible item is established in a reduced-volume state of at least about 80% of said initial volume and having substantially no compressible open cell foam having a density less than 1.2 pounds per cubic foot;

b. a flexible impermeable encasing substantially surrounding the compressible item;

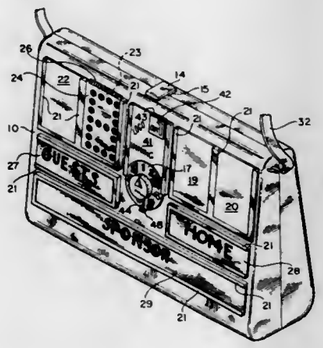
c. a seal to which the flexible impermeable encasing is responsive and which acts to hold the compressible item in its reduced-volume state through interaction between said impermeable encasing and the ambient pressure environment.

5,620,099

COMBINED PORTABLE SCORING SYSTEM AND STORAGE/CARRIER UNIT

Earl H. Bickett, 2113 E. Michigan Blvd., Michigan City; Kevin Coleman, 2626 Belle Plaine Trail, Long Beach, both of Ind. 46360, and Michael Yurkovic, 5234 N. Leamington, Chicago, Ill. 60630

Filed Nov. 28, 1994, Ser. No. 348,113
Int. Cl.[6] B65D *1/34*
U.S. Cl. 206—579 **17 Claims**



1. A combined portable game scoring system and equipment storage/carrier unit comprising:

first housing means including a base portion, a pair of oppositely disposed side wall portions and an upper end portion;

all of said aforementioned portions interconnected with an enlarged planar portion to form one half of said unit;

second housing means including a base portion, a pair of oppositely disposed side wall portions and an upper end portion;

all of said aforementioned portions of said second housing means interconnected with an enlarged planar portion to form a second half of said unit, said first and second housing means forming the outer walls of an enclosure within which items may be stored;

pivotal connection means for connecting said first and second housing means to form a storage area within said first and second housing portions;

latching means for holding said first and second housing portions in a closed position enclosing any equipment stored therein;

carrier means operably connected to said unit to allow carrying of said unit over the user's shoulder;

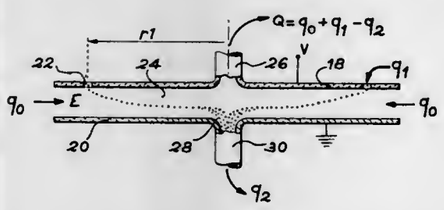
game scoring means for indicating the score of the game in progress and period of play indicator means for indicating the current status of the game located on an outer surface of one of said first and second housing means whereby said unit is first utilized as a storage/carrier unit and upon arrival at a playing site, said storage area is emptied, said first and second housing means are closed and positioned in an upright position whereupon said outer face of one of said housing means is now utilized to score a game and indicate the period of play of said game.

5,620,100

CHARGED PARTICLE SELECTOR

Michel Pourprix, Montlhéry, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 11, 1995, Ser. No. 438,704
Claims priority, application France, May 24, 1994, 94 06273
Int. Cl.[6] B03C *7/00*
U.S. Cl. 209—127.1 **4 Claims**



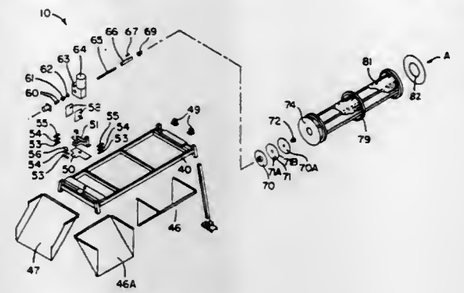
1. Electrical mobility selector of charged aerosol particles contained in an atmosphere to be examined comprising a first and a second, spaced, parallel, coaxial conductive disks; means for establishing an electrical field E between said disks by raising the disks to different potentials; an annular slot of radius r_1 in the first disk, the space between the two disks communicating with the atmosphere to be examined through the annular slot; a central intake provided in the first disk for bringing about the circulation in said space, from the periphery of the disk, of a stable, centripetal, laminar filtered air flow; and a central extraction orifice in the second disk.

5,620,101

TROMMEL SEPARATOR CLUTCH MECHANISM AND SYSTEM

Cynthia Andela, and James Andela, both of Richfield Springs, N.Y., assignors to Andela Tool and Machine, Inc., Richfield Springs, N.Y.

Filed Dec. 6, 1994, Ser. No. 349,939
Int. Cl.[6] B07B *1/42*
U.S. Cl. 209—288 **5 Claims**



1. A trommel separator comprising:

a motor;

a clutch device, attached to said motor;

a rotating drum enclosed by a screen having an aperture on one end, said rotating drum attached to said clutch device on a second end opposing said aperture;

a flexible mount apparatus, attached to said motor, including,

a mount having a bottom surface;

first and second plates attached to said motor and horizontally rotatable with respect to said mount; and

a pivot plate attached to said bottom surface of said mount for rotation of said mount around a vertical axis; and

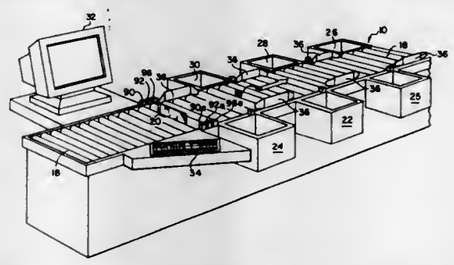
a frame, attached to said flexible mount apparatus, upon which rotates said rotating drum.

5,620,102

CONVEYOR SORTING SYSTEM FOR PACKAGES

Walter F. Finch, Jr., 31 Churchill Rd., Brockton, Mass. 02401

Filed Feb. 22, 1995, Ser. No. 392,032
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—583 **14 Claims**



1. A method for directing a parcel to a correct station from a powered conveyor which comprises:

a first step of identifying an identification characteristic of a parcel positioned adjacent a parcel stop means, said stop means being positioned adjacent an entrance to said conveyor,

a second step of identifying a presence of said parcel at said stop means,

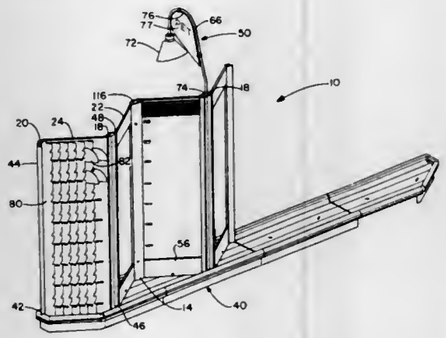
moving said stop means to permit said parcel to enter said conveyor in response to said first and second steps of identifying,

moving said parcel along said conveyor to sensor means which sense a position of said parcel on said conveyor,

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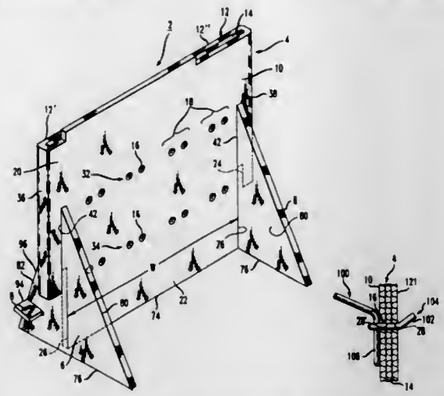
determining a correct position of said parcel on said conveyor in response to said sensor means,
and activating an activating means to move said parcel across at least a portion of the width of said conveyor to said correct station in response to determining said correct position of said parcel.

5,620,103
DISPLAY RACK
John A. Vlah, Burton; Joseph J. Smith, Wooster; Michael Ksiezyk, Parma; John Caterinacci, Maple Hts., and Theresa M. Patton, Avon Lake, all of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed May 5, 1995, Ser. No. 435,996
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—55 **16 Claims**



1. A rack unit for displaying greeting cards and the like, said rack unit comprising:
a rectangular base having first and second end edges and first and second side edges;
a first end upstanding support member having a base end and a top end, with its base end positioned at a corner of the rectangular base defined by the first end edge and the first side edge, a central upstanding support member, also having a base end and a top end with its base end positioned along the second side edge approximately midway between the first and second end edges, and a second end upstanding support member having a base end and a top end with its base end positioned at a corner of the rectangular base defined by the second end edge and the first side edge, each said upstanding support member extending upward generally normal to the rectangular base;
two top rails, the first said top rail spanning from the top end of the first upstanding support member to the top end of the central upstanding support member so that the first end upstanding support member, the central upstanding support member, the rectangular base and the first top rail form a first rectangular frame area; and the second said top rail spanning from the top end of the second end upstanding support member to the top end of the central upstanding support member so that the second end upstanding support member, the central upstanding support member, the rectangular base, and the first top rail form a second rectangular frame area;
a first and a second panel assembly positioned in each of the first and second rectangular frame areas, said first and second panel assemblies placed in back to back relationship to each other so that a display face on each panel assembly is directed outwardly from the rectangular frame area, with one panel assembly in each of the first and the second rectangular frame areas facing each other at an obtuse angle wherein the central upstanding support member forms a vertex of the obtuse angle;
the display face on each said panel assembly being adapted for receiving a plurality of means for displaying greeting cards or the like.

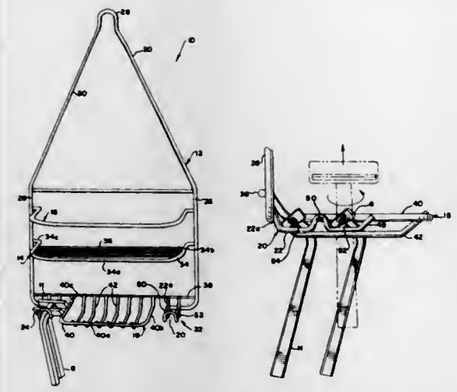
5,620,104
COLLAPSIBLE PEG DISPLAY STAND
Stephen T. Maglione, 15 Ava Maria Ct., Millington, N.J. 07946
Filed Feb. 27, 1995, Ser. No. 394,466
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—59.1 **20 Claims**



1. A collapsible peg board display stand for displaying articles on at least one peg secured to the display stand, the stand comprising:
a planar T-shaped display board having a plurality of article display peg receiving apertures therethrough, said board having a front and a rear side;
first and second planar supports releasably interlocked to the board in spaced relation to each other, an edge of each support and an edge of the board being coplanar for supporting the stand; and
a transverse brace member coupled to and between the supports for securing the supports in said fixed spaced relation.

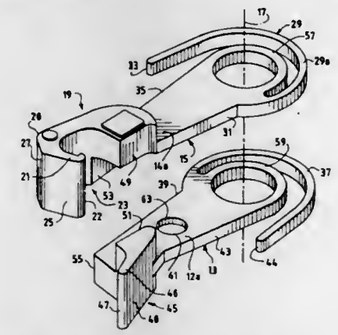
5,620,105
STORAGE CADDY
Thomas J. Macek, Chicago, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed Jul. 20, 1995, Ser. No. 504,560
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—119 **2 Claims**

1. A storage caddy for personal care products comprising:
a support portion for supporting said storage caddy in a selected position;
a shelf portion for supporting personal care products; and
an article receiving and retaining portion for supporting selected personal care products suspended therefrom, said article receiving and retaining portion including a pair of spaced apart elongated hanger members for supporting thereon at least a portion of selected personal care products of the type that can be selectively oriented in a position to engage, be supported by and rest on said hanger members or in a position to pass through the enclosed space therebetween for removal or insertion;
said elongated hanger members including a discontinuity formed therein to inhibit reorientation of the selected personal care product from the hanger engaging position to the pass through position and thereby inhibit the resultant inadvertent disengagement of the selected personal care product from the caddy;



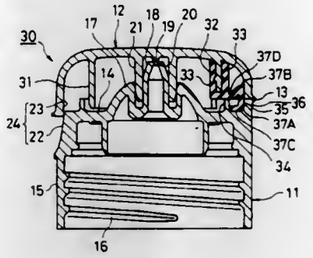
said elongated hanger members are oriented transverse to said frame portion;
a first end of each of said elongated hanger members is connected to said frame portion to define said enclosed space therebetween; and
a second end of each of said elongated hanger members is connected to each other to close the other end of said enclosed space therebetween.

5,620,106
MODEL RAILROAD CAR COUPLER
Dennis Storzek, Big Rock, Ill., assignor to Accurail, Inc., Elburn, Ill.
Filed Jan. 16, 1996, Ser. No. 587,384
Int. Cl.[6] B61G *3/04*
U.S. Cl. 213—75 TC **20 Claims**



1. A model railroad car drawbar comprising:
a first and second shank shaped for disposition adjacent one another and independently rotatable relative to a pivot axis, said first and second shanks being pivotable about said axis into a closed position;
a pivot pin opening located at a proximal end of each of said shanks, each said opening defining said pivot axis;
a knuckle located at a distal end of said first shank, said knuckle comprising a hook shaped to couple with a like hook disposed at 180° thereto;
a lip located at the distal end of said second shank, said lip occupying a position relative to said hook when said shanks are in said closed position for engaging the like hook during coupling;
a first spring member located at the proximal end of said first shank for providing a force to said first shank to bias said first shank to pivot into said closed position; and
a second spring member located at the proximal end of said second shank for providing a force to said second shank to bias said second shank to pivot into said closed position.

5,620,107
CAP WITH A HINGED TOP LID
Kiyoshi Takeuchi, Funabashi, Japan, assignor to Kao Corporation, Tokyo, Japan
Continuation of Ser. No. 260,270, Jun. 14, 1994, Pat. No. 5,501,348. This application Nov. 22, 1995, Ser. No. 562,101
Claims priority, application Japan, Jun. 16, 1993, 5-168356; Mar. 28, 1994, 6-79307
Int. Cl.[6] B65D *43/24*
U.S. Cl. 215—235 **3 Claims**

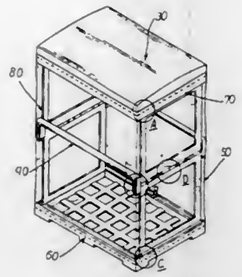


1. A cap comprising:
a cap body having a top lid hinged thereto by a hinge, said top lid being closed by a lock mechanism, said lock mechanism being formed on the cap body and on the top lid; and
an elastic rubber member having a first end and a second end, said first end of said elastic rubber member being secured near said hinge of said top lid;
wherein said second end of said elastic rubber member is capable of compressive and elastic bending deformations when pushed by a restraining wall of said cap body between said cap body and said top lid when said top lid is closed, so as to produce an elastic restoring force in said elastic rubber member when said top lid is closed, said elastic restoring force of said elastic rubber member causing the top lid to open to a fully opened position when the lock mechanism is released, and permitting the elastic rubber member to maintain contact with both the cap body and the top lid during the opening of the top lid to maintain the top lid in said fully opened position, two clamp portions are provided at the first end of said elastic rubber member, said two clamp portions clamping a support of the top lid to secure said rubber elastic member to said top lid.

5,620,108
LAUNDRY CONTAINER
Peyson Hsu, Changhua Hsien, Taiwan, assignor to Cheng Feng Blinds Ind. Co., Ltd., Changhua Hsien, Taiwan
Filed Dec. 27, 1995, Ser. No. 578,939
Int. Cl.[6] B65D *6/18*
U.S. Cl. 220—4.34 **3 Claims**

1. A laundry container comprising a cover body, a waterproof shade, a base seat, an upper frame, two support plate assemblies and two fixing beams, the cover body being pivotally connected with a rear edge of the upper frame, an upper edge of the waterproof shade being secured on outer periphery of the upper frame and a lower edge of the waterproof shade being secured on outer periphery of the base seat, said laundry container being characterized that:
the base seat has an upward projecting outer periphery and an upward projecting inner periphery which define a peripheral

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groove, several equally spaced bosses being disposed on left and right outer sides of the inner periphery;

the upper frame has a downward projecting outer periphery and a downward projecting inner periphery which define a peripheral groove, several equally spaced bosses being disposed on left and right outer sides of the inner periphery;

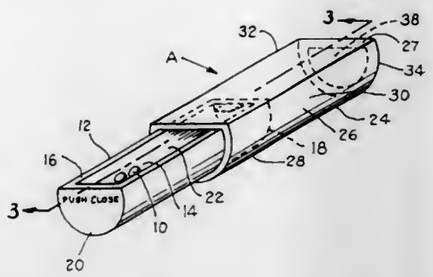
each support plate assembly includes an upper support plate and a lower support plate, the upper support plate having an outward extending horizontal face along upper edge and an upward extending flange along outer edge of the horizontal face, several equally spaced dents being formed on inner side of the flange, two projections being disposed at two ends of lower edge of the upper support plate, several fitting sleeves being disposed on the lower edge of the upper support plate the lower support plate having an outward extending horizontal face along lower edge and a downward extending flange along outer edge of the horizontal face, several equally spaced dents being formed on inner side of the flange, two projections being disposed at two ends of upper edge of the lower support plate, several insertion bodies being disposed on the upper edge of the lower support plate, each insertion body having an insertion pin at one end, the insertion pin having a ball head and being cut with a fissure; and

two pairs of engaging legs are respectively disposed at two ends of each fixing beam, each pair of engaging legs defining an engaging notch therebetween, whereby the insertion pins of the insertion bodies of the lower support plates are respectively inserted into the fitting sleeves of the upper support plates to form the two support plate assemblies and then the flanges of the lower support plates are inserted into the left and right sides of the peripheral groove of the base seat with the bosses of the inner periphery of the base seat engaged in the dents of the flanges of the lower support plates and then the flanges of the upper support plates are inserted into the left and right sides of the peripheral groove of the upper frame with the bosses of the inner periphery of the upper frame engaged in the dents of the flanges of the upper support plates with the waterproof shade in a stretched state and then the projections of the upper and lower support plates are inserted into the engaging notches of the engaging legs of the fixing beams to complete the assembly.

5,620,109
ASYMMETRICAL PORTABLE DISPENSER
Mark L. Madden, 102 Whispering Pines Dr., Anderson, S.C. 29621
Filed Jun. 26, 1995, Ser. No. 494,673
Int. Cl.[6] B65D *83/04;43/20*
U.S. Cl. 220—346 **2 Claims**

1. A portable dispenser having an accurately determinable dispensing position for dispensing small articles and which is easily operable by a person experiencing difficulty in grasping and manipulating small objects, said dispenser comprising:

a tray having an interior for containing said small articles, said tray having a tray opening which faces upwards in said dispensing position for dispensing said small articles from said interior;



a hollow sleeve having an asymmetrical sleeve cross-section and a central passage for receiving said tray and covering said dispenser opening, said sleeve having a first end and a second end;

said asymmetrical sleeve cross-section including a first surface facing upward in said dispensing position, and said sleeve cross-section having a second surface dissimilar to said first surface so that said person may reliably and accurately place said dispenser sleeve in said dispensing position by manually grasping said sleeve;

said second surface of said sleeve including an arcuate bottom integral with upright sides defining a generally U-shaped cross-section;

said central passage of said sleeve having an asymmetrical passage cross-section, said central passage having a size sufficient to receive a finger of said user along a general length of said passage;

said tray having an asymmetrical tray cross-section corresponding with said central passage cross-section requiring receipt of said tray to occur within said sleeve with said dispensing opening facing upwards solely in said dispensing position, said tray slidably mounted within said central passage;

said sleeve including a continuous surface which includes said first and second surfaces surrounding said tray when said tray is received within said central passage for isolating said tray from said user's palm;

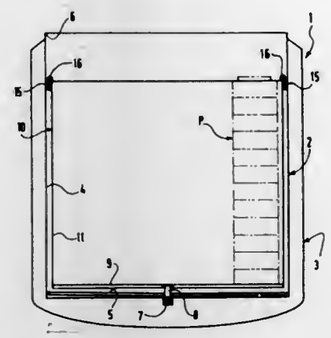
said second end of said sleeve having an exit opening through which said tray slides outwardly from said sleeve exposing said tray interior for dispensing said small articles from said interior in said dispensing position;

said first end of said sleeve includes an actuation opening of a size sufficient to receive a finger permitting said finger to enter said central passage for encountering said tray for pushing said tray from said central passage of said sleeve placing said tray in said dispensing position; and

said asymmetrical sleeve cross-section being constructed and arranged so that a user of said portable dispenser may reliably orientate said dispenser opening of said tray in said dispensing position to prevent accidental spillage of said small articles when uncovering said dispenser opening.

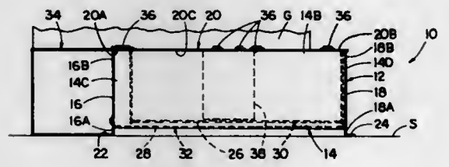
5,620,110
CRYOBIOLOGICAL CONTAINER
Daniel Delatte, Saint Maur, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France
Filed Oct. 14, 1994, Ser. No. 323,276
Claims priority, application France, Oct. 14, 1993, 93 12210
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—437 **17 Claims**

1. In a cryobiological container comprising a double shell reservoir structure with a vertical axis, comprising an internal shell having a cylindrical side wall and a bottom wall and forming an internal volume accessible through an upper opening of the same



diameter as that of the cylindrical wall and closable by a plug; wherein the improvement comprises a central bearing on the bottom wall engaged with a pivot fixed to a bottom of a rotatable cylindrical storage vessel with a vertical axis disposed coaxially within the inner shell and having a cylindrical side wall of a diameter slightly less than that of the side wall of the internal shell, and wherein the side wall of the rotatable receptacle comprises at its periphery a plurality of rollers with vertical axes coacting with the side wall of the inner shell.

5,620,111
DISTORTION-RESISTANT GENERATOR SUPPORT BASE AND STORAGE TANK ASSEMBLY
Roland P. Gehman, Stevens, Pa., assignor to MGS, Inc., Denver, Pa.
Filed Aug. 22, 1994, Ser. No. 294,224
Int. Cl.[6] B65D *85/00*
U.S. Cl. 220—571 **12 Claims**



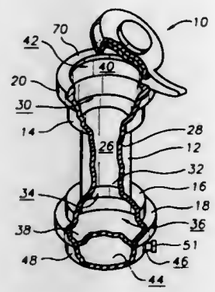
1. A generator support base and storage tank assembly, comprising:

(a) an outer support frame structure formed by a pair of upstanding end members and a top member extending in generally transverse relationship to the end members and being fixedly connected at opposite ends to upper ends of said upstanding end members; and

(b) an inner arcuate-shaped structure underlying said top member and extending between and fixedly connected to said end members so as to sufficiently structurally reinforce and strengthen said support frame to support an electrical generator on said top member thereof;

(c) said arcuate-shaped structure defining an interior compartment for containing a fluid material therein and being spaced above lower ends of said end members such that with said lower ends of said end members supported on a support surface said arcuate-shaped structure will be spaced above and out of corrosive contact with the support surface.

5,620,112
NOVELTY EXERCISE BEVERAGE VESSEL
Gary I. Brown, 3425 W. Maule Ave., Las Vegas, Nev. 89118
Filed Mar. 1, 1996, Ser. No. 609,353
Int. Cl.[6] B65D *17/44*
U.S. Cl. 220—703 **18 Claims**



1. A exercise beverage vessel comprising:

a central, cylindrically shaped, hollow grip portion having a grip portion beverage chamber formed therein, and having a grip portion outer diameter of between two and two and three-quarters inches, and a length between first and second ends thereof of between four and six inches;

a first cylindrical shaped, hollow disk member integrally formed with said first end of said grip portion having a first outer diameter of between four and five inches and a first beverage chamber formed therein that is in fluid communication with said grip portion beverage chamber;

a second cylindrical shaped, hollow disk member integrally formed with said second end of said grip portion having a second outer diameter equal to said first outer diameter and having a second beverage chamber formed therein that is in fluid communication with said grip portion beverage chamber;

a third cylindrically shaped, hollow disk member integrally formed with said second disk member having a third outer diameter of between six and one-half and seven and one half inches and a third beverage chamber formed therein that is in fluid communication with said second beverage chamber;

a fourth cylindrical shaped, hollow disk member integrally formed with said first disk member having a fourth outer diameter equal to said third outer diameter and having a fourth beverage chamber formed therein that is in fluid communication with said first beverage chamber and with said exterior of said exercise beverage vessel, said fluid communication with said exterior of said exercise beverage vessel being through a drinking opening;

a weight housing in connection with said third disk member having a weight chamber formed therein that is accessible through a fill aperture formed through an outer wall of said weight housing, said fill aperture being of a size sufficient to allow introduction therethrough and into said weight chamber of a weight increasing agent, said weight housing further having at least one transparent viewing portion of a size sufficient to allow a viewer to view said weight agent level within said weight chamber;

a plug member sized to frictionally fit within said fill aperture in a manner to provide a fluid tight seal;

a hinged cap member, hingedly attached to said fourth disk member with a hinge mechanism, having a pivoting cover portion of a size sufficient to cover said drinking opening, said cover portion including a resilient seal disposed along a perimeter edge thereof that contacts an outer surface of said

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fourth disk member adjacent to and surrounding said drinking opening when said cover portion is pivoted into a first position.

5,620,113

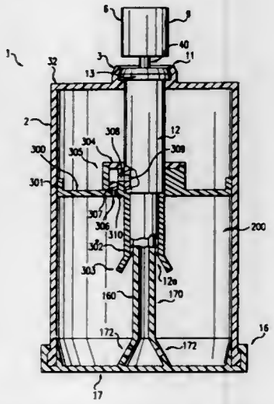
DISPENSER AND METHOD OF ITS USE

Philip Meshberg, 2770 S. Ocean Blvd. Apartment 602, Palm Beach, Fla. 33480

Continuation-in-part of Ser. No. 305,637, Sep. 14, 1994, which is a continuation-in-part of Ser. No. 163,787, Dec. 9, 1993, and Ser. No. 222,975, Apr. 5, 1994, Pat. No. 5,460,207, which is a division of Ser. No. 887,032, May 22, 1992, Pat. No. 5,305,810. This application Apr. 10, 1995, Ser. No. 419,499

Int. Cl.[6] B67D *5/40*

U.S. Cl. 222—1 **6 Claims**



1. A method of providing a dispensing container comprising the steps of:

providing a package comprising an open lower end and a retaining opening;

providing a pump structure;

inserting said pump structure into said retaining opening;

filling said package with a fluid product through said open lower end;

providing a bottom portion with an integrally-formed dip tube;

inserting said dip tube through said open lower end;

engaging an end of said dip tube with said pump structure; and

attaching said bottom portion to said open lower end to thereby seal said fluid product in said package.

5,620,114

SLIDING VALVE FOR SINGLE HANDED FLUID DISPENSING

Bobby L. Chalfa, Jr., 5261 Central Ave., Bonita, Calif. 91902

Filed Jan. 31, 1996, Ser. No. 594,898

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—23 **4 Claims**

1. In combination, a cap having a valve system, a spout, and a seal; and a fluid container for containing and dispensing fluid for single handed operation, said valve system comprising:

an oval shaped channel defined in and through said cap, said channel having a first stop and a second stop on each longitudinal end of said channel, and a groove centrally and circumferentially located in said channel;

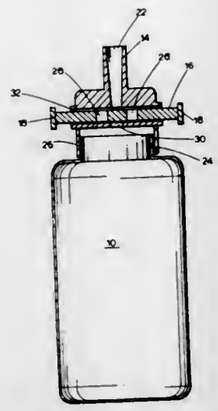
an oval shaped sliding member located in the channel, having first and second ends, said first end having a first flange extending therefrom, and second end having a second flange extending therefrom, a raised rib centrally and circumferentially located thereon, and a first orifice and a second orifice, symmetrically positioned about said raised rib, formed in said sliding member;

a third orifice, centrally located in the bottom of said channel, communicating with said seal of said cap; and

a fourth orifice, centrally located in the top of said channel, axially aligned with said third orifice, communicating with said spout of said cap;

said raised rib and said groove cooperatively providing an indirect tactile indicator of said valve system closure;

wherein, said valve system dispenses fluid by pushing said sliding member in said channel until one of said first flange or said second flange engages said first stop or said second stop, respectively, thereby aligning either of said first or second orifices with the third and fourth orifices allowing the fluid contained therein to pass therethrough.



5,620,115

CONFECTION DISPENSING APPARATUS

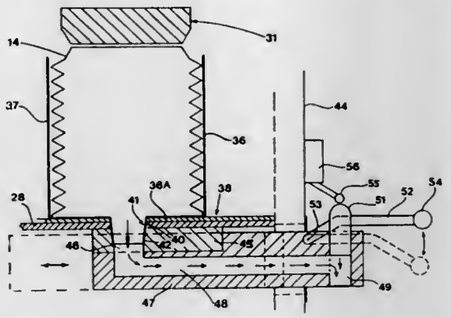
Shane R. McGill, c/o Global Ultrafreeze Limited, Unit 9, Ladbroke Park, Millers Road, Warwick, England

Continuation of Ser. No. 3,578, Jan. 13, 1993, abandoned, which is a division of Ser. No. 713,978, Jun. 11, 1991, Pat. No. 5,215,222, which is a division of Ser. No. 399,536, Aug. 10, 1989, Pat. No. 5,069,364. This application May 1, 1995, Ser. No. 431,479

Claims priority, application United Kingdom, Dec. 10, 1987, 87-28904; Oct. 7, 1988, 88-23584

Int. Cl.[6] B65D *35/28*

U.S. Cl. 222—95 **14 Claims**



1. Dispensing apparatus for dispensing a frozen product which comprises container means for containing the frozen product in semi-solid form to be dispensed, the container means having outlet means through which the product is discharged, dispensing means selectively operable to cause product in the container means to issue from the outlet means, said dispensing means comprising a piston operable upon being actuated to exert pressure on the frozen product and means isolating said piston from said frozen product so that said piston is not in engagement with said frozen product upon actuation of said piston, a housing for the container means, and refrigeration means whereby the housing and container means are kept at a low temperature to maintain the product in a frozen condition in operation.

5,620,116

ROTARY VANE GATE

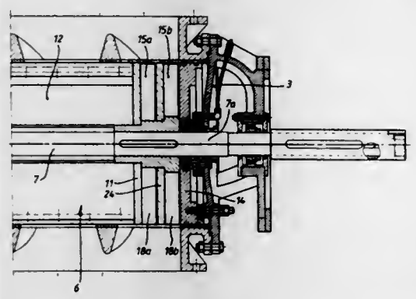
Wolfgang Kluger, Beckum; Klaus Schwab, Dinker; Andreas Franz, Rheda-Wiedenbruck; Dieter Quittek, Ahlen, and Bernd Köllner, Beckum, all of Germany, assignors to Krup Polysius AG, Beckum, Germany

Filed Jan. 13, 1995, Ser. No. 372,391

Claims priority, application Germany, Feb. 23, 1994, 44 05 828.4

Int. Cl.[6] G01F *11/10*

U.S. Cl. 222—368 **7 Claims**



1. In a rotary vane gate construction for use with free-flowing bulk material and comprising:

(a) a housing having opposite ends, housing covers at the opposite ends, an inlet opening, and an outlet opening,

(b) a rotatable, compartmentalized wheel within said housing having a drive shaft opposite ends of which are journalled in said housing and extend axially outward thereof through the covers,

(c) said wheel having at each of its opposite ends a limiting plate forming therebetween compartments which are open radially outward of the wheel,

(d) said inlet opening having an axial internal width which is at most as great as that of said compartment,

the improvement comprising:

(e) a wear plate adjacent each end of said housing and sealed thereto, each said wear plate occupying a position between the cover and the adjacent limiting plate, each said wear plate forming with its adjacent limiting plate a bypass chamber, said axial internal width of each outlet opening corresponding substantially to the combined axial widths of said wheel and each bypass chamber.

5,620,117

EXCHANGEABLE CLOSING AND POURING CAP

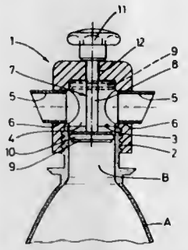
Jan W. H. Bieze, and Gerardus Legue, both of Amsterdam, Netherlands, assignors to On-Top Products B.V., and Johannes Broersen, both of Wieringerwerf, Netherlands

Filed Jun. 13, 1995, Ser. No. 489,681

Claims priority, application Netherlands, Jun. 14, 1994, 9400962

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—482 **6 Claims**



1. A closing and pouring cap for use with a bottle having an opening for pouring liquids, the closing and pouring cap comprising:

connecting means for fixedly securing the cap on the pouring opening of a bottle;

an air inlet and an outlet in the cap configured to provide fluid communication between an interior of the bottle and a pouring lip on the cap; and

a plunger movable between a closed position and an opened position, thereby respectively closing and opening the air inlet and the outlet, wherein the outlet and the plunger are configured such that the plunger, in the closed position, protrudes into the pouring opening of a bottle for sealing the bottle, and wherein the plunger comprises a longitudinal stem having a disc provided with a peripheral sealing ring at its end, the disc and sealing ring movable within the cap, the end of the stem opposite from the disc protruding from a top portion of the cap and having a control knob.

5,620,118

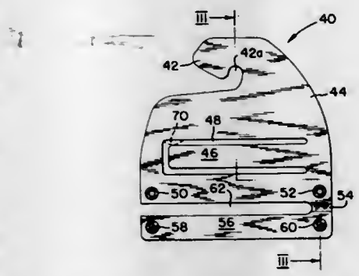
GARMENT HANGER

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 180,032, Jan. 11, 1994, and Ser. No. 279,280, Jul. 22, 1994, Pat. No. 5,501,378. This application Jan. 5, 1995, Ser. No. 369,185

Int. Cl.[6] A47G *25/14*

U.S. Cl. 223—85 **16 Claims**

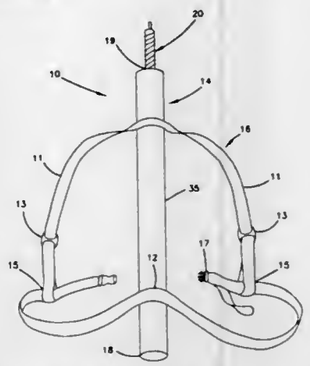


1. A garment hanger comprised of a one-piece body having a hook portion for the receipt of a display rod, a central portion depending from said hook portion, said body defining in said central portion an opening therethrough and a garment support

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member disposed in said opening and movable relative to said body and a lower portion defining a fold line segment depending from said central portion and a flap segment depending from said fold line segment, said central portion, said fold line segment and said flap segment jointly defining a slot in said body which opens into a margin of said body, said flap segment having a latching projection thereon, said central portion defining a passage therethrough for said flap projection, said central portion having a part thereof circumscribing said passage and in facing relation to said flap segment on folding thereof which is thickened with respect to adjacent parts of said central portion.

5,620,119
UMBRELLA HOLDER
Richard L. Keller, 6016 Chowen Ave. South, Edina, Minn. 55410
Filed Jun. 6, 1995, Ser. No. 467,746
Int. Cl.[6] A45B *11/02*
U.S. Cl. 224—190 **10 Claims**



1. A holder for carrying an open umbrella on a person comprising:

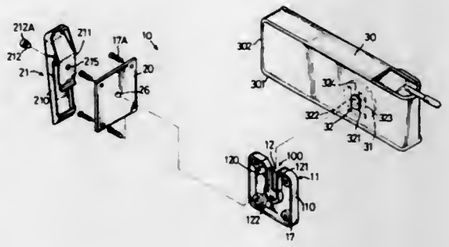
(a) a harness for securing the holder to the person;

(b) an umbrella supporting member connected to said harness such that said supporting member is positioned proximate a center of a back of the person when said harness is appropriately secured to the person;

(c) said supporting member comprising an elongated sheath positioned substantially vertically along the center of the back of the person, said sheath including a rigid inner member extending at least from proximate the waist of the person to at least proximate the upper back of the person, and a soft padded outer member circumscribing said rigid inner member on at least a substantial portion of the length of said rigid inner member, such that said padded outer member provides cushioning between said rigid inner member and the back of the person; and

(d) an attachment member for attaching a shaft of the open umbrella to said supporting member.

5,620,120
FIXING APPARATUS FOR A PORTABLE TELEPHONE
Tse-hsiung Tien, 7th Fl., No. 1, Alley 8, Lane 554, Pei-an Rd., Taipei, Taiwan
Filed May 31, 1995, Ser. No. 455,100
Int. Cl.[6] B65D *39/08;43/00*
U.S. Cl. 224—199 **7 Claims**



1. A fixing apparatus for a portable telephone comprising:

a pouch (**30**) adapted to enclose the portable telephone;

an engaging means (**32**) extending from the pouch (**30**), a socket (**10**) for detachably receiving the engaging means (**32**), and a cramp (**21**) connected to the socket (**10**) for fixing itself and the socket (**10**) on an objective body;

the engaging means (**32**) comprising a substantially elliptic plate (**321**) which defines a long axis and a short axis and a neck (**322**) extending from substantially a center of the elliptic plate (**321**) and firmly connected to the pouch (**30**);

the socket (**10**) comprising a base plate (**11**) and an upper plate (**20**) connected to the base plate (**11**), the base plate (**11**) defining a long cutout (**100**) from one side thereof up to a physically central point thereof, a first wall (**110**) being formed along peripheries of the base plate (**11**), a second wall (**120**) being projected from the base plate (**11**) substantially surrounding a periphery of the cutout (**100**) thus defining a ledge portion (**12**) between the cutout (**100**) and the second wall (**120**), the second wall (**120**) including two parallel straight portions (**121**) and a C-shaped portion (**122**) connected to the two parallel straight portions (**121**);

the engaging means (**32**) being sized to be slidable through the ledge portion (**12**) around the cutout (**100**), with the neck (**322**) passing through the cutout (**100**) and the substantially elliptic plate (**321**) sliding along the ledge portion (**12**) in the long axis direction;

a pivot (**18**) extended from the base plate (**11**), a first cutout (**110**A) defined in the first wall (**110**) of the base plate (**11**), a second cutout (**120**A) defined in the second wall (**120**) of the base plate (**11**), a first recess (**19**A) and a second recess (**19**B) defined in the base plate (**11**), a switch (**13**) comprising a switch body (**14**) which includes a boss (**140**) for pivotally receiving the pivot (**18**) projected from the base plate (**11**) and a saddle portion (**141**) extending out of the first cutout (**110**A) of the first wall (**110**) allowing a user to operate it;

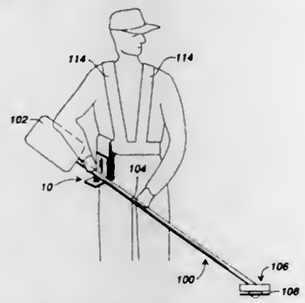
a first tongue (**15**) extended from the switch body (**14**); and

a second tongue (**16**) pivotally connected to the switch body (**14**);

whereby the engaging means (**32**) is manually made to turn substantially ninety-degrees in the C-shaped portion (**122**) of the second wall (**120**) when the substantially elliptic plate (**321**) thereof slides to touch the C-shaped portion (**122**) of the second wall (**120**), thereby locating the engaging means (**32**) in the C-shaped portion (**122**) of the second wall (**120**) of the socket (**10**) in place; and

whereby the switch (**13**) is operative to an unblocking status in which the protrusion (**151**) of the first tongue (**15**) is received in the first recess (**19**A) of the base plate (**11**) and a tip of the second tongue (**16**) is retained in the second cutout (**120**A) of the second wall (**120**) allowing the substantially elliptic plate (**321**) to slide along the ledge portion (**12**), or to a blocking status in which the protrusion (**151**) is received in the second recess (**19**B) of the base plate (**11**) and the tip of the second tongue (**16**) is retained beyond the second cutout (**120**A) of the second wall (**120**) and blocking the ledge portion (**12**) of the base plate (**11**).

5,620,121
QUICK RELEASING SUPPORT FOR LINE TRIMMERS
Elton G. Watson, 209 W. Ellawood Ave., Cedartown, Ga. 30125
Filed May 17, 1995, Ser. No. 443,239
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—272 **13 Claims**



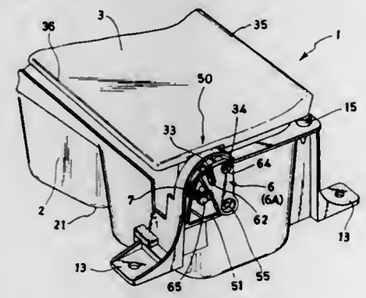
1. A support apparatus for a vegetation trimmer having a shaft and a rotating cutting head adjacent one end of said shaft, said support apparatus comprising:

a holster configured for support by the human body;

a detachable collar for attachment around said shaft of said trimmer, said detachable collar configured to support at least a portion of said weight of said trimmer;

interconnection means comprising a ball and socket, wherein one of said collar and said holster is substantially rigidly attached relative to said ball so as to be substantially stationary therewith, and the other of said collar and said holster is substantially rigidly attached relative to said socket so as to be substantially stationary wherewith, such that said trimmer may be attached relative to said holster in a ball and socket interconnection allowing said trimmer to be at least partially pivoted relative to said holster, and such that said trimmer may be lifted generally upwardly to disengage said ball and socket connection to disengage said trimmer from said holster.

5,620,122
DEVICE FOR OPENABLY SUPPORTING A LID AND A CUP HOLDER UTILIZING THE DEVICE
Tsutomu Tanaka, Tochigi-ken, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Nov. 28, 1995, Ser. No. 563,668
Claims priority, application Japan, Dec. 2, 1994, 6-323981
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—275 **2 Claims**



1. A device for openably supporting a lid comprising:

a lidded object closed by the lid,

a first rotation axis provided on an end surface of the lidded object,

an arm member rotatable about the first rotation axis and having a notch and a shaft insertion hole at its distal end portion,

an arcuate guide slot formed in the end surface of the lidded object along a path described by the distal end portion of the arm member when the arm member rotates about the first rotation axis,

an auxiliary guide slot formed as a depression in an upper edge of the guide slot,

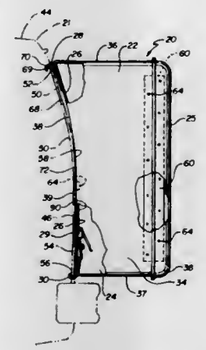
a first support member having a shaft-like portion which projects from the lid, through the guide slot and into the notch of the arm member, moves along the guide slot with opening/closing of the lid and makes contact with a first end of the guide slot when the lid is completely open,

a second support member having a shaft-like portion which projects from the lid, through the guide slot and into the shaft insertion hole of the arm member, moves along the guide slot with opening/closing of the lid and makes contact with a second end of the guide slot when the lid is almost completely closed, and

an energizing member for pressing the first support member in the direction of the upper edge of the guide slot,

the energizing member applying a force to the first support member when the lid is at greater than a prescribed opening angle for moving the first support member into contact with the first end of the guide slot while rotating the arm member about the first rotation shaft and completely opening the lid, and the energizing member applying a force to the first support member when the lid is at less than the prescribed opening angle for moving the first support member toward the auxiliary guide slot till the second support member makes contact with the second end of the guide slot and then rotating the first support member about the second support member as a second rotation axis thereby causing the first support member to move along a side surface of the notch till the first support member enters the auxiliary guide slot and the lid is completely closed.

5,620,123
VEHICLE CARGO CONTAINER
Joe Brisbois, 6861 Beach Rd., Eden Prairie, Minn. 55344
Filed May 26, 1995, Ser. No. 451,227
Int. Cl.[6] B60R *9/06*
U.S. Cl. 224—401 **20 Claims**



1. A cargo container for attachment to a vehicle having a rearward end with hinged rear door that swings open, the door having an exterior, an upper portion with a substantially horizontal upper edge, and a lower portion with a substantially horizontal lower edge, the cargo container comprising:

a rigid upright frame portion for extending along the exterior of the rear door from the lower portion to the upper portion when said container is attached to the vehicle;

a container portion connected to the frame portion, the container portion comprised of an openable access door and having an

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open storage area, whereby the open storage area is accessible through the access door when the access door is open; and

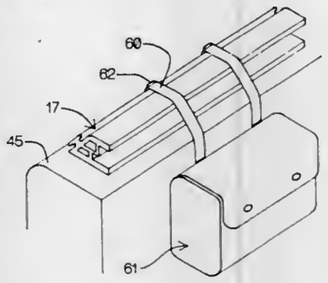
the frame portion removably attachable to the upper edge and the lower edge of the vehicle door, the frame portion and container portion sized to permit the rear door to swing open when the cargo container is attached to the door.

5,620,124

ATTACHMENT METHOD OF LOAD BAG IN PICKUP TRUCK

William F. Geier, 595 Ocran Rd., Whitestone, Va. 22578

Filed May 2, 1996, Ser. No. 641,886
Int. Cl.[6] B60R *9/055*
U.S. Cl. 224—404 **1 Claim**



1. A method of securing a load bag within the body of a pickup truck, said method comprising:

installing a tonneau cover assembly on the side walls of the pickup truck body, said tonneau cover assembly being of the type having a flaccid cover and having rails equipped with male snaps wherein said rails are respectively installed on top of said side walls of said pickup truck body and wherein said male snaps releasably engage female snaps on said flaccid cover;

removing said flaccid cover from said rails;

adding additional male snaps to said rails;

placing said load bag in said pickup truck body, said load bag being equipped with a plurality of straps extending upward from the back of said load bag and said straps being equipped with female snaps near the end of said strap being the opposite end from the end attached to said load bag;

extending said straps over one of said rails;

engaging said female snaps onto said additional male snaps.

5,620,125

BUMPER ATTACHABLE ACCESSORY SUPPORT DEVICE

Michael W. Duncan, and Patricia A. Duncan, both of Lake City, Minn., assignors to Even Par Enterprises, Inc., Lake City, Minn.

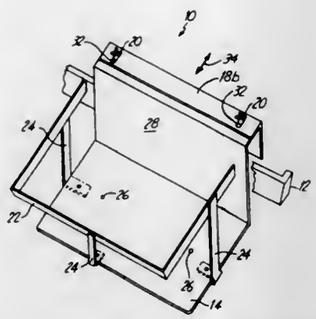
Filed Aug. 21, 1995, Ser. No. 517,533
Int. Cl.[6] B60R *9/00;11/00*
U.S. Cl. 224—515 **11 Claims**

1. An apparatus for supporting an accessory on a bumper of a golf car, the apparatus comprising:

an accessory support portion;

a bumper engaging portion connected to the accessory support portion;

an adjustable clamping portion, connectable to the bumper engaging portion to clamp the bumper between the bumper engaging portion and the adjustable clamping portion while the accessory support portion is in the supporting orientation, the adjustable clamping portion including an abutment member being couplable to the bumper engaging portion in one of a plurality of clamping orientations, the abutment member including a unitary member having two extending flanges, the



flanges being alternately connectable to the bumper engaging portion to define two of the plurality of clamping orientations; and

a connector connecting the adjustable clamping portion to the bumper engaging portion;

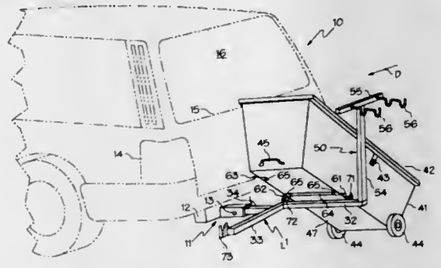
wherein the adjustable clamping portion and the connector are both adjustable to accommodate bumpers having different physical size characteristics.

5,620,126

L-SHAPED SUPPORT BEAM WITH DEMOUNTABLE WHEELED CONTAINER

Nikolas C. Janek, 789 Deepwoods, Aurora, Ohio 44202

Filed Mar. 5, 1996, Ser. No. 611,124
Int. Cl.[6] B60R *9/055*
U.S. Cl. 224—527 **11 Claims**



1. A cargo carrier for a vehicle, the vehicle having longitudinal axis along the length thereof, said cargo carrier comprising,

a rack comprising an L-shaped support beam in combination with a wheeled container having a generally planar base pivotably disposed upon said beam and releasably secured thereupon; and,

a connection member for removably connecting said L-shaped support beam to said vehicle's frame;

said L-shaped support beam selected from the group consisting of

(i) a single, integral first L-shaped support beam L^1 having a longitudinal strut extending substantially parallel to the longitudinal axis, and a transverse strut extending at right angles to said longitudinal strut; and,

(ii) a second L-shaped support beam L^2 having a longitudinal strut extending substantially parallel to the longitudinal axis, and a transverse compound arm extending at right angles to said longitudinal strut;

said longitudinal strut being at least as long as said planar base is wide, and having two longitudinally spaced-apart pivot latch means secured thereto at a distance at least corresponding to said planar base's width, said pivot latch means being adapted to support said container upon said longitudinal strut, allow it

to be rotated in a vertical plane from one side only of said longitudinal strut, and, to be secured in position by means associated with said support beam;

said transverse strut supporting that portion of the container not supported by said longitudinal strut, and extending for a sufficient distance along one side of said planar base and in close proximity to said truck's bumper, to afford stable support for said container;

said container having fixedly secured thereto, (i) two oppositely directed, spaced-apart locking pins to be matingly received in said pivot latch means, said locking pins protruding longitudinally, and, (ii) coaxially spaced-apart wheels fixedly secured near one end of said base to allow said container to be rolled in an inclined attitude;

said locking pins being insertable in said pivot latch means from one side of said longitudinal strut only, without lifting said wheels off the ground, thereafter to enable said container to be pivoted into the secured position with said transverse strut providing support for said container;

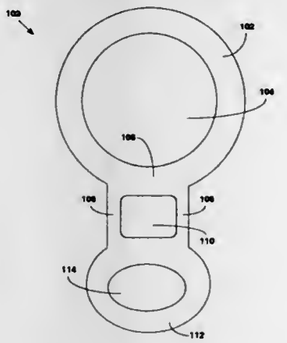
said container having a width less than that of a doorway through which it is to be rollingly transported in an inclined attitude, and a length less than the spacing of said vechicle's tail lights.

5,620,127

FOLDABLE GARMENT CARRIER

Robert MacKenzie, 4781 N. Congress Ave., #145, Lantana, Fla. 33462

Filed May 15, 1995, Ser. No. 441,689
Int. Cl.[6] B60R *7/00;7/10;9/00;11/00*
U.S. Cl. 224—555 **7 Claims**



1. A portable garment carrier for suspending clothing hangers from a car hook, comprising:

a handle assembly, the handle assembly having a handle assembly aperture;

a central hook attachment having a proximal end and a distal end, the central hook attachment attached at its proximal end to the handle assembly, the central hook attachment having a central aperture of a suitable size to accept a car hook;

a holder assembly attached to the distal end of the central hook attachment, the holder assembly having a holder assembly aperture large enough to accept at least one clothing hanger;

a central grip having a first end, a second end, and a central portion, the central portion further having a flexible extension extending outward from the central portion and capable of folding during use to form a rounded handle grip;

a first arm attached at a first end to the central hook assembly and attached at a second end to the first end of the central grip; and

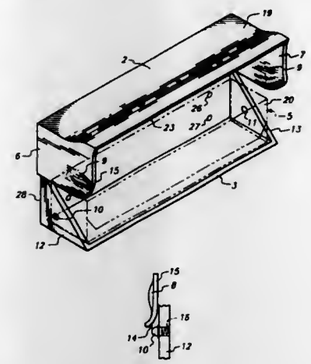
a second arm attached at a first end to the central hook assembly and attached at a second end to the second end of the central grip.

5,620,128

DISPENSER FOR ROLLED SHEET MATERIAL

Robert K. Dingman, 3060 Lakeshore, Benton Harbor, Mich. 49022, and Narasimha S. Paravastu, Clifton, N.J., assignors to Robert K. Dingman, Benton Harbor, Mich.

Filed Feb. 17, 1995, Ser. No. 389,951
Int. Cl.[6] B26F *3/02*
U.S. Cl. 225—19 **8 Claims**



1. A clamshell type container for storing a conventional box of rolled sheet material and for dispensing said rolled sheet material from said box, comprising:

an upper container portion comprising a top wall and a front wall;

a lower container portion comprising a bottom wall and a back wall, said back wall of said lower container portion being hingedly interconnected to said top wall of said upper container portion;

side wall members comprising first side wall members provided respectively at opposite ends of said upper container portion, and second side wall members provided respectively at opposite ends of said lower container portion;

said first and second side wall members being disposed in substantially overlapping relation to each other in said closed position of said container;

said upper container portion, said lower container portion, and said side wall members being fabricated of a substantially rigid material and together forming an enclosure shaped and dimensioned to closely receive therein said conventional box of rolled sheet material;

means for releasably locking said upper container portion and said lower container portion in a closed position, said locking means being disposed on said side wall members;

said locking means comprising a resiliently-biased locking member provided on at least one of said side wall members, and means for engaging said locking member provided on a corresponding side wall member disposed in substantially overlapping relation to said at least one side wall member in said closed position of said container;

said engaging means comprising a side wall edge portion which urges said locking member inwardly as said container is being closed, and a contiguous arcuate concave portion of said side wall within which said locking member automatically seats when said container is in said closed position;

said upper container portion and said lower container portion when in said closed position forming a predetermined aperture between a lower edge portion of said front wall and a forward edge portion of said bottom wall through which at least a portion of said sheet material is extended when said conventional box of rolled sheet material is operably disposed in said container; and

means for cutting said sheet material, said cutting means being disposed adjacent said predetermined aperture and along said lower edge portion of said front wall.

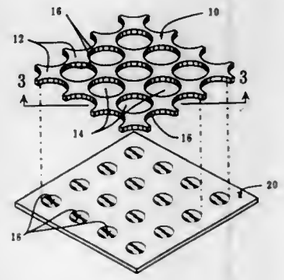
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5,620,129

DEVICE AND METHOD FOR FORMING AND ATTACHING AN ARRAY OF CONDUCTIVE BALLS

Philip E. Rogren, 624 Silver Ave., Half Moon Bay, Calif. 94019-1565

Filed Feb. 17, 1995, Ser. No. 390,677
Int. Cl.[6] B23K *35/14*
U.S. Cl. 228—56.3 **23 Claims**



1. A preform of conductive material capable of being formed into a plurality of conductive balls for accurate and secure attachment to respective conductive ball receiving areas of a substrate, comprising in combination:

(a) a substantially planar structure having an upper plane and a lower plane, said upper and lower planes being separated by a maximum thickness;

said preform also incorporating upper intermediate and lower intermediate planes, said intermediate planes being separated by a minimum thickness;

(b) said preform being perforated with a plurality of through-holes to define a matrix of sub-preforms, each said sub-preform comprising a substantially non planar structure, having a thickness that varies from said minimum thickness to said maximum thickness, wherein:

(i) said sub-preforms are connected to one another by thinned regions of conductive material;

(ii) said sub-preforms being spaced form one another so as to be coordinated with respective individual conductive ball receiving areas of a substrate;

(iii) said preforms incorporate contacting means, said contacting means being solid protrusions of said conductive material, extending to said upper plane from said upper intermediate plane and to said lower planes from said lower intermediate plane, for the purpose of making positive contact between said preform and said substrate when the preform is superposed above and, substantially parallel to said substrate; said contacting means further comprising in combination:

a) protrusions on each of said sub-preforms of said preform;

b) said protrusions being substantially centrally located relative to the through holes defining each sub-preform;

c) said protrusions configured in a shape selected from the group consisting of column, cone, truncated cone, spherical section and hyperboloid;

(iv) each of said sub-preforms contains a volume of conductive material sufficient to form a conductive ball of a desired diameter as said preform is heated for a length of time above a melting point of said conductive material such that said preforms separate from each other along said thinned regions, each conductive ball for attachment to a respective conductive ball receiving area of said substrate,

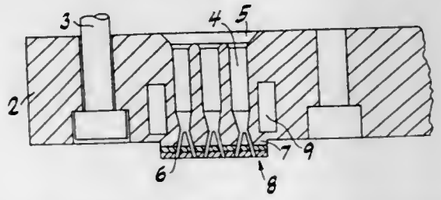
thereby providing a means for attaching an array of accurately sized spheroids of conductive material to a substrate with greater accuracy and reliability, and at lower cost that with current methods.

5,620,130

PROCESS FOR PRODUCING A DIE PLATE FOR UNDERWATER GRANULATION OF PLASTIC MATERIAL WITH AN INTERMEDIATE NICKEL ALLOY LAYER

Friedrich Schneider, Weissach, and Wolfgang Wörz, Illingen, both of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Germany

Filed Jul. 11, 1995, Ser. No. 500,630
Claims priority, application Germany, Jul. 15, 1994, 44 25 004.5
Int. Cl.[6] B23K *20/00*
U.S. Cl. 228—194 **10 Claims**



1. A process for forming a die plate for underwater granulation of plastic material comprising:

providing a base plate,

providing an annular cutting plate in facing relation to said base plate, and

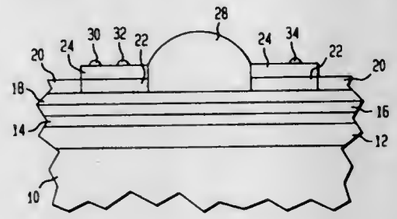
forming an intermediate layer between and joining said base plate and said annular cutting plate by hot-isostatic compression of a metal powder mixture containing nickel to diffusion bond the intermediate layer to said base plate and to said annular cutting plate.

5,620,131

METHOD OF SOLDER BONDING

Casey F. Kane, Linden, and Joseph Shmulovich, Murray Hill, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 15, 1995, Ser. No. 490,878
Int. Cl.[6] B23K *31/02;37/06*
U.S. Cl. 228—215 **12 Claims**



1. A method of solder bonding comprising the steps of

forming a conductive metallization pattern, including bonding pads, on the surface of a component,

forming a two-layer dam structure, including a top sacrificial dam layer and a bottom permanent dam layer, on each of said pads to define a portion of each pad to which solder is to be adhered, each of said top and bottom dam layers being characterized by being substantially non-wettable by solder, said dam structure being adapted to prevent molten solder from flowing from said defined pad portion to adjacent portions of the metallization pattern during subsequent solder-bump-formation and bonding steps,

forming respective solder bumps on said defined pad portions, said top sacrificial dam layer on each pad portion being adapted during solder-bump formation to prevent molten solder from flowing from said defined pad portion to adjacent portions of the metallization pattern,

removing the top sacrificial layer of said dam structure,

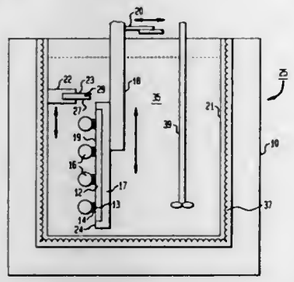
and, while maintaining conductive elements of an associated component in respective contact with said solder bumps, heating said solder bumps to bond said respective elements to said defined pad portions, said bottom dam layer on each pad portion being adapted during bonding to prevent molten solder from flowing from said defined pad portion to adjacent portions of the metallization pattern.

5,620,132

APPARATUS AND METHOD FOR REMOVING MELTABLE MATERIAL FROM A SUBSTRATE

Andrew J. Downing, Milwaukee, Wis.; Donald C. Foster, Westminster, Colo., and Karl J. Puttlitz, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 269,854, Jun. 30, 1994, Pat. No. 5,458,281. This application Jun. 5, 1995, Ser. No. 461,960
Int. Cl.[6] H01L *21/44*
U.S. Cl. 228—264 **24 Claims**



1. A method for removing at least one molten or solid structure from a surface comprising the steps of:

(a) placing said surface with said at least one molten or solid structure in at least one fluid bath,

(b) raising the temperature of said fluid bath to the melting point level of said at least one molten or solid structure, and

(c) squeegeeing off said at least one molten or solid structure from said surface by using at least one blade.

5,620,133

STORAGE AND FILING DEVICE

Robert K. Isserstedt, London, England, assignor to Vertago Investments Limited, Douglas, Isle of Man, and Bank of Bermuda, Virgin Islands (Br.)

Continuation of Ser. No. 977,014, Nov. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 301,332, Jan. 25, 1989, Pat. No. 5,163,606. This application Sep. 8, 1994, Ser. No. 302,244
Claims priority, application United Kingdom, Jan. 25, 1988, 8801568
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[6] B65D *27/02*
U.S. Cl. 229—67.1 **16 Claims**

1. A storage pouch comprising:

(a) a semi-rigid frame having an upper cross member having two ends, a lower cross member, a pair of side members extending between and joining the upper and lower cross members, and a stiffener extending laterally between and connected to the side members, the stiffener being spaced downwardly from the upper cross member by a relatively short distance,



(b) a first flexible sheet portion attached to the frame and covering an area defined between the stiffener, the lower cross member and the pair of side members, and

(c) a second flexible sheet portion attached to the frame and covering an area defined between the upper cross member, the lower cross member and the pair of side members,

wherein a pouch space is provided between the first and second sheet portions and access to said pouch space is permitted through an opening defined by the space between the upper cross member and the stiffener, and

wherein at least the stiffener is capable of bending resiliently to increase the size of the opening, and

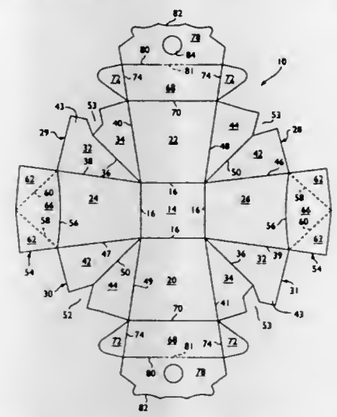
wherein the stiffener is connected to at least one of the side members by a reduced portion to assist movement of the stiffener relative to the side portion.

5,620,134

CLOSABLE CARTON

Richard E. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Nov. 7, 1995, Ser. No. 553,221
Int. Cl.[6] B65D *5/462*
U.S. Cl. 229—117.14 **20 Claims**



1. A carton erected from a single carton blank and disposed in a closed condition, said carton comprising:

a bottom wall panel,

four side wall panels, each of said side wall panels being integrally connected along a fold line to said bottom wall panel and disposed upwardly therefrom thereby defining first and second pairs of opposite side wall panels, said bottom wall panel and said four side wall panels defining a container space,

corner portions integrally connecting adjacent side wall panels, said corner portions being secured in overlapping pairs against said second pair of opposite side wall panels,

flap members, each of said flap members being integral along a flap fold line with one of said side wall panels of said first pair

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of opposite side wall panels, each of said flap members defining foldable portions folded into generally overlapping relation with a central portion of said flap member,

closure members, each of said closure members being integral along a closure fold line with a respective side wall panel of said second pair of opposite side wall panels,

tab structure securing a closure member to an adjacent flap member, and

handle portions, each of said handle portions being integral along a handle fold line with a respective said closure member, each of said handle fold lines being generally parallel to a closure fold line and having an extent greater than said closure fold line,

said flap members extending upwardly from said first pair of opposite side wall panels with each of said closure members being disposed generally parallel to said bottom wall panel so as to close the container space, said handle portions being disposed between said flap members in generally abutting relation and being generally transverse with respect to said closure members, said handle fold lines being in generally abutting relation and causing said first pair of opposite side wall panels to bow outwardly to maintain the flap members in their upward position thereby maintaining the handle portions in their abutting relation.

5,620,135

CONTAINER

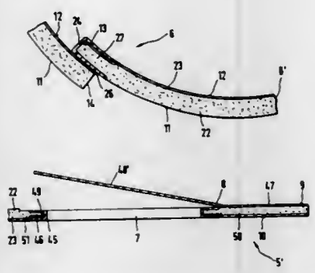
Werner Stahlecker, Stuttgart, and Berthold Mueller, Suessen, both of Germany, assignors to Ruediger Haaga GmbH, Altoberndorf, Germany

Filed Apr. 7, 1995, Ser. No. 418,798

Claims priority, application Germany, Apr. 7, 1994, 44 11 924.0

Int. Cl.[6] B65D *3/28*

U.S. Cl. 229—198.2 **21 Claims**



1. A container comprising at least one wall element formed from at least one sheet-shaped segment having a defined thickness and at least one edge enclosed by a U-shaped protective covering over an inner surface and an outer surface at least along a region bordering the at least one edge and having a thickness smaller than the defined thickness, wherein, prior to formation of the container by configuring the segment into a desired shape, said region is provided with the thickness smaller than the defined thickness and resulting from compression such that the segment, including the region having the protective covering has an approximately constant thickness along a full extent of the segment including the at least one edge covered by the protective coating, with inner and outer surfaces of the protective covering being flush with inner and outer surfaces of the segment adjacent the protective covering.

5,620,136

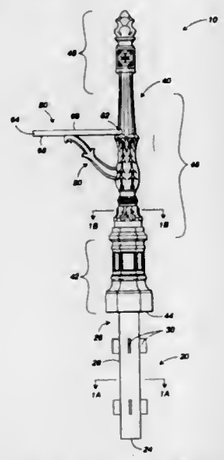
FOAM-FILLED PLASTIC MAILBOX POST

Ronald D. Erwin, Fayetteville, and Marvin R. Whitley, Norcross, both of Ga., assignors to Erwin Industries, Inc., Peachtree City, Ga.

Filed Oct. 24, 1995, Ser. No. 547,324

Int. Cl.[6] B65D *91/00*

U.S. Cl. 232—39 **7 Claims**



1. A post for supporting a mailbox above a ground, said post comprising:

a. a lower, ground-engaging portion for embedment in the ground and having a transverse dimension;

b. an upright portion fixed to said lower, ground-engaging portion and extending above said lower, ground-engaging portion, a lower part of said upright portion having a transverse dimension which is substantially greater than said transverse dimension of said lower, ground-engaging portion;

c. a lateral support member extending outwardly from said upright portion for supporting the mailbox above the ground;

d. a brace extending between said upright portion and said lateral support member, said post being at least substantially fabricated from an expanded foam core material and a solid plastic outer shell material; and

e. a reinforcing element within said expanded foam core and extending longitudinally within at least most of said upright portion.

5,620,137

ROOM ACCESS CONTROL AND POWER MANAGEMENT INSTALLATION

Jean-Louis Coelho, Saint Nom la Breteche, and Jean-Noël Marteau, Marly le Roi, both of France, assignors to Societe Francaise d'Estudes Electroniques S F 2 E, Le Mesnil Saint Denis, France

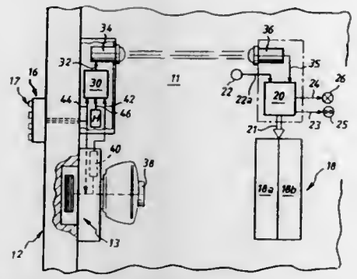
Filed Aug. 9, 1995, Ser. No. 513,148

Claims priority, application France, Aug. 10, 1994, 94 09906

Int. Cl.[6] G05D *23/00;* **F28F** *27/00*

U.S. Cl. 236—47 **10 Claims**

1. Room access control and energy management installation including a lock governed by an access code controlling entry to said room, code entry means accessible from outside said room and adapted to enable at least opening of said lock, an air conditioner for air conditioning said room, an air conditioning controller for selecting one of a plurality of predetermined air conditioning operating regimes including a nominal operating regime, a computer for calculating said operating regime having a data input connected to sensor means for producing a signal or a code indicating that said lock is locked from the inside, said nominal operating regime being selected when said signal or code is received from said sensor means.



5,620,138

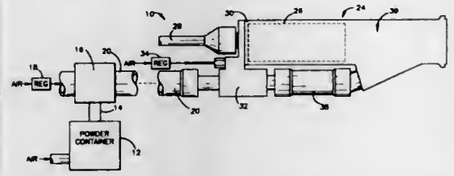
POWDER COATING GUN MOUNTED DIFFUSER AND AIR COOLED HEAT SINK IN COMBINATION WITH LOW FLOW POWDER PUMP IMPROVEMENTS

Gerald W. Crum, Elyria, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Filed Nov. 9, 1994, Ser. No. 336,469

Int. Cl.[6] B05B *5/025*

U.S. Cl. 239—3 **12 Claims**



1. The method of delivering a stream of air entrained charging powder to a spray gun comprising the steps of:

providing a spray gun with a nozzle section, a high voltage power supply, a heat sink plate abutted against said high voltage power supply, and a diffuser mounted to said heat sink plate and connected to said nozzle section by a conduit;

directing a stream of air entrained powder through said diffuser and through said conduit to said nozzle section of said spray gun;

directing compressed air through said heat sink plate and into said stream of air entrained powder in said diffuser to redistribute said air entrained powder in said stream of air entrained powder being directed through said diffuser and to direct said stream of redistributed air entrained powder into said conduit and to said nozzle section while transferring heat generated by said high voltage power supply from said heat sink plate to said compressed air.

5,620,139

NOZZLE ADAPTER WITH RECIRCULATION VALVE

Roger A. Ziecker, Lawrenceville, Ga., assignor to Nordson Corporation, Westlake, Ohio

Filed Jul. 18, 1995, Ser. No. 503,806

Int. Cl.[6] B05B *7/06;7/10;9/00*

U.S. Cl. 239—124 **18 Claims**

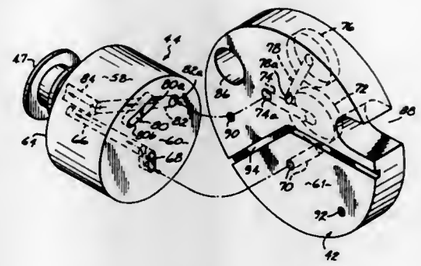
10. A nozzle adapter for spraying liquid hot melt adhesive, the nozzle adapter comprising:

a mounting plate having an adhesive input passage, a recirculation outlet passage, and an air input passage;

an adapter body fastened to said mounting plate;

a nozzle unit secured between said mounting plate and said adapter body for relative movement with respect to said mounting plate between at least first and second positions, said nozzle unit including an adhesive passage leading to an adhesive discharge outlet, a recirculation connecting passage and an air passage leading to an air discharge outlet; and,

wherein in the first position the adhesive passage of said nozzle unit aligns with the adhesive input passage of said mounting plate and the air passage of said nozzle unit aligns with the air input passage of said mounting plate to dispense adhesive and air from the respective adhesive and air discharge outlets, and in the second position the recirculation connecting passage of said nozzle unit the adhesive input passage with the adhesive recirculation outlet passage of said mounting plate and the air passage of said nozzle unit is blocked to shut off the flow of air to said air discharge outlet.



5,620,140

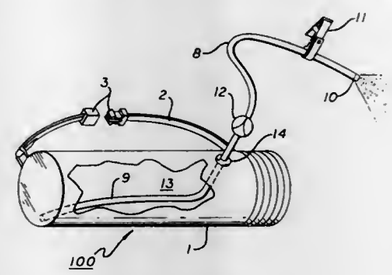
PORTABLE MIST COOLING DEVICE

Steven M. Utter, 481 N. Longmore St., Chandler, Ariz. 85224

Continuation of Ser. No. 324,872, Oct. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 927,231, Aug. 7, 1992, Pat. No. 5,535,951. This application Jun. 10, 1996, Ser. No. 664,302

Int. Cl.[6] B05B *9/08*

U.S. Cl. 239—153 **16 Claims**



1. A misting apparatus comprising:

a pressurizable fluid tank, said fluid tank including means for adding fluid to the fluid tank;

a manual air pump for pressurizing the fluid tank, said manual air pump being removably connectable to said pressurizable fluid tank in sealed fluid communication therewith, said manual air pump having a tubular piston chamber with a one-way valve allowing air to enter said pressurizable fluid tank, a cup seal disposed in said piston chamber and connected to an exterior pump handle;

a flexible tube in fluid communication with the fluid tank, said flexible tube having a distal end and a proximal end, said proximal end connected to said fluid tank;

an alligator clip secured near the distal end of the flexible tube, said clip capable of securing the flexible tube to an article of clothing;

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at least one spray nozzle secured at the distal end of the flexible tube, said spray nozzle delivering a fine mist of fluid in the vicinity of a wearer of the clothing when pressurized fluid is communicated to the spray nozzle for cooling the wearer; and

a valve connected to said flexible tube between said fluid tank and each said spray nozzle for controlling flow of fluid through said flexible tube.

5,620,141

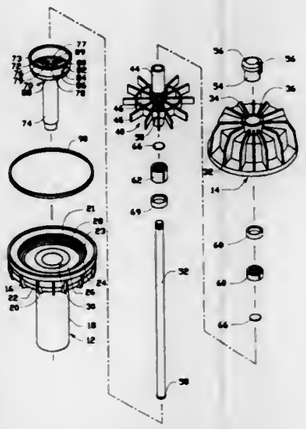
POP-UP ROTARY SPRINKLER

Jung-Li Chiang, 930 W. Maude Ave., Sunnyvale, Calif. 94086

Filed Jan. 30, 1995, Ser. No. 380,415

Int. Cl.[6] B05B *3/00*

U.S. Cl. 239—206 **7 Claims**



1. A pop-up rotary sprinkler for use with a sprinkler system, comprising:

a housing and a cover fastened to each other and formed as one assembly;

said housing including a pan-like portion, and a cylinder portion integrally extending downward from said pan-like portion wherein a bottom end of said cylinder portion can be communicably fastened to a pipe connector in said sprinkler system, and a top end of said cylinder portion can be communicable with an interior of said pan-like portion;

an internal sleeve being generally of a similar but less dimensioned configuration with regard to the housing and adapted to be received within the housing, said sleeve including a bowl-like section and a cylinder section extending downward from a bottom plate of the bowl-like section wherein a bottom end of said cylinder section is of a closed type but a top end thereof is open to communicate with an interior of the bowl-like section via a hole positioned substantially at a center portion of said bottom plate of the bowl-like section;

a rotor generally positioned in a space defined between the cover and the housing, said rotor including a tubular axle and a turbine wheel;

an elongated tubular spindle being adapted to be coaxially inserted into the axle of the rotor wherein said spindle is not only slidable along the axis of the rotor, but also co-rotated with the rotor; and

a nozzle head is attached to a top portion of said spindle.

5,620,142

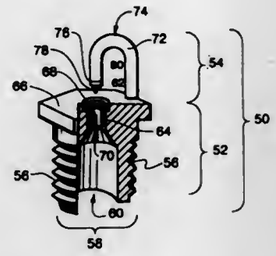
JEWELED ORIFICE FOG NOZZLE

Michael V. Elkas, 28 Franklin St., Ramsey, N.J. 07446

Continuation-in-part of Ser. No. 919,164, Jul. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 474,947

Int. Cl.[6] B05B *1/26*

U.S. Cl. 239—518 **22 Claims**



1. An improved pin jet nozzle adapted for use in providing an evaporative fog consisting essentially of fluid particles having a diameter of less than fifty micrometers (50 μm), said nozzle comprising:

a. a base portion itself comprising:

i. means for connection of said nozzle to a pressurized hydraulic system;

ii. means for receiving fluid from said system; and,

iii. an orifice component, said orifice component comprising:

A. an inlet adapted to receive fluid from said system;

B. an outlet orifice for the release of fluid from said system in the form of a jet; and,

C. a delivery channel adapted to convey fluid from said inlet to said outlet orifice; and,

b. a pin portion itself comprising:

i. support and centering means; and,

ii. an impingement pin member mounted upon said support and centering means and positioned over said outlet orifice and having an impingement face in the path of said fluid jet which impingement face is substantially similar in dimension to the diameter of said fluid jet;

c. further comprising a nozzle insert comprising:

i. an insert member comprising a hollow, generally cylindrical insert adapted to be held firmly within the outlet orifice of said base portion; and,

ii. an orifice member held firmly within the generally cylindrical insert member, which orifice member comprises:

A. a wear-resistant material;

B. a central orifice with a diameter of from about three one-thousandths of an inch (0.003 in.) to about fifteen one-thousandths of an inch (0.015 in.);

C. a high degree of concentricity, with a variance in the concentricity of said central orifice of less than five ten-thousandths of an inch (0.0005).

5,620,143

CONSTANT-FLOW IRRIGATION TAPE AND METHOD OF MAKING

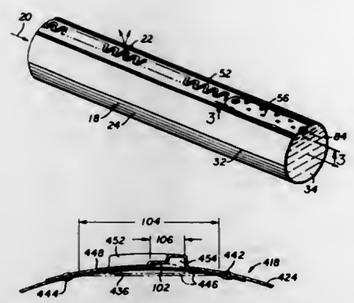
William Delmer; Daniel Delmer; Robert Delmer; John W. Erickson, and Ray C. Emmons, all of Huntington Beach, Calif., assignors to Drip Tape Manufacturers & Engineers, Inc., Huntington Beach, Calif.

Filed Oct. 24, 1994, Ser. No. 328,105

Int. Cl.[6] B05B *15/00*

U.S. Cl. 239—542 **30 Claims**

1. A constant-flow drip irrigation hose of the type having an elongate primary water flow path extending therethrough and a secondary flow path extending from said primary flow path to open outwardly of said hose, said drip irrigation hose comprising;



a hose body with a wall circumscribing and bounding said primary flow path, said wall including a first wall portion and a second wall portion which are circumferentially overlapped and sealingly connected to one another to define said secondary flow path therebetween, one of said first wall portion and said second wall portion defining a tortuous continuously-open channel forming a first part of said secondary flow path, and said first and said second wall portions being variably spaced from one another to define a variable-area second part of said secondary flow path, one of said first wall portion and said second wall portion being pressure-responsive to move toward the other of said first wall portion and said second wall portion to constrict said variable-area second part of said secondary flow path in response to increasing water pressure within said hose;

with one of said first wall portion and said second wall portion additionally defining a longitudinally-extending groove defining a third variable-area part of said secondary flow path, and one of said first wall portion and said second wall portion being further pressure-responsive and movable toward the other of said first wall portion and said second wall portion to constrict said variable-area third part of said secondary flow path in response to increasing water pressure within said hose after said variable area second part of said secondary flow path has been substantially closed.

5,620,144

STACKED INTERSPACIAL SPRAY HEADER FOR FGD WET SCRUBBER

Thomas W. Strock, Jackson Township, Stark County, and Frederick L. White, Goshen Township, Mahoning County, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 10, 1995, Ser. No. 386,834

Int. Cl.[6] B05B *1/18*

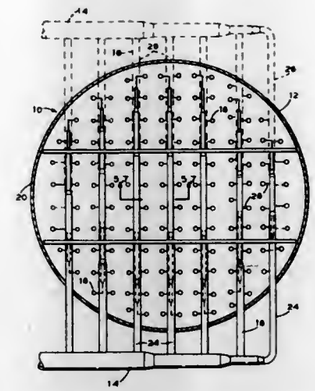
U.S. Cl. 239—557 **21 Claims**

1. An arrangement for uniformly distributing a liquid slurry across a flow path at a selected level within a housing comprising:

(a) a plurality of supply headers located at the selected level of the housing, said headers supplying the liquid slurry to the housing;

(b) a plurality of feeder lines secured to each said supply header, said feeder lines extending across the flow path at this level of the housing, said feeder lines that extend across the flow path from one said supply header being vertically disposed and aligned directly atop the said feeder lines that extend across the flow path from another said supply header to reduce blockage of the flow path; and

(c) a plurality of connectors coupled to each of these said feeder lines, each said connector supporting at least one spray nozzle



therefrom, the said connectors coupled to one said feeder line being staggered with respect to the said connectors coupled to an adjacent vertically disposed said feeder line.

5,620,145

HIGH-SPEED PULVERIZING METHOD AND EQUIPMENT

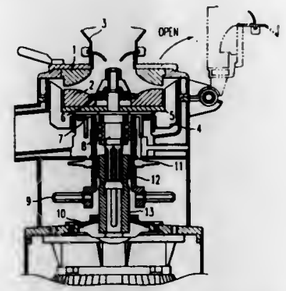
Tsuneo Masuda, Kawaguchi, Japan, assignor to Masuko Sangyo Co., Ltd., Kawaguchi, Japan

Filed Dec. 22, 1994, Ser. No. 361,364

Claims priority, application Japan, Dec. 27, 1993, 5-348616; Oct. 31, 1994, 6-290388

Int. Cl.[6] B02C *7/11*

U.S. Cl. 241—19 **5 Claims**



1. A method for producing finely pulverized powder, which comprises:

concentrically arranging a rotating grindstone having a flat grinding area at an outer circumference thereof and a fixed grindstone having a flat grinding area at an outer circumference thereof so that the flat grinding areas of said fixed and rotating grindstones are opposed to one another and forming a clearance therebetween of 100 to 3,000 μm;

mounting a plurality of ejection wings generating suction around said rotating bottom grindstone;

generating a reduced-pressure jet stream through said clearance while revolving and rotating grindstone and said ejection wings at high speed;

grinding and pulverizing raw material fed from a central opening of said fixed grindstone and forced between the grinding areas of the fixed and rotating grindstones;

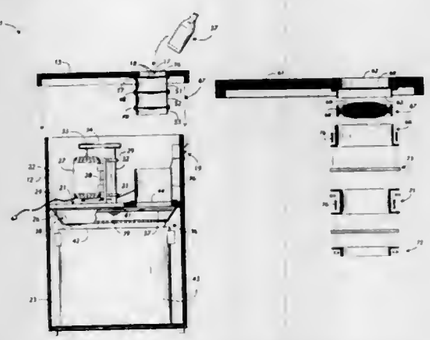
positioning a jetting vessel in the shape of an inverted cone in a lower casing and jetting air therefrom towards a filtration screen located above the lower casing;

feeding the powder obtained from said grinding and pulverizing to the jetting vessel;

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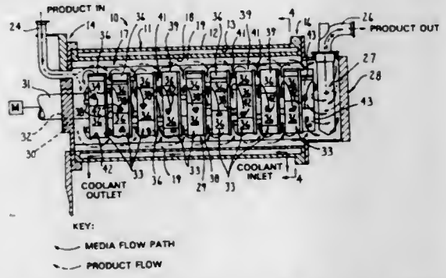
passing the powder through the filtration screen by jetting high-pressure air thereagainst by the jetting vessel;
conveying the fine powder passed through the filtration screen and further processing the fine powder via an exit member; and
ejecting powder not passed through said filtration screen from a lower end opening of the lower casing and returning the powder not passed through the filtration screen again to the grindstone grinding areas of the fixed grindstone and rotating the rotating grindstone for further and rotating grindstones and pulverization of the powder.

5,620,146
GLASS BOTTLE PULVERIZING METHOD AND APPARATUS
Donald E. Lukas, 520 Industrial Dr., Woodstock, Ga. 30188
PCT No. PCT/US93/11944, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO95/16520, PCT Pub. Date Jun. 22, 1995
PCT Filed Dec. 8, 1993, Ser. No. 500,969
Int. Cl.[6] B02C *19/14*
U.S. Cl. 241—99 **8 Claims**



1. An apparatus for smashing glass objects into fragments of a predetermined maximum size and depositing the fragments in a receptacle for subsequent processing, said apparatus comprising:
a housing having a top and an internal partition subdividing the interior of said housing into an upper chamber and a lower chamber, said top being formed with an access opening sized to receive whole glass objects to be smashed;
said partition being formed with an opening that communicates between the upper and lower chambers of said housing, said partition opening being sized to pass whole glass objects to be smashed and being substantially vertically aligned with the access opening in said top of said housing;
moving pulverizer means within the lower chamber of said housing for striking glass objects as they pass through the opening in said partition and breaking the glass objects into fragments;
a substantially vertically oriented elongated chute extending from said top into said upper chamber and a substantially vertically oriented elongated sleeve extending from said partition into said upper chamber and being aligned with said chute for communicating between the access opening formed in said top of said housing and the opening formed in said partition, said chute and sleeve being sized to direct whole glass objects from the access opening in said top of said housing and through the opening in said partition for presentation to said pulverizer means for smashing;
at least two yieldable diaphragms disposed at predetermined spaced intervals substantially along the entire length of said chute with each of said diaphragms being sized and configured to grip and substantially seal about the exterior of glass objects as they pass progressively through said chute and to close off communication through said chute when a glass object moves beyond the diaphragm in the chute;
filter means disposed along the length of said chute for preventing migration of airborne glass dust through the chute as glass bottles are smashed by said moving pulverizer means, said filter means being configured to bear firmly against and substantially seal about the exterior surface of glass bottles as the bottles move past said filter means in said chute; and
means for directing smashed glass fragments from said pulverizer means to the receptacle.

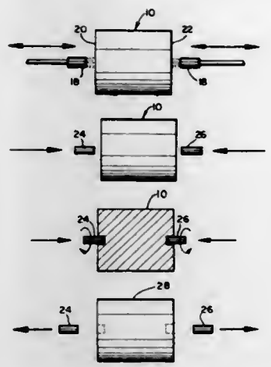
5,620,147
CONTINUOUS MEDIA MILL
Mitchel D. Newton, South Haven, Mich., assignor to Epworth Manufacturing Co., Inc., South Haven, Mich.
Filed Oct. 4, 1995, Ser. No. 539,114
Int. Cl.[6] B02C *17/16*
U.S. Cl. 241—171 **11 Claims**



1. A continuous media mill for effecting in a particulate-containing substance a reduction in size of said particulate in said particulate-containing substance urged under pressure through said continuous media mill, comprising:
support means;
an elongated vessel means mounted on said support means, said vessel means having a generally cylindrical interior;
inlet means and outlet means in said vessel means for said particulate-containing substance;
comminuting media in the interior of said vessel means, said media having a tendency to migrate toward said outlet means with said pressurized particulate-containing substance moving from said inlet means toward said outlet means;
rotor means extending centrally of said cylindrical interior of said vessel means and along a majority of the length thereof, said rotor means having a diameter substantially less than an inner surface of said vessel means to define a first space therebetween, said rotor means including a plurality of blades spaced axially along the length thereof for flinging said media radially outwardly in response to a rotation of said rotor means and means for effecting a movement of said comminuting media toward said inlet means in response to a rotation of said rotor means to counter the aforesaid tendency of said media to migrate with said particulate-containing substance in said first space toward said outlet means.

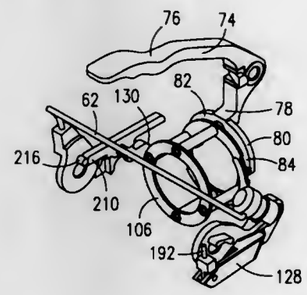
5,620,148
METHODS OF MAKING INDENTED CORELESS ROLLS
Joseph Mitchell, Gloucester, N.J., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 10, 1995, Ser. No. 402,341
Int. Cl.[6] B65H *18/28*
U.S. Cl. 242—160.4 **4 Claims**

1. A method of treating a coreless rolls of absorbent paper product so as to make it easier for a user to center a winding axis of the coreless roll with respect to a dispenser, comprising the steps of:



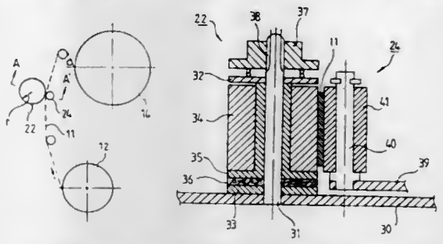
(a) positioning a tool adjacent to at least one side of the coreless roll so that the tool is substantially centered with respect to the winding axis of the roll; and
(b) pressing the tool into the side of the roll to form a visible depression in the side of the roll that is centered with respect to the winding axis of the roll, said tool being wetted prior to completion of said step of pressing the tool into the side of the roll;
whereby maintenance personnel will find it easier to center the roll with respect to a dispenser.

5,620,149
FISHING REEL WITH TRIGGER-ACTUATED BAIL ASSEMBLY
John A. Zurcher, St. Charles, Mo.; John W. Puryear, Biloxi, Miss.; Hyunkyu Kim, Incheon City, Rep. of Korea, and Robert L. Carpenter, Tulsa, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jul. 15, 1992, Ser. No. 914,261
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—233 **24 Claims**



1. A fishing reel comprising:
a frame;
a rotor;
means for mounting the rotor to the frame for rotation about a first axis;
a line storage spool;
means on the frame for rotating the rotor;
means on the rotor for directing line onto the line storage spool as an incident of the rotor being rotated about the first axis,
said line directing means including a bail assembly comprising first and second bail arms and means for mounting the bail arms to the rotor for pivotable movement of the bail assembly between (a) a first retrieve position and (b) a second cast position;
a bail actuator that is movable relative to at least one of the frame and rotor between a rest position and an operating position; and
means responsive to movement of the bail actuator from its rest position to its operating position for exerting a force on both of the bail arms to pivot the bail assembly over at least a portion of the range of movement of the bail assembly between its first position and its second position,
said force exerting means including an actuation plate, means for mounting the actuation plate to at least one of the frame and rotor for movement relative thereto between extended and retracted positions, means cooperating between the bail actuator and actuation plate for moving the actuation plate from its retracted position to its extended position as an incident of the bail actuator moving from its rest position to its operating position, at least one force transmission arm, means for mounting the at least one force transmission arm to at least one of the rotor and frame for movement relative thereto between third and fourth positions independently of the bail assembly, means cooperating between the actuation plate and the at least one force transmission arm for moving the at least one force transmission arm from its third position into its fourth position as an incident of the actuation plate moving from its retracted position into its extended position, and means cooperating between the at least one force transmission arm and bail assembly for urging the bail assembly from its first position into its second position as an incident of the at least one force transmission arm moving from its third position into its fourth position.

5,620,150
TENSION SERVO APPARATUS FOR MAGNETIC TAPE
Young-hoon Min, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Continuation of Ser. No. 240,529, May 10, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,152
Claims priority, application Rep. of Korea, May 12, 1993, 1993-8114
Int. Cl.[6] G11B *15/46;23/42;* **B65H** *59/38;23/188*
U.S. Cl. 242—334 **4 Claims**



1. In combination with a magnetic recording and reproducing system including a main chassis having a supply reel and a drum mounted thereon, a tension servo apparatus which provides a tension on a magnetic tape passing between the supply reel and the drum, said tension servo apparatus comprising:
a clutch roller including a pin having one end fixedly mounted on the main chassis, a lower plate attached to the main chassis, a guide member rotatably mounted on said pin, a roller fixed to said guide member for rotation therewith and which contacts the magnetic tape, and a friction member interposed between said guide member and said lower plate and in contact with said guide member for generating a frictional force against the rotation of said roller; and
a low friction roller positioned proximate to said clutch roller so as to press the magnetic tape between said low friction roller and said clutch roller such that as the magnetic tape travels the magnetic tape rotates said clutch roller, said clutch roller placing a tension on the magnetic tape as the magnetic tape passes between said clutch roller and said low friction roller,

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wherein said clutch roller further comprises:

a threaded portion on an opposite end of said pin extending beyond said roller and said guide member;

a cap threaded onto the threaded portion of said pin; and

an upper plate interposed between said cap and said guide member and in contact with said guide member,

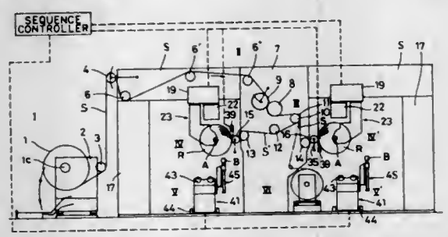
whereby rotation of said cap in one direction so as to tighten said cap pushes said upper plate which in turn pushes said guide member against said friction member to increase the frictional force against the rotation of said roller, thereby increasing the tension on the magnetic tape, and whereby rotation of said cap in an opposite direction loosens said cap so as to decrease the frictional force and in turn decrease the tension on the magnetic tape.

5,620,151

AUTOMATIC SLITTER REWINDER MACHINE

Minoru Ueyama, Katano, and Yoshiteru Kosuga, Osaka, both of Japan, assignors to Kabushiki Kaisha Fuji Tekkosho, Osaka, Japan

Continuation of Ser. No. 188,239, Jan. 28, 1994, abandoned.
This application Feb. 23, 1996, Ser. No. 606,497
Claims priority, application Japan, Feb. 5, 1993, 5-042082; Jun. 30, 1993, 5-189461; Jul. 7, 1993, 5-193140
Int. Cl.[6] B65H *18/10*
U.S. Cl. 242—530 **19 Claims**



1. A slitter rewinder for receiving a continuous length, elongated width sheet of web material and forming core-center rolls of the web material, said slitter rewinder assembly including:

a feed assembly for receiving the elongated width web sheet and transporting the elongated width web sheet in a feeding direction;

a slitting assembly positioned to receive the elongated web sheet from said feed assembly, said slitting assembly being positioned to extend across the width of the elongated width web sheet and having at least one slitter knife positioned for cutting the elongated width web sheet into a plurality of narrow width web sheets;

two roll forming assemblies, said roll forming assemblies being located on opposed sides of said slitting assembly for each receiving at least one narrow width web sheet therefrom, each said roll forming assembly including:

a support frame having elevated support rails that extend from a position proximal to said slitting assembly to a position distal from said slitting assembly;

a cross rail assembly including a cross rail attached to said support frame rails to move along said support rails and a drive unit connected to said cross rail to move said cross rail along said support rails;

at least one core holding assembly suspended from said cross rail, said core holding assembly including: two core holding frames mounted to said cross rail to move along said cross rail, said core holding frames being configured to rotatably support a core therebetween; a drive mechanism for moving said core holding frames along said cross rail; and a core-driving motor attached to one said core holding frame for rotating the core supported by said core holding assembly so as to wrap the narrow web sheet around the core so as to form a roll of web material;

a fixed position touch roller, said touch roller positioned to hold the narrow web sheet around the roll being formed on said at least one core holding assembly; and

a cutting head located adjacent said touch roller for selectively cutting the narrow width sheet along the width thereof;

two roll delivery assemblies, each said roll delivery assembly being located below said support rails associated with a separate one of said roll forming assemblies so that said core holding assembly of said roll forming assembly travels above said roll delivery assembly, each said roll delivery assembly including:

a lift unit, said lift unit having a top-located roll resting surface that is selectively positioned underneath said core holding assembly of said roll forming assembly to receive the formed roll carried by said core holding assembly;

an end web wrapping assembly including: a pair of rollers, said rollers being located on opposed sides of said lift unit adjacent said roll resting surface and being connected to said lift unit so as to have a first position wherein said rollers are located adjacent each other and above said roll resting surface so that said rollers support the formed roll and a second position wherein said rollers are spaced from each other, whereby when said rollers move from said first position to said second position, the formed roll is transferred to said roll resting surface; and a motor attached to one of said rollers for rotating said roller so as to cause rotation of the formed roll disposed on said rollers; and

a core feeding unit attached to said lift unit, said core feeding unit including at least one selectively vertically positionable member for holding a new core and positioning the new core between said core holding frames of said roll forming assembly; and

Sequence control means connected to said roll forming assemblies and to said roll delivery assemblies for controlling operation of said roll forming assemblies and said roll delivery assemblies, whereby, when a roll is completely formed on one of said core holding assemblies, said sequence control means is configured to: position said core holding assembly of said roll forming assembly and said roll delivery assembly associated therewith so that the formed roll is unloaded onto said end web wrapping assembly rollers while the narrow width web sheet forming the formed roll extends from said slitting assembly; position said core holding assembly so that the new core is unloaded from said core feeding unit and mounted to said core holding frames; position said core holding assembly so that the new core is held against the narrow web sheet between said cutting head and the formed roll so that the new core serves as a cutting support for the cutting head; actuate said cutting head and said core-driving motor so that the narrow web sheet is simultaneously cut from the formed roll and rolled around the new core;

actuate said end web wrapping assembly roller motor so that the end of the narrow web sheet extending from the formed core is wrapped around the formed roll; and actuate said end web wrapping assembly to lower the formed roll onto said roll resting surface of said lift unit of said roll delivery assembly.

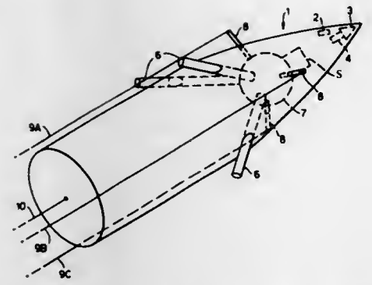
5,620,152

TETHERED MISSILE SYSTEM

Stephen V. Sargent, Stevenage, Great Britain, assignor to British Aerospace Public Limited Company, Farnborough, United Kingdom

Filed Jan. 22, 1996, Ser. No. 589,561
Claims priority, application United Kingdom, Jan. 27, 1995, 9501594
Int. Cl.[6] F42B *15/04*
U.S. Cl. 244—3.12 **9 Claims**

1. A missile launch and control system comprising: a launch station; a missile having an on-board vectored thrust mechanism; and control cable means, connected at one of its ends to the launch station and at another one of its ends to said vectored thrust mechanism, for controlling the lateral position of said missile in flight.

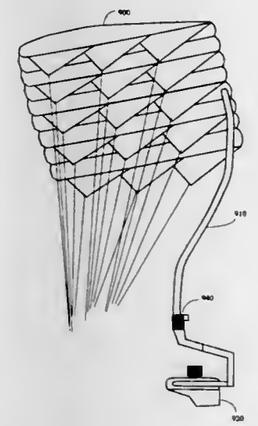


5,620,153

LIGHT AIRCRAFT WITH INFLATABLE PARACHUTE WING PROPELLED BY A DUCTED PROPELLER

Harold M. Ginsberg, 9727 Hagel Cir., Lorton, Va. 22079

Filed Mar. 20, 1995, Ser. No. 406,476
Int. Cl.[6] B64C *3/38*
U.S. Cl. 244—13 **10 Claims**



1. The inflatable parafoil wing comprising:

a flexible parafoil canopy having a substantially airfoil shape when inflated with a gas;

at least one gas valve for substantially sealing said flexible parafoil canopy so as to substantially maintain pressure within said flexible parafoil canopy;

a plurality of control and support lines, coupled to said flexible canopy for supporting a load;

a feed tube, coupled to said flexible parafoil canopy for supplying a pressurizing gas; and

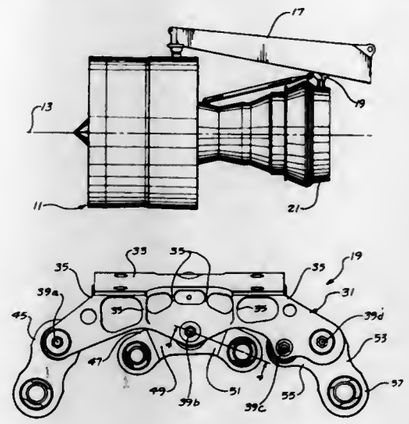
an internal combustion engine, coupled to the load, said internal combustion engine having an exhaust coupled to said feed tube so as to supply exhaust gases as pressurized gas to inflate said flexible parafoil canopy.

5,620,154

THREE LINK FAILSAFE ENGINE MOUNT

Kenneth E. Hey, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 3, 1995, Ser. No. 434,443
Int. Cl.[6] B64D *27/26*
U.S. Cl. 244—54 **12 Claims**



1. A fail-safe engine mount for attaching an engine casing of a jet engine to a support structure on an airplane, comprising:

(a) an upper fitting attachable to an airplane support structure, the upper fitting including a lower edge having first, second, third, and fourth upper connection locations located in a plane lying generally transverse to the longitudinal centerline of the engine;

(b) a clevis strip attached to the outer periphery of an engine casing in a plane lying generally transverse to the longitudinal centerline of the engine, the clevis strip including first, second, third, and fourth lower connection locations located in a plane lying generally transverse to the longitudinal centerline of the engine;

(c) a substantially straight first link connected to the upper fitting at the first upper connection location and connected to the clevis strip at the first lower connection location;

(d) a second link including a first arm and a second arm, the first arm connected to the clevis strip at the second lower connection location and connected to the upper fitting at the second upper connection location, the second arm defining an angle of roughly a 145° angle with respect to the first arm, the second arm further connected to the clevis strip at the third lower connection location; and

(e) a third link including a first arm and a second arm for stabilizing the first arm, the second arm connected to the upper fitting at the fourth upper connection location and connected to the clevis strip at the fourth lower connection location, the first arm defining an angle of roughly 105° with respect to the second arm, the first arm further connected to the upper fitting at the third upper connection location.

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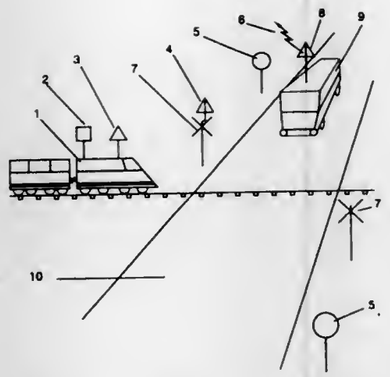
RAILWAY TRAIN SIGNALLING SYSTEM FOR REMOTELY OPERATING WARNING DEVICES AT CROSSINGS AND FOR RECEIVING WARNING DEVICE OPERATIONAL INFORMATION

Jan K. Michalek, 496 Willrich Dr., Newark, Ohio 43055

Filed Mar. 23, 1995, Ser. No. 409,142
Int. Cl.[6] B61L *23/00;25/00;7/06*
U.S. Cl. 246—121 **11 Claims**

1. A signalling system for a railroad comprising:

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a) a first transmitter located on a railroad train comprising a transmitter for transmitting first electromagnetic signals from said train sequentially to a plurality of warning devices located at railroad crossings along the route of said train, wherein said first signals comprise first digitally encoded identification means for specifying each of said railroad crossings and further comprise digitally encoded control means for controlling the function of said warning devices located at each of said crossings; and,

b) a second transmitter located at each of said railroad crossings comprising a transmitter for transmitting second electromagnetic signals from each of said crossings to said railroad train, wherein said second signals comprise digitally encoded identification means for identification of each of said crossings, and further comprise digitally encoded information relating the operational condition of said warning devices located at said crossings; and,

c) a first receiver located on said railroad train comprising a receiver for receiving said second signals and a memory for storing said second signals; and,

d) a second receiver located at each of said railroad crossings, comprising a means for comparing said first digitally encoded identification means with a predetermined digital identity code stored internally in said second receiver, and a means for controlling said warning devices at each of said railroad crossings in response to said digitally encoded control means received from said first transmitter whenever said transmitted identity code matches said internally stored identity code.

5,620,156

DEVICE FOR OPERATING A SWITCH FOR RAIL POINTS

Clarence Berggren, Saltsjö-Bro; Lars Eklund, Vällingby, and Uno Norrgård, Sorunda, all of Sweden, assignors to ABB Signal AB, Stockholm, Sweden

PCT No. PCT/SE94/00502, § 371 Date Nov. 24, 1995, § 102(e) Date Nov. 24, 1995, PCT Pub. No. WO94/27853, PCT Pub. Date Dec. 8, 1994

PCT Filed May 27, 1994, Ser. No. 549,756

Claims priority, application Sweden, May 27, 1993, 9301801

Int. Cl.[6] B61L *5/00*

U.S. Cl. 246—221 **14 Claims**

1. A device for operating a switch of a railway track, said switch including switch blades, said device comprising:

a drive module;

a linear operating module coupled to and driven by said drive module for generating a linear movement;

at least one locking module interconnected between said linear operating module and the switch blades for transferring said linear movement from said linear operating module to the switch blades, thereby moving the switch blades across a longitudinal direction of the railway track from a first position to a second position, said at least one locking module also locking the switch blades in said first position or said second position independently of said linear operating module;

a girder box forming a sleeper of the railway track for housing said drive module, said linear operating module, and said at least one locking module; and

means for joining said drive module, said linear operating module, and said at least one locking module, said joining means permitting independent replacement of said drive module, said linear operating module, and said at least one locking module;

said drive module, said linear operating module, and said at least one locking module being separate units.

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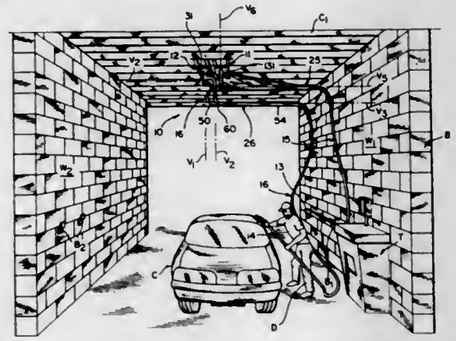
CAR WASH BOOM SYSTEM

Charles D. Titzer, 5977 Sharon Rd., Newburgh, Ind. 47630

Filed Nov. 4, 1994, Ser. No. 336,045

Int. Cl.[6] E21F *17/02*

U.S. Cl. 248—58 **46 Claims**



1. Apparatus for moving an element automatically between first and second positions comprising a support member, first means for supporting said support member for rotation in opposite directions about a first axis of rotation, an element, second means for supporting said element relative to said support member for rotation in opposite directions about a second axis of rotation, said first and second axes of rotation being disposed in substantially transverse relationship to each other, means for normally biasing said element relative to said support member in a direction tending to rotatably move said element about said second axis from a first position in which said element is disposed substantially in a horizontal plane toward a second position substantially parallel to and removed from said horizontal plane, and cooperative cam means and cam follower means for selectively permitting movement of said element by said biasing means from said first position toward said second position.

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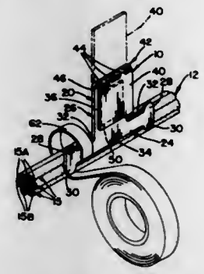
WIRING ASSEMBLY ADHESIVE FASTENER

Andrew F. Rodondi, Sharpsville, Pa.; David R. Peterson, Aurora, Ohio; John A. Yurtin, Southington, Ohio, and Charles M. Brigham, II, Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1994, Ser. No. 352,477

Int. Cl.[6] F16L *3/22*

U.S. Cl. 248—69 **4 Claims**



1. A fastener for attaching an electrical conductor to a support structure comprising a one piece, plastic T-shaped member having an elongated base which is adapted to be secured to said electrical conductor and a trunk extending normal to the base intermediate its ends,

said trunk having a first portion adjacent said base and a second portion remote from said base and integrally connected to said first portion along a fold line extending generally parallel to said base, a flat pressure sensitive adhesive pad secured to one side of said first portion, said second portion being folded along said fold line and into juxtaposed removable engagement with said flat adhesive pad on said one side of said first portion, said fastener being attachable to said support structure by unfolding said second portion from said flat adhesive pad on said first portion and thereafter pressing said pad onto said support structure.

5,620,159

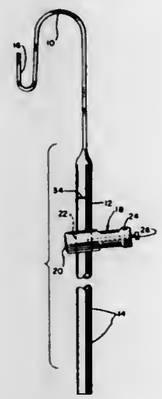
HANGER ASSEMBLY FOR LIQUID IRRIGATOR AND SLEEVE

Carl E. Tack, 407 Ashland Ave., River Forest, Ill. 60305

Filed Oct. 13, 1995, Ser. No. 543,023

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—214 **2 Claims**



1. Hanger assembly for liquid irrigator and sleeve, said assembly comprising a hanger rod comprising an upper downwardly facing hook portion, an elongated downwardly extending rod portion having a longitudinal axis extending from said upwardly facing hook portion, an upwardly facing hook extending laterally from said downwardly facing hook, a hanger arm slidably mounted on said rod portion, a plurality of openings in said rod portion along said longitudinal axis, and a pin associated with said hanger arm for engaging one of said openings, whereby said hanger arm may be adjustably positioned on said rod portion.

5,620,160

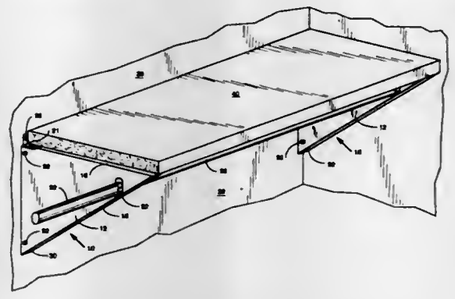
SHELF SUPPORT ASSEMBLY

Charles R. Grabe, 1057 General Sullivan Dr., West Chester, Pa. 19382

Continuation of Ser. No. 217,058, Mar. 24, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 658,248

Int. Cl.[6] A47G *29/02*

U.S. Cl. 248—235 **5 Claims**



1. A shelf support assembly comprising:

a generally flat body member formed from particle board;

said body member having opposite flat side faces, a generally elongated linear inner section shaped to snugly abut a planar wall surface, an outer section opposite said inner section, and an elongated top section shaped to receive an underside section of a flat shelf member, said top section having an indentation at an inner end region;

a first securing means including a generally L-shaped bracket member received in said indentation for securing said body member for securing said body member to a wall surface;

attachment means penetrating into said body for attaching said first securing means to said body; and

first holding means extending laterally of said side faces in the region of said first securing means and adjacent to and on the inner section of said body member side of said first attachment means and adjacent said attachment means and said first securing means for holding said body member against splitting or separating due to the penetration of said attachment means into said body member and/or the application of a downwardly directed force on said body member.

5,620,161

LOCKING PEDESTAL FOR AUTOMOTIVE SEATING

Donald W. Wisner, Grand Haven, and Erik J. Denslow, Spring Lake, both of Mich., assignors to Track Corp., Grand Haven, Mich.

Filed Aug. 25, 1995, Ser. No. 519,452

Int. Cl.[6] F16M *13/00*

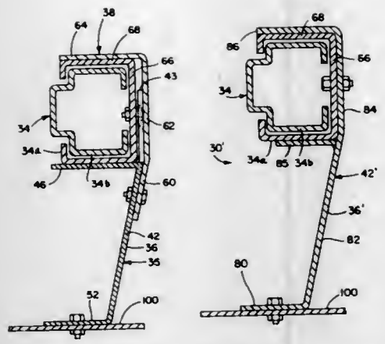
U.S. Cl. 248—429 **12 Claims**

1. An automotive vehicle seat assembly, comprising:

a pedestal adapted to be mounted to an automotive vehicle;

a rail mechanism supported on said pedestal, said rail mechanism including a fixed rail and a movable rail; and

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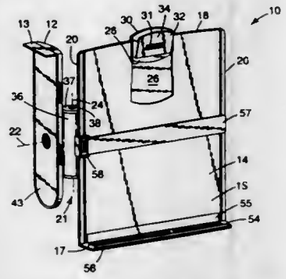


an interlock means for retaining said rail mechanism on said pedestal, said interlock means fixedly secured to and extending from said pedestal and over both rails of said rail mechanism.

5,620,162
ADJUSTABLE PAPER HOLDER

Tanya L. Beckwith, Eagan; Wayne K. Darvell, St. Paul, both of Minn.; Lawrence J. Fenske, Oregon Township, Dane County, Wis.; Kenneth J. Kirchhoff, Gem Lake; Lynette M. Miles, Lakeville, both of Minn.; Steven C. Suchanek, Madison, Wis., and Warren J. Wasescha, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1994, Ser. No. 324,650
Int. Cl.[6] B41J *11/02*
U.S. Cl. 248—442.2 **10 Claims**



10. An adjustable paper holder for use on a computer monitor having a viewed front surface and normally vertical opposite side surfaces disposed at about right angles with respect to said viewed surface, said paper holder comprising:

a support member adapted to be attached along either one of the side surfaces of the monitor;

a sheet support plate having front and rear major surfaces, a bottom edge, an opposite top edge, and side edges extending between said top and bottom edges;

mounting means for mounting said sheet support plate on said support member for relative pivotal movement around a pivot axis parallel to the edges of the sheet support plate and adjacent one of said edges, and

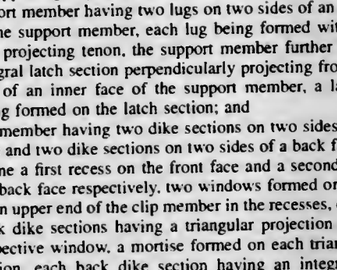
means for frictionally retaining said sheet support plate at any desired position relative to said support member that said support plate can be moved by said mounting means;

said means for mounting said sheet support plate on said support member for pivotal movement around said pivot axis comprises first and second hinge members having pivot portions mounted on each other for pivotal movement around said pivot axis, said second hinge member having a rectangular projecting portion projecting at about a right angle to said pivot axis, said sheet support plate has spaced rails along said rear surface, said spaced rails having distal edges and opposed lips projecting toward each other from said distal edges for removably receiving said projecting portion to support the sheet support plate from the projecting portion with said pivot portions adjacent either of the edges of the sheet support plate; said first hinge member has a projecting portion projecting at about a right angle to said pivot axis and supported by said support member.

5,620,163
SUPPORTING CLIP DEVICE

Ko-Lee Wu, 1F, No. 7, Lane 26, Chien Kong St., Shih Lin, Taipei, Taiwan

Filed Mar. 28, 1995, Ser. No. 411,516
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—688 **2 Claims**



1. A supporting clip device comprising;

a support member having two lugs on two sides of an upper end of the support member, each lug being formed with an integral projecting tenon, the support member further having an integral latch section perpendicularly projecting from a lower end of an inner face of the support member, a latch tenon being formed on the latch section; and

a clip member having two dike sections on two sides of a front face and two dike sections on two sides of a back face, which define a first recess on the front face and a second recess on the back face respectively, two windows formed on two sides of an upper end of the clip member in the recesses, each of the back dike sections having a triangular projection beside the respective window, a mortise formed on each triangular projection, each back dike section having an integral stopper board at a middle portion thereof, a notch being formed on a bottom end of the clip member, whereby the lugs of the support member are receivable through the windows of the clip member to fit the projecting tenons of the lugs into the mortises of the clip member to permit the support member to be pivoted about the projecting tenons away from the clip member through a certain angle or into the first recess of the clip member, the latch tenon of the latch section on the bottom of the support member being engageable with the bottom notch of the clip member for fixing the support member in the first recess of the clip member, and the stopper boards of the back dike sections of the clip member and the second recess collectively defining a clipping space for receiving a resilient clip plate.

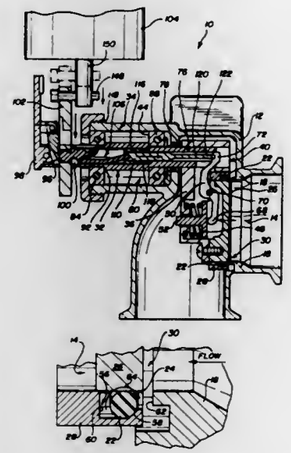
5,620,164

Patent Not Issued For This Number

5,620,165
RETRACTING RING SEAL VALVE

W. Clark Dean, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 17, 1995, Ser. No. 543,951
Int. Cl.[6] F16K *25/00*
U.S. Cl. 251—158 **15 Claims**



1. A retracting ring seal valve for adjustably restricting and permitting fluid flow, comprising:

a. a valve body that defines a central passage through which the fluid passes, a side chamber adjacent to and in fluid communication with the central passage, and a sealing shoulder around a circumference of the central passage; and

b. a gate assembly secured within the valve body to adjustably move between the central passage and side chamber, the gate assembly having a ring seal surrounding a peripheral edge of a sealing surface of the gate assembly, the ring seal being adjustably moved by a retainer to seal or open a flow gap defined between the sealing surface and sealing shoulder so that whenever the ring seal seals the flow gap the gate assembly thereby contacts the sealing shoulder to restrict fluid flow through the central passage, and whenever the retainer moves the ring seal out of the flow gap the gate assembly has no contact with the sealing shoulder and moves into the side chamber to permit unrestricted flow of the fluid through the central passage.

5,620,166
STEM AND NUT WITH BEARING FOR USE IN A MOTOR OPERATED VALVE

Bruce A. Lord, 652 Pinkham Brook Rd., Durham, Me. 04222, and Chester F. Cynoski, 2 North St., North Walpole, N.H. 03609

Filed Aug. 2, 1994, Ser. No. 284,239
Int. Cl.[6] F16K *31/50;31/53*
U.S. Cl. 251—267 **17 Claims**

1. A valve, comprising:

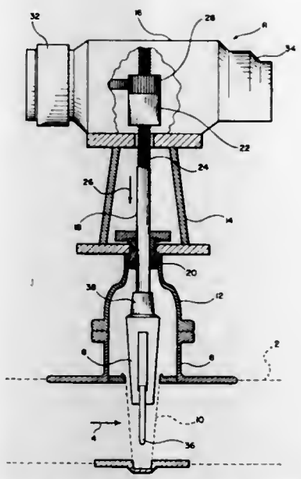
a) a body for connecting to a pipe;

b) said body having a passageway therethrough for communicating with the pipe;

c) a member disposed within said passageway, said member being movable between open and closed positions for permitting and stopping flow through the pipe, respectively;

e) a stem secured to said member;

f) a nut operably secured to said stem, said nut being axially stationary relative to said stem and rotatable thereabout;



g) an actuator for rotating said nut such that rotation of said nut causes said stem to move said member between said open and closed positions;

h) a first bearing adapted to radially center said stem within said nut, said first bearing adapted to permit said stem to slide axially relative thereto;

i) a second bearing operably associated with said first bearing adapted to reduce rotational friction between said nut and said stem;

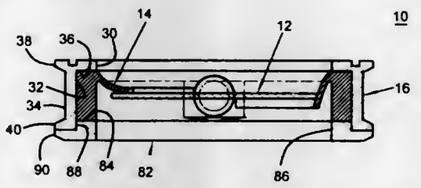
j) said nut including a recess at one end; and

k) said first and second bearings are disposed within said recess and being in operative engagement with one another.

5,620,167
MODULAR BUTTERFLY VALVE FOR TABLETS, CAPSULES AND THE LIKE

Helmut Habicht, 39 W. Wildewood Rd., Saddle River, N.J. 07458

Filed Feb. 22, 1996, Ser. No. 603,902
Int. Cl.[6] F16K *1/22*
U.S. Cl. 251—306 **2 Claims**



1. A modular butterfly valve for interrupting the flow of product such as tablets, capsules and the like without damaging said product comprising:

a) a disc member having a predetermined radius and being adapted to be rotated between an open position and a closed position, said disc member having opposing hubs, each hub member having a shaft member extending therefrom, a first of said shaft members having a sufficient length for extending exterior of the butterfly valve, a second of said shaft members having a determined length;

b) a housing having a first cylindrical through bore and a counterbore formed concentrically with said first through bore, said counterbore having a determined depth for providing a shelf portion, said housing having a first retaining flange and a second retaining flange, said first retaining flange being

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selectively contoured for engagement by a quick coupling ring, said second retaining flange being selectively contoured for engagement by second quick coupling ring, a transverse aperture being sized for allowing said first of said shaft members to pass therethrough with a predetermined clearance;

c) an elastomer valve seat having an outer diameter, a seat portion, and a pair of second transverse apertures, the seat portion having a pair of sealing lips being cantilevered at a selected angle from a selected portion of the valve seat near one end of the seat portion, the sealing lips having a predetermined thickness, an attaching end, and a distal end, each of the attaching ends forming a first throat portion, the distal end being contoured to provide a second throat portion, a radius of the second throat portion being smaller than the predetermined radius of the disc member; each of the pair of sealing lips having a predetermined length for positioning said distal end at a selected position with respect to an axis of said disc member, the sealing lip having a predetermined arcuate length;

d) a clamping ring having a second through bore, a pilot diameter, and a third retaining flange, the second through bore being substantially equal in diameter to said first through bore, the pilot diameter of said clamping ring being adapted to removably seat in said counterbore while retaining the valve seat in a preferred arrangement between a face of the clamping ring and the shelf portion of the housing, the third retaining flange being sized and contoured for a coupled abutment with the second retaining flange of the housing by the quick coupling ring;

wherein said disc member is resiliently suspended and biased by the valve seat for allowing self centering of the disc member in a direction transverse a direction of material flow, each distal end of the sealing lip of the valve seat abutting the disc member when in a closed position absent a cutting action for preventing damage to the product, and

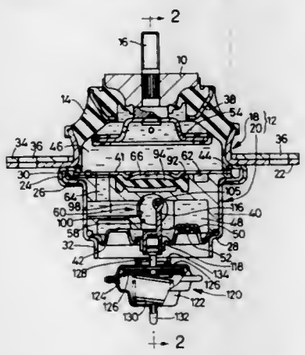
wherein one of the sealing lips abuts one side of the disk member, when the disk member is in the closed position and a second of the sealing lips abuts a peripheral edge of the disk member when the disk member is in the closed position.

5,620,168

FLUID-FILLED ELASTIC MOUNT HAVING ORIFICE PASSAGE CONTROL ROTARY VALVE CONNECTED TO DRIVE ROD AT RADIAL POSITION OFFSET FROM ROTATION AXIS OF THE VALVE

Shuji Ohtake, Utsunomiya; Rentaro Kato, and Tatsuya Suzuki, both of Kasugai, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Jan. 2, 1996, Ser. No. 582,068
Int. Cl.[6] F16M *7/00*; F16F *13/00*
U.S. Cl. 267—140.13 **10 Claims**



1. A fluid-filled elastic mount comprising:

a first mounting member to be attached to one of two members of a vibration system;

a generally cylindrical second mounting member to be attached to the other of said two members, said second mounting member including a cylindrical wall;

an elastic body elastically connecting said first and second mounting members so as to fluid-tightly close one of axially opposite open ends of said second mounting member;

a flexible diaphragm fluid-tightly closing the other of said axially opposite open ends of said second mounting member, and cooperating with said elastic body and said second mounting member to define a fluid-tight space;

a partition member disposed in said fluid-tight space so as to divide said fluid-tight space into a pressure-receiving chamber which is partially defined by said elastic body and filled with a non-compressible fluid and whose pressure changes upon application of a vibrational load to the elastic mount, and an equilibrium chamber which is partially defined by said flexible diaphragm and filled with the non-compressible fluid and whose volume is variable by displacement of said flexible diaphragm, said partition member having a sliding surface which defines a valve hole;

means for defining at least one orifice passage for fluid communication between said pressure-receiving and equilibrium chambers;

a rotary valve accommodated in said valve hole such that said rotary valve is rotatable in sliding contact with said sliding surface about an axis thereof which extends in a radial direction of said second mounting member, said rotary valve having a cutout communicating with said equilibrium chamber, and including a valve portion adjacent to said cutout, said at least one orifice passage being open on said sliding surface of said valve hole, so that at least one of said at least one orifice passage is selectively closed by said valve portion and opened through said cutout in communication with said equilibrium chamber; and

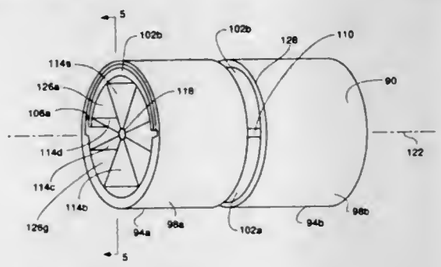
a motion converting mechanism for converting a reciprocating movement into a rotary motion of said rotary valve, said motion converting mechanism including a drive rod connected at one of opposite ends thereof to said rotary valve at a position which is offset from said axis of said rotary valve in a radial direction of said rotary valve, said drive rod extending through said cutout, said equilibrium chamber and said flexible diaphragm, the other of said opposite ends of said drive rod being located outside said fluid-tight space for receiving said reciprocating movement.

5,620,169

ROTARY MOUNT INTEGRAL FLEXURAL PIVOT WITH BLADES WHICH ARE INTEGRALLY INTERCONNECTED AT THE BLADE INTERSECTION

Dan A. Payne, Morrison, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Nov. 2, 1994, Ser. No. 333,496
Int. Cl.[6] F16D *1/00*
U.S. Cl. 267—160 **7 Claims**



1. A flexural pivot, comprising:

a first mount comprising a first hollow cylindrical mounting portion and a first tab extending from an end of said first cylindrical mounting portion, wherein said first cylindrical mounting portion comprises a first interior surface and a first exterior surface, wherein said first tab comprises a first interior surface and a first exterior surface;

a second mount comprising a second hollow cylindrical mounting portion and a second tab extending from an end of said second cylindrical mounting portion, wherein said second cylindrical mounting portion comprises a second interior surface and a second exterior surface, wherein said second tab comprises a second interior surface and a second exterior surface, wherein said first tab of said first mount extends into an interior of said second cylindrical mounting portion of said second mount whereby said first exterior surface of said of said first tab interfaces with said second interior surface of said second cylindrical mounting portion, wherein said second tab of said second mount extends into an interior of said first cylindrical mounting portion of said first mount whereby said second exterior surface of said second tab interfaces with said first interior surface of said first cylindrical mounting portion, wherein said first and second cylindrical mounting portions of said first and second mounts, respectively, are axially aligned; and

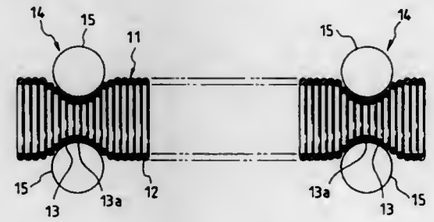
first and second flexure member integrally interconnected with each of said first and second mounts, said first flexure member being integrally interconnected with said first interior surface of said first cylindrical mounting portion of said first mount and being integrally interconnected with said second interior surface of said second tab of said second mount, said second flexure member being integrally interconnected with said second interior surface of said second cylindrical mounting portion of said second mount and being integrally interconnected with said first interior surface of said first tab of said first mount, wherein said first and second flexure members cross at an intersection and are integrally interconnected with each other along substantially an entire extent of said intersection, wherein said first and second mounts are movable relative to each other by a flexing of said first and second flexure members by a rotation of said first cylindrical mounting portion relative to second cylindrical portion substantially about said intersection and wherein said flexural pivot is integrally formed from a single piece of feed stock as a unitary structure which is free from any mechanical connection.

5,620,170

COIL SPRING SUPPORTING DEVICE

Tomoyuki Shibata; Yoshimi Noro, and Shouji Kimura, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation of Ser. No. 300,103, Sep. 1, 1994, abandoned. This application Nov. 22, 1994, Ser. No. 345,770
Claims priority, application Japan, Sep. 6, 1993, 5-048360 U
Int. Cl.[6] F16F *1/06*
U.S. Cl. 267—179 **2 Claims**



1. A coil spring supporting device comprising:

a coil spring having a length between opposite ends and including a plurality of helical windings having a winding diameter, the coil spring further having two connection portions spaced along the length thereof to be located between said opposite ends, said connection portions being helical windings smaller in winding diameter than the helical windings of the coil spring adjacent opposite sides of each connection portion, thereby to establish at each of said connection portions, an external winding depression; and

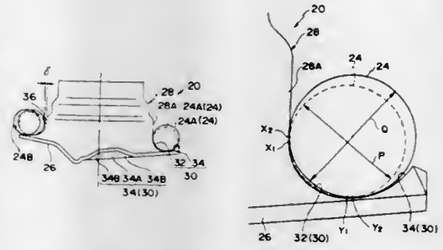
a pair of engaging members for holding the coil spring, the engaging members being fitted into the external winding depressions established by the two spaced connection portions of the coil spring, respectively.

5,620,171

SPRING SHEET STRUCTURE

Hideaki Wakatsuki, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1995, Ser. No. 532,276
Claims priority, application Japan, Oct. 5, 1994, 6-241669
Int. Cl.[6] F16F *1/12*
U.S. Cl. 267—179 **20 Claims**



1. A spring sheet structure supporting a coil spring used as a suspension spring, comprising:

a flange portion, an end portion of a coil spring abutting and engaging said flange portion;

a swelled portion provided at said flange portion, an outer diameter dimension of said swelled portion being set smaller than an inner diameter dimension of the coil spring, the end portion of the coil spring being disposed at an outer side of said swelled portion; and

positioning means provided at two peripheral direction regions of said flange portion which two regions abut and engage a wound seat portion of the end portion of the coil spring, said positioning means having different radii of curvature at a portion of said positioning means which faces an outer peripheral surface side of the wound seat portion of the coil spring and at a portion of said positioning means which faces an inner peripheral surface side of the wound seat portion of the coil spring, and said positioning means abutting the outer peripheral surface side of the wound seat portion in a point-contact state so as to make the inner peripheral surface side of the wound seat portion abut said swelled portion in a point-contact state.

5,620,172

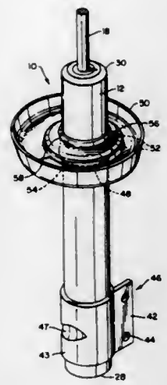
HYDRAULIC DAMPER

Gary C. Fulks, Spring Valley, Ohio; Nicholas Jones, La Morlaye, France; Manuel T. Barbosa, Cadiz, Spain; Francisco J. S. Jimenez, Cadiz, Spain; Antonio Perez De La Lastra Arjona, Cadiz, Spain; Miguel C. Garcia, Cadiz, Spain, and Jose I. M. Gorostidi, Cadiz, Spain, assignors to Delphi France Automotive Systems, Gennevilliers, France

Filed Jan. 30, 1995, Ser. No. 380,549
Claims priority, application United Kingdom, Nov. 9, 1993, 9323047
Int. Cl.[6] B60G *13/00*
U.S. Cl. 267—221 **2 Claims**

1. A hydraulic damper for a motor vehicle comprising a longitudinally extending tube, a piston assembly slidingly fit within the longitudinally extending tube for reciprocating movement therein and a separately formed spring seat positioned on the tube, wherein

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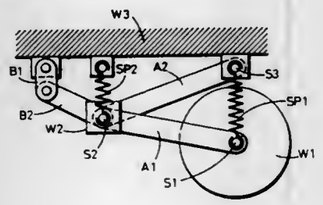
the longitudinally extending tube is substantially filled with a fluid that damps the reciprocating movement of the piston assembly within the longitudinally extending tube, wherein the tube is formed extruded aluminum or aluminum alloy, and the spring seat is formed from aluminum or aluminum alloy and wherein the spring seat is held on the longitudinally extending tube solely by engagement between the spring seat and longitudinally extending tube without welding and without fasteners, wherein the longitudinally extending tube includes a first circumferentially extending bead, wherein the spring seat comprises a cylindrical section which overlies a portion of the longitudinally extending tube abutting the first circumferentially extending bead and wherein a second circumferentially extending bead is formed in the longitudinally extending tube after the spring seat is overlayed on the longitudinally extending tube to secure the spring seat on the longitudinally extending tube.

5,620,173

DOUBLE-ACTING DISTRIBUTED PRESSURE VIBRATION PROOF STRUCTURE

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed May 16, 1995, Ser. No. 442,097
Int. Cl.[6] B60G *11/14*
U.S. Cl. 267—253 **7 Claims**



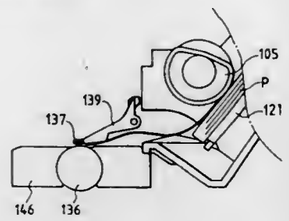
1. A vibration absorbing linkage system located between relatively movable first and second carriers comprising:
a) a first arm having a first end portion pivotally attached to the first carrier and a second end;
b) a second arm having a first end portion pivotally attached to the second carrier and a second end;
c) a joint hinge structure pivotally interconnecting the second ends of the first and second arms such that the first and second arms form a generally "V"-shaped configuration;
d) means for limiting the pivoting angle between the second arm and the second carrier, comprising:
i) a first dragging arm pivotally attached to the second carrier; and,
ii) a second dragging arm pivotally attached to the joint hinge structure and to the first dragging arm; and,
e) a first spring connected between the joint hinge structure and the second carrier.

5,620,174

SHEET CONVEYING APPARATUS

Masahiro Taniguro; Tetsuo Suzuki; Soichi Hiramatsu; Hiroyuki Saito; Haruyuki Yanagi, all of Yokohama; Takashi Nojima, Tokyo; Satoshi Saikawa, Inagi; Hiroyuki Kinoshita, Kawasaki, and Hideaki Kawakami, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 455,539, May 31, 1995, abandoned, which is a division of Ser. No. 97,199, Jul. 27, 1993, abandoned. This application Jul. 3, 1996, Ser. No. 674,990
Claims priority, application Japan, Jul. 31, 1992, 4-225147; Jul. 31, 1992, 4-225148
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10.12 **18 Claims**



1. A sheet conveying apparatus, comprising:
feeding means for feeding a sheet;
a rotary member for conveying the sheet fed by said feeding means;
pressing means for nipping the sheet by cooperating with said rotary member; and
controlling means for controlling rotation of said rotary member in a normal direction or a reverse direction, wherein said rotary member is rotated in the normal direction to convey the sheet fed by said feeding means in a forward direction by nipping the sheet in cooperation with said pressing member, then said rotary member is rotated in the reverse direction to convey the sheet in a backward direction until a leading end of the sheet nipped by a nipping portion between said rotary member and said pressing means is released to thereby cause the sheet to bend between the nipping portion and said feeding means with the leading of sheet being abutted against the nipping portion, and then said rotary member is rotated in the normal direction to convey the sheet in the forward direction, said controlling means controlling said rotary member in correspondence with a first mode for a first sheet thickness and a second mode for a second sheet thickness thicker than the first sheet thickness, so that in the first mode said rotary member starts conveyance of the sheet in the reverse direction after conveying the sheet by a first predetermined amount, and in the second mode said rotary member starts conveyance of the sheet in the reverse direction after conveying the sheet by a second predetermined amount larger than the first predetermined amount.

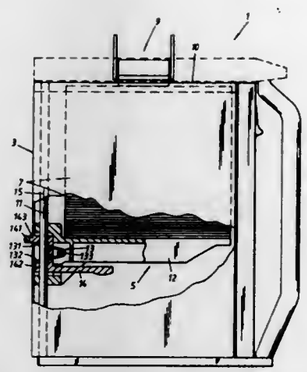
5,620,175

SHEET FEEDING APPARATUS HAVING A STACK ADVANCING PLATE AND PLATE LOCKING SPRING ELEMENT

Peter Hesoun, Linköping, Sweden, assignor to De La Rue Inter Innovation AB, Sweden

Filed Feb. 16, 1996, Ser. No. 602,962
Claims priority, application Sweden, Feb. 17, 1995, 9500591
Int. Cl.[6] B65H *3/04;1/08;1/26*
U.S. Cl. 271—34 **11 Claims**

1. An arrangement for feeding sheets from a bundle of sheets, comprising a wheel, roller or belt located, in operation, at one end



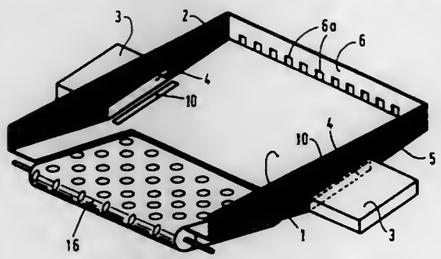
of the bundle and functioning to feed-out the outermost sheet of the bundle, and lifting means for lifting the bundle in a direction towards said wheel, roller or belt, said lifting means comprising a post and a bundle-carrying plate which can be moved up and down said post, characterized by a spring element having a free-end fitted on said post and defining an angle of other than 90° with the longitudinal axis of said post, and a remaining end attached to said plate for movement perpendicularly to said post, said spring element adapted to cooperatively establish a "jamming effect" with said post to operatively lock said plate to said post in a rest position; drive means for moving said plate relative to said post; and by an actuator which is fitted to said post close to said spring element, which is continuously displaceable along said post, and which is releasably attached mechanically to said drive means for movement of said plate relative to said post, wherein said spring element and said actuator are structured such that said spring element, responsive to displacement of said actuator along said post, releases said "jamming effect" to enable said plate to be displaced along said post.

5,620,176

SHEET DISCHARGING APPARATUS

Christopborus L. Spoorenberg, Nuenen, and Petrus J. M. Thissen, Heythuysen, both of Netherlands, assignors to OCÉ-Nederland, B.V., Venlo, Netherlands

Filed Mar. 8, 1995, Ser. No. 400,810
Claims priority, application Netherlands, Mar. 14, 1994, 9400396
Int. Cl.[6] B65H *3/14*
U.S. Cl. 271—98 **12 Claims**



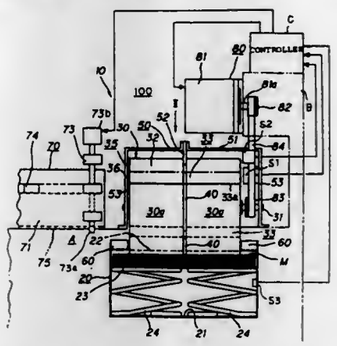
1. A sheet discharging device for discharging sheets one by one from the bottom of a stack of sheets, comprising:
a holder provided with a support surface for a stack of sheets, said support surface being provided with one or more openings in which a first vacuum can be created by suction means so as to suck a bottom sheet against said support surface,
means for blowing air over said support surface at least against one side of said stack perpendicular to the direction of the transport of said sheets, in order to create an air layer at least between said bottom sheet and that stack of sheets thereabove,
transport means for discharging said bottom sheet, and
means whereby, in dependence on the discharge of said bottom sheet from said one or more openings, a second higher vacuum is temporarily created in said one or more openings in order to bring the next sheet to the support surface.

5,620,177

PAPER SLIP STORAGE SYSTEM

Takatoshi Takemoto, Tokyo; Noriaki Kano; Eiji Ito, both of Iwate-ken; Tsutomu Onodera, Hanamaki, and Kozo Sekimoto, Sendai, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

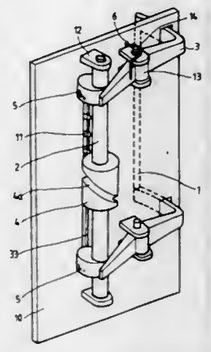
PCT No. PCT/JP93/00701, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO93/24402, PCT Pub. Date Dec. 9, 1993
PCT Filed May 26, 1993, Ser. No. 347,455
Claims priority, application Japan, Jun. 3, 1992, 4-142987
Int. Cl.[6] B65H *43/00*
U.S. Cl. 271—176 **22 Claims**



1. A paper slip storage system having a paper slip storage container being placed in conjunction with a transport mechanism for storing transported paper slips, wherein the improvement comprises:
a temporary housing section for receiving a transported paper slip and temporarily housing it;
a rotational displacement mechanism for rotionally displacing the temporary housing section for guiding the paper slip housed therein to a paper slip storage position of the paper slip storage container; and
a separation mechanism for blocking rotation of the paper slip housed in said temporary housing section against operation of rotational displacement of said temporary housing section and separating the paper slip from said temporary housing section at the paper slip storage position of the paper slip storage container,
said rotational displacement mechanism having a rotation body and a drive mechanism for rotationally driving said rotation body,
said paper slip storage container having an area for stacking and storing paper slips separated from said temporary housing section and a mechanism being provided under said area for pressing the stacked paper slips in a direction of said rotation body,
said paper slip pressing mechanism pressing the paper slips so that the uppermost one of the stacked paper slips comes into contact with an outer peripheral surface of said rotation body,
said temporary housing having a slit-like opening along an axial direction on the outer peripheral surface of the rotation body, and
said opening is cut as to extend to at least an end of the rotation body for accepting a paper slip along the axial direction of said rotation body.

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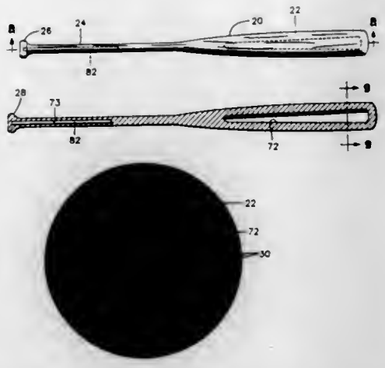
5,620,178
SHEET POST TREATMENT APPARATUS FOR STAPLING HAVING A SHEET ALIGNING MEMBER
Yeon K. Jung, Seoul, Rep. of Korea, assignor to Sindo Richo Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 9, 1995, Ser. No. 401,247
Claims priority, application Rep. of Korea, Mar. 10, 1994, 94.4829
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—293 **3 Claims**



1. A sheet post treatment apparatus for stapling equipped with a side plate having a slot liner of a designated size, comprising:
a plurality of bin trays formed with an aligning groove of a designated size at one side of each bin tray to provide a moving path for an aligning operation;
a rotation center shaft located at one side of the side plate and attached closely to upper and lower ends of the slot liner;
a bin tray moving means for moving said each bin tray upward or downward at certain intervals, said bin tray moving means being engaged with bin pins of said plurality of bin trays protruding through the slot liner, thus providing a sheet receiving space for discharged sheets;
at least one cam means located at one side of said bin tray moving means and eccentrically attached to said rotation center shaft;
an aligning means, one end thereof is connected to one side of said cam means and another end thereof is passed through the side plate, and is rotated by said cam means; and
a restoration spring, one end thereof is fixed at the side plate and the other end thereof is hung up on one side of said aligning means, providing said aligning means with restoration power to restore the aligning means to an original position after said aligning means is rotated by the rotation power of the cam means.

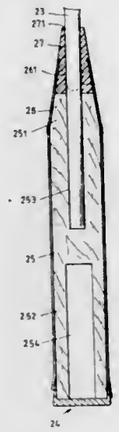
5,620,179
LAMINATED WOOD BAT AND METHOD OF MAKING SAME
Jack W. MacKay, Jr., Rte. 9, Box 185, Mt. Pleasant, Tex. 75455
Filed Aug. 3, 1995, Ser. No. 510,847
Int. Cl.[6] A63B *59/06*
U.S. Cl. 473—564 **17 Claims**

1. A laminated wood ball bat comprising a plurality of discrete thin wood veneer strips, said strips extending longitudinally of the bat in generally parallel relation and bonding material bonding said strips to each other to form said laminated bat, said wood veneer strips having longitudinal edge portions terminating at transversely remote surfaces of the bat, said bat including a barrel, a barrel end and a handle with the barrel defining a hitting zone for the bat, said barrel including a hollow core internally thereof and extending longitudinally of the barrel, said hollow core being generally centered in the barrel with respect to the outer periphery of the barrel of the bat and spaced from the barrel end of the bat, said



hollow core being formed by a plurality of said veneer strips having continuous outer edge portions and a void central portion defining the hollow core, said void central portions having one end terminating inwardly of the barrel end of said bat and an opposite end terminating toward the handle of said bat, said outer edge portions of said veneer strips including longitudinally and transversely continuous end portions defining a continuous barrel end.

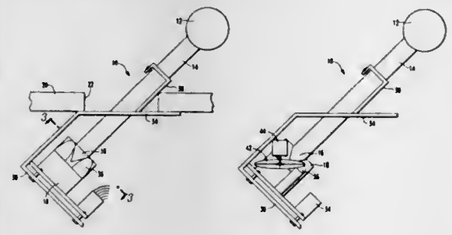
5,620,180
GRIP OF BADMINTON RACKET
Arthur Hong, No. 96, Sec. 4, Pei-Ping Rd., Taichung City, Taiwan
Filed Feb. 7, 1996, Ser. No. 597,987
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—521 **1 Claim**



1. A badminton racket comprising:
a head frame;
a gut located in said head frame;
a shaft of an elongated construction and extending from said head frame in a direction away from said head frame; and
a handle of a rodlike construction and having a tapered end fastened with a free end of said shaft, said handle comprising a main body with a grip portion, said main body provided with a tapered end which is fitted over with a front jacket, said main body further provided with an axial hole extending from said tapered end into said grip portion for receiving securely said shaft;
wherein said grip portion of said main body has a length of 15.5 centimeters or more; wherein said main body is provided in

an interior thereof with a slot of a predetermined length and extending from a free end of said main body in a direction toward said tapered end of said main body; and wherein said front jacket is provided with a V-shaped cut corresponding in location to a longitudinal center line of said gut to form a receiving space between said front jacket and over said tapered end of said main body, said receiving space intended for accommodating a shock-absorbing body such that a tapered end of a shock-absorbing body and said front jacket form together a tapered end of said handle.

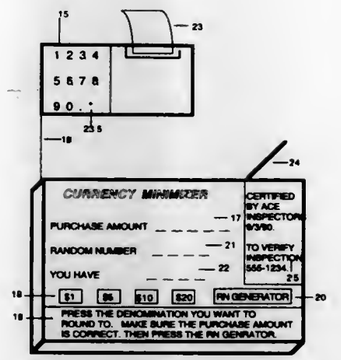
5,620,181
SIGNALING DEVICE FOR AMUSEMENT GAME
Bryan P. Hansen, DesPlaines, Ill., assignor to Capcom Coin-Op, Inc., Arlington Heights, Ill.
Filed Feb. 23, 1995, Ser. No. 392,538
Int. Cl.[6] A63F *7/30*
U.S. Cl. 273—118 A **9 Claims**



1. An amusement game, comprising:
a playfield;
a triggering device disposed on said playfield;
a microprocessor electrically linked to said triggering device and responsive to an activation thereof;
a light source controlled by said microprocessor for producing a color of light in response to said activation of said triggering device;
an optical lead optically connected to said light source; and
an optical receptor optically connected to said optical lead whereby said optical receptor will become illuminated in said color of light.

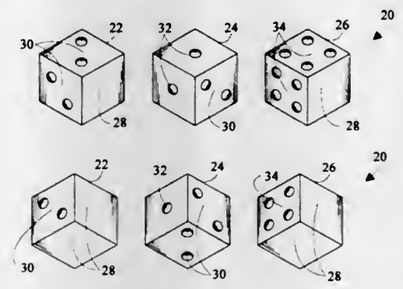
5,620,182
EXPECTED VALUE PAYMENT METHOD AND SYSTEM FOR REDUCING THE EXPECTED PER UNIT COSTS OF PAYING AND/OR RECEIVING A GIVEN AMMOUNT OF A COMMODITY
Michael T. Rossides, 3666 Upton St., NW., Washington, D.C. 20008
Continuation-in-part of Ser. No. 804,479, Dec. 13, 1991, Pat. No. 5,269,521, which is a continuation-in-part of Ser. No. 609,063, Nov. 7, 1990, Pat. No. 5,085,435, which is a continuation-in-part of Ser. No. 571,126, Aug. 22, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 165,676
Int. Cl.[6] A63F *9/00*; **G06F** *17/60*
U.S. Cl. 273—138.2 **2 Claims**

1. A probabilistic method and system for sorting customers that includes a random number generator and means for registering customer identification information, for setting time periods when a customer is eligible to win, for setting the chances of winning, for operating the random number generator to determine whether customer has won, and for recording how many times a customer has engaged in the random selection process;
said method and system also comprising the following steps:
a. using said probability setting means to set a probability that a customer will be able to buy a commodity at a certain



price, said probability represented by a fraction X/N, less than 1, where X and N are positive integers,
b. using said registration means to record a customer's identification information,
c. operating said random number generator to determine whether said customer has won the right to buy the commodity at said price, said random number generator selecting an integer from 1–N,
c1. if the integer selected is less than or equal to X then the customer wins,
c2. if not, the customer does not win,
d. using said registration means to record that said customer has engaged in said random selection process.

5,620,183
SET OF DICE FOR PRODUCING A RANGE OF NUMERICAL VALUES AND METHOD OF USE
John Skratulia, 11402 Howard St., Whittier, Calif. 90601
Filed Sep. 22, 1995, Ser. No. 532,302
Int. Cl.[6] A63F *9/04*
U.S. Cl. 273—146 **4 Claims**



1. A method for randomly generating one of the numbers one through eight, with each number one through eight having an equal 0.125 probability of being generated, comprising the steps of:
providing first, second, and third six-sided dice, said first die having a representation of the number zero disposed on three sides and a representation of the number two disposed on three sides; said second die having a representation of the number one disposed on three sides and a representation of the number two disposed on three sides; and, said third die having a representation of the number zero disposed on three sides and a representation of the number four disposed on three sides;
rolling said first, second, and third six-sided dice, after rolling said first, second, and third six-sided dice, each die having an uppermost side; and,

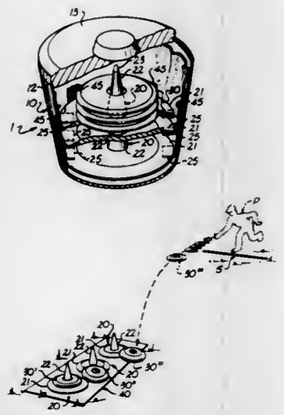
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numerically totaling said uppermost sides of said first, second, and third six-sided dice.

5,620,184

Patent Not Issued For This Number

5,620,185
RING TOSS GAME
Harvey C. Robertson, 112 Hilltop St., Simpsonville, S.C. 29681
Filed Feb. 29, 1996, Ser. No. 610,151
Int. Cl.[6] A63B *67/06*
U.S. Cl. 273—338 **4 Claims**



1. A ring toss game comprising:
at least one flying article having a hole at its center for throwing by a player; and
at least one target, said target comprising:
a circular flange having at least one fastening element for assuring said target remains properly positioned, said at least one fastening element comprising a spike;
a post extending upward from said circular flange and having a diameter smaller than that of said hole in said flying article, wherein said spike fits within a tapered portion of said post; and
a tip on top of said post, wherein said tip has a button for pushing said spike out of said tapered portion of said post;
whereby a player attempts to position said flying article on said circular flange by throwing said ring-shaped flying article at said target and causing said tip and post to pass through the center of said flying article.

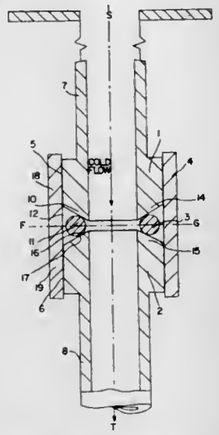
5,620,186
SOCCER TRAINING AND PRACTICE DEVICE
Primo P. Dudley, 1352 Maryland Dr., Concord, Calif. 94521
Filed Aug. 19, 1996, Ser. No. 697,082
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—423 **1 Claim**

1. An apparatus for holding and retrieving a soccer ball comprising:
(a) an anchor means;
(b) an elongated bungee cord member having a first end and second end;
(c) an said elongated bungee cord adjustable from variable lengths approximately 1–20 feet by wrapping the said cord around the anchor;



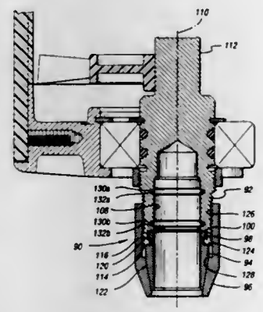
(d) An adjustable soccer ball casing for holding said soccer ball, said soccer ball holder including two continuous straps of webbing that cross at right angles and are sewn at the top and bottom to form 4 equal length elongated peices of webbing, the said soccer ball holder fits a size 4 and 5 soccer ball;
(e) an elongated center strap of twill elastic belting material, represents the middle of the soccer ball holder, which has a first and second end, the said first end has a male velcro closure while the said second end has a female velcro closure, the said center strap is sewn to four outer straps of webbing, the space between each strap is sewn approximately 4 ¼ inch spacings, the said soccer ball enters and exits from the said velcro closures;
(f) a nylon loop is affixed to the top of the said soccer ball holder, the loop is 1 inch in width, approximately 3 ⅛ in length, having a first end and second end, the first and second ends are bent a ¼ inch inward and sewn to form a loop.

5,620,187
CONTRACTING/EXPANDING SELF-SEALING CRYOGENIC TUBE SEALS
Lin X. Jia, Upton, N.Y., assignor to Florida Atlantic University, Boca Raton, Fla.
Division of Ser. No. 71,418, Jun. 1, 1993. This application Jun. 7, 1995, Ser. No. 487,348
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—26 **10 Claims**



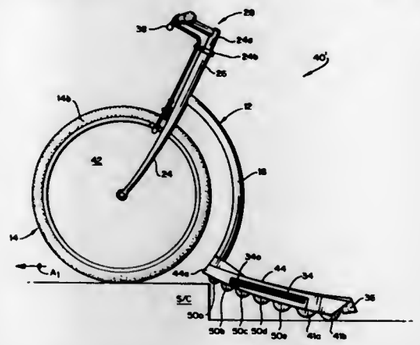
1. A cryogenic tube seal comprising:
a coupling member comprising a first axisymmetric sloped contact surface;
sealing means comprising a second axisymmetric contact surface, made of a material having a larger coefficient of thermal expansion than said first contact surface, and having a shape which is complementary to that of said first contact surface whereby when said second contact surface is brought into secured contact with said first contact surface at ambient temperature, the contact between the two surfaces is a sealed sloped engagement creating sloped-surface sealing which allows thermal contraction and expansion of said coupling member and said sealing means under temperature cycling from room temperature to temperatures at least as low as about 77K while maintaining sloped-surface sealing between said coupling member and said sealing means and not causing or resulting in the inelastic deformation of either of said surfaces, such that said surfaces can be repeatedly separated and re-engaged wherein said re-engagement is a sealed engagement; and
means for bringing said first contact surface and said second contact surface into secured contact.

5,620,188
ROUTER COLLET
Ronald C. McCurry, West Union, and Wallace E. Anderson, Pickens, both of S.C., assignors to Ryobi North America, Easley, S.C.
Filed Nov. 8, 1995, Ser. No. 555,266
Int. Cl.[6] B23B *31/20*
U.S. Cl. 279—48 **18 Claims**



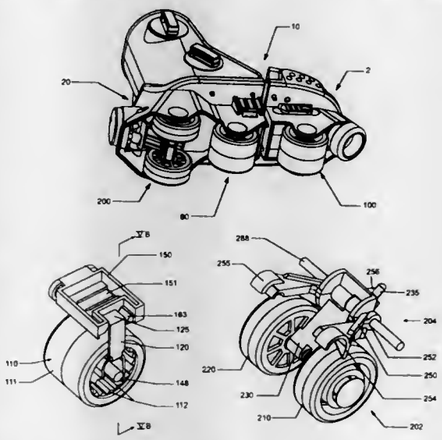
1. A router collet assembly for removably attaching a cutting tool to an elongated router drive shaft rotatable about a central axis, the router collet assembly comprising:
a body having an end driven by the drive shaft, a generally circular cylindrical cavity formed therein aligned with the drive shaft central axis, an end face opposite the driven end surrounding the cylindrical cavity, and a threaded outer peripheral surface;
a split collet having a cylindrical bore sized to receive a cylindrical shank of a cutting tool, a first end portion sized to slip it into the body circular cavity, a second end portion provided with a tapered frusto-conical outer surface, and an annular shoulder intermediate the first and second end portions for abuttingly cooperating with the body end face;
a nut having an axial bore extending therethrough with an internal threaded region for cooperating with the body threaded surface and an internal frusto-conical surface for cooperating with the collet frusto-conical outer surface, wherein the rotation of the nut relative to the body in a tightening direction causes the nut to engage the collet and constrict the collet bore to grip a shank of the cutting tool, and the rotation of the nut in an opposite loosening direction enables the collet to release the shank of the cutting tool; and
a retainer for retaining the collet and body together while permitting free rotation about the central axis and limited axial movement, wherein the collet can initially move rotationally and axially a limited distance with the nut as the nut is loosened before the retainer limits further axial movement causing the nut and collet to separate and the collet's grip on the cutting tool shank to be released.

5,620,189
SCOOTER
Jürgen Hinderhofer, Engelgasse 6, 88400 Biberach, Germany
Continuation-in-part of Ser. No. 273,837, Jul. 12, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 382,092
Claims priority, application Germany, Aug. 12, 1993, 9312041 U
Int. Cl.[6] B62M *1/00*
U.S. Cl. 280—5.24 **47 Claims**



1. A scooter comprising:
a frame which includes a substantially horizontal footboard, an unsteerable rear wheel journaled to a rear end of the footboard; and
a steerable front wheel journaled to said frame at a forward portion thereof; wherein
said front wheel has a radius which is larger than said rear wheel, and wherein
said footboard includes a series of in-line guide rollers journaled to said footboard forwardly of said unsteerable rear wheel.

5,620,190
IN-LINE SKATE
Albert P. Maggiore, Lancaster, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Aug. 18, 1994, Ser. No. 292,030
Int. Cl.[6] A63C *17/06;17/14;17/20*
U.S. Cl. 280—11.21 **27 Claims**



1. A roller skate comprising:
a body;

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a roller mounted to said body for rotation in a forward direction and an opposite, reverse direction, and having an outer, rolling surface and an inner surface disposed substantially concentric with, and radially inwardly from, said outer surface;

a ratchet tooth coupled to said roller on said inner surface and projecting radially inwardly with respect to said inner surface to a ratchet tooth inner radius;

a pawl having a guide portion, a pawl arm, and an engaging end;

means for guiding said pawl along a defined pawl path between a first position in which said engaging end is spaced radially inwardly from said ratchet tooth inner radius and a second pawl position in which said engaging end is disposed radially outwardly from said ratchet tooth inner radius, said pawl guide means being disposed at least partially within said inner surface and engaging said guide portion; and

a pawl adjuster disposed at least partially outside said outer surface, being movable between first, and second retainer positions, and being coupled to said pawl arm to move said pawl along said pawl path, said first and second retainer positions corresponding to said first and second pawl positions, respectively, said pawl adjuster in said second position allowing movement of said pawl along said pawl path away from said second pawl position in a ratcheting motion to permit said roller to rotate in only one of said forward and reverse directions.

11. An in-line roller skate having a roller assembly, comprising:

a body;

an axle coupled to said body;

first and second rollers rotatably mounted on said axle;

said first roller being slidably mounted on said axle for lateral movement between a first position adjacent said second roller and a second position spaced from said second roller;

a separator arm coupled to said body and selectively moveable between said first and second roller for sliding said first roller along said axle from said first position to said second position; and

a combine arm coupled to said body for sliding said first roller along said axle from said second position to said first position.

5,620,191

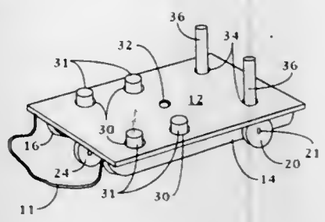
MULTIPLE PURPOSE SLED

Edward E. Sayette, 29 Junard Dr., Morristown, N.J. 07960

Filed Feb. 9, 1995, Ser. No. 385,892

Int. Cl.[6] B62B *13/18*

U.S. Cl. 280—13 **8 Claims**



10

1. A sled for transporting objects over varied terrain composed of soft or hard surfaces comprising:

(a) a carrying platform having at least one hole extending completely therethrough;

(b) first and second skids, said skids being parallel to the length of said carrying platform;

(c) first and second wheels, each of said wheels being positioned near one end of said carrying platform and extending below said first and second skids by a predetermined distance, whereby said first and second wheels support said end of said carrying platform when said sled is traversing said hard surfaces and said first and second skids support said sled during traversal thereof over said soft surfaces;

(d) a third wheel, said third wheel being positioned near the opposite end of said carrying platform from said first and second wheels, said third wheel being adapted to swivel on an axle about an axis perpendicular to said carrying platform and to extend below said first and second skids, each of said third wheel and said axle being removably mounted on said sled, whereby said third wheel stabilizes said sled and, together with said first and second wheels, establishes a plane below said skids so that said first, second and third wheels support said sled during traversal thereof over hard surfaces, said third wheel enabling said sled to turn easily on said hard surfaces and, when removed, reducing drag and facilitating movement of said sled over said soft surfaces;

(e) said carrying platform having at least one additional hole provided above said first and second skids, said additional hole extending through said carrying platform and being concentric with a molded indent in the skids; and

(f) said sled further comprising a utility tube, said tube being sized to fit within said additional hole and to receive a fishing pole, said molded indent providing a firm vehicle support to the utility tube and said fishing pole being held substantially vertically by said tube.

5,620,192

VEHICLE SUPPORT SYSTEM

Louis Demongin, 17205 Chicago Ave., Yorba Linda, Calif. 98626

Continuation of Ser. No. 463,021, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 310,758, Sep. 26, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 590,702

Int. Cl.[6] B60S *9/00*

U.S. Cl. 280—35 **3 Claims**



1. A vehicle support system comprising two dollies which are laterally positioned on a common axle and four locking collars which are mounted on the common axle and abut one against each side of a dolly through which the common axle passes, each dolly comprising:

a chassis including

two pivoting castors that are mounted in tandem to the chassis, allowing the vehicle support system to be moved about,

a clevis, located on the chassis opposite the castors and secured to the chassis with a clevis pin which allows the clevis to pivot,

two compressible pads, positioned on the chassis to define the limits of travel through which the clevis may pivot, and

an aperture on each side of the chassis through which the common axle passes.

5,620,193

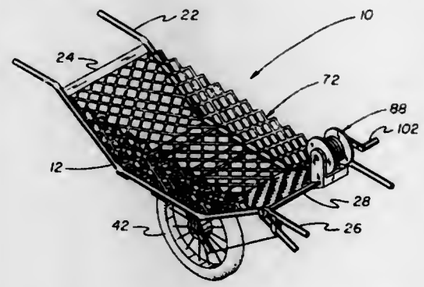
GAME HAULING CART

Jimmy L. Dschaak, 410 Woodbury Dr., Craig, Colo. 81625

Filed Dec. 4, 1995, Ser. No. 565,963

Int. Cl.[6] B62B *1/14*

U.S. Cl. 280—47.31 **9 Claims**



1. A new and improved game hauling cart for loading and transporting wild game comprising in combination:

a generally U-shaped frame having a first side portion, a second side portion and a middle portion, the first side portion of the frame having a first pair of handles extending therefrom with a first flat bar therebetween, the second side portion having a second pair of handles extending therefrom with a second flat bar therebetween, the middle portion being in a horizontal plane below the first and second portion, the middle portion having three flat bars proportionately space and forming a frame base;

a wheel being rotatably mounted on a hub body with a shaft portion being positioned within, the shaft portion having a pair of threaded ends;

a pair of vertical uprights with each upright having a wheel end and a frame end, the wheel end of each upright being capable of receiving one of the threaded ends of the shaft therethrough, the shaft being locked within each wheel end by a hex nut, the frame end of each upright being welded to a lower side of a central flat bar of the middle portion of the frame, each upright allowing the wheel to support the frame above a receiving surface for movement along the receiving surface;

a pair of V-shaped braces with each brace having a bottom end with a pair of arms extending upward therefrom, the bottom end of each brace being welded to one of the pair of uprights, each arm having a top end, the top end being welded to the lower side of one of the three flat bars, spaced from the central flat bar, of the middle portion of the frame, the V-shaped braces adding support for the wheel supporting the frame;

a rigid mesh being positionable within the frame, the mesh being welded to the first side portion, the second side portion and the frame base along an upper side of the frame, the mesh when welded to the frame and capable of transforming the frame into a symmetrical carriage structure;

a hand break mechanism being attached to one of the handles of the frame, the hand break mechanism having a break cable extending downwardly toward a catch device, the catch device being coupled to the shaft of the wheel between one of the uprights and the hub body of the wheel, the hand break mechanism being capable stopping the rotation of the wheel; and

a winch being attached to one of the flat bars between the handles of the frame, the winch having a cable being wrapped around a winch drum, the cable having a J-hook at an end, the J-hook allowing game to be hauled into the carriage, by the winch, for transporting game out of the wilderness.

5,620,194

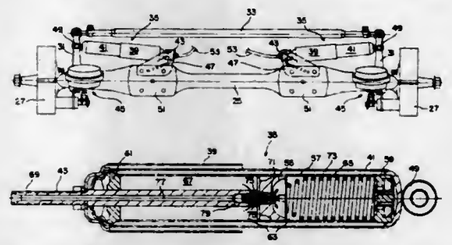
SELF-STEERING SUSPENSION LOCKOUT MECHANISM

Michael J. Keeler, Canton, and Michael J. Gottschalk, New Philadelphia, both of Ohio, assignors to The Boler Company, Itasca, Ill.

Filed Jun. 7, 1995, Ser. No. 477,587

Int. Cl.[6] B60D *1/06*

U.S. Cl. 280—81.6 **27 Claims**



19. A lockout mechanism for a self-steering, wheel-bearing axle suspension system of a vehicle comprised of a wheel-bearing axle, steering means, and a shock absorber having a fluid flow path therein for stabilizing oscillations in said system when in motion, said lockout mechanism including a valve located in the fluid flow path within said shock absorber for interrupting fluid flow in said fluid flow path thereby locking out said steering means.

5,620,195

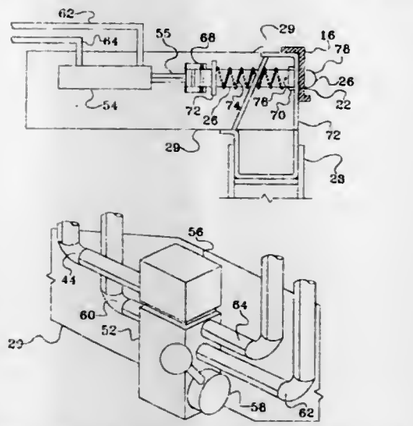
LOCKING SYSTEM FOR A SEMITRAILER SLIDING UNDERCARRIAGE WITH AIR PRESSURE PROTECTION VALVE

Larry L. Wessels, Lakewood, Colo., assignor to Rocky Mountain Technology Engineering Corp., Lakewood, Colo.

Continuation-in-part of Ser. No. 442,988, May 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 381,290, Jan. 31, 1995, Pat. No. 5,465,990, which is a continuation of Ser. No. 151,349, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 996,580, Dec. 24, 1992, Pat. No. 5,314,201. This application May 1, 1996, Ser. No. 639,347

Int. Cl.[6] B62D *53/06*

U.S. Cl. 280—149.2 **20 Claims**



1. A locking system for mounting on a sliding undercarriage of a semitrailer, the semitrailer pulled by a tractor, the locking system used for securing and releasing the sliding undercarriage from a pair of parallel rails mounted on an underside of the semitrailer, the parallel rails having spaced apart locking pin holes along the length

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thereof, the sliding undercarriage having spring operated air brakes operated from a pressurized air source on the semitrailer or tractor, the semitrailer having an electrical power source thereto, the locking system comprising:

a locking pin;

locking pin insertion and retraction means attached to said locking pin for inserting and retracting said locking pin in a selected locking pin hole in the parallel rails, said insertion and retraction means attached to the sliding undercarriage; and

an air pressure protection means connected to said locking pin insertion and retraction means and connected directly to the pressurized air source on the semitrailer to prevent the depletion of air pressure in the pressurized air source in the operation of the semitrailer's air brakes, said pressure protection means further preventing the operation of said locking pin insertion and retraction means when the pressurized air from the pressurized air source drops below a predetermined amount.

5,620,196

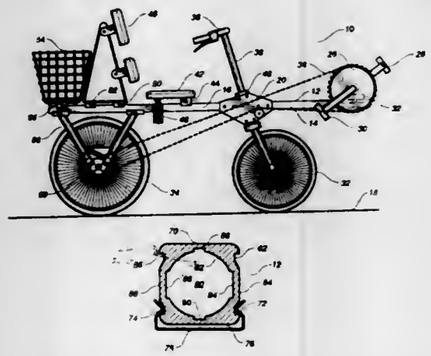
RECUMBENT BICYCLE FRAME

Jaroslav Belik, 1610 Mulcahy, Rosenberg, Tex. 77471

Continuation of Ser. No. 276,856, Jul. 18, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,671

Int. Cl.[6] B62K *3/02*

U.S. Cl. 280—281.1 **18 Claims**



1. A bicycle frame comprising:

a frame tube of unitary construction, said frame tube having a longitudinally extending, generally circular interior passageway and a first shoulder area intended inwardly in an exterior side of said frame tube adjacent a top surface of said frame tube, said first shoulder area extending continuously along an entire length of said frame tube, said top surface being a generally flat exterior surface extending along the length of said frame tube above said first shoulder area, said frame tube having a second shoulder area indented inwardly in an opposite exterior side of said frame tube from said first shoulder area, said second shoulder area extending continuously along the entire length of said frame tube adjacent said top surface, said frame tube having a bottom shoulder area indented inwardly in said exterior side of said frame tube adjacent a generally flat bottom exterior surface, said bottom shoulder area and said bottom exterior surface below said bottom shoulder area extending along the length of said frame tube.

5,620,197

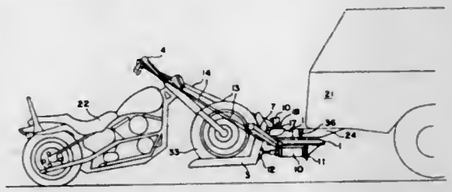
MOTORCYCLE TOWING DEVICE

J. Roy Howes, 665 NW. Archer Ave., Port St. Lucie, Fla. 34983

Filed Oct. 30, 1995, Ser. No. 550,432

Int. Cl.[6] B60R *9/10*

U.S. Cl. 280—402 **11 Claims**



1. A motorcycle towing device provided in kit form for raising a front wheel of a motorcycle from a ground level to a raised position for towing the motorcycle comprising,

a support bar having an extension means receivable into a trailer hitch receiver disposed on a vehicle;

a ramp means having a back side and a front side adapted to cradle a front wheel of a motorcycle on the front side;

means for mounting said ramp means pivotably on a rear extremity of the support bar;

actuator means for applying a force relative to the back side of said ramp means for elevating said ramp means and said motorcycle front wheel set within said front side of said ramp means into a raised position for towing;

means for securing said ramp means in an elevated position for towing said motorcycle; and

strap means for stabilizing said motorcycle when towing same.

5,620,198

COLLAR FOR TRAILER HITCH RECEIVER

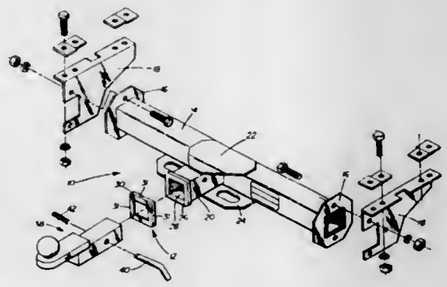
John R. Borchers, Victoria, Australia, assignor to Reese Products, Inc., Elkhart, Ind.

PCT No. PCT/US93/01765, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO94/19205, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 26, 1993, Ser. No. 50,481

Int. Cl.[6] B60D *1/60*

U.S. Cl. 280—507 **14 Claims**



1. A protective collar for installation on a receiver box of a trailer hitch receiver, the receiver box having a cavity adapted to receive a hitch bar, said collar comprising:

a body member including four segments, each segment being substantially L-shaped in section and including a facing portion defining an opening to the receiver box cavity and a mounting flange; and

means for mounting said body member over an open end of the receiver box so that said opening is aligned with the cavity in the receiver box.

5,620,199

SUSPENSION SYSTEM FOR VEHICLE

Unkoo Lee, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

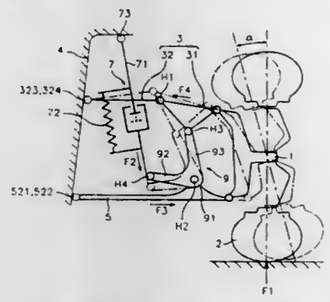
PCT No. PCT/KR94/00174, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/15865, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 8, 1994, Ser. No. 436,450

Claims priority, application Rep. of Korea, Dec. 10, 1993, 93-27181; Dec. 10, 1993, 93-27185

Int. Cl.[6] B60G *3/00;* **B62D** *17/00*

U.S. Cl. 280—691 **16 Claims**



1. A suspension system for a vehicle, comprising:

a wheel carrier supporting a wheel, said wheel carrier having upper and lower ends;

a lower control arm connecting the lower end of said wheel carrier to a vehicle body;

an upper control arm for connecting the upper end of said wheel carrier to the vehicle body;

a strut assembly formed by uniting a shock absorber and a spring to absorb an up-and-down vibration of the vehicle body; and

camber control means pivotally connected to a respective one of said upper control arm, said lower control arm at a position spaced from said wheel carrier, and said strut assembly to receive a force from said strut assembly for pushing said lower control arm towards the wheel and pulling said upper control arm towards the vehicle body.

5,620,200

AIRBAG MODULE REACTION CANISTER ENDWALL WITH AIRBAG INFLATOR MOUNT

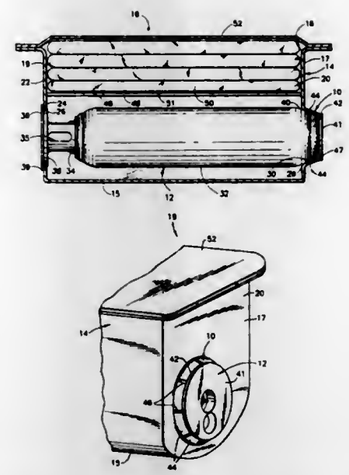
Brett R. Garner, South Weber; Rick L. Halford, Layton; Alan L. Clark, Kaysville, and Michael D. Jones, Hooper, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 31, 1995, Ser. No. 550,674

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **15 Claims**

1. A canister endwall for use as part of a reaction canister of an airbag module for securing an airbag inflator having a cylindrical inflator sidewall of a predetermined diameter and ending in a tapered portion of the inflator sidewall tapering radially inwardly to one end of the airbag inflator having an inflator flange, the inflator flange extending radially outwardly from the tapered portion of the inflator sidewall and having a diameter that is smaller than the diameter of the inflator sidewall, the canister endwall having an inner edge defining an airbag inflator mounting hole and a truncated conical array of a plurality of resilient fingers extending from the inner edge, the inner edge of the canister endwall being sized and shaped to allow passage of the inflator flange of the airbag inflator and engage the tapered portion of the inflator sidewall in a substantially gas-tight manner, the truncated conical array of the plurality of resilient fingers being sized to butt against the inflator flange when the tapered portion of the inflator sidewall is engaged with the inner marginal edge, the plurality of resilient fingers being bendable to allow passage of the inflator flange and, once the inflator flange passes through the truncated conical array of the plurality of resilient fingers, to spring back to butt against the inflator flange to prevent the inflator flange from being pulled out of the airbag inflator mounting hole.



5,620,201

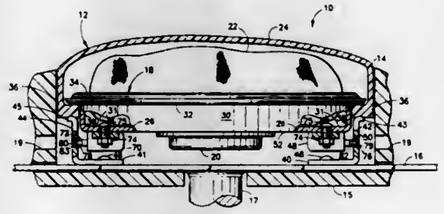
REMOVABLE, SNAP-IN MOUNTING SYSTEM FOR AIRBAG MODULE

Merle K. Ricks, Layton, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Feb. 21, 1996, Ser. No. 603,608

Int. Cl.[6] B60R *21/20*

U.S. Cl. 280—728.2 **25 Claims**



1. An airbag module mounting system comprising:

a module housing of an airbag module;

mounting structure within a mounting recess of a motor vehicle;

a first slot defined by one of the module housing or the mounting structure;

a first mounting latch mechanism secured to the other of the module housing or the mounting structure and having a biased, retractable latch extending outwardly therefrom engaging the first slot;

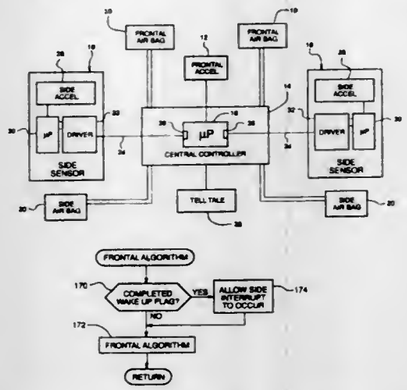
a second slot defined by one of the module housing or the mounting structure; and

a mounting projection on the other of the module housing or the mounting structure engaging the second slot;

whereby the engagement between the biased latch and the first slot and the engagement between the mounting projection and the second slot, in combination, secure the module housing within the mounting recess.

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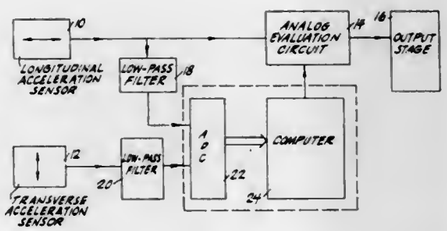
5,620,202
INTERFACE BETWEEN IMPACT SENSOR AND CONTROLLER FOR A SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM
Charles A. Gray, Noblesville; Sheri L. Patterson, Greentown; Douglas A. Nunan; Richard J. Ravas, Jr., both of Kokomo, and Robert V. Krakora, Carmel, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.
Filed Jan. 23, 1995, Ser. No. 376,565
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **15 Claims**



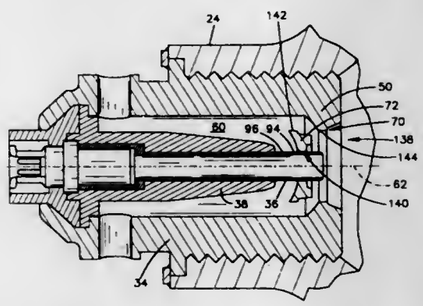
1. A supplemental inflatable restraint system having side and frontal air bags and corresponding side and frontal impact sensors, the system comprising:
a control for deploying the air bags;
a side impact sensor including
means for generating a pulsed signal indicative of the sensor condition, and
means for generating a deploy signal initiated upon an impending crash, the deploy signal having at least two successive accurately timed pulses of preset durations; and
interface means for coupling the signals from the side impact sensor to the control;
the control including computer means for measuring the timed pulses and comparing the timed pulses to stored values of the preset durations to verify the deploy signal, and further including means for deploying a side air bag when a deploy signal is verified.

5,620,203
APPARATUS AND METHOD FOR TRIPPING A SAFETY SYSTEM FOR THE PROTECTION OF AN OCCUPANT OF A VEHICLE
Edmund Jeenicke, Luxemburg, Luxembourg; Bernhard Mattes, Sachsenheim 1, and Claus Condne, Wadgassen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 166,169, Dec. 10, 1993, Pat. No. 5,449,198, which is a continuation of Ser. No. 623,945, Feb. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 485,300
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **19 Claims**

1. A system for activating an occupant protection device of a vehicle, comprising:
an acceleration sensor for detecting an acceleration of the vehicle and for generating an acceleration signal indicative of the detected acceleration;
a digital determination device for receiving the acceleration signal, for determining, in a digital manner, an occurrence of a collision of the vehicle in response to the acceleration signal, and for generating a first trigger signal based upon the digital determination;
an analog determination device for receiving the acceleration signal, for determining, in an analog manner, an occurrence of a collision of the vehicle in response to the acceleration signal, and for generating a second trigger signal based upon the analog determination; and
a control device for receiving the first and second trigger signals and for controlling activation of the occupant protection device as a function of at least one of the first and second trigger signals.

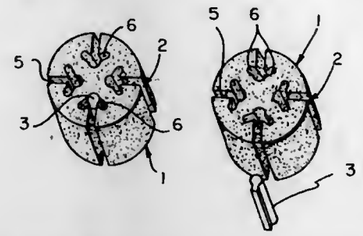


5,620,204
APPARATUS FOR INFLATING AN INFLATABLE VEHICLE OCCUPANT PROTECTION DEVICE
Stuart M. Frey, Bloomfield Hills, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jan. 5, 1996, Ser. No. 583,314
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—737 **19 Claims**



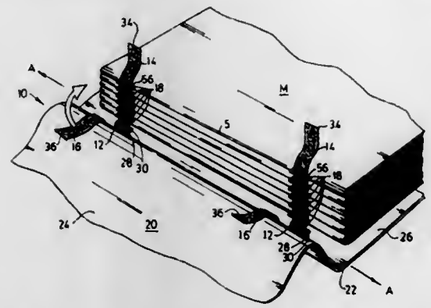
1. An apparatus for inflating an inflatable vehicle occupant protection device, said apparatus comprising:
a pressure vessel means for defining a chamber containing a source of inflation fluid for inflating the vehicle occupant protection device, said pressure vessel means including a closure wall for blocking the flow of said inflation fluid;
means for forming a first opening in said closure wall;
a breakaway section of said closure wall having an inner surface defining said first opening, said breakaway section being broken away from said closure wall when a predetermined pressure level in said chamber is reached and forming a second opening in said closure wall of said pressure vessel;
a member coaxial with said first opening and having an outer surface, after said breakaway section is broken away from said closure wall, said member projecting through said first opening and said outer surface supporting and retaining said breakaway section; and
means for directing said inflation fluid from said second opening into the vehicle occupant protection device.

5,620,205
GAS GENERATION AND IGNITION SYSTEM FOR AIRBAG INFLATION
Donald R. Lauritzen, Hyrum; David J. Green, Brigham City; Robert D. Taylor, Hyrum, and Scott C. Mitson, Honeyville, all of Utah, assignors to Morton International, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 259,852, Jun. 15, 1994, Pat. No. 5,387,009, which is a continuation-in-part of Ser. No. 213,176, Mar. 14, 1994, Pat. No. 5,441,705. This application Feb. 23, 1995, Ser. No. 392,570
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 **24 Claims**



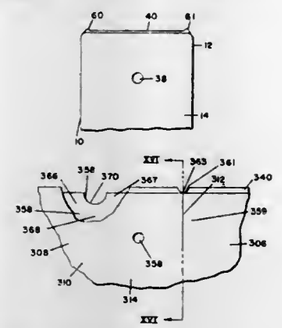
1. In an airbag inflator which comprises a gas generating solid grain and an igniter strip to ignite said gas generating solid grain, the improvement comprising said gas generating solid grain having at least one groove on its external surface, said groove being shaped to receive an igniter strip having a shape complementary to at least a portion of the shape of said groove; and wherein said gas generating solid grain does not contain any cavities capable of containing an igniter strip other than said at least one groove on its external surface.

5,620,206
APPARATUS FOR BINDING MATERIALS
Adalberto Flores, 80 Kimball Dr., Rochester, N.Y. 14623
Filed May 19, 1995, Ser. No. 445,141
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—21.1 **23 Claims**



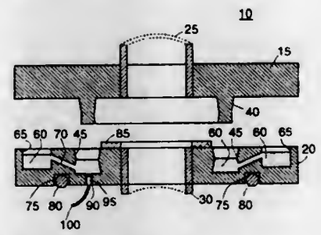
1. An apparatus for binding one or more pages together, each page having a first side extending along a first axis, said apparatus comprising:
at least one stitch secured adjacent to the first side with a portion of said stitch extending away from the first side to define an opening between said stitch and the first side; and
a fastener having first and second elongated members, said first and second elongated members each having a pair of opposing ends, with one end of said first elongated member connected to one end of said second elongated member;
said first elongated member extending through said opening between said stitch and the first side, said other ends of said first and second elongated members detachably secured together to bind the pages together.

5,620,207
RING BINDER COVER
Edward Podosek, Wilbraham, and Vytautas K. Beleckis, East Longmeadow, both of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.
PCT No. PCT/US93/03786, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO93/21021, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 21, 1993, Ser. No. 325,228
Int. Cl.[6] B42C *7/00*; **B42F** *13/00*
U.S. Cl. 281—29 **10 Claims**



1. A ring binder comprising:
(a) an insert, said insert having a pair of parallel flexible webs spaced apart a predetermined distance to divide said insert into three zones, hingedly connected by said pair of parallel flexible webs, said zones being dimensioned to define a front cover panel, a back cover panel and a spine panel, each of said webs having a first end and a second end, and an insert notch at each end,
(b) a matching pair of thermoplastic, heat-sealable sheets disposed on opposite sides of said insert and heat-sealed together only about their peripheral edges, and
(c) a ring mechanism fixed to said spine panel.

5,620,208
BOLTLESS FLANGE
Robert J. Kirkham, Blackfoot, Id., assignor to Lockheed Idaho Technologies Company, Idaho Falls, Id.
Filed May 19, 1995, Ser. No. 446,186
Int. Cl.[6] F16L *13/11*
U.S. Cl. 285—21.1 **17 Claims**

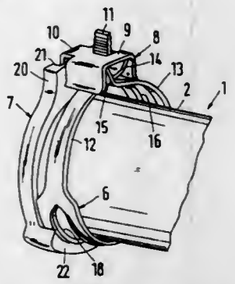


1. A pipe flange system comprising:
(a) a lower flange having a groove and alloy reservoir therein, the alloy reservoir communicating with the groove for supplying a fusible alloy and for allowing displacement of the alloy upon mating of the tongue and groove;

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(b) heating means attached to the lower flange; and,
(c) an upper flange having a tongue protruding therefrom for mating with the groove of the lower flange, whereby upon heating of the fusible alloy by the heating means the tongue mates with the groove, and whereby upon cooling of the fusible alloy the flanges solidly couple and seal.

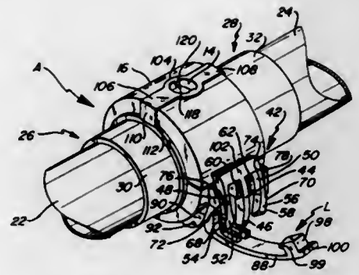
5,620,209
DEVICE FOR CLAMPING A HOSE END SECTION FITTED ONTO A PIPE END SECTION
Heinz Sauer, Ronneburg, Germany, assignor to Rasmussen GmbH, Maintal, Germany
Filed Feb. 5, 1996, Ser. No. 597,074
Claims priority, application Germany, Feb. 22, 1995, 195 06 144.6
Int. Cl.[6] B65D *63/02;* **F16L** *33/20*
U.S. Cl. 285—23 **14 Claims**



1. A device for clamping a hose end section that is fitted onto a pipe end section, said device comprising:
a hose clamp surrounding a hose end section, the internal diameter of the clamp in a non-tensioned state being smaller than an internal diameter of the clamp in a tensioned state and smaller than an external diameter of the hose, said hose clamp having overlapping end sections, each of said end sections having an approximately radially outwardly extending tensioning jaw;
a securing ring being fixed to said hose end section, said securing ring having a radial projection, said securing ring surrounding said hose end section and being disposed between said hose end and said hose clamp, said securing ring being joined to said hose clamp in an area diametrically opposite to said area of overlap of said end sections of said hose clamp, said securing ring having a recess disposed in a radial projection; and
an approximately U-shaped clip having a cross-piece and a pair of legs depending from said cross-piece, said U-shaped clip being disposed such that, in said tensioned state, said legs of said clip overlap said tensioning jaws of each of said end sections, said U-shaped clip having a hook depending from said cross-piece and being radially engaged in said recess.

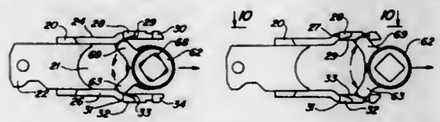
5,620,210
FLUID CONDUIT COUPLING
Todd A. Eyster, and Albert B. Olsen, both of Littleton, Colo., assignors to Stanley Aviation Corporation, Aurora, Colo.
Filed Oct. 24, 1995, Ser. No. 547,647
Int. Cl.[6] F16L *21/06;* **A41F** *1/00*
U.S. Cl. 285—81 **7 Claims**

1. In a coupling assembly for releasably interconnecting first and second annular flanges on respective confronting ends of first and second fluid carrying conduit members, wherein said coupling assembly includes a pair of arcuate coupling halves pivotally joined together at first adjacent ends for circumferentially surrounding said confronting ends and including an arcuate circumferential wall having a thickness and a pair of spaced ribs extending inwardly from opposite circumferential edges thereof, at least one longitudinal locking channel on the outer surface of the opposite end of one of said coupling halves, and a pair of resilient locking tines extending longitudinally from the outer surface of the opposite end of the other of coupling halves, said locking tines being bendable toward each other for reception within said locking channel and each having an outer edge with a radius so that each inner side of said locking channel makes contact with each of said outer edges of said respective locking tines during closure and release and each further including a locking surface which snaps into engagement with the locking surfaces of said locking channel to releasably hold said coupling halves in closed position around said sleeve, the improvement comprising:



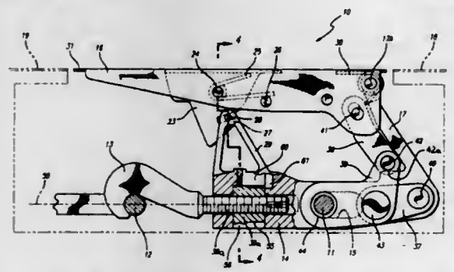
said locking tines having a locking edge adjacent said opposite end of said other of said coupling halves;
an elongated latch having a first end and a second end, said first end being pivotally connected to said opposite end of said one of said coupling halves and extendable across said locking tines for engagement with said locking edge when said coupling halves are in closed position;
at least one fin extending from said elongated latch and positioned between said tines when said coupling halves are in said closed position to prevent movement of said locking tines toward each other; and
a locking catch at said second end of said elongated latch for locking engagement with said locking edge when said coupling halves are in closed position to hold said at least one fin between said locking tines.

5,620,211
LATCH WITH ADJUSTABLE BACKSET
Philip C. Ellis, Reading, Pa., assignor to Baldwin Hardware Corporation, Reading, Pa.
Filed Oct. 27, 1995, Ser. No. 549,411
Int. Cl.[6] E05C *1/00*
U.S. Cl. 292—1.5 **10 Claims**



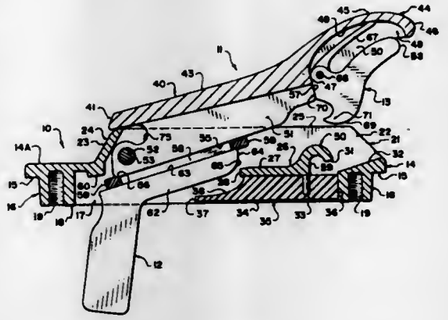
1. A latch assembly having a backset adjustment for mounting in a door comprising
a bolt longitudinally reciprocating in a housing between a forward extended position and a rearward retracted position;
latch operating means operably connected to said bolt and operably connected to rotatable, collapsible actuation means, said latch operating means including a front pair of engagement means and a rear pair of engagement means longitudinally spaced apart, each pair of engagement means comprising two horizontally spaced apart detents;
spindle for rotation of said actuation means;
said collapsible actuation means being rotatable about a transverse axis to displace said operating means to reciprocate said bolt and comprising two half hubs rotatable relative to each other having an opening extending axially therethrough adapted to removably receive a complementary shaped spindle, said half hubs being locked against rotation relative to each other with said spindle inserted through said half hub openings and free to rotate relative to each other with said spindle removed from said openings, each half hub including one radial arm adapted to engage one of said detents of one pair of engagement means upon rotation of said half hub, whereby upon rotation of at least one of said half hubs in one direction relative to said other half hub the distance between said arms becomes smaller than the distance between said detents of one pair of engagement means and said actuation means is in a collapsed condition and said actuation means is able to pass between said one pair of engagement means to vary the backset, and upon rotation of at least one of said hubs in the opposite direction the distance between said arms becomes larger than the distance between said detents of said front pair of engagement means and said actuation means is in an expanded condition and is unable to pass between said front pair of engagement means.

5,620,212
LOW PROFILE HOOK LATCH ASSEMBLY
William R. Bourne, Redondo Beach, and Frank T. Jackson, Corona, both of Calif., assignors to Hartwell Corporation, Placentia, Calif.
Filed Aug. 28, 1995, Ser. No. 520,159
Int. Cl.[6] E05C *5/02*
U.S. Cl. 292—113 **6 Claims**



1. A hook latch mechanism for joining two members, with the hook latch mechanism carried on one member on a mounting bolt and a keeper carried on the other member,
the hook latch including in combination:
a body;
a hook carried in said body for engagement with a keeper;
a handle pivotally mounted on said body at a first pivot axis for movement between latched and unlatched positions;
a catch carried on said handle for engagement with said body when said handle is in said latched position; and
first, second and third links, with said first link pivotally connected at one end to said body at a second pivot axis, said second link pivotally connected to said handle at a third pivot axis, and said third link pivotally connected to said second link at a fourth pivot axis and pivotally connected to said first link at a fifth pivot axis;
said third link including a mounting bolt opening for pivotally receiving a mounting bolt, and said body including a slot for slidingly receiving the mounting bolt;
with the keeper and hook defining a latch load line, and the portion of said body between said first and second axes defining a fourth link generally parallel with said second link and projecting upward from said latch load line spacing said handle away from said hook, said handle when in said latched position being substantially parallel with and spaced from said latch load line and when in said unlatched position being generally perpendicular to and spaced from said latch load line; and
with each of said four links being rigid between its axes, and with each of said five pivot axes always disposed on or to the handle side of said latch load line as said handle is moved between said latched and unlatched positions.

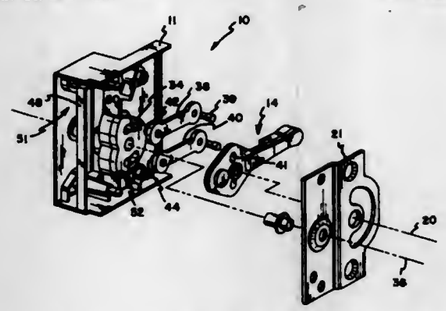
5,620,213
WINDOW LOCK
Frederick G. Ellis, 80 Burnett Avenue, Winnipeg, Manitoba, Canada
Continuation-in-part of Ser. No. 193,528, Feb. 8, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 576,987
Int. Cl.[6] E05C *3/04*
U.S. Cl. 292—210 **19 Claims**



1. A window construction comprising:
a window frame member;
a window member movable relative to the window frame member;
and a lock for locking the window member in a closed position against the window frame member;
the lock including a lock element for cooperation with the window member, a lock body mounted on the window frame member at an opening therein and a lock handle mounted for pivotal movement relative to the lock body;
the lock body including a base portion engaged onto a surface of the window frame member, a raised portion projecting outwardly from the surface and a hollow interior of the raised portion;
the lock handle including a mounting portion, means mounting the mounting portion on the raised portion for pivotal movement relative thereto about an axis transverse to the raised portion and the handle and parallel to the surface from a first lock position to a raised release position, and a manually graspable portion extending from said mounting portion to a position in which at least one finger of a hand of a user can engage an under surface of the manually graspable portion for pulling the handle out of said lock position away from said surface of the window frame into said release position;
actuator means mounted on the lock handle and extending through the hollow interior of the raised portion and through said opening in the window frame member for engaging said lock element to lock the window in a closed position;
and latch means for releasably latching the lock handle in the lock position, the latch means comprising an abutment surface on the lock body facing toward the surface of the window frame member and a latch trigger mounted on the lock handle at the under surface of the manually graspable portion so as to be graspable simultaneously with grasping of the manually graspable portion for pivotal movement of the latch trigger relative to the lock handle;
such that the latch trigger is manually movable from a latch position, in which an abutment element on the latch trigger engages the abutment surface, away from the abutment surface to a release position in which the lock handle is released.

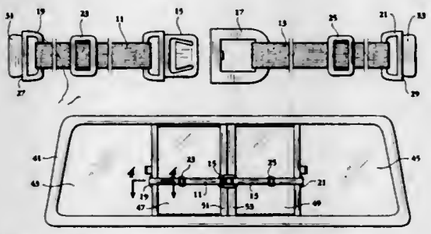
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5,620,214
SASH LATCH
Michael W. Kondratuk, Cameron, Wis., assignor to Wright Products Corp., Minneapolis, Minn.
Filed Feb. 2, 1993, Ser. No. 12,503
Int. Cl.[6] E05C 3/06
U.S. Cl. 292—217 11 Claims



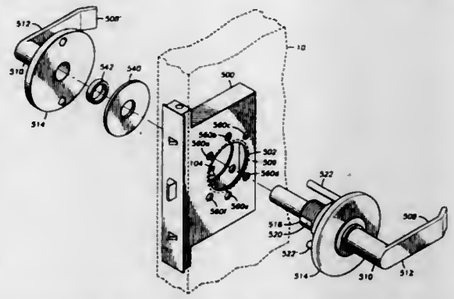
1. A sash latch assembly for use with a movable window having a window sash and a window sill, said latch assembly comprising:
a keeper mounted on said window;
a latch housing mounted on said window sill;
a handle mounted within said latch housing for rotation about a handle axis between an unlocked position and a locked position;
a bolt mounted within said latch housing for rotation about a bolt axis;
said bolt having a cam surface and a keeper pulling surface, wherein rotation of said bolt contacts said keeper with said keeper pulling surface, moving said keeper into said latch housing when said handle is moved into said locked position;
link means for connecting said handle to said bolt and for converting rotational motion of said handle to rotational motion of said bolt; and
a spring fixedly held within said latch housing such that, when said handle is rotated to said unlocked position said spring abuts said cam surface so as to maintain said bolt in a fully rotated position, thereby increasing the range within which said bolt can capture said keeper; and
wherein said bolt further includes a lifting surface for contacting said keeper, whereby rotation of said bolt contacts said keeper lifting said keeper and moving said keeper into said latch housing when said handle is moved into said locked position.

5,620,215
SLIDING WINDOW LOCK
Kenneth Janeway, 5006 Redbud Dr., Sand Springs, Okla. 74063
Filed Sep. 20, 1995, Ser. No. 530,944
Int. Cl.[6] B65D 45/00
U.S. Cl. 292—256 15 Claims



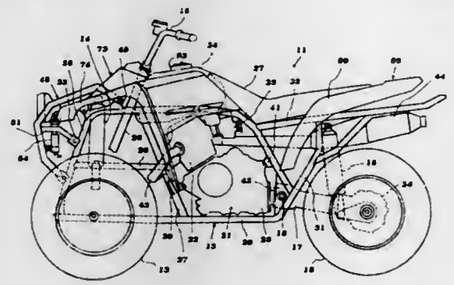
8. A lockable sliding window assembly comprising:
a pair of windows disposed in a common track for slidable transposition between an open condition in which parallel inner edges of a frame of each said window are spaced apart and a closed condition in which said parallel inner edges are in abutment with each other;
a first substantially inelastic flexible strap;
a first rigid D-ring connected at one end of said first strap and having a tongue extending orthogonally from a flat edge thereof;
first means for permanently laminarly adhering a flat face of said first member tongue to a face of one of said window frames with said flat edge of said first D-ring abutting an outer edge of said one of said window frames;
a first portion of a coupling means connected at another end of said first strap;
a second substantially inelastic flexible strap;
a second rigid D-ring connected at one end of said second strap and having a tongue extending orthogonally from a flat edge thereof;
second means for permanently laminarly adhering a flat face of said second member tongue to a face of the other of said window frames with said flat edge of said second D-ring abutting an outer edge of said other of said window frames; and
a second portion of said coupling means connected at another end of said first strap;
said portions of said coupling means being selectively matable and separable for respectively connecting and disconnecting said first and second straps and said first and second straps having a combined length such that, when said windows are in the closed condition with said parallel window frame edges in abutment and said coupling means portions are mated with said straps extending around outer edges of said frames and along inside faces of said windows, said straps are tautly extended between said first and second D-rings.

5,620,216
LOCK MECHANISM
Mark W. Fuller, 2806 Michau, Houston, Tex. 77009
Continuation-in-part of Ser. No. 309,843, Sep. 20, 1994, which is a continuation-in-part of Ser. No. 969,771, Oct. 30, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 350,662
Int. Cl.[6] E05B 9/00
U.S. Cl. 292—337 9 Claims



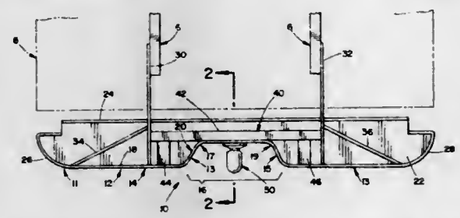
1. A lock for use with a lockset having a handle connected to jaws, wherein the jaws are moveable inwardly of a lock housing in response to turning motion of the handle, comprising:
a case having an opening therethrough for receipt of the lock housing therein;
a bolt extendable from said case, said bolt including an engagement portion located within said case and extending partially into said opening;
said engagement portion for interconnecting with said jaws within said opening, said opening, in conjunction with said housing, providing positional alignment between said engagement portion and the jaws.

5,620,217
BUMPER ASSEMBLY FOR FOUR WHEEL VEHICLE
Makoto Ichikawa; Eiji Kato, and Yoshihiro Morishita, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Apr. 19, 1995, Ser. No. 424,803
Claims priority, application Japan, May 12, 1994, 6-122087
Int. Cl.[6] B60R 19/52
U.S. Cl. 293—102 14 Claims



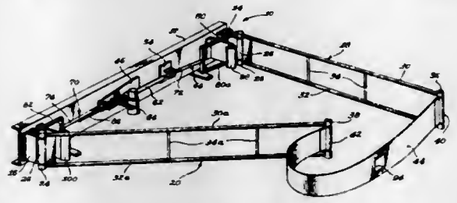
1. A motor vehicle comprising a tubular frame assembly, a pair of front wheels and at least one rear wheel suspended from said tubular frame assembly, a front cover comprising a pair of front fenders each overlying a respective one of said front wheels and an intermediate portion bridging and integrally connecting said fenders in overlying relationship to a portion of said tubular frame assembly, and a front bumper of tubular construction having a pair of spaced-apart side members extending through openings in said front cover and detachably connected to said tubular frame assembly.

5,620,218
APPARATUS FOR AFFIXING A TOWING DEVICE TO A VEHICLE
Mark J. Saltzman, Moreland Hills, and Thomas A. Gries, Solon, both of Ohio, assignors to Buyers Products Company Inc., Mentor, Ohio
Continuation of Ser. No. 278,510, Jul. 21, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,563
Int. Cl.[6] B60R 19/48
U.S. Cl. 293—117 14 Claims



8. An apparatus for reinforcement of a step bumper of a light towing vehicle, the step bumper having an indented portion positioned in a center thereof, a protruding portion corresponding to the indented portion, and spaced apart first and second attachment brackets for attachment of the bumper to the vehicle, the apparatus comprising:
a generally U-shaped channel beam, having an open side, located on the protruding portion and between the first and second attachment brackets, the open side of the beam facing away from the protruding portion;
a first support structure engaging the channel beam, spaced from a lateral side of the protruding portion, and between the first attachment bracket and the protruding portion; and,
a second support structure engaging the channel beam, spaced from an opposite lateral side of the protruding portion, and between the second attachment bracket and the protruding portion.

5,620,219
RETRACTABLE ARTICULATED FRONT PROTECTIVE FENCE FOR SCHOOL BUS
Jean-Hugues Servant, 1999 St-Charles sud. Granby, Québec, Canada
Filed Mar. 26, 1996, Ser. No. 621,931
Int. Cl.[6] B60R 11/48
U.S. Cl. 293—117 11 Claims

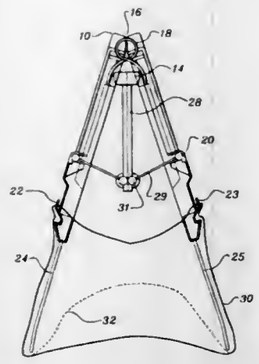


1. A protective fence for use ahead of a school bus defining a front end, said protective fence comprising:
a) an elongated frame member, destined to be securingly attached horizontally to the school bus front end;
b) a first and a second elongated lightweight arms having respective inner and outer ends, said inner ends being pivotally attached to opposite ends of said elongated frame member for pivoting movement of said first and second arms between respective retracted and extended positions around respective laterally spaced-apart parallel pivoting axes;
c) power means, carried by said frame member, for selectively pivoting said first and second arms sequentially from said retracted to said extended position and from said extended to said retracted position; and
d) a foldable semi-rigid lightweight band attached, in an articulated fashion, to the respective outer ends of said first and second arms; said first and second arms being adjacent to said frame member at said retracted position, with said first arm overlapping said second arm, and projecting away from said frame member at said extended position; wherein a lightweight fence assembly is formed in ground overhanging fashion in said extended position.

5,620,220
SANITARY WASTE COLLECTOR
Bahram Khoshnood, 1420 NW. Boca Raton Blvd., Boca Raton, Fla. 33486
Filed Jul. 17, 1995, Ser. No. 501,280
Int. Cl.[6] A01K 29/00; [redacted]H 1/12
U.S. Cl. 294—1.3 13 Claims

1. A sanitary waste collector, comprising:
(a) two substantially planar braces, each having an interior and exterior face, each having a common grippable opening, and each pivotally attached, at one transverse edge thereof, to a hinge means, each of said braces also defining opposite transverse edges thereof;
(b) means for continuously urging said interior faces of said braces toward each other;
(c) means for selectably manually actuatably urging said braces away from each other, in which an impartable force thereof is sufficient to overcome an imparted force of said continuously urging means (b) otherwise pressing said braces toward each other;
(d) two arms, each extending integrally outwardly from said opposite transverse edges of each of said braces; and

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(e) enclosure means selectably securable between said arms, said enclosure means normally closed when said selectably urging means (c) are not actuated,

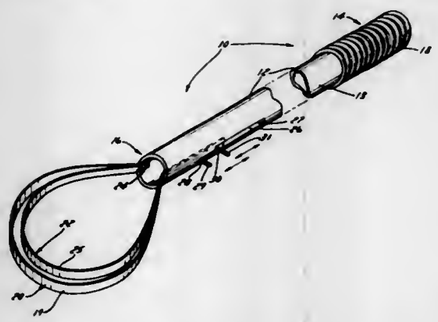
whereby, upon actuation of said selectably urging means (c), said arms and said enclosure means are opened such that, within said enclosure means, can be placed pet waste or other materials to be sanitarily disposed of and, upon release of said selectably urging means (c), said enclosure means are returned to their normally closed position, thereby containing and encasing said waste or other materials.

5,620,221

PET HYGIENE MANAGEMENT APPARATUS AND METHOD

James A. Wilke, S76 W12620 McShane Dr., Muskego, Wis. 53150

Filed Apr. 3, 1996, Ser. No. 625,703
Int. Cl.[6] A01K *29/00*; E01H *1/12*
U.S. Cl. 294—1.5 **10 Claims**



1. An apparatus for collecting pet excrement comprising:

a tube with a distal end and a proximal end,

a position slot in a sidewall of the tube between the distal end and the proximal end, with the position slot having a first stop, a second stop and a backstop,

a first band having two ends, with one end attached to the distal end of the tube and the other end supporting a first actuator, with the first actuator slidingly engaged in the position slot, thereby forming an outer loop,

a second band having two ends, with one end attached to the distal end of the tube and the other end supporting a second actuator, with the second actuator slidingly engaged in the position slot, thereby forming an inner loop,

a receptacle attachment device attached to the distal end of the tube, and

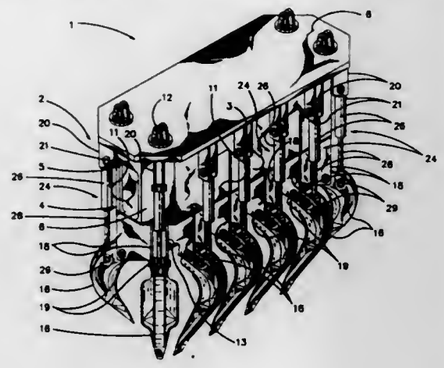
a receptacle supported by the receptacle attachment device and engaged between the outer loop and the inner loop.

5,620,222

ELECTRO-HYDRAULIC RECTANGULAR GRAPPLE FOR RAILCARS

Peter F. Prinz, Ethel, La., assignor to Hawco Manufacturing Co., Inc., Slaughter, La.

Filed Feb. 14, 1995, Ser. No. 388,387
Int. Cl.[6] B66C *3/16*
U.S. Cl. 294—88 **10 Claims**



1. A grapple comprising:

i) a substantially rectangular housing having two sides and an end;

ii) an attachment device positioned on said housing for attaching a tension member to said housing;

iii) a plurality of tines pivotally attached to said housing along each of said sides, wherein each of said plurality of tines has a tine actuating device attached thereto, said actuating devices having a first end attached to said housing and a second end attached to said tines;

iv) at least one tine pivotally attached to said housing along said end, wherein said tine has a tine actuating device attached thereto, said actuating device having a first end attached to said housing and a second end attached to said tine;

v) a fluid supply mechanism operatively attached to said tine actuating devices, said fluid supply mechanism being positioned on said grapple.

5,620,223

GRIPPING DEVICE

Douglas W. Mills, Freeport, Ill., assignor to Gabco Air, Inc., Gainesville, Fla.

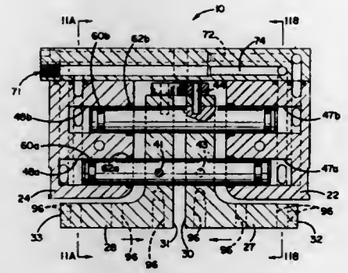
Filed Aug. 28, 1995, Ser. No. 520,024
Int. Cl.[6] B25J *15/08*
U.S. Cl. 294—88 **14 Claims**

1. A gripping device comprising:

a body having opposing sides, each side having at least two inwardly directed cylinders aligned with the cylinders of the opposing side;

first and second pistons extending between the aligned cylinders, the cylinders defining a space axially off the ends of the pistons;

means for providing a high fluid pressure to the space off one end of each piston and a relatively low fluid pressure to the space off the other end of each piston, to urge each piston axially in the direction of the space having lower fluid pressure, the means further configured to pressurize the spaces to urge the first and second pistons in opposing relation;



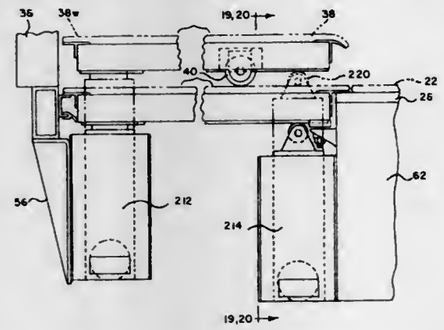
first and second gripping jaws, the first gripping jaw being carried on the first piston and the second gripping jaw being carried on the second piston, whereby axial movement of the first and second pistons in opposing directions moves the first and second gripping jaws in opposing directions to clamp and release objects.

5,620,224

TRAILER SLIDEOUT MECHANISM WITH VERTICALLY MOVABLE CABIN FLOOR

Anthony J. DiBiagio, Granger; Marvin P. Burns, Nappanee, and Larry Martin, Goshen, all of Ind., assignors to Holiday Rambler LLC, Wakarusa, Ind.

Filed Sep. 26, 1994, Ser. No. 311,945
Int. Cl.[6] B60P *3/35*
U.S. Cl. 296—26 **15 Claims**



1. A slideout mechanism for use in a vehicle having a floor, a wall, an opening in the wall, and an extensible cabin movable through the opening between retracted and extended positions, said slideout mechanism comprising

extension means for positioning the cabin between the retracted position wherein the cabin is disposed substantially inside the vehicle and the extended position wherein the cabin is disposed substantially outside of the vehicle,

the cabin having walls and a cabin floor vertically movable relative to the cabin walls, and

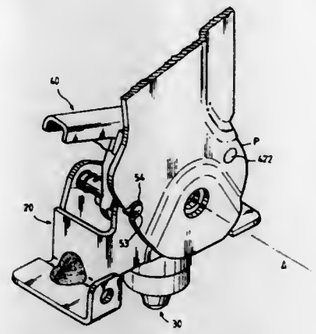
leveling means for vertically positioning the cabin floor independently of the cabin walls between a raised position wherein the cabin floor is above the vehicle floor and a lowered position wherein the cabin floor is substantially level with the vehicle floor.

5,620,225

DEVICE FOR THE REMOVABLE FASTENING TO A FLOOR OF THE UNDERFRAME OF A SEAT AND ITS APPLICATION ESPECIALLY TO LAND-BASED MOTOR VEHICLES

Sylvain Harry, Noyers, France, assignor to Cesa-Compagnie Europeenne de Sieges pour Automobiles, Levallois-Perret Cedex, France

Filed Nov. 16, 1995, Ser. No. 558,883
Claims priority, application France, Dec. 15, 1994, 94 15133
Int. Cl.[6] B60N *2/00*
U.S. Cl. 296—63 **10 Claims**



1. A device for removable fastening, to a floor, of an underframe (P) of a seat, said underframe being movable between first and second positions by tipping it upon a given direction (Δ), said device comprising:

a striker plate (**10**) which is associated with the floor (S) and which exhibits two opposed faces (**101**,**102**), for bearing and for locking, pierced through by an opening (**11**) with a free passage (**111**) bordered by a contact area (**112**) on the locking face (**102**);

a casing (**20**) which includes a lock bolt (**30**) comprising a hollow long straight locking body (**31**) with a cylindrical guide cavity (**310**), which has an axis orthogonal to said direction (Δ), and with a tip (**311**), and with at least one passage (**312**) pierced through said body (**31**) to emerge into the cavity (**310**), and with an open end (**313**),

said lock bolt (**30**) further comprising at least one ball (**32**) housed in said at least one passage (**312**) so as to be retained therein so that it can move between a first position projecting partially outside the body (**31**) so as to be able to encounter the contact area (**112**) to lock the lock bolt (**30**) onto the striker plate (**10**) when the tip (**311**) thereof is engaged in the free passage (**111**), and a second position retracted inside the body (**31**) so as to separate itself from the contact area (**112**) so as to unlock the lock bolt (**30**) from the striker plate (**10**),

said lock bolt (**30**) further comprising a needle (**33**), housed so that it can move in the cavity (**310**) between an active position in which it allows said at least one ball (**32**) to project and an inactive position in which it allows the ball (**32**) to retract, with a cylindrical shank (**331**), with an inside end potion (**332**) consisting of a cone frustum (**3321**) converging towards a pilot (**3322**) to cause the ball (**32**) to project or retract, and with an outside end portion (**333**):

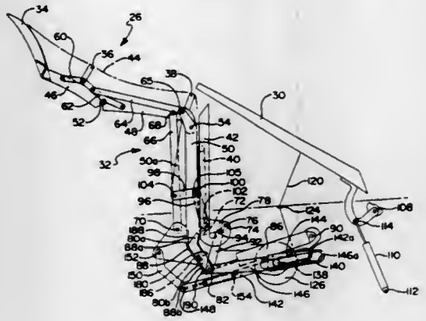
a control (**40**) borne by the casing (**20**) and connected by a link (**41**) to said outside end portion (**333**) so as to move the needle (**33**) in the body (**31**), wherein the control (**40**) comprises a lever (**42**) which has an operating hand grip (**421**) and an articulation (**422**) associated with the casing (**20**) to allow it to turn about an axis parallel to the given direction (Δ) between an unlocked position and a locked position and which bears the link (**41**) so as to be able to move the needle (**33**) between the two positions thereof; and

a safety feature (**50**) coupled to the lever (**42**) and intended to interact with the underframe (**P**) to prevent said underframe

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from being tipped into the first position thereof as long as the lock bolt (**30**) is not locked onto the striker plate (**10**).

5,620,226
SIMPLIFIED AUTOMATED TOP OPERATOR
Robert H. Sautter, Jr., Jackson, Mich., assignor to Dura Convertible Systems, Inc., Adrian, Mich.
Filed Dec. 7, 1995, Ser. No. 568,780
Int. Cl.[6] B60J *7/08*
U.S. Cl. 296—107 **19 Claims**



1. A convertible vehicle having a foldable top movable between an extended raised position and folded lowered position in a storage well; a tonneau movable between positions opening and closing the storage well; wherein the top comprises spaced articulated side rail structures that are interconnected by spaced transverse bows, including a movable rear bow engageable with the closed tonneau in top raised position; power means; and first linkage means connecting the power means to the side rail structures to enable the power means to raise and lower the top, characterized by

second linkage means connecting the power means to the tonneau to enable the power means to open the tonneau to permit top movement between raised and lowered positions and to close the tonneau in top raised and lowered positions, and

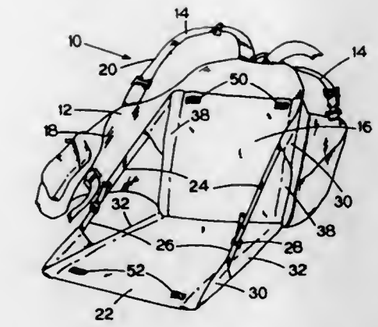
third linkage means connecting the power means with the rear bow to enable the power means to raise the rear bow during top raising to provide clearance for movement of the tonneau between open and closed positions, thereby enabling the power means

to raise the rear bow, open the tonneau and begin lowering the top, and close the tonneau as the top is fully lowered to lower the top, and

to open the tonneau and begin raising the top, close the tonneau as the top is fully raised, and lower the rear bow onto the tonneau to raise the top.

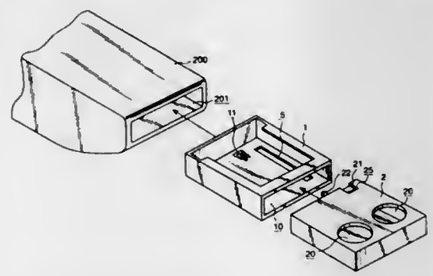
5,620,227
VEST GARMENT WITH PIVOTABLE SEAT MEMBER
Paul W. Brune, 147 Samson La., New Haven, Mo. 63068
Filed Mar. 29, 1996, Ser. No. 625,753
Int. Cl.[6] A47C *1/00*
U.S. Cl. 297—4 **11 Claims**

1. A combination vest and pivotable seat member, said vest comprising a fabric to be worn on an upper torso of a user, said vest comprising at least a dorsal member and shoulder support means, said seat member having one end connected to a lower portion of said dorsal member and having straps for being connected to and supported from an upper portion of said dorsal member whereby an effective chair comprised of said seat member and said dorsal member for supporting said user is created, lengths



of said straps being adjustable, whereby an angular orientation between said seat member and said dorsal member is adjustable.

5,620,228
DRAWER DEVICE
Kuniyasu Ito; Shigeru Yabuya; Minoru Shibata, and Akira Azumi, all of Aichi-Pre., Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-ken, Japan
Filed Jun. 29, 1995, Ser. No. 496,905
Claims priority, application Japan, Jul. 1, 1994, 6-150812
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—188.17 **4 Claims**



1. A drawer device for an automobile comprising:

an arm member pivotally mounted to said automobile to be movable between upright and horizontal positions, said arm member having a free end;

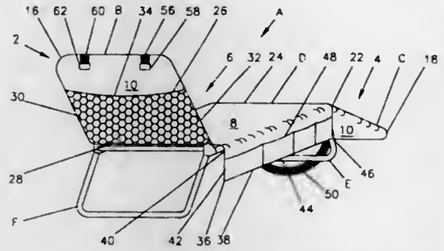
a drawer member slidably mounted within said arm member to move outwardly from said free end, said drawer member being movable between a pulled open position, a first interior position, and a second interior position;

a spring member biasing said drawer member toward said pulled open position;

a lock mechanism that is engaged to lock said drawer member in said first interior position, said locking mechanism including means for releasing the lock as said drawer member is moved from said first interior position to said second interior position, and locking said drawer member as said drawer member is pushed from said pulled open position to said second interior position; and

a control member positioned between said arm member and said drawer member, said control member preventing said drawer member from being pushed between said first and second interior positions when said arm member is in a substantially upright position, said control member allowing said drawer member to be pushed between said first and second interior positions when said arm member is pivoted out of said upright position.

5,620,229
COMBINATION CARRYING BAG, COVER AND ACCESSORY STORAGE FOR A PORTABLE FOLDING LOUNGE
Janet K. Ledford, P.O. Box 1108, Duncan, Okla. 73534
Filed Apr. 10, 1996, Ser. No. 629,841
Int. Cl.[6] A47C *27/00*
U.S. Cl. 297—229 **15 Claims**



15. A bag for a lounge chair and a lounge-chair frame having a first folding portion, a second folding portion and a stationary center portion intermediate and hingedly attached to said first and said second folding portions:

said bag being a rectangular article comprised of a first sleeve section, a second sleeve section and a trunk section intermediate said first sleeve section and said second sleeve section wherein said first sleeve section, said second sleeve section and said trunk section are connected to form said rectangular article having a top surface and a bottom surface;

said first sleeve section is comprised of a first rectangular top layer of flexible material and a first rectangular bottom layer of flexible material wherein said first rectangular top layer corresponds with, overlies and is fixedly attached to said first rectangular bottom layer along each longitudinal edge and each outside transverse edge to thereby form said first sleeve section having a first inwardly facing open side adjacent to the inner transverse edge of said first rectangular top layer of flexible material;

said second sleeve section is comprised of a second rectangular top layer of flexible material and a second rectangular bottom layer of flexible material wherein said second rectangular top layer corresponds with, overlies and is fixedly attached to said second rectangular bottom layer along each longitudinal edge and each outside transverse edge to thereby form said second sleeve section having a second inwardly facing open side adjacent to the inner transverse edge of said second rectangular top layer of flexible material;

said trunk section is comprised of a rectangular flexible material wherein a first transverse edge of said trunk section is fixedly attached to said inner transverse edge of said first rectangular top layer of flexible material of said first sleeve section and a second transverse edge of said trunk section is fixedly attached to said inner transverse edge of said second rectangular top layer of flexible material of said second sleeve section, wherein said first rectangular top layer of flexible material, said second rectangular top layer of flexible material and said trunk section cooperate to form said top surface of said bag.

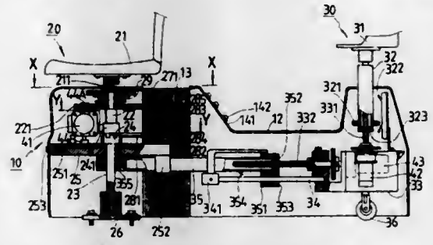
said second rectangular bottom layer of flexible material has directly attached thereto a semi-circular loop, said semi-circular loop being formed by directly fastening, adjacent said second open side, each end of a rectangular strap to respective points of intersection of each said end with each length dimension and the width dimension of said second rectangular bottom layer of flexible material;

said first rectangular bottom layer of flexible material has attached thereto a pocket having three closed sides and one outwardly facing open side, said pocket being comprised of a net material attached to said first rectangular bottom layer of flexible material along each common length dimension and each common inner width dimension;

said trunk section has attached thereto along at least one longitudinal edge thereof a second bag having at least one compartment, wherein said second bag is comprised of an outside layer of flexible material attached to an inside layer of flexible material along each transverse edge and a longitudinal edge to thereby form said second bag having three closed sides and one open side adjacent to said trunk section; and

said first bottom layer of flexible material has attached thereto, at said outside transverse edge, one end of at least one rectangular strap, wherein a clamp is attached to said strap at the other end thereof.

5,620,230
ADJUSTABLE HAIRDRESSER'S CHAIR
Jung-Te Wu, No. 6, Lane 56, Woa-Tau Road, Dah-Li Shiang, Taichung, Taiwan
Filed Sep. 28, 1995, Ser. No. 535,860
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—241 **3 Claims**



1. An adjustable hairdresser's chair comprising:

a motor housing base, said motor housing base comprising a front shell, a rear shell, a bellows covering linked between said front shell and said rear shell;

a front seat unit mounted on said front shell, said front seat unit comprising a seat stem, a seat supported on said seat stem, an upper rod fixedly secured to said seat stem, a bottom rod having a bottom end fixedly secured to an axle holder inside said front shell and a top end coupled to said upper rod;

a rear seat unit mounted on said rear shell, said rear seat unit comprising an internally threaded upright seat tube, a bearing block disposed inside said rear shell and supported on a castor, a screw rod mounted on said bearing block inside said rear seat and threaded into said upright seat tube and adapted to move said upright seat tube vertically;

first reversible drive means for rotating the seat stem of said front seat unit in changing the horizontal angle of the seat of said front seat unit relative to the seat of said rear seat unit, said first drive means comprising a first gear fixedly mounted around said upper rod of said front seat unit, and reversible motor controlled transmission mechanism coupled to said first gear;

second reversible drive means carried by the rear shell for rotating the screw rod of said rear seat unit and for changing the elevation of the seat of said rear seat unit;

third reversible drive means carried by said rear shell for moving said shell relative to said front shell to change the distance between the seat of said front seat unit and the seat of said rear seat unit, said third reversible drive means comprising a reversible motor mounted on said bearing block, a guide rod having a rear end coupled to the bottom rod of said front seat unit and a front end supported on a socket, a screw rod having one end coupled to said reversible motor and an opposite end threaded into a screw hole on a bearing at one end of said guide rod, the screw rod of said third reversible drive means being moved longitudinally relative to said guide rod to compress or expand said bellows covering when said reversible motor is activated;

a pair of first micro switches installed in said front shell adjacent said first drive means and a first contact block control means

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on said first drive means for limiting with said micro switches the turning angle of said seat stem of said front seat unit;

a pair of second micro switches installed in said rear shell adjacent said second drive means and a second block control means on said second drive means for limiting with said second micro switches the vertical movement of said upright seat tube of said rear seat unit;

a pair of third micro switches installed in said rear shell adjacent said third drive means and a third contact block control means on said third drive means for limiting with said third micro switches the horizontal movement of said rear shell relative to said front shell; and

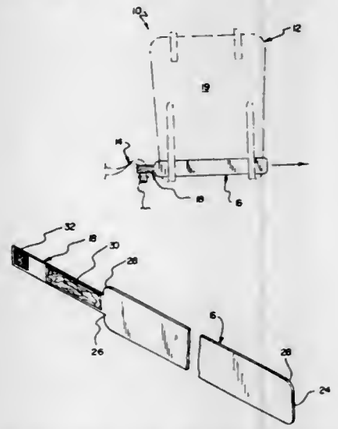
a control unit means mounted on said rear shell and having control keys for controlling said first drive means, said second drive means, and said third drive means.

5,620,231

SEAT BELT THREADER ASSEMBLY FOR CHILD SAFETY SEATS

Duane L. Marker, and Mary J. Marker, both of 6906 Kirkwood Club Dr., Indianapolis, Ind. 46241

Filed Mar. 19, 1996, Ser. No. 618,168
Int. Cl.[6] A47D *1/00*; B60N *2/26*
U.S. Cl. 297—250.1 **1 Claim**



1. A new and improved seat belt threader assembly for child safety seats comprising, in combination:

a child safety seat including a back member having slots positioned therethrough;

a seat belt including a male buckle member, the seat belt being operatively coupled to recoil means;

a handle fabricated of rigid plastic and formed in an elongated planar rectangular configuration with a first end and a second end, the second end having a central region, the handle having four rounded corners and a width of about 1½ inches; and

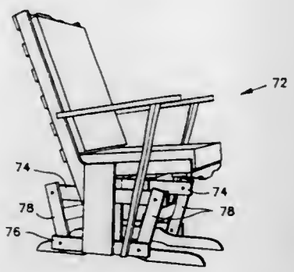
a strap member formed in an elongated planar rectangular configuration with a front face and a rear face, the strap member having about one half the length and width of the handle, the strap member being flexible and having a first end, a second end and a center point, the first end of the strap member being formed integrally with the central region of the second end of the handle, the handle and the strap member having a length of about 20 inches, the front face of the strap member including female hook and loop fasteners affixed thereto between the center point and first end thereof, the front face of the strap member including male hook and loop fasteners affixed thereto adjacent to the second end thereof, in an operative orientation a user folding the strap member around the male buckle member of the seat belt and tightly coupling the male and female hook and loop fasteners together, the user then threading the handle, strap member and seat belt through the slots of the baby seat.

5,620,232

MECHANISM TO CONVERT ANGULAR RECIPROCAL MOVEMENTS INTO INTERMITTENT UNDIRECTIONAL ROTARY MOVEMENT

Alvin A. Laplante, Boîte 3607, Station: Bureau Chef, Tracadie, N. B., Canada

Filed Jul. 24, 1995, Ser. No. 506,009
Int. Cl.[6] A47D *13/10*
U.S. Cl. 297—282 **1 Claim**



1. A glider-style rocking chair having:

a first support member movable in a first reciprocal angular movement having a first direction and a second direction,

a second support member movable in a second reciprocal angular movement, said first reciprocal angular movement and said second reciprocal angular movement being parallel, directionally opposite, and set by a rocking motion of said rocking chair, and

an articulation between said first support member and said second support member, said articulation comprising a shaft and a mechanism to convert said first and said second angular reciprocal movements of said first support member and said second support member into an intermittent unidirectional rotary movement of said shaft, said mechanism comprising;

a pair of ball bearings having each an outer race mounted in a fixed relationship with a respective said first support member or said second support member, and having each an inner race mounted in a fixed and coaxial relationship with said shaft,

a pair of flanges being each mounted adjacent and coaxial a respective said bearing and also in a fixed relationship with a respective said first support member or said second support member,

each of said flanges having one-way clutch means acting on said shaft in said first direction,

whereby a movement of either said first support member or said second support member in said first direction causes said flange fixed to said first support member or to said second support member moving in said first direction to clutch onto said shaft and to rotate said shaft in said first direction,

and a movement of either said first support member or said second support member in a second direction causes said flange fixed to said first support member or to said second support member moving in said second direction to slide on said shaft, preventing thereby a movement of said shaft in said second direction.

5,620,233

ADJUSTING MECHANISM FOR SELECTIVELY POSITIONING CHAIR COMPONENTS

Thomas D. Corwin, Centreville, Mich., assignor to JAMI, Inc., Overland Park, Kans.

Filed Jun. 7, 1995, Ser. No. 471,912
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **8 Claims**

1. An adjustment mechanism for furniture components said mechanism comprising:

(a) a first member having a plurality of ratchet recesses therein;

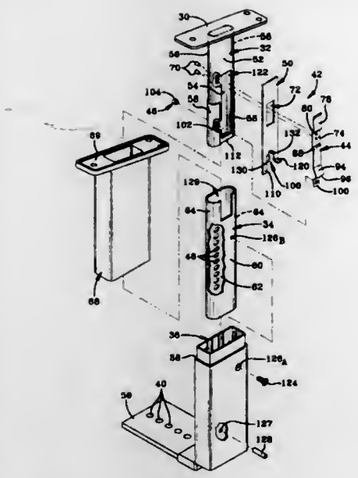
(b) a ratchet dog supported by a second member; said first and second members being positioned in alignment and being advanceable between a retracted alignment and an extended alignment relative to each other; said ratchet dog successively aligning with respective ones of said ratchet recesses as said first and second members are advanced between said retracted and extended alignments;

(c) a spring engaging said ratchet dog and urging said ratchet dog into the respective ratchet recess aligned with said ratchet dog;

(d) blocking means advanceable into a dog blocking position for preventing advancement of said ratchet dog into said ratchet recesses;

(e) first means on said adjustment mechanism for advancing said blocking means into said blocking position when said first and second members are advanced to said extended alignment; and

(f) second means on said adjustment mechanism for advancing said blocking means out of said dog blocking position when said first and second members are advanced to said retracted alignment.



5,620,234

SEAT BELT CUSHION

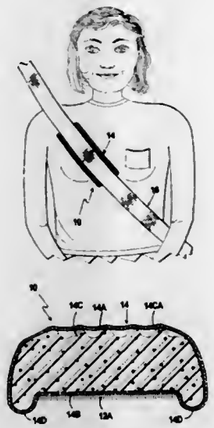
Judy W. Gunby, 8121 Hwy. 54, Sharpsburg, Ga. 30277

Filed Nov. 13, 1995, Ser. No. 555,844
Int. Cl.[6] B60R *22/00*
U.S. Cl. 297—482 **5 Claims**

1. A seat belt cushion (**10**) removably attachable to a seat belt (**16**), slidably repositionable to and from a particular location along the length of the seat belt, the seat belt cushion (**10**) comprising:

A) a cushion padding (**14**) which comprises a cushion face and a cushion back having a relatively planar central portion, the cushion face (**14C**) comprises a plurality of longitudinal cushion padding chutes (**14CA**) extending therefrom, the cushion padding chutes (**14CA**) are specifically configured in a longitudinally arranged plurality of columns to prevent the seat belt cushion (**10**) from slipping, the cushion padding further comprises two cushion sides (**14D**), each cushion side (**14D**) is positioned on each opposite longitudinal edge of the cushion back (**14B**); and a cover member which encloses the cushion padding, said cover having a front surface and a rear surface corresponding to the cushion face and cushion back respectively, and

B) a first hook and loop fastening element securely attached to the rear surface of the cover, the first fastening element is complimentary to an elongated second hook and loop fastening element (**16A**) on the seat belt (**16**) such that the cushion is adjustably mounted to the seat belt.

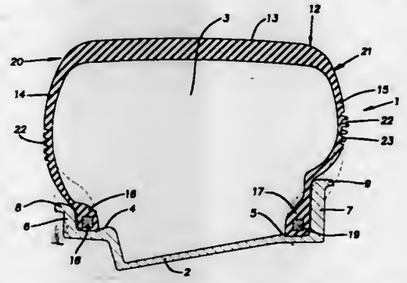


5,620,235

VEHICLE WHEEL

Jonny Janus, Dimeldorf, Germany, assignor to Stahlschmidt & Maiwork GmbH, Werdohl, Germany

PCT No. PCT/EP94/00484, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/19204, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 19, 1994, Ser. No. 454,126
Claims priority, application Germany, Feb. 21, 1993, 43 05 235.5; Jul. 28, 1993, 43 25 292.3
Int. Cl.[6] B60B *21/00*
U.S. Cl. 301—95 **7 Claims**

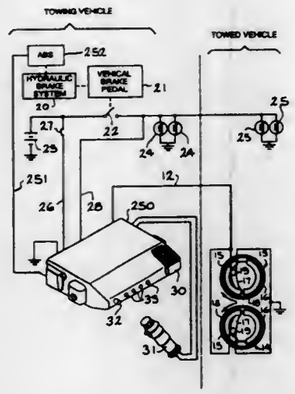


1. A vehicle wheel comprising a rim having two upstanding flanges in combination with a detachably mounted pneumatic tire received by the flanges, said tire including a body having a torus shape cross-section with a substantially cylindrical running surface connected to two radially extending side walls with inner edges including beads, said sidewalls having a natural outwardly curved profile, said beads being reinforced by inextensible wires and being received by said flanges for detachably mounting the tire to the rim with said side walls each having an outwardly curved profile, one of said flanges having a greater radial extent than the other of said flanges and terminating at an inner flange end disposed substantially adjacent a central region of the adjacent side wall of the tire in supporting engagement therewith to restrain said natural outwardly curved profile of the engaged portion of the side wall, said heightened flange of said rim extending in its radial extent more steeply inwardly than said natural outwardly curved profile to push the engaged portion of the side wall inwardly to a substantially right angle orientation relative to the rim beginning at said inner

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flange end remote from said bead, and said heightened flange thereby redirecting said outwardly curving profile of the adjacent side wall of the inflated tire to provide said side wall adjacent said heightened flange with a side wall contour different from that of said side wall adjacent said other flange.

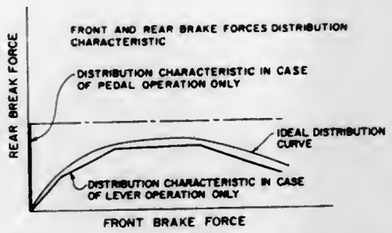
5,620,236
ELECTRONIC TRAILER BRAKE CONTROLLER
Michael C. McGrath, Farmington Hills; Wayne M. Groleau, Novi; Michael A. Hedding, Canton; Brian J. Stockford, Ann Arbor, and David Sullivan, Brighton, all of Mich., assignors to Hayes Wheels International, Inc., Romulus, Mich.
Filed Sep. 27, 1994, Ser. No. 313,703
Int. Cl.[6] B60T *13/00*
U.S. Cl. 303—7 **9 Claims**



1. An electronic brake controller for actuating electric wheel brakes of a towed vehicle, the towed vehicle being associated with a towing vehicle having a set of wheel brakes, the electronic brake controller comprising:
means for generating a triggering signal at a voltage level when the towing vehicle brakes are actuated;
a sensor for producing a brake control signal which is representative of a desired braking of the towed vehicle;
control means responsive to said triggering signal and said brake control signal for generating an output signal for actuating the electric wheel brakes of the towed vehicle; and
means for limiting said voltage level of said triggering signal such that said voltage level does not exceed a predetermined amount.

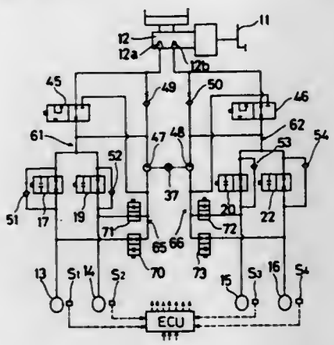
5,620,237
BRAKE DEVICE FOR MOTORCYCLE
Kanau Iwashita, and Tetsuo Tsuchida, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1994, Ser. No. 366,481
Claims priority, application Japan, Dec. 30, 1993, 5-352040
Int. Cl.[6] B60T *8/26*
U.S. Cl. 303—9.64 **31 Claims**

1. A motorcycle brake device comprising:
a front brake operatively mounted relative to a front wheel and a rear brake operatively mounted relative to a rear wheel of a motorcycle,
said front brake being operated by a first hydraulic pressure and said rear brake being operated by a second hydraulic pressure and a third hydraulic pressure;
a lever operatively connected to the motorcycle;



a lever hydraulic system operatively connected to said front brake for supplying the first hydraulic pressure to said front brake responsive to operation of said lever;
a lever interlocking hydraulic system operatively connected to said rear brake, for selectively supplying the second hydraulic pressure to said rear brake when said lever is operated;
a pedal operatively connected to the motorcycle; and
a pedal hydraulic system operatively connected to said rear brake for directly supplying the third hydraulic pressure only to said rear brake responsive to operative of said pedal.

5,620,238
BRAKE CONTROL DEVICE FOR AUTOMOTIVE VEHICLE
Hiroaki Takeuchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 9, 1995, Ser. No. 556,142
Claims priority, application Japan, Nov. 11, 1994, 6-277717
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—113.2 **13 Claims**

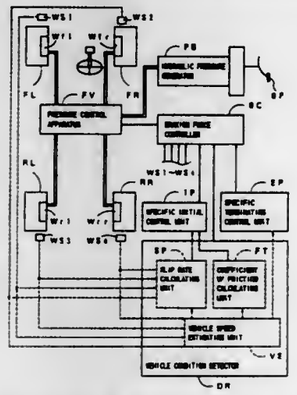


1. A brake control device for an automotive vehicle comprising:
a master cylinder in which is defined a fluid pressure chamber;
a first wheel brake for braking a first driving wheel;
a second wheel brake for braking one of a second driving wheel and a driven wheel;
a fluid passage for supplying a fluid pressure from the fluid pressure chamber to the first wheel brake and the second wheel brake;
a one-way fluid pressure pump having a sucking side and a discharging side;
an electric motor connected to the one-way fluid pressure pump for driving the one-way fluid pressure pump;
a switching valve disposed in the fluid passage and movable between a first position in which fluid communication between the fluid pressure chamber and each of the first wheel brake and the second wheel brake is established and fluid communication between the sucking side of the one-way fluid pressure pump and the fluid pressure chamber is interrupted, and a second position in which fluid communication between the sucking side of the one-way fluid pressure pump and the fluid pressure chamber is established and fluid communication

between the fluid pressure chamber and each of the first wheel brake and the second wheel brake is interrupted;
a first normally opened solenoid valve disposed between the switching valve and the first wheel brake;
a second normally opened solenoid valve disposed between the switching valve and the second wheel brake;
a return circuit establishing fluid communication between the sucking side of the one-way fluid pressure pump and each of the first wheel brake and the second wheel brake, the return circuit establishing fluid communication between the discharging side of the one-way fluid pressure pump and the fluid passage at a point between the first switching valve and both the first normally opened solenoid valve and the second normally opened solenoid valve;
a relief valve which is open when fluid pressure discharged from the discharging side of the one-way fluid pressure pump exceeds a predetermined value in order to relieve surplus fluid pressure to the fluid passage at a point between the switching valve and the fluid pressure chamber;
a first regulating means disposed in the return circuit at a point between the sucking side of the first one-way fluid pressure pump and the first wheel brake, the first regulating means decreasing and increasing the fluid pressure in the first wheel brake in response to closing and opening of the first solenoid valve while the fluid pressure is increased in the portion of the fluid passage located between the switching valve and both the first normally opened solenoid valve and the second normally opened solenoid valve; and
a second regulating means disposed in the return circuit at a point between the sucking side of the first one-way fluid pressure pump and the second wheel brake, the second regulating means decreasing and increasing the fluid pressure in second wheel brake in response to closing and opening of the second solenoid valve while the fluid pressure is increased in the portion of the fluid passage located between the switching valve and both the first normally opened solenoid valve and second normally opened solenoid valve.

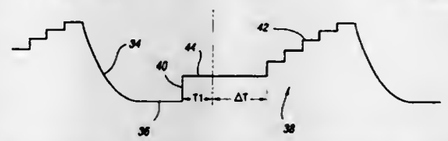
5,620,239
VEHICLE MOTION CONTROL SYSTEM
Jun Mihara, Toyoake; Kenji Tozu, Yokkaichi; Yoshiyuki Yasui, Kariya; Masanobu Fukami, Hazu-gun; Takayuki Itoh; Yoshiharu Nishizawa, both of Nagoya, and Akio Sakai, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 7, 1996, Ser. No. 597,912
Claims priority, application Japan, Feb. 9, 1995, 7-046179
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—121 **11 Claims**

1. A vehicle motion control system for maintaining stability of



an automotive vehicle when said vehicle in motion, by controlling a braking force applied to wheels of said vehicle, comprising:
wheel brake cylinders operatively connected to said wheels for applying the braking force thereto;
pressure generating means for pressurizing a brake fluid in response to depression of a brake pedal and supplying a hydraulic braking pressure to each of said wheel brake cylinders;
pressure control means disposed in a hydraulic circuit communicating said pressure generating means with each of said wheel brake cylinders for controlling the hydraulic braking pressure in each of said wheel brake cylinders;
wheel speed detecting means for detecting a wheel speed of each of said wheels;
braking force control means for actuating said pressure control means in response to the wheel speed detected by said wheel speed detecting means to control the braking force applied to each of said wheels;
vehicle condition detecting means for detecting a condition of said vehicle in motion; and
specific initial control means for providing a predetermined pressure increasing characteristic for the hydraulic braking pressure discharged from said pressure control means on the basis of the output of said vehicle condition detecting means, when said braking force control means initiates the control of the braking force, said braking force control means controlling the hydraulic braking pressure supplied from said pressure control means to said wheel brake cylinders in accordance with the pressure increasing characteristic provided by said specific initial control means to maintain the stability of said vehicle.

5,620,240
ANTI-LOCK BRAKE METHOD AND SYSTEM INCLUDING A VARIABLE PRIMARY TO SECONDARY APPLY HOLD STAGE
Brian C. Tuck; Mark S. Luckevich, both of Ann Arbor, and Bernard W. Johnson, Brighton, all of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.
Filed Sep. 9, 1994, Ser. No. 303,700
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—156 **15 Claims**



1. A method of controlling a pressure-responsive brake for front and rear wheels of a vehicle, the vehicle having at least front and rear sensors capable of generating a signal representative of speed of said front and rear wheels respectively, the vehicle further having an anti-lock brake system capable of cyclic control of brake pressure wherein an anti-lock brake system cycle includes a primary and a secondary apply stage of increasing pressure applied to the brake separated by a time interval of substantially constant brake application pressure applied to each of said front and rear wheels, said time interval including a fixed portion and a variable portion, the method comprising a sequence of the following steps of:
activating the primary apply stage within the anti-lock brake system cycle,
estimating vehicle speed based on said signal from said sensor,
calculating an estimated vehicle deceleration based on said vehicle speed,
setting said time interval at a predetermined duration as long as said estimated vehicle deceleration is above a predetermined threshold value,
computing said time interval as a function of said estimated vehicle deceleration whenever said vehicle speed is greater than said predetermined speed and said estimated vehicle deceleration is below a predetermined threshold value, main-

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taining said substantially constant brake application pressure for said computed time interval proportional to said estimated vehicle deceleration and,

activating the secondary apply stage upon completion of said time interval.

5,620,241

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Jochen Burgdorf, Offenbach-Rumpenheim, Germany, assignor to ITT Automotive Europe GmbH, Frankfurt, Germany

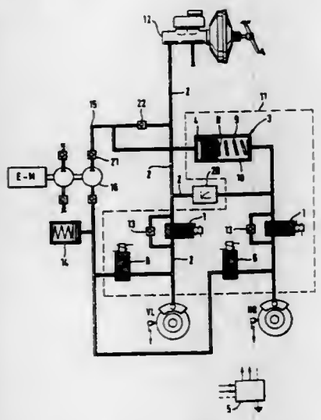
PCT No. PCT/EP93/01085, § 371 Date Nov. 9, 1994, § 102(e) Date Nov. 9, 1994, PCT Pub. No. WO93/23271, PCT Pub. Date Nov. 25, 1993

PCT Filed May 4, 1993, Ser. No. 335,704

Claims priority, application Germany, May 9, 1992, 42 15 280.1

Int. Cl.[6] B60T *13/68*

U.S. Cl. 303—186 **36 Claims**



1. A hydraulic brake system with slip control, including a pedal-operable master cylinder, to which a front-wheel brake and a rear-wheel brake of an automotive vehicle are connected at least through a main pressure line, including a hydraulic auxiliary-pressure pump which is connected to an auxiliary-pressure line and takes in pressure medium from a reservoir and supplies it to the wheel brakes, and including wheel speed sensors and a controlling and regulating electronic unit to determine the wheel rotational behavior and to generate electric braking pressure control signals, said brake system further including pressure modulation valves, including at least one inlet valve and at least two outlet valves, connected to the wheel brakes to control the braking pressure, characterized in that a pressure-medium displacing element is connected to the main pressure line which leads to the rear-wheel brake, the pressure of the auxiliary-pressure pump being adapted to be applied to a first end surface of the pressure-medium displacing element, wherein said first end surface is in selective fluid communication with said front-wheel brake, and in that the pressure prevailing in the rear-wheel brake is adapted to be applied to a second end surface which is arranged opposite to the first end surface., wherein said pressure-medium displacing element undergoes a stroke to displace a pressure from said front wheel-brake toward said rear-wheel brake.

5,620,242

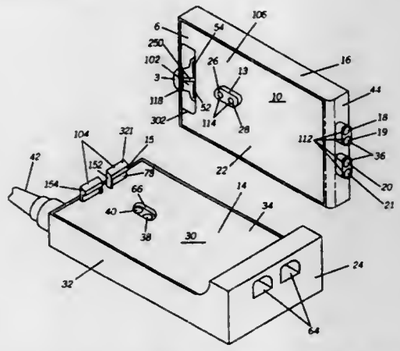
PORTABLE RADIO BATTERY LATCH

Robert Leon, Miami Lakes; Kok H. Chong, Tamarac, and Kuruvilla Valakuzhy, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 19, 1993, Ser. No. 49,050

Int. Cl.[6] H01R *3/00*

U.S. Cl. 312—223.1 **3 Claims**



1. A battery pack for use with a radio, said radio having a backside including a battery receiving area, a bottom sidewall extending perpendicularly from said backside and having a plurality of apertures formed therethrough, a cavity disposed on said battery receiving area having a plurality of contacts disposed therein, and a catch assembly, said battery pack comprising:

a battery latch, comprising:

a button extending through an opening having a finger recess;

a plurality of hooks for engaging said catch assembly; and

an ejector for releasing said hooks from said catch assembly upon said button being selectively depressed by an operator;

a plurality of bosses formed on a bottom side of said battery pack, each of said bosses having at least one contact and adapted to extend into one of said apertures, thereby exposing said at least one contact, said plurality of bosses providing a, pivot support for latching said battery pack to said radio;

a boss formed on a battery cover corresponding with said cavity for aligning said battery pack with said radio, said boss formed on said battery cover including contacts corresponding with said contacts disposed in said cavity; and

at least one battery cell connected to at least one of said contacts.

5,620,243

MODULAR FILING & STORAGE SYSTEM

Paul R. Billingham, 22 Heathfield Terrace, Chiswick, London W4 4JE, England

PCT No. PCT/GB93/00553, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO93/18977, PCT Pub. Date Sep. 30, 1993

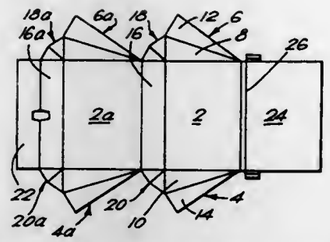
PCT Filed Mar. 18, 1993, Ser. No. 307,610

Claims priority, application United Kingdom, Mar. 20, 1992, 9206049

Int. Cl.[6] A47B *43/00;* **B65D** *5/52*

U.S. Cl. 312—259 **9 Claims**

1. A blank of a card material for constructing a box file, which, in the made up form, comprises a pair of similar "half shells" hinged together along a common edge, each half shell comprising a tray like member having a base with an upstanding side wall extending along one edge, and two opposed end walls in the form of right angle triangles, the two half shells being hinged together along a line which defines a top edge of the upstanding side wall of one half shell, and an edge of the base which is opposite the upstanding side wall, of the other half shell, so that when closed,



the end walls of the box show a diagonally extending line at a junction of the two half shells; the blank comprising:

(a) a first rectangular portion forming the base of one half shell;

(b) a first inwardly foldable connection section forming a first pair of "double-triangular" flaps, one extending from each end of the first rectangular portion, and each being so shaped as to be foldable to form one of said triangular end walls;

(c) a second rectangular portion, connected by a common edge to a third side of the first rectangular portion, and being narrower than the said first portion so as to form one upstanding side wall;

(d) a second inwardly foldable connection section forming a second pair of "double triangular" flaps connected to opposite sides of the second rectangular portion, and each of which has one side in common and connected to one corresponding side of the adjacent first "double triangular" flap;

(e) a third rectangular portion of the same size as the first rectangular portion, and adapted to form the base of the other half shell and thus the opposite side of the box; and

(f) a third inwardly foldable connection section forming a third pair of "double triangular" flaps extending from opposite sides of the said third rectangular portion and each being so shaped as to be foldable to form one of said triangular end walls;

(g) a fourth rectangular portion, adapted to form the opposite side to said second rectangular portion; and

(h) a fourth inwardly foldable connection section forming a fourth pair of "double triangular" flaps, each of which is arranged at one end of said fourth rectangular portion, and is connected by one of its other edges to the adjacent edge of the corresponding third "double triangular" flap.

5,620,244

COMPUTER ACCESSORY ENGAGEMENT/ DISENGAGEMENT MECHANISM

Yung-Chi Yang, Taipei, Taiwan, assignor to Inventec Corporation, Taiwan

Filed Sep. 21, 1995, Ser. No. 531,972

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—333 **3 Claims**

1. In combination with a computer housing, a mechanism for releasably securing an accessory, having a retaining element such as a recess, within the computer housing, said mechanism comprising

a latch arm pivotally connected to the housing, for engaging the retaining element, said latch arm being movable between a latched position in which the arm interengages with said retaining element and a release position in which the arm is free of said retaining element,

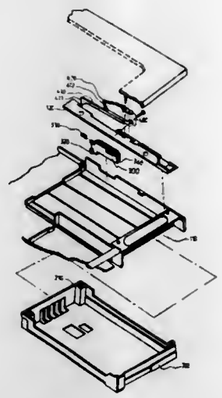
first biasing means for urging said arm toward said latched position,

an oblique element protruding from said latch arm for moving said element toward said release position,

a disengagement member, supported by the housing, and being movable between a rest position and an active position,

spring means for urging said disengagement member toward said rest position,

said disengagement member having a portion which can be manipulated from outside the housing so as to move the disengagement member toward its active position,



said disengagement member having a surface which bears against said oblique element as the disengagement member is moved toward said active position, to free said arm from said element, and

said disengagement member further having a lug for ejecting the accessory partially from the housing.

5,620,245

MANUSCRIPT DISPLAY APPARATUS

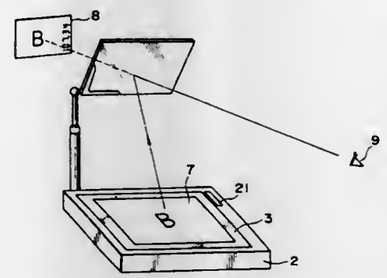
Akiyoshi Kobayashi, Shimada; Toru Yamana, Fujieda; Yoshitake Nakazawa, Shimizu; Shinichi Yamamoto, and Hidenori Sato, both of Fujieda, all of Japan, assignors to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Jul. 6, 1995, Ser. No. 499,107

Claims priority, application Japan, Jul. 25, 1994, 6-192229; Jan. 27, 1995, 7-031670

Int. Cl.[6] G02B *17/06*

U.S. Cl. 353—28 **14 Claims**



6. Manuscript display apparatus, comprising manuscript sheet supporting means formed for supporting a manuscript sheet in which a manuscript to be displayed is written; light generating means which generate light adapted to pass through the manuscript sheet supported on said manuscript sheet supporting means; and mirror means arranged to reflect the light which is generated by said light generating means to pass the light through the manuscript sheet; a time display means which displays a time display image as a virtual image in said mirror means, said time display means including a bar graph display element.

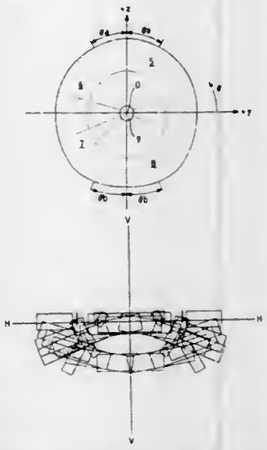
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5,620,246

HEADLAMP FOR AN AUTOMOBILE

Hiroyuki Uehan, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 352,624
Claims priority, application Japan, Dec. 9, 1993, 5-340352; Sep. 19, 1994, 6-248332
Int. Cl.[6] B60Q 1/04
U.S. Cl. 362—61 9 Claims



9. A headlamp for an automobile which comprises a reflector having a reflecting surface formed as a free surface and a principal optical axis, and a front lens disposed in front of said reflector and which is capable of obtaining a light-distribution pattern having a horizontal cutline parallel to a horizontal line, wherein:

(a) a light source member having a filament is disposed such that a central axis of said light source member orthogonally intersects said principal optical axis of said reflector and extends along a horizontal direction; and

(b) projected filament images of said light source member, which are projected forwardly by said reflecting surface, defining an elliptical-shape-like-portion at a center of said projected filament images, said elliptical portion being darker than other portions of said projected filament images, and upper edges of said projected filament images being located at or below said horizontal cutline.

5,620,247

TORCHIERE LAMP HAVING SEPARATE TWIN FLEX TASK LIGHT

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Dec. 29, 1995, Ser. No. 581,415
Int. Cl.[6] F21S 1/12
U.S. Cl. 362—250 4 Claims

1. An electric lamp comprising:

a base member for supporting said lamp;

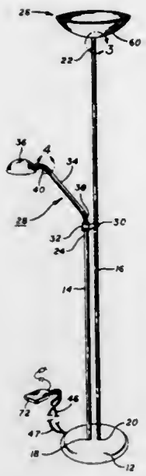
a general area lighting means in a form of a generally upwardly directed pan shaped reflector having illumination means disposed therein;

a pair of hollow stem members rigidly affixed at one end thereof to said base member;

one of said hollow stem members being affixed at an opposite end thereof to said pan shaped reflector;

a support member disposed between said base member and said pan shaped reflector and affixed to said one of said hollow stem members;

the other of said hollow stem members terminating at and being connected to said support member;



an arm member extending from said support member at the termination said other hollow stem member and terminating in a task light;

said arm member having first and second flexible sections disposed intermediate the ends thereof; and

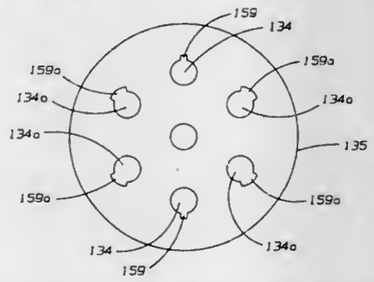
electrical wiring disposed within each of said hollow stem members and said arm member.

5,620,248

VARIABLE ALIGNING BEADED FASTENER ASSEMBLY FOR LIGHTING FIXTURES

David Sevack, Montreal, and Jules Pallal, St. Brupo, both of Canada, assignors to Tripar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 226,456, Apr. 12, 1994, Pat. No. 5,475,578. This application Nov. 29, 1995, Ser. No. 564,628
Int. Cl.[6] F21S 1/06
U.S. Cl. 362—405 14 Claims



1. A lighting fixture or portable lamp assembly to facilitate the fast assembly and alignment of longitudinally extending arms to a base, said assembly comprising:

a base;

at least one longitudinally extending arm;

said arm having a circumferential bead formed near an end of said at least one longitudinally extending arm;

said bead having a flat surface thereon;

said bead further having at least one indentation in positional register with at least one projection protruding from an opposite flat surface of said bead;

said longitudinally extending arm having a threaded end located beyond said bead; and,

said threaded end of said longitudinally extending arm being insertable within at least two bores in said base, one first bore of said at least two bores having at least one longitudinally extending notched slotted opening extending from an outer periphery of said first bore in said base,

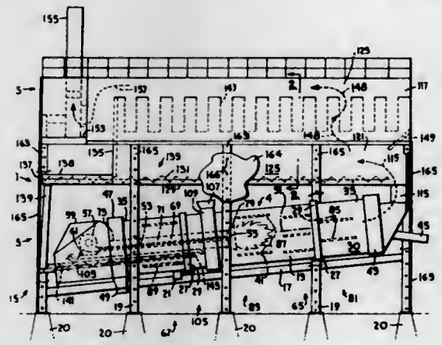
one further bore of said at least two bores having at least one wider notched slotted opening extending from said other periphery of said second, further bore in said base.

5,620,249

COMPACT ENCLOSABLE ASPHALT PLANT

Joseph E. Musil, Ely, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Sep. 18, 1996, Ser. No. 715,653
Int. Cl.[6] B28C 5/46
U.S. Cl. 366—25 19 Claims



1. A compact system for producing hot mix asphalt from various ingredients, comprising:

(a) processing means for producing the hot mix asphalt from the various ingredients, said processing means including an inclined rotary drum, a burner assembly for generating a hot gas stream within said drum, and exhaust means for exhausting said hot gas stream, including any particulate matter entrained therein, from said drum;

(b) filter means, including a baghouse, for reclaiming said entrained particulate matter from said hot gas stream exhausted from said drum by said exhaust means;

(c) return means for returning said particulate matter reclaimed by said filter means to said drum for use as one of the various ingredients for producing the hot mix asphalt; and

(d) support means for supporting said processing means, said filter means and said return means generally vertically relative to each other.

5,620,250

JET MIXER HAVING A SELF-CENTERING LIQUID BEARING HUB ARRANGEMENT

Mark E. Chilcoat, Kent, and James W. Althouse, III, Hudson, both of Ohio, assignors to Pro-Quip, Inc., Macedonia, Ohio

Filed Mar. 5, 1996, Ser. No. 610,836
Int. Cl.[6] B01F 5/02
U.S. Cl. 366—168.2 16 Claims

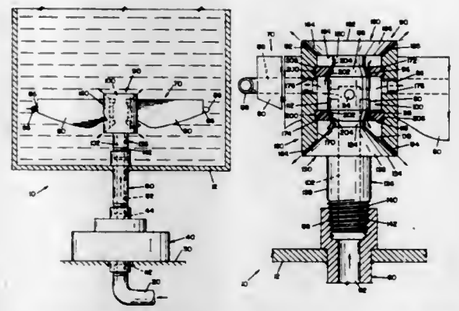
1. A jet mixer for a fluid comprising:

fluid conduit means for transmitting fluid,

hub means engageable with the fluid conduit means for receiving fluid therefrom, said hub means comprising:

a body portion;

a sleeve member rotatable about said body portion, said sleeve member and said body portion defining a plurality of slots having a variable area for the passage of fluid therethrough,



wherein said fluid acts as a bearing between the body portion and the sleeve member, and

a plurality of ring means arranged between the body portion and the sleeve member, each said ring means and said body portion defining a gap for

regulating the amount of fluid passing through said plurality of slots, wherein each said gap varies in size as said sleeve member moves axially; and

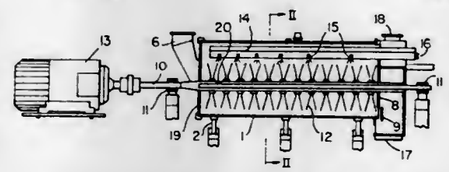
impeller means mountable to the sleeve member for receiving fluid from said hub means, said impeller means having nozzles for emitting fluid to effect rotation of the impeller means and the sleeve member.

5,620,251

COMPACTING GRANULATOR

Christian R. Funder, Fredensborg; Morten M. Hansen, Lyngby; Ove E. Hansen, Allerød; Torben Hein, Vanløse; Tage M. Larsen, Farum, and Elo Nielsen, Albertslund, all of Denmark, assignors to Niro A/S, Soborg, Denmark

PCT No. PCT/DK95/00190, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO95/31276, PCT Pub. Date Nov. 23, 1995
PCT Filed May 15, 1995, Ser. No. 481,400
Claims priority, application Denmark, May 16, 1994, 0552/94
Int. Cl.[6] B01F 9/02;15/02
U.S. Cl. 366—169.1 11 Claims



1. A compacting granulator for continuous, compacting granulation and simultaneous mixing of at least one pasty or powdery material under supply of at least one fluid, characterized in comprising

i) a drum (1) rotatable around a substantially horizontal longitudinal axis, said drum having a length which is bigger than its diameter, and means (6) for introducing pasty or powdery material at one end and means for removing granulate at the opposite end,

(ii) a shaft (10) extending parallel with the longitudinal axis of the drum thought the length of the drum placed eccentrically in the drum (1) in a level below the longitudinal axis of the drum and displaced laterally in the rotational direction of the bottom part of the drum relative to the vertical plane through the longitudinal axis, said shaft being at at least the major part of its length present in the drum provided with compacting means (12), the parts of which that are farthest away from the shaft passing, when the shaft is rotating, through an area near the part of the drum wall which is closest to the shaft,

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iv) means (4,5) for rotating the drum (1) around its longitudinal axis as well as means (13) for adjustably rotating said shaft (10) in the same direction and with a number of revolutions, being a value which during the running of the granulator is from 10 to 1000 times bigger than the number of revolutions of the drum (1) for hurling up the tumbled material present in the drum such that it is thrown through a path outside the area, where the product would be present in the drum, was it not influenced by the compacting means,

iv) at least one scraper (14) arranged stationarily in the drum for removing material from the inner wall of the drum for uniting it with material hurled up by the compacting means (12) and

v) at least one nozzle (15) for distributing at least one fluid in the part of the drum which is passed by the material in uphurled up state.

5,620,252

STATIC MIXER APPARATUS FOR HIGHLY VISCOUS MEDIA

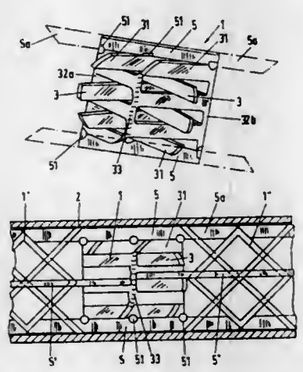
Rudolf Maurer, Winterthur, Switzerland, assignor to Sulzer Management AG, Switzerland

Filed Jan. 16, 1996, Ser. No. 585,817

Claims priority, application European Pat. Off., Feb. 2, 1995, 95810073

Int. Cl.[6] B01F *5/06*

U.S. Cl. 366—337 **8 Claims**



1. In a static mixing device for highly viscous media including a conduit and a static mixer comprising:

a tubular casing defined about an axis of fluid flow for fluid to be mixed by the static mixer;

at least one static mixer element having first crossed webs and second crossed webs, each crossed web being disposed at a different angle other than normal or parallel to the axis of fluid flow and including individual spaced apart linear web elements defining fluid flow intervals there between;

the individual spaced apart linear web elements of any crossed web extending substantially parallel to one another and extending in side-by-side relation across substantially the width of the tubular casing and the individual spaced apart linear web elements of the first crossed webs angularly intersecting, crossing and occupying a portion of the fluid flow intervals of the individual spaced apart linear web elements of the second crossed webs;

the individual spaced apart linear web elements having a border at their respective ends to the tubular casing only; and,

no individual spaced apart linear web elements having a border with the tubular casing continuously between their respective ends to the tubular casing whereby each individual spaced apart linear web element has a border at one end to the tubular casing, a boarder at an opposite end to the tubular casing, but lacks a direct border between the respective ends to the tubular casing to permit fluid flow between the individual spaced apart linear web elements and the tubular casing.

5,620,253

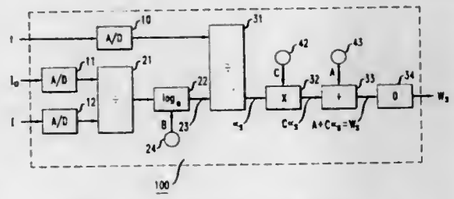
METHOD OF DETERMINING THE THERMAL RESISTIVITY OF ELECTRICALLY INSULATING CRYSTALLINE MATERIALS

John E. Graebner, Short Hills, and Sungho Jin, Millington, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 31, 1995, Ser. No. 509,678

Int. Cl.[6] G01N *25/20*

U.S. Cl. 374—43 **18 Claims**



1. A method of determining the thermal resistivity W_x of an electrically insulating, crystalline or polycrystalline sample (SUT) of host material, containing a concentration of an impurity of a combination of impurities, comprising the steps of:

(a) measuring the optical absorptivity α_x of the sample (SUT) in a spectral range having wavelengths of significant intensities continuously spanning a range of wavelengths having a spectral width approximately equal to at least 200 nm; and

(b) determining the thermal resistivity W_x of the sample (SUT) by determining the value of $A+C\alpha_x$, where A and C are the constants determined from the equation $W=[C+A\alpha]A+C\alpha$, the values of C and A being determined by

measuring the respective thermal resistivities W_1 and W_2 by a prior art method, and measuring the respective optical absorptivities α_1 and α_2 of at least first and second bodies B_1 and B_2, respectively, comprising the same host material as that of the sample and the same impurity or combination of impurities as that of the sample, but the first and second bodies containing a different concentration of the impurity or of the combination of impurities from each other.

5,620,254

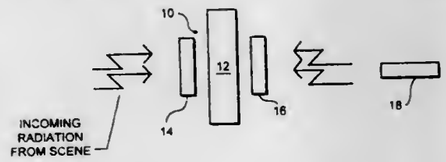
THERMAL DETECTOR MODULATION SCHEME

Martin Rost, Islip Terrace, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Mar. 8, 1995, Ser. No. 400,348

Int. Cl.[6] G01J *5/20*

U.S. Cl. 374—129 **7 Claims**



1. A thermal detector including:

an active detector element which detects radiation from a scene of interest;

a modulated light source;

a compensator detector element which detects radiation from said modulated light source; and

a modulated output which is responsive to an output of said active detector element as compensated by an output of said compensator detector element.

5,620,255

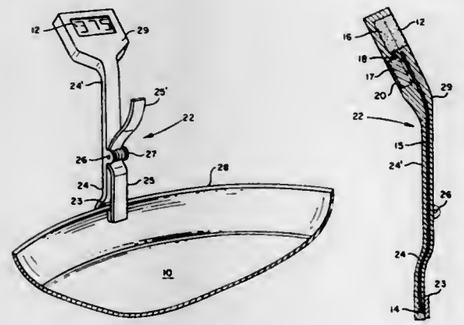
TEMPERATURE MEASUREMENT AND DISPLAY OF THE TEMPERATURE OF A COOKING SURFACE

Walter R. Cook, III, 214.5 LaVerne Ave., Long Beach, Calif. 90803

Division of Ser. No. 139,830, Oct. 22, 1993, Pat. No. 5,441,344. This application Aug. 2, 1995, Ser. No. 510,240

Int. Cl.[6] G01K *1/02;1/14;13/00;7/04*

U.S. Cl. 374—141 **3 Claims**



1. Apparatus removably affixed to a cooking utensil by a clamp placed over an edge of a surface of said cooking utensil for measurement and display of a temperature of said cooking surface of said cooking utensil, said clamp comprising

a first arm and a second arm, said second arm being pivoted on a pin held by said first arm and spring biased toward said first arm at a clamping end, thereby rendering said clamp removable from said cooking utensil,

a temperature sensing means at said clamping end of said first arm in thermal contact with said cooking surface for producing a voltage proportional to said surface temperature,

means connected to said temperature sensing means for quantitative measurement of said voltage produced proportional to said cooking surface temperature, and

conversion means electrically connected to said quantitative voltage measurement means for converting and displaying said quantitative measurement of said voltage into a display of temperature measurement in calibrated units of temperature corresponding to the temperature of said cooking surface, said conversion means being mounted for viewing said display on said clamp, said clamp having

a pad of high thermal conductive material at said clamping end of said first arm, said pad having said temperature sensing means embedded therein, whereby said sensing means produces said voltage directly proportional to temperature of said cooking surface,

a pair of insulated electrical leads coupling said voltage of said temperature sensing means to said quantitative voltage measurement means, and

said first arm of said clamp is extended away from said clamping end thereof to provide an extended part of said first arm on which said quantitative measurement means and said conversion means are mounted at a location remote from said cooking surface.

5,620,256

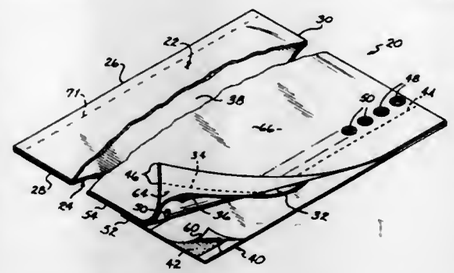
TAMPER EVIDENT SECURITY BAG

George A. Makrauer, 2918 Alpine Ter., Cincinnati, Ohio 46208

Filed Aug. 22, 1995, Ser. No. 518,012

Int. Cl.[6] B65D *33/34*

U.S. Cl. 383—5 **16 Claims**



1. A security bag comprising:

first and second plastic panels with first and second top edges, respectively, forming a bag opening between the top edges;

first openings through the first top edge;

second openings through the second top edge and aligned with the first openings, the second openings being smaller than the first openings to form an area around the second openings that is accessible through the larger, first openings;

a flap having a surface; and

an adhesive covering portions of the surface of the flap, wherein upon the flap being folded over the top edges, the flap adhering to the first top edge and second top edge to seal the opening, the adhesive also extending from a first portion of the flap through the first openings and contacting the area around the second openings to provide an adhesive to plastic seal, and the adhesive further extending through the second openings to a second adhesive portion of the flap to provide a continuous run of adhesive through the openings in the first and the second top edges.

5,620,257

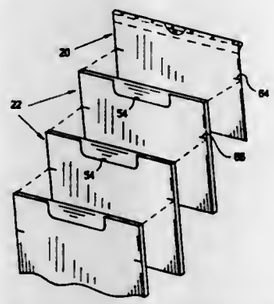
HOLDER FOR STORING PAPERS

Michael C. Hendershot, 820 Davis St., Suite 220, Evanston, Ill. 60201

Filed Mar. 18, 1996, Ser. No. 617,132

Int. Cl.[6] B65D *33/14;30/22*

U.S. Cl. 383—11 **10 Claims**



1. A holder for holding flat papers identified as having a vertical position, comprising,

a plurality of components which include a back support and at least one pocket,

the back support being in the form of a flat panel and having a seam along its top edge, and a rigid bar in the seam extending essentially the width of the panel, and further having an

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aperture through the seam at the center, transversely, exposing the bar and receiving a hook for holding the panel,

each pocket being in the form of a double flat panel forming a closed bottom and an open top and having a width substantially the same as that of the back support,

the back support, except for said bar, and each pocket being made up of paper, and

means securing the pocket to the back support along a transverse line extending the width of the pocket at the top of the latter, and, when the pocket is secured to the back support, spaced downwardly from the top of the back support.

5,620,258

PRESS DIE SET AND PRESS MACHINE FOR DRIVING IT

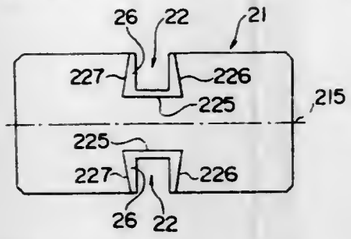
Nobuo Enomoto; Mitsuji Hosoda; Toshio Wada; Kazuyoshi Umeya, and Koki Okanda, all of Yamanashi-ken, Japan, assignors to Enomoto Co., Ltd., Yamanashi-ken, Japan

Division of Ser. No. 214,617, Mar. 18, 1994. This application Sep. 29, 1995, Ser. No. 536,611

Claims priority, application Japan, Mar. 26, 1993, 5-092373; Oct. 28, 1993, 5-062774 U; Nov. 15, 1993, 5-308629; Nov. 18, 1993, 5-066429 U

Int. Cl.[6] F16C *29/04*

U.S. Cl. 384—47 **4 Claims**



1. A chain-like cross roller bearing in which a number of rollers are rotatably coupled, each roller being provided with a circumferential groove at the center in the direction of the axis of rotation, the surface of circumferential groove of which is coated with resin and the surface of the circumferential groove is worked into a shape preventing the peeling-off of the resin, the circumferential groove of the roller being rotatably fitted with a support ring which is formed at the center of the coupling link, and a coupling ear provided at each side of the support ring coupling adjacent to the coupling links so that each roller is coupled so as to be orthogonal with each other.

5,620,259

LINEAR GUIDE

Gianfranco Mainardi, Au, Switzerland, assignor to Doma Tech pneumatische Komponenten, Au, Switzerland

Filed May 30, 1996, Ser. No. 655,467

Claims priority, application Switzerland, Jun. 3, 1995, 01643/95

Int. Cl.[6] F16C *29/04:29/12*

U.S. Cl. 384—58 **19 Claims**

1. A linear guiding apparatus comprising

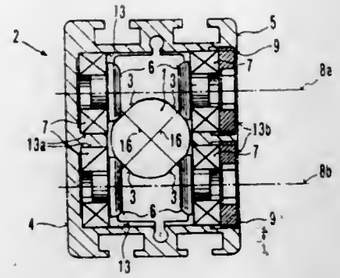
rod means having a peripheral surface and at least four guiding surfaces distributed over said peripheral surface and extending in longitudinal direction of said rod means, said longitudinal direction of said rod means defining a longitudinal axis;

carriage means arranged for a linear guided movement along said rod means, said carriage means including:

a roll arrangement comprising at least four rolls, each roll having an axis and engaging said guiding surface in such a manner that the axis of the respective roll extends substantially in a direction perpendicular to said longitudinal axis, but is inclined with respect to a plane perpendicular to the respective guiding surface; and

journal means for said rolls;

said carriage means being guided by said rolls engaging said guiding surfaces along said rod means, thereby being substantially free of torsion about said longitudinal axis.



5,620,260

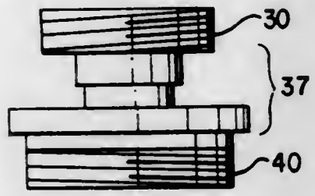
VARIABLE CHARACTERISTIC THRUST BEARING

Russell D. Ide, 122 Ridge Dr., Exeter, R.I. 02822

Division of Ser. No. 105,945, Aug. 13, 1993, Pat. No. 5,382,097, which is a division of Ser. No. 954,144, Sep. 30, 1992, Pat. No. 5,255,984, which is a continuation-in-part of Ser. No. 949,225, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 541,131, Jun. 4, 1990, Pat. No. 5,125,754, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, and Ser. No. 516,977, Apr. 30, 1990, Pat. No. 5,066,144, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, which is a continuation-in-part of Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned, said Ser. No. 516,781is a continuation-in-part of Ser. No. 309,081, said Ser. No. 949,225is a continuation-in-part of Ser. No. 685,148, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 309,081. This application Nov. 28, 1994, Ser. No. 348,125

Int. Cl.[6] F16C *17/06*

U.S. Cl. 384—122 **10 Claims**



1. A bearing pad for use in a bearing of the type that includes a plurality of bearing pads spaced about a shaft, the bearing pad comprising: a pad portion having a pad surface and a support portion supporting the pad portion; wherein the pad portion includes a threaded portion and the support portion includes a portion having a shape that is complimentary to the shape of the threaded portion of the pad portion that the support portion and the pad portion can be threadably secured to one another.

5,620,261

BEARING BUSH AND METHOD OF MANUFACTURING THE BEARING BUSH

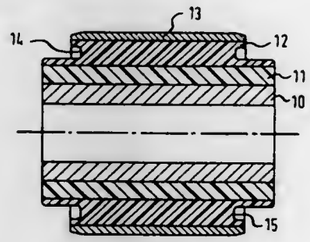
Robert Salz, Neustadt/Wied, Germany, assignor to Metzeler Gimetall AG, Breuberg, Germany

Filed Aug. 24, 1995, Ser. No. 519,124

Claims priority, application Germany, Aug. 24, 1994, 44 30 037.9

Int. Cl.[6] F16C *17/02*

U.S. Cl. 384—276 **2 Claims**



1. A method of manufacturing a bearing bush, which comprises:

inserting an inner tube of metal and an intermediate tube of synthetic material resting against the inner tube and being slideable at least in a circumferential direction, into a vulcanizing mold together;

deforming the intermediate tube in accordance with an external contour of the inner tube during vulcanization; and

applying a vulcanized layer onto an outer surface of the intermediate tube.

5,620,262

SLIDING BEARING

Yoshio Kumada; Katsuyuki Hashizume, and Soji Kamiya, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

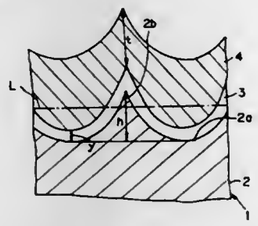
PCT No. PCT/JP95/00466, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/25908, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 17, 1995, Ser. No. 549,725

Claims priority, application Japan, Mar. 18, 1994, 6-73961

Int. Cl.[6] F16C *33/24*

U.S. Cl. 384—283 **8 Claims**



1. A sliding bearing comprising a bearing alloy layer having a plurality of circumferentially extending annular grooves formed in its inner peripheral surface which are axially spaced apart from each other to define a circumferentially extending peak between each pair of axially adjacent annular grooves, an intermediate layer which coats the surface of the bearing alloy layer, and an overlay layer which coats the surface of the intermediate layer, whereby sufficiently abrading the overlay layer and the intermediate layer, beginning from the surface of the overlay layer, exposes the portions of the overlay layer and the intermediate layer which remain in recesses formed by the annular grooves as well as the peaks of the bearing alloy layer,

wherein the peak of the bearing alloy layer has a beight h, the intermediate layer has a thickness y and the overlay layer has a thickness t at the top of the peak, the parameters h, y and t satisfying the following inequalities:

$$1 \leqq h \leqq 8 \quad (1)$$

$$0 < y \leqq 2 \quad (2)$$

$$0.7\,h \leqq t \leqq 2\,h \quad (3)$$

where h, y and t are represented in unit of μm.

5,620,263

AXLE BEARING ASSEMBLY AND METHOD OF MEASURING BEARING CLEARANCES

Hisashi Ohtsuki, Iwata-gun; Motoharu Niki, Iwata; Yasunori Terada, Iwata, and Nobuyoshi Yamashita, Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

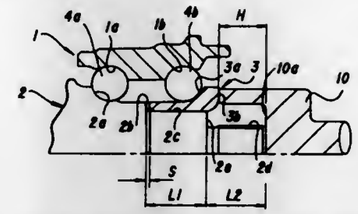
PCT No. PCT/JP94/01830, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO95/12072, PCT Pub. Date May 4, 1995

PCT Filed Oct. 28, 1994, Ser. No. 448,328

Claims priority, application Japan, Oct. 28, 1993, 5-269362; Oct. 29, 1993, 5-271479

Int. Cl.[6] F16C *33/60:43/04*

U.S. Cl. 384—517 **4 Claims**



1. An axle bearing assembly comprising an outer ring having a flange formed on the outer periphery thereof and two rows of raceway surfaces formed on the inner periphery thereof, an inner ring having a raceway surface formed on the outer periphery thereof in opposed relation to one of the raceway surfaces of the outer ring, an axle formed on the outer periphery thereof with a raceway surface opposed to the other raceway surface of the outer ring and also with a press-fit portion continuous therewith through a shoulder portion and adapted to have the inner ring press-fitted thereon, and two rows of balls angularly contacting with one row of the raceway surfaces of the outer ring and the raceway surface of the inner ring and with the other row of the raceway surfaces of the outer ring and the raceway surface of the axle, wherein the inner ring is press-fitted until it abuts against the shoulder portion of the axle and in that bearing clearance is negative.

5,620,264

ERROR CONTROL SYSTEM FOR A PRINTER

Osamu Kagita, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,003

Claims priority, application Japan, Jun. 2, 1994, 6-121480

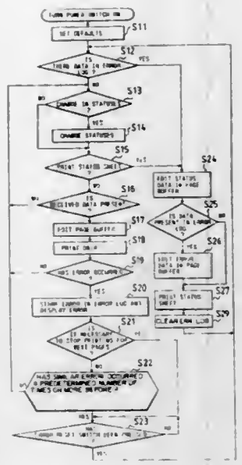
Int. Cl.[6] B41J *29/38*

U.S. Cl. 400—74 **9 Claims**

1. An error control system for a printer designed to continue printing when an error not requiring a stoppage of printing has occurred during a print operation, comprising:

a means for responding to the occurrence of a given error by storing error content data indicating a type of error that has occurred during the print operation;

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printing means for completing the print operation whenever the given error is an error not requiring the printer to stop printing;

a means for storing status data indicating operational statuses currently set for the printer;

means for checking for the error content data in said means for storing error content data in response to a power-up command following a power-down condition; and

a means, responsive to said means for checking, for retrieving the stored error content data from said means for storing error content data and for printing out the stored error content data and the stored status data together on one sheet in a status print operation.

5,620,265

INK RIBBON CARTRIDGE

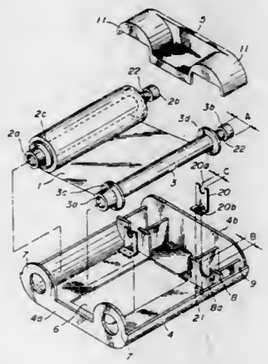
Shinichi Kondo, Miyagi, Japan, assignor to Sony Corporation, Japan

Filed Dec. 16, 1994, Ser. No. 357,920

Claims priority, application Japan, Dec. 28, 1993, 5-335370

Int. Cl.[6] B41J *32/00*

U.S. Cl. 400—196 **10 Claims**



1. An ink ribbon cartridge comprising;

a pair of spools having an ink ribbon wound therebetween around central, axially extending cylindrical winding surfaces thereof and respectively including first and second shank portions axially projected from opposing end portions of said cylindrical winding surfaces;

a shell including a plurality of bearing portions rotatably supporting said pair of spools at said shank portions, said plurality of bearing portions including respective first and second bearing portions; and

compatibility determining means disposed along and cooperative with at least one of said shank portions, said compatibility determining means being disposed between said first and second bearing portions;

wherein said compatibility determining means comprises a circumferential groove formed on a selected one of said shank portions and a member defining a recess, a position of said member and a width of said recess being determined such that said recess may receive and rotatably support said shank only at the circumferential groove thereof.

5,620,266

METHOD FOR OPTIMALLY CONTROLLING SERIAL PRINTER CARRIAGE

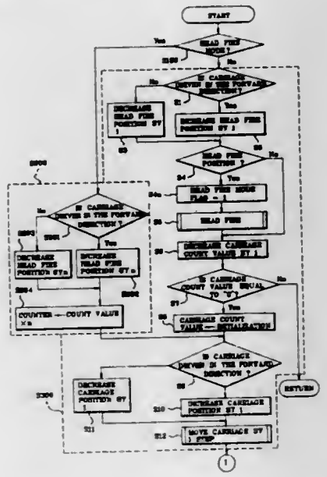
Hong J. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 54,759, Apr. 30, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,743

Claims priority, application Rep. of Korea, Feb. 26, 1993, 93-2981

Int. Cl.[6] B41J *19/30*

U.S. Cl. 400—279 **5 Claims**



1. A method for optimally controlling the carriage of a serial printer comprising the steps of driving a carriage step motor to move a carriage in successive steps at a substantially constant speed wherein said step of driving the carriage comprises driving said carriage motor at step intervals based on a head drive basic unit until a head is in a head fire mode and then driving said carriage motor based on a carriage drive basic unit at step intervals each n times greater than the step intervals before reaching said head fire mode.

5,620,267

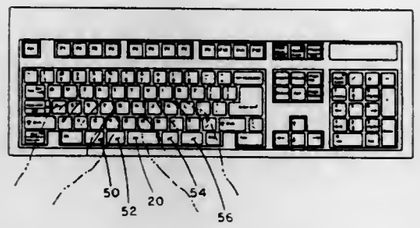
KEYBOARD WITH THUMB ACTIVATED CONTROL KEY

Robert D. Klauber, Fairfield, Iowa, assignor to Keyboard Advancements, Inc., Fairfield, Iowa

Continuation-in-part of Ser. No. 137,941, Oct. 15, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,765

Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—486 **19 Claims**



1. A keyboard for a computer, electronic typewriter, or word processor, comprising:

a plurality of alphanumeric keys comprising twenty-six alphabetic keys and ten numeric keys arranged corresponding to touch typing position each of which alphanumeric keys automatically effects a different alphanumeric character,

a means to effect a space wherein said means to effect a space is positioned within reach of at least one thumb of a touch typist having hands and fingers positioned on said keyboard in touch typing position,

a plurality of non-alphanumeric keys, and

a means to actuate a control function wherein actuation of said control function simultaneously with one alphabetic key automatically effects a specific function such as, but not limited to, one of save, print and type italics,

wherein said means to actuate the control function is a key labeled control and said means to actuate the control function is positional within reach of at least one thumb of the touch typist having hands and fingers positioned on the keyboard in touch typing position.

5,620,268

COMPOSITE CASSETTE INCLUDING A TAPE CASSETTE AND A RIBBON CASSETTE

Koshiro Yamaguchi, Kasugai; Kiyoshi Sugimoto, Kuwana, and Yutaka Sugiyama, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 18, 1996, Ser. No. 617,058

Claims priority, application Japan, Mar. 29, 1995, 7-100064; Nov. 30, 1995, 7-337942; Jan. 9, 1996, 8-019437

Int. Cl.[6] B41J *11/58*

U.S. Cl. 400—603 **22 Claims**

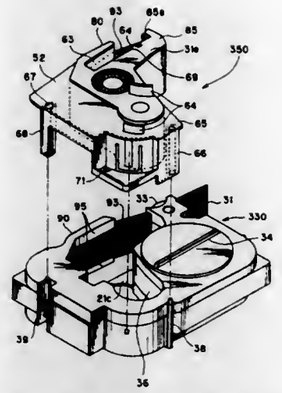
1. A tape/ribbon composite cassette comprising

a tape cassette freely detachably mounted in a printer provided with a print head, the tape cassette housing a tape serving as a print medium, the tape cassette having an upper surface;

a ribbon cassette freely detachably mounted in the tape cassette, the ribbon cassette housing an ink ribbon, the ribbon cassette provided with an upper surface overlapping at least a portion of the upper surface of the tape cassette;

at least two guide portions provided to the tape cassette at positions separated from each other at an outer periphery of the tape cassette, the at least two guide portions guiding the ribbon cassette vertically in and out of the tape cassette; and

at least two guided portions formed integrally to the upper surface of the ribbon cassette at positions corresponding to the positions of the guide portions, the at least two guided portions engaging with the guide portions to guide the ribbon cassette vertically in an out of the tape cassette.



5,620,269

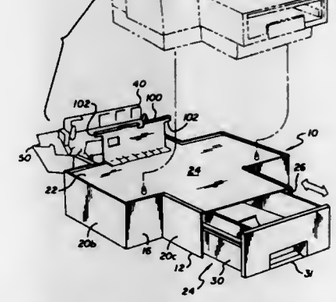
PRINT MEDIA TRANSPORT APPARATUS FOR MOVING PRINT MEDIA THROUGH A PRINTER FROM A HIGH VOLUME INPUT TRAY ACCESSORY

Michael Gustafson, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 17, 1995, Ser. No. 373,829

Int. Cl.[6] B41J *11/58*

U.S. Cl. 400—624 **10 Claims**



1. A print media transport apparatus for transporting sheets of print media from a high volume auxiliary media input tray and for introducing said sheets into a printer media transport path extending from an individual sheet reception slot to a print zone of a printer, said apparatus comprising:

a) a tray cabinet having an upper surface for supporting a printer thereon and having a receptacle in said cabinet for receiving a print media tray moveable into and out of said cabinet along a path extending from a first side of said cabinet toward a second side of said cabinet;

c) means in said cabinet for moving individual print media sheets from the top of a stack of sheets in said tray toward said second side of said cabinet;

d) a convex print media guide moveable between an operative position in which said guide extends upwardly from said cabinet and an open position in which said convex guide

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extends generally in the direction of movement of said print media tray, said guide being movably connected to said cabinet proximate said second side of said cabinet;

e) a print media guide housing moveable between an operative position in which said housing extends upwardly from said cabinet and an open position in which said housing extends generally in the direction of movement of said print media tray, said housing being movably connected to said cabinet at said second side, said housing having a concave print media guide surface therein spaced from said convex print media guide, said convex guide and said concave housing surfaee, when in operative position, defining a curved print media path therebetween terminating at a discharge end, said housing substantially enclosing said print media guide;

f) means for moving individual sheets of print media along said print media path; and

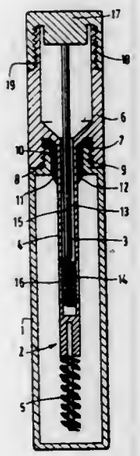
g) a print media pre-heater affixed to one of said guide and said housing proximate said print media discharge end.

5,620,270

DEVICE FOR STORING AND APPLYING A MAKEUP PRODUCT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Sep. 5, 1995, Ser. No. 523,546
Claims priority, application France, Sep. 5, 1994, 94 10609
Int. Cl.[6] A45D *40/24;40/00*
U.S. Cl. 401—126 **19 Claims**



12. An application and storage assembly for use with makeup comprising:

an elongated tubular container having an opening for storing makeup therein;

a first applicator removably coupled to the container having a first hollow rod with two ends, one end with a first application element that is stored within the container and the other end with a first cap thereon extending from the container during storage, the first hollow rod having at least one slot therein positioned along its length; and

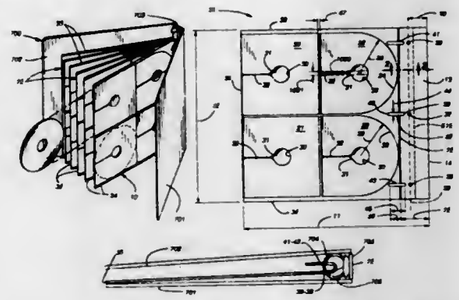
a second applicator removably coupled to the container having a second rod with two ends, one end with a second application element that is stored within the first hollow rod inside the container and is configured to be in communication with makeup stored in the container, and the other end with a second cap thereon extending from the container during storage and sealing the opening to the container.

5,620,271

THREE RING BINDER PAGE FOR HOLDING COMPACT DISCS

James A. Bergh, Boulder, and Terrence M. Drew, Superior, both of Colo., assignors to Case Logic, Inc., Longmont, Colo.

Filed Sep. 13, 1995, Ser. No. 527,661
Int. Cl.[6] B42F *13/00;* **B65D** *85/30;85/57*
U.S. Cl. 402—79 **42 Claims**



1. A relatively thin and flexible three ring binder page for removably storing a plurality of compact discs, comprising;

a first transparent and flexible plastic sheet, a second flexible plastic sheet, and a third transparent and flexible plastic sheet.. said three sheets being arranged in that order,

said first, second and third sheets each having a generally similar rectangular shape whose vertical height generally conforms to the vertical height of a standard size three-ring binder cover, and whose horizontal width is somewhat larger than the horizontal width of a standard size three-ring binder cover,

said first sheet, second and third sheets each having a horizontal top edge and a horizontal bottom edge that define said horizontal width, and having a vertical right hand side edge and a vertical left hand side edge that define said vertical height,

a first three-sided heat seal binding said first sheet, second and third sheets together at said top edge, bottom edge, and right hand side edge, to thereby form a unitary flexible three ring binder page wherein said right hand side edge defines a binder edge of said binder page,

four three-sided heat seals binding said first, second and third sheets together in a manner to define four single-disc storage pockets on each side of said binder page,

said four single-disc storage pockets on each side of said page being arranged in two identical four-pocket generally square matrixes, each matrix having two storage pockets on each vertical side of said matrix,

a first pattern of three vertically aligned and circular binder holes formed at a location that is spaced a first distance from said right hand side edge of said binder page,

a second pattern of three vertically aligned and elongated binder holes individually extending in a horizontal direction and individually horizontally aligned with one of said three circular binder holes, said three elongated binder holes being formed at a location that is spaced a second greater distance from said right hand side edge of said binder page, and

a linear and vertical beat seal fold line extending generally parallel to said right hand side edge of said binder page, and located to intersect said three elongated binder holes.

5,620,272

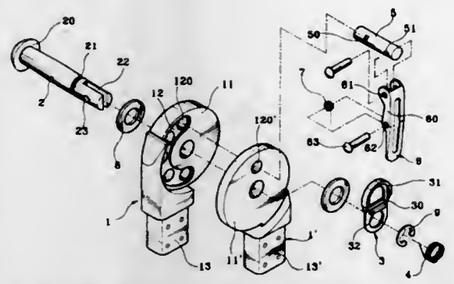
ADJUSTABLE JOINT ASSEMBLY FOR LADDER SECTIONS

Chim-Yuem Sheng, No. 38, Wen Hua S. Rd., Sanchung City, Taipei Hsien, Taiwan

Filed May 10, 1995, Ser. No. 438,361
Int. Cl.[6] F16C *11/00*
U.S. Cl. 403—96 **1 Claim**

1. An adjustable joint assembly for ladder sections comprising:

a) a pivot shaft;



b) a first base plate and a second base plate pivotally mounted on the pivot shaft, the first base plate including a plurality of eccentric blind holes formed therein and the second base plate including an eccentric hole formed therethrough;

c) a locking rod having a retaining slot formed therein, the locking rod extending through the eccentric hole of the second base plate for selective engagement with any one of the plurality of blind holes of the first base plate for maintaining the second base plate at a desired angle relative to the first base plate;

d) a lever pivotally mounted to the pivot shaft and the locking rod, the lever being disposable between a locked position wherein the locking rod engages a blind hole of the first base plate for maintaining the second base plate at the desired angle relative to the first base plate and an unlocked position wherein the locking rod is disengaged from the blind hole to permit the second base plate to be pivoted relative to the first base plate;

e) a locating plate carried by the pivot shaft, the locating plate including a mounting hole having a peripheral edge, a finger strip for manual engagement by a user and a flange adjacent the mounting hole, the locating rod being loosely coupled to the locating plate through the mounting hole;

f) a torsional spring including a first end and a second end, the first end being disposed in engagement with pivot shaft and the second end being disposed in engagement with the flange of the locating plate for biasing the peripheral edge of the mounting hole against the locating rod; and

g) whereby when the lever is disposed in the unlocked position, the peripheral edge of the mounting hole engages the retaining slot of the locating rod to maintain the lever in the unlocked position until manual engagement of the finger strip by the user to release the peripheral edge of the mounting hole from the retaining slot after adjustment of the desired angle between the base plates has been accomplished.

5,620,273

SECTIONAL BAR SYSTEM

Klaus Heyn, Zell/Mosel, and Jochen Koehn, Wittlich, both of Germany, assignors to Zeller Plastik, GmbH, Zell/Monsel, Germany

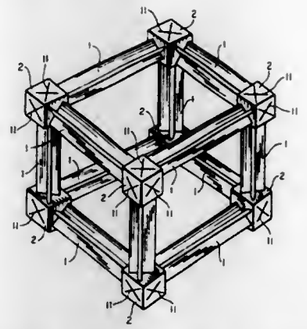
PCT No. PCT/EP94/00759, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO94/20762, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 11, 1994, Ser. No. 507,445
Claims priority, application Germany, Mar. 12, 1993, 43 07 920.2
Int. Cl.[6] F16B *7/04*
U.S. Cl. 403—170 **29 Claims**

1. Sectional bar system comprising

a) bars (1), the surfaces of which form X-profiles over their whole lengths, and

b) connecting elements (2), each of which comprise several assembled parts for the bars (1), wherein

c) the bars (1), which have tapered ends (3), comprise first joining elements (4) for the connection with the connecting elements (2), and



d) the connecting elements (2) comprise recesses (11), which each can receive one tapered end (3) of a bar (1), and second joining elements (6) for the connection with the first joining elements (4) of the bars (1), and

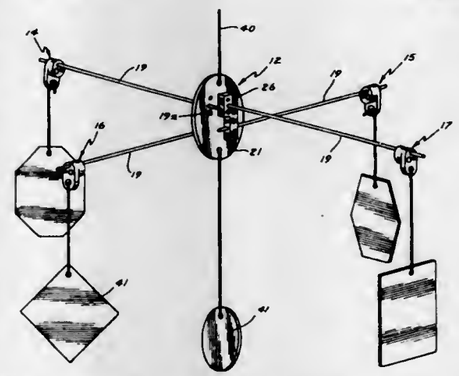
e) the connecting elements (2) are cubes each formed preferably by six pyramids (5) with four surfaces.

5,620,274

MOBILE SUSPENSION DEVICE

Stuart C. W. Wear, 8216 30 1/2 St. #109, St. Louis Park, Minn. 55426

Filed Feb. 26, 1996, Ser. No. 607,290
Int. Cl.[6] A63H *33/42*
U.S. Cl. 403—171 **6 Claims**



5. a suspension arrangement for mobiles, comprising a central holding member formed as a molded product,

a plurality of clip members integral with said central holding member by linkage attachments suspending mobiles; and

said linkage being separable.

5,620,275

TIMBER BEAM HANGER AND RESULTING BEAM CONNECTION

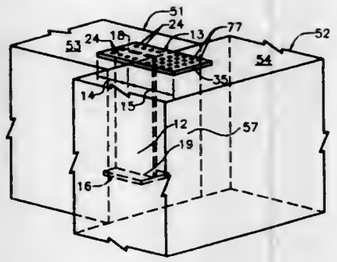
Josef Novacek, 4063 West 20th Avenue, Vancouver, British Columbia, Canada

Filed Dec. 23, 1994, Ser. No. 362,994
Int. Cl.[6] F16B *9/00*
U.S. Cl. 403—232.1 **8 Claims**

1. A beam connection assembly comprising:

(a) a first member having an upper face, a lower face opposite to the upper face, and a first joint face, the first joint face having a generally vertical slit intersecting the upper face, and a

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generally horizontal slit which is intersected by the vertical slit at a position remote from the upper and lower faces, the horizontal slit being defined in part by a pair of spaced apart horizontal slit faces,

(b) a second member having a second joint face, at least one portion of the second joint face being adjacent and generally complementary to at least one portion of the first joint face,

(c) a beam hanger comprising:

(i) a generally vertical web inserted into the vertical slit in the first joint face, the web being within a generally vertical axial plane and having upper and lower edges adjacent the upper face and the horizontal slit respectively of the first member, the web having an outer edge adjacent the first joint face,

(ii) an upper flange non-releasably connected to and extending from the upper edge of the web so that the upper flange contacts the upper face of the first member,

(iii) a seat non-releasably connected to and extending from the lower edge of the web and inserted within the horizontal slit, the seat having a lower face which is concealed from view by the first member,

(iv) a connector for connecting the beam hanger to the second member, the connector being non-releasably connected to the upper flange or the web and cooperating with secondary fasteners to secure the beam hanger to the second member, and

(d) a plurality of primary fasteners passing through openings in the upper flange of the beam hanger and extending into the first member to secure the upper flange to the first member.

5,620,276

DEFORMABLE IMPACT TEST BARRIER

Michael C. Niemerski, Jenison; Gerald J. Schoeb, and Fritz Huebner, both of Holland, all of Mich., assignors to Plascore, Inc., Zeeland, Mich.

Filed Sep. 29, 1995, Ser. No. 536,058
Int. Cl.[6] E01F *13/00*
U.S. Cl. 404—6 **10 Claims**

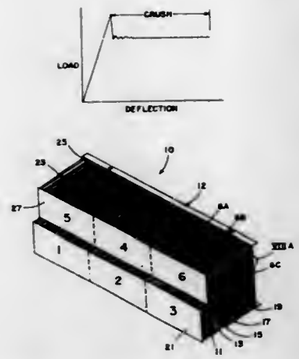
1. An impactor for a movable, deformable barrier simulating an automobile, comprising:

an upright, solid backing support having a support face;

a plurality of energy absorbing impact segments protruding from said support face;

each said segment having an outer impact face and each comprising a plurality of layers of honeycomb having crush strengths characterized by increasing crush strength of successive layers from said outer impact face to said support;

said layers being separated by and secured to perforate plates therebetween allowing air flow from a crushing layer to the succeeding layers when said layers are successively crushed; and



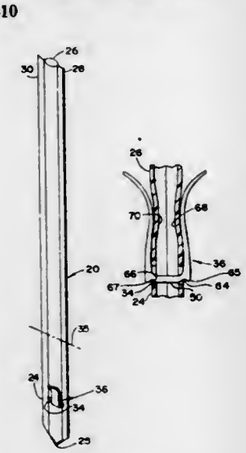
each impact segment having a thin vent layer adjacent said support for discharge of air from all of said segments as they are successively crushed.

5,620,277

MARKING AND ANCHORING APPARATUS

Novice J. Cole, Sr., P.O. Box 1266, Brentwood, Tenn. 37027, and Gary J. Wonzer, 3070 Palm Ave., Ft. Myers, Fla. 33901

Filed Dec. 1, 1994, Ser. No. 347,707
Int. Cl.[6] E01F *9/00*
U.S. Cl. 404—10 **39 Claims**



24. Marker apparatus, comprising;

(a) a post having top and bottom ends, flexibly resilient means having top and bottom ends with said top end of said resilient means being secured to said bottom end of said post, and means attached to said bottom end of said resilient means for supporting said post at a desired location,

(b) said post having a longitudinally extending tubular central section with wings extending outwardly from opposite sides of said tubular central section,

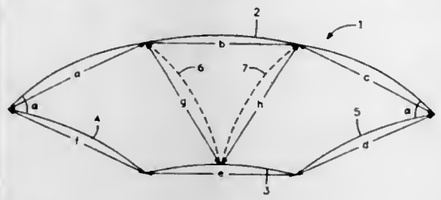
(c) said flexibly resilient means acting as a universal hinge to enable said post to tip in any direction in response to an impact from any direction to prevent crumpling of said wings which would inhibit or prevent said post from returning to an upright position.

5,620,278

TILE

Cameron J. Clarke, Delgany, Ireland, assignor to Shapes & Solutions Limited, Delgany, Ireland

PCT No. PCT/IE93/00027, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO93/23625, PCT Pub. Date Nov. 25, 1993
PCT Filed May 17, 1993, Ser. No. 341,539
Claims priority, application Ireland, May 18, 1992, 1583/92
Int. Cl.[6] E01C *5/00*
U.S. Cl. 404—34 **20 Claims**



1. A tile comprising:

a first side edge,

a second side edge,

third and fourth side edges which extend between the first and second side edges,

the second, third and fourth side edges being of substantially equal length,

the length of the first side edge being substantially the sum of the lengths of the other three side edges,

all of the side edges being of curvilinear shape, and

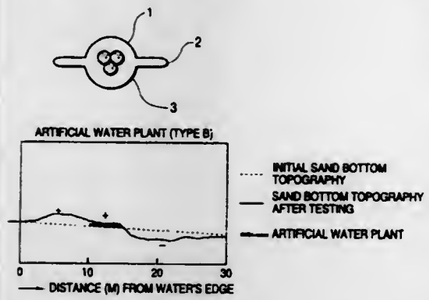
each side edge defining a portion of a circle, the radii of curvature of all of the side edges being substantially equal.

5,620,279

ARTIFICIAL WATER PLANT SYSTEM FOR CONTROLLING SEDIMENT TRANSPORT ON A WATER BED

Hironobu Furusawa, Osaka, and Kazuki Oda, Sakai, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1995, Ser. No. 500,328
Claims priority, application Japan, Jul. 11, 1994, 6-158811
Int. Cl.[6] E02B *3/00*
U.S. Cl. 405—24 **7 Claims**



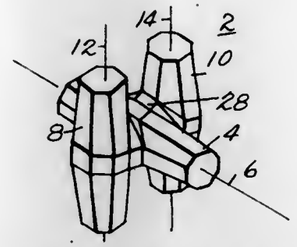
1. An artificial water plant system for controlling sediment transportation on a water bed, which is a rod-shaped or tubular molding product having a circular or non-circular cross sectional shape and comprising a thermoplastic elastomer alone having a flexural modulus of from 500 to 5000 kg/cm^2 or a composite body having a sheath constituted with said thermoplastic elastomer and a core constituted with synthetic fiber bundles.

5,620,280

CONCRETE ARMOR UNIT TO PROTECT COASTAL AND HYDRAULIC STRUCTURES AND SHORELINES

Jeffrey A. Melby, and George F. Turk, both of Vicksburg, Miss., assignors to U.S. Army Corps of Engineers as Represented by the Secretary of the Army, Washington, D.C.

PCT No. PCT/US94/09263, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO95/09279, PCT Pub. Date Apr. 6, 1995
Continuation-in-part of Ser. No. 128,426, Sep. 30, 1993, Pat. No. 5,441,362. This PCT application Aug. 17, 1994, Ser. No. 290,721
Int. Cl.[6] E02B *3/04*
U.S. Cl. 405—29 **41 Claims**



1. An armor unit for protecting harbor and navigation channels, and coastal, river, lake and reservoir banks and shorelines and other structures from the damaging hydrodynamic forces of waves and water currents, comprising:

a central elongate member having a longitudinal axis; and

first and second outer elongate members connected with said central elongate member on opposite sides thereof, said first and second outer elongate members having parallel longitudinal axes extending normal to said longitudinal axis of said central elongate member, said elongate members each having an octagonal cross-section, the cross-sectional area of each member decreasing from an intermediate portion toward the opposite ends thereof, whereby when a plurality of structures are interlocked to define a protective array, a high degree of wedging is afforded between said octagonal members and residual stability is provided in the array.

5,620,281

MACHINE AND METHOD FOR LAYING FILM ON FACE OF LANDFILL

Arville J. Lammers; Rodrigo A. Garcia, both of Conroe, Tex., and Joseph G. Gho, Vancouver, Canada, assignors to EPI Environmental Products Inc., Conroe, Tex.

Continuation of Ser. No. 164,375, Dec. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 104,195, Aug. 10, 1993, Pat. No. 5,416,133. This application Feb. 16, 1996, Ser. No. 603,153
Int. Cl.[6] F02B *3/12*
U.S. Cl. 405—129 **5 Claims**

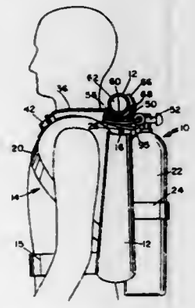


1. A method of providing a daily cover for a working face of a landfill which comprises:

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dumping trash into a landfill during a period of operation, creating an open face of trash;
at the end of a working day, using mechanical means to unroll a first strip of degradable polyolefin film having a top and edges over a portion of said open face;
concurrently depositing mechanically-fed anchoring material onto said top and inside said edges of said first strip of film;
cutting said first strip of film;
unrolling a second strip of degradable polyolefin film adjacent and parallel to said first strip of film, while depositing more of said anchoring material onto said second strip;
cutting said second strip of film;
repeating the above-described steps of unrolling, depositing, and cutting strips of film a plurality of times until said open face is completely covered.

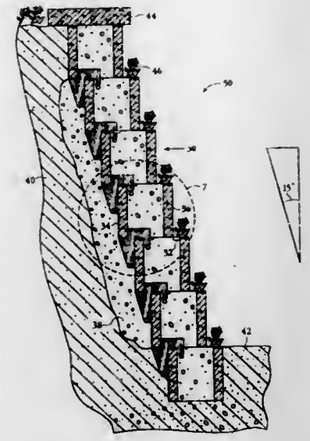
5,620,282
BUOYANCY COMPENSATOR ASSEMBLY
Robert T. Stinton, Lakeside, Calif., assignor to Diving Unlimited International, San Diego, Calif.
Filed Dec. 12, 1994, Ser. No. 353,628
Int. Cl.[6] B65C *11/02*
U.S. Cl. 405—186 **20 Claims**



1. A buoyancy compensator assembly, comprising:
an inflatable bladder having an internal chamber for filling with gas to control buoyancy of a diver, an inlet port for supply of gas to the bladder, and an outlet port for exhaust of gas from the bladder, the bladder being adapted for mounting at least partially on a diver's back and having an outer face and an inner face;
at least one passageway extending beneath the bladder from the outer face to the inner face of the bladder;
a bladder inflation control valve for controlling supply of air to the bladder inlet port; and
at least two hoses extending through the passageway and over a diver's shoulder when the bladder is mounted on a diver's back, one of the hoses having a first end connected to said bladder inlet port and a second end connected to said bladder inflation control valve, and the other hose having a first end connected to the bladder inflation control valve and a second end for connection to a low pressure gas supply.

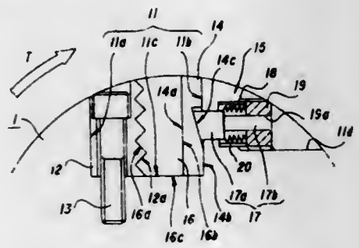
5,620,283
ALIGNMENT HANGER AND METHOD FOR BUILDING A BARRIER OF CONCRETE BLOCKS
Richard Walter, 1960 Francis Ave., Santa Clara, Calif. 95051
Filed Nov. 1, 1955, Ser. No. 548,342
Int. Cl.[6] E02D *29/00;29/02*
U.S. Cl. 405—286 **16 Claims**

1. A hanger for aligning open-celled construction blocks to form a sloped barrier, the hanger comprising,



a hook portion having an inside reach for lapping over a slope side wall of a block, an outside reach for contacting an outside wall of the block, and a bridge connecting the inside reach and the outside reach and for spanning a rim of the block, and
a shoulder portion projecting laterally from the outside reach of the hook portion and having a top ledge for receiving a rim of a vertically adjoining block, the top ledge of the shoulder being coplanar with a bottom surface of the hook portion.

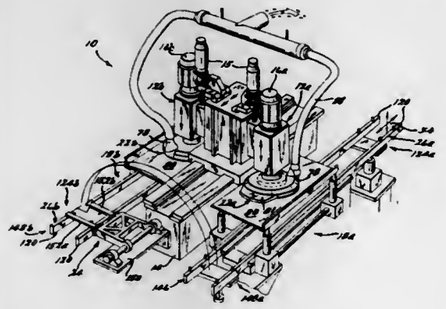
5,620,284
CUTTING TOOL
Yoshihisa Ueda, Ibaragi; Hiroshi Shimomura, Tsukuba; Shouji Takiguchi, Iwai, and Akira Kanaboshi, Tsukuba, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
PCT No. PCT/JP95/00355, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO95/24287, PCT Pub. Date Sep. 14, 1995
PCT Filed Mar. 6, 1995, Ser. No. 545,605
Claims priority, application Japan, Mar. 7, 1994, 6-036179; Mar. 7, 1994, 6-036180; Mar. 7, 1994, 6-036181; Mar. 7, 1994, 6-036182
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—158 **12 Claims**



1. A cutting tool, comprising:
a substantially conic main body which is rotated about its longitudinal axis,
a U-shaped groove having a U-shaped cross section and extending along a generatrix of the conic main body,
a slider equipped with a cutting tip and slidably mounted in the U-shaped groove, and

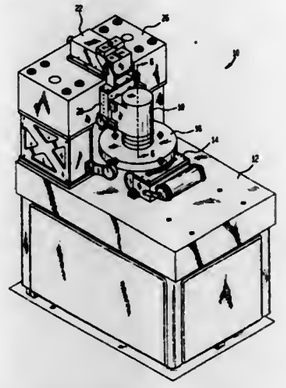
a coupling member provided in the main body which is rotatable with the main body, movable forward and backward along the longitudinal axis, and engages the slider to slide the slider, wherein;
a spacer is detachably mounted between one of a pair of wall surfaces of the U-shaped groove facing each other and the slider, the spacer being formed with an engaging portion extending along the generatrix,
an engaged portion engageable with the engaging portion is formed on one side surface of the slider which is brought into contact with the spacer, and
biasing means which biases the slider toward the one wall surface of U-shaped groove with an elastic force.

5,620,285
ADIABATIC DRY DIAMOND MILLING SYSTEM
Manuel C. Turchan, 42288 Crestview Cir., Northville, Mich. 48167
Division of Ser. No. 875,231, Apr. 28, 1992. This application May 18, 1995, Ser. No. 444,233
Int. Cl.[6] B23C *1/00*
U.S. Cl. 409—132 **6 Claims**



1. A method for very high speed adiabatic milling of a workpiece, said method comprising the steps of:
placing said workpiece, in a fixture having a mask circumscribing said workpiece, adjacent a cutting means having a partly concave cutter body to enhance rigidity of said cutting means;
enclosing said cutting means and said workpiece with a peripheral shroud so as to define a peripheral enclosure portion for said cutting means and said workpiece;
creating a pressure differential between said peripheral enclosure portion and an ambient pressure so as to create a first air flow between said workpiece and said mask and a second air flow between said peripheral shroud and said mask; and
cutting said workpiece at about 6,000 to approximately 60,000 surface feet per minute cutting speed with said cutting means such that substantially all of the heat generated during said very high speed adiabatic milling is transferred to chips formed thereby;
whereby said workpiece is located relative to said cutting means such that said pressure differential creates at least one fluid flow that substantially evacuates said chips from said peripheral enclosure portion, said cutting means and said workpiece, thereby preventing heat transfer from said chips to said workpiece and said cutting means so as to achieve a substantially very high speed adiabatic milling machining operation.

5,620,286
FLYCUTTING MACHINE FOR MANUFACTURING PRINTED CIRCUIT BOARDS
David H. Youden, Clayton, N.C., assignor to Rank Taylor Hobson, Ltd., England
Filed Nov. 9, 1994, Ser. No. 336,847
Int. Cl.[6] B23C *3/00*
U.S. Cl. 409—157 **32 Claims**

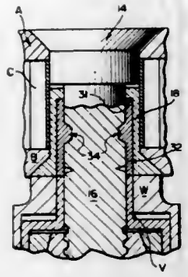


1. A flycutting apparatus comprising:
first support means for supporting an object having a surface to be machined; a rotatable flywheel having cutting means thereon for removing a predetermined amount of material from said surface of said object during machining operations; second support means for supporting said rotatable flywheel at an adjustable position with respect to said surface of said object; adjustment means for adjusting the relative position of said rotatable flywheel with respect to the surface of said object while the machining operations are being performed; means for receiving an elongate web of material and feeding said web of material onto said first support means whereby said material is continuously machined by said rotatable flywheel; and sensor means for detecting changes in the relative position of said rotatable flywheel and said surface of said object, said sensor means being adapted to send signals to said adjustment means during machining operations whereby said adjustment means responds to said signals by adjusting the relative position of said rotatable flywheel with respect to said surface of said object.

5,620,287
FASTENER SYSTEM WITH CONTROLLED CLAMPING LOAD
John D. Pratt, Laguna Niguel, Calif., assignor to Textron Inc., Providence, R.I.
Filed Dec. 1, 1995, Ser. No. 566,056
Int. Cl.[6] F16B *13/04;13/06*
U.S. Cl. 411—43 **28 Claims**

1. A fastener system for particular use in clamping a panel assembly; said fastener system comprising:
a pin member including a head for clamping engagement of a panel surface, and a generally elongate shank projecting from said head for extension through said panel, and a locking-recess formed in said shank for reception of a locking formation therein;
a fastener sleeve having a bore through which said pin shank is insertable, and an anvil portion formed on an inner portion of said sleeve; and
a lock collar insertable into said sleeve bore radially between said shank and said sleeve and into abutment with said anvil portion, and said collar is configured and arranged to enable subsequent application of sufficient force upon said collar to

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force the collar axially relative to the sleeve thereby compressing the collar against said abutting anvil portion to produce cold-flow deformation of a portion of said collar into said shank locating-recess to form said locking formation therein and secure fastening of said pin shank and said sleeve.

5,620,288

FASTENING MEMBER ASSEMBLY TO BE DRIVEN INTO A HARD RECEIVING MATERIAL BY AN EXPLOSIVE POWDER CHARGE OPERATED SETTING TOOL

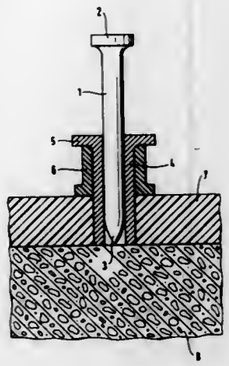
Rupert Janssen, Meiningen, Austria, and Markus Froewis, Munich, Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Feb. 21, 1995, Ser. No. 391,984

Claims priority, application Germany, Feb. 21, 1994, 44 05 410.6

Int. Cl.[6] **F16B** *15/00*

U.S. Cl. 411—441 **10 Claims**



1. Fastening member assembly, to be driven into a hard receiving material (8, 16, 25) by an explosive powder charge operated setting tool, comprising an axially extending shank (1, 9, 17) having a leading end to be driven into the receiving material and a trailing end, said shank has a tip (3, 11, 19) at the leading end and a load engagement means (2, 10, 18) at the trailing end forming a shoulder extending transversely outwardly from said shank, wherein the improvement comprises an axially extending sleeve (4, 12, 20) laterally enclosing said shank for a portion of the axial length thereof adjacent the leading end of said shank, said sleeve having a leading end and a trailing end, a stop (5, 13, 22) located at the trailing end of said sleeve projecting transversely outwardly from said sleeve, and energy absorbing means laterally enclosing such sleeve and located along an axially extending section of said sleeve from said stop towards the leading end of said sleeve.

5,620,289

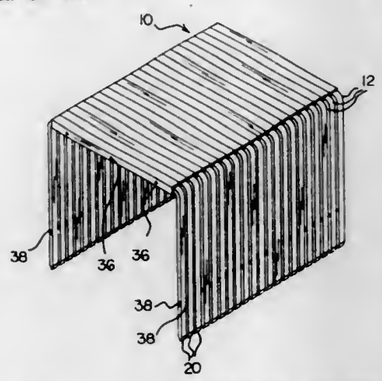
COLORED STAPLES

Rinda M. Curry, 3391 Brookmeade St., Memphis, Tenn. 38127-6701

Filed Feb. 9, 1996, Ser. No. 599,037

Int. Cl.[6] **F16B** *15/08*

U.S. Cl. 411—444 **4 Claims**



1. New and improved colored staples with color identification components centrally coupled with respect thereto comprising, in combination:

a plurality of staples, each having a short central section in a first plane and long end sections in planes spaced parallel with each other and perpendicular to the first plane, the staples having a common cross-sectional configuration throughout the majority of their extents and formed with points at the ends of their ends remote from their central sections, each of the staples having a generally rectangular cross-section with long parallel interior and exterior faces and short parallel lateral faces therebetween;

a plurality of cylindrical sleeves, one for each staple, each sleeve having an interior opening of a rectangular cross-sectional configuration of a size and shape corresponding to the cross-sectional configuration of the staples and mounted thereon to cover essentially the entire central section, the color of the sleeves being constant for the plurality of staples to assist in identification purposes;

a plurality of spaced projections on each sleeve and extending from adjacent sleeves and joining with adjacent projections of each next adjacent sleeve to constitute a separation region between staples of each plurality of staples; and

a plurality of supplemental spaced projections on each staple located adjacent to the points extending from adjacent staples and joining with adjacent supplemental projections of each next adjacent staple to further constitute the separation region between staples of each plurality of staples.

5,620,290

GROUND RETAINER

Kent Homfeldt, Elgin; Barth Leatherman, St. Charles, both of Ill., and James Langford, Port Washington, Wis., assignors to Illinois Tool Works Inc., Glenview, Ill.

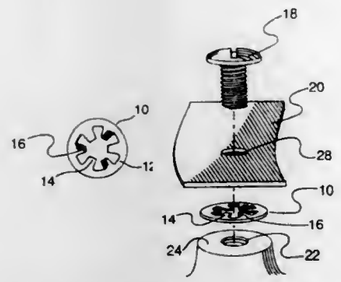
Filed Aug. 23, 1995, Ser. No. 518,252

Int. Cl.[6] **F16B** *39/24;* **H01R** *4/26*

U.S. Cl. 411—533 **20 Claims**

1. A snap-on ground retainer, for use with a fastener comprising a shank having a head at one end and a threaded portion extending along the length of the shank, comprising:

a relatively thin sheet metal, washer-like member having a radially outer annular body portion disposed within a plane, and a radially inner tooth portion comprising a plurality of circumferentially spaced teeth extending radially inwardly from a radially inner margin of said radially outer annular body portion;



said plurality of circumferentially spaced teeth comprising a first set of flat, resiliently flexible retaining teeth, and a second set of grounding teeth;

said first set of flat, resiliently flexible retaining teeth having a first predetermined length defining a first locus, defined by radially innermost portions of said first set of flat, resiliently flexible retaining teeth, having a first diametrical value such that said first set of flat, resiliently flexible retaining teeth are adapted to be engageable with, and deflectable in a first direction by, a threaded portion of a shank of a fastener, when said ground retainer is telescopically associated with a threaded portion of a shank of a fastener, for permitting passage of said ground retainer over a threaded portion of a shank of a fastener in a second relative direction, and yet said first set of flat, resiliently flexible retaining teeth are rigid enough for preventing said ground retainer from being easily detached from a threaded portion of a shank of a fastener by relative movement of said ground retainer with respect to a threaded portion of a shank of a fastener in said first direction after said ground retainer is telescopically associated with a threaded portion of a shank of a fastener; and

said second set of grounding teeth having a second predetermined length, which is slightly smaller than said first predetermined length of said first set of flat, resiliently flexible retaining teeth, defining a second locus, defined by radially innermost portions of said second set of grounding teeth having a second diametrical value which is slightly larger than said first diametrical value of said first locus as defined by said radially innermost portions of said first set of flat, resiliently flexible retaining teeth such that said grounding teeth are not adapted to be engageable with a threaded portion of a shank of a fastener when said ground retainer is telescopically associated with a threaded portion of a shank of a fastener, said grounding teeth being axially deflected out of said plane of said annular body portion for enabling said grounding teeth to engage an adjacent upper surface member and an adjacent lower surface member, when a fastener is telescopically associated with said ground retainer and is tightly secured to a lower surface member, and thereby create and maintain an electrical connection between an upper surface member and a lower surface member.

5,620,291

QUICK DISCONNECT FASTENER

Earl J. Hayes, Northville; Stefano Spadoni, and Jason E. Porter, both of Livonia, all of Mich., assignors to Alcoa Fujikura Ltd., Brentwood, Tenn.

Filed Feb. 16, 1996, Ser. No. 603,950

Int. Cl.[6] **F16B** *19/00*

U.S. Cl. 411—552 **16 Claims**

1. A fastener assembly comprising:

(a) a bolt having a head, a cylindrical stem and a bolt keying means provided thereon, said stem extending outwardly from and perpendicular to the head of said bolt and having a first end abutting said head and an opposite second end said bolt keying means having two pair of diametrically opposed longitudinal ribs, said first pair of ribs extending approximately half of the length of said stem from said opposite second end toward said first end, said second pair of ribs extending approximately half of the length of said stem from said first end toward said second end;

(b) a nut having internal slots and a first and a second opposed surface, said internal slots running from said first surface to said second surface, said slots corresponding to said first pair of ribs of said bolt such that said bolt and said nut can be suitably engaged, said internal ramps beginning at said second surface and extending approximately one-quarter of the distance around and internally of said nut providing a surface for said first pair of ribs to travel thereon, each said ramps having a notch for receiving one of the first pair of ribs of said bolt such that the nut and bolt interlock; and

(c) a spring means having a spring keying for mating with said bolt, said spring means being disposed on the bolt to provide a linear force between the nut and the head of the bolt responsive to deflection of said spring means when said spring means is located between said nut and said bolt head.

5,620,292

APPARATUS FOR UNLOADING LARGE FISH FROM A BOAT HOLD

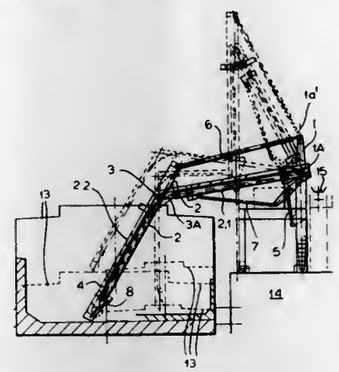
Horst Steckel, and Helmut Kern, both of St. Ingbert, Germany, assignors to PWH Anlagen + Systeme GmbH, St. Ingbert, Germany

Filed Jan. 11, 1996, Ser. No. 588,627

Claims priority, application Germany, Jan. 26, 1995, 195 02 279.3

Int. Cl.[6] **B65G** *67/60*

U.S. Cl. 414—140.8 **11 Claims**

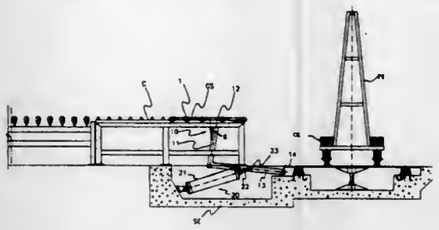


1. An apparatus for unloading fish from a hold of a boat adjacent an unloading site, the apparatus comprising:

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a carriage movable horizontally at the site along the boat;
an articulated arm having
a rigid inner section having an inner end pivoted about a horizontal inner axis on the carriage and an outer end,
a pivot defining an outer horizontal axis at the inner-section outer end, and
a rigid outer section having an inner end pivoted on the inner-section outer end at the pivot and an outer end;
means including an inner actuator braced between the carriage and the inner section for pivoting the arm on the carriage about the inner axis;
means including an outer actuator braced between the carriage and the outer arm section for pivoting the outer section about the outer axis on the inner section;
an endless conveyor element extending along the arm from the inner-section inner end to the outer-section outer end; and
a multiplicity of holders spaced along the conveyor element.

5,620,293
GLASS SHEET HANDLING APPARATUS
Manuel Alarcon-Lopez, Col. Bondojito; Rafael-Jorge Rojas-Cortes, Col. El Dorado; Oscar Lugo-Ramirez, Fraccionamiento IMMEX Tultitlán; Severino Islas-Sanchez, Ojo de Agua, and Enrique-Meliton Gomez-Hernandez, Col. Lazaro Cárdenas, all of Mexico, assignors to Vidrio Plano De Mexico, San Juan Ixhuatepec, Mexico
Filed Aug. 7, 1995, Ser. No. 511,652
Int. Cl.[6] B65H *29/44*
U.S. Cl. 414—399 **7 Claims**

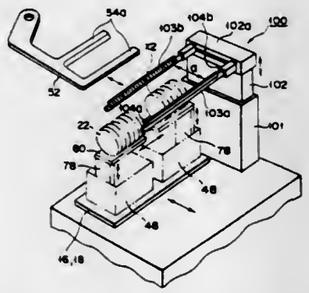


1. A glass sheet handling apparatus to horizontally receive a glass sheet from a production line conveyor and place it vertically on an adjacent conveyance shelf, the apparatus comprising:
(a) a glass sheet receiving platform at a discharging end of the conveyor comprising at least two lateral frame members and a plurality of transverse bars connecting said lateral frame members, each of the transverse bars including rollers, to horizontally receive and move the glass sheet across the platform for discharge from the production line;
(b) at least two reciprocating angular members, each having a first end pivotally joined to opposite sides of the platform and a second fixed end anchored to a base, and an operating member contacting said angular member between said first free end and said second fixed end to rotate the platform with the glass sheet thereon from a first horizontal position in contact with the conveyance shelf to a second vertical position in contact with the conveyance shelf;
(c) driving means coupled to the operating member; and
(d) control means comprising a sensor to provide a signal indicating the presence of a glass sheet on the platform, and a data processor for receiving and processing the signal to activate the driving means.

5,620,294

Patent Not Issued For This Number

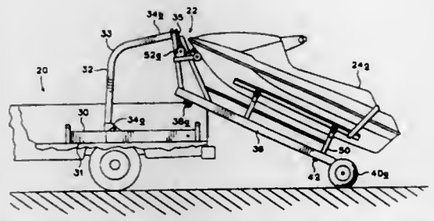
5,620,295
TRANSFER APPARATUS
Mitsuo Nishi, Kumamoto, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan
Division of Ser. No. 312,080, Sep. 26, 1994, Pat. No. 5,505,577, which is a continuation-in-part of Ser. No. 140,985, Oct. 25, 1993, Pat. No. 5,374,153, which is a continuation of Ser. No. 787,663, Nov. 4, 1991, abandoned. This application Dec. 27, 1995, Ser. No. 580,430
Claims priority, application Japan, Nov. 17, 1990, 2-312478
Int. Cl.[6] B65G *65/30*
U.S. Cl. 414—417 **4 Claims**



1. A transfer apparatus for transferring a plurality of substrates between carriers holding these substrates equidistantly apart from each other and a support arm member, comprising:
a plurality of carrier tables each having a carrier disposed thereon, said carrier tables being linearly arranged such that the substrates held by the carriers are arranged parallel to each other;
elevator means for moving the carriers downward together with the carrier tables; and
a plurality of receiving members each having a plurality of grooves formed on an upper surface for collectively receiving all of the substrates held by each carrier when the carrier is moved downward by the elevator means; and
horizontal moving means for Roving at least one of said carrier tables toward an adjacent carrier table or for moving at least one of said receiving members toward an adjacent receiving member;
wherein the plurality carriers are moved downward together with the carrier tables, and the substrates held by the carriers are received by the receiving members so as to be separated from the carriers, and all the substrates equidistantly arranged by the horizontal moving means are collectively held by the support arm member so as to be lifted from the receiving members.

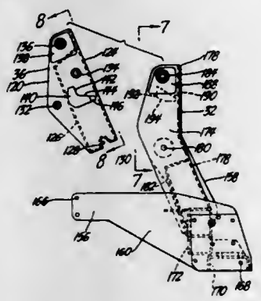
5,620,296
DEVICE FOR LOADING AND CARRYING CARGO
Vincent P. J. McMahon, and Brian Dries, both of Sandy, Oreg., assignors to Toyrak Enterprises, Inc., Sandy, Oreg.
Filed Nov. 2, 1995, Ser. No. 552,223
Int. Cl.[6] B60P *1/64*
U.S. Cl. 414—498 **11 Claims**

1. An apparatus for loading and carrying cargo on the bed of a pickup truck comprising:
a chassis equipped for easy mount and dismount on the bed of a pickup track;
at least one hydraulic or pneumatic cylinder rigidly connected to the chassis and oriented generally along an axis extending between the front and rear ends of the track;
a shaft structure having a distal end variably extending from an end of the cylinder along said axis;



a power generator connected to the cylinder and operable to drive the shaft structure in and out of the cylinder along said axis;
a control device for controlling the power generator and movement of the shaft structure relative to the cylinder;
an arm having a proximal end and a distal end, the proximal end of the arm being pivotally connected to the chassis at one point and also pivotally connected to the distal end of the shaft structure at a second point, so that movement of the shaft structure along said axis substantially parallel to the ed of the pickup truck causes the arm to move to and from load and unload positions while the chassis remains stationary relative to the bed of the pickup truck; and
a carrier assembly including a mechanism for detachably linking the carrier assembly to the distal end of the arm, and a rack sized and shaped to support a type of cargo, so that the cargo can be securely mounted on the rack and then loaded on the bed of the pickup truck by linking the carrier assembly to the distal end of the arm and manipulating the control device to drive the distal end of the arm toward the front end of the pickup truck until the carrier assembly and cargo is loaded completely and securely on the bed of the pickup truck.

5,620,297
TRACTOR LOADER MOUNTING STRUCTURE
F. Allen Mahaney, 3709 Pawnee Pl., Sioux City, Iowa 51104
Filed Feb. 14, 1996, Ser. No. 599,958
Int. Cl.[6] B66C *23/00*
U.S. Cl. 414—686 **6 Claims**

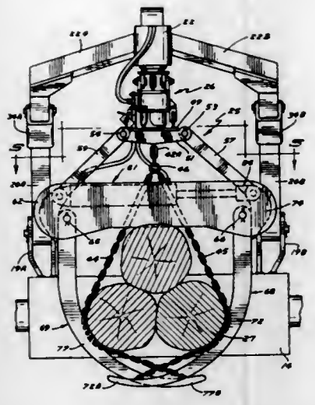


1. A tractor loader attachment comprising a left socket assembly including a vertical inside plate and a vertical outside plate spaced from the inside plate, adapted to be secured to a tractor chassis;
a right socket assembly including a vertical inside plate and a vertical outside plate spaced from the inside plate, adapted to be secured to a tractor chassis;
a left upright assembly releasably connected to the left socket assembly;
a right upright assembly releasably connected to the right socket assembly;
a boom pivotally attached to the left upright assembly and to the right upright assembly;
a left boom lift cylinder pivotally connected to the boom and the left upright assembly;
a right boom lift cylinder pivotally connected to the boom and the right upright assembly;
an engagable support between the left socket assembly and a lower end of the left upright assembly including a left transverse trough and a left horizontal transverse pin receivable within the left transverse trough;
an engagable support between the right socket assembly and a lower end of the right upright assembly including a right transverse trough and a right horizontal transverse pin receivable within the right transverse trough;
a first left socket wedge positioned between the vertical inside plate and the vertical outside plate of the left socket assembly, above the engagable support between the left socket assembly and the left upright assembly and welded to the vertical inside plate of the left socket assembly and wherein the first left socket wedge has a forward facing generally vertical surface and a forward facing inclined surface extending downwardly and rearwardly;
a first right socket wedge positioned between the vertical inside plate and the vertical outside plate of the right socket assembly, above the engagable support between the right socket assembly and the right upright assembly and welded to the vertical inside plate of the right socket assembly and wherein the first right socket wedge has a forward facing generally vertical surface and a forward facing inclined surface extending downwardly and rearwardly;
a first left upright wedge welded to the left upright assembly and having a rearward facing generally vertical surface in engagement with the forward facing generally vertical surface of the first left socket wedge and an inclined surface in engagement with the left socket wedge forward facing inclined surface;
a first right upright wedge welded to the right upright assembly and having a rearward facing generally vertical surface in engagement with the forward facing generally vertical surface of the first right socket wedge and an inclined surface in engagement with the right socket wedge forward facing inclined surface;
a left locking pin passing through an aperture through the left socket assembly and an aligned aperture through the left upright assembly; and
a right locking pin passing through an aperture through the right socket assembly and an aligned aperture through the right upright assembly.

5,620,298
SKIDDING GRAPPLE
Robert D. Barwise, 366 County Rd. 339, Bovey, Minn. 55709
Filed Aug. 14, 1995, Ser. No. 514,568
Int. Cl.[6] B66C *1/00*
U.S. Cl. 414—734 **19 Claims**

1. A skidding grapple mounted on a tow vehicle, comprising:
a boom assembly mounted on the tow vehicle, having a boom with an outer boom end;
a winch drum mounted on the tow vehicle and a winch line connected at one end to the winch drum for spooling in over the winch drum;
a grapple assembly connected to the end of the boom;
means for lifting the boom to elevate and lower the grapple assembly;
said grapple assembly including a grapple yoke, and first and second grapple arms pivotally connected to the grapple yoke for pivotal movement about parallel axes;
said first and second grapple arms having first and second tines movable between open and closed positions;
said first and second grapple arms mounted to the grapple yoke so that the tines are located in off-set relationship so that the ends of the tines bypass one another when moving together;
a choke line having a first leg and a second leg, one end of the first leg connected to the end of the first tine, one end of the second leg connected to the end of the second tine so that the ends of the legs bypass with the ends of the tines, the other end of each leg being connected to the winch line;

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a releasable coupling connecting the grapple assembly to the end of the boom, said releasable coupling having an upper assembly connected to the end of the boom, and a lower assembly connected to the grapple assembly, said upper assembly and lower assembly having openings that are aligned when the assemblies are connected to form a central opening through the coupling, said winch line extending from the winch drum through the central opening of the coupling to the grapple assembly; and

power means for opening and closing the grapple tines, permitting engagement of a load by the tines and forming a noose around the load by moving from an open position to a closed position encompassing a load and the first and second tines bypassing one another whereby the first and second legs of the choke line form a noose about the load for carrying the load.

5,620,299

PROCESS AND DEVICE TO STORE AND SEPERATE TEXTILE TUBES

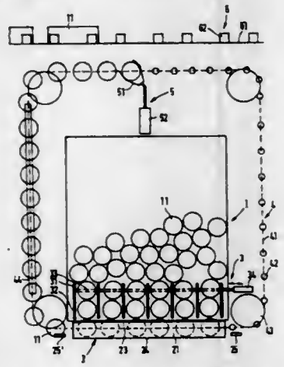
Gerhard Grabovsky, Lenting, and Bernhard Stang, Kipfenberg, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Dec. 2, 1994, Ser. No. 349,073

Claims priority, application Germany, Dec. 24, 1993, 43 44 548.9

Int. Cl.[6] B66F *11/00*

U.S. Cl. 414—745.7 **19 Claims**



1. A process for storing and transferring tubes at a textile machine, said process comprising randomly loading the tubes in a storage magazine with their axis being essentially parallel so that the tubes settle in a random undefined order within the storage magazine; moving the randomly loaded tubes towards a position for transfer from the storage magazine; separating the randomly loaded tubes into ordered pre-determined positions prior to transferring the tubes; transferring the tubes at the transfer position from their ordered positions to a conveyor device; and said transferring to a conveyor device further comprising conveying the tubes in a direction away from the storage magazine in a direction parallel to the axis of the tubes.

5,620,300

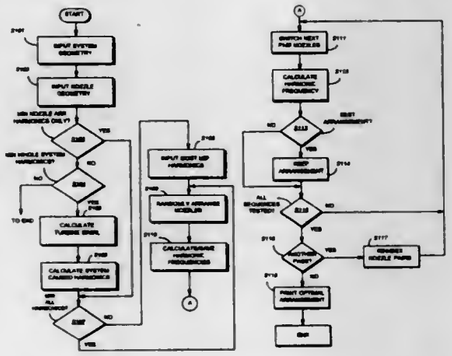
METHOD OF CONSTRUCTING A TURBINE NOZZLE TO PREVENT STRUCTURALLY INDUCED EXCITATION FORCES

Hans M. Knuijt, Niskayuna, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Nov. 16, 1995, Ser. No. 559,055

Int. Cl.[6] F01D *25/04*

U.S. Cl. 415—19.6 **11 Claims**



1. A method of constructing a turbine nozzle with a plurality of nozzle segments to prevent structurally induced excitation forces, the method comprising:

(a) inputting structural characteristics of each of said plurality of nozzle segments;

(b) theoretically selecting a random sequencing of said plurality of nozzle segments;

(c) calculating a relative harmonic content of per revolution excitation forces of the sequence in accordance with said structural characteristics;

(d) theoretically exchanging nozzle segments in pairs to change the sequence of said plurality of nozzle segments;

(e) repeating steps (c) and (d) until all possible sequences have been tested; and

(f) selecting a sequence that best prevents structurally induced excitation forces.

5,620,301

ACTUATOR MECHANISM FOR VARIABLE ANGLE VANE ARRAYS

Steven D. Lawer, Derby, England, assignor to Rolls-Royce plc, England

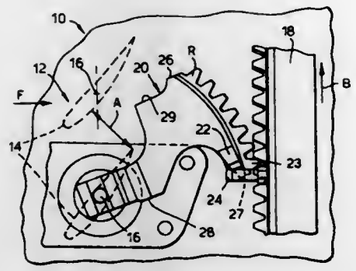
Filed Apr. 5, 1996, Ser. No. 628,156

Claims priority, application United Kingdom, Jun. 5, 1995, 9511271

Int. Cl.[6] F01D *17/12*

U.S. Cl. 415—150 **11 Claims**

1. An actuator mechanism for a variable angle vane array for use in a fluid flow machine of the type having an axis and a casing,



the variable angle vane array comprising a plurality of vanes, the vanes are pivotably mounted in the casing about radial axes, the vanes are pivotable between a first position giving maximum fluid flow delivery, and a second position giving minimum fluid flow delivery, each vane having a radially outer end,

the mechanism comprising a lever arm in the form of a gear segment secured to the radially outer end of each vane for effecting pivoting movement thereof, and

a toothed unison ring meshing with the gear segments for simultaneous transmission of pivoting movement to each vane through their respective gear segments,

wherein, the gear segments and the unison ring are provided with emergency drive means which engage to cause the gear segments to turn beyond toothed engagement with the unison ring so as to pivot their respective vanes to an effective zero fluid delivery position.

5,620,302

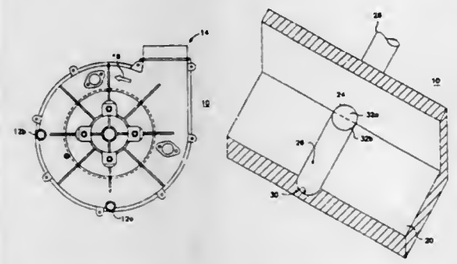
DYNAMIC CONDENSATE EVACUATOR FOR HIGH EFFICIENCY GAS FURNACES

Bobby D. Garrison, and William S. Gatley, Jr., both of Cassville, Mo., assignors to Fasco Industries, Inc., Chesterfield, Mo.

Filed Aug. 31, 1995, Ser. No. 522,128

Int. Cl.[6] F01D *25/32*

U.S. Cl. 415—169.2 **20 Claims**



1. An impeller housing that drains condensate during all operating modes of an impeller, comprising:

a single-wall housing shell having an interior surface; and

at least one aperture in said housing shell through which condensate is drained from said housing; and

wherein a portion of said at least one aperture is disposed above the housing shell interior surface so as to minimize the venturi effect of air flowing by said aperture responsive to rotation of the impeller in said housing shell.

5,620,303

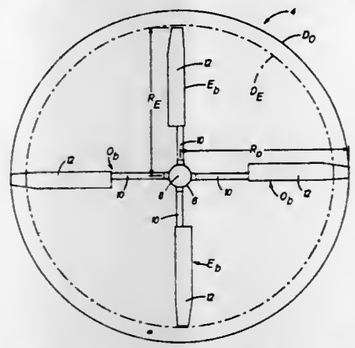
ROTOR SYSTEM HAVING ALTERNATING LENGTH ROTOR BLADES FOR REDUCING BLADE-VORTEX INTERACTION (BVI) NOISE

Robert C. Moffitt, Seymour, and Joseph A. Visintainer, Beacon Falls, both of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,580

Int. Cl.[6] B64C *11/28*

U.S. Cl. 416—87 **4 Claims**



2. A Variable Diameter Rotor system (4) for rotorcraft and operative to reduce Blade-Vortex Interaction (BVI) noise, said rotorcraft operating in first and second operating modes, comprising:

a rotor hub assembly (6) defining an axis of rotation (8) about which said rotor hub assembly (6) rotates;

odd and even blade assemblies (O_b, E_b) mounting to and rotating with said rotor hub assembly (6), each of said rotor blade assemblies (O_b, E_b) having inboard and outboard blade sections (10, 12), said outboard blade section (12) telescopically mounted to said inboard blade section (10);

said odd and even rotor blade assemblies (O_b, E_b) each defining a radial length R_O and R_E, respectively; and

means (70) for positioning said outboard blade sections (12) with respect to said inboard blade sections (10) such that said radial length R_E of said even blade assemblies (E_b) is equal to said radial length R_O of said odd blade assemblies (O_b) in the first operating mode, and such that said radial length R_E is between about 70% to about 95% of said radial length R_O in the second operating mode.

5,620,304

ROTOR SYSTEM HAVING ALTERNATING LENGTH ROTOR BLADES AND POSITIONING MEANS THEREFOR FOR REDUCING BLADE-VORTEX INTERACTION (BVI) NOISE

David G. Matsuka, Huntington; Edward W. Gronenthal, Shelton, and Robert C. Moffitt, Seymour, all of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,581

Int. Cl.[6] B64C *11/28*

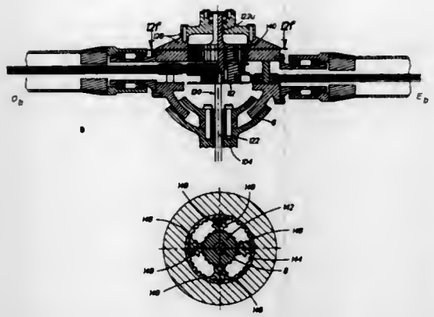
U.S. Cl. 416—87 **6 Claims**

6. A Variable Diameter Rotor system (4) for rotorcraft and operative to reduce Blade-Vortex Interaction (BVI) noise, said rotorcraft operating in first and second operating modes, comprising:

a rotor hub assembly (6) defining an axis of rotation (8) about which said rotor hub assembly (6) rotates;

odd and even blade assemblies (O_b, E_b) mounting to and rotating with said rotor hub assembly (6), each of said rotor blade assemblies (O_b, E_b) having inboard and outboard blade sections (10, 12) defining an internal chamber (64), said outboard blade section (12) telescopically mounted to said inboard

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blade section (**10**) and being biased outwardly of said rotational axis (**8**) by centrifugal forces C_f acting thereupon;

said odd and even rotor blade assemblies (O_b, E_b) each defining a radial length R_O and R_E, respectively;

means (**70**) for positioning said outboard blade sections (**12**) with respect to said inboard blade sections (**10**) such that, in the first operating mode, said radial length R_E of said even blade assemblies (E_b) is equal to said radial length R_O of said odd blade assemblies (O_b), and, in the second operating mode, said radial length R_E is between about 70% to about 95% of said radial length R_O, said positioning means (**70**) including:

a centrifugal restraint assembly (**80**) disposed in each said internal chamber (**64**) and disposed in combination with said outboard blade section (**12**), said centrifugal restraint assembly (**80**) being biased outwardly of said rotational axis (**8**) by said centrifugal forces C_f acting on said outboard blade section (**12**);

a stop surface (**64***s*) formed internally of each said internal chamber (**64**);

actuation means (**90**), in combination with said centrifugal forces C_f, operative for transpositioning said centrifugal restraint assemblies (**80**) within said internal chambers (**64**) such that, in the first operating mode, said centrifugal restraint assemblies (**80**) of said even blade assemblies (E_b) are disposed in abutting engagement with said stop surfaces ($64s_E$) thereof and said centrifugal restraint assemblies (**80**) of said odd blade assemblies (O_b) are disposed in abutting engagement with said actuation means (**90**) and, in the second mode, said centrifugal restraint assemblies (**80**) are disposed in abutting engagement with said stop surfaces (**64***s*), said actuation means further including:

a reeling assembly (**110**) including:

a cylindrical drum (**112**) disposed internally of said rotor hub assembly (**6**) and operative for rotation about said rotor hub assembly axis (**8**);

end fixities (**114**) disposed internally of said chambers (**64**) and operative for engaging and disengaging said centrifugal restraint assembly (**80**);

strap means (**116**) for mechanically coupling said end fixities (**114**) to said cylindrical drum (**112**), said strap means (**116**) being disposed in winding combination therewith; and

drive means (**120**) for effecting rotation of said cylindrical drum (**112**) thereby effecting linear translation of said end fixities (**114**) within said internal chambers (**64**), said drive means (**120**) further including:

an input drive shaft (**122**); and

a planetary gear system (**140**) including:

a driving sun gear (**142**) coaxially aligned with said rotor hub assembly (**6**), said driving sun gear (**142**) being affixed to and driven by said input drive shaft (**122**);

a ring gear (**144**) affixed to and supported by said rotor hub assembly (**6**);

a plurality of planetary pinions (**146**) disposed between and interacting with said sun and ring gears (**142**, **144**), such that said planetary pinions translate about said rotational axis (**8**), in response to rotation of said sun gear; and

carrier posts (**148**) disposed in combination with said planetary pinions (**146**) and said cylindrical drum (**112**) for driving said cylindrical drum about said rotational axis (**8**).

5,620,305

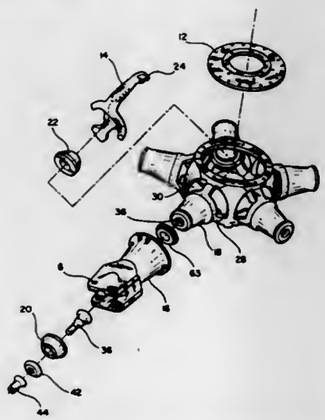
HUB FOR ROTARY WING AIRCRAFT

Francis H. McArdle, Norristown, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 20, 1995, Ser. No. 406,576

Int. Cl.[6] **B64C** *27/48*

U.S. Cl. 416—134 A **18 Claims**



1. A hub for a rigid rotor rotary wing aircraft for mounting a plurality of rotating airfoil blades for rotation about a rotor shaft spin axis, said hub comprising:

a hub shell having a central opening therethrough having a central axis, the central axis of said central opening lying along the rotor shaft spin axis, said shell being attached to said rotor shaft for rotation therewith;

a plurality of inner members attached to said hub shell for rotation therewith, one of said inner members being provided for each of said blades, said inner members having a blade pitch axis approximately orthogonal to said rotor shaft spin axis;

a plurality of outer members, each outer member enclosing one of said inner members and rotatable about said blade pitch axis with respect to said inner member;

a plurality of pitch housings, each of said pitch housings being attached to the inboard end of one of said outer members nearest said hub for rotation therewith, said pitch housings having a pitch arm extending into the central opening in said hub shell;

a first bearing mounted between each of said inner members and its respective outer member for supporting the outer member for rotation about the blade pitch axis;

a second bearing mounted between each of said pitch housings and its respective inner member for supporting said pitch housing for rotation about the blade pitch axis; and

blade attachment means at the outboard end each of said outer members for attaching a rotor blade thereto.

5,620,306

IMPELLER

Terence R. Day, Coombabah, Australia, assignor to Magiview Pty. Ltd., Queensland, Australia

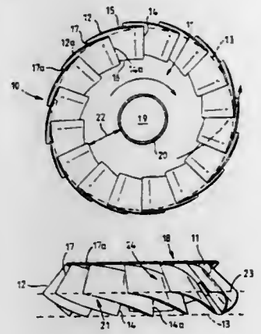
PCT No. PCT/AU93/00581, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/11638, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 424,461

Claims priority, application Australia, Nov. 12, 1992, PI.5790

Int. Cl.[6] **F04D** *29/24;29/30*

U.S. Cl. 416—185 **10 Claims**



1. An impeller having a front intake area and a rear discharge area, a hub containing a rotational axis of the impeller, a plurality of blades extending about the hub, at least some of the blades being in an overlapping relationship to define a passageway between adjacent overlapping blades, the passageway having an inlet defined by a leading edge of each adjacent blade and communicating with the front intake area, and an outlet defined by a trailing edge of each adjacent blade and communicating with the rear discharge area, wherein each blade is curved to define an outer convex side and an inner concave side, the outer convex side adapted to impact against and compress fluid as the impeller rotates, each blade further having a lower root edge and an upper free tip edge, the adjacent overlapping blades converging towards each other from the inlet to the outlet, the leading and trailing edges of each blade diverging outwardly from the rotational axis.

5,620,307

LASER SHOCK PEENED GAS TURBINE ENGINE BLADE TIP

Seetharamaiah Mannava; Albert E. McDaniel, both of Cincinnati; William D. Cowie, Xenia; Herbert Halila, Cincinnati; James E. Rhoda, Mason, and Stephen J. Ferrigno, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 6, 1995, Ser. No. 399,325

Int. Cl.[6] **F01D** *5/18*

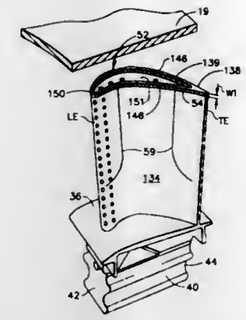
U.S. Cl. 416—241 R **10 Claims**

1. A gas turbine engine blade comprising:

a metallic airfoil having a pressure side, a suction side, and a radially outer tip extending chordwise between a leading edge and a trailing edge of said airfoil,

at least one laser shock peened surface on at least one side of said airfoil,

said laser shock peened surface extending chordwise along at least a portion of said tip and extending radially from said tip, and



a region having deep compressive residual stresses imparted by laser shock peening (LSP) extending into said airfoil from said laser shock peened surface.

5,620,308

GAS TURBINE, GAS TURBINE BLADE USED THEREFOR AND MANUFACTURING METHOD FOR GAS TURBINE BLADE

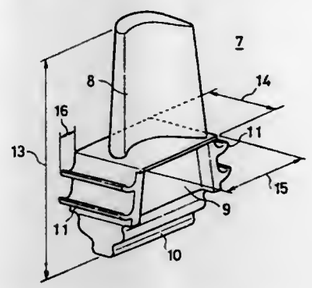
Akira Yoshinari; Tosiaki Saito, both of Katsuta; Katsumi Iijima; Tadami Ishida, both of Hitachi; Ryozo Hashida, Katsuta, and Kimio Kano, Sendai, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Tohoku Electric Power Co., Inc., Miyagi-ken, both of Japan

Division of Ser. No. 290,294, Aug. 15, 1994, Pat. No. 5,489,194, which is a continuation-in-part of Ser. No. 760,076, Sep. 13, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,292

Claims priority, application Japan, Sep. 14, 1990, 2-245210

Int. Cl.[6] **F01D** *5/14*

U.S. Cl. 416—241 R **30 Claims**



1. A heavy-duty gas turbine comprising:

a compressor;

a combustion liner;

a turbine blade, in a single stage or multi-stages, which has a dovetail secured to a turbine disk and has an overall length of not less than 180 mm, and which is made of a single-crystal Ni-base alloy whose γ phase is a single crystal, said Ni-base alloy having a composition in weight percent containing 0.15% or less C, 2% or less Mn, 5–18.4% Cr, 1–12% Al, 5% or less Ti, 2.0% or less Nb, 1.5–15% W, 5% or less Mo, 12% or less Ta, 15.0% or less Co, 0.2% or less Hf, 3.0% or less Re, and 0.02% or less B; and

a turbine nozzle provided in correspondence to said turbine blade;

wherein operating gas temperature is not less than 1400° C., and metal temperature of a first blade is not less than 1000° C. under working stress.

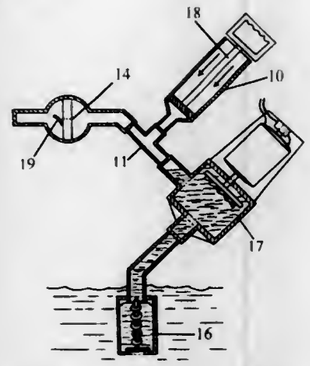
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5,620,309

FLUID PUMP PRIMING SYSTEM

Terry J. Todden, and Richard A. Thornberry, both of 15442 Vintage St., Mission Hills, Calif. 91345

Filed Jan. 27, 1995, Ser. No. 380,021
Int. Cl.[6] F04B 23/10; F04F 10/00
U.S. Cl. 417—199.2 4 Claims



1. A fluid pump and siphon device priming system for use with a non self-priming fluid pump or a siphon device comprising:
an outlet valve for dispensing a supply of fluid;
a priming pump for delivering the supply of fluid to said outlet valve,
a tube means for carrying the supply of fluid to said outlet valve; wherein said outlet valve includes an internal valve means housed within said outlet valve whereupon the closing of said outlet valve results in the formation of negative air pressure when said internal valve means is closed and further results in the elimination of air when said internal valve means is open.

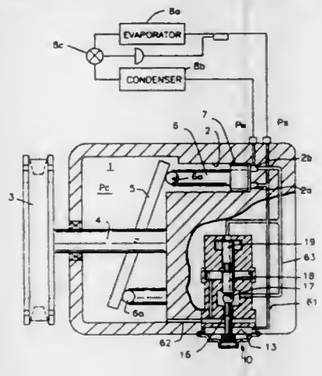
5,620,310

CONTROL VALVE FOR A VARIABLE DISPLACEMENT REFRIGERANT COMPRESSOR

Kenji Takenaka, and Toru Takeichi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

PCT No. PCT/JP94/00026, § 371 Date Aug. 31, 1994, § 102(e) Date Aug. 31, 1994, PCT Pub. No. WO94/16225, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1994, Ser. No. 302,662
Claims priority, application Japan, Jan. 11, 1993, 5-002655
Int. Cl.[6] F04B 1/26
U.S. Cl. 417—222.2 6 Claims

1. A control valve for a variable displacement refrigerant compressor of a car-climate control system, which compressor has a suction chamber for refrigerant before compression, a discharge chamber for the refrigerant after compression, and a crank chamber for receiving therein a compression-drive mechanism, said control valve having a pressure-sensing means for providing movement of a control valve element in response to a change in suction pressure of the refrigerant gas, said control valve element controlling opening of a fluid communication passageway extending between at least said discharge chamber and said crank chamber to adjustably change a pressure level in said crank chamber to vary displacement of said compressor,



wherein said control valve comprises: a compensation means for compensating for controlling operation of said control valve element when the pressure of discharged refrigerant gas is above a predetermined pressure level; and a compensation-stopping means for stopping the compensating operation of said compensating means when the pressure of the discharged refrigerant gas is reduced below the predetermined pressure level,

wherein said valve means comprises: a discharge pressure change in direct communication with said discharge chamber of said compressor and in communication with a crank chamber of said compressor via an opening in a valve seat; and a control valve element arranged to be moved in a first axial direction toward a position where it is seated against said valve seat by said pressure-sensing means in relation to a rise in the suction pressure,

wherein said compensating means comprises: a compensating chamber arranged at a position spaced from said discharge pressure chamber in a second axial direction opposite to the first axial direction, said compensating chamber in communication with said crank chamber of said compressor; and a balancing rod slidably arranged between said discharge pressure chamber and said compensating chamber, said balancing rod having a first end integral with said valve element of said valve means and a second free end in said compensating chamber; and,

wherein said compensation-stopping means comprises: a compensation-stopping chamber arranged at a position further axially spaced from said discharge pressure chamber than said compensation chamber, in the direction opposite to that of the axial movement of said valve means toward said valve seat, said compensation-stopping chamber in communication with said discharge chamber of said compressor; and a high-pressure-compensating rod slidably arranged between said compensating chamber and said compensation-stopping chamber, said high-pressure-compensating rod arranged to be separated from or in contact with the said free end of said balancing rod of said compensation means, and being urged by a spring element in the second axial direction to separate from said free end of said balancing rod.

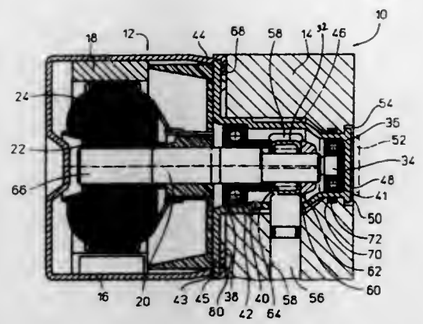
5,620,311

PISTON PUMP HAVING A PUMP CASING TO WHICH A PUMP MOTOR IS ATTACHED

Gerhard Wetzel, Korntal-Muenchingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 20, 1995, Ser. No. 575,195
Claims priority, application Germany, Dec. 20, 1994, 44 45 362.0
Int. Cl.[6] F04B 17/03
U.S. Cl. 417—415 15 Claims

1. A piston pump having a pump casing to which a pump motor is attached, said pump motor has a motor casing and a motor shaft which protrudes in one direction from the motor casing and projects into the pump casing and which has on a shaft section that projects into the pump casing an eccentric for driving at least one pump piston which is arranged to extend radially from the motor shaft and is accommodated in the pump casing in a displaceable manner in a longitudinal direction of the piston, wherein the piston pump (**10**) has an eccentric-bearing component (**40**) which projects into a stepped bore (**46**) in the pump casing (**14**) and is fastened to



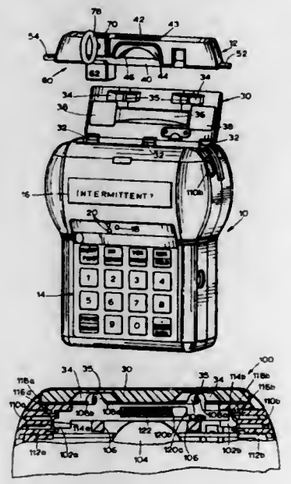
the pump casing (**14**) on a side of the pump casing remote from the pump motor (**12**) by a flange (**50**) that projects radially outwards for connecting the pump motor (**12**) to the pump casing (**14**) at a side remote from the pump motor (**12**), said flange (**50**) is produced by forming a collar (**52**) that projects in a radial direction from the eccentric-bearing component (**40**), said eccentric-bearing component (**40**) surrounds the shaft section of the motor shaft (**20**) that protrudes from the motor casing (**16**) and projects into the pump casing (**14**), said shaft has two shaft bearings (**36, 38**) inserted into said pump casing on either side of the eccentric (**32**), the motor shaft (**20**) is rotatably mounted in said shaft, bearings (**36, 38**) and has a window (**58, 60**) through which the at least one pump piston (**56**) projects at the eccentric (**32**).

5,620,312

INFUSION PUMP WITH DUAL-LATCHING MECHANISM

Oscar Hyman, Park Ridge; Jeffery Pribil, Algonquin, both of Ill.; Avi Zeilig, Rosh-Ha'ain, Israel, and Clinton Deckert, Poway, Calif., assignors to Sabratek Corporation, Niles, Ill.

Filed Mar. 6, 1995, Ser. No. 399,183
Int. Cl.[6] F04B 43/08
U.S. Cl. 417—474 7 Claims



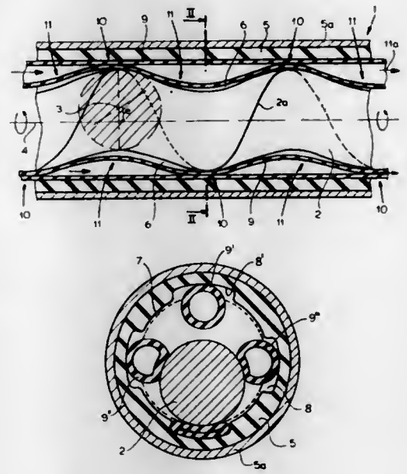
1. An infusion apparatus for infusing liquid into a patient, said infusion apparatus comprising:
a housing adapted to receive a cassette having a flexible tube through which said liquid may be pumped;
a pump disposed within said housing and adapted to pump said liquid through said flexible tube of said cassette;
a door connected to said housing, said door having an open position and a closed position;
latching means for maintaining said door in said closed position;
first release means operatively coupled to said latching means; and
second release means operatively coupled to said latching means,
said first and second release means being independently operable so that said door is released by said latching means only upon actuating both of said first and second release means.

5,620,313

WORM PUMP FOR FLOWABLE MEDIA

Klemens Fockenberg, Bottrop, Germany, assignor to Seepex Seeberger GmbH & Co., Bottrop, Germany

Filed Jan. 17, 1996, Ser. No. 587,668
Claims priority, application Germany, Jan. 19, 1995, 195 01 441.3
Int. Cl.[6] F04B 43/12
U.S. Cl. 417—475 10 Claims



1. A worm pump comprising:
an elongated rotor rotated about an axis and in the form of a worm, said rotor being of uniform circular cross section along a length, thereof with the centers of the cross sections being offset from said axis of rotation of the rotor;
a pump stator formed with a stator cavity receiving said rotor and defined by a plurality of angularly spaced cylindrical wall segments defining a clearance with said rotor and of a radius greater by said clearance than a sum of a radius of the circular cross section and the offset of said centers from said axis of rotation, said stator cavity comprising at least two longitudinal recesses between said wall segments, said stator cavity having a longitudinal axis coinciding with said axis of rotation of the rotor; and
respective elastic tubes received in said recesses and projecting therefrom into said stator cavity for compression by portions of said rotor furthest from said axis of rotation, thereby advancing squeezed sealing regions of the respective tubes axially therealong to displace a flowable medium in the respective tube, said tubes in said recesses being of different diameters.

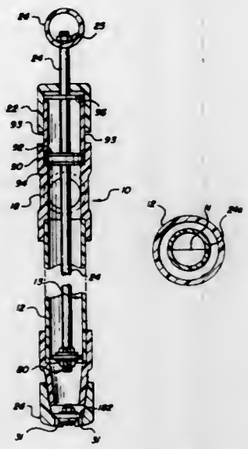
VOL 1197 ISS 3 AP 15 1997 UMI

5,620,314

HAND-OPERATED LIQUID PUMP WITH REMOVABLE PARTS

David M. Worton, 1570 Hood St., Bloomfield Hills, Mich. 48302

Filed Feb. 21, 1995, Ser. No. 391,779
Int. Cl.[6] F04B *53/12;39/14;33/00*
U.S. Cl. 417—550 33 Claims



1. A versatile hand-portable, hand-operated liquid pump comprising:

an inlet port for receiving liquid into the pump;

an outlet port for discharging liquid from the pump;

a substantially cylindrical housing having an elongated internal bore and a bottom end in fluid communication with the inlet port and a top end in fluid communication with the outlet port;

an elongated pump rod having a lower end and an upper end connectable to a handle for enabling a user to manually reciprocate the rod in an upstroke movement and a downstroke movement within the bore of the housing;

a plunger pump assembly connected to the lower end of the pump rod and having a plunger mounted in the housing for slidingly engaging the bore of the housing during upstroke and downstroke movements within the bore of the housing;

an inlet fitting, forming the inlet port, removably coupled to the bottom end of the housing for receiving an inlet attachment, wherein the pump rod has a length sufficiently long so that the plunger assembly may be extended beyond the bottom end of the housing when the inlet fitting is removed to allow access to the plunger for service;

a unidirectional flow device operatively connected to the inlet fitting for allowing liquid to flow in a direction from the inlet port toward the outlet port while substantially preventing liquid from flowing in the opposite direction; and

a three-way connector structure including a substantially sealed end and having a first passage engaged with the top end of the cylindrical housing and a second passage forming the outlet port and a third passage connected to the substantially sealed end which has a hole extending therethrough for substantially engaging the pump rod, the pump rod extending through the hole and the first and third passages.

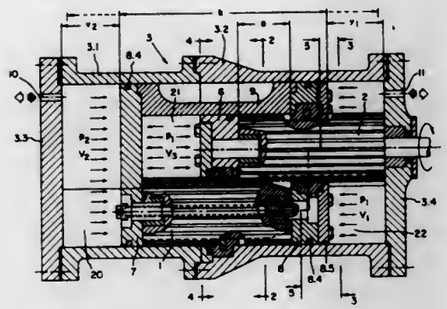
5,620,315

GEAR PUMP FOR FEEDING OF FLUIDS

Ulrich Pfuhler, Ulm, Germany, assignor to Sandra Hutter, Neresheim, Germany

PCT No. PCT/EP94/00961, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/23209, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 26, 1994, Ser. No. 530,218
Claims priority, application Germany, Mar. 31, 1993, 43 10 518.1
Int. Cl.[6] F01C *21/16*
U.S. Cl. 418—21 5 Claims

1. A fluid gear pump or motor comprising:



an axially fixed gear having a free end and a fixed end;

an axially movable gear axially parallel to, and meshing with, said axially fixed gear, said axially movable gear having first and second ends, said second end proximate said fixed end of said axially fixed gear;

a casing enclosing said axially fixed gear and said axially movable gear, said casing having a peripheral wall, said peripheral wall having an interior surface, said axially fixed gear axially fixed to said casing;

a first end wall and a second end wall in sealing contact with said interior surface of said peripheral wall of said casing, said first end of said axially movable gear rotatably mounted in said first end wall, said second end of said axially movable gear rotatably mounted in said second end wall;

a wall bridging said first end wall and said second end wall, said bridging wall having an interior wall surface and forming with said first end wall and said second end wall a carriage axially movable within said casing, said interior wall surface of said bridging wall forming with said axially fixed gear a first delivery gap extending across part of the circumference of said axially fixed gear, said interior surface of said peripheral wall and said axially movable gear forming a second delivery gap extending across part of the circumference of said axially movable gear, said delivery gaps each having an entry area provided with a low pressure space having an inlet, and an outlet area provided with a high pressure space having an outlet; and

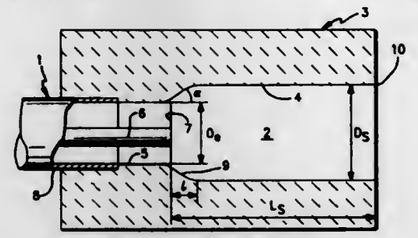
a third end wall sealingly contacting said interior wall surface of said bridging wall, said free end of said axially fixed gear rotatably attached to said third end wall.

5,620,316

WORKING HOLE FOR OXYBURNER, OXYBURNER ASSEMBLY COMPRISING SUCH A WORKING HOLE AND PROCESS FOR USING SUCH AN ASSEMBLY

Thierry Duboudin, Versailles, France; Louis Philippe, Oakbrook Terrace, Ill.; Serge Laurenceau, Versailles, France; Eric Duchateau, Clarendon Hills, Ill., and Jean-Yves Iatrides, Saint Maur Des Fosses, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Nov. 1, 1994, Ser. No. 332,055
Claims priority, application France, Sep. 22, 1994, 94 11332
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—181 11 Claims



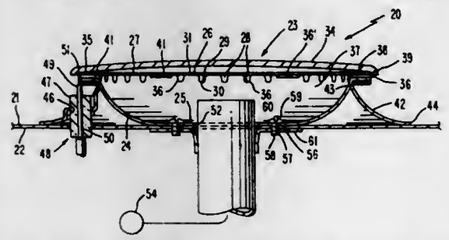
1. Opening for an oxyburner, comprising a block of refractory material formed with a through passage, said passage comprising a substantially cylindrical outlet region of a diameter D_s and a length L_s, connecting to a substantially cylindrical inlet region of a diameter D_e, the ratio D_s/D_e being comprised between 1.5 and 2.5, and the ratio $L_s/(D_s-D_e)$ being comprised between 2 and 7.

5,620,317

BURNER CONSTRUCTION, COOKING APPARATUS UTILIZING THE BURNER CONSTRUCTION AND METHODS OF MAKING THE SAME

Kent K. Sigler, New Stanton, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 9, 1995, Ser. No. 386,010
Int. Cl.[6] F23Q *3/00*
U.S. Cl. 431—266 8 Claims



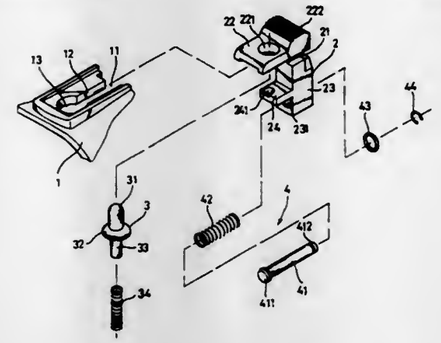
1. A burner construction, comprising a substantially bowl-shaped burner body means having a chamber means therein and having opposed end means, one of said opposed end means being open to said chamber means and the other of said opposed end means having means for interconnecting a source of fuel to said chamber means, a removable cap means closing said open end means of said body means, and port means interconnecting said chamber means to the exterior of said burner construction and through which said fuel can issue to burn externally to said burner construction, said body means having an annular surface means interrupted by a plurality of radially disposed and spaced apart groove means that have open ends and closed ends, said cap means having an annular surface means cooperating with said annular surface means of said body means to close said open ends of said groove means to define said port means, and said annular surface means of said burner body means comprises an annular flange means that extends radially outwardly from said one end of said burner body means, wherein said annular flange means and said burner body means comprise a one-piece and homogenous member which comprises a flat metallic sheet that has been stamped into an annular flange means and said burner body means, and further comprising a bezel ring surrounding said burner body means adjacent said other end thereof, said bezel ring carrying an igniter electrode means that is adapted to spark therefrom to said annular flange means.

5,620,318

FUEL GAS PRESS CONTROL DEVICE OF A GAS TORCH

Chin-Lin Tsai, 3F, No. 94, Sec. 4, Chun Hsin Rd., San Chung City, Taipei Hsien, Taiwan

Filed Aug. 1, 1996, Ser. No. 691,179
Int. Cl.[6] F23D *14/28*
U.S. Cl. 431—344 4 Claims



1. A fuel gas press control device comprising:

a shell having an opening, a circular hole, and a sliding slot communicating between said opening and said circular hole;

a switch mounted on said shell and moved in said sliding slot, said switch comprising a horizontal top plate disposed above said shell and having a vertical through hole, a vertical bottom block disposed below said shell and having a horizontal through hole, a neck connected between said horizontal top plate and said vertical bottom block and inserted through the opening of said shell into the circular hole and sliding slot thereof, a horizontal projecting plate perpendicularly raised from said vertical bottom block above the elevation of the horizontal through hole of said vertical bottom block and having a vertical through hole vertically aligned with the vertical through hole of said horizontal top plate, a pressure rod assembly mounted in the horizontal through hole of said vertical bottom block and adapted for pressing on a gas lever of a butane well;

a retainer knob having a knob head inserted through the vertical through hole of said horizontal top plate of said switch from the bottom, a rod-like knob body facing the vertical through hole of said horizontal projecting plate of said switch, and a collar disposed between said knob head and said rod-like knob body and stopped below said shell; and

a compression spring mounted around the rod-like knob body of said retaining knob and connected between the horizontal top plate of said switch and the horizontal projecting plate thereof to impart an upward pressure to said collar;

wherein when said switch is moved along the sliding slot of shell to the circular hole thereof, the collar of said retaining knob is forced upward into the circular hole of said shell by said compression spring, causing a sound to be produced, and at the same time said pressure rod assembly is pressed on the gas lever of said butane well to release fuel gas; when the knob head of said retaining knob is pressed down to lower the collar of said retaining knob from the circular hole of said

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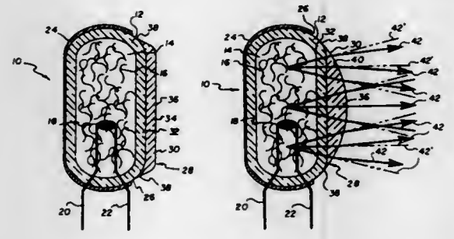
shell, said switch is allowed to be pushed backwards from the circular hole of said shell to the sliding slot thereof, permitting said pressure rod assembly to be moved away from the gas lever of said butane well to stop fuel gas.

5,620,319

PHOTOFLASH LAMP WITH OPTICAL ELEMENT UNDERGOING HEAT GENERATED CHANGE FROM SUBSTANTIALLY UNIFORM THICKNESS TO BEING THICKER IN THE CENTER, DURING FLASH IGNITION, TO ENHANCE LIGHT OUTPUT BY CONVERGING LIGHT RAYS

Arnold W. Lungershausen, West Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1996, Ser. No. 627,860
Int. Cl.[6] F21K *5/00*
U.S. Cl. 431—360 **6 Claims**



1. A photoflash lamp comprising a lamp housing, a combustible material burning inside said lamp housing to produce a flash illumination, and ignition means for igniting said combustible material, is characterized by:

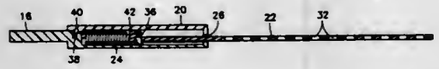
optical element means on said lamp housing for changing shape responsive to the lamp housing becoming heated when said combustible material is burned inside the lamp housing to produce the flash illumination, for enhancing the light output of the flash illumination.

5,620,320

SUBSTANTIALLY CONSTANT FORCE COIL SPRING USABLE IN EXTRAORAL ORTHODONTIC APPLIANCE

Steven O. Luse, and Craig L. Jacobson, both of 1611A S. Melrose Dr., #16, Vista, Calif. 92083-5471

Filed May 4, 1995, Ser. No. 435,087
Int. Cl.[6] A61C *7/00*
U.S. Cl. 433—5 **3 Claims**



1. In an extraoral orthodontic appliance, a coil spring used for imparting forces to be applied against the teeth, said coil spring comprising:

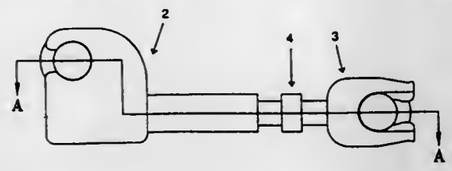
a superelastic, shape-memory alloy wire wound into a coil, said wire having a wire diameter of 0.02 inches, said coil having a spring force selected to be within the range of 375 to 800 grams, said spring force to be substantially constant when said coil spring is installed in an orthodontic appliance regardless of movement of the user.

5,620,321

ORTHODONTIC APPLIANCE

David W. Thornburg, LaPorte, and Phillip S. Horvath, New Carlisle, both of Ind., assignors to TP Orthodontics, Inc., LaPorte, Ind.

Filed May 18, 1995, Ser. No. 444,232
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—19 **2 Claims**



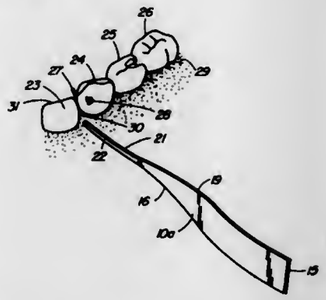
1. In an orthodontic device for attachment to teeth of the upper and lower jaw of a patient for the purpose of moving teeth and/or stimulating mandibular jaw bone growth, comprising a pair of telescoping mechanisms, each having an opposite end portion, said telescoping mechanisms comprising a telescope outer tube portion and a telescope inner rod portion, said device comprising attachment means for securing each of the two opposite end portions to one or more teeth of the patient, the improvement comprising said attachment means including a ball and socket assembly, said ball having a sphere integrally connected to a stem terminating in a flange which is adapted to be affixed to the outer face of one or more teeth by an orthodontic device, said socket comprising a flange attached radially to said tube portion, the socket comprising a hemispherical shaped cavity intruding into a face of said flange, the diameter of said cavity being sized such that it provides a clearance fit around the sphere of said ball; a slot extending from the edge of said flange into the center of said hemispherical shaped cavity through to an opposite face of the flange, with said stem of said ball extending through said slot, whereby coupling of said flange to said ball is accomplished by pivoting said socket approximately 120 degrees about said ball.

5,620,322

DENTAL MATRIX STRIP

Michael Lococo, 5138 Valleyway, Niagara Falls, Ontario, Canada

Filed Jul. 27, 1995, Ser. No. 507,946
Int. Cl.[6] A61C *5/04*
U.S. Cl. 433—39 **9 Claims**



1. An elongated dental matrix strip of thin, flexible material comprising:

(a) a major width end portion;

(b) a minor width end portion;

(c) a first side edge portion extending longitudinally between said end portions;

(d) a second side edge portion extending longitudinally between said end portions;

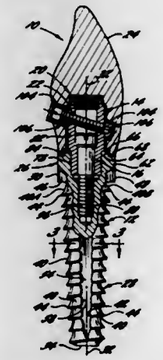
(e) said second side edge portion being convergent at an acute angle with respect to the first side edge portion in a direction from said major end portion to said minor end portion.

5,620,323

DENTAL RESTORATION STRUCTURE

Robert A. Bressman, 9631 Gross Point Rd., Skokie, Ill. 60076, and Daniel Megert, Horeastrasse 17, 3186 Duedingen, Switzerland

Filed Aug. 22, 1994, Ser. No. 293,560
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—174 **9 Claims**



1. A dental restoration structure comprising an implant anchorable in a jawbone, and means for securing to said implant connecting means for connecting a crown/tooth structure to said implant, said securing means comprising a threaded root end; wherein said implant comprises a neck portion having a cylindrical peripheral wall, and a tapered, thread cutting portion having generally longitudinally disposed grooves providing cutting teeth comprising a cutting leading edge defining a first thread direction and also providing opposite to said leading edge, a non-cutting edge upon said securing means being rotated opposite to said first thread direction to secure said connecting means, wherein said thread cutting portion further comprises a tip and has a peripheral edge defined by peripheral edges of said cutting teeth, wherein said cutting portion peripheral edge adjacent said neck portion is stepped in from said peripheral wall of said neck portion, wherein said thread cutting portion is tapered toward said tip, and wherein said implant comprises a threaded cavity for receiving said threaded root end of said securing means, and said threaded cavity has a thread direction opposite to said first thread direction.

5,620,324

EDUCATIONAL KIT INCLUDING SEPARABLE ALPHANUMERIC SYMBOLS

Robert S. Rettke, 9900 Avenue West, Apt. 22, Everett, Wash. 98204

Filed Nov. 16, 1995, Ser. No. 559,554
Int. Cl.[6] G09B *1/36*
U.S. Cl. 434—160 **11 Claims**

1. An educational kit comprising in combination:

a plurality of alphanumeric symbols;

said plurality of alphanumeric symbols, each being separable into a first section and a second section;

said plurality of alphanumeric symbols, each having at least one attachment means to attach said first section to said second section;

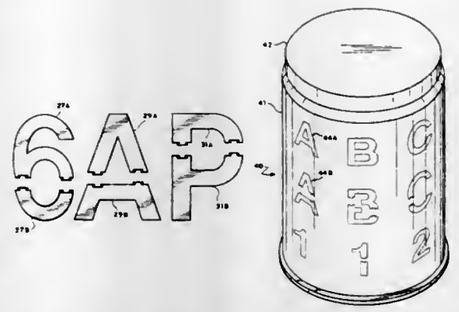
said attachment means comprising a dovetail in said first section and a groove in said second section providing a firm attachment between said first section and said second section of said plurality of alphanumeric symbols, said dovetail and groove being dimensioned and configured to interconnect in a close and tight relationship;

each of said plurality of alphanumeric symbols having a separate and distinct color;

a receptacle dimensioned and configured to contain said plurality of alphanumeric symbols, wherein said receptacle displays individual images on an outside surface that correspond to each of said plurality of alphanumeric symbols;

said individual images each having the same color as each of the corresponding plurality of alphanumeric symbols; and

said receptacle having a lid secured to said receptacle by a securing means; whereby the educational kit assists in the education of children in assembling the plurality of alphanumeric symbols, recognizing each alphanumeric symbol and distinguishing each alphanumeric symbol by its distinctive color.

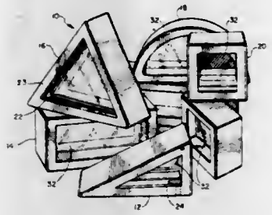


5,620,325

EDUCATIONAL BLOCKS WITH ENHANCED MANIPULATION FEATURES

Eileen M. Glick, 1085 Warburton Ave, Hastings-On-Hudson, N.Y. 10706

Filed Aug. 10, 1995, Ser. No. 513,401
Int. Cl.[6] G09B *19/10*; A63H *33/04*
U.S. Cl. 434—258 **15 Claims**





1. An educational play block for grasping by a user's hand, the hand with a distal phalanx portion length, comprising:

a) an interior member;

b) a peripheral member surrounding and affixed to the interior member, the peripheral member with an interior surface, an outer circumference and at least one exterior surface, the

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distance between the interior member and the exterior surface defining at least one ledge, the distance between the interior member and the exterior surface further defining a ledge width, the distance between the interior surface and the outer circumference defining a ledge height, the ledge width ergonometrically proportioned such that the distal phalanx portion length is accommodated when the block is grasped by the user; and

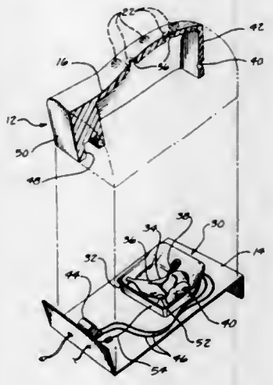
c) means for enhanced gripping disposed on the at least one ledge.

5,620,326

ANATOMICAL SIMULATOR FOR VIDEOENDOSCOPIC SURGICAL TRAINING

Scott B. Younker, Vashon Island, Wash., assignor to Simulab Corporation, Vashon Island, Wash.

Filed Jun. 9, 1995, Ser. No. 489,311
Int. Cl.[6] G09B *23/30*
U.S. Cl. 434—268 **43 Claims**



1. An anatomical simulator for surgical training, comprising:

a plurality of synthetic anatomical structures;

and a resilient synthetic connective tissue bonding the synthetic anatomical structures together and defining a synthetic tissue plane having a predetermined thickness and tear strength, the connective tissue being incisable to permit dissection of the anatomical structures while maintaining the integrity of individual dissected anatomical structures.

5,620,327

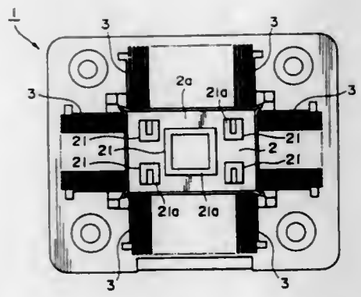
ANTISTATIC SOCKET APPARATUS

Tomohide Tokumaru, Kanagawa, and Toshiyuki Goto, Oita, both of Japan, assignors to Sony Corporation, Japan

Filed May 12, 1995, Ser. No. 440,092
Claims priority, application Japan, May 17, 1994, 6-128232
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—72 **20 Claims**

1. An antistatic socket apparatus (**1**) for allowing electrical conductivity to take place between a measurement instrument and an electronic component which is enclosed in a package through leads (**12**) protruding out of the package enclosing said electronic component, said antistatic socket apparatus comprising:

a bearer (**2**) made up of a predetermined non-conductive material for mounting the package of said electronic component on a mounting surface (**2a**) of said bearer, said predetermined non-conductive material being selected to have a resistance value which allows static charge to diffuse but which maintains a predetermined level of electrical insulation;



contactors (**3**) arranged on the circumference of said bearer and, with said electronic component mounted on said mounting surface, to be brought into contact with said leads; and

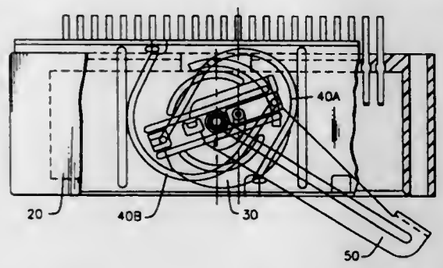
a plurality of protrusions (**21**) provided on said mounting surface of said bearer for supporting said package in a non-contact relationship above said mounting surface, said protrusions being made of the predetermined non-conductive material and having a total surface area which is less than the surface are of said mounting surface, the total surface area being selected to reduce the amount of friction between said projections and the package and the amount of static electricity which is generate.

5,620,328

CONNECTOR RELEASE MECHANISM

Masahiro Yamamoto, Yokohama, and Toshimitsu Sonobe, Tokyo, both of Japan, assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Oct. 19, 1994, Ser. No. 325,833
Claims priority, application Japan, Oct. 19, 1993, 5-261072
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **14 Claims**



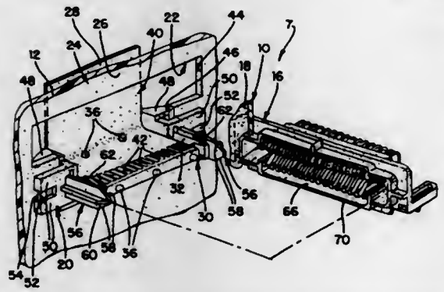
1. A connector comprising first and second housings (**10**) (**20**) detachably coupled to each other, a pivotal plate (**30**) pivotally mounted to one of said two housings, a pair of leaf springs (**40A**, **40B**) interposed between one of said two housings and said pivotal plate, and latch means (**12**) for locking said two housings, said latch means comprising an engaging pin (**31**) extending from said pivotal plate, and a latch groove (**12**) formed in one of said two housings, wherein when said first and second housings are coupled, said leaf springs act to pivot the pivotal plate which in turn causes coupling of the first and second housings, and wherein when said pivotal plate is in a set state and said first and second housings are in a reset state, said latch means interferes with coupling of said two housings.

5,620,329

SELF-ALIGNING ELECTRICAL CONNECTIVE ARRANGEMENT

Richard L. Kidd, Stow; Paul Di Llello, Cortland; David G. Siegfried, Vienna; Anthony J. Corso, Struthers, all of Ohio; Robert W. Rimko, Transfer, Pa., and Bobbi S. Dankert, Cicero, Ind., assignors to General Motors Corporation, Detroit, Mich., and Delco Electronics Corp., Kokomo, Ind.

Filed Jun. 17, 1996, Ser. No. 664,357
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—248 **8 Claims**



1. An electrical connective arrangement for mating an electrical component with a first structure to a flexible circuit, the flexible circuit being positioned adjacent a second structure, the second structure having first and second surfaces penetrated by an aperture, the arrangement comprising:

a male slider, the slider having a platform projecting in a first direction, the platform providing a presentation surface for the flexible circuit, the slider also having at least one set of fingers juxtaposing the second structure, at least one of the fingers being compliant, and the male slider also having an alignment post; and

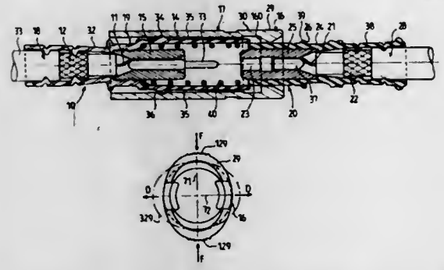
a female housing connected with the electrical component, the female housing having a cavity to receive the platform in the alignment post of the male slider, the female housing having at least one terminal biased for contact with the flexible circuit and wherein movement of the electrical component in a second direction opposite the first direction toward the second structure causes the slider to move in a first plane to align itself with the female housing and to establish an electrical connection.

5,620,330

CONNECTOR FOR COAXIAL CABLE

Ernest Pizon, Saint Cloud, France, assignor to Mecaniplast, Aubergenville, France

Filed Nov. 17, 1995, Ser. No. 560,535
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—350 **9 Claims**



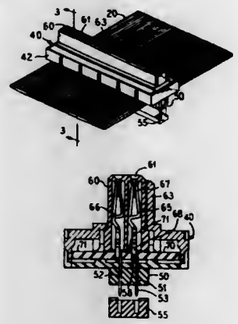
1. Connector for coaxial cable, comprising a first element (**10**) and a second element (**20**), these being designed to be fitted together, one in the other, in order to establish an electrical connection between two cores (**11**, **21**) and two earth braids (**12**, **22**), the first element (**10**) comprising a central projecting pin (**13**) intended to be connected to the first core (**11**), and a tubular metallic part (**14**) concentric with the pin, separated from the latter by an insulating central body (**15**) and intended to be connected to the first braid (**12**), the second element (**20**) comprising a central socket (**23**) intended to receive the pin (**13**) and to be connected to the second core (**21**), and a tubular metallic part (**24**) concentric with the socket (**23**) from which it is separated by an insulating central body (**25**) and intended to be connected to the second braid (**22**), the two metallic tubular parts (**14**, **24**) being designed to be brought into electrical contact, one of the elements (**20**, **10**) including a snap-fastening means (**26**) while the other element (**10**, **20**) is equipped with a complementary snap-fastening means (**16**) designed to interact with the snap-fastening means (**26**) after the two elements (**10**, **20**) have been fitted together in order to ensure axial connection between these two elements, the complementary snap-fastening means (**16**) being provided on a piece (**17**) made of insulating material, especially made of plastic, having radial projections (**160**) designed to become snap-fastened after the fitting-together operation, the snap-fastening means (**26**) being formed by a kind of radially projecting collar (**39**), the above-mentioned piece on which the complementary snap-fastening means (**16**) are provided consisting of a casing (**17**) made of insulating material, surrounding the metallic tubular part (**14**, **24**) of the corresponding element of the connector, this casing (**17**) having radial projections (**160**) designed to become snap-fastened behind the above-mentioned collar (**39**) after the fitting operation, characterized in that the radial projections (**160**) are circumferentially surrounded by an elastic unlocking ring (**29**), the cross section of which has an oblong shape, extending around the axis of the casing (**17**) of insulating material, and with which the projections are radially integral, the casing (**17**) having longitudinal openings (**42**) defining two longitudinal tabs (**30**) separated from each other in the peripheral sense and extending symmetrically with respect to the axis of the casing (**17**) of insulating material, the complementary snap-fastening means (**16**) being provided at the end of the said longitudinal tabs (**30**), the ends of which are connected annularly by the elastic unlocking ring (**29**), the two longitudinal tabs (**30**) being in line with those faces of the elastic unlocking ring which are closest together.

5,620,331

FEED-THRU IDC TERMINATOR

Oleg Los, Glenview; Jaime Duran, and William L. Zuckerman, both of Chicago, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Dec. 15, 1994, Ser. No. 356,685
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—404 **10 Claims**



1. A feed-thru IDC terminator comprising:

a first end having IDC contacts protruding therefrom;

a second end having feed-thru contacts therein;

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a circuit board between said IDC contacts and said feed-thru contacts having termination circuitry thereon; and

said feed-thru contacts and said IDC contacts are distinct and include mounting ends, wherein said mounting end of said feed-thru contact and said mounting end of said IDC contact share the same thru-hole of said circuit board and are electrically connected.

5,620,332

TERMINAL ELEMENT

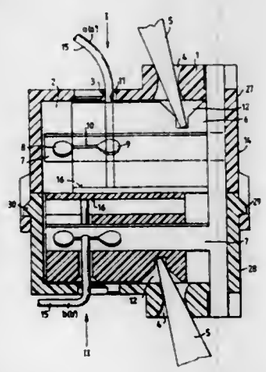
Dieter Gerke; Manfred Müller, and Harald Bülow, all of Berlin, Germany, assignors to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Aug. 10, 1995, Ser. No. 513,535

Claims priority, application Germany, Aug. 10, 1994, 44 37 022.9

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—417 **17 Claims**



1. A terminal element comprising:

a housing defining a chamber and defining a housing opening for receiving a conductor;

an IDC element positioned in said chamber, said IDC element defining a contact slot and an access portion;

a slider movably positioned in said chamber, said slider being movable between a first position and a second position, said slider defining a slider opening for receiving a conductor, said slider opening being positioned adjacent said housing opening and said access portion in said first position, said slider opening being positioned adjacent said contact slot in said second position;

movement means for moving said slider between said first and second positions, said movement means being operatable from outside said housing, said movement means including a notch defined by said slider and a movement opening defined by said housing.

5,620,333

ELECTRICAL CONNECTOR STRAIN RELIEF HOOD

Michael C. Boyle, Shelton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Dec. 7, 1994, Ser. No. 350,620

Int. Cl.[6] H01R *13/58*

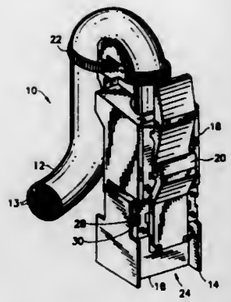
U.S. Cl. 439—471 **21 Claims**

1. An electrical cable assembly comprising:

a cable having a plurality of electrical wires;

an electrical connector body connected to the cable by first ends of the electrical wires; and

a strain relief hood connected to the connector body and the cable, the hood having a first section snap-lock connected to the connector body and a second section attached to the cable, the first section including an outwardly deflectable cantilevered side wall formed, at least partially, by two slots between the cantilevered side wall and two other side walls adjacent to the cantilevered side wall wherein the strain relief hood includes a first member and an interlocked second member.



5,620,334

STRESS RELIEF DEVICE FOR CABLES ADAPTED TO BE REMOVABLY ATTACHED TO THE REAR OF A CONNECTOR

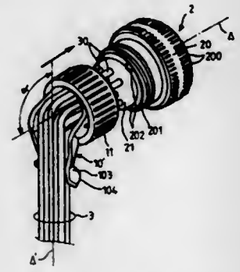
Thierry Quillet, Paris; Pascal Ribeau, Le Mans, and Herve Le Gallic, Cherreau, all of France, assignors to Framatome Connectors International, Paris, France

Filed Jun. 1, 1995, Ser. No. 457,224

Claims priority, application France, Jun. 3, 1994, 94 06809

Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—471 **7 Claims**



1. A stress relief device (**1**, **1'**) for use between a connector (**2**), to the rear of which it can be removably attached, and a cable harness (**3**), the device (**1**, **1'**) comprising a clamp (**10**, **10'**) having an open rear part (**102"**) forming a receptacle for the cables of said harness and an annular front part (**102'**), and a ring (**11**) having a particular inside diameter adapted to be fixed to the connector (**2**), the ring (**11**) having in its rear part an internal flange (**110**) and in said front annular part (**102'**) an increased thickness periphery (**1000**) having a profile complementary to that of said internal flange (**110**) to maintain the annular front part (**102'**) of the clamp (**10**, **10'**) in rearward abutment, characterized in that the material of the clamp (**10**, **10'**) has elastic properties and in that said front part (**102'**) of the clamp (**10**, **10'**) is open, this part having the shape of a "C" of which the facing two lips (**1001**, **1002**) are separated by a distance determined so that, when a compression force is applied to it, said lips (**1001**, **1002**) can move towards each other by virtue of its elasticity sufficiently to enable insertion of said front annular part (**102'**) of the clamp (**10**, **10'**) inside the ring (**11**) having said particular internal diameter, wherein said rear part (**102"**) of the clamp (**10**, **10'**) includes at least one peg (**105**) projecting from its external surface so as to restrict forward movement of the clamp (**10**, **10'**) after insertion into the ring (**11**).

5,620,335

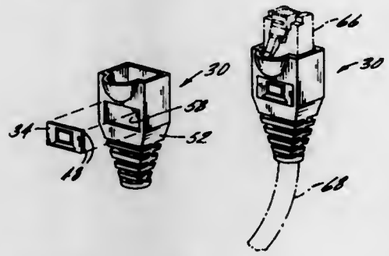
BOOT WITH ICON HOLDER

John A. Siemon, Woodbury, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Mar. 17, 1995, Ser. No. 406,033

Int. Cl.[6] H01R *3/00*

U.S. Cl. 439—491 **16 Claims**



1. A strain relief boot comprising:

at least one flat recess capable of receiving and retaining an identification insert;

a flat identification insert disposed in said recess.

5,620,336

CABLE RETAINER FOR ELECTRIC CABLE

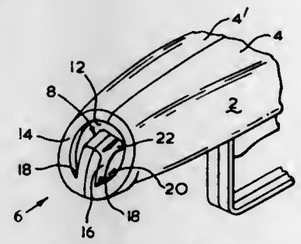
John Worthing, Birtley, United Kingdom, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 14, 1995, Ser. No. 557,632

Claims priority, application United Kingdom, Nov. 15, 1994, 9423005

Int. Cl.[6] H01R *13/72*

U.S. Cl. 439—501 **9 Claims**



1. A cable retainer (**6**) for retaining an electric power cable (**26**) for a portable electrical appliance (**10**), characterised in that the cable retainer (**6**) comprises a substantially L-shaped hook member (**8**), comprising two arms (**16**,**22**), the first of which arms (**16**), is secured to the wall (**14**) of the appliance (**10**) within an aperture (**12**) formed in the wall (**14**), the securing point (**20**) being located in the wall of the aperture and the second of which arms (**22**) is a return arm and extends into the body (**24**) of the appliance (**10**).

5,620,337

FUSED WATTHOUR METER BYPASS STORAGE ADAPTER

Allen V. Pruehs, Howell, Mich., assignor to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Mar. 15, 1995, Ser. No. 404,722

Int. Cl.[6] H01R *31/08*

U.S. Cl. 439—508 **21 Claims**

1. A watthour meter bypass storage adapter mountable in jaw contacts in a watthour meter socket for connecting a watthour meter mountable in the adapter to at least certain of line and load conductors connected to the jaw contacts in the watthour meter socket, the adapter comprising:

a housing including a base and a watthour meter receiving portion;

a first pair of aperture formed in the base at standard line terminal mounting positions;

a second pair of apertures formed in the base at standard load terminal mounting positions;

a pair of load blade terminals extendable through the second pair of apertures in the base;

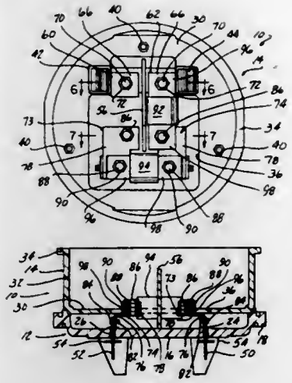
at least one line terminal mounted in one aperture of the first pair of apertures in the base and having a blade terminal end extending through the one aperture;

at least one fuse having opposite ends;

first fuse connector means, disposed in the housing, for connecting one end of the at least one fuse to the at least one line terminal, the first fuse connector means including a pair of first electrically conductive members, each having a blade terminal end and a fuse mounting surface angularly disposed from the blade terminal end, the blade terminal ends of the pair of first members extending through the first pair of apertures in the base;

second fuse connector means, disposed in the housing and having a portion attachable to each of the load blade terminals for mounting one end of the at least one fuse to at least one of the pair of load blade terminals, the second fuse connector means including a pair of second electrically conductive members, each having first and second angularly disposed legs, the first leg attachable to one of the load blade terminals, the second leg forming a fuse mounting surface; and

wherein the at least one fuse is mountable in one of a plurality of selectible positions in the first and second fuse connector means including a first position between the at least one line terminal to one load blade terminal, and a second position between the two load blade terminals.



5,620,338

UNIVERSAL BATTERY CABLE ASSEMBLY

Jan Stephens, Vashon; Ron Decoteau, Carnation; Alan Martin, Issaquah, and Steve Bleistein, Lake Forest Park, all of Wash., assignors to PACCAR Inc., Bellevue, Wash.

Filed Aug. 25, 1994, Ser. No. 295,985

Int. Cl.[6] H01R *13/52*

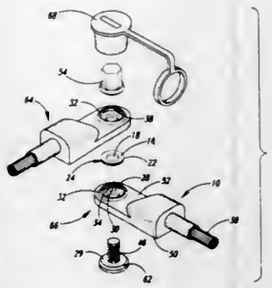
U.S. Cl. 439—522 **11 Claims**

1. A battery cable assembly comprising:

a terminal having a tang coupled to a barrel, the tang being provided with an aperture to receive a stud of a battery, the barrel being adapted to receive a conductor; and

a boot of insulating, resilient material encasing the terminal, a top surface of the boot being provided with a first annular opening having an inner wall and an annular bead protruding

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from the inner wall, a radially most inward surface of the annular bead being convex, the annular bead being adapted to sealingly engage a nut that may be provided on the stud of the battery to secure the terminal to the battery.

5,620,339

ELECTRICAL CONNECTORS

Ian J. Gray, and Melvin D. White, both of Winchester, Great Britain, assignors to ITT Industries Ltd., Basingstoke, England

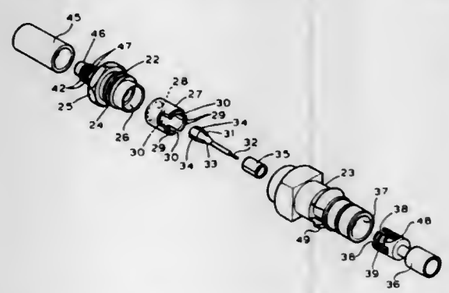
PCT No. PCT/GB93/00142, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/16506, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 22, 1993, Ser. No. 290,714

Claims priority, application United Kingdom, Feb. 14, 1992, 9203234; May 14, 1992, 9210375; Nov. 13, 1992, 9223824

Int. Cl.[6] H01R *9/05*

U.S. Cl. 439—578 **3 Claims**



1. An electrical connector comprising a tubular body structure (**22**, **23**) having an axially extending bore (**37**) therein for receiving an incoming cable and for accommodating electrically-conductive contact-making means located adjacent a part of the cable within the tubular body structure and electrically coupled with contact means of the connector, and axially displaceable means (**36**) at least partly received by the tubular body structure and effective to cause the contact-making means to make good electrical contact with a conductor of the cable in response to a predetermined axial displacement of the displaceable means, in which the displaceable means has at least one positive hold position relative to the tubular body structure in which position the displaceable means acts solely to retain other connector components within the tubular body structure and in which the predetermined axial displacement of the displaceable means from the positive hold position to a further position establishes good electrical contact between the contact-making means and the conductor of the cable;

said axially displaceable means having a groove or projection, and said connector including a tubular latching member that is slotted to provide a plurality of radially deflectable arms having a groove or projection thereon for making snap engagement with spaced projections or grooves on the axially displaceable means.

5,620,340

CONNECTOR WITH IMPROVED SHIELDING

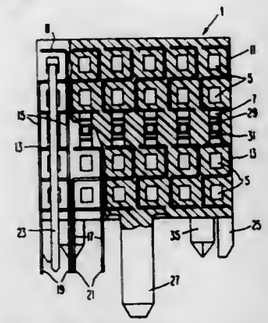
Derek Andrews, Vinkel, Netherlands, assignor to Berg Technology, Inc., Reno, Nev.

PCT No. PCT/US93/12673, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/16477, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 30, 1993, Ser. No. 454,397

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—608 **6 Claims**



1. An electrical connector comprising:

a body of electrically insulating material having contact holes, each of said contact holes provided with an electrical conductive contact element, and said contact holes arranged in at least two columns and at least two rows, said columns having a longitudinal direction, said contact element being arranged for contacting a contact pin of a mating connector; and

shielding elements of electrically conductive plate material being disposed in said body, said shielding elements being shaped and arranged so that neighboring contact elements are always entirely shielded from each other by parts of said shielding elements, wherein said shielding elements are square wave shaped and are each arranged within one column in such a way that an open portion of each of said square wave shaped shielding elements is not adjacent to an open portion of a neighboring square wave shaped shielding element, and wherein at least one of said shielding elements being provided with a resilient contact member which is integrally formed with said shielding element for the purpose of contacting a ground contact member of the mating connector.

5,620,341

ESD AND EMI PROTECTED ETHERNET LAN TAP

Ping Peng, Harrisburg; Paul J. Anastaslo, Camp Hill, and Nilesh B. Pathak, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 3, 1995, Ser. No. 415,891

Int. Cl.[6] H01R *13/66*

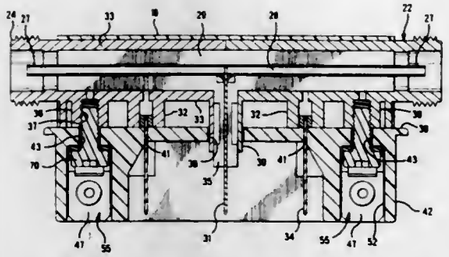
U.S. Cl. 439—620 **8 Claims**

1. A tap connector for a coaxial cable to electrically connect signal and signal ground of the coaxial cable to a transceiver, the transceiver being also connected to earth ground, the connector comprising:

a connecting member having a center conductor, an outer conductive shell, a signal tap contact and a ground tap contact, said center conductor being electrically connected to the signal of the coaxial cable and to the signal tap contact to provide signal to the transceiver, said shell being electrically connected to the signal ground of the coaxial cable and to the ground tap contact for providing signal ground to the transceiver; and

a shunt subassembly comprising a capacitor, a first end of the capacitor being electrically connected to the shell, a second end of the capacitor being electrically connected to the earth ground on the transceiver;

whereby noise and electrostatic discharge is shunted from signal ground to earth ground by way of said capacitor wherein said shunt subassembly further comprises a circuit board having a conductive plane in a hole extending therethrough, a grounding strap having a screw hole therein, and a capacitor being a chip capacitor which is mounted on to the circuit board so that the second end of the capacitor is electrically connected to the conductive plane, wherein a screw is received in a hole in the transceiver and into the hole on the circuit board, the screw providing electrical connection from the earth ground on the transceiver to the conductive plane and to the second end of the capacitor, wherein the outer shell includes a screw hole, a screw being received through the hole of the grounding strap and into the screw hole of the shell, one end of the grounding strap being soldered to the first end of the capacitor, electrical connection for the signal ground being provided through the screw to the grounding strap and to the first end of the capacitor.



5,620,342

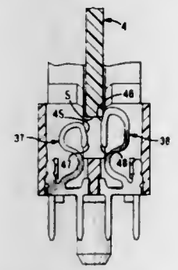
SOCKET HAVING LOW INSERTION FORCE CONTACT SYSTEM

Timothy J. Kinross, Greensboro, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 12, 1995, Ser. No. 489,602

Int. Cl.[6] H01R *23/70*

U.S. Cl. 439—637 **12 Claims**



1. A socket for electrically connecting a circuit card to a substrate, comprising:

a dielectric housing defining a card-receiving slot having a bottom surface and a pair of opposite side surfaces;

a plurality of contacts spaced apart along a length of the slot, each of the contacts including a resilient contact beam extending into the slot and having a card-engaging surface which is arranged to be engaged and deflected by a leading edge of the circuit card during insertion of the circuit card into the slot, a card-contacting surface which is arranged for electrically connecting with the circuit card upon full insertion of the circuit card in the slot, the card-engaging surfaces of at least some contact beams being at a greater height above the bottom surface than the card-engaging surfaces of others of the contact beams, all of the card-contacting surfaces being at a same height above the bottom surface;

wherein, during insertion of the circuit card into the slot, the at least some contact beams are engaged and deflected by the circuit card before the others of the contact beams, and upon full insertion of the circuit card in the slot, each of the contact beams has a respective point of contact with the circuit card at said same height.

5,620,343

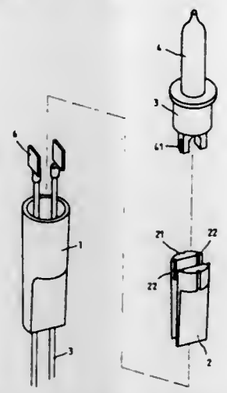
WATERTIGHT SOCKET STRUCTURE FOR USE IN A LIGHT BULB

Wun F. Pan, No. 125, Lane 99, Pu Ting Road, Hsinchu, Taiwan

Filed Feb. 20, 1996, Ser. No. 603,420

Int. Cl.[6] H01R *17/00*

U.S. Cl. 439—699.2 **1 Claim**



1. A light bulb socket for use in a decorative light bulb series, comprising a light bulb held in a holder, a light bulb holder mounted on the top of a socket body, conductor plates connected to electrical conductor wires and housed inside the socket body to electrically connected with lead wires of the light bulb, and electrical conductor wires extending through the bottom of the socket body and characterized in that inside said socket body there is provided with two sealing elements that respectively have a semicylindrical configuration at the upper portion thereof with two grooves formed on the side surface facing each other to secure said conductor plates and a groove formed on the semicylindrical surface to allow the lead wires of said light bulb passing through, said sealing elements being so snugly fitted into said socket body that the bottom of the socket body is closed in a watertight manner.

5,620,344

WATER-TIGHT CONTACT PIN PLUG ASSEMBLY

Guntram May, Altdorf, and Helmut Steinhardt, Nürnberg, both of Germany, assignors to Framatome Connectors Intl, Paris, France

Continuation of Ser. No. 411,282, Mar. 27, 1995. This application Jul. 15, 1996, Ser. No. 680,112

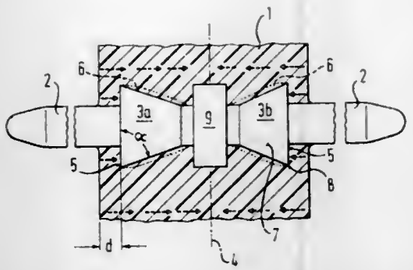
Claims priority, application Germany, Mar. 25, 1994, 44 10 455.3

Int. Cl.[6] H01R *13/405*

U.S. Cl. 439—736 **7 Claims**

1. A water-tight contact pin plug assembly including at least one contact pin cast within plastic parts, said at least one contact pin being completely surrounded by said plastic parts and having

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cross-sectional variations over a length of a cast part of said at least one contact pin, said cross-sectional variations comprising at least two truncated cones which are substantially rotationally symmetrical relative to an axis of said at least one contact pin and which have major base surfaces forming shoulders situated opposite adjacent surfaces of said plastic part, a distance d between said shoulders and associated surfaces of said plastic part being large enough to prevent said plastic parts from breaking open in a zone of said shoulders.

5,620,345

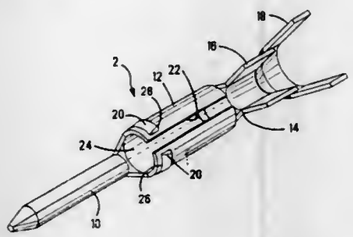
HIGH DENSITY PIN AND SOCKET ELECTRICAL CONNECTOR

Lawrence Macioce, 150 Hidden Hills Dr., Kernersville, N.C. 27284, and Peter G. Nielsen, 144 Whispering Creek Rd., King, N.C. 27021

Continuation of Ser. No. 599,468, Jan. 23, 1996, which is a division of Ser. No. 327,258, Oct. 21, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,656

Int. Cl.[6] H01R *13/428*

U.S. Cl. 439—746 **13 Claims**



1. A cylindrical stamped and formed electrical contact terminal having a contact section, a stabilization section and a crimp section, the terminal being insertable from the rear into a cavity in a housing having a forwardly facing internal shoulder in the cavity between a forward cavity section and a smaller cavity section to the rear of the forward section, the stabilization section of the terminal being formed with edges of the stamped and formed stabilization section being opposed and spaced apart to form a gap, the edges being free to resiliently move toward each other to close the gap, the stabilization section having tapered retention ribs on opposite sides of the gap, the ribs being relatively rigid embossed sections tapered toward the rear of the stabilization section and contiguous on three sides with the stabilization section and with a transverse edge located at the rear of the tapered embossed section, the transverse edge engaging the cavity shoulder when the stabilization section is expanded, the tapered retention ribs engaging the housing during movement through the smaller cavity section to inwardly deflect the stabilization section to cause the edges to move toward each other during passage of the stabilization section through the smaller cavity section.

5,620,346

CONNECTOR AND CONNECTOR TESTING APPARATUS

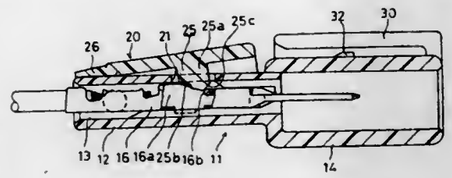
Hitoshi Okumura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 2, 1995, Ser. No. 397,745

Claims priority, application Japan, Mar. 3, 1994, 6-060107; May 16, 1994, 6-126868

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—752 **12 Claims**



1. A connector, comprising:

a connector housing (**11**) formed with a cavity (**13**) for accommodating a terminal fitting (**16**), a retainer (**20**) having a portion which is pivotally mounted on the connector housing (**11**) such that the retainer is movable between a locking position and a non-locking position, said retainer having a locking portion (**25**) for locking the terminal fitting (**16**) inserted into the cavity (**13**), said retainer further comprising a resilient biasing member (**26**) spaced from said portion of said retainer which is pivotally mounted on the connector housing (**11**) for resiliently biasing the retainer (**20**) toward the locking position.

5,620,347

CONTACT PORTION STRUCTURE OF FEMALE CONNECTOR TERMINAL

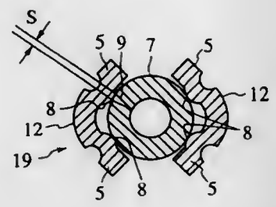
Yoshitsugu Sawada, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,474

Claims priority, application Japan, Jun. 30, 1994, 6-149313

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—851 **6 Claims**



1. A contact portion structure of a female terminal (**1**) for receiving a pin portion of a mated male terminal, the pin portion having a junction groove, the contact portion structure comprising:

a pair of opposing elastic plate portions (**4**);

two pairs of flat plate-shaped contact portions (**5**), each pair extending from one of the opposing elastic plate portions, respectively and bent at right angles at each end thereof; and

contact projections (**8**) having a diameter, each contact projection being formed on an inner surface of the flat plate-shaped contact portion (**5**) for contacting the pin portion (**7**) of the mated male terminal (**6**), the diameter of each of the contact projections (**8**) being larger than the junction groove (**9**) of the pin portion (**7**) of the mated male terminal (**6**).

5,620,348

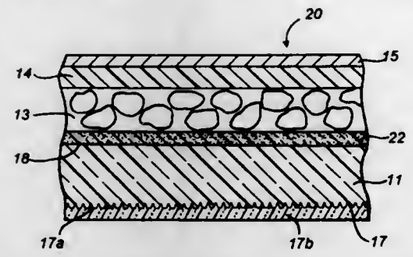
METHOD OF MANUFACTURING ELECTROLUMINESCENT LAMPS HAVING SURFACE DESIGNS AND LAMPS PRODUCED THEREBY

Jose Santana; Harold Thorgersen, both of Woodbury, Conn.; John Dixon, London, England, and Andrew C. Ledesma, Cebu, Philippines, assignors to Timex Corporation, Middlebury, Conn.

Filed May 12, 1995, Ser. No. 439,840

Int. Cl.[6] H05B *33/10;33/02*

U.S. Cl. 445—24 **21 Claims**



1. An improved method of manufacturing an electroluminescent lamp having a front side and a back side of the type having a transparent substrate with top and bottom surfaces, and front and back electrodes having interposed therebetween an electroluminescent layer and an insulating layer, wherein the improvement comprises:

adapting the front side of said lamp to reflect incident ambient light and transmit light received from the electroluminescent layer when the electroluminescent layer is energized; and

providing the transparent substrate with a predetermined surface configuration on one surface to enhance the diffusion and fringing of the reflected incident ambient light and the light emitted by the electroluminescent layer when energized.

5,620,349

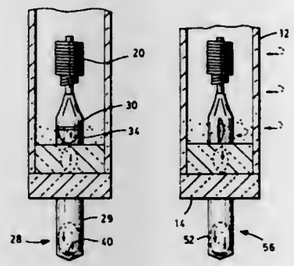
METHOD FOR AMALGAM RELOCATION IN AN ARC DISCHARGE TUBE

John A. Scholz, Danvers, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 805,703, Dec. 11, 1991. This application Jul. 26, 1996, Ser. No. 687,696

Int. Cl.[6] H01J *9/38;9/395*

U.S. Cl. 445—26 **19 Claims**



1. A method for charging an arc tube assembly with a chemical fill, comprising the steps of:

providing an electrode assembly including an electrode attached to an electrode support tube having a generally cylindrical wall;

forming an opening in the wall of said electrode support tube;

mounting said electrode assembly in one end of an arc tube with said opening located inside said arc tube;

dispensing a chemical fill into said arc tube; and

moving said arc tube so as to cause said chemical fill to pass through said opening and drop into an interior region of said electrode support tube.

5,620,350

METHOD FOR MAKING A FIELD-EMISSION TYPE ELECTRON GUN

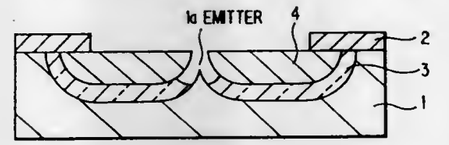
Hisashi Takemura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,722

Claims priority, application Japan, Oct. 27, 1994, 6-286173

Int. Cl.[6] H01J *1/30;9/02*

U.S. Cl. 445—50 **6 Claims**



1. A method for making a field-emission type electron gun, comprising the steps of:

a) forming insulating film on a main plane of a silicon substrate;

b) selectively etching said insulating film within a region where a gate electrode will be formed no form a mask of said insulating film;

c) removing said silicon substrate within said region using said mask to form a concave portion, wherein said insulating film remains on an edge of said concave portion and an edge of said insulating film extends in the form of a cantilever from said edge of said concave portion;

d) oxidizing a surface of said silicon substrate by thermal oxidation to form an emitter with a sharpened tip;

e) depositing a film for forming a gate electrode to fill said concave portion;

f) removing an unnecessary part of said film for forming said gate electrode; and

g) selectively removing said oxidized surface of said silicon substrate on said emitter to expose said tip of said emitter.

5,620,351

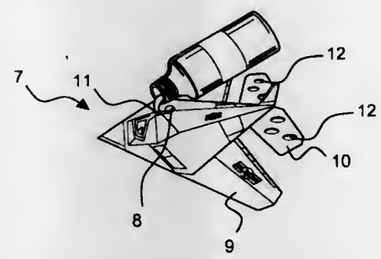
BUBBLE TOY

Yat-Ming Ho, New Territories, Hong Kong, assignor to Well Skill Industrial Ltd., Hong Kong, Hong Kong

Continuation of Ser. No. 154,004, Nov. 18, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,228

Int. Cl.[6] A63H *33/28;27/00*

U.S. Cl. 446—15 **7 Claims**



1. A toy aircraft comprising a fuselage and a pair of wings extending from opposed sides of said fuselage, each of said wings being formed by two substantially planar members that are ori-

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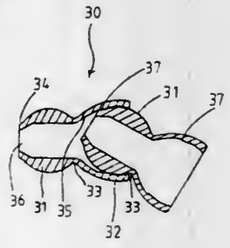
ented in a direction generally parallel to the intended direction of flight of the toy aircraft, each of said members having a plurality of holes therein and said members being so disposed that the holes in one of said members overlay corresponding holes in the other of said members, with a gap defined between said members, and said fuselage defining a liquid reservoir adapted to supply liquid continuously to the gap defined between the members in a direction substantially parallel to the surface of said members.

5,620,352

FLEXIBLE TUBE HAVING A NUMBER OF JOINTS

Chun-Chuen Tzong, No. 35, Avenue 6, Lane 13, Chong Ching Road, Taichung, Taiwan

Filed Mar. 29, 1996, Ser. No. 624,095
Int. Cl.[6] A63H *33/12:33/06:3/46*
U.S. Cl. 446—120 **1 Claim**



1. A flexible tube comprising:

a plurality of joint members, said joint members each including a first end portion having a spherical member formed thereon and including a second end having a semi-spherical member formed thereon and including a neck portion of reduced diameter formed between said spherical member and said semi-spherical member, said joint members each including an interior formed therein, said spherical members each including a first end distal to said semi-spherical member and having a first annular tapered surface formed thereon, said semi-spherical members each including an inner peripheral surface having a second annular tapered surface formed therein for engaging with said first annular tapered surface of said spherical member and for limiting a rotational movement of said spherical member relative to said semi-spherical member, said semi-spherical member of a first of said joint members being engaged with said neck portion of a second of said joint members so as to further limit the rotational movement of said spherical member relative to said semi-spherical member and so as to prevent said spherical member from disengaging from said semi-spherical member,

said interiors of said joint members forming a continuous passage for allowing an engagement of electric wires therein.

5,620,353

LIQUID BALL CAPABLE OF PROVIDING A DYNAMIC VIEW

Toong-Kwung Lai, Hsin Chu Hsien, Taiwan, assignor to Szu Woei Co., Ltd, Hsin Chu Hsien, Taiwan

Filed Jan. 23, 1996, Ser. No. 589,070
Int. Cl.[6] A63H *33/26*
U.S. Cl. 446—136 **1 Claim**

1. A liquid ball for providing a dynamic view, comprising: a ball portion for containing a liquid and a magnet-containing ornament therein, a base portion attached to a bottom side of said ball portion and defining an inner space therein, and a driving mechanism accommodated inside said inner space in said base portion;

said base portion having: a top plate; a wall member with an upper through hole and a lower through hole; and an upper decorative ring member and a lower decorative ring member rotatably mounted around said wall member, said upper and lower ring members both having an outer surface and an inner periphery with a toothed surface, said upper decorative ring located such that portion of sad toothed surface extends over the upper through hole and said lower decorative ring located such that a portion of said toothed surface extends over said lower through hole; and

said driving mechanism comprising: a power source and a gearset rotated by said power source said gearset including an upper gear meshing with the toothed surface of said upper decorative ring through said upper through hole and a lower gear meshing with the toothed surface of said lower decorative ring through said lower through hole; said upper gear being directly rotated by said power source thereby causing said upper ring member to rotate, said lower gear being rotated by rotation of said upper gear thereby causing said lower ring member to rotate;

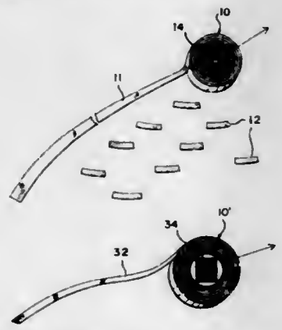
a central gear disposed closely below said ball portion rotated by said upper gear, said central gear connected to a rotary shaft which projects through said top plate of said base portion; a horizontally and radially extending arm member connected to the rotary shaft, the arm member having two ends; a magnet attached to each end of said arm member with magnetic poles at a top side of said magnets different from each other, whereby said two magnets on said arm member produce a changeable magnetic field in the ball portion when said arm member rotates along with said central gear and said gearset is rotated by said power source, and said magnetic field causes said magnet-containing ornament to revolve and rotate in said liquid in said ball portion.

5,620,354

STREAMERS WITH CONFETTI

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Filed Jun. 28, 1995, Ser. No. 496,075
Int. Cl.[6] A63H *37/00*
U.S. Cl. 446—475 **12 Claims**



1. A streamer for producing a visual display comprising:

(a) a core of soft material;

(b) a roll of wound layers of plastic film surrounding said core;

(c) said film being composed of PVC film;

(d) a large plurality of pieces of confetti contained between said wound layers of plastic film, at least some of said pieces of confetti being composed of tissue paper; and

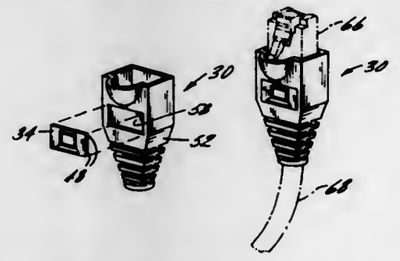
(e) said wound layers of plastic film being coated with a high-slip coating such that said roll unwinds smoothly and said confetti pieces are released from the roll as the streamer unwinds in the air.

5,620,355

CONFETTI LAUNCHING DEVICES

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Division of Ser. No. 111,608, Aug. 25, 1993, Pat. No. 5,529,527, which is a continuation-in-part of Ser. No. 51,355, Apr. 23, 1993, Pat. No. 5,352,148. This application Nov. 14, 1995, Ser. No. 557,295
Int. Cl.[6] A63H *37/00*
U.S. Cl. 446—475 **14 Claims**



1. A system for launching lightweight articles into the air comprising in combination:

an elongated hollow tube having first and second ends, said tube containing a plurality of lightweight articles to be launched into the air;

a source of compressed gas;

a female quick-disconnect fitting connected to said source of compressed gas;

closure means for closing said tube secured to said first tube end and

a male quick-disconnect fitting secured to said closure means for quick connection and disconnection of said tube to and from said female quick-disconnect fitting and said source of compressed gas.

5,620,356

ROW TOOL BALANCE AND BOW CORRECTION APPARATUS

Stanley Lackey; Lauren Lackey, and Gordon Grosslight, all of 5144 Commerce Ave., Unit A, Moorpark, Calif. 93021

Filed Jan. 27, 1995, Ser. No. 379,791
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **5 Claims**

1. In an automated system for lapping thin film magnetic heads disposed in row on a bar, the improvement which comprises:

a stationary fixture;

a movable fixture carried on said stationary fixture;

a lapping assembly including a rotary lapping plate;

means for securing said bar in opposition to said lapping plate and comprising a plurality of struts and rods;

means carried on said bar for generating data signals representing throat height during the lapping process;

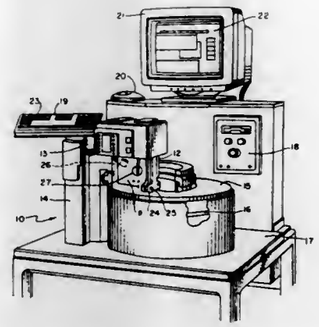
a data processor coupled to said signal generating means for producing command signals in response to said data signals;

electromagnetic actuator means coupled to said data processor for automatically correcting the balance and bow of said bar relative to said lapping plate via said struts and rods in response to said command signals from said processor;

a first set of said electromagnetic actuators is coupled to said bar via said rods for the correction of balance and a second set of electromagnetic actuators is coupled to said bar via said struts to correct for bow of said bar;

said data processor, said data generating means, said signal generating means and said electromagnetic actuators define a closed loop lapping control system for correction of balance and bow of said bar; and

said second set of electromagnetic actuators is carried on an equal numbered set of pivot pins and said struts carried on said set of pivot pins whereby pivotal movement thereof is in response to said data signals applied to said second set of electromagnetic actuators for correction of the bow of said bar.

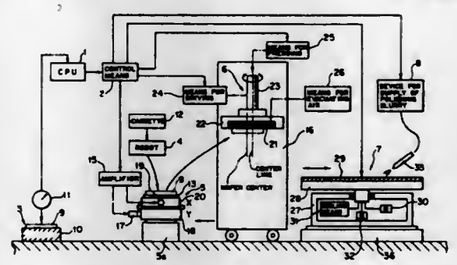


5,620,357

POLISHING METHOD AND APPARATUS FOR AUTOMATIC REDUCTION OF WAFER TAPER IN SINGLE-WAFER POLISHING

Hitoshi Misaka; Kouichi Tanaka; Morifumi Matsumoto, and Kouji Morita, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 423,252
Claims priority, application Japan, Apr. 18, 1994, 6-103398
Int. Cl.[6] B24B *7/22*
U.S. Cl. 451—9 **17 Claims**



1. A polishing apparatus for reducing wafer taper in single-wafer polishing, where wafers are pressed one by one on a polishing pad to reduce the taper practically to zero and at the same time make the surface flat by polishing, comprises: a measurement instrument of thickness for measuring thickness profiles in X,Y directions mutually perpendicular of a wafer; a central processing unit (hereinafter referred to CPU) for obtaining the taper T and stock removal S_0, further computing and recording the eccentricity δ between the center of the wafer and the center of pressing load based upon the taper T and stock removal S_0 obtained and lastly providing a control means with the eccentricity δ while polishing;

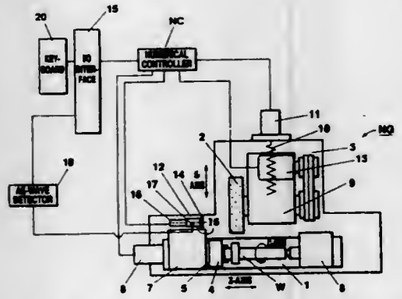
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a robot for setting a wafer, which is taken out of a cassette, in place on a positioning plate; an X,Y stage, on which the positioning plate is placed, and automatically positioning the wafer at the position corresponding to the eccentricity δ; a first device for holding by suction, pressing and rotating the wafer equipped with a wafer suction plate for holding the wafer and at the same time providing the wafer with pressing force and rotation; a second device, which contacts with the wafer suction plate, for rotating and reciprocating a polishing table having a polishing pad fixedly disposed on the surface, the polishing table being rotatable around its center axis to provide a relative revolutional motion for the wafer; a third device for supply of polishing slurry to the contacting surfaces of the wafer and the polishing pad; and a controlling means for receiving the eccentricity δ from a CPU and automatically control the constituents above mentioned of the polishing apparatus.

5,620,358
METHOD OF DRESSING GRINDSTONE FOR NC GRINDER

Masahiro Furukawa; Masaaki Nagaya, and Tatsuhiro Yoshimura, all of Aichi, Japan, assignors to Okuma Corporation, Japan

Division of Ser. No. 376,242, Jan. 23, 1995. This application Apr. 24, 1996, Ser. No. 636,955
Claims priority, application Japan, Jan. 25, 1994, 6-23762
Int. Cl.[6] B24B *53/00*
U.S. Cl. 451—22 **1 Claim**



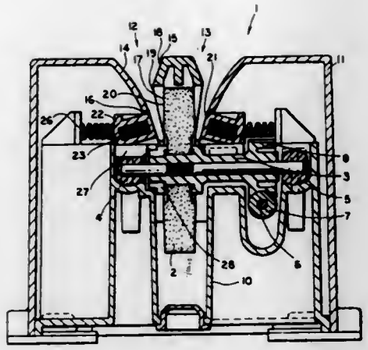
1. A method of dressing a grindstone in an NC grinding machine, said method comprising the steps of:
dressing a surface of said grindstone by bringing said rotary dresser in rotation into contact with said surface of said grindstone, and thereafter grinding a workpiece by bringing said surface of said grindstone into contact with said workpiece; and
detecting a load of a grindstone axle motor for rotationally driving a grindstone axle carrying said grindstone thereon;
wherein if said load detected is greater than a load value previously set, said dressing is judged to have been positively performed, allowing said grinding to be continued.

5,620,359
KNIFE SHARPENER

Marc Harrison, Portsmouth, R.I., and Alain Vadrot, Paray-le-Monial, France, assignors to Cuisine de France, Ltd., Shelton, Conn.

Filed Oct. 7, 1994, Ser. No. 320,197
Int. Cl.[6] B24B *3/36*
U.S. Cl. 451—45 **11 Claims**

1. A knife sharpener comprising:
a grinding wheel;
means for rotating the grinding wheel;
a fixed guide surface for directing a knife blade into contact with the grinding wheel; and,



a movable guide member disposed adjacent to a grinding surface on the grinding wheel; and adjacent to the fixed guide surface means for biasing the movable member in a direction towards the wheel to adapt by inward displacement to various blade contours while assuring constant contact pressure with the wheel.

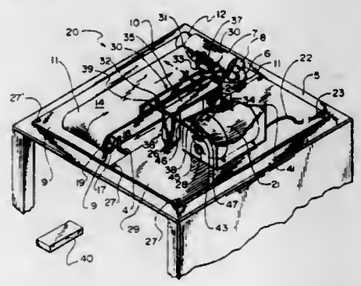
5,620,360

Patent Not Issued For This Number

5,620,361
SANDING ACCESSORY AND METHOD

Perry J. Aylesworth, 5901 Cypress St., Zephyrhills, Fla. 33540

Filed Feb. 28, 1996, Ser. No. 608,560
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—59 **21 Claims**

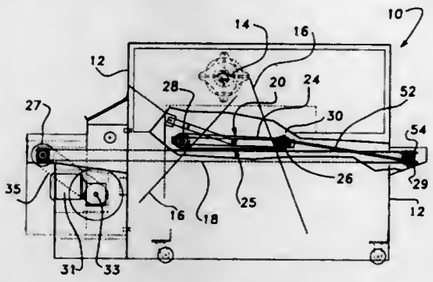


1. A workpiece-holding accessory for a typical belt sander or similar sanding means having a traveling planar sanding surface, comprising
a workpiece fence having workpiece-contacting faces adapted to be based substantially vertically close to and upstanding from such sanding surface traveling in a substantially horizontally plane; and
fence-traversing means including a drive member attached at one end to the fence and attached at an opposite end to drive mechanism adapted to reciprocate the drive member and thus the attached fence crosswise of the direction of travel of the sanding surface.

5,620,362
SHOT BLAST MACHINE WITH HOLD DOWN FOR PARTS BEING DEFLASHED

Udo Kuehn, Holland, Ohio, assignor to B&U Corporation, Adrian, Mich.

Filed Mar. 4, 1996, Ser. No. 610,374
Int. Cl.[6] B24C *3/14*
U.S. Cl. 451—81 **8 Claims**

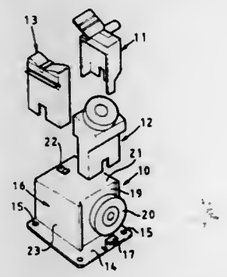


1. A shot blast machine for deflashing plastic molded parts comprising:
substantially horizontal conveyor means for delivering parts to be deflashed, shot blast means located above said conveyor means for impelling particles downwardly into deflashing engagement with parts on said conveyor means, a wire mesh member above said conveyor means and below said shot blast means to retain parts on said conveyor during deflashing, and mounting means for mounting said wire mesh member so that it moves at generally the same speed as said conveyor means and so that it engages said parts to retain the parts on said conveyor means.

5,620,363
POWERED GRINDING TOOL

Paul S. Hepworth, Guildford, United Kingdom, assignor to Turner Intellectual Property Limited, United Kingdom

Filed Jul. 20, 1994, Ser. No. 281,851
Claims priority, application United Kingdom, Jan. 24, 1992, 9201600; WIPO, Jan. 15, 1993, PCT/GB93/00079
Int. Cl.[6] B24B *41/00*
U.S. Cl. 451—231 **13 Claims**

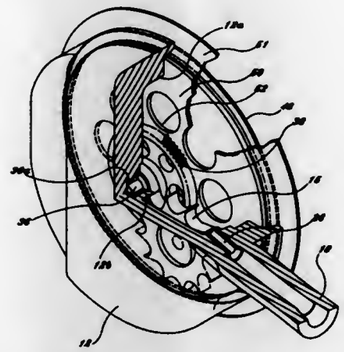


1. A powered grinding tool comprising a casing, a motor within the casing, the motor adapted to be driven by power supply means, a rotatable shaft in drivable engagement with the motor, a rotatable grinding wheel to which drive is transmitted from said shaft, and the casing providing engagement means for temporarily securing a selected one of a number of adapters to the tool at a work station thereof, each adapter providing a location which, when the adapter is fitted to the tool at said work station, is disposed relative to the grinding wheel so that there is correct positioning between part of an implement at said location and said grinding wheel for said part to be worked by the wheel, said engagement means adapted to secure the selected adapter by guiding sliding, so that the selected adapter is secured in a snap-fit to the tool, in that there is manually operable catch means of the snap-fit allowing subsequent removal of the adapter from the tool, and in that the engagement means comprise a pair of spaced grooves or projections at the casing with which a pair of spaced complementary projections or grooves respectively of the selected adapter (11, 12, 13) engages.

5,620,364
WATER-DRIVEN ROTARY TOOL

Laura C. Torrance, 801 Azalea St., Boca Raton, Fla. 33486, and James J. Castanza, 1590 SW. Albatross Way, Palm City, Fla. 33490

Filed Nov. 15, 1994, Ser. No. 339,566
Int. Cl.[6] B24B *23/00*
U.S. Cl. 451—359 **6 Claims**



1. A water-driven hand tool, comprising:
a main housing having a first cylindrical cavity having a periphery and a second cylindrical cavity, said first and second cylindrical cavities spacially offset from each other;
a water-driven impeller mounted rotatably in said housing second cylindrical cavity;
a main housing inlet conduit connectable to a water supply under pressure, and in fluid communication with said impeller to rotatably drive said impeller, said housing inlet conduit including a first nozzle;
an axle rotatable and centrally mounted for rotation in said main housing;
a driven gear fixedly connected to said axle;
an annular backing pad connected to said axle to be rotated thereby;
an impeller drive shaft connected to said main housing and to said water driven impeller, said impeller drive shaft and said axle offset from each other;
a drive gear fixedly connected to said impeller drive shaft, said drive gear rotatably engaged with said driven gear;
a disposable working disk for sanding or grinding attached supportively and removably to said backing pad;
a shroud having a substantially annular flange around its periphery, said shroud sized to fit in said housing first cylindrical cavity with predetermined spacing between the housing first cylindrical cavity periphery and the shroud annular flange for efficient water expulsion for deflecting water away from said backing pad; and
a bearing support plate having relatively large apertures disposed therein, said bearing support plate connected to a bottom surface of said shroud, such that the water that is used to drive said water driven impeller is able to flow through the support plate apertures to a peripheral edge of said shroud and escape through centrifugal action.

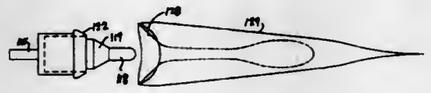
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5,620,365

THROAT TISSUE CUTTING APPARATUS FOR FISH PROCESSING MACHINES

Timothy S. Hicks, Seattle, Wash., assignor to Flohr Metal Fabricators, Inc., Seattle, Wash.

Division of Ser. No. 324,880, Oct. 17, 1994, Pat. No. 5,480,347.
This application Oct. 10, 1995, Ser. No. 541,886
Int. Cl.[6] A22C *25/14*
U.S. Cl. 452—106 9 Claims



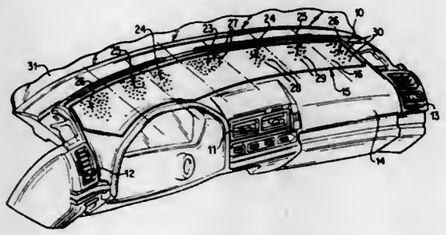
1. A throat tissue cutting device for a fish processing machine comprising:
- a cylindrical cutting unit with teeth at a head end;
- a shield surrounding said cutting unit and slidably mounted thereon between a shielding position covering said teeth and a retracted position exposing said teeth;
- a spring biasing said shield toward said shielding position;
- said shield having a nose for engaging a deheaded fish at the throat thereof as said cutting unit is advanced, further advancement of said cutting unit relative to said shield in opposition to the bias of said spring functioning to expose said teeth for cutting the throat tissue; and
- a mechanism connected to said cutting unit for selectively advancing and rotating the cutting unit.

5,620,366

DIFFUSE VENTILATION SYSTEM FOR PASSENGER VEHICLES AND METHOD FOR MAKING SAME

Wolf-Dietrich Münzel, Altdorf; Jutta Schmidtke, Stuttgart; Dietrich Hamm, Sindelfingen, and Michael Kelz, Aidlingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 13, 1996, Ser. No. 617,646
Claims priority, application Germany, Mar. 13, 1995, 195 08 983.9
Int. Cl.[6] B60H *1/34*
U.S. Cl. 454—152 17 Claims



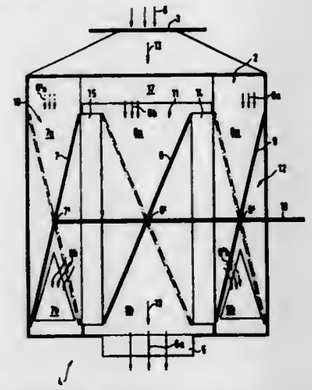
1. System for the diffuse ventilation of a vehicle interior in an area of a dashboard extending along a windshield, having a top part visible to vehicle occupants which has a plurality of air outlet openings, and having a bottom part which is covered by the top part and which, together with the top part, bounds an air distribution space connected to an air feeding device,
- wherein the top part and the bottom part are connected to form an insert which is disposed in the dashboard and is flush with its top side, and
- wherein a plurality of separate channels are formed in the bottom part which are parallel with respect to one another, are open toward the top, extend in the longitudinal direction of the insert and are covered directly by the top part.

5,620,367

AIR DRYING INSTALLATION FOR MOTOR VEHICLES

Noureddine Khelifa, Stuttgart, Germany, assignor to Behr GmbH & Co., Stuttgart, Germany

Filed Mar. 15, 1995, Ser. No. 403,961
Claims priority, application Germany, Mar. 15, 1994, 44 08 796.9
Int. Cl.[6] B60H *3/00*
U.S. Cl. 454—156 27 Claims



25. A dehumidifying apparatus comprising:
- a housing having a common inflow adapted to introduce inflow air into the housing, a first outflow adapted to discharge dehumidified air, and a second outflow adapted to discharge desorption air;
- first and second air-permeable wall elements of hygroscopic material disposed within the housing;
- an air flow control element movable between a first position and a second position for controlling air flow from the common inflow to the outflows,
- wherein in the first position the air flow control element directs inflow air from the common inflow through the first wall element to dry the first wall element, and the desorption air is exited through the second outflow, and directs the inflow air from the common inflow through the second wall element to dehumidify the inflow air, which is exited through the first outflow, and
- wherein in the second position the air flow control element directs the inflow air from the common inflow through the second wall element to dry the second wall element and the desorption air is exited through the second outflow, and directs the inflow air from the common inflow through the first wall element to dehumidify the inflow air, which is exited through the first outflow.

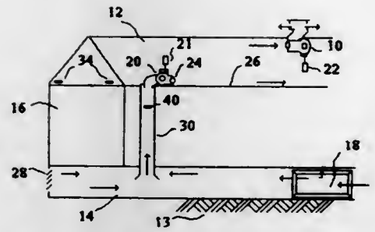
5,620,368

FORCED CLIMATE VENTILATOR

Thomas M. Bates, and Larry W. Wyatt, both of Virginia Beach, Va., assignors to R.T.R. Credit, Inc., Virginia Beach, Va.

Filed Jan. 19, 1995, Ser. No. 375,472
Int. Cl.[6] F24F *7/06*
U.S. Cl. 454—186 26 Claims

17. A forced climate ventilator comprising:
- duct means for accommodating the transfer of air between an attic and a crawl space of a building, said duct means providing a closed conduit extending continuously through an occupiable portion of the building intermediate the attic and crawl space, said duct means having only a first aperture in a portion of said duct means extending into the crawl space permitting entry of air from the crawl space into said duct means, and a second aperture in a portion of said duct means extending into the attic permitting exit of air from said duct means into said attic, said second aperture being located adjacent a lowermost level of the attic; and
- first fan means for forcibly expelling air from within an uppermost strata of the attic to the outside of the building through at least one opening in a roof of the building.

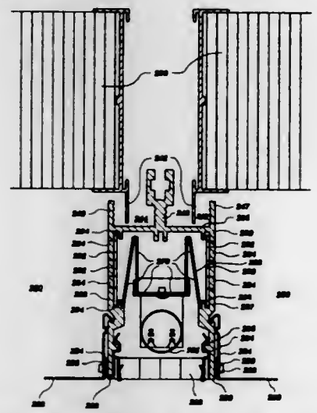


5,620,369

METHOD AND DEVICE FOR UNIDIRECTIONAL AIRFLOW IN CLEANROOM

Peter J. Spransy, Salt Lake City; Ronald W. Daw, Murray, and David L. Brewer, Sandy, all of Utah, assignors to Daw Technologies, Inc., Salt Lake City, Utah

Continuation of Ser. No. 216,209, Mar. 22, 1994, abandoned.
This application Jun. 6, 1995, Ser. No. 465,745
Int. Cl.[6] F24F *13/068*
U.S. Cl. 454—187 12 Claims



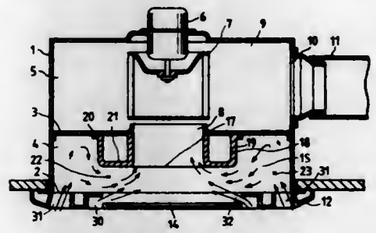
7. A cleanroom ceiling for a cleanroom, said cleanroom ceiling comprising an array of rectangular cleanroom filters supported within a grid support system, each rectangular cleanroom filter of said array having a filter support flange extending about the periphery thereof, said array of cleanroom filters filtering air flowing into said cleanroom, said grid support system including:
- a rectangular matrix formed by a plurality of interconnected load bearing cross members providing load bearing support to said cleanroom ceiling structure, the plurality of cross members forming a plurality of rectangular filter insert openings between adjacent cross members, each load bearing cross member of the plurality of cross members including:
  - a crossmember having a top wall, a first side wall having at least one aperture therein to allow a portion of said air to flow therethrough, and a second side wall having at least one aperture therein to allow a portion of said air to flow therethrough;
  - a gel track support channel formed proximate the top of each load bearing cross member to receive a portion of said filter support flange within the gel track support channel; and
  - one or more elongated lights installed within the cross members and allowing air exiting the aperture in the first side wall thereof and the second side wall thereof of the cross member of the plurality of cross members to flow thereabout and exit the cross members into the vortex space therebelow.

5,620,370

BLOWING APPARATUS, SUCTION PANEL THEREFOR AND STRAIGHTENING GUIDE THEREFOR

Yoshiyuki Umai; Yoshikatsu Nankaku; Keiichi Hasegawa; Yoshimi Iwamura, all of Gifu; Katsuhisa Ootsuta, Hyogo, and Kiyoshi Nakamura, Gifu, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 268,980
Claims priority, application Japan, Dec. 2, 1993, 5-302950
Int. Cl.[6] F24F *7/007*
U.S. Cl. 454—354 37 Claims

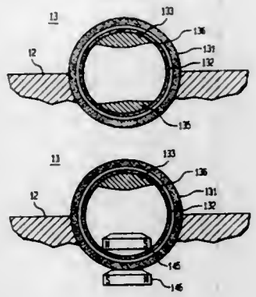


6. A suction panel for stabilizing an air stream and concealing a blower in a blowing apparatus in which the blowing apparatus includes a suction chamber enclosed by rigid body surfaces with one open surface; and a fan suction port serving as a suction port for the blower, said suction panel being attached to said blowing apparatus so as to close the open surface, said suction panel comprising:
- a front panel portion for allowing the open surface to be closed so as to conceal the blower,
- a first and a second suction port communicating with said suction chamber wherein said second suction port is spaced apart from said first suction port by at least one opening width of said first suction port,
- said first suction port having a protecting portion projecting toward a center of the suction chamber and parallel to said front panel portion,
- wherein an air stream from said first suction port is directed by said projecting portion toward the center of the suction chamber so as to usher an air stream from said first and second suction ports into the fan suction port and thereby stabilize and guide the air stream into the fan suction port.

9. An apparatus comprising:
- a suction chamber,
- a blower chamber,
- a partition separating said suction chamber from said blower chamber,
- a first port disposed on a wall of said suction chamber,
- a second port disposed on said partition permitting flow communication between said suction chamber and said blower chamber,
- an annular guide provided at the mouth of said second port said annular guide projecting into said suction chamber and having a portion of said annular guide which faces said suction chamber tapered to form a bell-mouth shape.

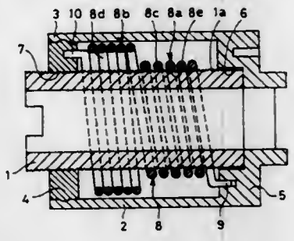
VOL 1197 ISS 3 AP 15 1997 UMI

5,620,371
COMPUTER TRACKBALL
Greg E. Blonder, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Nov. 8, 1995, Ser. No. 555,197
Int. Cl.[6] G09G *5/00*
U.S. Cl. 463—37 **18 Claims**



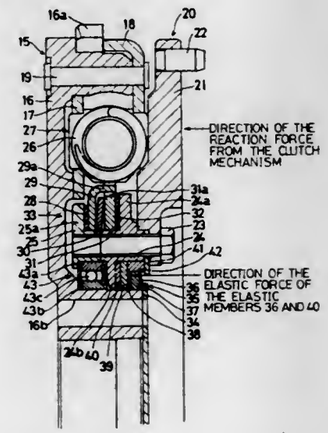
10. Apparatus comprising
a computer including a housing
a freely rotatable trackball fixedly held in said housing, and
means for detecting rotations of the trackball and for generating signals indicative of same,
said trackball including
a translucent outer sphere, and
an inner sphere disposed inside of the outer sphere,
the trackball being such that the inner sphere maintains a predetermined orientation relative to said housing notwithstanding rotations of the outer sphere.

5,620,372
TORQUE LIMITING MECHANISM FOR TWO ROTARY MEMBERS
Seiichi Takada, Tokyo, and Noriko Kurita, Kuwana, both of Japan, assignors to NTN Corporation, Osaka, Japan
Filed Aug. 29, 1995, Ser. No. 521,048
Claims priority, application Japan, Aug. 30, 1994, 6-205341
Int. Cl.[6] F16H *35/10*
U.S. Cl. 464—40 **2 Claims**



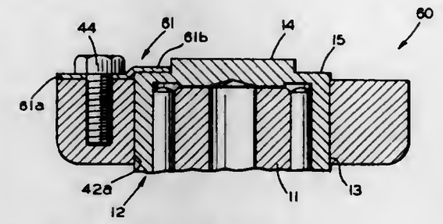
1. A torque limiter comprising:
an outer cylinder having a first end and a second end;
an inner cylinder rotatably mounted within said outer cylinder;
a closure member mounted between an outer peripheral surface of said inner cylinder and an inner peripheral surface of said outer cylinder adjacent said first end of said outer cylinder;
a coil spring mounted between said inner cylinder and said outer cylinder, and said coil spring having a first end connected to said closure member and a second end connected to said second end of said outer cylinder; and
a lubricating oil film between an inner peripheral surface of said coil spring and an outer peripheral surface of said inner cylinder,
wherein said inner periphery of said coil spring is in contact with said outer peripheral surface of said inner cylinder, and said outer peripheral surface of said inner cylinder has a roughness Ra of 0.6–1.0, and said coil spring has a circular cross-section to minimize the contact area between said inner peripheral surface of said coil spring and said outer peripheral surface of said inner cylinder having said roughness Ra of 0.6–1.0, with said lubricating oil film present at the contacting areas between said coil spring and said inner cylinder.

5,620,373
TORQUE VARIATION ABSORBING DEVICE
Junji Kagiyama, and Masakazu Kamiya, both of Toyoake, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Continuation of Ser. No. 31,904, Mar. 16, 1993, abandoned.
This application Oct. 17, 1994, Ser. No. 324,462
Claims priority, application Japan, Mar. 18, 1992, 4-062205
Int. Cl.[6] F16D *3/14*
U.S. Cl. 464—68 **13 Claims**



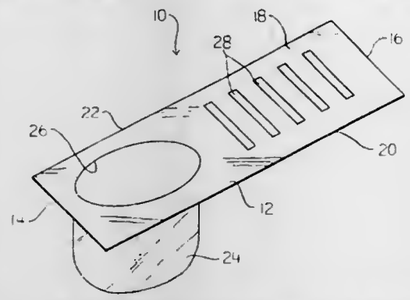
1. A torque variation absorbing device comprising:
a drive body for connecting to a drive member;
a driven body for connecting to a clutch mechanism which produces a reaction force upon release of the clutch mechanism;
a damping mechanism disposed between the drive body and the driven body;
a hysteresis mechanism disposed between the drive body and the driven body, the hysteresis mechanism including an elastic member which exerts an elastic force; and
a bearing disposed between the drive body and the driven body and including an inner race and an outer race, one of the inner race and the outer race being biased relative to the other one of the inner race and the outer race in the direction of the drive body and in the same direction as the direction of the reaction force of the clutch member by the elastic force of the elastic member to minimize play between the inner race and the outer race.

5,620,374
BEARING CUP AND RETAINER STRAP FOR UNIVERSAL JOINT
Leon W. Valencic, Oregon, and Ray A. Gall, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio
Continuation-in-part of Ser. No. 696,229, May 6, 1991, Pat. No. 5,376,051. This application Jun. 5, 1995, Ser. No. 459,939
Int. Cl.[6] F16D *3/26*
U.S. Cl. 464—130 **8 Claims**



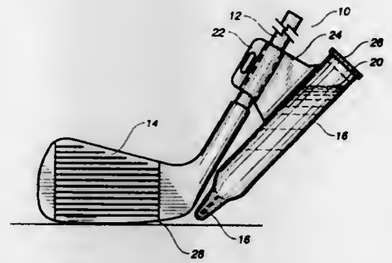
1. A universal joint assembly comprising:
a yoke including an arm having an outer surface and an opening formed therethrough extending inwardly from said outer surface;
a cross having an outwardly extending trunnion and an end;
a bearing cup rotatably mounted on said end of said trunnion, said bearing cup including an outer circumferential surface and an end surface, said bearing cup being disposed within said yoke arm opening such that said end surface of said bearing cup is located outwardly from said outer surface of said a of said yoke; and
a retainer clip including a base portion secured to said outer surface of said arm of said yoke, an end portion extending over a portion of said end surface of said bearing cup to retain it within said yoke arm opening, and a transition portion homogeneously formed between said base portion and said end portion having a substantially uniform thickness, wherein lower surfaces of said base portion and said end portion define planes which are generally parallel and not co-planar, and wherein said transition portion defines a plane which extends at an angle relative to said planes defined by said base portion and said end portion.

5,620,375
GOLF PUTTING PRACTISE APPARATUS AND METHOD OF INSTALLATION OF THE SAME
George N. Frotten, 18437 - 97A Avenue, Edmonton, Alberta, Canada
Filed Mar. 13, 1996, Ser. No. 617,938
Claims priority, application Canada, Apr. 5, 1995, 2146404
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—180 **4 Claims**



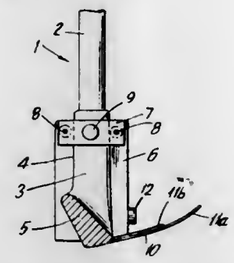
1. A golf putting practise apparatus designed to fit into a floor duct of a forced air heating system, comprising:
a flat support plate having a first end, a second end and a peripheral edge, the flat support plate being fabricated of a resilient material that returns to its original shape after bending; and
a cup spaced from the peripheral edge immediately adjacent the first end and depending from the flat support plate, the cup having a peripheral lip which is substantially level with the flat support plate; and the flat support plate having a top surface, a bottom surface and a plurality of air passages spaced at intervals between the second end and the cup, the air passages extending through the flat support plate from the bottom surface to the top surface.

5,620,376
GOLF SWING TRAINING DEVICE
Kevin Hsu, 11610 Inwood, Houston, Tex. 77077
Filed Feb. 16, 1996, Ser. No. 601,330
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—233 **18 Claims**



11. A golf swing training device comprising:
a chamber having an outlet orifice means, said outlet orifice means for allowing drops of a liquid having a viscosity of water to pass therethrough by and only by capillary action, said outlet orifice means positioned at a bottom of said chamber, said outlet orifice means being in valveless fluid communication with said chamber; and
a means for attaching said chamber to a shaft of a golf club.

5,620,377
GOLF CLUB INCLUDING REMOVABLY ATTACHED GROUND ENGAGEABLE GUIDE SURFACE
Dieter Glockner, Hofackerweg 29, 91126 Schwabach, Germany
Filed Dec. 22, 1995, Ser. No. 577,273
Claims priority, application Germany, Dec. 29, 1994, 44 47 084.3
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—238 **5 Claims**

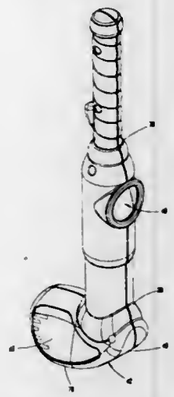


1. A golf club comprising a shaft having a lower end, a head having a club face attached to the lower end of the shaft, and an

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intermediate piece removably attached to the shaft on a side of the shaft facing away from the club face of the head, the intermediate piece being adjustable in a vertical position thereof relative to the head, the intermediate piece comprising a ground engageable guide surface extending upwardly and forwardly from the head.

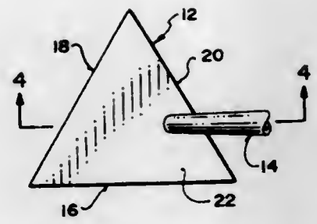
5,620,378
GOLF CLUB WITH INTEGRAL BALL STORAGE
Raymond J. Fritz, Maple Heights, and Matthew R. Fuligni, Twinsburg, both of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Jul. 12, 1996, Ser. No. 679,171
Int. Cl.[6] A63B *53/00;* **B65D** *85/00;85/62*
U.S. Cl. 473—282 **19 Claims**



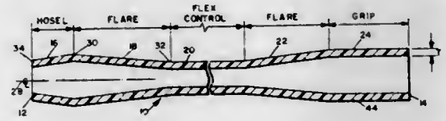
1. A golf club and ball storage device, comprising:
an elongate club shaft having an upper handle portion, an intermediate shaft segment, and a lower end;
the shaft intermediate segment comprising sidewalls and an internal ball magazine chamber extending axially along the shaft segment, and a first opening extending through the sidewalls at an upper end of the shaft intermediate segment in communication with the chamber and sized to admit a ball therethrough and into the chamber, and a second opening extending through the segment sidewalls at a lower end of the shaft intermediate segment in communication with the chamber and sized to permit egress of a ball therethrough; and
a club head affixed to the lower end of the club shaft for striking a ball.

5,620,379
PRISM GOLF CLUB
Robert A. Borys, 19 Cuthbertson Place, Winnipeg, Canada
Filed Dec. 9, 1994, Ser. No. 354,845
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—313 **1 Claim**

1. A gold club comprising a club head and a shaft, the club head consisting of a triangular prismatic shape composed of a single flat striking face, two back faces meeting at an apex and flat, parallel top and bottom surfaces of isosceles triangular shape, the top and bottom surfaces being perpendicular to the back faces and the base of the triangle being along the striking face, and the club head having a center of mass and the shaft comprising a substantially straight shaft substantially aligned along a shaft axis lying in a plane parallel to the striking face and extending through the center of mass of the club head, the shaft thereby intersecting the top surface of the head at a position closer to the heel of the club head than the toe, said shaft axis plane being positioned closer to the striking face than to the apex between the back faces.

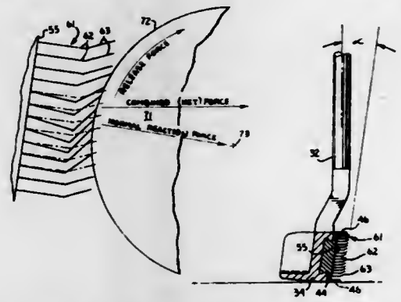


5,620,380
LIGHT WEIGHT GOLF CLUB SHAFT HAVING CONTROLLABLE "FEEL"
Richard L. Tennent, Alpine, and Richard G. Tennent, El Cajon, both of Calif., assignors to UniFiber Corporation, San Diego, Calif.
Filed Dec. 8, 1995, Ser. No. 569,755
Int. Cl.[6] A63B *53/10*
U.S. Cl. 473—319 **16 Claims**



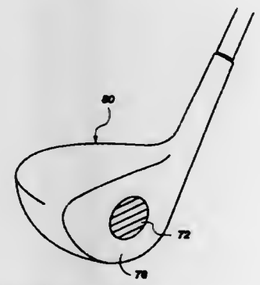
1. A light weight golf club shaft having a predetermined combination of flex, stiffness and torque and being highly resistant to breakage, comprising:
an elongated hollow rod having, a top end and a bottom end, and having in adjacent order from bottom to top a hosel section, a lower flare section, a flex control section, an upper flare section, and a grip section;
said flex control section having a substantially uniform outer diameter;
said lower flare section having varying outer diameter increasing from the outer diameter of said flex control section at their mutual junction to a larger outer diameter at the junction of said lower flare section with said hosel section;
said hosel section having an outer diameter not greater than said larger outer diameter of said lower flare section;
said grip section being adapted to receive a hand grip surrounding at least a portion of an outer surface of said grip section;
said sections in combination forming an external profile of said shaft;
all of said sections having the same uniform wall thickness, such that the interior profile of said hollow rod forming said shaft substantially conforms to said exterior profile of said shaft; and
the relative lengths of said flex control section and said lower flare section, the location of said junction therebetween and said external profile being determined by the relative amounts of flex, torque and stiffness desired in said shaft, said shaft thereby having light weight without loss of desired flex, torque and stiffness properties.

5,620,381
GOLF PUTTER
George T. Spalding, Bradenton, Fla., assignor to George Spalding, Inc., Monroe City, Mo.
Filed Mar. 29, 1996, Ser. No. 624,995
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—329 **24 Claims**



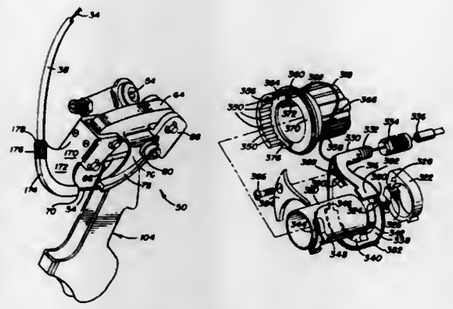
1. An improved golf putter comprising:
a. a putter head;
b. a plurality of wires attached to said putter head, each said wire including:
i. an initial leg portion extending outward from said putter head; and
ii. an angled leg portion extending upward and outward from said initial leg portion, said angled leg portion having a terminal end pointing away from
c. said wires being positioned such that at least some of said angled leg portions of said wires contact a golf ball during a putting stroke with said putter.

5,620,382
DIAMOND GOLF CLUB HEAD
Hyun S. Cho, 1804 Fort Douglas Clr., Salt Lake City, Utah 84103; Bong K. Lee; Yong I. Kim, both of Sungnam, Rep. of Korea; Nam K. Jin, Seoul, Rep. of Korea, and Kyoung R. Han, Cheonan, Rep. of Korea, assignors to Hyun Sam Cho, Salt Lake City
Filed Mar. 18, 1996, Ser. No. 617,343
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—331 **34 Claims**



1. A golf club head comprising:
a ball striking face having a receiving cavity formed therein for receiving a golf club head insert; and
a golf club head insert comprising (a) a surface layer of a compact material comprising a member selected from the group consisting of diamond and CBN crystals wherein said crystals are bonded together by diamond-diamond or CBN-CBN bonds between adjacent crystals, and (b) a support layer of a hard, rigid material to which said surface layer is bonded, wherein said golf club head insert is disposed in said receiving cavity such that the surface layer is coplanar with the ball striking face wherein said surface layer of said insert increases the amount of energy transferred to a struck golf ball.

5,620,383
BICYCLE DERAILLEUR AND ACTUATING SYSTEM
Sam H. Patterson; John D. Cheever, and Michael W. Larson, all of Chicago, Ill., assignors to SRAM Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 384,013, Feb. 6, 1995, Pat. No. 5,533,937. This application Aug. 29, 1995, Ser. No. 520,400
Int. Cl.[6] F16H *9/00*
U.S. Cl. 474—80 **33 Claims**

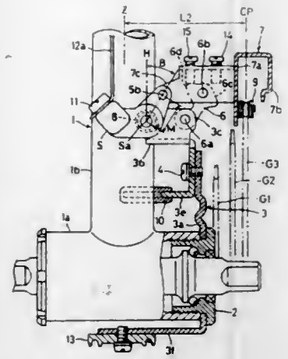


1. A bicycle gear shifting system, comprising:
a derailleur having a p-knuckle, a b-knuckle and an actuation regulator, said b-knuckle being affixed to a bicycle frame, said b-knuckle being operatively connected to said p-knuckle,
said actuation regulator being operatively connected to said p-knuckle to control the actuation ratio of the derailleur, said actuation regulator maintaining the actuation ratio of the derailleur at no greater than 1.5:1 over the range of motion of said p-knuckle;
a shift actuator; and
a control cable operatively connected to said derailleur and said shift actuator.

5,620,384
FRONT DERAILLEUR FOR A BICYCLE
Satoru Kojima, and Naohiro Nishimoto, both of Sakai, Japan, assignors to Shimano, Inc., Osaka, Japan
Division of Ser. No. 337,861, Nov. 14, 1994, Pat. No. 5,496,222. This application Nov. 29, 1995, Ser. No. 564,402
Claims priority, application Japan, Nov. 12, 1993, 5-60911 U; Nov. 12, 1993, 5-283358; Nov. 12, 1993, 5-283359; Apr. 22, 1994, 6-84217; Apr. 22, 1994, 6-84218
Int. Cl.[6] F16H *59/00*
U.S. Cl. 474—82 **18 Claims**

1. A from derailleur apparatus attachable to a frame of a bicycle for shifting a chain between a small sprocket and a large sprocket comprising:
a fixed section for attaching said front derailleur to said frame;
a movable section positioned above said fixed section for moving between first and second positions with respect to said fixed section;
a chain guide attached to said movable section for contacting said chain to shift said chain;
wherein said first position corresponds to a position of said chain guide when said chain guide is facing said small sprocket;

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wherein said second position corresponds to a position of said chain guide when said chain guide is facing said large sprocket;

a first pivotal link disposed between said fixed section and said movable section for movably supporting said movable section with respect to said fixed section, said first pivotal link being supported to said fixed section to pivot about a first pivotal axis, said pivotal link being supported to said movable section to pivot about a second pivotal axis, a phantom line extending through said first pivotal axis and said second pivotal axis being tilted inwardly of said bicycle with respect to a vertical line of said bicycle when said movable section is in said first position, said phantom line being tilted outwardly of said bicycle with respect to said vertical line when said movable section is in said second position; and

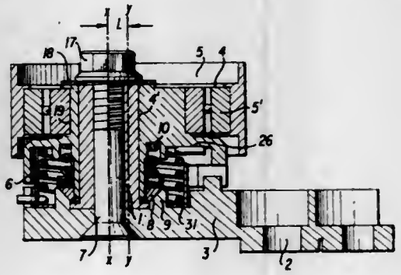
a second pivotal link disposed outwardly of said bicycle with respect to said first pivotal link and pivotably attached to said fixed section and to said movable section for movably supporting said movable section with respect to said fixed section in cooperation with said first pivotal link.

5,620,385

TENSIONERS FOR DRIVING BELTS

Paolo Cascionale, Pescara; Luigi Celio, Palena; Luigi Laviola, Rome, and Alberto Ruffini, Brecciarola, all of Italy, assignors to Dayco PTI S.p.A., Chieti Scalo, Italy

Filed Oct. 25, 1995, Ser. No. 547,795
Claims priority, application Italy, Oct. 28, 1994, MI9402215
Int. Cl.[6] F16H *7/10*
U.S. Cl. 474—112 **21 Claims**



1. A tensioner for driving belts comprising a stationary structure, a lever arm supported by said stationary structure and movable relative to said stationary structure, a pulley associated with the arm, first mechanical spring means associated with the stationary structure and the arm to move the arm with respect to the stationary structure and to urge the pulley against the belt, frictional dampening means associated with the stationary structure and the arm to dampen movements of the arm rotating relative to the stationary structure in both directions of rotation, said stationary structure comprising a shaft having a longitudinal axis and being mounted in a stationary manner relative to the movements of the rotating arm, said arm having a portion supported by said shaft so as to rotate with respect to said shaft, said tensioner further comprising:

a) said dampening means comprising first and second annular elements each having conical surfaces, second mechanical spring means, said first conical surface comprising frictional means and being mounted coaxially to the shaft and movable axially with respect thereto and against the second conical surface, said second spring means biasing the first and second conical surfaces against each other into contact under pressure, said first and second conical surfaces having a mean radius smaller than the maximum radial dimension of the first mechanical spring means;

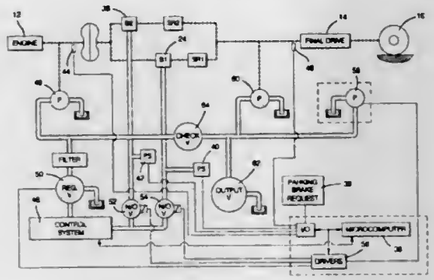
b) the length value l of the arm measured between the centers of the shaft and the pulley and the mean radius value Rm of the conical surfaces are correlated in a predetermined manner to produce, when the arm rotates relative to the stationary structure, a frictional dampening between the first and second conical surfaces which is smaller than the frictional dampening occurring between the shaft and the portion of arm carried by the shaft.

5,620,386

PARKING BRAKE FOR A POWER TRANSMISSION

Fereydoon Jamzadeh, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1995, Ser. No. 552,762
Int. Cl.[6] F16H *1/46*
U.S. Cl. 475—140 **3 Claims**



1. A park mechanism in a transmission having an input shaft and an output shaft comprising:

first and second torque establishing mechanisms each having a plurality of mechanically engaged friction members for respectively establishing first and second distinct drive ratios in a transmission, and a hydraulically actuated member for selectively preventing establishment of the respective ratios;

an electro-hydraulic control system for selectively supplying hydraulic fluid to said hydraulically actuated members; and

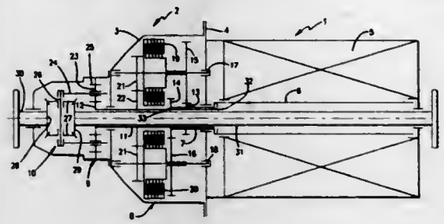
said first and second torque establishing mechanisms being simultaneously engaged when hydraulic fluid is not supplied thereto for establishing a park condition in said transmission to inhibit rotation of the output shaft.

5,620,387

DRIVE UNIT FOR A MOTOR VEHICLE

Grzegorz Janiszewski, Angered, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Jun. 29, 1995, Ser. No. 496,620
Claims priority, application Sweden, Jun. 29, 1994, 9402303
Int. Cl.[6] F16H *48/30*
U.S. Cl. 475—150 **7 Claims**



1. In a drive unit for a motor vehicle, comprising an electric motor (1) with a rotor (6), an input shaft (7), driven by said rotor, to a speed reducer (8,9), a differential (10) driven by said speed reducer, and a pair of wheel axles (30, 31) driven by said differential, the input shaft being a hollow shaft and one (31) of the driven wheel axles extending through the hollow shaft and the rotor, the speed reducer (8,9) having at least two gear ratios; the improvement wherein the speed reducer (8,9) has a first reduction step between the input shaft (7) driven by the rotor (6) and at least one countershaft (17,18) driven by the input shaft, and a second reduction step between the countershaft and an output shaft (11) driven by the countershaft, said output shaft (11) driving the sun gear (12) of a planetary gear set (9) coupled to the differential (10), said planetary gear set (9) providing a third reduction step, at least two freely rotatable gears (15,16;43,44), lockable by means of clutch means (19, 20), being disposed on the associated countershaft (17, 18) to provide a reduction step with two gear ratios.

5,620,388

AXLE AXIAL MOTION LIMITING DEVICE FOR A ROTATING COMPONENT SHAFT POSITION ADJUSTMENT

Joseph B. Schlegelmann, Marcette; William D. Baedke, Romeo, and Michael M. Start, Utica, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1995, Ser. No. 398,275
Int. Cl.[6] F16H *48/00*
U.S. Cl. 475—230 **4 Claims**

1. In a differential mechanism, a device for limiting the range of axial motion, comprising:

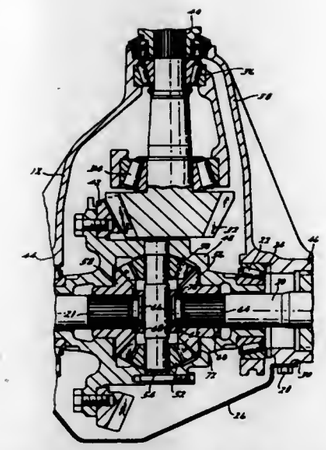
first and second mutually substantially aligned shafts, each supported for rotation about a longitudinal axis, having a first recess located near an end of the shaft;

first and second side bevel gears, the first gear rotatably fixed to the first shaft and supported for axial displacement with respect to the first shaft, the second gears rotatably fixed to the second shaft and supported for axial displacement with respect to the second shaft, each of said gears having a second recess;

a first washer supported on the first shaft, partially located in the first recess of the first shaft and partially located into the second recess of the first gear, abutting the first gear and the first shaft;

a second washer supported on the second shaft, partially located in the first recess of the second shaft and partially located into the second recess of the second gear, abutting the second gear and the second shaft;

a differential pinion shaft carrying bevel pinions in continuous meshing engagement with the first and second gears, located adjacent said ends of the first and second shafts, fixed against axial displacement;



a first shim surrounding the first shaft, located between the first washer and the differential pinion shaft, contacting the differential pinion shaft and the first washer; and

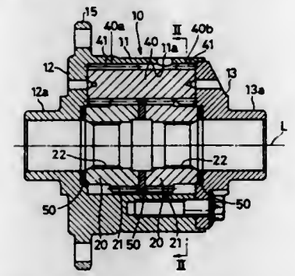
a second shim surrounding the second shaft, located between the second washer and the differential pinion shaft, contacting the differential pinion shaft and the second washer.

5,620,389

PARALLEL-AXIS DIFFERENTIAL

Hideyuki Sato, Saitama-ken, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,051
Claims priority, application Japan, Oct. 13, 1994, 6-274387
Int. Cl.[6] F16H *3/44*
U.S. Cl. 475—249 **5 Claims**



1. A parallel-axis differential, comprising:

(a) a housing rotatable about a rotational axis upon receipt of a rotational torque, said housing having at least a pair of pockets formed in an inner periphery thereof in mutually adjacent relation and extending in parallel with said rotational axis, an inner peripheral surface of each of said pockets being cylindrical;

(b) a pair of side gears rotatably received in said housing and coaxial with said housing, said pair of gears being connected to end portions of a pair of coaxial output shafts, respectively;

(c) at least a pair of planetary gears rotatably received in said pair of pockets of said housing and being parallel with said rotational axis of said housing, said pair of planetary gears being in engagement with said pair of side gears respectively and also in engagement with each other, said planetary gears being rotated relative to said housing with top faces of teeth of said planetary gears being in contact with the inner peripheral surfaces of said pockets; and

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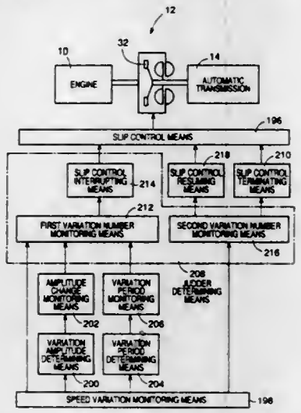
(d) end portions of said teeth located on opposite end portions of each of said planetary gears being gradually reduced in height toward ends of said planetary gear so that top faces of said end portions of said teeth comprise gently-sloping convexly-curved faces, said convexly-curved top faces of the end portions of the teeth intersect end faces of the teeth to form edges, with said convexly-curved top faces of the end portions of the teeth being brought into contact with the inner peripheral surfaces of said pockets to thereby prevent said edges of the teeth from coming into contact with the inner peripheral surfaces of the pockets when said planetary gears are slightly inclined.

5,620,390

MOTOR VEHICLE LOCK-UP CLUTCH CONTROL APPARATUS, HAVING MEANS FOR DETECTING CLUTCH JUDDER WITH HIGH ACCURACY

Katsumi Kono, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 4, 1995, Ser. No. 539,070
Claims priority, application Japan, Oct. 7, 1994, 6-244196; Jun. 14, 1995, 7-147000; Jul. 13, 1995, 7-177356
Int. Cl.[6] F16H *45/02*; B60K *41/28*
U.S. Cl. 477—65 **31 Claims**



1. An apparatus for controlling an amount of slip of a lock-up clutch disposed between a pump impeller and a turbine impeller in a power transmitting system of a motor vehicle, said apparatus comprising:

slip control means for controlling the amount of slip of said lock-up clutch such that an actual slip speed of said lock-up clutch coincides with a predetermined target slip speed;

speed variation monitoring means for detecting variations of a rotating speed of said turbine impeller;

judder determining means connected to said speed variation monitoring means, for determining the presence or absence of a judder of said lock-up clutch on the basis of the number of said variations detected by said speed variation monitoring means during slip control of said lock-up clutch by said slip control means, and for inhibiting operation of said slip control means if in the presence of said judder;

variation amplitude determining means connected to said speed variation monitoring means, for determining an amplitude of each of said variations of said rotating speed of said turbine impeller which have been detected by said speed variation monitoring means; and

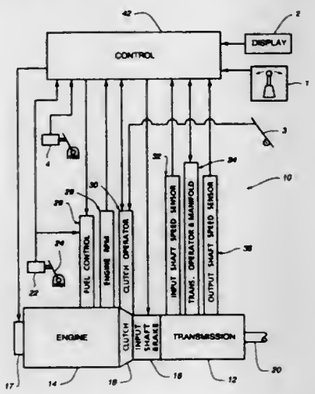
amplitude change monitoring means connected to said variation amplitude determining means, for determining, on the basis of the amplitudes of two successive variations determined by said variation amplitude determining means, whether an amount of change of the amplitudes of said two successive variations is larger than a predetermined upper limit, and inhibiting said judder determining means from using at least a latter one of said two successive variations for the determination of the presence or absence of said judder of said lock-up clutch, if said amount of change determined is larger than said predetermined upper limit.

5,620,391

DOWNSHIFT LOGIC FOR SEMI-AUTOMATIC MECHANICAL TRANSMISSION WITH MANUAL CLUTCH CONTROLLER

Keith Wright, Preston, England, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 7, 1995, Ser. No. 511,773
Claims priority, application United Kingdom, Aug. 19, 1994, 9416840
Int. Cl.[6] B60K *41/24*
U.S. Cl. 477—78 **12 Claims**



1. A method for controlling a vehicular at least partially automated mechanical transmission system (**10**) comprising a multiple-speed, change-gear mechanical transmission (**12**) drivingly connected to a fuel-controlled engine (**14**) by a master friction clutch (**16**), a non-manually controlled transmission operator (**34**), an engine fuel control (**26**) for controlling the supply of fuel to the engine, a manual clutch controller (**3**) for manually engaging and disengaging said master clutch and a controller (**38**) for receiving input signals and for processing same according to predetermined logic rules to issue command output signals to system operators, said method characterized by:

during implementation of a downshift into a target gear ratio (GR_T), including controlling engine speed to equal a synchronous value, sensing for manual disengagement of said master clutch, and

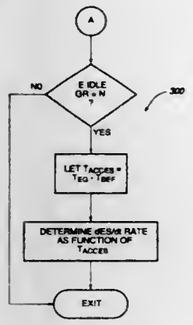
if manual disengagement of said master clutch is sensed during implementation of a downshift, causing further implementation of said downshift by controlling engine speed to be suspended until enabling conditions occur, said enabling conditions including sensing at least one of reengagement of said master clutch and vehicle speed failing to exceed a reference value (OS<REF?).

5,620,392

ENGINE ACCESSORY TORQUE AND ENGINE DECELERATION RATE LINEAR RELATIONSHIP AND ENGINE ROTATIONAL MOMENT-OF-INERTIA DETERMINATION METHOD/SYSTEM

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 242,824, May 16, 1994. This application Sep. 21, 1994, Ser. No. 309,713
Int. Cl.[6] B60K *41/00*; F16H *59/14*
U.S. Cl. 477—120 **5 Claims**



1. A method for controlling an automated mechanical transmission system in an assembled vehicle having a multiple-speed mechanical transmission, an internal combustion engine, a non-positive coupling drivingly interposed the transmission and the engine, an electronic data link carrying signals indicative of engine torque and engine speed, and a controller for receiving input signals and processing same according to predetermined logic rules to issue command output signals to a transmission actuator, said method comprising:

(a) determining in a calibration operation values allowing post-calibration determination of engine deceleration rate (dES/dt rate) and engine accessory torque (T_{ACCES}) by the process of:

(i) presuming a linear relationship between engine deceleration rate and engine accessory torque (dES/dt rate=A+(B * T_{ACCES})) in an assembled vehicle;

(ii) experimentally determining a first set of values defining engine deceleration rate (dES/dt $rate_1$) and engine accessory torque (T_{ACCES1}) when engine accessory torque is at a minimum value;

(iii) experimentally determining a second set of values defining engine deceleration rate (dES/dt $rate_2$) and engine accessory torque (T_{ACCES2}) when engine accessory torque is at a maximum value;

(iv) taking said first and second sets of values as points on a line and mathematically defining a linear equation including said points (dES/dt=(A+B * T_{ACCES})); and

(v) memorizing the intercept (A) and slope (B) values of said linear equation;

(b) during post-calibration vehicle operation, determining engine deceleration rate as a function of input signals indicative of engine accessory torque and said linear relationship when the vehicle is not in motion and the engine is at idle, and determining engine accessory torque as a function of input signals indicative of engine deceleration rate and said linear relationship when the vehicle is in motion; and

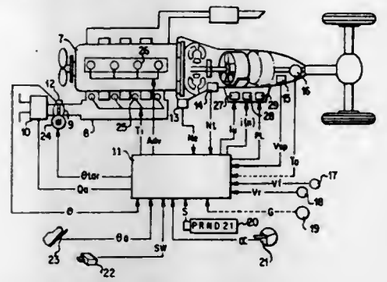
(c) causing said controller to control said transmission as a function of at least one of engine deceleration rate and engine accessory torque.

5,620,393

POWER TRAIN CONTROLLER AND CONTROL METHOD

Toshimichi Minowa, Tokai-mura; Yoshiyuki Yoshida, Hitachi, both of Japan, and Junichi Ishii, Novi, Mich., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,607
Claims priority, application Japan, Sep. 2, 1994, 6-209521
Int. Cl.[6] F02D *35/00*
U.S. Cl. 477—155 **29 Claims**



1. A motor vehicle control system comprising:

an automatic change speed transmission operable to shift between a plurality of transmission gears,

a plurality of vehicle operating condition sensors for sensing respective vehicle operating conditions,

an operating mode selector for accommodating vehicle operator selection of one of a plurality of vehicle operating modes,

and a transmission control unit for automatically controlling the operation of the transmission as a function of the respective selected operating mode and as a function of a plurality of said operating conditions sensed by said sensors, said control unit being operable to control at least two control functions of said transmission as a function of sad operating conditions in respective different control patterns for respective different selected operating modes.

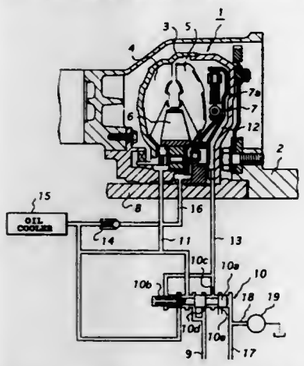
5,620,394

LOCK-UP CONTROLLING APPARATUS FOR AUTOMATIC TRANSMISSION

Naonori Iizuka, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Continuation of Ser. No. 237,167, May 3, 1994. This application Sep. 11, 1995, Ser. No. 526,283
Claims priority, application Japan, May 14, 1993, 5-136520
Int. Cl.[6] F16H *45/02*
U.S. Cl. 477—168 **3 Claims**

1. A lock-up controlling apparatus for an automatic transmission



including an engine load sensor for detecting an engine load, a

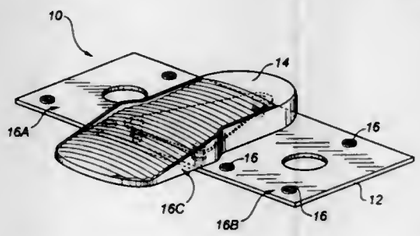
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vehicle speed sensor for detecting a vehicle speed, lock-up determining means for determining based on a detection value derived from said engine load sensor and a detecting value derived from said vehicle speed sensor whether a lock-up clutch should be brought into an operatively connected state or said lock-up clutch should be released from the operatively connected state, and lock-up actuating means for bringing said lock-up clutch into the operatively connected state or releasing said lock-up clutch from the operatively connected state based on a result derived from the determination made by said lock-up determining means, comprising:

lock-up release controlling means for changing a pattern representing the reduction of an operative connecting force of said lock-up clutch based on an engine load detection value at the same time when it is determined that said lock-up clutch should be released from the operatively connected state, and

wherein in the case that a magnitude of said engine load detection value is smaller than a first predetermined value, the operative connecting force of said lock-up clutch is reduced at a first high speed, in the case that a magnitude of said engine load detection value lies between said first predetermined value and a second predetermined value larger than said first predetermined value, the operative connecting force of said lock-up clutch is reduced at a third low speed, and in the case that a magnitude of said engine load detection value is larger than said second predetermined value, the operative connecting force of said lock-up clutch is reduced at a second intermediate speed lying between said first high speed and said third low speed.

5,620,395
METHOD AND ASSOCIATED APPARATUS FOR INSTALLING AN ABOVE ICE SURFACE CURLING HACK
Raymond Como, Box 32, Riviere Qui Barre, Alberta, Canada
Filed Sep. 7, 1995, Ser. No. 524,798
Int. Cl.[6] A63B *69/00*
U.S. Cl. 482—19 **1 Claim**



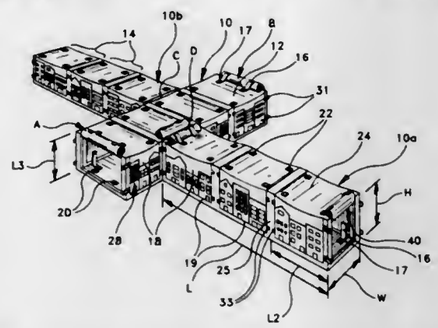
1. A method of installing an above ice surface curling hack, comprising the steps of:

a. firstly, embedding a base member into a sheet of ice, the base member being totally covered by ice thereby leaving a planar ice surface, the base member having at least two vertically oriented female receptacles;

b. secondly, drilling the ice out of the female receptacles; and

c. thirdly, providing a detachable foot pad having depending male members and mating the female receptacles of the base member with the depending male members of the detachable foot pad.

5,620,396
TOY TUNNEL STRUCTURE
Mark E. Westphal, 106 Shelley La., Yardley, Pa. 19067
Filed Aug. 22, 1994, Ser. No. 293,544
Int. Cl.[6] A63B *9/00*
U.S. Cl. 482—35 **14 Claims**



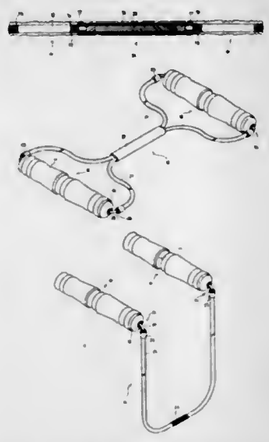
1. A toy tunnel structure, having a first end, a second end and a generally uniform tubular portion therebetween, said toy tunnel structure comprising:

a plurality of framing supports, wherein each of said framing supports defines an open central region;

flexible material surrounding said framing supports, joining said framing supports together and defining said generally tubular portion of said toy tunnel structure, said generally tubular portion including at least one section, wherein each said section has a height and width of between 1.5 feet and 4 feet and includes a bottom surface, a top surface and opposing side surfaces, that extend in between two of said framing supports; and

at least one means of ingress disposed at said first end, at said second end and at each said side surface through which a child can enter and exit said tunnel structure, wherein each of said means of ingress is uniform in size.

5,620,397
MULTIPURPOSE EXERCISE DEVICE
Huang-Chun Chieh, P.O. Box 453, Taichung, Taiwan
Filed Dec. 29, 1995, Ser. No. 580,805
Int. Cl.[6] A63B *21/02;23/14;5/22*
U.S. Cl. 482—46 **1 Claim**



1. A multipurpose exercise device comprising:

a dumb bell set comprising two dumb bells mounted on a support rod, said support rod provided respectively at both ends thereof with a threaded portion and a decorative pad, said decorative pad being engaged with said threaded portion such that a ring space is formed between said threaded portion and said decorative pad;

a spring provided respectively at both ends thereof with a decorative member having a tubular projection provided therein with a threaded hole, said spring further provided with a protective tube fitted thereover;

two resilient tubes detained at midsegments thereof by a detaining tube and provided respectively at both ends thereof with a fastening apparatus;

a plurality of pivoting apparatuses, each of said pivoting apparatuses comprising a movable curved rod and a fastening member, said movable curved rod provided with a pivoting point, said fastening member provided with a tubular projection having a threaded hole engageable with said threaded portion of said support rod of said dumb bell set, said fastening member further provided with a through hole opposite in location to and in communication with said threaded hole of said tubular projection, said movable curved rod fitted into said through hole such that a connection end of said movable curved rod is engaged with one of said resilient tube; and

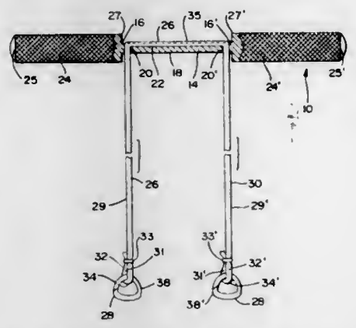
a jump rope provided at a midsegment thereof with a protective spring, said jump rope further provided respectively at both ends thereof with a fastening apparatus engageable with said connection end of said movable curved rod of said pivoting apparatus;

wherein said threaded portions of said dumb bell set are engaged with said threaded holes of said spring and said tubular projection of said spring is fitted into said ring space of said dumb bell set so as to enable said multipurpose exercise device to be used as an arm building device;

wherein said multipurpose exercise device can be converted into a chest building device by engaging said threaded holes of said pivoting apparatus with said threaded portions of said dumb bell set such that said tubular projection of said fastening member of said pivoting apparatus is received in said ring space of said dumb bell set;

whereing said multipurpose exercise device can be converted into a jump rope by engaging said threaded hole of said fastening member of said pivoting apparatus with said threaded portion of said dumb bell set such that said tubular projection of said fastening member of said pivoting apparatus is received in said ring space of said dumb bell set.

5,620,398
EXERCISE APPARATUS FOR WRISTS AND FOREARMS
Eric P. Moriarty, 1749 Golf Rd., #138, Mt. Prospect, Ill. 60056
Filed Apr. 10, 1996, Ser. No. 631,305
Int. Cl.[6] A63B *23/14*
U.S. Cl. 482—46 **16 Claims**



1. Wrists and forearms exercise apparatus comprising:

a substantially cylindrical bar defining a first predetermined diameter and first and second opposed ends equidistant from a central location of said bar;

first and second substantially cylindrical handles defining a second predetermined diameter greater than said first predetermined diameter and respectively connected to and extending outwardly from said first and second ends;

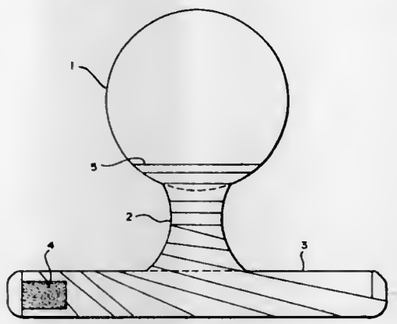
wherein each of said handles has a longitudinal length sufficient to enable a user to grasp each of said handles with a full hand;

said bar further defining first and second spaced apart holes located between said handles substantially equidistant from said central location and extending completely through said bar, and an open-topped channel extending between said holes;

an elongated, flexible member positioned within said channel and normally extending downwardly through said holes; and

means in operative relationship with said flexible member for removably connecting a weight, or weights, to said flexible member.

5,620,399
GRIPPING SLEEVE FOR THE FIRM GRIP OF AN OBJECT
Norbert Hofmann, Knappertsbuschstr. 39, 81927 Munich, Germany
Continuation of Ser. No. 121,496, Sep. 16, 1993, abandoned.
This application Aug. 16, 1995, Ser. No. 524,156
Int. Cl.[6] A63B *21/00;* **A41D** *13/08*
U.S. Cl. 482—49 **16 Claims**



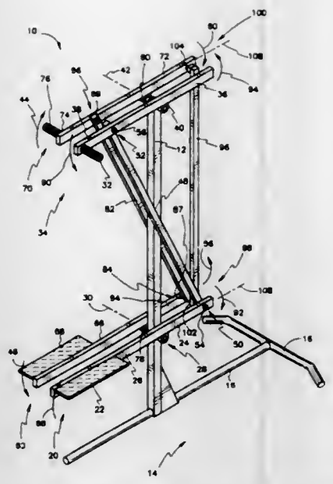
1. Gripping sleeve for tight gripping of a part of exercise machines and equipment by hand, said gripping sleeve consisting of a plate extending away from a wrist band said plate and said wristband being connected in a cantilevered manner by a flexible connecting web; wherein the plate is made of a tightly clinging material; and wherein said wrist band forms the sole means for attachment of the plate and said connecting web to a user's wrist wherein said tightly clinging material is a substantially flat resiliently flexible moisture absorbent cellular rubber having a sufficiently high coefficient of friction to function as a means for preventing slippage between the plate and said part being gripped therewith; and wherein said wrist band is formed of a nonstretchable textile material forming a flexible strengthening means for the user's wrist.

5,620,400
MOUNTAIN CLIMBING EXERCISE APPARATUS
Stephen R. Foster, 10865 Gold Hill Dr., Grass Valley, Calif. 95945
Filed Aug. 6, 1996, Ser. No. 693,347
Int. Cl.[6] A63B *23/04;21/00*
U.S. Cl. 482—51 **8 Claims**

1. Exercising apparatus requiring body motions which are particularly suitable for mountain climbing activities, said exercising apparatus comprising:

a vertical mast;

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a right foot treadle and first bearing means for journaling said right foot treadle at said mast, said first bearing means having a horizontal axis of pivot, said right foot treadle having a forward section projecting forwardly of said mast and a rear section projecting rearwardly of said mast, and a left foot treadle and second bearing means for journaling said left foot treadle at said mast, said second bearing means having a horizontal axis of pivot, said left foot treadle having a forward section projecting forwardly of said mast and a rear section projecting rearwardly of said mast;

a right hand operated lever and third bearing means for journaling said right hand operated lever at said mast, said third bearing means having a horizontal axis of pivot, said right hand operated lever having a forward section projecting forwardly of said mast and a rear section projecting rearwardly of said mast, and a left hand operated lever and fourth bearing means for journaling said left hand operated lever at said mast, said fourth bearing means having a horizontal axis of pivot, said left hand operated lever having a forward section projecting forwardly of said mast and a rear section projecting rearwardly of said mast;

a right side connecting rod having proximal and distal ends, said right side connecting rod rotatably fixed to said right foot treadle at said proximal end and rotatably fixed to said right hand operated lever at said distal end, said proximal end fastened to one of said forward section of said right foot treadle and said rear section of said right foot treadle, and said distal end fastened to the other of said forward section of said right hand operated lever and said rear section of said right hand operated lever;

a left side connecting rod having proximal and distal ends, said right side connecting rod rotatably fixed to said left foot treadle at said proximal end and rotatably fixed to said left hand operated lever at said distal end, said proximal end fastened to one of said forward section of said left foot treadle and said rear section of said left hand operated lever, and said distal end fastened to the other of said forward section of said left hand operated lever and said rear section of said left foot treadle; and

an offsetting link having a proximal end and a distal end, said proximal end rotatably connected to said right foot treadle and said distal end rotatably connected to said left hand operated lever.

5,620,401

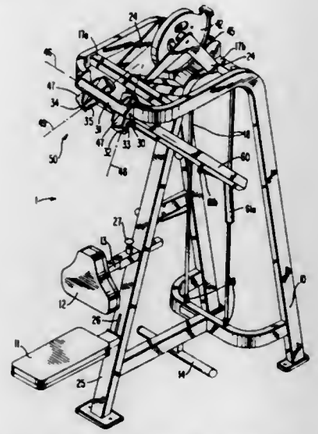
Patent Not Issued For This Number

5,620,402

REAR DELTOID AND ROWING EXERCISE MACHINE AND METHOD OF EXERCISING

Roy Simonson, Colorado Springs, Colo., assignor to CYBEX International, Inc., Ronkonkoma, N.Y.

Filed Mar. 1, 1995, Ser. No. 396,670
Int. Cl.[6] A63B *21/062;69/06*
U.S. Cl. 482—72 **49 Claims**



1. In an exercise machine having an input arm and a frame, a hinge mechanism for mounting the input arm to the frame comprising:

a primary hinge rotatably mounted to the frame for rotation about a primary hinge axis;

a secondary hinge rotatably mounted proximate to the primary hinge for rotation about a secondary hinge axis wherein the arm is mounted to the secondary hinge;

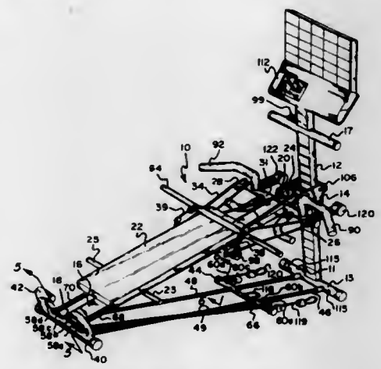
wherein the primary hinge axis and the secondary hinge axis are skew.

5,620,403

SLIDING EXERCISE MACHINE

Christopher B. Lundin, Newark, Del., assignor to Physiq, Inc., Mullica Hill, N.J.

Filed Sep. 29, 1995, Ser. No. 536,322
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—96 **18 Claims**



1. A sliding exercise machine comprising:

a main frame;

a housing movably mounted to said main frame along a vertical plane;

a support having first and second ends, said second end of said support being secured to and movable with said housing;

a board slidably mounted atop said support, said board being slidable along the length of said support;

a pulley means comprising a first pulley means carried by said housing and second pulley means carried by said board;

a cord having opposing ends and being positioned around each of said pulley means so that manipulation of said cord moves said board along said support;

handle means extending from said opposing ends of said cord;

an intermediate cross bar positioned between said first end of said support and said main frame, and cable means secured between said first end of said support and said main frame, said cable means extending through said intermediate cross bar;

tension means, and

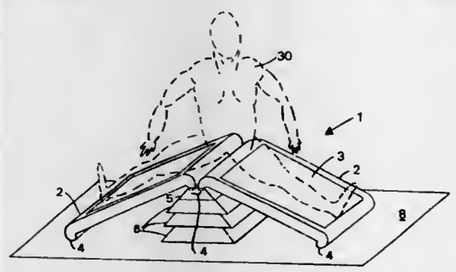
first projecting means for removably securing said tension means to said first end of said support and said board.

5,620,404

MUSCLE STRETCHING TRAINER SYSTEM

Waldorf C. Eyman, Whitney, Tex., assignor to Gym-Trix, Inc., Durham, N.H.

Filed Aug. 16, 1995, Ser. No. 515,961
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—142 **20 Claims**



1. A Kit of parts for stretching muscles of a user, said kit of parts comprising:

a primary base having an upper first surface supporting one of a pair of adjacent elongate pivot grooves or a pair of adjacent feet, a lower opposed second surface being connected to said first surface by a sidewall, and said primary base having a width; and

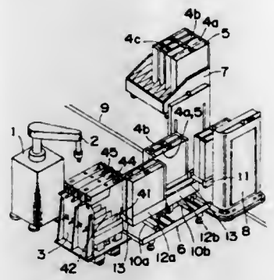
a pair of elongate boards each including the other of said elongate pivot groove or a foot, formed in a surface thereof adjacent at least one end of each of said elongate boards, for mating with one of said pair of adjacent elongate pivot grooves or said pair of adjacent feet su,ported by said first surface, each of said elongate boards having e width substantially equal to the width of said primary base, and each said foot being sized to intimately engage with one of said pair of adjacent elongate pivot grooves to facilitate pivoting movement between said board and said primary base.

5,620,405

SUPPLYING METHOD AND SYSTEM OF COMPONENT/TOOL AND, APPARATUS AND CASSETTE TO BE USED IN THE METHOD

Ryoichi Kamatani, Hirakata; Hideto Machida, Moriguchi, and Yoshiyuki Kubota, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jun. 29, 1994, Ser. No. 267,393
Int. Cl.[6] B23Q *3/155*
U.S. Cl. 483—1 **14 Claims**



1. A method of supplying different kinds of components and tools, comprising the steps of:

providing a component/tool supplying apparatus comprising a component/tool supplying unit; plural component supplying cassettes respectively having component take-out openings, respectively containing different kinds of components, and for respectively feeding the components contained therein to the component take-out openings; and a tool supplying cassette having a tool take-out opening, containing tools for use with the components or for use in assembling the components, and for feeding the tools to the tool take-out opening; wherein the plural component supplying cassettes and the tool supplying cassette are of uniform dimensions;

setting at least one of the component supplying cassettes and the tool supplying cassette in the component/tool supplying unit in accordance with consumption of the components and operating procedures of the component/tool supplying apparatus; and

exchanging at least one other of the component supplying cassettes and the tool supplying cassette for said at least one of the component supplying cassettes and the tool supplying cassette set in the component/tool supplying unit in said setting step, in accordance with the consumption of the components and the operating procedures of the component/tool supplying apparatus so that the different kinds of components and tools are available in the component/tool supplying unit when required.

5,620,406

TOOL CLAMPING MECHANISM

Mansu Bae, Kyungju-kun, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

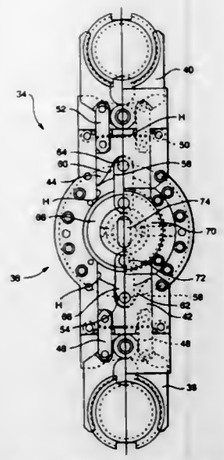
Filed Sep. 28, 1995, Ser. No. 535,512
Claims priority, application Rep. of Korea, Sep. 29, 1994, 94-24821
Int. Cl.[6] B65F *47/90*
U.S. Cl. 483—39 **3 Claims**

1. A tool clamping mechanism for use in a machining center, comprising:

a pivoting member having at each of opposite ends a pair of fingers for grasping a tool, the fingers of each pair being connected to said pivoting member and each other by a hinge;

a block fixedly mounted on a rotatable shaft so as to be rotatable clockwise and counter-clockwise in a given range by said shaft, said block being rotatably positioned in the center of said pivoting member;

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a pair of sliders for respectively pushing and pulling said pairs of fingers to open or close;

a pair of block links pivotably connected to said block and to said pair of sliders;

a pair of slider links pivotably connected to each of said sliders and each pair of fingers; and

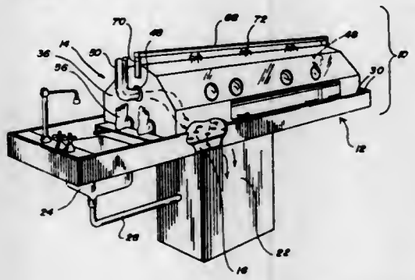
an actuating means for rotating said shaft and thus rotating the block, whereby when said block is rotated, said sliders are pulled or pushed so as to open or close said pairs of fingers through the cooperation of said links.

5,620,407

ACTIVE CONTROL CONTAINMENT SYSTEM FOR LIMITING OCCUPATIONAL EXPOSURE TO BIOHAZARDOUS MATERIALS

Elise S. Chang, 356 Golfview Rd., N. Palm Beach, Fla. 33408

Filed Jun. 12, 1995, Ser. No. 489,226
Int. Cl.[6] A61G *10/00*
U.S. Cl. 600—21 **7 Claims**



1. An active control containment system for biohazardous materials for use in medical, forensic and embalming procedures within a treatment room comprising:

an autopsy table having an internal air chamber and an upper surface defining a body supporting top with a table edge, said supporting top having a plurality of apertures in fluid communication with the air chamber; an exhaust duct for evacuating air from the air chamber and establishing a down-draft through the apertures in the surface;

a vaulted cover made of material impermeable to the biohazardous materials to be contained, said cover made at least in part of transparent material and open on the bottom, said bottom forming an air seal at least in part when placed proximate the supporting top, said cover and said supporting top defining a substantially closed compartment for containing the biohazardous materials, an air intake in the cover providing air flow through the compartment, said compartment maintained at a negative pressure compared to the treatment room by the down-draft through the apertures in the surface, at least one opening in the cover through which the operator can work with the biohazardous materials in the compartment and through which air is drawn from the treatment room,

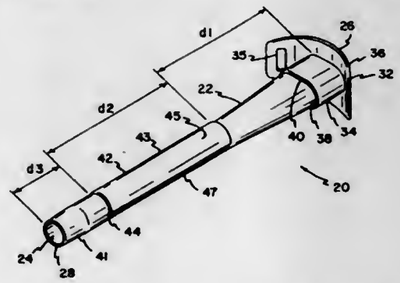
whereby said containment system provides active control and defends the operator from being splashed by or from inhaling the biohazardous materials in the compartment.

5,620,408

ENDOSCOPIC OVER-TUBE

Jack A. Vennes, 18905 12th Ave. North, Plymouth, Minn. 55447, and Jeff M. Rank, 2249 Fairmont Ave., St. Paul, Minn. 55105

Filed Apr. 14, 1995, Ser. No. 421,986
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—114 **19 Claims**



1. An endoscopic over-tube for receiving and guiding medical instrumentation into the upper alimentary canal of a patient comprising:

a) a bite block for insertion and retention in the mouth of the patient; and

b) a flexible protective sheath engaging the bite block and adapted for insertion into the upper alimentary canal of the patient, the sheath having first and second ends and having a longitudinal bore, the sheath including a first end portion positioned proximate the first end a second end portion positioned proximate the second end, and an intermediate portion positioned between the first and second end portions, the intermediate portion including a stiffened region that is stiffer than the first and second end portions and is positioned a predetermined distance from the first end, such that when the sheath is inserted into the upper alimentary canal, the first end portion engages the bite block within the mouth of the patient, the second end portion is within the esophagus of the patient, and the stiffened region aligns substantially along the pharynx of the patient.

5,620,409

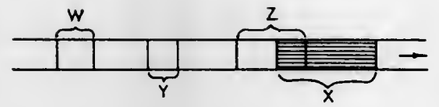
METHOD FOR INHIBITING CLOT FORMATION

Rocco C. Venuto, Williamsville, N.Y., and Reinold O. B. Gans, Maarsen, Netherlands, assignors to The Research Foundation of State University of New York, Amherst, N.Y.

Filed Sep. 15, 1995, Ser. No. 529,224
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 **30 Claims**

1. A method for inhibiting blood clot formation in a first segment of a blood vessel, said method comprising:

selecting a first segment of a blood vessel in which inhibition of blood clot formation is desired, wherein the first segment has an upstream region; and



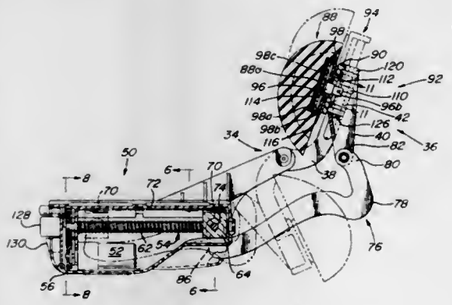
exposing a second segment of the blood vessel to ultrasound, wherein the second segment is selected from the group of segments consisting of: a segment of the blood vessel containing the upstream region; and a segment of the blood vessel located upstream from the upstream region; wherein said exposure of the second segment to the ultrasound inhibits blood clot formation in the first segment of the blood vessel.

5,620,410

CONTINUOUS PASSIVE MOTION DEVICE FOR A WRIST

Robert T. Kaiser, Mount Laurel, N.J.; Robert Zambelli, Sellersville; George Telepko, Fort Washington, both of Pa.; Berdj C. Kalustyan, Moorestown, and Vero Ricci, Collingswood, both of N.J., assignors to Jace Systems, Inc., Moorestown, N.J.

Continuation of Ser. No. 116,316, Sep. 3, 1993, Pat. No. 5,458,560. This application Oct. 3, 1995, Ser. No. 538,320
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—40 **4 Claims**



3. A therapeutic passive motion device comprising:

a main housing unit which is supportable on a user;

a securing element located on the main housing unit to connect the main housing to a forearm of a user;

a yoke member rigidly supported by and extending outwardly from the main housing unit;

a first link mechanism pivotally connected to an end of the yoke member remote from the main housing unit at a first pivotal connection;

a supporting assembly including a supporting plate provided on the first link mechanism and a hand-supporting member removably attached to the supporting plate, the supporting assembly being adapted to support a user's hand;

a motion producing device located within the main housing unit having a motor which drives a linear output member which undergoes reciprocal linear movement; and

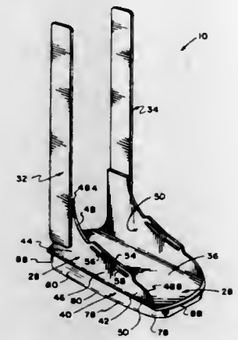
a second link mechanism pivotally connected to the first link mechanism at a second pivotal connection and to the output member of the motion producing device at a third pivotal connection, wherein the second link mechanism defines means for transforming the reciprocal linear movement of the output member of the motion producing device into an oscillatory movement of the first link mechanism.

5,620,411

ANKLE BRACE WALKER

Gail H. Schumann, and Vernon L. Stevenson, both of Fort Worth, Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Continuation of Ser. No. 838,608, Feb. 19, 1992, Pat. No. 5,352,189. This application May 27, 1994, Ser. No. 250,271
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—23 **33 Claims**



1. An ankle brace assembly for securing a patient's ankle and foot against relative movement comprising, in combination:

a foot plate having a planar surface for supporting the patient's foot;

lateral and medial side plates attached to said foot plate on opposite sides of said planar surface, said lateral and medial side plates projecting upright with respect to said foot plate;

said lateral and medial side plates each formed as one piece and having an anterior plate portion, a posterior plate portion, and an intermediate plate portion integrally formed with the anterior plate portion and the posterior plate portion, the posterior plate portion having a coupling plate portion projecting upright relative to the intermediate plate portion, each side plate having an external edge which transitions along a continuous concave arch extending along the intermediate plate portion from the anterior plate portion to the coupling plate portion; and

lateral and medial brace members attached to the posterior plate portions of said lateral and medial side plates, respectively, said lateral and medial brace members projecting upright with respect to said foot plate.

5,620,412

HIP ABDUCTION SYSTEM

Michael D. Modglin, Winter Haven, Fla., assignor to National Orthotic Laboratories, Inc., Winter Haven, Fla.

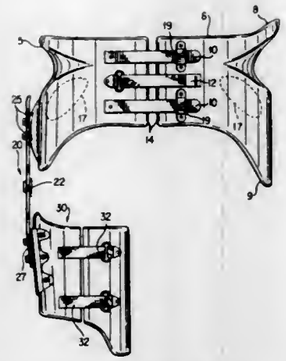
Continuation of Ser. No. 310,989, Sep. 23, 1994, abandoned, which is a continuation of Ser. No. 185,412, Jan. 24, 1994, abandoned, which is a division of Ser. No. 911,477, Jul. 10, 1992, Pat. No. 5,344,391. This application Jun. 13, 1995, Ser. No. 489,830
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—24 **5 Claims**

1. A hip abduction system for stabilizing the hip joint of a patient, comprising:

a) a substantially rigid two-piece pelvic girdle comprising a first hip-engaging member dimensioned to fit a first hip on one side of the patient's body and connected by a fastening device to a second hip-engaging member dimensioned to fit a second hip on another side of the patient's body;

b) a slidable guide system mounted on said pelvic girdle and comprising a substantially rigid guide member disposed on one of said hip-engaging portions and engaging a channel

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disposed on another of said hip-engaging portions, whereby relative vertical movement between the hip-engaging portions is reduced;

c) a substantially rigid caliper device with an upper end and a lower end, said upper end adjustably mounted to one of said hip-engaging portions; and

d) a substantially rigid thigh-engaging member, dimensioned to encircle the patient's thigh and adjustably mounted to said lower end of said caliper device, whereby a distance between the thigh-engaging member and the pelvic girdle can be adjusted by adjusting the relative positions of the thigh-engaging member and the pelvic girdle on said caliper device;

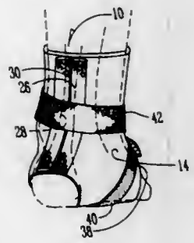
wherein said first and second hip-engaging members each comprise upper and said lower flanges, the upper end of said caliper device is mounted to said first hip-engaging member, and the upper and lower flanges of said second hip-engaging member are longer than the respective upper and lower flanges of said first hip-engaging member.

5,620,413

COMBINATION ANKLE BRACE AND WRAP

Donaebill G. Olson, 15832 Tradewind Dr., Spirit Lake, Iowa 56101

Filed Jul. 14, 1995, Ser. No. 502,571
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—65 **14 Claims**



1. An ankle brace comprising:

an elastic compression support sleeve adapted to fit over the foot of a user, said sleeve having a medial, lateral, and a back side and upper and lower portions;

a non-elastic strap having a first and second end, said first end coupled to the compression support sleeve proximate the lower portion of the compression support sleeve, said strap and sleeve including a hook and loop fastener for securing the strap around the compression support sleeve when the sleeve is fitted over the foot of the user; and

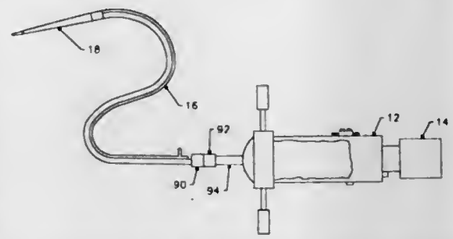
a first and second pressure release pad each disposed on the back side of the sleeve generally parallel to each other defining a channel, the channel being disposed in the proximity of the Achilles tendon of the user and having a width which is at least as narrow as the Achilles tendon of the user.

5,620,414

APPARATUS AND METHOD FOR EFFECTING SURGICAL INCISION THROUGH USE OF A FLUID JET

Robert M. Campbell, Jr., 415 Stone Wood, San Antonio, Tex. 78216

Continuation-in-part of Ser. No. 906,558, Jun. 30, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,195
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22 **8 Claims**



1. A method for surgically cutting human tissues comprising the steps of:

selecting a cutting implement, said cutting implement comprising:

an implosion chamber having a nozzle outlet and pressure means for elevating pressure in an interior space defined within said implosion chamber and means for introducing a first measure of liquid into said interior space of said implosion chamber;

a vessel of variable internal volume for containing a second measure of fluid and having a nozzle port for sealingly mating with said nozzle outlet and for extending outside of said implosion chamber through said nozzle outlet, said vessel being sized and shaped for residing in said interior space of said implosion chamber, said vessel being substantially sealed except with respect to said nozzle port;

conduit means sealingly connected to said nozzle outlet means of said implosion chamber;

a nozzle tip sealingly connected to said conduit means, said nozzle tip having a fluid jet orifice through which a portion of said second measure of fluid may exit as pressure is applied to said second measure of fluid by way of pressure applied to said vessel through pressure applied to said first measure of fluid in said implosion chamber;

said pressure means being configured for elevating said pressure of said first measure of said fluid in said interior space of said implosion chamber to a level sufficient to propel said portion of said second measure of said fluid with force sufficient to cut a tissues, said pressure being not less than approximately 100 psi and being increased according to specific nature of tissue to be cut;

introducing said vessel into said interior space of said implosion chamber, said vessel having said second measure of fluid contained therein;

sealingly engaging said nozzle port of said vessel with said nozzle outlet of said implosion chamber;

introducing said first measure of fluid into said interior space of said implosion chamber until said first measure of fluid displaced substantially all space not occupied by said vessel contained therein;

actuating said pressure means for applying pressure to said first measure of fluid and thereby applying pressure to said second measure of fluid; and

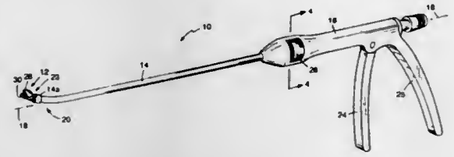
directing said fluid jet orifice in the direction of human tissue which is to be cut for achieving said cut.

5,620,415

SURGICAL INSTRUMENT

Paul V. Lucey, Sandown, N.H.; Paul A. Torrie, Marblehead; C. Vaughan Seifert, Boxboro, both of Mass., and Graham Smith, Plaistow, N.H., assignors to Smith & Dyonics, Inc., Andover, Mass.

Continuation of Ser. No. 11,416, Jan. 29, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 319,057
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22 **34 Claims**



15. A surgical instrument comprising

a stationary member supporting a surgical tool at a distal region thereof,

a rotatable member supported by said stationary member and having a distal end coupled to said surgical tool and being relieved with a first opening pattern to render it at least partially flexible for transmitting rotational force applied at a proximal region of said instrument to said surgical tool to selectively change a rotational orientation of said surgical tool with respect to said stationary member,

a driver member supported by said stationary member and having a distal end coupled to said surgical tool and being relieved with a second pattern different from said first opening pattern to render it at least partially flexible for transmitting an axial force applied at said proximal region to said surgical tool to operate said surgical tool and cause said surgical tool to sever body material, and

one of said rotatable member or said driver member being hollow to provide a passage that extends from a distal end of said one member proximally through said one member to said proximal region of said instrument for transporting body material severed by said surgical tool from said distal region to said proximal region of said instrument in response to suction applied at said proximal region of said instrument.

5,620,416

METHODS OF USING TOPICAL AGENTS WITH SYSTEMICALLY ADMINISTERED ACTIVE AGENTS

Jim E. Riviere, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Jun. 7, 1995, Ser. No. 473,318
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—49 **7 Claims**

1. A method of providing an increased concentration of a systemically administered active agent to a treatment area of a subject, comprising:

systemically administering an active agent to a subject, subject to the provisos that said active agent is other than a vasodilator and that systemic administration is by means other than iontophoresis; and

topically applying a vasodilator to a treatment area of the subject in an amount effective to increase the concentration of said active agent in the treatment area,

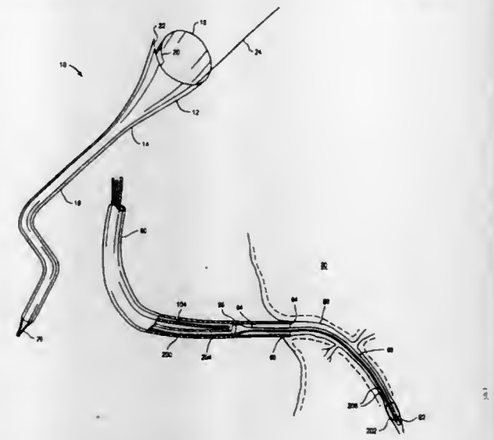
wherein the concentration of systemically administered active agent is increased in the treatment area compared to the concentration of systemically administered active agent which would be achieved in the treatment area in the absence of topical vasodilator.

5,620,417

RAPID EXCHANGE DELIVERY CATHETER

Yue-Teh Jang, Fremont; Richard S. Ginn, San Jose, and Stephen M. Salmon, Sunnyvale, all of Calif., assignors to Cardiovascular Imaging Systems Incorporated, Sunnyvale, Calif.

Filed Jul. 7, 1994, Ser. No. 271,878
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **21 Claims**



1. A method for introducing an interactive element at the distal end of an interactive catheter into a coronary artery, said method comprising:

introducing a guiding catheter having a lumen into the vasculature of a patient so that a distal end of the guiding catheter is at a coronary ostium;

positioning a tubular body within the lumen of the guiding catheter so that a proximal end of the tubular body is disposed within the guiding catheter and a distal end of the tubular body lies near a target location in the coronary artery;

introducing a plurality of interactive catheters, each having an interactive element at the distal end thereof, into the lumen of the guiding catheter; and

advancing the distal end of one of said plurality of interactive catheters into an open proximal end of the tubular body and through the tubular body to the target location in the coronary artery so that said interactive catheter extends through both the lumen of the guiding catheter and through the tubular body while the remaining interactive catheter is within the lumen of the guiding catheter.

5,620,418

RETROGRADE CORONARY SINUS CATHETER

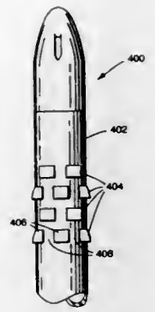
William G. O'Neill, Ann Arbor; Nelson L. Huldin, Pittsfield Township, both of Mich.; Sheila J. Hanson, Mequon, Wis., and Walter L. Carpenter, McHenry, Ill., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 21,526, Feb. 23, 1993, Pat. No. 5,395,331, which is a continuation-in-part of Ser. No. 874,589, Apr. 27, 1992, Pat. No. 5,324,260. This application Dec. 7, 1994, Ser. No. 350,649
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **85 Claims**

1. A coronary sinus catheter for the retrograde infusion of cardioplegia solution into the coronary sinus of a patient's heart, the catheter comprising:

a flexible, elongate catheter tube having proximal and distal ends and an outer diameter, and including at least an infusion lumen extending longitudinally through the tube, at least one

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infusion lumen outlet generally adjacent the distal end of the catheter tube, and means adjacent the proximal end of the catheter tube for connecting a source of cardioplegia solution to the catheter; and

an inflatable balloon on the catheter tube generally adjacent the distal end of the catheter tube proximally of the infusion lumen outlet, the inflatable balloon being expandable as the balloon is inflated from an un-inflated diameter, generally equal to the outer diameter of the catheter tube for introducing the catheter into the coronary sinus, to an inflated diameter, substantially greater than the outer diameter of the catheter tube for securing the distal end of the catheter in the coronary sinus;

the inflatable balloon having a plurality of outwardly-facing, spaced-apart, segmented, annular ribs or lands for frictionally engaging the coronary sinus, each segmented annular rib or land comprising a plurality of solid, raised, generally elongate rib portions separated by non-raised portions extending annularly around the periphery of the balloon in alternating fashion, the non-raised portions preferentially stretching in comparison to the raised rib portions as the balloon is inflated to its inflated diameter, the balloon, including the ribs or lands, being integrally molded of generally uniform elastomeric material; and

the raised rib portions of adjacent ribs or lands being staggered such that the raised rib portions of one rib or land are generally longitudinally aligned with the non-raised portions of the adjacent rib or land.

5,620,419

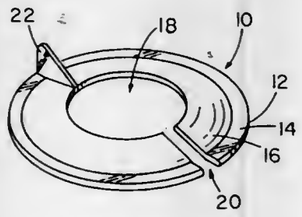
PORT STABILIZER RING

Chun K. Lui, Monroeville, and Louis Goode, Evans City, both of Pa., assignors to Cook Pacemaker Corporation, Leechburg, Pa.

Filed Oct. 14, 1994, Ser. No. 324,107

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—116 **32 Claims**



1. A noninvasive, infusion port stabilizer for use in conjunction with a vascular access device (**44**) implanted beneath the skin (**45**) of a patient, the access device (**44**) having an infusion port (**46**), an infusion chamber (**48**) contained in the infusion port (**46**), and a top septum (**52**) over the infusion chamber (**48**), and the stabilizer comprising a rigid ring (**12, 36**) having a planar annulus (**14**) and a ramp (**16**) extending inwardly of the annulus (**14**); wherein the ramp (**16**) defines a central ring opening (**18, 42**) having an interior diameter greater than the diameter of the septum (**52**) but less than the maximum diameter of the infusion port (**46**); wherein the ring (**12, 36**) is radially split (**20**), thereby allowing withdrawal of the ring (**12, 36**) transversely to any needle or cannula (**58**) which may be in fluid communication with the infusion chamber (**48**), without interfering with any such needle or cannula (**58**); and wherein the ring (**12, 36**) has an exterior diameter greater than the diameter of the infusion port (**46**); such that when the port stabilizer ring (**12, 36**) is positioned on the skin (**45**) of the patient over the general area of the infusion port (**46**), pressure on the annulus (**14**) and the ramp (**16**) centers the port stabilizer ring (**12, 36**) over the infusion port (**46**), simultaneously stabilizing the position of the infusion port (**46**) and visually locating the septum (**52**) for access.

5,620,420

FLUID DELIVERY APPARATUS

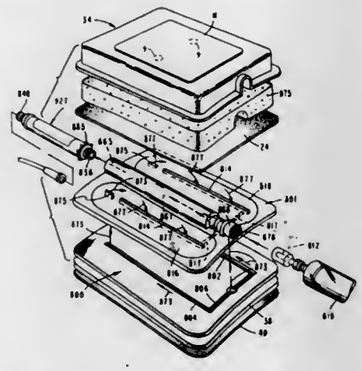
Marshall S. Kriesel, 80 N. Mississippi Rd., St. Paul, Minn. 55104

Continuation of Ser. No. 46,438, May 18, 1993, Pat. No. 5,411,480, which is a continuation-in-part of Ser. No. 987,021, Dec. 7, 1992, Pat. No. 5,279,558, which is a continuation of Ser. No. 870,269, Apr. 17, 1992, Pat. No. 5,205,820, which is a continuation-in-part of Ser. No. 642,208, Jan. 16, 1991, Pat. No. 5,169,389, which is a continuation-in-part of Ser. No. 367,304, Jun. 16, 1990, Pat. No. 5,019,047. This application May 1, 1995, Ser. No. 432,219

The portion of the term of this patent subsequent to May 18, 2013, has been disclaimed.

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—133 **7 Claims**



1. A fluid delivery device for delivering fluids to a patient extracorporeal at a controlled rate comprising:

(a) a base having a fluid inlet and a fluid outlet interconnected by a fluid flow path;

(b) filling means for introducing fluid into said fluid inlet;

(c) a deformable membrane which is fitted over said base to define a chamber in communication with said fluid inlet and said fluid outlet, said membrane being movable from a first position to a second position whereby fluid within said chamber will be expelled through said fluid outlet;

(d) an expandable member disposed outside said chamber and in contact with said membrane for moving said membrane from said first position to said second position; and

(e) a cover superimposed over said base and said expandable member to form an enclosure, said cover including venting means for venting to atmosphere gases contained within said enclosure.

5,620,421

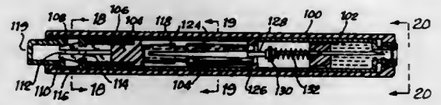
SYRINGE INJECTOR SYSTEM

William L. Schmitz, 43901 Citrus View Dr., Hemet, Calif. 92344

Continuation-in-part of Ser. No. 164,330, Dec. 9, 1993. This application Aug. 8, 1994, Ser. No. 287,674

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—135 **6 Claims**



1. An automatic injection apparatus for use the powered injection of medicament comprising:

(a) an elongated cylindrical barrel defining a forward end and a rear end;

(b) a medicament chamber housed in said barrel substantially coaxially with said barrel and being defined by a cylindrical wall, a front diaphragm and a piston slidable in said cylindrical wall spaced behind said diaphragm;

(c) a hollow hypodermic needle coaxially slidably seated in said piston and having a forward flesh-penetrating outlet tip and a rear end mounting a transverse baffle, and a side inlet intermediate said baffle and tip which is disposed rearwardly of the forward face of said piston prior to use of said apparatus;

(d) a plunger disposed in axially slidable relation in said barrel behind said medicament chamber and being operable to slide forwardly from a cocked position, to a forward injected position and back to said forward position;

(e) a power spring biasing said plunger from said cocked position forwardly in said barrel to engage said baffle and having adequate strength and throw to displace said needle forwardly to pierce said diaphragm and enter the flesh of a patient to a predetermined depth, at which point said baffle butts against said piston and forces same forwardly such that said medicament is forced through said side inlet into said needle and out said outlet tip into the flesh of the patient to purge said medicament substantially completely from said chamber throughout an injection stroke such that medicament is injected continuously substantially as a liner function of increasing depth of injection of said needle tip in a tracked injection; and,

(f) detent means to lock said plunger in said cocked mode against the tension of said spring, and an externally accessible release means to neutralize said detent means and release said plunger to execute said injection stroke.

5,620,422

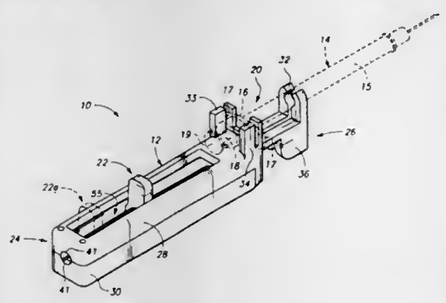
HYPODERMIC SYRINGE FILLING APPARATUS

Frank Halbich, W. 4595 Selway Ave., Post Falls, Id. 83854

Filed Feb. 27, 1996, Ser. No. 606,735

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—187 **29 Claims**



1. A hypodermic syringe filling apparatus enabling filling of a hypodermic syringe with a prescribed quantity of fluid, the filling apparatus comprising:

a body comprising a pair of juxtaposed portions mounted to one another, the juxtaposed portions comprising two opposing pairs of journal recesses which together form two opposing journals within the body;

a screw mounted for selective rotation relative to the body, the screw having opposing longitudinal ends which are rotatably received within the opposing journals within the body;

a syringe supporting framework provided relative to the body and being sized to externally engage and retain a hypodermic syringe; and

a plunger stop associated with the body and positioned to engage and stop extension of a plunger of a hypodermic syringe received by the supporting framework, the plunger stop being mounted for movement relative to the supporting framework to a plurality of fixed locations to enable degree of extension of a plunger of a hypodermic syringe received by the supporting framework to be selectively varied, the plunger stop threadedly engaging the screw.

5,620,423

SYRINGE FOR THE CONTROLLED DISCHARGE OF VISCOUS MATERIALS

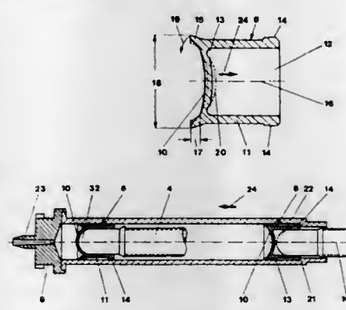
Rudolf Eykmann, Wehrheim; Joachim Fritze, Friedrichsdorf; Birgit Uhrig, Neu-Anspach, and Dieter Schödel, Wiesbaden, all of Germany, assignors to Heraeus Kulzer GmbH, Germany

Filed Sep. 23, 1994, Ser. No. 311,772

Claims priority, application Germany, Sep. 23, 1993, 43 32 308.1

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—217 **12 Claims**



1. A syringe for the controlled discharge of a pasty material, comprising: a cartridge for holding the material; a cup-shaped stopper having an open end and having a base surface configured as an elastically deformable disc-shaped membrane surface; and a rotary piston having an inserted end, with the rotary piston configured to be inserted into one end of the cartridge, with the rotary piston, on the inserted end, pressing against the membrane surface, with the stopper having an exterior configuration which tightly closes an inside cross section of the cartridge, and with the membrane surface of the stopper configured as a plastic membrane surface which, in a depressurized state, is prestressed and assumes a stable position with respect to a longitudinal insertion direction of the rotary piston, so that after a displacement of the membrane surface by the rotary piston, the disc-shaped membrane surface returns reversibly to the stable position in the depressurized state, wherein the membrane surface in the depressurized state is configured as a curvature, wherein a concavity of the curvature faces in a direction opposite to the longitudinal direction of insertion of the rotary piston, wherein the cartridge includes an inside wall and the stopper includes a sealing lip in contact with the inside wall of the cartridge, wherein the sealing lip is configured in an encircling

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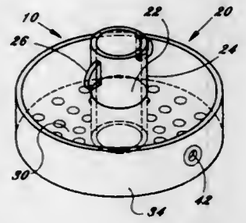
manner, wherein the sealing lip includes an outer end which, prior to insertion into the cartridge, has a diameter larger than an inside diameter of the cartridge, wherein the stopper includes a side wall, wherein the sealing lip projects downward beyond the prestressed membrane surface and outward beyond the side wall, and wherein the sealing lip, which is in contact under tension against the inside wall of the cartridge, exerts a bending moment on the membrane surface which is directed opposite to the longitudinal direction of insertion of the rotary piston.

5,620,424

DEVICE FOR PREVENTING CATHETER RELATED INFECTION

Daniel J. Abramson, 7671 San Mateo Dr. East, Boca Raton, Fla. 33433

Filed Jun. 26, 1995, Ser. No. 494,536
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—265 **11 Claims**



1. A device for use with medical catheters for preventing, or reducing the incidence of, catheter-related infection originating at the site of catheter insertion into the patient's body comprising:

a body defining a centrally disposed aperture therethrough;

means associated with said body for dispensing antiseptic, wherein said means for dispensing antiseptic includes a reservoir, housed within said body and containing a supply of antiseptic, said body defining a plurality of openings communicating with said reservoir for dispensing said antiseptic proximal the catheter insertion site.

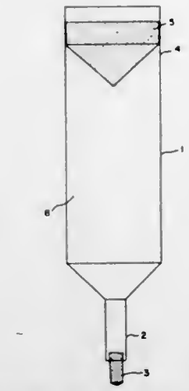
5,620,425

METHOD FOR THE PREPARATION OF PRE-FILLED PLASTIC SYRINGES

Gayle Heffernan, Middlesex, and Allen Welsher, East Brunswick, both of N.J., assignors to Bracco International B.V., Amsterdam, Netherlands

Filed Nov. 3, 1993, Ser. No. 147,353
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—281 **16 Claims**

1. A method for the preparation of a pre-filled plastic syringe including a plurality of components, comprising the steps of:



(a) providing at least one component of said syringe which is molded under conditions which are substantially free of pyrogens and viable and non-viable particulates, said conditions meeting a cleanliness level of about Class 100; and

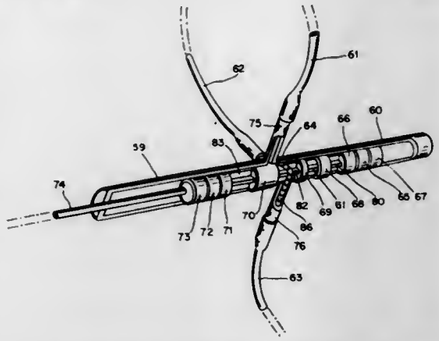
(b) filling and assembling said syringe.

5,620,426

CONNECTING DEVICE

Philip W. Braithwaite, Worcester, United Kingdom, assignor to Innovata Biomed Limited, St. Albans, United Kingdom

PCT No. PCT/GB93/00734, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO93/19808, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 7, 1993, Ser. No. 302,846
Claims priority, application United Kingdom, Apr. 7, 1992, 9207532
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **15 Claims**



1. A connecting device for use in connecting together open ends of two or more medical instruments so as to control a flow of fluid between the medical instruments, said connecting device comprising:

intermediate conduit means having two or more ports to which open ends of the two or more medical instruments are connectable; and,

a plurality of fluid directing members located inside said intermediate conduit means and movable linearly therein in an end-to-end abutting relationship, so that each of said fluid directing members has a first end and a second end and are arranged along said intermediate conduit means so that said first end and said second end, respectively, of adjacent said fluid directing members abut one another, said fluid directing members being operable for allowing, or restricting, the flow of fluid, via said intermediate conduit means, between two medical instruments when the medical instruments are connected to the ports of said intermediate conduit means, depending upon a linear position of said fluid directing members inside said intermediate conduit means,

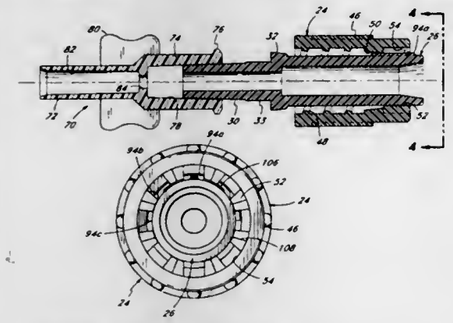
said fluid directing members being movable within said intermediate conduit means from a first position, wherein said fluid directing members act to close all the ports in said intermediate conduit means to fluid flow, to a second position, wherein said fluid directing members allow fluid flow between two of said medical instruments connected to said connecting device, to a third position, wherein all the ports of said intermediate conduit means are closed to fluid flow between said intermediate conduit means and said two medical instruments, the movement of said fluid directing members being a sequential movement, in one direction, from each position to the next.

5,620,427

LUER LOCK SYSTEM

Gary S. Werschmidt, Yorba Linda; Raymond P. Felth, Rialto, both of Calif., and David R. Kipp, 2371 Edna Way, Upland, Calif. 91784, assignors to David R. Kipp, Upland, Calif.

Filed Apr. 27, 1995, Ser. No. 431,073
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **32 Claims**



1. A medical connector, comprising:

an elongate tubular body having a proximal and a distal end, and a central lumen extending axially therethrough;

a hub on the tubular body, movable between a distal position in which the hub is rotatable about the tubular body, and a proximal position in which the hub is rotationally locked with respect to the tubular body;

a first friction engagement surface on the tubular body;

a complementary second friction engagement surface on the hub; and

at least one ridge on the tubular body for indicating when the hub is in the proximal position and rotationally locked to the tubular body,

wherein said first and second engagement surfaces contact each other when the hub is in the distal position and cooperate to resist rotation of the hub with respect to the tubular body.

5,620,428

SUCTION CANISTER APPARATUS AND METHOD

Joseph M. Hand, Sheboygan Falls, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

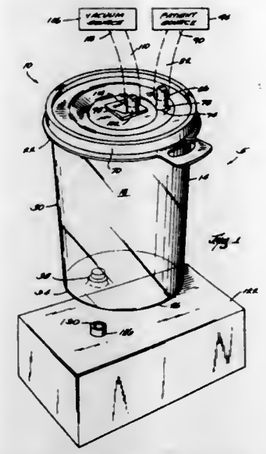
Filed Dec. 29, 1994, Ser. No. 365,695
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—317 **42 Claims**

1. A suction canister comprising

a chamber for collecting body fluids, said chamber being at least partially defined by a wall including a protrusion extending into said chamber and defining passageway having an open outer end and a closed inner end, said protrusion including a frangible wall portion having increased frangibility relative to the remainder of said wall such that said protrusion can be broken to provide communication between said passageway and said chamber,

a patient port communicating with said chamber for communication with a patient cavity, and

a vacuum port communicating with said chamber for communication with a vacuum source such that application of a vacuum to said vacuum port creates a vacuum in said chamber and thereby draws body fluids into said chamber via said patient port.



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a feminine napkin having a first side for being positioned facing and adjacent to a woman's vagina, and a second side;

a vagina simulating outer bag means being attached to the second side of the napkin, the vagina simulating outer bag means comprising at least one open end for insertion of a penis therein when the napkin is in use, the vagina simulating outer bag means simulating a vagina; and

means for securing the napkin to the woman adjacent to the vagina during use of the napkin and the vagina simulating outer bag means.

5,620,430

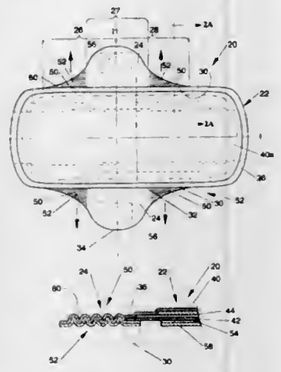
ABSORBENT ARTICLE HAVING FLAPS AND ZONES OF DIFFERENTIAL EXTENSIBILITY

Jeffrey V. Bamber, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 73,256, Jun. 7, 1993, Pat. No. 5,389,094, which is a continuation of Ser. No. 769,891, Oct. 1, 1991, abandoned. This application Jun. 2, 1994, Ser. No. 253,001

Int. Cl.[6] A61F *13/15; 13/20*

U.S. Cl. 604—385.2 **8 Claims**



1. The absorbent article for wearing in a wearer's undergarment which has a crotch region with a pair of side edges, said absorbent article having a principal longitudinal centerline that is oriented in a longitudinal direction, and a principal transverse centerline that is oriented in a transverse direction, said absorbent article comprising:

a main body portion having two spaced apart longitudinal edges, two spaced apart transverse edges, and laterally outermost portions, said main body portion comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet;

a pair of flaps at least partially around for folding along the side edges of the wearer's undergarment, said flaps being joined to said main body portion, one of said flaps extending laterally outward beyond the laterally outermost portions of said main body portion, said flaps having a flap transverse centerline and distal edges, said flaps comprising first portions of said flaps that are located along said flap transverse centerline, and second portions of said flaps, at least parts of which are spaced longitudinally away from said flap transverse centerline, wherein said second portions of said flaps spaced longitudinally away from said flap transverse centerline comprise at least one zone of differential extensibility having a greater range of extensibility outward in a generally transverse direction than said first portions of said flaps located along said flaps transverse centerline, said zone of differential extensibility comprising corrugated portions of said flaps which have ridges and valleys that are oriented at an angle relative to the principal longitudinal centerline.

5,620,431

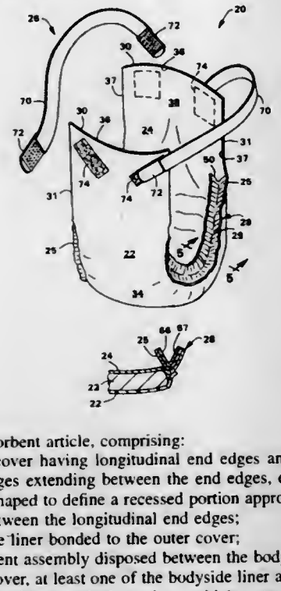
ABSORBENT ARTICLE WITH ELASTICIZED LEG CUFFS

Lynn K. LeMahieu, Hortonville, and David A. Kuen, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 30, 1994, Ser. No. 368,057

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **16 Claims**



1. An absorbent article, comprising:

an outer cover having longitudinal end edges and longitudinal side edges extending between the end edges, each side edge being shaped to define a recessed portion approximately midway between the longitudinal end edges;

a bodyside liner bonded to the outer cover;

an absorbent assembly disposed between the bodyside liner and outer cover, at least one of the bodyside liner and outer cover forming side marginal portions which extend beyond the absorbent assembly; and

elastic members comprising an air-permeable material and having opposite end edges, opposite inner and outer edges extending between the end edges and defining a width dimension, an inner zone adjacent the inner edge, and an outer zone adjacent the outer edge;

wherein the outer zone of each of the elastic members is bonded to one of the side marginal portions such that the elastic members span the recessed portions and at least a portion of the outer zone of each elastic member is positioned transversely outward from the side edge of the outer cover, the inner zone of each of the elastic members forms a freestanding cuff, the elastic members are elasticized over substantially the entire width dimension, and the absorbent article has a leg cuff tension of at least about 0.2 kilogram.

5,620,432

TAPE TAB FASTENERS FOR DISPOSABLE ABSORBENT ARTICLES

David J. K. Goulait, and David W. Cabell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 450,773, May 24, 1995, Pat. No. 5,578,152, and a continuation-in-part of Ser. No. 263,322, Jun. 21, 1994, Pat. No. 5,482,588, and a continuation-in-part of Ser. No. 263,115, Jun. 21, 1994, Pat. No. 5,487,809. This application Jun. 7, 1995, Ser. No. 486,875

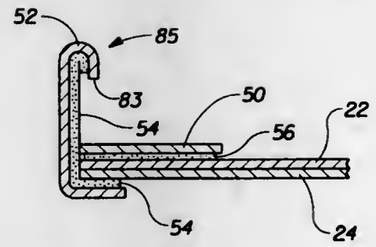
Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—390 **12 Claims**

1. A disposable absorbent article comprising:

a topsheet;

a backsheet joined with said topsheet;



an absorbent core disposed between said topsheet and said backsheet; and

a two-piece tape tab comprising:

a backing substrate having a first surface, a second surface, a first edge and a second edge;

a pressure-sensitive adhesive disposed on said first surface of said backing substrate adjacent said first edge;

a construction adhesive disposed on said first surface of said backing substrate spaced inwardly from said second edge of said backing substrate a distance about 0.5 mm, said construction adhesive joining said backing substrate with said backsheet;

a release substrate having a release surface, an adhesive surface, a first end and a second end; and

a permanent adhesive disposed between said adhesive surface of said release substrate and said topsheet, said permanent adhesive joining said release substrate to said topsheet.

5,620,433

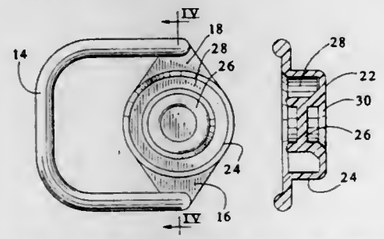
PORT ADAPTOR AND PROTECTOR AND CONTAINER HAVING SAME

Andrew D. Aswad, Mundelein; Dale Severs, Gurnee; Joyce Silvestri, Antioch, all of Ill.; Hugh M. Forman, Waukesha, Wis.; Lecon Woo, Libertyville, Ill.; Thomas D. Hiller, Vernon Hills, Ill.; Lisa S. Walsh, Wonder Lake, Ill.; Sandra Wade, Highland Park, Ill.; Eddie Chan, Mundelein, Ill.; Patrick Balteau, Namur, Belgium; Franco Peluso, Heverlee, Belgium, and Eric Henaut, Nivelles, Belgium, assignors to Baxter International Inc., Deerfiled, Ill.

Continuation of Ser. No. 156,486, Nov. 23, 1993, Pat. No. 5,498,253. This application Sep. 15, 1995, Ser. No. 528,572

Int. Cl.[6] A61B *19/00*

U.S. Cl. 604—403 **4 Claims**



1. A port protector for removably sealing an open end of a tubular member, the protector comprising:

a cap portion including a top and side walls integrally formed to define an interior, the cap portion separable from the tubular member and capable of engaging an open end of the tubular member and removably sealing the open end of the tubular member;

a plug member extending from the top into the interior of the cap portion and integrally formed with the top of the cap portion, the plug member capable of engaging with the open end of the tubular member and removably sealing the open end of the tubular member wherein the plug member extends within the interior of the cap portion a distance no greater than a distance of the side walls from the top of the cap portion and further wherein the plug member includes recesses formed each side of the plug member such that a wall is formed in the plug member in a plane parallel to a plane defined by the top of the cap portion and at a point intermediate a length of the side walls; and

means extending from the cap portion allowing removal of the cap portion from the open end of the tubular member wherein the means extending from the cap portion extends from opposite side walls of the cap portion in the plane parallel to the plane defined by the top of the cap portion and remote from the top of the cap portion.

5,620,434

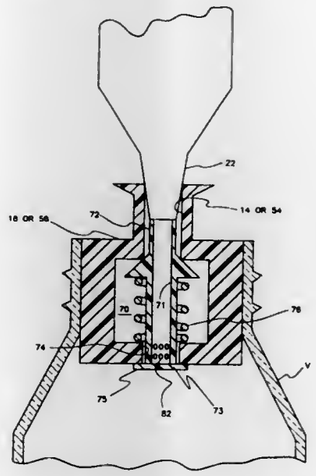
MEDICINE VIAL LINK FOR NEEDLELESS SYRINGES

Seth K. Brony, 13064 Twelve Hills Rd., Clarksville, Md. 21209

Continuation-in-part of Ser. No. 209,885, Mar. 14, 1994, Pat. No. 5,454,805. This application Jul. 10, 1995, Ser. No. 500,152

Int. Cl.[6] A61B *19/00*

U.S. Cl. 604—406 **4 Claims**



1. An adapter link for providing sealed fluid medicament communication between a medicine vial having an opening for access and a needleless medication dispensing syringe having a conical nozzle tip, said adapter link comprising:

a resilient, tubular, generally cylindrical body member having a smooth outer surface for tightly fitting the inside of the opening formed in the medicine vial, and an outer periphery;

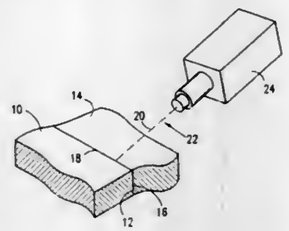
an upstanding annular portion formed in said body portion, having an upper rim around said outer periphery;

means defining a smooth central aperture formed in said upstanding annular portion, for sealably receiving said conical nozzle tip of said syringe, said aperture formed as a blind bore extending partially through said body member; and

a valve disposed within said body member, having automatically operating means for maintaining said blind bore closed, and for opening said valve responsive to insertion of the conical nozzle tip of the syringe into said aperture formed in said body member, wherein said upper rim on said upstanding annular portion of said body is expanded radially when the conical nozzle tip of the syringe is received in said blind bore, said valve comprising a hollow valve body having a plurality of holes extending only radially through said hollow valve body and a floor closing the bottom of said hollow valve body, whereby said valve serves as a sieve for filtering fluid.

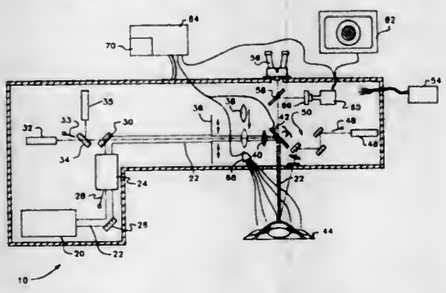
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5,620,435
EYE SURGERY
Michael Belkin, Givat Shmuel; Abraham Katzir, Tel Aviv; Alon Goldring, Jerusalem; Alex Harel, Savion, and Yeshayahu S. Eisenberg, Kiryat Tivon, all of Israel, assignors to Optomedic Medical Technologies, Ltd., Or-Yehuda, and Ramot University Authority for Applied Research, Tel-Aviv, both of Israel
Filed Oct. 5, 1995, Ser. No. 539,246
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—4 **10 Claims**



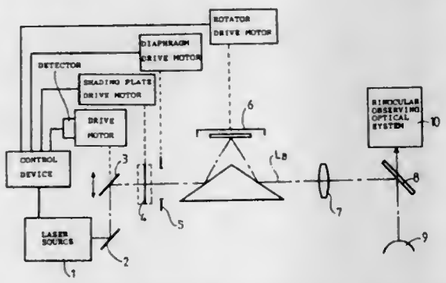
1. A method for welding a first portion of ocular tissue having a leading edge to a second portion of ocular tissue having a leading edge, said method comprising the steps of:
positioning said leading edge of said first portion of ocular tissue directly adjacent to and against said leading edge of said second portion of ocular tissue; and
applying pulses of a laser light from a source thereof substantially simultaneously to said leading edge of said first portion of ocular tissue and to said leading edge of said second portion of ocular tissue, in a pulsed mode, wherein multiple pulses impinge on a given location, said pulses of said laser light penetrating said portions of ocular tissue to a depth of approximately 1–300 microns so that said leading edge of said first portion of ocular tissue may be securely welded to said leading edge of said second portion of ocular tissue, said laser light having a wavelength of approximately 10.6 microns and a power output level sufficient to maintain said portions of ocular tissue at a temperature of approximately 45–60 degrees Celsius during said applying of said laser light.

5,620,436
METHOD AND APPARATUS FOR PROVIDING PRECISE LOCATION OF POINTS ON THE EYE
Stefan Lang, Munich, Germany, and David R. Clonts, Houston, Tex., assignors to Chiron Technolas GmbH Ophthalmologische Systeme, Germany
Continuation of Ser. No. 310,656, Sep. 22, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 672,307
Int. Cl.[6] A61B *17/36*; **A61N** *5/02*
U.S. Cl. 606—4 **13 Claims**



1. A computer system based method of accurately aiming a pulsed laser beam onto an eye in a system with a low power registration laser beam for providing a laser spot on the eye indicating where a shot of the pulsed laser beam will strike the eye the low power registration laser beam being parallel to the pulsed laser beam;
an aiming system controlled by the computer system for adjusting the aim of the pulsed laser beam and the registration laser beam onto the eye;
a computer system controlled eye tracking device that tracks a fixed point on the eye, that provides central point coordinates of a central point on the eye, and that provides registration coordinates of where the registration laser beam strikes the eye relative to the tracked central point on the eye; and
the computer system running ablation profile software for calculating next shot coordinates of where on the eye relative to the central point on the eye a next pulse of the pulsed laser beam should be fired, the method comprising the compute system operated steps of;
calculating the next shot coordinates:
generating an error vector by comparing the registration coordinates of where the low power registration laser beam strikes the eye relative to the tracked central point of the eye to the next shot coordinates of where the next pulse of the pulsed laser beam should be fired relative to the tracked central point of the eye;
adjusting the aim of the pulsed laser beam and the registration laser beam using the aiming system in response to said generated error vector; and
firing a pulse of the pulsed laser beam after said adjusting step.

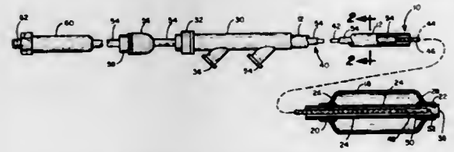
5,620,437
OPERATION APPARATUS FOR CORRECTING AMETROPIA WITH LASER BEAM
Toshifumi Sumiya, Nukata-gun, Japan, assignor to Nidek Co., Ltd., Japan
Division of Ser. No. 113,063, Aug. 30, 1993, Pat. No. 5,470,329. This application Nov. 27, 1995, Ser. No. 563,005
Claims priority, application Japan, Aug. 31, 1992, 4-257276
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—5 **3 Claims**



1. An apparatus for ablating the cornea of an eye by a laser beam of ultraviolet rays to correct hypermetropia of the eye, comprising:
a laser source for emitting a laser beam;
a optical system for reflecting and directing the laser beam onto a cornea;
a diaphragm for restricting an irradiation area within a circle area about an apex of the cornea, disposed in an optical path of the optical system;
irradiation area restricting means having a beam shading boundary line intersecting the meridian of the cornea at right angles, disposed in the optical path of the optical system, the means restricting the irradiation area of the laser beam with the irradiation boundary line intersecting the meridian of the cornea in cooperation with the diaphragm and changing a distance from the apex of the cornea to the irradiation boundary line;

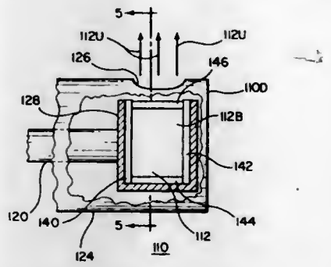
beam rotating means for rotating the irradiation area of the laser beam formed by the diaphragm and the irradiation area restricting means about the apex of the cornea, the beam rotating means being controlled to cover all meridians of the cornea and to be in a same depth at a position of the same radius as one cycle of the irradiation of the laser beam; and
control means for controlling the laser source, the irradiation area restricting means and the beam rotating means to provide a first small amount of irradiation at a central portion of the cornea and to provide a second amount of irradiation larger than said first amount around a peripheral portion thereof, so that the curvature of the cornea's optical zone is made larger than before the cornea is ablated.

5,620,438
METHOD AND APPARATUS FOR TREATING VASCULAR TISSUE FOLLOWING ANGIOPLASTY TO MINIMIZE RESTENOSIS
Curtis A. Amplatz, St. Paul, Minn.; Christopher H. Porter, Woodinville, Wash., and Mark A. Rydell, Golden Valley, Minn., assignors to AngioMedics II Incorporated, Minneapolis, Minn.
Filed Apr. 20, 1995, Ser. No. 425,858
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—10 **15 Claims**



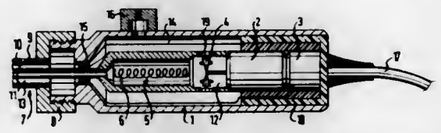
1. Apparatus for treating the wall of a lumen of a tubular vessel to modify the tissue for therapeutic benefit comprising, in combination:
(a) a catheter having an elongated, flexible tubular catheter body with a proximal end, a distal end portion, first and second lumens extending through the tubular body and an inflatable balloon of a predetermined length dimension disposed proximate the distal end portion of the tubular catheter body and in fluid communication with the first lumen, both the distal end portion of the tubular catheter body and the inflatable balloon being made from a radiant energy-transmissive material;
(b) an elongated, flexible, radiant energy-emitting fiber having a proximal end and a distal end, the radiant energy-emitting fiber being coaxially disposed in the second lumen and extending from the proximal end of the tubular catheter body to the distal end portion, the radiant energy-emitting fiber being displaceable longitudinally within the second lumen;
(c) the radiant energy-emitting fiber including an elongated, flexible optical waveguide core having an elastomeric jacket thereon, the jacket having a segment extending beyond a distal end of the core, the segment comprising the radiant energy diffusing element;
(d) a reinforcing tubular member coaxially disposed about the jacket and extending from the proximal end of the radiant energy-emitting fiber toward, but short of, the distal end of the radiant energy-transmissive fiber by a predetermined length dimension greater than the predetermined length dimension of the diffusing element;
(e) means for supplying the radiant energy-emitting fiber from a source of radiant energy of a selected wavelength and energy insufficient to effect tissue necrosis; and
(f) means coupled to the proximal end of the catheter body and to the radiant energy-emitting fiber for controllably longitudinally displacing the distal end of the radiant energy-emitting fiber along the predetermined length dimension of the balloon to expose a wall surface of the lumen of the tubular vessel to radiant energy of a predetermined wavelength.

5,620,439
CATHETER AND TECHNIQUE FOR ENDOVASCULAR MYOCARDIAL REVASCULARIZATION
George S. Abela, 80 Longfellow Rd., Wellesley, Mass. 02181, and H. Paul Maruska, Acton, Mass., assignors to George S. Abela, E. Lansing, Mich., and Spire Corporation, Bedford, Mass.
Filed Jun. 6, 1995, Ser. No. 468,474
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—11 **35 Claims**



1. A catheter for treating a patient comprising:
an optical fiber connected to the proximal end interface and extending towards a distal end; a catheter body extending in a lengthwise direction from a proximal end to a distal end and defining a circumferential direction around the lengthwise direction; an interface located at the proximal end for receiving laser energy external to a patient;
a distal laser mounted at the distal end of the catheter body and operable to receive laser energy from the optical fiber and operable to use the received laser energy as pumping energy to generate an output laser beam exiting from the catheter;
an outer hood mounted to the catheter body adjacent the distal end and having an opening disposed therein, the opening disposed to allow the output laser beam to pass therethrough; and
a flushing solution channel interior to the catheter body and connected to supply flushing solution to the opening.

5,620,440
MEDICAL INSTRUMENT FOR APPLYING HOT GAS
Helmut Heckele, Knittlingen; Manfred Boebel, Ötisheim, and Detlev Branscheid, Ahrensburg, all of Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany
Filed Nov. 14, 1994, Ser. No. 338,331
Claims priority, application Germany, Nov. 13, 1993, 43 38 866.3
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—28 **13 Claims**



1. An instrument for applying hot gas for heat treatment and coagulation of tissue in a body cavity, comprising:
a double-walled shaft forming two coaxial tubes which respectively define a first channel and a second channel, the shaft having a proximal end and a distal end;
heating means arranged at the proximal end of the shaft for heating up insufflation gas in the body cavity;
fan means arranged at the proximal end of the shaft for drawing the gas into an outer one of the tubes at the distal end of the shaft, back through the outer tube to the heating means and

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fan means at the proximal end of the shaft, and circulating the heated gas through an inner one of the tubes from the proximal end to the distal end; and

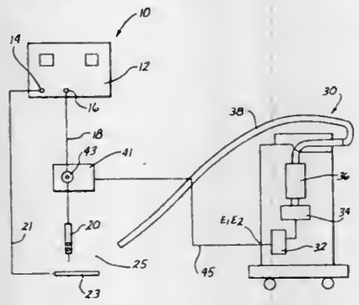
temperature sensing means arranged in each of the tubes for sensing gas temperature within the tubes.

5,620,441

SMOKE EVACUATOR REMOTE ON/OFF SWITCH APPARATUS AND METHOD

Richard J. Greff, and David W. Tung, both of Yorba Linda, Calif., assignors to Stackhouse, Inc., Riverside, Calif.

Filed Jun. 15, 1994, Ser. No. 260,084
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—32 **12 Claims**



1. Apparatus for controlling operation of a smoke evacuator in response to operation of a surgical tool, which produces smoke as a side effect when performing a surgical function, comprising:

an electrosurgical power generator for activating the surgical tool in order to perform a surgical function at a surgical site;

means coupled to the power generator for introducing the power from the generator to the tool to enable the tool to perform a surgical function at the surgical site, the introducing means having a first state when the power is being introduced to the tool and a second state when the power is not being introduced to the tool;

sensor means coupled to the introducing means and responsive to the introduction of power from the generator to the tool for producing a transition signal when the introducing means changes state from one of the first state and the second state to the other of the first state and second state;

switch means including a switch and being responsive to the transition signal for momentarily closing the switch when the introducing means changes state;

a smoke evacuator for removing from the surgical site smoke produced by the surgical tool, the evacuator having an activated state and a deactivated state; and

control means included in the evacuator and responsive to momentary closure of the switch by the switch means for changing the state of the evacuator from one of the activated state and deactivated state to the other of the activated state and deactivated state.

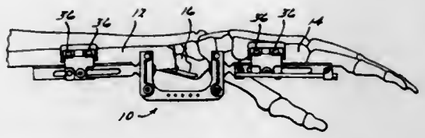
5,620,442

METHOD AND APPARATUS FOR EXTERNAL FIXATION OF SMALL BONES

Kirk J. Bailey, 7 Crescent South, Andover, N.J. 07821; Sean P. Curry, 927 Castle Point Ter., Hoboken, N.J. 07030, and John S. Mahaffey, 57 Duck Hawk Ct., Hackettstown, N.J. 07840

Filed May 12, 1995, Ser. No. 439,696
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—54 **20 Claims**

1. An apparatus for securing a first bone portion in a fixed relationship to a second bone portion, the apparatus comprising:



a first bone screw connected to the first bone portion;

a second bone screw connected to the second bone portion;

means for receiving said first bone screw, said means for receiving said first bone screw having a spherical portion;

means for receiving said second bone screw, said means for receiving said second bone screw having a spherical portion; and

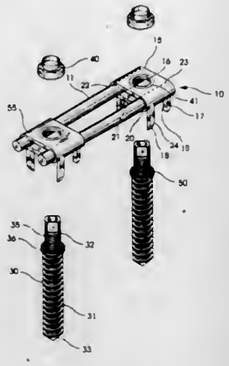
means for securing said means for receiving said first bone screw to said means for receiving said second bone screw, said means for securing being operative to at least partially define a radiographic window to permit radiographic examination of the fixed relationship of the first and second bone portions in a direction substantially parallel to said first bone screw, said radiographic window extending directly between said spherical portion of said means for receiving said first bone screw and said spherical portion for said means for receiving said second bone screw.

5,620,443

ANTERIOR SCREW-ROD CONNECTOR

Stanley Gertzbein, Houston, Tex., and Michael C. Sherman, Memphis, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Filed Jan. 25, 1995, Ser. No. 377,658
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **13 Claims**



9. A transverse fixator assembly for spanning between a pair of longitudinal members situated adjacent a patient's vertebrae, comprising:

a number of connectors each having a lower bone engagement surface and an upper surface, each of said connectors configured to span a distance between said members and engageable to said members, each of said connectors defining a thru-hole for engaging a bone bolt; and

a number of spikes projecting from said lower surface of each said connector, said spikes configured to engage a vertebra;

a bone bolt for each of said connectors, said bone bolt including,

a vertebra engaging portion on a first end,

a threaded post on a second end, said post insertable through said thru-hole of said connector, and

an integral flange between said vertebra engaging portion and said post for supporting said connector;

a threaded nut for each of said bolts, said nut engageable to a bolt to secure a connector to a bolt; and

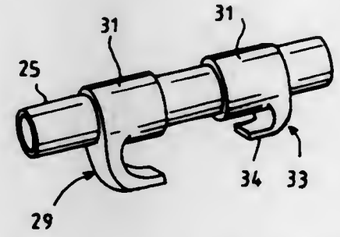
a locking mechanism configured to prevent the bolt from rotating relative to said connector and the vertebra when the threaded nut is being threaded onto said post.

5,620,444

CLAMP FOR STABILIZING A CERVICAL SPINE SEGMENT

Richard Assaker, Kain, Belgium, assignor to Sofamor S.N.C., Rang-du-Fliers, France

PCT No. PCT/EP94/02906, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO95/06440, PCT Pub. Date Mar. 9, 1995
PCT Filed Sep. 1, 1994, Ser. No. 433,364
Claims priority, application France, Sep. 3, 1993, 93 10528
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **14 Claims**



10. Spine osteosynthesis device, comprising: a first tubular spinal rod configured to extend longitudinally along a spine segment; and at least one first anchorage member comprising a first tubular body portion and an anchorage portion; said first tubular body portion sized to allow a sliding fit with said first spinal rod and consequently an adjustment of the relative position of said first anchorage member and said first spinal rod, said first spinal rod and said first tubular body portion being mechanically crimped together so as to fix said first body portion in said relative position along said first spinal rod.

5,620,445

MODULAR INTRAMEDULLARY NAIL

Robert Brosnahan, 2936 Waterleaf, Germantown, Tenn. 38138; Anthony James, 3605 Millie Dr., Bartlett, Tenn. 38135; Harry Lee, 7110 Pecan La., South Haven, Miss. 38617, and Thomas A. Russell, 667 Arbor Edge Cir., Apt. 301, Memphis, Tenn. 38103

Filed Jul. 15, 1994, Ser. No. 275,806
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—63 **10 Claims**



1. A modular intramedullary nail, comprising:

a) a proximal nail component;

b) a distal nail component;

c) a central nail component having proximal and distal end portions that are respectively connected during use to the proximal and distal nail components to define therewith upon assembly a modular intramedullary nail unit having a generally smooth continuous outer surface of generally uniform outer diameter and that is free of sharp curves, enabling the assembled nail unit to be surgically inserted into a patient's intramedullary canal;

d) connecting portions for securing the proximal and distal nail components to the respective proximal and distal end portions of the central nail component, the connecting portions including corresponding male and female conical connector sections, the conical connector sections being tapered at about the same angle so they can be fitted and secured together;

e) the connecting portions including self orienting interlocking portions on the proximal and distal nail components adjacent the conical sections for resisting relative rotational movement between the components;

f) said interlocking portions comprising at least in part a plurality of flat surfaces carried by the male conical connector section and a correspondingly shaped plurality of flat surfaces carried by the female connector section; and

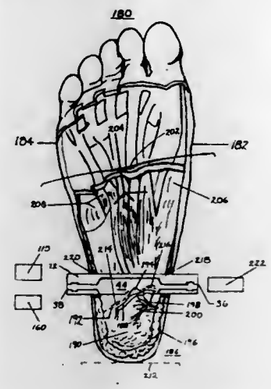
wherein the central nail component is much larger than either of the proximal or distal nail components.

5,620,446

SURGICAL APPARATUS FOR PERFORMING ENDOSCOPIC SURGERY AT LOCATIONS WHERE TISSUE INSERTS INTO BONE

Gregory McNamara, Lowell, Mass., and William E. Donahue, Mayfield Heights, Ohio, assignors to Endoscopic Heel Systems, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 84,859, Jun. 29, 1993, Pat. No. 5,429,117, which is a division of Ser. No. 914,192, Jul. 14, 1992, Pat. No. 5,253,659. This application Jun. 7, 1995, Ser. No. 481,841
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—79 **36 Claims**



7. An instrument for use in cutting tissue, said instrument comprising:

a. an elongated shaft having proximal and distal ends;

b. a handle attachable to said proximal end;

c. locking means at said proximal end for releasably attaching a handle to said shaft, and

d. said distal end having a forward portion having generally rounded corners and extending generally transversely from said shaft, a cutting portion, and means at a lower end of said cutting portion for guiding said forward portion without exposing said cutting portion to the tissue while guiding the instrument.

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5,620,447

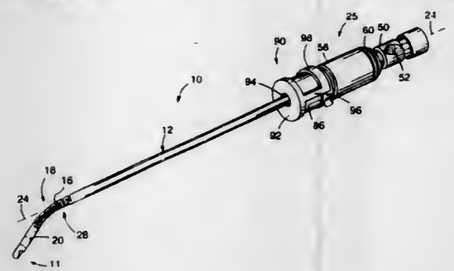
SURGICAL INSTRUMENT

Graham Smith, Plaistow; Peter M. Cessarini, Londonderry, both of N.H., and Steven B. Woolfson, Brookline, Mass., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Continuation of Ser. No. 200,662, Feb. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 11,364, Jan. 29, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,743

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—79 **74 Claims**



1. A surgical instrument disposed generally along an axis, said surgical instrument comprising

a first member that extends distally from a base and has an opening in a distal region thereof for admitting tissue, said first member including a bend region that angularly offsets said distal region of said first member from said axis so that said distal region is aligned with a distal axis,

a second member for moving a cutting implement and causing it to cut tissue that is exposed to said implement through said opening, and

a rotator coupled to said first member for rotating said first member with respect to said base to rotate said opening around to said distal axis, said distal axis and said distal region remaining aligned as said first member rotates with respect to said base.

5,620,448

BONE PLATE SYSTEM FOR OPENING WEDGE PROXIMAL TIBIAL OSTEOTOMY

Giancarlo Puddu, Rome, Italy, assignor to Arthrex, Inc., Naples, Fla.

Filed Mar. 24, 1995, Ser. No. 440,306

Int. Cl.[6] A61F *5/00*

U.S. Cl. 606—87 **13 Claims**

1. A method of correcting a deformity by performing an osteotomy in a bone at an osteotomy site using a plurality of bone plates, each bone plate having two ends, a width, a proximal side, and a distal side, the distal side having a projection with a length and a depth, and a tool having a distal end and a proximal end, the distal end including a wedge having a tapered thickness and two prongs, the two prongs being separated by a distance greater than the bone plate width, the method comprising the steps of:

(a) forming an incision over the osteotomy site;

(b) resecting the bone from a first side of the bone to a second side of the bone, leaving a bony hinge on the second side;

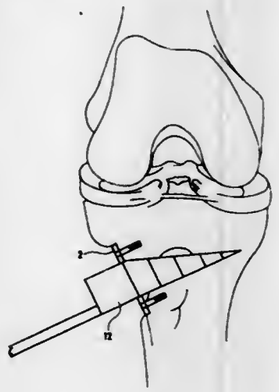
(c) wedging open the resection by inserting the tool to a depth at which the deformity is corrected;

(d) selecting a bone plate having a projection length equal to the thickness of the tool at the deformity-correcting depth;

(e) placing the selected bone plate between the two prongs of the tool;

(f) inserting the projection into the resection opening such that plate spans the resection, the two ends of the plate contacting the first side of the bone;

(g) securing the two ends of the plate to the bone on the first side of the bone so as to maintain the projection within the resection opening.



5,620,449

MECHANICAL SYSTEM FOR BLIND NAIL-HOLE ALIGNMENT OF BONE SCREWS

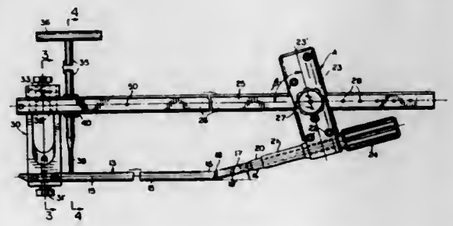
Giovanni Faccioli, Monzambano; Stefano Rossi, Verona, both of Italy, and William C. Oppenheim, Short Hills, N.J., assignors to Orthofix, S.r.l., Bussolengo, Italy

Continuation-in-part of Ser. No. 310,622, Sep. 22, 1994, abandoned. This application Mar. 8, 1995, Ser. No. 401,094

Claims priority, application Italy, Jul. 28, 1994, VR94A0069

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—98 **41 Claims**



13. In combination, an intramedullary nail having one or more transverse bone-screw holes, and a drill jig for use in mechanically aligning a drill guide with one or more of said transverse bone-screw holes after the intramedullary nail has been installed in a fractured tibia, wherein the intramedullary nail has (i) a proximal end adapted for jig attachment and (ii) a single bent portion near said proximal end and (iii) a straight remaining elongate portion extending distally of said bent portion and having said one or more holes, whereby a sagittal plane of symmetry is defined by said bent and remaining portions;

said jig comprising an elongate guide bar of constant non-circular section, and a handle having means for keyed selective connection to the proximal end of the nail such that said handle extends transversely of the nail and in said sagittal plane, said handle having a guide for said guide bar for retaining said guide bar in said sagittal plane of the nail and parallel to said elongate remaining portion of the nail;

outrigger structure removably carried by said guide bar and extending laterally outboard of said sagittal plane and having an outer end with one or more drill-guide bores in general alignment with said one or more holes; and

a spacer rod adapted for removable mounting to said guide bar in the sagittal plane of the nail and near said outrigger structure and of such length as to contact said nail when the one or more drill-guide bores of said outrigger structure are truly aligned with the one or more holes of said nail.

5,620,450

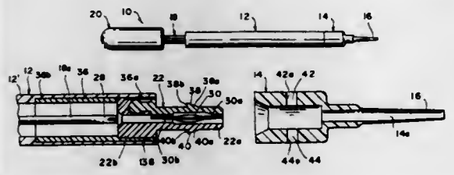
TRANSVERSE HINGED DEFORMABLE INTRAOCULAR LENS INJECTING APPARATUS

Daniel C. Eagles, Capistrano Beach; Vladimir Feingold, Laguna Niguel, and Thomas J. Chamber, Upland, all of Calif., assignors to Staar Surgical Company, Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 368,792, Jan. 4, 1995, Ser. No. 345,360, Nov. 18, 1994, Ser. No. 197,604, Feb. 17, 1994, Pat. No. 5,499,987, Ser. No. 196,855, Feb. 15, 1994, and Ser. No. 953,251, Sep. 30, 1992, abandoned. This application Oct. 25, 1995, Ser. No. 547,295

Int. Cl.[6] A61F *9/00*

U.S. Cl. 606—107 **12 Claims**



1. A surgical apparatus for implantation of a deformable intraocular lens through a small incision in the eye, comprising:

a lens injecting device including a slidable plunger and a lens cartridge receiver;

a lens cartridge having a lens delivery passageway therethrough, said lens cartridge having a rear portion disposed within said lens cartridge receiver of said lens injecting device, said lens cartridge including a front portion with an upper lid portion and a lower tray portion, said upper lid portion connected to said lower tray portion by a transverse hinge oriented transversely relative to said lens delivery passageway to allow the lens cartridge to be opened and closed for loading the deformable intraocular lens into said lens cartridge;

a nozzle portion including a lens cartridge receiver accommodating said front portion of said lens cartridge receiver, said nozzle portion when assembled onto said front portion of said lens cartridge maintaining said upper lid portion and said lower tray portion in a closed configuration, said nozzle portion including a lens delivery passageway continuous with said lens delivery passageway of said lens cartridge; and

a locking arrangement between said lens injecting device and said lens cartridge engaging, when said lens cartridge is loaded into said lens cartridge receiver of said lens injecting device.

5,620,451

LEAD EXTRACTION SYSTEM FOR TRANSVENOUS DEFIBRILLATION LEADS AND FOR ENDOCARDIAL PACING LEADS

John P. Rosborough, Houston, Tex., assignor to Intermedics, Inc., Angleton, Tex.

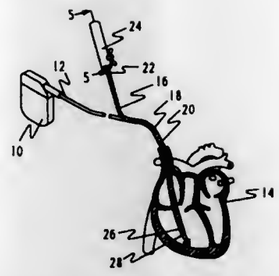
Filed Apr. 25, 1995, Ser. No. 428,450

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—108 **27 Claims**

1. A lead extraction system comprising

a coiled, flexible ribbon having a distal end and a proximal end, said flexible ribbon forming a tube adapted to fit over an implanted lead, successive turns of said ribbon lying adjacent one another and spaced apart from one another such that said lead can be passed between two successive turns of said ribbon from an outside of said tube to an inside thereof, and means attached to said distal end of said ribbon for severing fibrous ingrowth surrounding said lead.



5,620,452

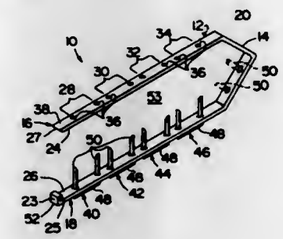
SURGICAL CLIP WITH DUCTILE TISSUE PENETRATING MEMBERS

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Dec. 22, 1994, Ser. No. 361,823

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—151 **16 Claims**



1. A surgical clip comprising

a base and at least two generally opposed arms extending from said base;

an aperture formed in a first of said arms; and

a ductile tissue penetrating member carried by a second of said arms in opposed relation to said aperture;

said ductile tissue penetrating member having a length to pass through said aperture and be bent against said first arm when said arms are moved toward one another.

5,620,453

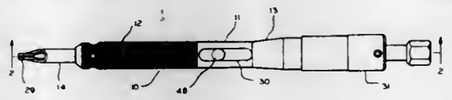
SURGICAL KNIFE WITH RETRACTABLE BLADE AND DEPTH OF CUT CONTROL

Ravi Nallakrishnan, 26 Plaza Dr., Westmont, Ill. 60559

Continuation of Ser. No. 147,847, Nov. 5, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,849

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—166 **3 Claims**



1. A surgical knife, said knife comprising:

a substantially straight, hollow, generally cylindrical handle terminating in first and second ends and having a central, axially-extending passageway;

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a plunger assembly positioned within and axially moveable along said passageway to an extended position and a retracted position;

a blade holder assembly to which a surgical cutting blade is mounted,

said blade holder assembly positioned within said passageway,

said blade holder assembly axially moveable along said passageway responsive to the movement of said plunger assembly to extend said cutting blade from said first knife handle end and to retract said cutting blade into said knife handle;

a footplate attached to said first knife handle end;

means for setting a depth of cut of said cutting blade; and

means to retain said blade holder assembly in said extended position,

said retaining means includes means formed on said plunger assembly for engaging mating means formed on an interior surface of said knife handle.

5,620,454

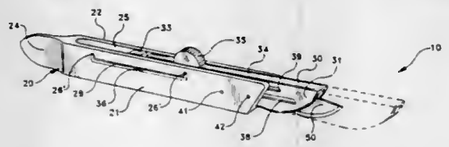
GUARDED SURGICAL SCALPEL

Robert W. Pierce, Wrentham; Nell Jolly, Brighton, and Richard V. Kennedy, Hyannis, all of Mass., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 25, 1994, Ser. No. 328,996

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **5 Claims**



1. A guarded surgical scalpel device, comprising:

a handle having a distal end, a proximal end and a longitudinal axis and two generally parallel side walls and defining a cavity therein, at least one of the side walls defining a slot that is generally parallel to the longitudinal axis of the handle and that has an upturned portion at both ends;

a movable guard disposed in the cavity for longitudinal movement with respect to the handle, the guard having two parallel side walls generally parallel to the two parallel side walls of the handle and a top wall with a distal end and a proximal end that is generally perpendicular to the two parallel side walls of the guard and that is movable in a direction perpendicular to the longitudinal axis of the handle; and

a pin mounted on the guard adjacent to the proximal end of the top wall and generally parallel to the top wall and generally perpendicular to the two parallel side walls of the guard so as to extend into the slot whereby movement of the top wall of the guard in a direction perpendicular to the longitudinal axis of the handle moves the pin out of engagement with the upturned portions of the slot.

5,620,455

MULTI-FUNCTION INSTRUMENT FOR PEDICURE OPERATIONS OR THE LIKE

Luigina Grigoletto, Via Monte Nero 18/A, 36027 Cusinati di Rosa' (Prov. of Vicenza), Italy

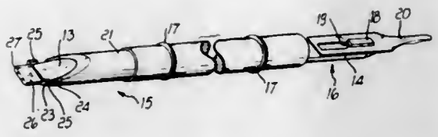
Filed May 26, 1995, Ser. No. 451,623

Claims priority, application Italy, Jun. 2, 1994, PD94A0102

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **20 Claims**

1. Multi-function instrument for pedicure and manicure operations, comprising: a substantially rod-like body, said body having at least one grip region; at least one coupling region; at least one main tool for coupling to said coupling region; at least one cap for



said at least one main tool; and at least one secondary tool, said at least one cap being connected to said at least one secondary tool;

wherein said at least one main tool comprises a blade fixed to said coupling region by means of an anchoring device, said anchoring device comprising a profiled sleeve that couples snugly and detachably to said coupling region and has a bracket-like protrusion, said coupling region being chisel-shaped, and said bracket-like protrusion including: a surface that faces a longitudinal axis of said sleeve; a seat arranged transversely with respect to the longitudinal axis of said sleeve; and two raised portions formed on said surface and arranged on opposite lateral edges of the bracket-like protrusion; said blade being shaped complementarily with respect to said bracket-like protrusion.

5,620,456

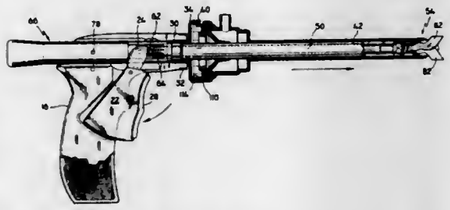
TROCAR ASSEMBLY

Jude S. Sauer, Pittsford; Roger J. Greenwald, Holley; Mark A. Bovard, Palmyra, and Thomas A. Tiberio, Webster, all of N.Y., assignors to Lasersurge, Inc., Rochester, N.Y.

Filed Oct. 20, 1995, Ser. No. 546,168

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—185 **35 Claims**



9. A surgical trocar, which comprises:

a cannula;

an obturator configured for insertion into the cannula, the obturator including proximal and distal end portions;

at least two overlapping blade members for cutting tissue, the blade members sharing a common pivot point and supported at the distal end portion of the obturator for movement away from the obturator;

an actuating mechanism associated with the obturator and operatively connected to the blade members, the actuating mechanism including a trigger member movable to cause movement of the blade members to a deployed position at least partially exposed beyond the cannula.

5,620,457

CATHETER BALLOON

Gregory Pinchasik, and Jacob Richter, both of Ramat Hasharon, Israel, assignors to Medinol Ltd., Tel Aviv, Israel

Filed Nov. 23, 1994, Ser. No. 344,815

Int. Cl.[6] A61M *29/00*

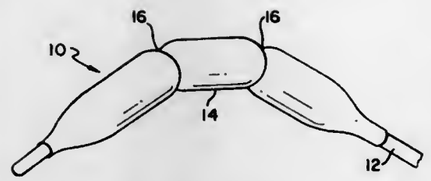
U.S. Cl. 606—194 **6 Claims**

1. A balloon catheter comprising:

a catheter tube;

at least one inflatable balloon attached to said catheter tube; and

at least one ring-like shaped narrowing device for narrowing the diameter of said at least one inflatable balloon at least at one



portion thereof; said narrowing device comprising a zig-zagged ring.

5,620,458

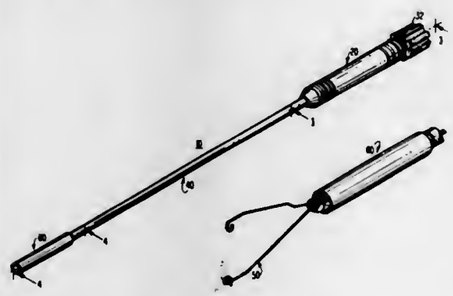
SURGICAL INSTRUMENTS USEFUL FOR ENDOSCOPIC SPINAL PROCEDURES

David T. Green, Westport; Salvatore Castro, Seymour; Carlo A. Mililli, Huntington; Keith Ratcliff, Sandy Hook, and Michael Castro, Seymour, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 16, 1994, Ser. No. 213,963

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—198 **24 Claims**



1. An endoscopic surgical instrument for spreading vertebrae comprising:

a handle portion including a manually operable member;

an elongated endoscopic portion connected to said handle portion and extending distally therefrom, said endoscopic portion defining a longitudinal axis and having proximal and distal end portions;

a vertebrae spreading mechanism movably mounted with respect to said endoscopic portion, said vertebrae spreading mechanism including first and second vertebrae spreading arm members;

an actuation mechanism at least partially housed within said endoscopic portion and movable in response to movement of said manually operable member, said actuation mechanism including at least one camming element engageable with said first and second arm members to move said arm members from a closed to an open position, said first and second arm members deployable in a general transverse direction with respect to said longitudinal axis in response to movement of said manually operable member such that said first and second arm members remain in general parallel relation during deployment.

5,620,459

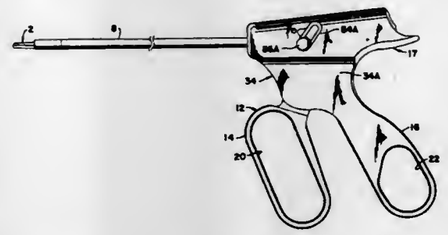
SURGICAL INSTRUMENT

Philip R. Lichtman, Newton, Mass., assignor to Microsurge, Inc., Needham, Mass.

Continuation of Ser. No. 26,489, Mar. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 869,535, Apr. 15, 1992, Pat. No. 5,318,589. This application Apr. 25, 1995, Ser. No. 428,275

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—205 **46 Claims**



1. A surgical instrument comprising:

a handle housing with a first handle member affixed thereto, and at least first and second concentrically arranged shafts extending longitudinally away from said housing, said first and second shafts each having proximal and distal ends with said proximal ends extending into said handle housing, said second shaft being affixed to said housing at its proximal end so as to be immobile with respect to said housing, and said first shaft surrounding said second shaft and being arranged to translate longitudinally with respect to said second shaft;

a jaw unit carried by said distal end of said second shaft, said jaw unit comprising at least two jaws, a rear section, and intermediate leaf spring elements connecting each of said jaws to said rear section, said leaf spring elements biasing said jaws so that when said leaf spring elements are unrestrained, said jaws are deployed in angular spaced relation with one another;

said first shaft having a length such that when said first shaft is caused to translate towards the distal end of said second shaft, the distal end of said first shaft will slide over said jaw unit and mechanically cause said jaws to close towards one another;

translation means for causing said first shaft to translate longitudinally relative to said second shaft, said translation means comprising a second handle member mounted for pivotal movement relative to said first handle member, gear rack means on said proximal end of said first shaft, and gear means coupled to said second handle member and engaged with said gear rack means for causing reciprocal movement of said first shaft relative to said second shaft, whereby to cause said first shaft to move into and out of jaw closing relation with said jaws; and

cooperating pawl and teeth means located within said housing for preventing movement of said first shaft relative to said second shaft in a first direction while permitting relative movement in a second opposite direction.

5,620,460

SURGICAL NEEDLE HOLDER

James R. Smith, Flat 2, 193 Sutherland Avenue, Little Venice, London W9 1ET, England

Continuation of Ser. No. 216,398, Mar. 23, 1994, Pat. No. 5,487,749. This application Jun. 22, 1995, Ser. No. 493,604

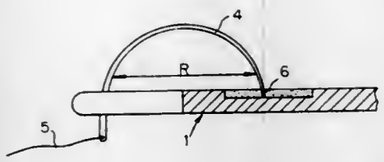
Claims priority, application United Kingdom, Mar. 24, 1993, 9306080

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—205 **8 Claims**

1. A surgical needle holder which comprises:

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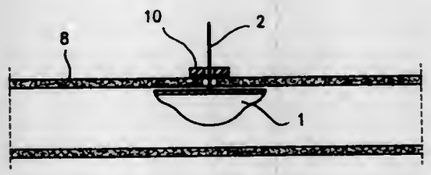
a) a pair of elongate members which are linked together at a pivot point in scissors-like fashion and which include projecting jaw portions forming jaws for releasably holding a surgical needle; and

a pair of handle portions for opening and closing the jaws, each said handle portion comprising an elongated portion extending between a handle portion grip and said pivot point, said elongated portion widening into an enlarged portion containing said pivot point, each said handle portion including an outer and an inner side, inner sides of said pair of handle portions facing each other, wherein one of said handle portions further comprising means for retaining a tip of the surgical needle in a position wherein the needle tip is contained so as to be inoperative when the projecting jaw portions are closed, said retaining means provided in an outer side of at least one of said pair of handle portions and including a surface depression in said enlarged portion of said handle portion, said surface depression containing said surgical needle so as to be inoperative.

5,620,461
SEALING DEVICE

Wouter M. Muijs Van De Moer, Grindweg 56, 3055 VB Rotterdam, and Rienk Rienks, Mennestraat 17, 3882 An Putten, both of Netherlands

Continuation of Ser. No. 187,788, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 781,091, Oct. 22, 1991, abandoned. This application Jan. 5, 1995, Ser. No. 369,264
Claims priority, application Netherlands, May 29, 1989, 8901350; WIPO, May 29, 1990, PCT/NL90/00078
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—213 **28 Claims**

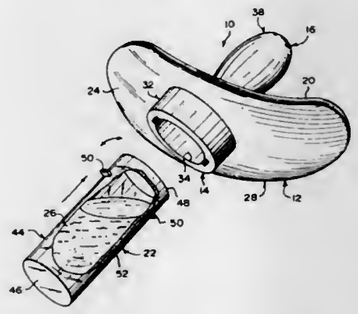


1. A sealing device for percutaneously sealing a percutaneously made puncture in a blood vessel having a vessel wall with inner and outer wall surfaces, said sealing device comprising a first element which is constructed and arranged to be percutaneously inserted into the blood vessel; a fixation attachment connected to the first element, said first element being repositionable after insertion into the blood vessel to engage against the inner wall surface, and a second element constructed and arranged to be inserted percutaneously and be moved over the fixation attachment toward and adjacent the wall of the blood vessel and into cooperative relation with said first element about said puncture in said blood vessel to thereby seal the puncture in the blood vessel.

5,620,462
LIQUID VITAMIN AND MEDICINE DISPENSER FOR INFANTS AND TODDLERS

Diane L. Valenti, 152 Holiday Blvd., Center Moriches, N.Y. 11934

Filed May 1, 1995, Ser. No. 431,436
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—234 **3 Claims**



1. A liquid vitamin and medicine dispenser for infants and toddlers comprising:

a) a flexible mask contoured to the shape of a mouth of an infant/toddler to provide support, said flexible mask being a curved bean-shaped disk, said flexible mask being fabricated out of a molded plastic material;

b) a lock assembly centrally mounted into said flexible mask, said lock assembly being a hollow cylindrical housing having a socket on the outer side of said flexible mask to receive said vial therein, said lock assembly being fabricated out of a solid hard plastic;

c) a nipple having a pinhole therein secured into said lock assembly on an inner side of said flexible mask, so that the infant/toddler can suck on said nipple, said nipple being a compressible hollow bulb-shaped member having a beaded neck, which is retained within said lock assembly, said nipple being fabricated out of a latex material; and

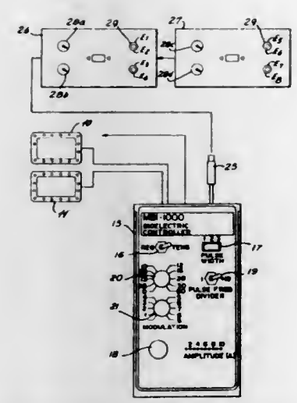
d) a vial mounted in a removable manner into said lock assembly on an outer side of said flexible mask, so that a liquid vitamin/medicine can be placed into said vial to flow into said nipple, allowing the infant/toddler to suck the liquid out of said nipple, said vial being a cylindrical body having a closed end and an open end, to hold the liquid vitamin/medicine therein, said vial including a pair of oppositely disposed lock tabs adjacent the open end, which when inserted into said lock assembly will be retained therein in the removable manner, with the open end up against said nipple.

5,620,463
ELECTROPHYSIOLOGICAL CONDITIONING SYSTEM AND METHOD

Roland A. Drolet, Quebec, Canada, assignor to Free World Trust, Phoenix, Ariz.

PCT No. PCT/CA92/00538, § 371 Date Aug. 30, 1994, § 102(e) Date Aug. 30, 1994, PCT Pub. No. WO93/12835, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 9, 1992, Ser. No. 256,015
Claims priority, application Canada, Dec. 20, 1991, 2058179
Int. Cl.[6] A61N *1/18;2/04*
U.S. Cl. 607—3 **30 Claims**

1. An electrophysiological conditioning system comprising generator means, said generator means feeding one or more conditioning applicators with specific signals, said specific signals being adjustable so as to generate in combination desired magnetic and electric conditioning field signals, said applicators being electromagnetic and/or electrode conditioning applicators, means to measure effective conditioning magnetic field parameters, said parameters including the intensity and the direction or polarity of the said magnetic field parameters, said means to measure said parameters allowing for precise or desired readjustments of said magnetic field parameters to desired values in predetermined areas or spacial volumes in the space surrounding the said one or more electromagnetic conditioning applicators, said magnetic and electric conditioning field signals have a critical damping or nearly critical damping characteristic waveform, said conditioning system having adjustment means for the adjustment or choice of polarity of the said conditioning signals, said conditioning applicators including one or more electromagnetic coil applicators and one or more pairs of electrodes connected to an associated one of said generator means through predetermined interface circuit means, said conditioning system being characterized in that said interface circuit means allows for independent adjustments of the said electric conditioning field signals to desired values and this independently of the amplitude or intensity of the chosen and effective magnetic conditioning field signals which are provided in combination, said conditioning system being capable of producing said conditioning field signals having a peak amplitude in the range of approximately 0.01 to 5 millivolts per centimeter of voltage per unit length in the close surrounding of said one or more electromagnetic applicators, for the said conditioning signals induced by means of said magnetic field signals in the space surrounding the said one or more electromagnetic coil applicators, and a peak amplitude in the range of approximately 1 to 200 volts between the two electrodes of said one or more pairs of electrodes for the said electric conditioning field signals.



5,620,464
SYSTEM AND METHOD FOR DELIVERING MULTIPLE CLOSELY SPACED DEFIBRILLATION PULSES

Mark W. Kroll, Minnetonka; Dennis A. Brumwell, Bloomington, and Ann M. Donohoo, Shorview, all of Minn., assignors to Angelon Corporation, Plymouth, Minn.

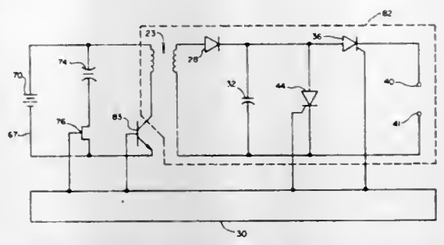
Continuation-in-part of Ser. No. 993,094, Dec. 18, 1992, Pat. No. 5,407,444, and a continuation-in-part of Ser. No. 993,292, Dec. 18, 1992, Pat. No. 5,383,907. This application Jan. 23, 1995, Ser. No. 376,353
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **18 Claims**

1. A main energy delivery electrical circuit for use in an implantable cardioverter defibrillator device, comprising:

a) a low power output primary defibrillator battery;

b) a high power output intermediate power intensifying capacitor system;

c) switch means, electrically connected to the intensifying capacitor system and the primary defibrillator battery, for selectively switching between the primary defibrillator battery and the intensifying capacitor system;



d) a high voltage transformer system electrically connected to the switch means; and

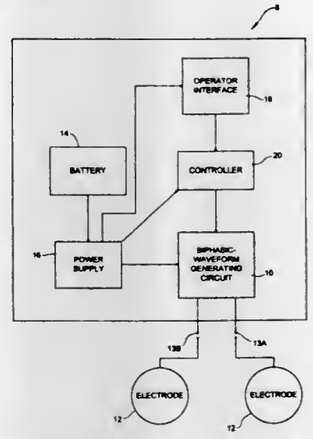
a main energy delivery capacitor system connected to the transformer system for storing, in a first pulse to be discharged, an electrical charge from the primary defibrillator battery and for storing, as at least one subsequent pulse to be discharged, an electrical charge derived from the intensifying capacitor system,

such that the electrical circuit permits the implantable cardioverter defibrillator device to deliver multiple closely spaced defibrillation pulses to a heart.

5,620,465
EXTERNAL DEFIBRILLATOR FOR PRODUCING AND TESTING BIPHASIC WAVEFORMS

Kenneth F. Olson, Minneapolis, and Byron L. Gilman, Plymouth, both of Minn., assignors to SurvivaLink Corporation, Minneapolis, Minn.

Filed Jun. 8, 1995, Ser. No. 490,831
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **10 Claims**



1. An external defibrillator device for testing the efficacy of biphasic waveform defibrillation pulses including:

a power supply;

pulse generating circuitry coupled to the power supply for generating monophasic waveform and biphasic waveform defibrillation pulses;

an interface actuated by an operator during patient rescues; and

control means for controlling the operation of the pulse generating circuitry wherein the control means is coupled to the pulse generating circuitry and the interface, and wherein the control means causes the pulse generating circuitry to sequentially generate at least one biphasic waveform defibrillation pulse before generating monophasic waveform defibrillation pulses in response to sequential actuations of the interface during a patient rescue.

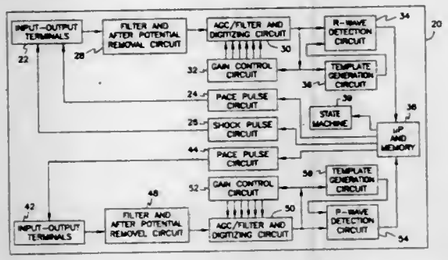
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5,620,466

DIGITAL AGC USING SEPARATE GAIN CONTROL AND THRESHOLD TEMPLATING

Paul A. Haefner, Crystal; Mark A. Stockburger, Inver Grove Heights, and William J. Linder, Golden Valley, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Aug. 14, 1995, Ser. No. 514,612
Int. Cl.[6] A61N *1/08*; A61B *5/04*
U.S. Cl. 607—5 **58 Claims**



27. A system for automatically adjusting a sensing threshold in a cardioverter/defibrillator having a pulse circuit for generating shock pulses based on a detect signal representing cardiac events indicated in electrical activity of a heart, the system comprising:

an amplifier for amplifying the electrical activity of the heart according to a variable gain;

a cardiac depolarization detector for detecting depolarizations in the amplified electrical activity of the heart and providing the detect signal representing a cardiac event indicative of a depolarization when the amplified electrical activity exceeds a variable sensing threshold;

gain controller for adjusting the variable gain of the amplifier based on amplitudes of the amplified electrical activity of at least three detected cardiac events; and

threshold controller for acquiring amplitudes of the amplified electrical activity and for adjusting the variable sensing threshold to a level proportional to the acquired amplitude of the amplified electrical activity of a current detected cardiac event and for decreasing the variable sensing threshold from said level in discrete steps until the variable sensing threshold is at a low threshold value.

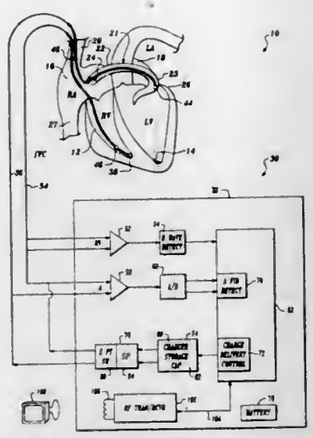
5,620,467

IMPLANTABLE ATRIAL DEFIBRILLATOR HAVING CARDIOVERTING OUTPUT VOLTAGE LIMITING FOR SIMULATING LARGER STORAGE CAPACITORS

Darrell O. Wagner, Gold Bar, Wash., assignor to InControl, Inc., Redmond, Wash.

Filed Oct. 10, 1995, Ser. No. 541,682
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—5 **5 Claims**

1. In an implantable atrial defibrillator which includes a storage capacitor for storing electrical energy, switch means for discharging at least a portion of the stored energy into a patient's heart as a discharge voltage and charging means for charging the storage capacitor with the stored energy to a peak pre-discharge voltage, the improvement comprising limiting means for precluding the discharge voltage from exceeding a voltage limit, the voltage limit being a substantially constant fraction of the peak pre-discharge voltage.

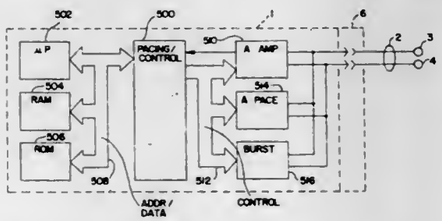


5,620,468

METHOD AND APPARATUS FOR TREATMENT OF ATRIAL FIBRILLATION

Luc R. Mongeon; Michael R. S. Hill, both of Minneapolis, and Rahul Mehra, Stillwater, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 230,578, Apr. 21, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 627,959
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **26 Claims**



1. An anti-arrhythmia device, comprising:

means for detecting atrial fibrillation in a patient's heart;

electrode means for delivering pulse bursts to said patient's heart;

pulse generator means responsive to detection of atrial fibrillation for delivering series of low energy pulse bursts unsynchronized to depolarizations of said patient's heart to said electrode means.

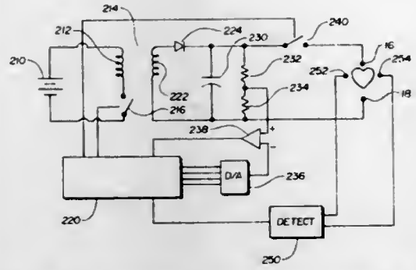
5,620,469

STEPPED CARDIOVERSION SYSTEM FOR AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR

Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Oct. 11, 1994, Ser. No. 321,389
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—7 **26 Claims**

13. An improved implantable cardioverter defibrillator system for treating ventricular tachycardias, the implantable cardioverter defibrillator system being a self-contained human implantable



device that includes a high voltage pulse-generating capacitor means for storing an electrical charge, an energy means for internally charging the pulse-generating capacitor means, means for detecting a ventricular tachycardia in a human patient and a control means for selectively discharging the electrical charge as an electrical countershock to be delivered through at least two electrodes adapted for implantation in the human patient in response to a means for detecting, the improvement comprising:

the control means further including:

means for delivering a first cardioversion countershock of a first low energy value of less than about 4.99 joules from the pulse-generating capacitor means; and

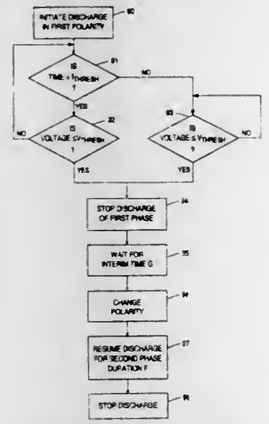
means for delivering at least a second cardioversion countershock of a second low energy value of less than about 4.99 joules from the pulse-generating capacitor means, the second low energy value being greater than the first low energy value.

5,620,470

ELECTROTHERAPY METHOD

Bradford E. Gliner, Bellevue; Thomas D. Lyster, Bothell; Clinton S. Cole, Kirkland; Daniel J. Powers, and Carlton B. Morgan, both of Bainbridge Island, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Continuation of Ser. No. 601,593, Feb. 14, 1996, abandoned, which is a division of Ser. No. 103,837, Aug. 6, 1993. This application May 24, 1996, Ser. No. 653,386
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—7 **18 Claims**



1. A method for applying electrotherapy to a patient through electrodes external to a patient, the electrodes being electrically connected in a first predetermined polarity to an energy source charged to an initial level, the method comprising the following steps:

discharging the energy source across the electrodes until the end of a predetermined time period or until an electrical unit measured across the electrodes decays to a first predetermined terminal level, whichever occurs first; and

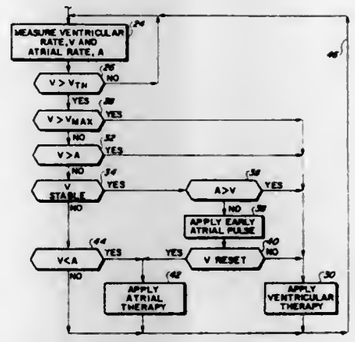
if the end of the predetermined time period occurs before the electrical unit decays to the first predetermined level, extending the discharging step until the electrical unit reaches a second predetermined level.

5,620,471

SYSTEM AND METHOD FOR DISCRIMINATING BETWEEN ATRIAL AND VENTRICULAR ARRHYTHMIAS AND FOR APPLYING CARDIAC THERAPY THEREFOR

James L. Duncan, Alpharetta, Ga., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Jun. 16, 1995, Ser. No. 491,560
Int. Cl.[6] A61N *1/36;1/362;1/365;1/368*
U.S. Cl. 607—14 **26 Claims**



1. An implantable cardiac stimulating device for monitoring and stimulating the heart of a patient, the cardiac stimulating device comprising:

means for measuring intrinsic atrial and ventricular heart rates;

rate determining means for determining whether the ventricular heart rate is less than, equal to or exceeds the atrial heart rate;

ventricular stimulation means for applying ventricular stimulation therapy to the heart when the rate determining means determines that the ventricular heart rate exceeds the atrial heart rate;

stability determining means for determining whether the ventricular heart rate is stable, wherein a stable ventricular heart rate provides an indication that the rhythm is a tachycardia and an unstable ventricular heart rate provides an indication that the rhythm requires further testing to determine if it is of natural origin;

atrial pulse generating means for applying an atrial stimulation pulse to the heart at a rate slightly faster than the measured intrinsic atrial heart rate;

reset determining means for determining whether the ventricular heart rate is reset by the atrial stimulation pulse, whereby the resetting of the ventricular heart rate provides an indication that the ventricle is tracking the atrium; and

atrial stimulation means for applying atrial stimulation therapy to the heart when:

the stability determining means determines that the ventricular heart rate is stable;

the rate determining means determines that the atrial heart rate is equal to the ventricular heart rate; and

the reset determining means determines that the ventricular heart rate is reset by the atrial stimulation pulse, thereby indicating that the ventricle is tracking the atrium and an atrial arrhythmia is present.

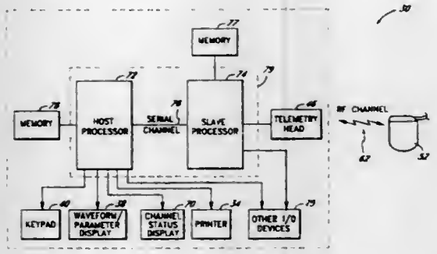
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5,620,472

APPARATUS AND METHOD FOR DYNAMICALLY INTERPRETING AND DISPLAYING A REAL-TIME TELEMETRY LINK

Azita M. Rahbari, Newbury Park, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 12, 1995, Ser. No. 372,489
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—27 **62 Claims**



1. An external monitoring apparatus having a communication channel for transmitting signals representing data between a cardiac stimulation device implanted within a human body and the external monitoring apparatus, comprising:

a telemetry head, connected to the external monitoring apparatus, having means for transmitting and receiving radio frequency signals, defined by a plurality of parameters, over the communication channel;

means for measuring at least one parameter of the radio frequency signals, the measured parameter being indicative of the quality of the communication channel;

means for evaluating the quality of the communication channel based on the value of the measured parameter; and

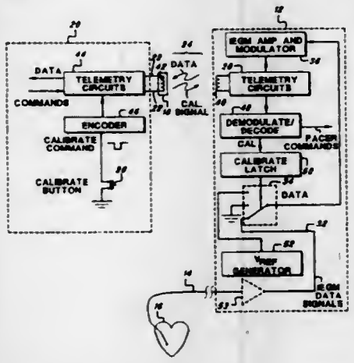
means for displaying at least one graphical representation indicative of the quality to an operator.

5,620,473

CALIBRATION SYSTEM FOR PACEMAKER-GENERATED INTRACARDIAC ELECTROGRAM

John W. Poore, South Pasadena, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 8, 1995, Ser. No. 400,646
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—27 **25 Claims**



22. An implantable pacemaker comprising:

means for sensing intracardiac electrogram (IEGM) signals;

means for telemetering the IEGM signals to a remote receiver;

a voltage source that provides a first reference voltage having a fixed magnitude;

means for receiving a calibrate signal; and

switch means responsive to receipt of the calibrate signal for adding the first reference voltage to the IEGM signals telemetered to the remote receiver for a prescribed time period;

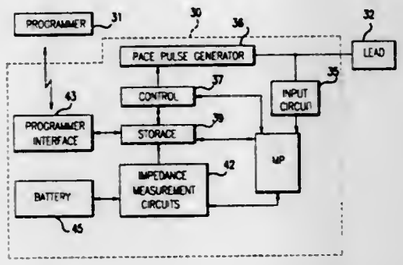
the fixed magnitude of the first reference voltage thereby providing a way to calibrate the magnitude of the IEGM signals.

5,620,474

SYSTEM AND METHOD FOR DETERMINING INDICATED PACEMAKER REPLACEMENT TIME BASED UPON BATTERY IMPEDANCE MEASUREMENT

Jan Koopman, Dieren, Netherlands, assignor to Vitatron Medical, B.V., Dieren, Netherlands

Filed Apr. 24, 1995, Ser. No. 427,418
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—29 **17 Claims**



1. A programmable implantable pacemaker, said pacemaker having a battery which provides energy to said pacemaker, said battery having at least one parameter which changes with cumulative expenditure of energy to said pacemaker, a controllable pulse generator for generating pace pulses, and programming means for programming said pacemaker to operate under a programmed set of operating conditions, said pacemaker further comprising:

measuring means for obtaining an actual measure of the actual value of said battery parameter;

means tier storing a reference measure of said battery parameter which is representative of a cumulative battery expenditure which correlates to desired pacemaker replacement at a time when said pacemaker still has at least a predetermined remaining time of operation;

calculating means for calculating said reference measure to provide a calculated value of said reference measure when said operating conditions are changed by said programming means, said calculating being a function of said changed conditions, and including determining that said calculated value corresponds to when said pacemaker still has at least said predetermined remaining time of operation, and for storing said calculated value as said reference measure: and

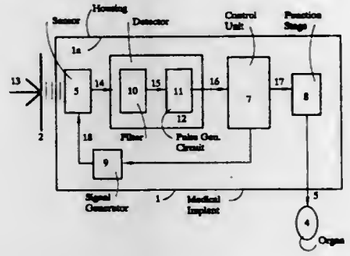
comparison means for automatically comparing said actual measure with said reference measure and providing a replacement time indication as a function of said comparison.

5,620,475

EXTRACORPOREALLY CONTROLLABLE MEDICAL IMPLANT AND METHOD FOR OPERATING SAME

Peter Magnusson, Nacka, Sweden, assignor to Siemens Elema AB, Solna, Sweden

Filed Apr. 14, 1995, Ser. No. 421,780
Claims priority, application Sweden, Apr. 25, 1994, 9401402
Int. Cl.[6] A61N *1/08*
U.S. Cl. 607—30 **8 Claims**



1. A medical implant comprising:

an implantable housing;

function implementation means in said housing for implementing one of a plurality of functions relating to administration of therapy to a patient in whom said housing is implanted;

sensor means in said housing for sensing a series of extracorporeally generated shockwave pulses, said pulses having intervals therebetween, and for generating an electrical signal having a series of electrical pulses with respective intervals therebetween corresponding to the intervals between said shockwave pulses;

measuring means in said housing for measuring a duration of each interval in said electrical signal;

means in said housing for comparing the duration of each interval in said electrical signal, as measured by said measuring means, to each of a first predetermined time interval and a second predetermined time interval longer than said first predetermined interval, and for assigning each duration as being of said first predetermined time interval or of said second predetermined time interval and for producing an output interval sequence of first and second predetermined time intervals dependent on the comparison of the respective durations for all intervals in said electrical signal;

memory means in said housing for storing a plurality of interval sequences respectively corresponding to said plurality of functions;

means in said housing for comparing said output interval sequence to said interval sequences of said memory means for storing; and

means in said housing for, if coincidence exists between said output interval sequence and one of said plurality of interval sequences, controlling said function implementation means to implement the function corresponding to said one of said plurality of interval sequences.

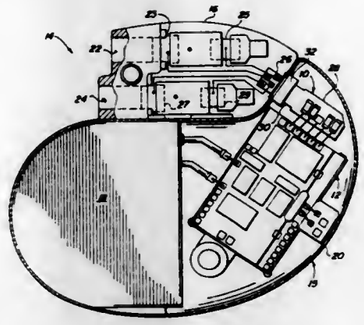
5,620,476

IMPLANTABLE MEDICAL DEVICE HAVING SHIELDED AND FILTERED FEEDTHROUGH ASSEMBLY AND METHODS FOR MAKING SUCH ASSEMBLY

Buehl E. Truex, Glendora; Scott R. Gibson, Granada Hills, and Alvin H. Weinberg, Moorpark, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 13, 1995, Ser. No. 565,204
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—36 **19 Claims**

9. In an implantable medical device having a hermetically sealed housing, said housing including a wall and enclosing electronic circuits for producing electrical stimulating pulses, an improved system for electrically connecting the electronic circuits with an implantable lead, the improved system comprising:



at least one connector block for making electrical contact with the implantable lead;

an elongated multilayered structure having a first portion for disposition outside the hermetically sealed housing, an opposite second portion for disposition inside the hermetically sealed housing and an intermediate portion between the first and second portions adapted to be disposed, in hermetically sealed fashion, within the wall of the hermetically sealed housing, the multilayered structure including a generally planar array of printed conductors disposed between opposite layers of electrically insulating material and extending between the first and second portions, at least one connector pad coupled to the generally planar array of printed conductors at the first portion for coupling to the at least one connector block, and at least one contact coupled to the generally planar array of printed conductors at the second portion for coupling to the electronic circuits of the implantable medical device;

conductive means for electrically connecting the at least one connector block and the at least one connector pad at the first portion of the multilayered structure; and

a connector assembly attached to the hermetically sealed housing enclosing the at least one connector block, the first portion of the multilayer structure and the conductive means therein.

5,620,477

PULSE GENERATOR WITH CASE THAT CAN BE ACTIVE OR INACTIVE

Benjamin D. Pless, Atherton; Steven M. Mitchell, Palo Alto, and M. Elizabeth Bush, Fremont, all of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 221,811, Mar. 31, 1994, abandoned. This application May 31, 1995, Ser. No. 455,824
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—37 **12 Claims**

1. An implantable cardiac stimulator comprising:

a pulse generator case;

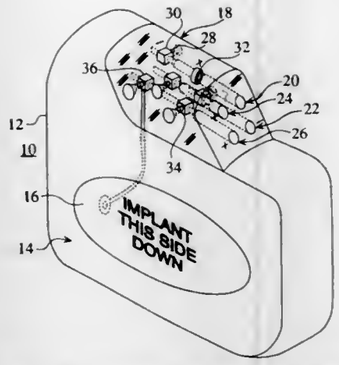
defibrillation pulse generator circuitry housed in said case;

a header attached to said case, said header including at least first and second cavities;

said first cavity having a contact for making an electrical connection; and

said second cavity having a first contact for making an electrical connection and a second contact electrically connected to at least a portion of said case, wherein said second contact of said second cavity further includes a switch, said switch being

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triggerable by insertion of a pin into said second cavity, and wherein triggering said switch activates said at least a portion of said case for use as an electrode.

5,620,478

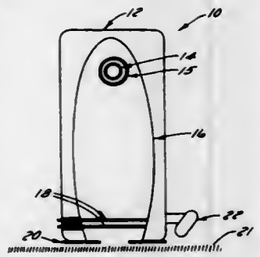
METHOD AND APPARATUS FOR THERAPEUTIC ELECTROMAGNETIC TREATMENT

Shimon Eckhouse, Haifa, Israel, assignor to ESC Medical Systems Ltd., Yokneam, Israel

Continuation-in-part of Ser. No. 383,509, Feb. 3, 1995, which is a continuation-in-part of Ser. No. 964,210, Oct. 20, 1992, Pat. No. 5,405,368. This application Jun. 7, 1995, Ser. No. 477,479

Int. Cl.[6] A61N *5/06*

U.S. Cl. 607—88 **12 Claims**



1. A therapeutic treatment method comprising the steps of applying a cooling gel adapted to cool the surface of a treatment are to the treatment area, providing a pulsed light output for treatment, and directing the pulsed light output to the treatment area.

5,620,479

METHOD AND APPARATUS FOR THERMAL THERAPY OF TUMORS

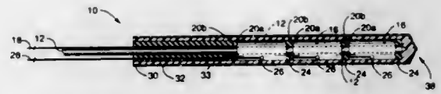
Chris J. Diederich, Novato, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 332,997, Nov. 1, 1994, which is a continuation-in-part of Ser. No. 291,336, Aug. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 83,967, Jun. 25, 1995, Pat. No. 5,391,197, which is a continuation-in-part of Ser. No. 976,232, Nov. 13, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 383,472

Int. Cl.[6] A61F *7/00*; **A61B** *17/20*

U.S. Cl. 607—97 **33 Claims**

1. An apparatus for applying thermal therapy to tissue, comprising:



(a) a tubular ultrasound transducer;
(b) a cylindrical support member, said support member extending coaxially through said transducer;
(c) a power lead, said power lead electrically connected to said transducer;
(d) a sealant coating over said transducer; and
(e) an outer cover over said sealant coating, wherein said sealant coating is disposed between and in contact with said transducer and said outer cover, and wherein said transducer is thereby directly implantable in a patient.

5,620,480

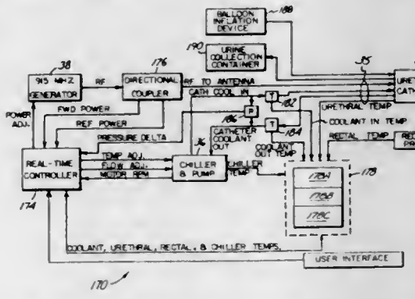
METHOD FOR TREATING BENIGN PROSTATIC HYPERPLASIA WITH THERMAL THERAPY

Eric N. Rudie, Inver Grove Heights, Minn., assignor to Urologix, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 208,642, Mar. 9, 1994, Pat. No. 5,464,445, which is a continuation of Ser. No. 847,718, Mar. 6, 1992, Pat. No. 5,413,588. This application Sep. 20, 1994, Ser. No. 309,137

Int. Cl.[6] A61N *5/02*

U.S. Cl. 607—101 **10 Claims**



1. A method for treating tissues adjacent to a body lumen, the method comprising:
inserting a catheter into the body lumen so as to position an energy emitting element located within the catheter adjacent to the tissues to be treated;
circulating a fluid between the energy emitting element and the tissues to be treated;
cooling the fluid to a predetermined temperature for a predetermined period of time; and
energizing the energy emitting element after the predetermined period of time to heat the tissues to be treated.

5,620,481

DEVICE FOR MULTI-PHASE RADIO-FREQUENCY ABLATION

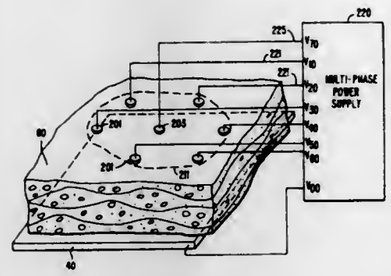
Jawahar M. Desai, 8755 Petite Creek Way, Roseville, Calif. 95661, and Htay L. Nyo, 682 N. 5th St., Apt. 3, San Jose, Calif. 95112

Continuation-in-part of Ser. No. 318,427, Oct. 5, 1994, which is a continuation of Ser. No. 726,035, Jul. 5, 1991, Pat. No. 5,383,917. This application Jun. 7, 1995, Ser. No. 482,936

Int. Cl.[6] A61N *5/00*

U.S. Cl. 607—101 **1 Claim**

1. A radio-frequency ablation apparatus for biological tissues, comprising:



an electrode catheter having an array of electrodes;
an auxiliary electrode in electrical contact with the biological tissues; and
means for supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and said auxiliary electrode to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.

5,620,482

INFLATABLE THERMAL BLANKET WITH A FOOT DRAPE

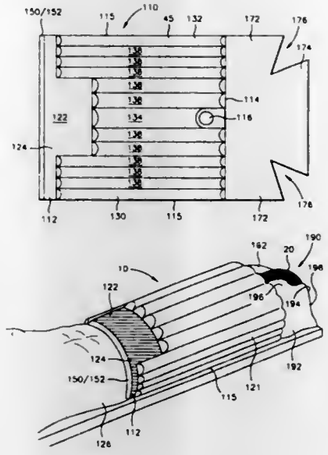
Scott D. Augustine, Bloomington, and Randall C. Arnold, Maplewood, both of Minn., assignors to Augustine Medical, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 242,780, May 16, 1994, abandoned, which is a division of Ser. No. 638,748, Jan. 8, 1991, Pat. No. 5,405,371, which is a continuation-in-part of Ser. No. 550,757, Jul. 10, 1990, Pat. No. 5,531,237, which is a continuation-in-part of Ser. No. 227,189, Aug. 2, 1988, Pat. No. 5,406,234, which is a contiouation-in-part of Ser. No. 104,682, Oct. 5, 1987, abandoned. This application Feb. 15, 1995, Ser. No. 388,730

Int. Cl.[6] A61F *7/00*

U.S. Cl. 607—107 **19 Claims**

1. A thermal blanket for covering and bathing a person in a thermally-controlled inflating medium, comprising:
a flexible base sheet having a head end, a foot end, two edges, and a plurality of apertures;
an overlaying flexible sheet attached to a first surface of the base sheet by a plurality of seals which form a plurality of communicating inflatable chambers between the base sheet and the material sheet, the apertures opening through the base sheet into the chambers;
a continuous seam between the overlaying material sheet and the base sheet near the periphery of the thermal blanket; and
a non-inflatable foot drape formed by an extension of the base sheet at the foot end of the thermal blanket.



5,620,483

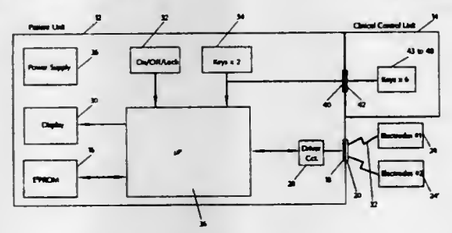
PORTABLE PHYSIO-THERAPY APPARATUS

Conor M. Minogue, Kinvarra, Ireland, assignor to BMR Research & Development Limited, Bunberg, Ireland

Filed Apr. 17, 1995, Ser. No. 423,521

Int. Cl.[6] A61N *1/08*

U.S. Cl. 607—115 **6 Claims**



1. A physio-therapy apparatus for applying electrical stimulation to a human patient, the apparatus comprising a portable housing having first and second portions, said first housing portion containing a memory for storing at least one therapy program defining the characteristics of electrical signals to be applied to the patient, first electrical connector means for connecting external stimulation electrodes to the housing, and a microprocessor for driving the electrodes according to said at least one therapy program, and said second housing portion having a plurality of manual control elements for controlling the microprocessor to modify at least some of the electrical signal characteristics of said at least one therapy program, wherein said second housing portion is detachably connected to said first housing portion by a second electrical connector means whereby said electrical signal characteristics cannot be modified without said second housing portion being attached to said first housing portion.

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5,620,484

COMPOSITIONS AND PROCESSES FOR DYEING KERATIN FIBRES WITH 6-HYDROXYINDOLINE AND OXIDATION BASES AT ACID PH'S

Mireille Maubru, Chatou, France, assignor to L'Oreal, Paris, France

Filed Feb. 27, 1996, Ser. No. 607,722
Claims priority, application France, Feb. 27, 1995, 95 02273
Int. Cl.[6] A61K 7/13
U.S. Cl. 8—409 24 Claims

1. A ready-to-apply composition for the oxidation dyeing of keratin fibres, which composition comprises, in a medium which is suitable for dyeing:

an effective amount to dye said keratin fibres of at least one oxidation base selected from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols, heterocyclic bases and the acid addition salts of said oxidation bases,

an effective amount to dye said keratin fibres of at least one coupler selected from 6-hydroxyindoline and acid addition salts of said compound, and

at least one oxidizing agent,

wherein the pH of said ready-to-apply composition is less than 7.

5,620,485

SILICONE FOAM CONTROL AGENTS FOR HYDROCARBON LIQUIDS

Kenneth C. Fey, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 15, 1995, Ser. No. 574,421
Int. Cl.[6] C10L 1/28
U.S. Cl. 44—320 18 Claims

1. An organopolysiloxane compound having its formula selected from

(i) $RR^1R^2SiO(R_2SiO)_a(RR^1SiO)_b(RR^2SiO)_cSiRR^1R^2$,

(ii) $RR^1R^2SiO(R_2SiO)_a(RR^2SiO)_cSiRR^1R^2$,

(iii) $RR^1R^2SiO(R_2SiO)_a(RR^1SiO)_bSiRR^1R^2$, or

(iv) $RR^1R^2SiO(R_2SiO)_aSiRR^1R^2$

wherein R is a monovalent hydrocarbon group having from 1 to 20 carbon atoms, R^1 is R or a group having its formula selected from

(v) $-R^3-O-(CH_2CH_2O)_d-(CH_2CH(CH_3)O)_e-R^4$,

(vi) $-R^3-O-(CH_2CH_2O)_d-R^4$,

or

(vii) $-R^3-O-(CH_2CH(CH_3)O)_e-R^4$

wherein R^3 is a divalent hydrocarbon group having from 1 to 20 carbon atoms, R^4 is selected from a hydrogen atom, an alkyl group, an aryl group, or an acyl group, d has a value of from greater than zero to 150, and e has a value of from greater than zero to 150, R^2 is selected from R, a group having the formula $-R^3-C_6H_5$, or a group having the formula $-R_3-O-C_6H_5$ wherein R^3 is as defined above, a has a value of from greater than zero to 1000, b has a value of from greater than zero to 100, and c has a value of greater than zero to 100, with the proviso that there is at least one group having its formula selected from formula (v), (vi), or (vii) as defined above and at least one group having its formula selected from $-R^3-C_6H_5$ or $-R^3-O-C_6H_5$ per molecule.

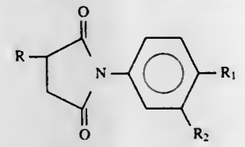
5,620,486

FUEL COMPOSITIONS CONTAINING ARYL SUCCINIMIDES

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Dec. 30, 1994, Ser. No. 366,534
Int. Cl.[6] C10L 1/22
U.S. Cl. 44—347 27 Claims

1. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an effective detergent amount of a compound of the formula:



wherein R is a hydrocarbyl group having an average molecular weight of about 600 to 2,000; and

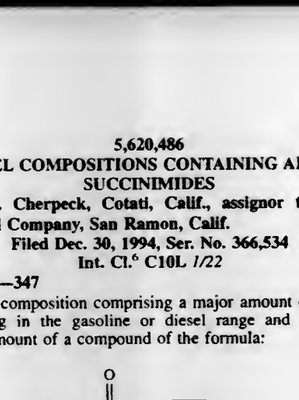
R_1 and R_2 are independently selected from the group consisting of hydrogen, hydroxy, $-CO_2H$, $-NO_2$, and $-NR_3R_4$, wherein R_3 and R_4 are independently hydrogen or lower alkyl of 1 to 6 carbon atoms; provided that R_1 and R_2 cannot both be hydrogen and further provided that when one of R_1 and R_2 is $-NR_3R_4$ or CO_2H, the other may not be hydrogen.

5,620,487

HIGH PERFORMANCE, MULTI-STAGE, PRESSURIZED, AIRBLOWN, ENTRAINED FLOW COAL GASIFIER SYSTEM

Herbert E. Andrus, Jr., Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 999,511, Dec. 30, 1992, abandoned. This application Nov. 9, 1994, Ser. No. 336,440
Int. Cl.[6] C10J 3/76
U.S. Cl. 48—76 1 Claim



1. In a high performance, multi-stage, pressurized, airblown, entrained flow gasifier system for gasifying coal to produce product gas therefrom including a first vessel embodying a first stage wherein char is burned producing slag and generating a temperature therewithin of approximately 3500 degrees F., a second stage wherein char is gasified producing product gas and a third stage wherein coal is devolatilized producing char, the first vessel including first char injection means for injecting into the first stage the char that is burned therewithin, air injection means for injecting into the first stage the air required for the burning of the char therewithin, second char injection means for injecting into the second stage the char that is gasified therewithin, coal injection means for injecting into the third stage the coal that is devolatilized therewithin, slag tap means provided at a first location in the first vessel for discharging the slag from the first vessel and outlet

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means provided at a second location in the first vessel for discharging the product gas having char entrained therewithin from the first vessel, and a second vessel located in surrounding relation to the first vessel such that an annulus is formed between the first vessel and the second vessel, the annulus being filled so that the pressure therewithin is greater than the pressure existing in the first vessel such that if a leak occurs within the first vessel the direction of flow will be from the annulus into the first vessel, the improvement comprising:

a. a heat exchanger located in juxtaposed relation to the first vessel downstream thereof and connected in fluid flow relation therewith for receiving directly from the first vessel the product gas having char entrained therewithin, said heat exchanger having water flowing therein and being operative to effect therewithin as a consequence of a heat exchange between the product gas having char entrained therewithin and the water flowing in said heat exchanger the production of the steam required for the operation of the high performance, multi-stage, pressurized, airblown, entrained flow gasifier system and the cooling of the product gas having char entrained therewithin, said heat exchanger having outlet means connected in fluid flow relation with the annulus for discharging from said heat exchanger to the annulus a first portion of the steam produced in said heat exchanger solely sufficient to fill the annulus with steam at a pressure greater than the pressure within the first vessel;

b. a separator device located downstream of said heat exchanger and connected in fluid flow relation therewith for receiving therefrom the product gas having char entrained therewithin after the product gas entrained therewithin has been sufficiently cooled in said heat exchanger, said separator device being operative to effect the separation therewithin of the char from the product gas, said separator device including first outlet means for discharging the product gas from said separator device, said separator device further including second outlet means connected in fluid flow relation with said outlet means of said heat exchanger for discharging the char from said separator device into the remaining portion of the steam produced in said heat exchanger such that the remaining portion of the steam from said heat exchanger solely constitutes all of the steam that is required for purposes of effecting therewith the transport of the char separated in said separator device to the first char injection means for injecting into the first vessel and to the second char injection means for injecting into the second stage of the first vessel;

c. sulfur removal means comprising limestone/dolomite injection means for injecting limestone/dolomite into the third stage of the first vessel such that the limestone/dolomite is operative to react with any sulfur present in the first vessel to form sulfur compounds that become entrained in the product gas within the first vessel and are discharged with the product gas from the first vessel through the outlet means thereof: and

d. slag baffle means comprising a slag baffle supported in the second stage of the first vessel in spaced relation to the sidewalls thereof, said slag baffle being operative to block the central portion of the first vessel so as to cause any slag falling from the second stage into the first stage of the first vessel to fall outward of the slag tap opening in the first vessel.

5,620,488

METHOD OF FLUIDIZED-BED GASIFICATION AND MELT COMBUSTION

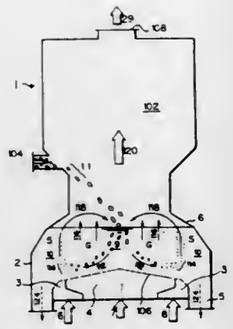
Yoshio Hirayama; Takahiro Oshita, both of Kanagawa-ken; Chikashi Tame, Tokyo; Shuichi Nagato, Kanagawa-ken; Tetsuhisa Hirose, Tokyo; Norihisa Miyoshi, Kanagawa-ken; Seiichiro Toyoda, Tokyo; Shugo Hosoda, Kanagawa-ken; Shosaku Fujinami, and Kazuo Takano, both of Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,370

Claims priority, application Japan, Mar. 10, 1994, 6-065439; Apr. 15, 1994, 6-101541; Feb. 9, 1995, 7-022000

Int. Cl.[6] C10J *3/54;* **B09B** *3/00;* **F22B** *1/00;* **F27B** *15/16*

U.S. Cl. 48—197 R **29 Claims**



1. A method of gasifying combustible material to produce combustible gas, said method comprising:

providing within a furnace of circular horizontal cross-sectional configuration a circular bed of fluidized medium;

introducing from a central portion of a bottom of said furnace below said bed an upward stream of a central fluidizing gas into a central portion of said bed;

introducing from a peripheral annular portion of said bottom of said furnace an upward stream of an annular fluidizing gas, surrounding said central fluidizing gas stream, into an annular portion of said bed surrounding said central portion thereof, said annular fluidizing gas having an oxygen content, and said annular fluidizing gas stream being introduced into said annular portion of said bed at a mass flow velocity that is greater than a mass flow velocity of said central fluidizing gas stream, to actively fluidize upwardly said annular portion of said bed to thereby form an annular fluidized beds;

deflecting centrally inwardly said upward annular fluidizing gas stream and upwardly fluidized medium of said annular fluidized bed by an annular inclined wall of said furnace, thereby directing the thus deflected fluidized medium centrally onto said central portion of said bed, and thus forming a central moving bed in which said fluidized medium settles downwardly;

thereby creating a recirculating flow of said fluidized medium centrally downwardly in said central moving bed, then radially outwardly from a lower part of said central moving bed to a lower part of said annular fluidized bed, then upwardly in said annular fluidized bed, and then centrally radially inwardly from an upper part of said annular fluidized bed back to said central moving bed;

providing a total oxygen content of said central and annular fluidizing gas streams to create a reducing atmosphere in said furnace;

introducing a supply of combustible material onto said central moving bed such that said combustible material is moved downwardly with said fluidizing medium therein, and thereby gasifying a volatile component of said combustible material and generating combustible gas and char;

flowing said combustible gas upwardly from said central moving bed of fluidized medium;

passing said char from said lower part of said central moving bed to said lower part of said annular fluidized bed and distributing said char uniformly throughout said annular fluidized bed; and

combusting at least a portion of said char in said annular fluidized bed by the oxygen of said annular fluidizing gas flowing upwardly therethrough, thereby substantially consuming said oxygen within said annular fluidized bed and substantially preventing said oxygen from passing upwardly through said annular fluidized bed to combust said combustible gas above said circular bed, and thereby heating said fluidized medium that is flowed from said annular fluidized bed back to said central moving bed, thus serving as a heat source for further gasification of the volatile component of further said combustible material.

5,620,489

METHOD FOR MAKING POWDER PREFORM AND ABRASIVE ARTICLES MADE THEREFORM

Naum N. Tselesin, Atlanta, Ga., assignor to Ultimate Abrasive Systems, L.L.C., Atlanta, Ga.

Continuation of Ser. No. 225,251, Apr. 8, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,388

Int. Cl.[6] B24D *18/00*

U.S. Cl. 51—293 **62 Claims**

1. In a method for making an abrasive article wherein a plurality of abrasive particles and a quantity of powdered sinterable matrix material are combined together and sintered to form the article, the improvement comprising forming a soft, easily deformable and flexible preform from a mixture of said quantity of powdered sinterable matrix material and a liquid binder composition, including a plurality of abrasive particles at least partially in said preform and then sintering said preform to form said abrasive article.

5,620,490

DIESEL PARTICULATE FILTER APPARATUS

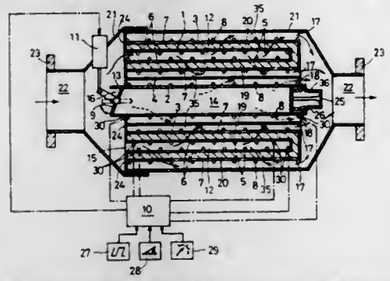
Hideo Kawamura, Kanagawa-ken, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 28, 1995, Ser. No. 520,017

Claims priority, application Japan, Aug. 29, 1994, 6-226107; Aug. 29, 1994, 6-226108

Int. Cl.[6] B01D *35/18;46/00*

U.S. Cl. 55—267 **19 Claims**



1. A diesel particulate filter apparatus comprising filters provided in an exhaust system for a diesel engine and adapted to collect particulates contained in an exhaust gas discharged from said diesel engine, and heaters for use in incinerating the particulates collected by said filters,

said filters being formed by cylindrical filter bodies made by laminating long ceramic fiber materials,

metal nets being provided on both surfaces of said filter bodies,

a metal net in said metal nets which is positioned at least upstream a flow of said exhaust gas forming said heater comprising a conductive material,

non-conductive twisted fiber threads used to fix said filter bodies being wound therearound.

5,620,491

PROCESS AND APPARATUS FOR DECONTAMINATING GLASS CULLET

Michael W. Puhl; Luther H. Dore, and Roger L. Erb, all of Marion, Ind., assignors to Ball-Foster Glass Container Company, LLC, Muncie, Ind.

Filed Mar. 8, 1995, Ser. No. 400,749

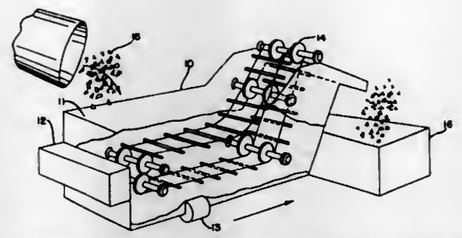
Int. Cl.[6] C03B *32/00*

U.S. Cl. 65—102 **20 Claims**

1. A process of decontaminating foreign glass cullet to produce furnace-ready glass cullet comprising the steps of:

providing a foreign glass cullet comprising crushed glass, and metallic aluminum;

providing a bath of a caustic solution, the bath having a bottom surface and a top surface;



treating the foreign glass cullet with the bath of caustic solution to form a treated cullet comprising crushed glass, hydrogen gas, an aluminate compound in solution, and non-reacted metallic aluminum, wherein the hydrogen gas forms on the non-reacted metallic aluminum to float the aluminum to the surface of the bath while the crushed glass remains on the bottom of the bath;

removing the floating metallic aluminum from the surface of the bath; and,

removing the treated cullet from the bottom of the bath to produce a furnace-ready cullet including crushed glass that is sufficiently free of metallic aluminum.

5,620,492

APPARATUS FOR QUENCHING GLASS

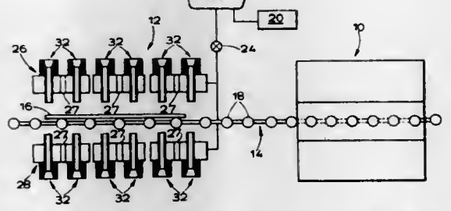
Michael B. Land, 2 Tranter Avenue, Alvechurch, Birmingham, B48 7PH, England

PCT No. PCT/GB93/01664, § 371 Date Jan. 30, 1996, § 102(e) Date Jan. 30, 1996, PCT Pub. No. WO95/04708, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 5, 1993, Ser. No. 596,165

Int. Cl.[6] C03B *27/00*

U.S. Cl. 65—348 **9 Claims**



1. Apparatus for quenching a sheet of glass undergoing heat treatment comprising an array of air ejectors forming quench nozzles which in use direct jets of air at the surface of the glass, the ejectors each comprise a main nozzle inlet, a throat and nozzle outlet, an annular slot around an inlet region of the throat being arranged to receive a relatively small flow of high pressure motivating air from a source of compressed air whereby to cause ambient air to become entrained into said main nozzle inlet and a relatively large flow of high velocity air thereby to be discharged through the nozzle outlet on to the glass.

5,620,493

METHOD AND APPARATUS FOR DETECTING FIBER BREAKS

Russell D. Arterburn, Athens, Tenn., assignor to Schuller International, Inc., Denver, Colo.

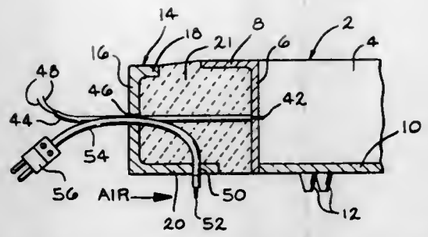
Filed Jan. 5, 1995, Ser. No. 369,039

Int. Cl.[6] C03B *37/07*

U.S. Cl. 65—377 **12 Claims**

1. In a process of making fibers by extruding a molten material through holes or nozzles of a fiber forming bushing to form an array of fibers and pulling said fibers at a high speed to attenuate said fibers to a desired fiber diameter whereby ambient air streams

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are induced into the array of fibers when they are being pulled at high speed and whereby said bushing is mounted and held in place inside a frame with a refractory material, detecting a breakout of the fibers with a thermocouple junction held in the path of said ambient air stream, wherein the improvement comprises passing the breakout detecting thermocouple through said refractory material to locate said junction in said path.

5,620,494

METHOD FOR MANUFACTURING OPTICAL FIBER COUPLER

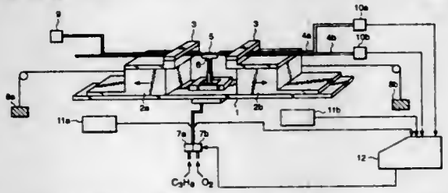
Eisuke Sasaoka; Yuji Kobayashi; Tomomi Moriya; Yoichi Ishiguro, and Shigeru Semura, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 474,907

Claims priority, application Japan, Jun. 14, 1994, 6-131669; Jun. 14, 1994, 6-131671

Int. Cl.[6] C03B *37/07;37/15;* **G02B** *6/255*

U.S. Cl. 65—377 **17 Claims**



1. A method for manufacturing an optical fiber coupler comprising the steps of:

tightly contacting bare fiber portions of a plurality of optical fibers;

heating said bare fiber portions with a heating means to fuse said bare portions;

elongating said optical fibers by heating with said heating means under a constant tension;

measuring an actual elongating speed of said optical fibers; and

determining a ratio of a target elongating speed to said actual elongating speed and controlling said heating means based on said ratio.

5,620,495

FORMATION OF GRATINGS IN POLYMER-COATED OPTICAL FIBERS

Jennifer Aspell, Holmdel; Daryl Inniss, Hillsborough; Valerie J. Kuck, Upper Montclair; Mark A. Paczkowski, Green Township, Sussex County, and Debra A. Simoff, South Plainfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

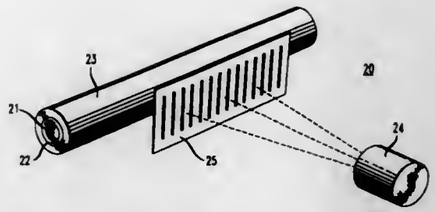
Filed Aug. 16, 1995, Ser. No. 515,625

Int. Cl.[6] C03B *37/01*

U.S. Cl. 65—392 **5 Claims**

1. A method of forming a grating in an optical fiber comprising the steps of:

providing a polymer-coated optical fiber, said fiber having a cladding and a photosensitive core;



without removing said polymer, exposing said core by side writing through said polymer and cladding, to a pattern of ultraviolet radiation corresponding to said grating.

5,620,496

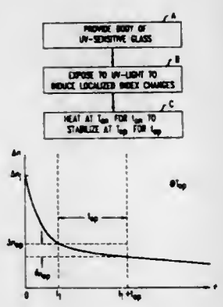
METHOD OF MAKING STABLE OPTICAL DEVICES EMPLOYING RADIATION-INDUCED INDEX CHANGES

Turan Erdogan, Berkeley Heights; Paul J. Lemaire, Madison; Victor Mizrahi, Bedminster, and Donald P. Monroe, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 152,120, Nov. 12, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,650

Int. Cl.[6] C03B *37/00*

U.S. Cl. 65—425 **5 Claims**



1. A method for making an optical device employing radiation induced refractive index changes, said induced changes subject to decay with time and described for an operating temperature by a characteristic decay curve, said device designed to operate at a maximum operating temperature T_{op} for an operating period t_{op} with decay of the induced index changes less than δn_{op} over the period of operation, comprising the steps of:

providing a body of glass;

exposing said glass to radiation to induce said refractive index changes;

determining the characteristic decay curve of said induced index changes in said glass for at least one temperature $T>T_{op}$ and extrapolating therefrom the characteristic decay curve for the induced index changes in said glass for T_{op};

determining a point P on said decay curve for the induced index changes in said glass for T_{op} for which the passage of t_{op} will produce a decay of less than δn_{op} wherein point P represents a value of decay over a period of time; and

heating said glass at an anneal temperature $T_{an}>T_{op}$ for an anneal time $t_{an}<t_{op}$ to achieve a value of decay equivalent to that value represented by point P on said extrapolated curve.

5,620,497

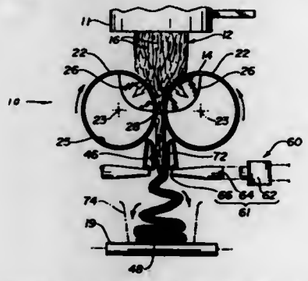
WOOL PACK FORMING APPARATUS USING HIGH SPEED ROTATING DRUMS AND LOW FREQUENCY SOUND DISTRIBUTION

David P. Aschenbeck, and Michael T. Pellegrin, both of Newark, Ohio, assignors to Owens Corning Fiberglas Technology Inc., Summit, Ill.

Division of Ser. No. 236,067, May 2, 1994. This application Jun. 5, 1995, Ser. No. 465,209

Int. Cl.[6] C03B *37/04*

U.S. Cl. 65—505 **10 Claims**



1. An apparatus for forming a fibrous wool pack from a veil of fibers produced from a fiberizing apparatus, the apparatus comprising:

two foraminous conveyor surfaces for receiving the veil, the conveyor surfaces being in a spaced relationship and defining a gap therebetween, the conveyor surfaces being mounted for movement in a generally downward direction;

a suction apparatus positioned to exhaust gases from the veil through at least one of the conveyor surfaces, whereby the fibers in the veil are conveyed through the gap to form a web of fibers traveling in a generally downward direction;

a lapping device for lateral movement of the web, the lapping device comprising a generator including a resonator robe having an open end from which sound may be emitted, wherein the resonator robe is shaped for emission of sound at a frequency less than about 30 cycles per second to a portion of a web; and

a receiving surface for receiving the web to form a fibrous wool pack.

5,620,498

USE OF FUNGAL MYCELIUM AS A SOIL ADJUVANT

Hildegard Ebert, Bad Soden am Taunus, and Winfried Schräpler, Schlangenbad, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 981,091, Nov. 24, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 364,412

Claims priority, application Germany, Nov. 27, 1991, 41 38 883.6

Int. Cl.[6] C05F *11/08;9/04*

U.S. Cl. 71—6 **13 Claims**

1. A soil adjuvant, which consists essentially of a fungal mycelium treated with at least 10% of quicklime,

said soil adjuvant having a moisture content of 40–60%.

5,620,499

CHEMICAL DISPENSING DEVICE AND METHOD

James J. Farley, 505 E. Lancaster Ave., Apt. 412, St. David, Pa. 19087

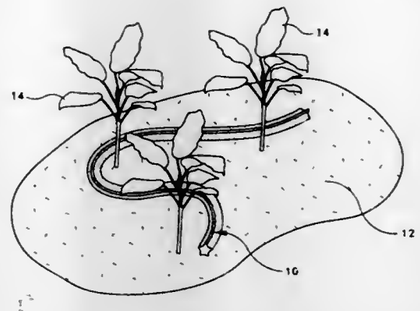
Continuation of Ser. No. 990,281, Dec. 14, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 373,890

Int. Cl.[6] C05G *5/00*

U.S. Cl. 71—64.11 **11 Claims**

1. A device for dispensing at least one fertilizer compound into a surrounding environment over a period of time, comprising:

a homogenous, substantially water insoluble elastomer compound shaped into a selected form, said elastomer compound



including said at least one fertilizer compound that is dissolved within said elastomer compound in a concentration in excess of the solubility of said at least one fertilizer compound at ambient temperature and pressure, wherein said at least one fertilizer compound precipitates out of solution and migrates to an external surface of said selected form, at a predetermined rate for said period of time, thereby being dispensed into the said surrounding environment in a controlled manner.

5,620,500

DEHUMIDIFYING METHOD

Motoo Fukui; Junjiro Iwamoto, both of Yokohama, and Kei Nishii, Ichihara, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,445

Claims priority, application Japan, Apr. 8, 1994, 6-071094

Int. Cl.[6] B01D *53/22;53/26*

U.S. Cl. 95—52 **11 Claims**

1. A dehumidifying method which comprises contacting at elevated temperature and pressure, a compressed gas containing water vapor on one side of a vapor permselective membrane, while contacting a dry gas to the other side of the membrane, to let the water vapor selectively permeate through the membrane, wherein the membrane is made of an ion exchange membrane having ion exchange groups, of which counter ions are partly or entirely substituted by multivalent metal ions, wherein the ion exchange membrane is made of a fluorine-containing copolymer containing a repeating unit of the following formula:

$$-(CF_2CF)-$$
$$|$$
$$(OCF_2CF)_p-O-(CF_2)_m-SO_3X_{1/n}$$
$$|$$
$$CF_3$$

wherein X is a metal atom, p is 0 or 1, m is an integer of from 1 to 5, and n is the valency of metal atom X, and the metal ions are selected from the group consisting of Ca^{2+}, Ni^{2+}, Co^{2+}, Cu^{2+}, Pb^{2+}, Sn^{2+}, Mg^{2+}, Zn^{2+}, Be^{2+}, Al^{3+}, and Fe^{3+}, said ion exchange membrane being a hollow fiber or a tube.

5,620,501

RECOVERY OF TRACE GASES FROM GAS STREAMS

Satish S. Tamhankar, Scotch Plains, and Ramakrishnan Ramachandran, Allendale, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

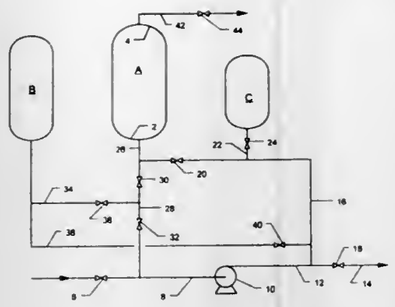
Filed Aug. 15, 1995, Ser. No. 515,444

Int. Cl.[6] B01D *53/053*

U.S. Cl. 95—92 **23 Claims**

1. A pressure swing adsorption process for the recovery of at least one gaseous impurity from a gas stream comprising repeatedly performing in sequence the steps:

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(a) cocurrently charging said gas stream at a superatmospheric adsorption pressure into a single adsorption vessel containing an adsorbent which selectively adsorbs said at least one gaseous impurity, thereby adsorbing said at least one gaseous impurity, while cocurrently discharging from said single adsorption vessel a nonadsorbed gas stream depleted in said at least one gas impurity;

(b) partially countercurrently depressurizing said single adsorption vessel, thereby discharging gas therefrom, and collecting the discharged gas in a gas storage vessel;

(c) further countercurrently depressurizing said single adsorption vessel, thereby discharging therefrom a gas product enriched in said at least one gaseous impurity;

(d) partially pressurizing said single adsorption vessel by cocurrently charging thereinto gas from said gas storage vessel; and

(e) further pressurizing said single adsorption vessel to said superatmospheric adsorption pressure by cocurrently charging said gas stream thereinto.

5,620,502

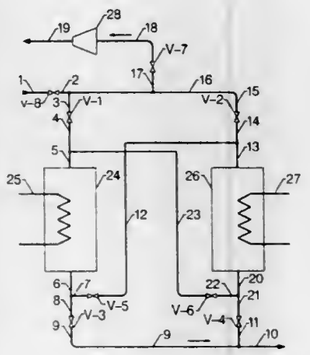
RECOVERY AND PURIFICATION OF REFRIGERANTS

Stephen R. Dunne, Bethel, Conn.; Mark T. Staniulis, Peekskill, N.Y., and Alan P. Cohen, New Fairfield, Conn., assignors to UOP, Des Plaines, Ill.

Continuation of Ser. No. 380,173, Jan. 30, 1995, abandoned, which is a division of Ser. No. 227,431, Apr. 14, 1994, Pat. No. 5,425,242. This application Jun. 7, 1995, Ser. No. 474,818

Int. Cl.[6] B01D *53/02*

U.S. Cl. 95—142 **3 Claims**



1. A process for the recovery and purification of a contaminated refrigerant stream comprising halogenated hydrocarbons from impurities including water and air, said process comprising passing said contaminated refrigerant stream through a molecular sieve adsorbent to adsorb said refrigerant, said molecular sieve adsorbent selected from the group consisting of ZSM-5, BSS, ECR-32, and rare earth exchanged faujasites, having a SiO_2/Al_2O_3 ratio less than about 12 and mixtures thereof.

5,620,503

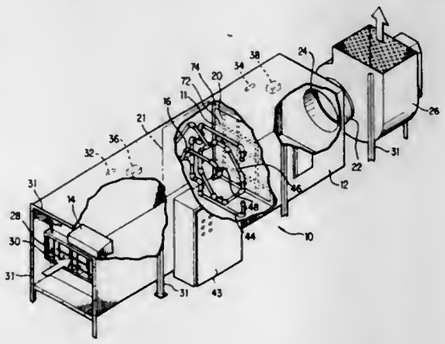
HUMIDIFIER AND METHOD FOR HUMIDIFYING AIR

Thomas L. Miller, Linden, and Joseph M. Maceri, Swartz Creek, both of Mich., assignors to Tom Miller, Inc., Holly, Mich.

Continuation of Ser. No. 334,345, Nov. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 145,596, Nov. 4, 1993, Pat. No. 5,425,902. This application Jul. 29, 1996, Ser. No. 681,878

Int. Cl.[6] B01F *3/04*

U.S. Cl. 95—211 **37 Claims**



1. An air humidifier for controlling the humidity of a stream of air, the air humidifier comprising:

a housing having an upstream inlet for receiving a stream of ambient air to be humidified and a downstream outlet for expelling the stream of air after it has been humidified;

a heater in the housing for adding heat to the stream of air;

a spray apparatus in the housing for spraying a mist of finely divided water droplets into the stream of heated air;

a mist eliminator in the housing to intercept the mist of water droplets and comprised of elongated monofilaments interlaced and sufficiently spaced from each other so that the air stream moves freely therethrough but sufficiently close to each other so that the mist of droplets is captured in a liquid phase by the mist eliminator and is substantially completely converted by flow along said monofilaments into a vapor phase in the form of increased humidity in the air stream;

a controller modulating the quantity of water sprayed from the spray apparatus;

a first humidity sensor located downstream of the mist eliminator to sense the humidity of the stream of air, the humidity sensor being in communication with the controller;

wherein the controller variably modulates the quantity of water sprayed from the spray apparatus in response to the humidity sensed by the first humidity sensor to maintain a predetermined relative humidity in the stream of air expelled from the downstream outlet, and wherein the spray apparatus has a plurality of spaced apart nozzles and plurality actuators in fluid communication with the nozzles, the nozzles spraying finely divided droplets of water, the actuators being selectively governed by the controller to regulate the quantity of water flowing to and sprayed from the nozzles and each nozzle spraying a discrete portion of the mist eliminator wherein when all nozzles are spraying water, the mist eliminator pad is essentially covered with a mist of water droplets.

5,620,504

PRESSURE SWING ADSORPTION APPARATUS VALVE ACTIVATION

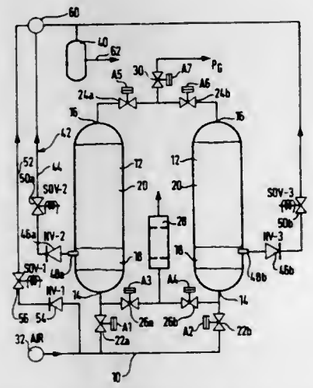
John R. Coates, Farnham, England, assignor to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 373,154, Jan. 17, 1995, abandoned. This application Feb. 8, 1996, Ser. No. 598,415

Claims priority, application United Kingdom, Jan. 25, 1994, 9401422

Int. Cl.[6] B01D *53/053*

U.S. Cl. 96—114 **9 Claims**



1. An apparatus for the separation of air by the Pressure Swing Adsorption process comprises one or more pressure vessels having an inlet and an outlet and at least one gas actuated actuator for controlling the flow of gas through said vessel or vessels, said one or more pressure vessels having in flow series a first moisture adsorbing material and a second gas adsorbing material, in which there is further provided a reservoir for receiving a portion of said air passing through said pressure vessel after it has been dried by being passed through at least a portion of said moisture adsorbing material but before it passes said second gas adsorbing material, and directing means for directing the dried air to said reservoir and from said reservoir to said at least one gas actuated actuator for the actuation thereof.

5,620,505

FILTER

Volker Koch, Stuttgart; Helmut Luka, Kornwestheim; Nikolaus Moser, Ditzingen; Bruno Sommer, Ludwigsburg, and Manfred Wagner, Stuttgart, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

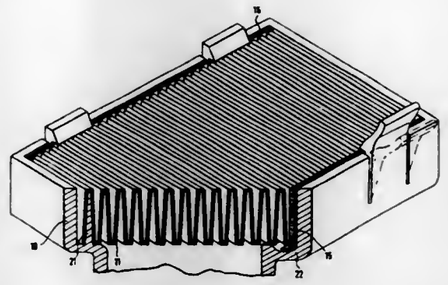
Filed Aug. 29, 1995, Ser. No. 520,437

Claims priority, application Germany, Aug. 29, 1994, 44 30 333.5

Int. Cl.[6] B01D *29/07;53/04*

U.S. Cl. 96—134 **20 Claims**

1. A filter comprising a filter element having a substantially planar configuration and comprising a pleated filter paper or a nonwoven web, said filter element being arranged in a filter housing and having a rolled-edge seal disposed on at least two lateral edges thereof, said rolled-edge seal engaging a portion of said filter housing which extends at least partially laterally inwardly from said lateral edges, sealing the filter element relative to the filter housing.



5,620,506

ACTIVATED CARBON, PRODUCTION THEREOF AND ADSORPTION USING ACTIVATED CARBON

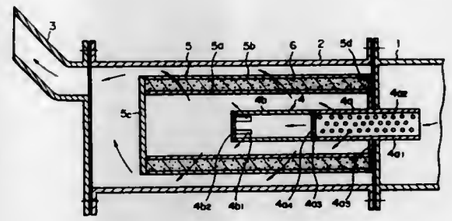
Yoshihiro Ikenaga, and Takeji Kobata, both of Hokkaido, Japan, assignors to The Social Welfare Foundation Hokkaido Rehabily, Hokkaido, Japan

Continuation of Ser. No. 480,209, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 242,022, May 11, 1994, Pat. No. 5,494,500, which is a continuation of Ser. No. 108,174, Aug. 17, 1993, abandoned, which is a continuation of Ser. No. 796,262, Nov. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 669,917, Mar. 15, 1991, Pat. No. 5,186,914. This application Nov. 30, 1995, Ser. No. 564,911

Claims priority, application Japan, Nov. 26, 1990, 2-325036; Oct. 24, 1991, 3-303889

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—139 **7 Claims**



1. An apparatus for treating an exhaust gas from a light oil combustion apparatus which comprises:

a muffler connected with the light oil combustion apparatus,

an exhaust pipe containing an exhaust gas introducing and exhausting pipe provided with multiple gas discharging small holes and a plurality of gas escape ports and a filter pipe, and

a gas outlet pipe connected with the exhaust pipe,

said filter pipe being composed of an inner layer filter pipe and an outer layer filter pipe, an activated carbon packed in the space between the inner layer filter pipe and the outer layer filter pipe, and a blind plate blocking one end of the filter pipe, wherein said activated carbon comprises carbon microcrystals irregularly arranged and difficultly graphitizable carbon, said difficultly graphitizable carbon including crosslinking lattices in the gaps among carbon microcrystals and said activated carbon having pencil hardness of from B to 6B, pore size of 100–400 Å, specific surface area of 150–500 m^2/g, pore volume of 1.3–5.0 ml/g and CEC of 8–13, and

the exhaust gas introducing and exhausting pipe being provided in the inner space of the inner layer filter pipe.

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5,620,507

CANISTER FOR CONTAINING A BED OF PARTICLES

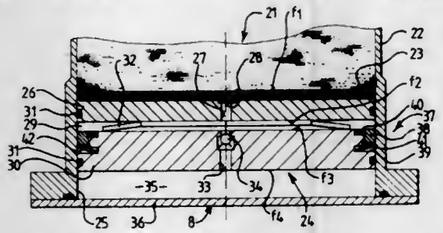
Terence Oborne; David Peacey, and John Rogers, all of Yeovil, Great Britain, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Jun. 26, 1995, Ser. No. 494,879

Claims priority, application United Kingdom, Jun. 27, 1994, 9412856.8

Int. Cl.[6] B01D *53/047*

U.S. Cl. 96—149 9 Claims



1. A canister for containing a bed of particles through which in one part of an operating cycle an operating fluid is passed at a normal operating pressure, the canister including load means for applying a predetermined compressive load to the bed of particles, the loading means comprising piston means slidable in the canister along a longitudinal axis thereof, there being means when the canister is operating in a second part of the operating cycle having a reduced operating pressure, for subjecting the piston means to the normal operating pressure of the operating fluid to urge the piston means towards the particles so that the loading means is automatically adjusted to maintain substantially the predetermined compressive load.

5,620,508

HEAT MELTABLE SOLID INK

Tadamichi Yamano, and Takao Arimura, both of Osaka, Japan, assignors to Fujicopian Co., Ltd., Japan

Filed Apr. 16, 1996, Ser. No. 633,294

Claims priority, application Japan, Apr. 17, 1995, 7-090761; Nov. 10, 1995, 7-292873

Int. Cl.[6] C09D *11/08*

U.S. Cl. 106—23 A 5 Claims

1. A solvent-free heat meltable solid ink comprising a rosin resin in an mount of not less than 10% by weight based on the total amount of the ink, and a coloring agent comprising carbon black and an oil-soluble dye.

5,620,509

COATING COMPOSITION AND METHOD FOR ITS PREPARATION

Anna-Liisa Tampio, Kiviniementie 2 B 18, FIN-00960 Helsinki, Finland

PCT No. PCT/FI94/00035, § 371 Date Sep. 21, 1995, § 102(e) Date Sep. 21, 1995, PCT Pub. No. WO94/17147, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 26, 1994, Ser. No. 495,496

Claims priority, application Finland, Jan. 27, 1993, 930326

Int. Cl.[6] C09D *101/02;101/26;101/28;103/02*

U.S. Cl. 106—162.5 18 Claims

1. A coating composition consisting essentially of a cellulose fiber filler, a water soluble binder comprising at least one of a cellulose material a starch material, water, a foaming agent, and optional adjuvants, wherein the amount of the binder based on the filler is 3 to 15% by weight, the dry-matter content of the filler and the binder of the composition is together approximately 12 to 25% by weight, and the amount of foaming agent is approximately 0.001 to 1% by weight.

5,620,510

SWOLLEN STARCHES AS PAPERMAKING ADDITIVES

Merle J. Mentzer, Mokena, Ill., and Eduardo A. Piazza, Baradero, Argentina, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 23, 1995, Ser. No. 493,881

Int. Cl.[6] D21H *17/28;* C09D *103/02*

U.S. Cl. 106—206.1 17 Claims

1. A papermaking additive composition comprising a two phase suspension of swollen starch having a dry substance from about 0.5% to about 30% by weight, a cooked swollen volume from about 1.6 ml./gram to about 100 ml./gram and cooked solubles from about 0.5% to about 50% by weight.

5,620,511

METHOD FOR PREPARING A PREFORM FOR A COMPOSITE MATERIAL

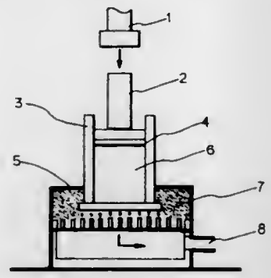
Junsu Kim, Seoul, and Bumgoo Chung, Poksan-dong, both of Rep. of Korea, assignors to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Nov. 27, 1995, Ser. No. 563,101

Claims priority, application Rep. of Korea, Nov. 28, 1994, 94-31470

Int. Cl.[6] C30B *28/00*

U.S. Cl. 117—75 7 Claims



1. A method of preparing a whisker-preform, comprising the steps of:

(a) uniformly dispersing a mixture of silicon microparticles and carbon fibers in the ratio of 4:1 to 8:1 into an aluminium alkoxide solution;

(b) filtering the dispersion obtained in step (a), dehydrating the filtered material, forming and drying the dehydrated material: and

(c) heating the material dried in step (b) at a temperature in the range of 300° to 400° C.

5,620,512

DIAMOND FILM GROWTH FROM FULLERENE PRECURSORS

Dieter M. Gruen, Downers Grove; Shengzhong Liu, Woodridge; Alan R. Krauss, Naperville, and Xianzheng Pan, Woodridge, all of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Oct. 27, 1993, Ser. No. 143,866

Int. Cl.[6] C30B *29/04*

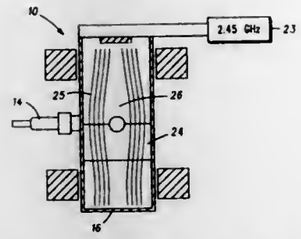
U.S. Cl. 117—108 17 Claims

1. A method for manufacturing a diamond film on a substrate, comprising the steps of:

(a) forming a fullerene vapor including C_{60};

(b) providing a noble gas stream free of hydrogen and combining said fullerene vapor with said noble gas stream;

(c) passing said combined fullerene vapor and noble gas carrier stream into a chamber;



(d) forming a plasma in said chamber, and the presence of said noble gas enabling fragmentation of said fullerene in said plasma to preferentially form carbon dimer species; and

(e) depositing said fragmented fullerene, containing carbon dimer species generated in said plasma by the presence of said fullerene vapor with said noble gas, onto said substrate to form said diamond film.

5,620,513

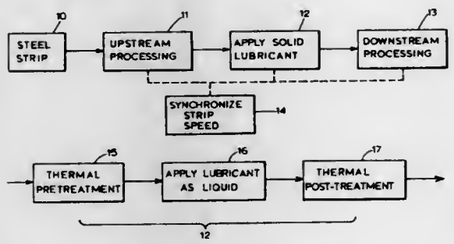
IN-LINE APPLICATION OF SOLID LUBRICANT TO STEEL STRIP

Elliott Y. Spearin, Crown Point, Ind., and James C. Carney, Middletown, Ohio, assignors to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 234,541, Apr. 28, 1994. This application May 8, 1995, Ser. No. 437,039

Int. Cl.[6] B05C *11/00*

U.S. Cl. 118—64 5 Claims



5. In combination, (a) a multi-stage steel strip processing line and (b) solid lubricant application equipment incorporated in-line with said steel strip processing line between stages thereof, for applying, to said steel strip, as alternatives, either a wax or polymer material, each of which forms a transparent film of solid lubricant on the steel strip, wherein said strip-processing line comprises:

an upstream processing stage comprising means for performing at least one processing step at an upstream location;

a downstream processing stage comprising means for performing at least one processing step downstream of the location of said upstream processing stage;

means for moving said steel strip in a downstream direction during processing;

said strip having a strip speed at the upstream processing stage and a strip speed at the downstream processing stage;

and means for synchronizing the speed of the moving steel strip in said downstream processing stage with the strip speed employed in said upstream processing stage;

said strip having a strip temperature as it undergoes processing;

said lubricant application equipment being located in-line with said steel strip-processing line, between said upstream and downstream processing stages;

and wherein said lubricant application equipment comprises:

means for providing said line with both (a) a capability for applying a film-forming wax material, as a liquid, and (b) a capability for applying a film-forming polymer material, as a liquid;

said last-recited means comprising means for applying one of said film-forming materials, as a liquid, to said moving steel strip while the other film-forming material remains unapplied;

said material-applying means comprising means for applying, as alternatives, either said wax material or said polymer material;

means for providing said line with a capability for adjusting the temperature of said moving steel strip upstream of said material-applying means;

said means for providing said upstream temperature-adjusting capability comprising (i) heating means or (ii) cooling means or having the capability of employing means (i) and (ii) alternatively;

means for providing said line with a capability for adjusting the temperature of said strip downstream of said material-applying means, using heating means;

means for providing said line with a capability for adjusting the temperature of said strip downstream of said material-applying means, using cooling means;

means for sensing the temperature of said moving steel strip upstream of said material-applying means;

means for employing said upstream temperature-adjusting capability selectively, in response to one of the following parameters, to subject said strip to (a) heating or (b) cooling or (c) neither (a) nor (b), said parameters comprising (1) the particular film-forming material that is applied or (2) the upstream temperature that is sensed or (3) a combination of (1) and (2);

means for sensing the temperature of said moving steel strip downstream of said material-applying means;

means for adjusting the temperature of said moving steel strip downstream of said material-applying means either (a) by using said heating means while said cooling means remains unemployed or (b) by using said cooling means while said heating means remains unemployed;

and means for synchronizing the speed of said moving steel strip in said lubricant application equipment with the strip speed employed in said strip-processing stages.

5,620,514

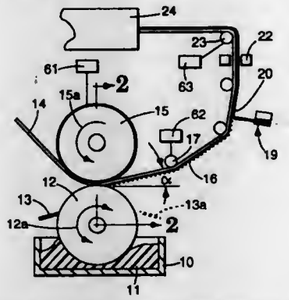
DIFFERENTIAL-SPEED GRAVURE COATING OF MAGNETIZABLE LAYERS IN THE MANUFACTURE OF MAGNETIC RECORDING MEDIA

John D. Munter, Oakdale, Minn.; Donald M. Lewis, Hudson, Wis.; Joseph H. Lam, Woodbury; Kevin K. Kuck, Lino Lakes, both of Minn.; Michael J. Brost, Camarillo, Calif., and Norman E. Gehrke, Browntou, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 294,079, Aug. 22, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,859

Int. Cl.[6] B05C *1/08*

U.S. Cl. 118—249 14 Claims



1. Apparatus for coating a fluid dispersion of magnetizable particles and binder onto a flexible elongated backing member that is being advanced longitudinally to produce a magnetizable layer of a magnetic recording medium, said apparatus comprising:

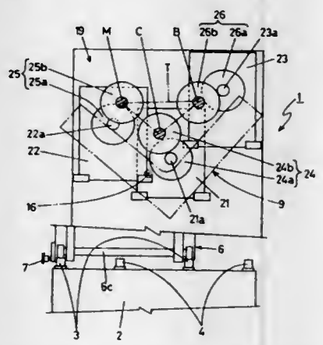
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a) a gravure roll,
b) means for rotating the gravure roll at a constant speed,
c) means for continuously supplying a fluid dispersion of magnetizable particles and binder to the gravure roll while it is being rotated,
d) a backup roll which has a non-compliant surface,
e) means for rotating the backup roll at a constant surface speed independently of a surface speed of the gravure roll,
f) a compliant nip roll positioned for holding the backing member against the backup roll upstream of the gravure roll to drive the backing member at the surface speed of the backup roll,
g) means, connected to at least one of the backup roll and gravure roll, for maintaining a gap between the backup roll and gravure roll, and
h) means for forcing the backing member into contact with the gravure roll over an arc to allow fluid dispersion to transfer from the gravure roll to the backing member.

5,620,515
COATING APPARATUS

Susumu Takahashi; Hirofumi Yamamoto, and Haruhiro Iida, all of Osaka, Japan, assignors to Inoue Kinzoku Kogyo Co., Ltd., Osaka, Japan

Filed May 30, 1995, Ser. No. 454,597
Int. Cl.[6] B05C *1/08*
U.S. Cl. 118—258 **6 Claims**

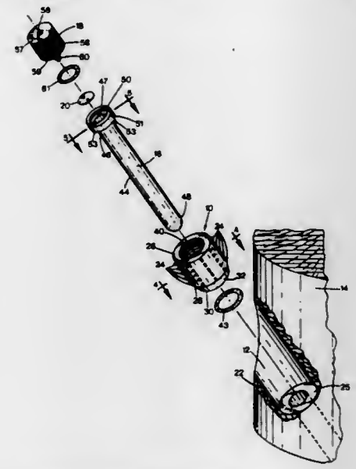


1. A coating apparatus for applying coating agents having different viscosities to a web of sheet material, comprising:
three pairs of bearings having respective axes which define apexes of an imaginary triangle;
three rolls journaled by said three pairs of bearings, respectively, one of said rolls being a backing roll for engaging the web of sheet material;
means for applying the coating agents to another one of said rolls which cooperates with the web of sheet material on said backing roll for applying the coating agents to the web of sheet material;
drive means including three output shafts at predetermined locations;
three offset shaft couplings for connecting the three rolls to the corresponding three output shafts;
a swing frame to which said three pairs of bearings are mounted, said swing frame having a portion located outside of the imaginary triangle; and
a movable frame by which said portion of the swing frame is journaled, said movable frame being movable in a to-and-aft direction,
said imaginary triangle being rotatable so far as the mount of offset between said rolls and said output shafts is within an allowable offset range of said offset shaft couplings, whereby the coating agents having different viscosities can be applied to the web of sheet material.

5,620,516
WOOD-TREATING DEVICE

Guy G. Helsing, Albany, and Jon Atherton, Hillsboro, both of Oreg., assignors to National Wood Treating Company, Corvallis, Oreg.

Continuation of Ser. No. 51,042, Apr. 21, 1993, Pat. No. 5,443,641. This application Feb. 22, 1995, Ser. No. 392,139
Int. Cl.[6] A01G *29/00*
U.S. Cl. 118—407 **18 Claims**

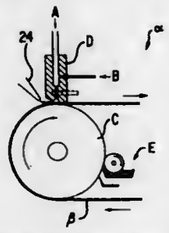


1. A wood-treating device comprising
a docking sleeve having top and bottom ends and having a continuous aperture extending through both ends;
a container for holding treating materials dimensioned to extend through the aperture and adapted to be removably mounted to the docking sleeve, the container having an elongate tubular body portion with an open end adjacent the docking sleeve and a closed end opposite the open end and having an enlarged head portion adjacent said open end extending radially outwardly from said body portion to define a support collar;
a frangible seal covering the opening; and
an actuator mounted for shifting in the docking sleeve toward the seal operable to break the seal.

5,620,517
PAINTING DEVICE

Minoru Saitoh, Yamagata-ken, Japan, assignor to IG-Technical Research Inc., Japan

Filed Jun. 6, 1995, Ser. No. 470,028
Claims priority, application Japan, Sep. 14, 1994, 6-220609
Int. Cl.[6] B05C *3/02;3/10*
U.S. Cl. 118—411 **9 Claims**



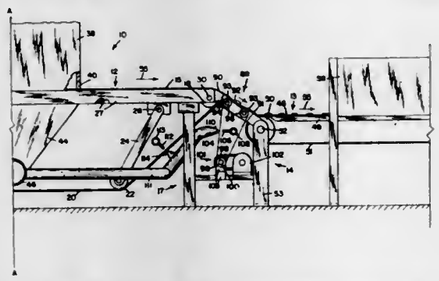
1. A painting device for painting a pattern on a surface of a base sheet material, comprising:
paint head including:

a painting groove extending transverse to a feeding direction of the base sheet material through which a paint is fed for painting the base sheet material, the painting groove being wider than a width of said base sheet material, and
at least one primary paint pipe communicating with said painting groove, and
at least one secondary paint pipe connected with said at least one primary paint pipe;
means for feeding the base sheet material comprising a supporting feed roller; and
a cleaning unit for cleaning paint from said support feed roller, said cleaning unit comprising:
a pallet for retaining a cleaning agent therein;
a cleaning roller in contact with said supporting feed roller and said pallet, whereby the cleaning agent retained in said pallet is carried by said cleaning roller and transferred to said supporting feed roller for cleaning said supporting feed roller; and
a doctor constructed and arranged to scrape said supporting feed roller at a location on said supporting feed roller at a location following contact with said cleaning roller, relative to a direction of rotation of said supporting feed roller.

5,620,518
POWDER COATING SYSTEM

Richard Salisbury, Laguna Niguel, Calif., assignor to Blodgett & Blodgett, P.C., Worcester, Mass.

Division of Ser. No. 156,432, Nov. 23, 1993, Pat. No. 5,382,450, which is a division of Ser. No. 839,498, Feb. 20, 1992, Pat. No. 5,264,037, which is a continuation of Ser. No. 486,513, Feb. 28, 1990, Pat. No. 5,000,985. This application Jan. 17, 1995, Ser. No. 373,947
Int. Cl.[6] B05B *5/00;13/02*
U.S. Cl. 118—641 **5 Claims**

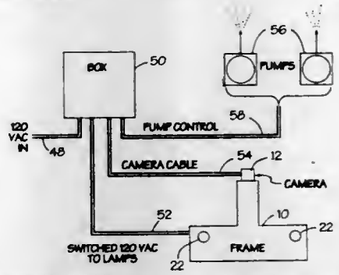


1. An apparatus for coating an article which has at least one flat surface, said apparatus comprising:
(a) an endless foraminous conveyor which travels in a loop and which has an upper conveying portion and a lower return portion, said conveyor having an outer surface and an inner surface, said conveyor travelling substantially horizontally along said upper conveying portion from a first point to a second point, said conveyor supporting the articles so that the flat surface of the article rests on the outer surface of the upper conveying portion of said conveyor and conveying said articles from said first point to said second point,
(b) an applicator for depositing uncured coating particles on all exposed surface areas of said article as the article moves from said first point to said second point,
(c) a second conveyor for conveying said article substantially horizontally from said second point to a third point,
(d) a bridging element for transferring said article from said foraminous conveyor to said second conveyor after the article has passed said second point, so that the flat surface of said article rests on said second conveyor, and
(e) curing means between said second point and said third point for curing the uncured particles on said article as the article is conveyed from said second point to said third point.

5,620,519
CONTROLLER AND METHOD FOR SELECTIVELY CONTROLLING THE AMOUNT OF WAX APPLIED TO FRUIT

Henry A. Affeldt, Victorville; Tim D. Conway, Stockton, and David M. Musoke, Alta Loma, all of Calif., assignors to Sunkist Growers, Inc., Ontario, Calif.

Filed Aug. 19, 1994, Ser. No. 292,898
Int. Cl.[6] B05C *11/00*
U.S. Cl. 118—669 **39 Claims**



1. An apparatus for applying a controlled quantity of a substance to the surface of a plurality of substantially axially-symmetric, three-dimensional objects in a two-dimensional array of said objects, each of said objects having an axis, and having variable, measurable geometric features, comprising:
Photometric means for measuring geometric features, comprising the length of the axis and the diameter across the axis, of each of said substantially axially-symmetric, three-dimensional objects in the two-dimensional array;
Control circuit means, responsive to said photometric means, for generating a command to dispose a calculated amount of the substance on each particular portion of the array in accordance with the geometric features of the objects in such particular portion, measured by said photometric means; and
substance application means, responsive to said control means, for disposing said specifically calculated amount of the substance on each such particular portion of the array,
whereby said substance is efficiently applied to each one of said three-dimensional objects in the two-dimensional array notwithstanding variations, among said objects, in said geometric features.

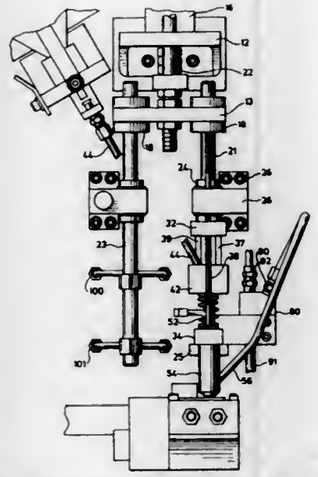
5,620,520
APPARATUS FOR PRODUCING COATED FASTENERS HAVING CLOSED ENDS

Richard J. Duffy, Shelby Township, and Eugene D. Sessa, Mt.Clemens, both of Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Continuation-in-part of Ser. No. 849,741, Mar. 12, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 269,172
Int. Cl.[6] B05C *19/06;19/04;* **B05B** *1/28;7/14*
U.S. Cl. 118—677 **16 Claims**

1. An apparatus for applying a heat fusible powdered resin to at least a portion of the threads of an internally threaded fastener having an internal diameter between approximately 0.1 and 1.5 inches, comprising:
a frame;
a powered actuator mounted on said frame;
an actuating member connected to and driven by said actuator;
means for heating the fastener;
a support for locating the heated fastener in a spray position;
a moveable application nozzle positioned adjacent the heated fastener in said spray position, said application nozzle having an axial length and carried by said actuating member, for insertion into the heated fastener and for applying said powdered resin to the threads of the heated fastener, said threads having surfaces positioned at an angle relative to the path of travel of said nozzle;

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a nozzle tip located on said axial length of the application nozzle for controlling the application of the powdered resin;

a supply assembly for supplying the powdered resin to said nozzle; and

vacuum means for removing excess powder that does not adhere to said threads, said vacuum means being disposed proximate to and on one side of the heated fastener, wherein said vacuum means comprises a cavity in said support and adjacent said one side of the heated fastener.

5,620,521

METHOD FOR SURFACE TREATMENT

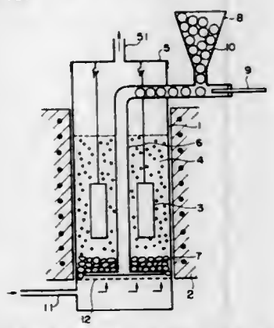
Hideo Tachikawa, Aichi-ken; Hiromasa Takeda, Miyagi-ken, and Kazuyuki Nakanishi, Aichi-ken, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Continuation of Ser. No. 83,886, Jun. 28, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 386,230

Claims priority, application Japan, Jun. 30, 1992, 4-197602

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—717 **18 Claims**



1. A method for forming a surface layer on a material to be treated in a fluidized bed in a furnace having a gas distributor and comprising the steps of:

introducing a fluidizable powder mixture composed of a) a powder of refractory material and b) a surface layer-forming powder of a metal and/or alloy into the furnace;

introducing, above the gas distributor and between and adjacent to said fluidizable powder mixture and said gas distributor, a layer of coarse particles having a mean diameter, D (m), as defined by the following formula:

$$(1650V\mu/PG)^{1/2}<D<6.5\ d<780\times10^{-6}\ m$$

where

V: velocity of a fluidizing gas (m/s);

μ: viscosity coefficient of the fluidizing gas (kg/m·s);

P: mean density of the coarse particles (kg/m);

G: acceleration of gravity (9.8 m/s^2);

d: mean particle diameter of the powder of a metal and/or alloy (m),

fluidizing said fluidizable powder mixture by said fluidizing gas having the velocity V supplied through said gas distributor to form a fluidized bed; and

forming said surface layer on the material to be treated under heating in the presence of a halide, whereby said layer of coarse particles prevents fluidized bed powders from agglomeration.

5,620,522

MICROWAVE PLASMA GENERATOR

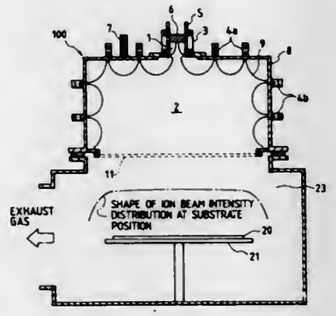
Satoshi Ichimura, Hitachi; Tadashi Sato, Mito; Takashi Iga, and Kenichi Natsui, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,063

Claims priority, application Japan, Sep. 30, 1994, 6-237378

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MR **34 Claims**



1. A microwave plasma generator comprising:

a wave guide tube for transmitting microwave,

an electron heating space chamber formed at a location in downstream side from a dielectric body in the wave guide tube,

a plasma generating space chamber connected to the electron heating space chamber,

first static magnetic field generating means, which comprises permanent magnets surrounding outer periphery of the electron heating space chamber, forming a strong magnetic field of which intensity exceeds an intensity of electron cyclotron resonance magnetic field at a microwave exit of the dielectric body, along the microwave transmitting direction in the electron heating space chamber, and

concurrently forming a cusped magnetic field, wherein

a magnetic field with steep gradient in intensity is generated at a portion between the microwave exit of the dielectric body and the boundary between the electron heating space chamber and the plasma generating space chamber, and

the direction of the magnetic field is inverted opposite to the direction of the strong magnetic field in the electron heating space chamber in a region from the boundary of the electron heating space chamber with the plasma generating space chamber to interior of the plasma generating space chamber, and a second static magnetic field generating means comprising permanent magnets which are arranged at around the plasma generating space chamber with alternately reverse polarity.

5,620,523

APPARATUS FOR FORMING FILM

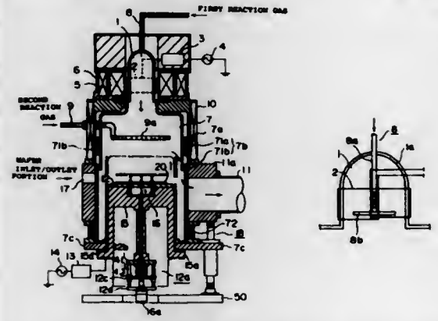
Kazuo Maeda; Kouichi Ohira, and Yuhko Nishimoto, all of Tokyo, Japan, assignors to Canon Sales Co., Inc.; Alcan-Tech Co., Inc., and Semiconductor Process Laboratory Co., Ltd., all of Japan

Filed Feb. 16, 1995, Ser. No. 389,791

Claims priority, application Japan, Apr. 11, 1994, 6-072017

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 IR **18 Claims**



1. A film-forming apparatus for forming a film on a substrate comprising:

a housing having a central axis and an interior defining an upstream plasma-forming chamber and a downstream film-forming chamber open to said plasma-forming chamber;

a substrate holder for supporting the substrate within said film-forming chamber;

means for forming a plasma from a first reaction gas within a plasma-forming zone extending along said central axis within said plasma-forming chamber;

first gas inlet means for introducing the first reaction gas into an upstream end of said plasma-forming chamber, said first gas inlet means comprising a gas pipe terminating at a distal end within said plasma-forming chamber and having a plurality of gas discharge holes for discharge of the first reaction gas into said plasma-forming chamber and a plate fixed to said distal end and having an upstream surface for receiving the first reaction gas discharged from said gas discharge holes, whereby the first reaction gas is discharged into said plasma-forming zone, flows toward said downstream film-forming chamber, then impacts said upstream surface of said plate, then flows over said upstream surface radially outward from said central axis and then exits said plasma-forming chamber and flows into said film-forming chamber;

second gas inlet means for introducing a second reaction gas into said film-forming chamber for reaction with said first reaction gas to deposit a reaction product as a film on the substrate.

5,620,524

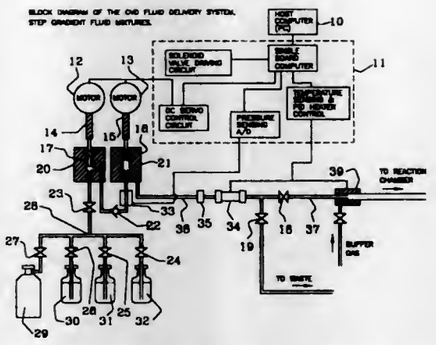
APPARATUS FOR FLUID DELIVERY IN CHEMICAL VAPOR DEPOSITION SYSTEMS

Chiko Fan, 810 El Quanito Dr., Danville, Calif. 94526; Anthony Pearson, 498 Los Pinos Way, San Jose, Calif. 95123; J. James Chen, 2304 Maximilian Dr., Campbell, Calif. 95008, and James L. White, Jr., 392 Eagle Trace, Half Moon Bay, Calif. 94109

Filed Feb. 27, 1995, Ser. No. 395,613

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—726 **6 Claims**



1. A step gradient positive displacement dual plunger system for continuous and pulse-free delivery of reagents for semiconductor processing, said system comprising:

a plurality of reagent sources;

a buffer gas source;

a primary liquid delivery chamber and a secondary liquid delivery chamber;

wherein said primary and secondary liquid chamber are comprised of a high pressure chamber with an inlet and an outlet, a plunger connected to a motor assembly, fluoropolymer high pressure seals, and a washing chamber;

said motor assembly comprising a ball screw spindle, a counter rotating shaft and bearing, a direct or gear drive motor with an attached optical encoder that provides closed loop motion control;

said plurality of reagent sources and said buffer gas source are connected by solenoid valves to a manifold, said manifold is connected to the inlet of said primary liquid delivery chamber via a solenoid valve;

a pressure transducer is connected to the outlet of said primary liquid delivery chamber via a check valve, and the inlet of said secondary liquid delivery chamber;

a device to minimize the pressure pulsation associated with the plunger operation;

wherein said device comprise a capillary tube before and in series with a volume element, said volume element is connected in series to another capillary tube, and a heating or cooling means for heating or cooling the reagents in the volume elements;

a heating gas mixing block comprising a reagent inlet, a buffer gas inlet, a heating means for heating the heating gas mixing block, and an outlet to a reaction chamber;

wherein said reagent is flashed vaporized and mixed with a buffer gas; and

the outlet of said secondary liquid delivery chamber is connected before and in series with said device via said capillary tubing, said device is connected before and in series with the reagent inlet of said heating gas mixing block via said capillary tubing.

5,620,525

APPARATUS FOR SUPPORTING A SUBSTRATE AND INTRODUCING GAS FLOW DOXIMATE TO AN EDGE OF THE SUBSTRATE

Everhardus P. van de Ven, Saratoga; Eliot K. Broadbent, San Jose; Jeffrey C. Benzing; Barry L. Chin, both of Saratoga, Calif., and Christopher W. Burkhart, Los Gatos, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 7,457, Jan. 22, 1993, Pat. No. 5,374,594, which is a division of Ser. No. 554,225, Jul. 16, 1990, Pat. No. 5,230,741. This application Aug. 23, 1994, Ser. No. 294,513

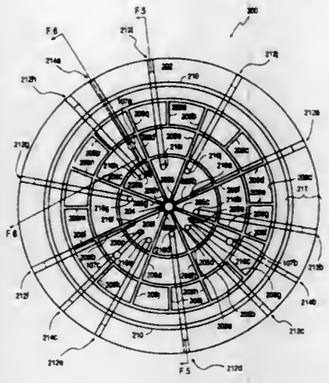
Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—728 **47 Claims**

1. An apparatus for supporting a substrate in a process chamber of a chemical vapor deposition reactor, the substrate having a thickness and a shape, comprising:

a platen mounted in the process chamber, the platen having a gas orifice defining a periphery of an interior region, the interior

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region having a surface, the surface having a shape substantially coextensive with the shape of the substrate, and the platen further having an exterior region surrounding the interior region; and

a projecting member having an inner surface surrounding a volume, the volume being peripherally coextensive with the interior region, the projecting member extending from the exterior region, the inner surface of the projecting member extending to at least the thickness of the substrate, and the inner surface of the projecting member being approximately uniformly spaced apart from a periphery of the volume.

5,620,526

IN-SITU CLEANING OF PLASMA TREATMENT CHAMBER

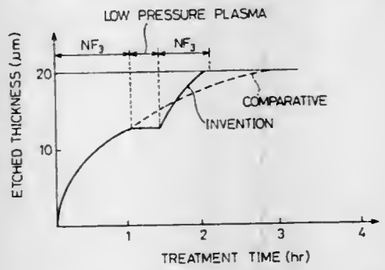
Hirofumi Watatani; Masahiko Doki, both of Kawasaki; Shoji Okuda, Kasugai; Junya Nakahira, and Hideaki Kikuchi, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, and Fujitsu VLSI Limited, Aichi, both of Japan

Filed Jul. 22, 1994, Ser. No. 279,110

Claims priority, application Japan, Sep. 10, 1993, 5-225547

Int. Cl.[6] C09K *13/08*

U.S. Cl. 134—1.1 **10 Claims**



1. A process for in-situ cleaning of a plasma treatment chamber, said process comprising the steps of:

conducting a first plasma treatment in a plasma treatment chamber with nitrogen trifluoride plasma at a first pressure, so as to remove an oxide layer previously deposited inside the plasma treatment chamber;

conducting a second plasma treatment in said plasma treatment chamber at a second pressure lower than said first pressure, said second plasma treating being conducted in a plasma of a gas selected from a group consisting of oxygen, water vapor, silane, fluorine, nitrogen trifluoride, or a mixture of nitrogen trifluoride with at least one of hydrogen fluoride, fluorine, and water vapor; and

a third plasma treatment in said plasma treatment chamber with nitrogen trifluoride plasma at a third pressure higher than said second pressure, so as to further remove said oxide layer.

5,620,527

CLEANSING AND DISINFECTING METHOD

David N. Kramer, Stevenson, and Philip A. Snow, Henderson, both of Md., assignors to The Sterilex Corporation, Owings Mills, Md.

Division of Ser. No. 886,171, Jul. 16, 1986, Pat. No. 4,941,989. This application Aug. 4, 1988, Ser. No. 228,171

Int. Cl.[6] B08B *7/00;* **C23G** *5/036*

U.S. Cl. 134—2 **9 Claims**

1. A method of cleansing and disinfecting a substrate in need thereof comprising contacting said substrate with an aqueous solution of an alkaline water-soluble salt having hydrogen peroxide of crystallization, said salt being present in a range of about 30–77% by weight, wherein said salt is selected from the group consisting of percarbonates, perborates, persilicates and perphosphates associated with an alkali metal cation, and a positively charged phase-transfer agent, wherein said phase-transfer agent is selected from the group consisting of a phosphonium salt, a sulfonium salt and a quaternary ammonium salt having a chain of carbon atoms on the quaternary nitrogen approximately 6 to 30 atoms in length.

5,620,528

SOLAR CELL WITH A CONNECTING STRUCTURE

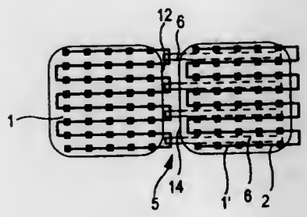
Reinhart Schade, Olching; Gerhard Lehner, Munich; Adolf Muenzer, Unterschleissheim; Friedrich-Wilhelm Schulze, Eching, all of Germany, and Robert Wieting, Simi Valley, Calif., assignors to Siemens Solar GmbH, Munich, Germany, and Siemens Solar Industries International, Inc., Camarillo, Calif.

Filed Sep. 27, 1995, Ser. No. 533,985

Claims priority, application Germany, Sep. 30, 1994, 44 35 219.0

Int. Cl.[6] H01L *31/05*

U.S. Cl. 136—244 **14 Claims**



12. An array of solar cells, with each solar cell comprising a flat active semiconductor body with a diode structure with a back surface and a front surface, a back surface metallization on the back surface of the semiconductor body facing away from the light, a first conductor structure disposed on the back side metallization and having a portion extending beyond a first edge thereof, a pattern of electrical contacts on a front surface of the semiconductor body, a second conductor structure disposed on the pattern of electrical contacts and connected thereto, said second conductor structure having a serpentine structure with straight portions connecting return bend portions and with more than two return bend portions extending beyond a second edge of the body; and adjacent solar cells being interconnected by the return bend portion of the second conductor structure on the pattern of the electrical contacts of one cell being interconnected to the portions of the first conductor structure on the back surface of the adjacent cell.

5,620,529

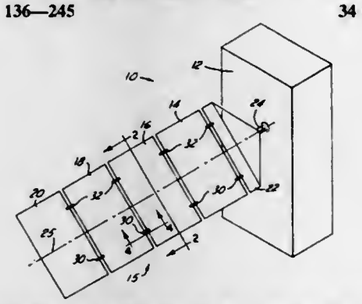
LOW DISTURBANCE SOLAR ARRAY

Samir F. Bassily, Los Angeles; Stuart F. Bockman, Torrance, and George N. Young, Los Angeles, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Nov. 3, 1995, Ser. No. 552,811

Int. Cl.[6] H01L *31/045*

U.S. Cl. 136—245 **34 Claims**



1. A solar array for a spacecraft, said array having a longitudinal axis, said array comprising:

a plurality of rigid solar panel members connected together in series along said longitudinal axis; and

pairs of hinge members positioned between and connecting together each of said panel members;

said hinge members being symmetrically positioned substantially at (½√3)W, where W is the width of said panel members;

wherein the movement of the center of mass of said solar panel members in a direction transverse to said longitudinal axis during thermal induced transverse bending of said solar panel members is substantially minimized; and

wherein one of said hinge members of each of said pairs of hinge members has transverse and rotational degrees of freedom, while the other of said hinge members has at least a rotational degree of freedom.

11. A solar array for a spacecraft, said array having a longitudinal axis, said array comprising:

a plurality of rigid solar panel members connected together in series along said longitudinal axis;

each of said solar panel members comprising a central core member having two planar surfaces, a first layer of face sheet material positioned on a first planar surface of said core material, a second layer of face sheet material positioned on a second planar surface of said core material, an insulating layer positioned on said first layer of face sheet material, and a plurality of solar cells positioned on said insulating layer;

said plurality of solar cells having a first coefficient of thermal expansion in the direction of said longitudinal axis;

said first and second layers of face sheet material each comprising composites made from a plurality of plies of material, said plies being oriented to provide a second coefficient of thermal expansion in each of said layers in the direction of said longitudinal axis; and

said second coefficient of thermal expansion counter balancing and substantially neutralizing said first coefficient of thermal expansion.

5,620,530

BACK REFLECTOR LAYER, METHOD FOR FORMING IT, AND PHOTOVOLTAIC ELEMENT USING IT

Akiya Nakayama, Kyoto, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

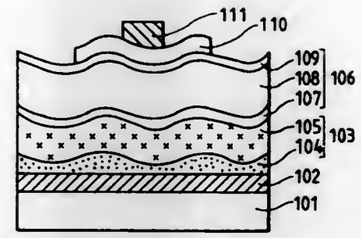
Filed Aug. 15, 1995, Ser. No. 515,296

Claims priority, application Japan, Aug. 24, 1994, 6-199343

Int. Cl.[6] H01L *31/04;31/18;* **C23C** *14/34*

U.S. Cl. 136—259 **19 Claims**

1. A back reflector layer comprising a base layer made of a metal or alloy as a first metal, and a transparent oxide layer comprising a



second metal and formed on said first metal, wherein the electron affinity of said second metal is at least 0.46 eV smaller than that of said first metal and wherein said transparent oxide layer is formed by a sputtering method in an atmosphere comprising at least H_2O and an inert gas and with a target having a composition ratio of said second metal of 1.06 to 1.2 times the stoichiometric composition thereof.

4. A photovoltaic element comprising a semiconductor junction containing layer formed on the back reflector layer as set forth in any one of claims **1** to **3**.

5,620,531

PHOTOVOLTAIC ELEMENT

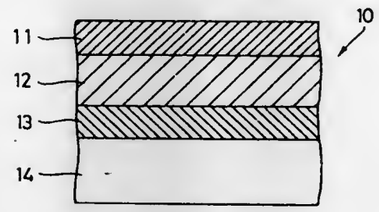
Keizo Ikai; Iwane Shiozaki; Masaki Minami, and Mitsuo Matsuno, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,415

Claims priority, application Japan, Dec. 14, 1994, 6-333091

Int. Cl.[6] H01L *31/06;31/07;31/0256*

U.S. Cl. 136—263 **5 Claims**



1. A photovoltaic element which comprises a semiconducting material resulting from decomposition of a silicon polymer having an organic substituent.

5,620,532

METHOD FOR MANUFACTURING NB_3AL GROUP SUPERCONDUCTOR

Naofumi Tada, Ube; Fumio Iida, Hitachi; Ryukichi Takahashi, Hitachioota, and Takaaki Suzuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 155,788, Nov. 23, 1993. This application Jun. 6, 1995, Ser. No. 470,436

Claims priority, application Japan, Nov. 30, 1992, 4-320279

Int. Cl.[6] H01B *13/00*

U.S. Cl. 148—98 **4 Claims**

1. A method for manufacturing Nb_3Al group superconductor comprising the steps of;

dispersing and mixing Nb particles and Nb_2Al ultrafine particles by a mechanical alloying method thereby obtaining a Nb_3Al group superconducting precursory composition.

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deforming said Nb_3Al group superconducting precursory composition with a deforming ratio at least 1,000, and subsequently,

performing a diffusion reaction at 1,000°–1,800° C.

5,620,533

METHOD FOR MAKING GRAIN-ORIENTED SILICON STEEL SHEET HAVING EXCELLENT MAGNETIC PROPERTIES

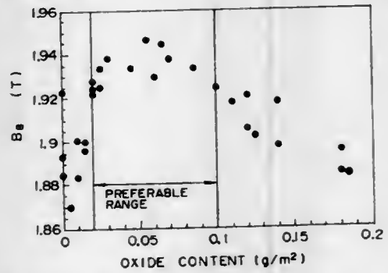
Keisuke Kotani; Mitsumasa Kurosawa; Masaki Kawano; Hirotake Ishitobi; Masayuki Sakaguchi; Takafumi Suzuki, all of Okayama, and Ujihiro Nishiike, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Sep. 26, 1995, Ser. No. 533,841

Claims priority, application Japan, Jun. 28, 1995, 7-161955

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—113 **4 Claims**



1. In a method for producing a grain-oriented silicon steel sheet which includes:

producing a silicon steel slab having a silicon steel slab composition;

hot-rolling said silicon steel slab to produce a silicon steel sheet;

cold-rolling said silicon steel sheet at least once, including a final cold-rolling, to produce a silicon steel sheet;

decarburization annealing said silicon steel sheet, said decarburization annealing including a temperature elevation phase and an oxidizing atmosphere, to produce decarburized silicon steel sheet;

applying an annealing separating agent to said decarburized silicon steel sheet; and

final annealing said decarburized silicon steel sheet to produce said grain-oriented silicon steel sheet;

the steps which comprise:

controlling said silicon steel slab composition to comprise, as inhibitor forming components, about 0.02 to 0.15 wt % Mn, about 0.005 to 0.060 wt % Se, about 0.010 to 0.06 wt % Al, and about 0.0030 to 0.0120 wt % N;

controlling the oxide content on said silicon steel sheet surface within about 0.02 to 0.10 g/m^2 before said temperature elevation phase in said decarburization annealing;

maintaining the ratio of steam partial pressure to hydrogen partial pressure in said oxidizing atmosphere within a range of about 0.3 to 0.5 when said silicon steel sheet has a surface temperature ranging from about 500° to 750° C. during said temperature elevation phase in said decarburization annealing; and

maintaining the ratio of steam partial pressure to hydrogen partial pressure in said oxidizing atmosphere within a range of about 0.5 to 0.8 when said silicon steel sheet has a surface temperature ranging from about 750° to 850° C. during said decarburization annealing.

5,620,534

Patent Not Issued For This Number

5,620,535

ALLOY SHEET FOR SHADOW MASK

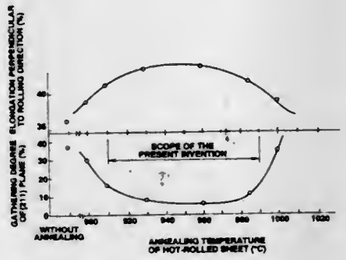
Tadashi Inoue; Kiyoshi Tsuru; Michihito Hiasa, and Tomoyoshi Okita, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 7,755, Jan. 22, 1993, Pat. No. 5,456,771. This application Dec. 1, 1993, Ser. No. 160,399

Claims priority, application Japan, Jan. 24, 1992, 4-032941; May 31, 1993, 5-152885; Jul. 27, 1993, 5-184938

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—311 **72 Claims**



1. An annealed alloy sheet for making a shadow mask by press forming the annealed alloy sheet, said alloy sheet consisting essentially of 34 to 38 wt. % Ni, 0.07 wt. % or less Si, 0.00001 to 0.002 wt. % B, 0.002 wt. % or less O, less than 0.002 wt. % N and optionally C, Mn and Cr, with the balance being Fe and inevitable impurities;

said annealed alloy sheet having the following properties:

(i) 0.2% proof stress of 28 kgf/mm^2 or less; and

(ii) a gathering degree of {211} plane of said annealed alloy sheet being 16% or less.

5,620,536

MANUFACTURE OF ZIRCONIUM CLADDING TUBE WITH INTERNAL LINER

Mats Dahlbäck, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

PCT No. PCT/SE93/01070, § 371 Date Aug. 11, 1994, § 102(e) Date Aug. 11, 1994, PCT Pub. No. WO94/15343, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 15, 1993, Ser. No. 284,648

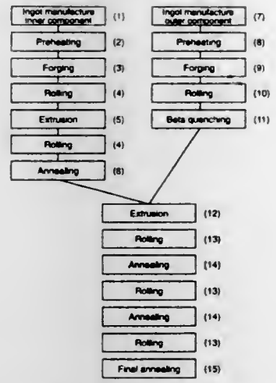
Claims priority, application Sweden, Dec. 18, 1992, 9203871

Int. Cl.[6] G21C *21/02;3/20*

U.S. Cl. 148—519 **16 Claims**

1. A method of manufacturing a composite cladding tube of a nuclear fuel element which is resistant to pellet-clad interaction, said composite cladding tube comprising an inner portion formed from a first component selected from the group consisting of zirconium and a zirconium alloy and an outer portion formed from a second component selected from the group consisting of Zircaloy 2, Zircaloy 4 and Zr 2.5 Nb, said method comprising the steps of:

(a) providing an ingot of said first component,



(b) forging rolling, extruding, and heat treating said ingot of said first component to form an inner billet,

(c) positioning said inner billet from step (b) within an outer machined billet formed from an ingot of said second component,

(d) extruding said joined billets from step (c) to form a joined tube blank, and

(e) machining said tube blank from step (d) to provide said composite cladding tube,

(f) said steps (b)–(e) being conducted at a temperature below that which causes incipient beta-phase transformation within said first component.

5,620,537

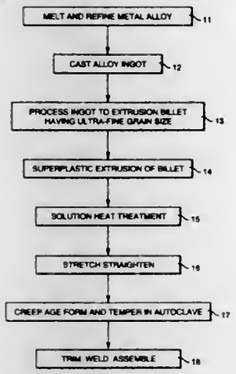
METHOD OF SUPERPLASTIC EXTRUSION

Clifford C. Bampton, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Thousand Oaks, Calif.

Filed Apr. 28, 1995, Ser. No. 431,186

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—564 **14 Claims**



13. A method of superplastic extrusion of metals, comprising the steps of:

providing a billet of metal selected from the group of superplastically formable metals consisting of aluminum alloys; titanium alloys; nickel, cobalt, and iron-based superalloys; stainless steels; carbon steels; copper alloys; and magnesium alloys;

performing equal channel angular extrusion of said billet to form an extrusion billet of metal having a uniform, equiaxed, ultra-fine grain microstructure with grain dimensions less than about 10 μm;

controlling temperature and strain rate of said extrusion billet to maintain said metal within a superplastic regime of said metal;

forcing said extrusion billet of metal through a thermostatically heated isothermal extrusion die while maintaining said metal within said superplastic regime of temperature and strain rate;

extruding from said extrusion die a complex-shaped extruded metal component having a shape selected from the components consisting of I-beams, thin cross section panels, integrally stiffened panels, T-stiffened panels, closed-box panels, and hollow section components; and

creep-age forming said complex-shaped metal component extruded from said extrusion die.

5,620,538

ASYMMETRIC RACING TIRE FOR OVAL RACE COURSES

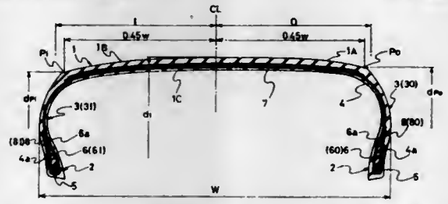
Masayuki Oshima, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,588

Claims priority, application Japan, Dec. 28, 1994, 6-328361

Int. Cl.[6] B60C *3/04;3/06;11/00;15/06*

U.S. Cl. 152—209 A **13 Claims**



1. A tire to be set on a racing vehicle running on an oval race course, wherein both end portions of a carcass provided in at least one layer are folded back around bead cores in left and right bead portions from an axially inner side of said tire to an axially outer side thereof, bead fillers extending into side wall portions being provided on the outer circumferences of said bead cores, belt layers being provided in the part of a tread portion which is on a radially outer side of said carcass,

wherein a profile of an outer tread region of said tread portion which is positioned to be further axially outward toward an outer side of a race course than a center line of said tire and a profile of an inner tread region of said tread portion which is positioned to be further axially inward toward an inner side of said race course than said center line of said tire are asymmetrical, an outer diameter and a thickness of said outer tread region being larger than an outer diameter and a thickness of said inner tread region, a difference between the outer diameters of portions of said tire which are spaced from said center line of said tire in the opposite widthwise directions from the center line by a distance corresponding to 45% of a maximum width of said tire being 0.5–5.0% of the outer diameter of a portion of said tire which is on said center line.

5,620,539

PNEUMATIC RADIAL TIRE WITH RUBBER CHAFER, STIFFENER AND SIDEWALL-REINFORCING RUBBER LAYER

Keita Ide, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,984

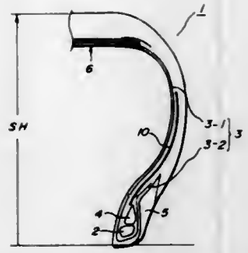
Claims priority, application Japan, Dec. 9, 1994, 6-306530; Nov. 22, 1995, 7-304413

Int. Cl.[6] B60C *9/00;15/00;15/06;9/08*

U.S. Cl. 152—541 **4 Claims**

1. A pneumatic radial tire comprising; a radial carcass comprised of a rubberized cord ply body toroidally extending between a pair

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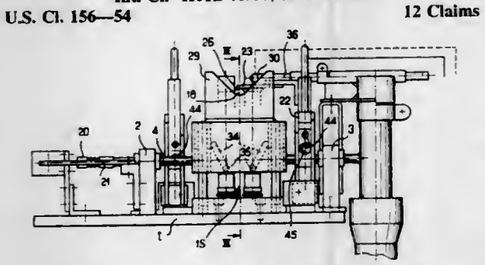
of bead cores and wound around each bead core from inside toward outside to form a turnup portion, a stiffener disposed above each bead core between the rubberized cord ply body and its turnup portion, and a rubber chafer arranged outside the turnup portion, provided that a ratio of cross-sectional area of the stiffener to cross-sectional area of the rubber chafer is not more than 0.5 and a thickness of the rubber chafer is a maximum in the vicinity of an outward end of the stiffener in a radial direction of the tire, and a sidewall-reinforcing rubber layer having a JIS A hardness of not less than 80° arranged along the carcass in a region ranging from a crown portion of the carcass to the bead core.

5,620,540

METHOD AND A MACHINE FOR MANUFACTURING A SHEATHED BUNDLE OF THREAD-LIKE ELEMENTS

Henri Bigot, Creteil, and Michel Caure, Meulan, both of France, assignors to Plasto SA, Chenove, France

PCT No. PCT/FR93/00951, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO95/09427, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 29, 1993, Ser. No. 424,466
Int. Cl.[6] H01B *13/00;* **B29C** *63/06*
U.S. Cl. 156—54 **12 Claims**



1. A method of manufacturing a bundle of tubes or electric cables of finite length, in which the bundle includes at least one junction point for a branch, and in which the tubes or electric cables of the bundle are enveloped in a plane thermofusible insulating material that is wrapped transversely about the elements and that has its longitudinal edges united by welding performed by application of heat, except at locations of junction points with each branch, the method being characterized in that each branch of the bundle is sheathed in succession by means of a respective tape that is wrapped transversely and is closed around the tubes or electric cables constituting the branch except at the location of a part of said branch which is adjacent to a respective one of the junction points.

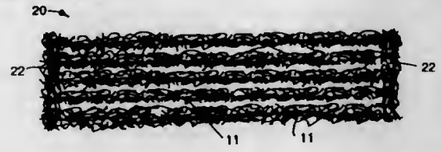
5. A machine for manufacturing a bundle of tubes or electric cables of finite length, the bundle including at least one junction point for a branch, and the elements of the bundle being covered in a tape of thermofusible insulating material wrapped transversely around the bundle with longitudinal edges of the tape being united by welding, the machine being characterized in that it includes a welding head comprising two rows each of a plurality of drive wheels for driving the bundle and the tape against which the wheels bear, a V-shape previously being imparted to the tape by a guide situated upstream from said wheels, said rows of wheels defining between them a through path for the bundle, which path is upwardly open and passes successively beneath a first horizontal guide for folding down a first side of the V-shape against the bundle, beneath a nozzle for blowing hot air into an angle formed between the folded-down first side and a non-folded-down second side of the V-shape, and beneath a second horizontal guide for folding down the second side of the V-shape against the already folded-down first side.

5,620,541

METHOD OF MAKING MULTILAYER NONWOVEN THERMAL INSULATING BATTS

Carol E. Herzberg, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 247,133, May 20, 1994, Pat. No. 5,437,909. This application May 3, 1995, Ser. No. 434,454
Int. Cl.[6] B32B *31/14*
U.S. Cl. 156—62.2 **8 Claims**



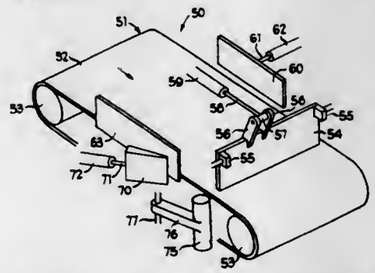
1. A method of making a thermal insulating nonwoven multilayer batt comprising the steps of:
(a) forming a web of bonding staple fibers and staple fill fibers;
(b) subjecting said web to sufficient heat to cause bonding of the bonding staple fibers to other bonding staple fibers and staple fill fibers at points of contact to stabilize the web;
(c) forming a batt of multiple layers of said webs; and
(d) bonding the layers at the periphery of the batt such that interior portions are not bonded to adjacent layers.

5,620,542

APPARATUS AND METHOD FOR SEALING VALVED BAGS TRANSPORTED BY A CONVEYOR

Michael R. Avila, West Jordan; Robert G. Kelley, South Jordan; Don G. Giles, Salt Lake City, and Jerry L. Aldridge, Grantsville, all of Utah, assignors to Stone Container Corporation, Chicago, Ill.

Filed Dec. 13, 1994, Ser. No. 354,988
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.1 **17 Claims**



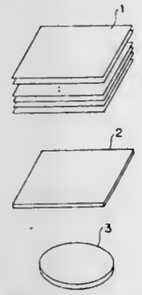
1. A method for sealing a freestanding valved bag containing articles therewithin, said valve bag being transported by a conveyor in a freestanding manner, said valve bag having a body with a longitudinal axis, said longitudinal axis extending substantially parallel to a longest dimension of said bag, said bag further having a first side portion extending substantially parallel to said longitudinal axis, said bag further having a first end, a center of gravity, and a sealable valve, disposed proximate said first end, at least a portion of said sealable valve protruding from said body, exteriorly of said first side portion, in a substantially perpendicular orientation relative to said longitudinal axis, said valved bag further having a second side portion extending substantially parallel to said longitudinal axis and, in turn, substantially parallel to said longest dimension of said bag, said method comprising the steps of:
orienting said freestanding valve bag on said conveyor in a freestanding manner, so that said rests with said second side portion on said conveyor, so as to minimize the distance between said center of gravity of said freestanding valved bag relative to a surface of said conveyor;
transporting said freestanding valved bag along said conveyor in a freestanding manner and in a direction of travel substantially parallel to said longitudinal axis of said freestanding valved bag;
stopping said transporting of said freestanding valved bag on said conveyor when said sealable bag is substantially aligned with a sealing area;
repositioning said freestanding valved bag to dispose at least a portion of said protruding sealable valve into said sealing area;
sealing said sealable valve to restrain said articles therewithin, through the direct application of externally applied forces to the protruding portion of said sealable valve and without the insertion of sealing apparatus into said sealable valve; and
resuming said travel of said freestanding valved bag along said conveyor.

5,620,543

METHOD OF MANUFACTURING MICROWAVE MAGNETIC MATERIAL BODY

Hiroshi Marusawa; Takehiro Kounoike, and Kunisaburo Tomono, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 154,586, Nov. 18, 1993, Pat. No. 5,459,439. This application Feb. 2, 1995, Ser. No. 382,609
Claims priority, application Japan, Nov. 25, 1992, 4-314885
Int. Cl.[6] B32B *31/18;31/26*
U.S. Cl. 156—89 **11 Claims**



1. A method of fabricating a microwave magnetic material body, comprising the steps of:
forming a magnetic paste obtained by mixing magnetic powders with a binder resin and a solvent;
forming a plurality of sheets from said magnetic paste;
laminating said plurality of magnetic sheets together to obtain a laminated body;
forming said laminated body in a disc shape; and
sintering the laminated body.

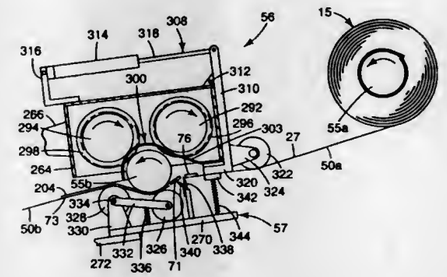
7. A method of fabricating a microwave magnetic material body, comprising the steps of:
forming a magnetic paste obtained by mixing magnetic powders with a binder resin and a solvent;
forming a plurality of sheets from said magnetic paste, each of said plurality of magnetic sheets having a thickness of several microns to several tens of microns;
laminating said plurality of magnetic sheets together to obtain a laminated body; and
sintering the laminated body to form the microwave magnetic material body.

5,620,544

TAPE ROLL LINER/TAB, APPLICATION APPARATUS AND METHOD

David R. Cram; Dee L. Johnson; Harvey D. Ogren, and Jeffery N. Jackson, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 7, 1995, Ser. No. 473,286
Int. Cl.[6] B65H *18/00*
U.S. Cl. 156—184 **3 Claims**



1. A process for sequentially forming a plurality of coreless rolls of pressure sensitive adhesive tape comprising the steps of:
longitudinally advancing a web having first and second major surfaces, one surface thereof bearing pressure sensitive adhesive thereon;
applying a liner/tab across a lateral width of the advancing web on the adhesive-bearing surface thereof;
winding the advancing web about a mandrel member to define a tape roll, whereby an innermost wrap of the web for eech tape roll includes an extent of the liner/tab sufficient to mask any exposed adhesive; and
cutting the liner/tab and web laterally into two segments, a first segment of the liner/tab defining said extent for one tape roll, and a second segment of the liner/tab defining a mask for adhesive along at an outermost end portion of a web for a previously wound tape roll.

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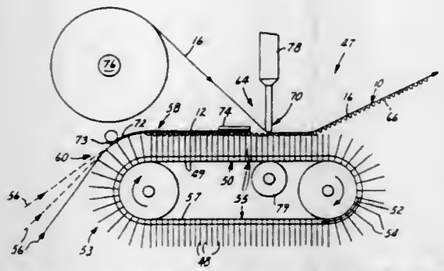
METHOD OF MAKING A CORRUGATED NONWOVEN WEB OF POLYMERIC MICROFIBER

David L. Braun, Lake Elmo; James E. Steffen, and Raju Venkatapathy, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 93,398, Jul. 19, 1993, which is a continuation-in-part of Ser. No. 925,384, Aug. 4, 1992, abandoned. This application May 23, 1995, Ser. No. 448,087
Int. Cl.[6] B31F *1/24*
U.S. Cl. 156—205 **26 Claims**

1. A method of making a corrugated nonwoven web of polymeric microfiber, which method comprises:
(a) introducing a nonwoven web of polymeric microfiber having a solidity of 0.1 or less into a corrugating apparatus that has a plurality of paddles secured at a first end to a means for moving the paddles about a path, the nonwoven web of polymeric microfiber making contact with spaced second ends of the paddles opposite to the paddles' first ends; and

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(b) reducing the spacing between the second ends of the paddles to cause the nonwoven web of polymeric microfiber to become corrugated, wherein the corrugated nonwoven web of polymeric microfiber has a solidity of 0.1 or less.

5,620,546

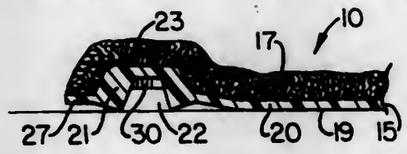
METHOD OF MAKING A FLOOR MAT HAVING A CHANNEL

Harold Reuben, Akron, Ohio, assignor to The Akro Corporation, Canton, Ohio

Division of Ser. No. 872,456, Apr. 23, 1992, Pat. No. 5,362,544, which is a continuation-in-part of Ser. No. 694,966, May 3, 1991, Pat. No. 5,154,961. This application May 24, 1994, Ser. No. 248,522

Int. Cl.[6] B29C *43/20;59/02*

U.S. Cl. 156—219 **14 Claims**



1. A method of forming an integral raised portion in an edge section of a floor mat; said floor mat having a pliable multilayer structure having an upper face layer overlying a base layer, and having a main body section bordered by said edge section;

molding an integrally molded channel in the edge section and extending longitudinally thereof by placing the base layer and the face layer under a compressive molding pressure applied to a bottom surface of the base layer and the top surface of the face layer;

embedding a portion of the bottom surface of the face layer in the upper surface of the base layer;

heating the base layer to cure the base layer while the face layer and the base layer are under the compressive molding pressure; and

maintaining the heating of the base layer until the base layer is cured, so as to form an integral raised portion in the edge section of the floor mat, defined by said integrally molded channel.

5,620,547

METHOD OF MANUFACTURING A DISK CASSETTE SHUTTER

Shuichi Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

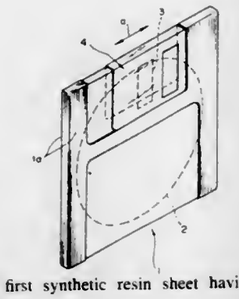
Division of Ser. No. 918,471, Jul. 22, 1992, Pat. No. 5,527,606. This application Jun. 7, 1995, Ser. No. 485,742

Claims priority, application Japan, Jul. 25, 1991, 3-207183; Jul. 25, 1991, 3-207184; Aug. 2, 1991, 3-216497

Int. Cl.[6] G11B *23/03;* **B32B** *31/02*

U.S. Cl. 156—226 **17 Claims**

1. A method of fabricating a recording disk shutter for a recording disk's protective package, comprising the steps of:



providing a first synthetic resin sheet having heat resistant properties;

providing a second synthetic resin sheet having low frictional properties;

laminating said first sheet to said second sheet to produce a lamination;

forming a shutter by folding said lamination in a U-shape.

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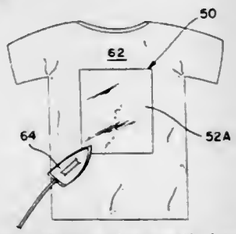
METHOD FOR TRANSFERRING A SILVER HALIDE PHOTOGRAPHIC TRANSFER ELEMENT TO A RECEPTOR SURFACE

Donald S. Hare, East Brunswick, N.J., assignor to Foto-Wear, Inc., Milford, Pa.

Continuation of Ser. No. 206,218, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 405,298, Sep. 11, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 659,700

Int. Cl.[6] B44C *1/16*

U.S. Cl. 156—239 **21 Claims**



1. A method of applying a photographic image to a receptor element, which comprises the steps of:

(a) exposing imagewise a silver halide photographic transfer element comprising,

a support having a front surface and a rear surface,

a heat activated transfer coating layer on said front surface of said support which is a material capable of transferring and adhering developed image and non-image areas from said front surface of said support to a surface of said receptor element upon the application of heat energy to the rear surface of the support, said transfer coating layer capable of stripping from said front surface of the support and adhering to said surface of said receptor element by liquefying and releasing from said support when heated and resolidifying on said receptor element when heat is removed, said transfer coating provides a colorfast image when transferred to said receptor element, and

at least one silver halide light sensitive emulsion layer on said front surface of said transfer coating layer,

(b) developing the imagewise exposed silver halide light sensitive photographic element to form a photographic image,

(c) positioning the front surface of said silver halide photographic element against said receptor element, and

(d) applying heat energy alone or together with pressure to the rear surface of the silver halide photographic element in order to liquify said transfer coating layer and release said photographic image layer containing said developed image and non-image areas and transfer and adhere said photographic image layer to said receptor element, with the proviso that the adherence of said photographic image layer is a result of the heated transfer coating layer which resolidifies on said receptor element when heat is removed and said adherence does not require an external adhesive layer and occurs in an area at least coextensive with the area of said at least one silver halide light sensitive emulsion layer.

5,620,549

METHOD OF MANUFACTURING HOLLOW RESIN MOLDING

Hidenobu Miyajima, Shizuoka, Japan, assignor to Asahi Tec Corporation, Shizuoka, Japan

Division of Ser. No. 353,217, Dec. 1, 1994, Pat. No. 5,538,571. This application Aug. 1, 1995, Ser. No. 509,098

Claims priority, application Japan, Dec. 1, 1993, 5-301601; Dec. 1, 1993, 5-301602

Int. Cl.[6] B29C *65/54*

U.S. Cl. 156—245 **2 Claims**

1. A method of manufacturing a manifold made of a synthetic resin comprising the steps of:

integrally molding an internal molding having a predetermined shape of a hollow portion of the manifold by a molding means;

molding external molding elements having a predetermined shape of an exterior of the manifold and being split into a plurality of parts;

integrating said internal molding with said external molding elements by a joining means; and

fitting a completely shaped flange member to a connecting portion formed by said respective external molding elements and said internal molding thereby forming said manifold.

5,620,550

PACKAGING MATERIAL WITH AN OPENING ARRANGEMENT AND A METHOD OF PRODUCING SAME

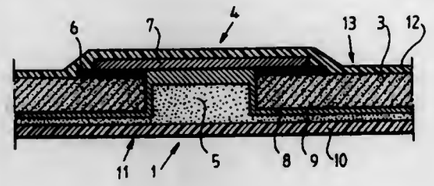
Ingvar Andersson, Löddeköpinge, and Thorbjörn Andersson, Södra Sandby, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Continuation of Ser. No. 36,278, Mar. 24, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 307,431

Claims priority, application Sweden, Mar. 31, 1992, 9200999

Int. Cl.[6] B32B *31/04;* **B65B** *61/20;* **B65D** *41/00*

U.S. Cl. 156—252 **21 Claims**



1. A method of producing a packaging material with an opening arrangement for use in producing a package which holds contents and which possesses an outer surface facing away from the contents comprising: providing a core layer of material having oppositely facing first and second surfaces; forming a prepared pouring aperture in the core layer; covering the prepared pouring aperture with a material strip that is sealed to the core layer so that upon tearing-off of the material strip a pouring aperture is exposed; and completely covering at least a first portion of the material strip with an outer layer by sealing the outer layer to the material strip and to the first surface of the core layer, the outer layer forming the outer surface of the package when the packaging material is subsequently formed into a package.

5,620,551

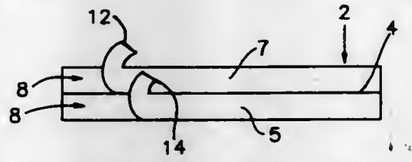
CORNER EDGE ROLL

Chris J. Botsolas, Clearwater, Fla., assignor to Carol M. Botsolas, Clearwater, Fla.

Division of Ser. No. 320,601, Oct. 11, 1994, which is a continuation of Ser. No. 147,872, Nov. 4, 1993, abandoned, which is a division of Ser. No. 776,199, Oct. 15, 1991, Pat. No. 5,281,456. This application Apr. 5, 1995, Ser. No. 417,655

Int. Cl.[6] B32B *7/02;* **D04H** *1/58*

U.S. Cl. 156—257 **7 Claims**



1. A method for forming corner edge material comprised of the steps of:

(a) forming a layer of adhesive material on one surface of a strip of material; and

(b) forming more than one score line parallel to the edges of the strip on the side of the adhesive layer wherein the strip is formed of material selected from the group consisting of rigid high impact grade polyvinyl chloride, light gauge metal and aluminum fused to rigid polyvinyl chloride and having a thickness of 0.005 inch to 0.0625 inch.

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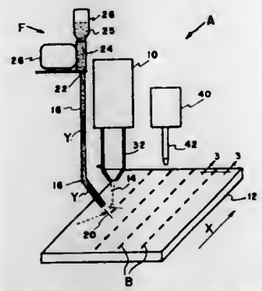
METHOD OF PRODUCING A SLIP-RESISTANT SUBSTRATE BY DEPOSITING RAISED BEAD-LIKE CONFIGURATIONS OF A COMPATIBLE MATERIAL AT SELECT LOCATIONS THEREON, AND A SUBSTRATE INCLUDING SAME

Paul E. Denney, State College, Pa., assignor to The Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 744,199, Aug. 12, 1991, Pat. No. 5,368,947. This application Sep. 12, 1994, Ser. No. 304,255

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—272.2 **19 Claims**



1. A method of producing a slip-resistant article be bonding raised configurations of a compatible material at select locations on the article surface, the method comprising the steps of:

a) providing a base plate having a surface portion;

b) providing a nozzle having a high power radiant energy source first chamber including focusing means and an orifice for said focusing means;

c) providing a powder feeding tube independent of said nozzle and having an end portion positioned below said nozzle for injecting particles of a material compatible with the base plate material;

d) providing said nozzle with a second chamber for supplying a suppression gas coaxial of said first chamber and radially adjacent thereto and around said focusing means and sepa-

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rated therefrom and having an orifice substantial coplanar with the orifice of said said focusing means;

e) projecting for a preset time period an irradiating beam having a point of impingement at a predetermined location on said surface portion by actuating said energy source;

f) injecting substantially simultaneously with step e) a predetermined quantity of particles into a portion of said irradiating beam at a point lying a distance away from the said point of impingement of said beam on said predetermined location on said surface portion;

g) projecting simultaneously with steps e) and f) a suppression gas downwardly about said irradiation beam and outwardly therefrom to prevent said particles from being directed upwardly toward said focusing means to prevent interference of said particles with said focusing means and to deflect said particles downwardly toward said point of impingement of said beam by actuating said suppression gas supply means;

h) allowing the injected particles to interact with said beam for a time period sufficient to cause partial melting of a substantial number of particles;

i) transporting particles treated in step h) to the point of impingement of said beam on said predetermined location on said surface portion;

j) causing a relative motion between said surface portion and said energy source;

k) allowing partially melted particles on said predetermined location to bond with the surface material thereby forming a raised configuration thereon; and

l) repeating steps d)–k) for forming another raised configuration on another location on said surface portion for thereby forming a slip-resistant article.

5,620,553

PHOTOPOLYMERISABLE LIQUID COMPOSITIONS FOR BONDING FRICTION MATERIAL TO METAL

Margaret R. Haddon, Milton Keynes; Terence J. Smith, Hertfordshire, and Stuart Mansfield, Sawston, all of England, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 284,729, Aug. 2, 1994, Pat. No. 5,451,616, which is a continuation of Ser. No. 903,836, Jun. 24, 1992, abandoned. This application May 18, 1995, Ser. No. 443,949

Claims priority, application United Kingdom, Jun. 29, 1991, 9114099

Int. Cl.[6] B32B *3/26;* **C09J** *5/06;7/00;111/06*

U.S. Cl. 156—273.5 **20 Claims**

1. An improved method of bonding a surface of friction material to a metal surface which comprises (i) bringing said surfaces together, with a heat curable solid film adhesive between and in contact with said surfaces to form an assembly, and heating the assembly to cure the film adhesive, said film adhesive being obtained by polymerization of a liquid composition on exposure to actinic radiation, the improvement comprising using a liquid composition comprising (A) a heat-curable phenol-aldehyde resol, (B) a photopolymerisable polyurethane or polyester having, on average, more than one polymerizable acrylic group per molecule, or a mixture of said polyurethane and said polyester, (C) a photopolymerization initiator for (B), and (D) a polyvinylacetal.

5,620,554

APPARATUS FOR MAKING A COMPOSITE ROOFING PRODUCT

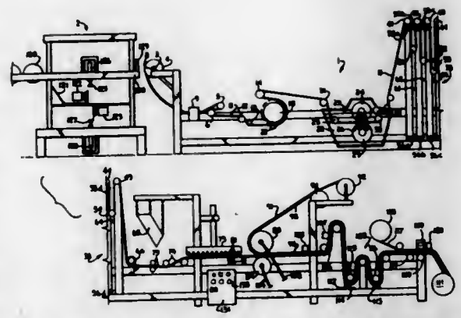
Jesse S. Venable, Herington, Kans., assignor to Carlisle Corporation, Syracuse, N.Y.

Division of Ser. No. 243,703, May 17, 1994, Pat. No. 5,456,785. This application Jan. 26, 1995, Ser. No. 378,587

Int. Cl.[6] B32B *31/04*

U.S. Cl. 156—496 **22 Claims**

1. Apparatus for making a composite roofing material, comprising:



(a) a splicer, a support for a first roll of vulcanized sheet downstream of said splicer, a first roll of vulcanized sheet in said support, a supply of fleece, and a supply of thermoplastic adhesive film, said vulcanized sheet extended along a path;

(b) A heater for heating a first side of said vulcanized sheet;

(c) said vulcanized sheet and said fleece compressed together, separated by said thermoplastic adhesive at a pair of unheated compression rollers immediately downstream of said heater and said rollers;

(d) said rollers compressing one side of said heated vulcanized rubber sheet with one side of said thermoplastic adhesive film while simultaneously compressing one side of said fleece with the other side of said thermoplastic adhesive film, wherein said heating is effective to heat the first side of said vulcanized sheet to a temperature above a melting temperature of said thermoplastic film;

(e) said splicer having a support for a second roll of vulcanized sheet, and a mechanism adapted to splice together a trailing edge of said first roll of vulcanized sheet to a leading edge of said second roll of vulcanized sheet;

(f) an apparatus adapted to guide said second roll of vulcanized sheet from said splicer to said apparatus to support said first roll of vulcanized sheet, thereby permitting splicing of vulcanized sheet from one roll to another on the fly.

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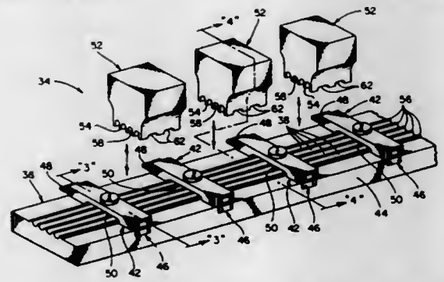
ULTRASONICALLY WELDED PLASTIC RIBBON AND APPARATUS AND PROCESS FOR FORMING SAME

Hrishikesh Choudhury, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 156,530, Nov. 19, 1993, Pat. No. 5,439,720, which is a continuation of Ser. No. 783,307, Oct. 28, 1991, abandoned. This application May 10, 1995, Ser. No. 438,579

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—580.2 **6 Claims**



1. An apparatus for forming a unitary ribbon of plastic tubing in the form of two or more lengths of tubing disposed in side-by-side relationship, said apparatus comprising,

an elongated base member having an upper surface with two or more parallel, generally semi-cylindrical longitudinally extending and closely adjacent grooves formed in the upper surface thereof and defining a nest for two or more lengths of plastic tubing,

a series of releasable clamps disposed along the length of said base member in spaced relationship for retaining said lengths of tubing in said grooves,

a series of sonic welding horns disposed one between each pair of clamps and having one or more longitudinally disposed welding blades each vertically aligned with the spacing between each two side-by-side lengths of tubing,

means for moving said sonic welding horns downwardly into sonic welding engagement with said side-by-side lengths of tubing, and

means for activating said sonic welding horns at an ultrasonic frequency for welding said non-contacting side-by-side tubing lengths together at spaced intervals along the length thereof to define a unitary ribbon of plastic tubing.

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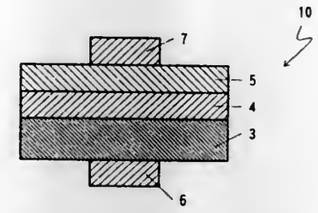
SAPPHIRELESS GROUP III NITRIDE SEMICONDUCTOR AND METHOD FOR MAKING SAME

Katsuhide Manabe; Masayoshi Kolke; Hisaki Kato; Norikatsu Kolde; Isamu Akasaki, and Hiroshi Amano, all of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Jun. 26, 1995, Ser. No. 494,846

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—507 **12 Claims**



1. A method for manufacturing a gallium nitride (GAN) sapphireless semiconductor film, comprising the steps of:

forming zinc oxide (ZnO) layers on respective ones of at least two sides of a sapphire substrate;

forming semiconductor layers of Group III nitride compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, inclusive of x=0, y=0, and x=y=0 on respective ones of said ZnO layers;

etching said ZnO layers with a ZnO-specific etchant; and

separating said semiconductor layers from said sapphire substrate.

5,620,556

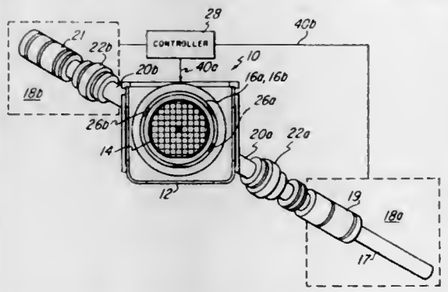
METHOD FOR RAPIDLY ETCHING MATERIAL ON A SEMICONDUCTOR DEVICE

Steven A. Henck, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 882,779, May 14, 1992, Pat. No. 5,425,839. This application Feb. 8, 1995, Ser. No. 385,411

Int. Cl.[6] G01N *21/00*

U.S. Cl. 438—8 **8 Claims**



1. A method for etching a layer of material used in the fabrication of semiconductor devices comprising the steps of:

placing a semiconductor device in a processing chamber, said semiconductor device having a first layer of a first material covering portions of a substrate and a second layer of a second material covering said first layer;

etching said second layer with a first etching process in said chamber;

obtaining plurality of thickness measurements substantially in real time during said etching step from an ellipsometer;

determining an etching rate from said plurality of thickness measurements;

stopping said etching of said second layer with said first etching process so as to leave a residual layer of said second material; and

etching said residual layer with a second etching process to remove said second layer and expose said first layer, said second etching process being different than said first etching process.

5,620,558

ETCHING OF COPPER-CONTAINING DEVICES

Karrie J. Hanson, Westfield, N.J.; Barry Miller, Bratenahl, Ohio; Barbara J. Sapjeta, Parsippany, N.J.; Akshay V. Shah, Berkeley Heights, N.J., and Ken M. Takahashi, Warren, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 94,654, Jul. 19, 1993, Pat. No. 5,298,117. This application Mar. 28, 1994, Ser. No. 219,686

Int. Cl.[6] C23F *1/02;* **H01L** *21/00*

U.S. Cl. 216—95 **6 Claims**



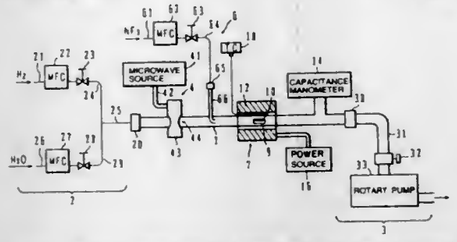
1. A process for fabricating a substrate having metallic electrical interconnects, wherein said interconnects comprise a first metal overlying a second metal, said process comprising the steps of etching a region comprising a first layer of said first metal overlying a second layer of said second metal characterized in that both said first and second layers are etched using a solution comprising HF, cupric chloride, and hydrochloric acid.

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5,620,559
HYDROGEN RADICAL PROCESSING

Jun Kikuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,735
Claims priority, application Japan, Mar. 18, 1994, 6-049547
Int. Cl.[6] B44C *1/22;* **C03C** *15/00;25/06;* **C23F** *1/00*
U.S. Cl. 438—723 **12 Claims**

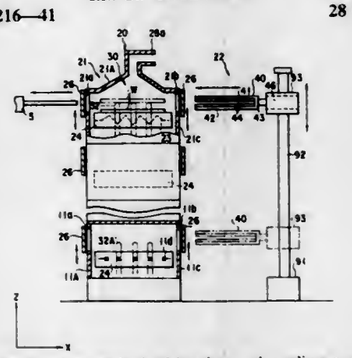


1. A method of manufacturing a semiconductor device comprising:
applying a gas containing HF and one of H_2O and an alcohol to a substrate to produce an HF treated substrate;
providing a hydrogen containing gas;
applying an excitation energy to said hydrogen containing gas at a plasma generating region to thereby generate a plasma in said hydrogen containing gas;
causing said hydrogen containing gas to flow from said region to a first position that is downstream from said region, at which first position high energy particles in the hydrogen containing gas have decayed sufficiently so that the concentration of high energy particles in the hydrogen containing gas has become negligible;
adding nitrogen fluoride to said hydrogen containing gas at said first position to produce a treatment gas;
causing said treatment gas to flow from said first position to a second position that is further downstream; and
contacting a surface of said HF treated substrate with said treatment gas at said second position to thereby remove imperfect oxide contamination from said surface.

5,620,560
METHOD AND APPARATUS FOR HEAT-TREATING SUBSTRATE

Masami Akimoto, Kumamoto; Yasuhiro Sakamoto, and Kouji Harada, both of Kumamoto-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed Oct. 3, 1995, Ser. No. 538,589
Claims priority, application Japan, Oct. 5, 1994, 6-264424
Int. Cl.[6] H01L *21/00*
U.S. Cl. 216—41 **28 Claims**

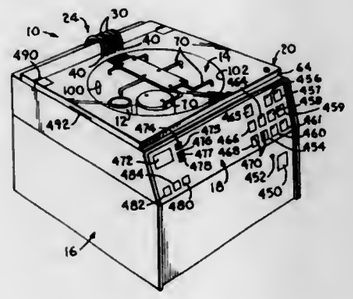


1. A heat-treating method of heating and cooling a substrate comprising the steps of:
(a) carrying the substrate into a heat-treating section by a main arm and mounting the substrate on a heating stage;
(b) heating the substrate on the heating stage;
(c) lifting the heated substrate from the heating stage;
(d) approaching an approach cooling holder to the substrate thus lifted and cooling it above the heating stage; and
(e) carrying the cooled substrate from above the heating stage.

5,620,561
VORTEX EVAPORATION

Lowell L. Kuhn, Independence; James F. Ptacek, Kansas City, and Gary P. Roepke, Blue Springs, all of Mo., assignors to Labconco Corporation, Kansas City, Mo.

Division of Ser. No. 234,241, Apr. 28, 1994, Pat. No. 5,569,357. This application May 19, 1995, Ser. No. 444,523
Int. Cl.[6] B01D *1/00*
U.S. Cl. 159—47.1 **15 Claims**



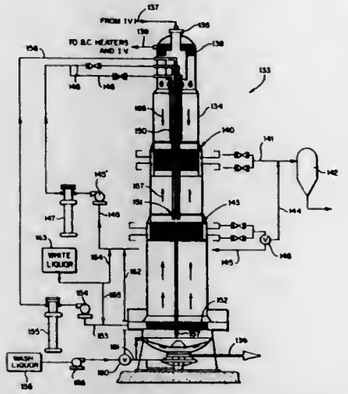
1. A method of evaporating liquid from a liquid and solid solution in a container, said method comprising:
providing a vortex evaporator comprising a chamber and a container holder inside the chamber;
moving the container holder in an orbital motion such that the solution forms a vortex configuration within the container to increase the surface area of the solution and promote liquid evaporation;
directing gas into the container from a point source overlying the solution to decrease the partial pressure on the solution thereby increasing the evaporation rate of the liquid from the solution; and
controlling the motion of the container holder.

9. A method of evaporating liquid from a liquid and solid solution in a container, said method comprising:
providing a vortex evaporator comprising a chamber and a container holder inside the chamber;
moving the container holder in an orbital motion such that the solution forms a vortex configuration within the container to increase the surface area of the solution and promote liquid evaporation;
drawing a vacuum within the chamber to decrease the boiling temperature of the solution without moving liquid from the container into the chamber;
controlling the motion of the container holder
providing a heater inside the chamber;
heating the container holder to increase the temperature of the solution in the container; and controlling the operation of the heater.

5,620,562
DISSOLVED SOLIDS CONTROL IN PULP PRODUCTION

Bruno S. Marcoccia, South Glens Falls; J. Robert Prough, Queensbury; Richard O. Laakso, Queensbury; Joseph R. Phillips, Queensbury, all of N.Y.; Rolf C. Ryham, Roswell, Ga.; Jan T. Richardsen, Glens Falls, and R. Fred Chasse, Queensbury, both of N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Division of Ser. No. 127,548, Sep. 28, 1993, Pat. No. 5,547,102, which is a continuation-in-part of Ser. No. 56,211, May 4, 1993, Pat. No. 5,489,363. This application Apr. 3, 1996, Ser. No. 625,709
Int. Cl.[6] D21C *7/12;7/14*
U.S. Cl. 162—42 **30 Claims**



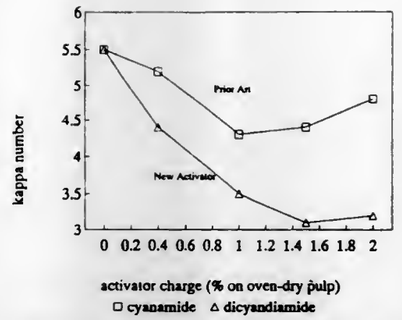
1. A method of producing kraft pulp using a continuous digester having a top, a bottom, an inlet for cellulose fibrous material at the top, an outlet for digested pulp at the bottom; a top screen assembly, an extraction screen assembly below the top screen assembly, and a cooking screen assembly below the extraction screen assembly, comprising the steps of:
(a) introducing a slurry of cellulosic material to be digested into the inlet;
(b) withdrawing some liquid from the slurry of material at the top screen assembly;
(c) extracting black liquor from the extraction screens;
(d) extracting liquor from the cooking screen and dividing it into at least first and second portions;
(e) passing the first portion to recovery;
(f) augmenting the second portion with low dissolved organic material liquid to produce an augmented second portion; and
(g) recirculating the augmented second portion back to the interior of the digester at about the level of the cooking screen assembly.

5,620,563
PROCESS FOR DELIGNIFICATION AND BLEACHING OF CHEMICAL WOOD PULPS WITH HYDROGEN PEROXIDE AND A DICYANDIAMIDE ACTIVATOR

Jianxin Chen, 2726 Mount Seymour Parkway, North Vancover, B.C., Canada

Filed Oct. 31, 1994, Ser. No. 331,935
Int. Cl.[6] D21C *9/16*
U.S. Cl. 162—65 **1 Claim**

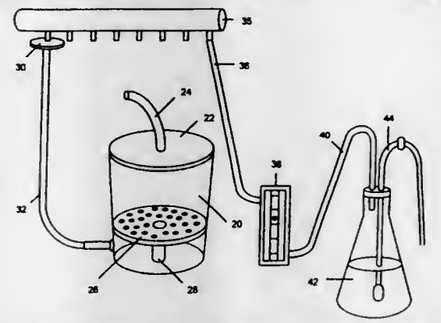
1. An improved process for delignification and bleaching of an oxygen delignified chemical wood pulp comprising the steps of:
a) producing a slurry of chemical wood pulp under alkaline conditions from the oven-dried pulp to be treated; and
b) adding to the slurry a hydrogen peroxide bleaching agent and a dicyandiamide bleaching activator in an amount of about 1.5% to about 2.0% by weight of the oven-dried pulp whereby a delignified and bleached wood pulp is produced having a brightness value greater than about 72.55% ISO and a kappa value of less than about 3.2.



5,620,564
METHOD OF ENHANCING BIOPULPING EFFICACY

Masood Akhtar, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Aug. 11, 1994, Ser. No. 289,479
Int. Cl.[6] D21C *3/00;3/20*
U.S. Cl. 162—72 **13 Claims**



1. A method of making a wood pulp comprising the steps of:
(a) chipping wood into wood chips;
(b) inoculating the wood chips with a liquid inoculum of *Ceriporiopsis subvermispora* and corn steep liquor;
(c) introducing the wood chips into a bioreactor, wherein step (c) may take place before or after step (b);
(d) incubating the wood chips under conditions favoring the propagation of the fungus through the wood chips for a sufficient amount of time for the fungus to modify a significant amount of the lignin naturally present in the wood chips; and
(e) mechanically pulping the wood chips degraded by the fungus into a paper pulp.

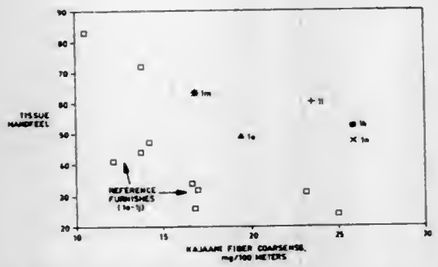
5,620,565
PRODUCTION OF SOFT PAPER PRODUCTS FROM HIGH AND LOW COARSENESS FIBERS

Nicholas W. Lazorisak, Hockessin, Del.; John F. Schmitt, West Chester, Pa., and Reginald Smith, Wilmington, Del., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 268,232, Jun. 29, 1994. This application Oct. 26, 1995, Ser. No. 547,745
Int. Cl.[6] D21C *3/00;3/04*
U.S. Cl. 162—72 **50 Claims**

1. A method of making sanitary paper products from cellulosic fibers, comprising:

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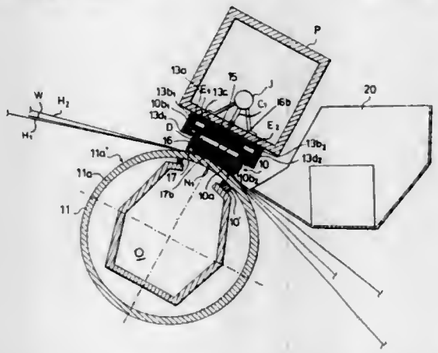
(a) pulping said cellulosic fibers in water with agitation to produce a pulp slurry, said slurry having a consistency between about 3% to about 18% and a pH below about 8.0;
(b) adding to the slurry a surfactant and at least one enzyme selected from the group consisting of cellulase, hemicellulase and lipase and maintaining said pulp slurry at a temperature above about 100° F. for at least 15 minutes;
(c) dewatering the slurry to a consistency of from about 25% to about 35%;
(d) crumbing the dewatered slurry, thereby producing crumbed fiber;
(e) passing the crumbed fiber through a fiber disperser and mixing oil selected from the group consisting of vegetable oil, mineral oil, lanolin oil, and their derivatives thereof with said fiber to produce treated pulp containing oily products; and
(f) forming said treated pulp into a wet web and drying the web to form a sanitary paper product.

5,620,566

EXTENDED NIP PREPRESS FOR A PAPER WEB

Kari Holopainen, Jyväskylä , Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jun. 2, 1995, Ser. No. 459,111
Claims priority, application Finland, Jun. 3, 1994, 942616
Int. Cl.[6] D21F *3/02*
U.S. Cl. 162—205 **20 Claims**



1. A press for pressing a paper web as the web is supported in direct engagement with a water permeable first wire, comprising
a load shoe arranged in a loop of the first wire, said load shoe having a front surface in direct engagement with the first wire,
a backing element situated in opposed relationship to a front surface of said load shoe,
first means for directing a fluid pressure medium to press said load shoe toward said backing element, and
second means for directing said pressure medium onto said front surface of said load shoe to lubricate said front surface of said load shoe.

19. A method for pressing a paper web, comprising the steps of:
supporting the web in direct engagement with a water permeable first wire.
arranging a load shoe in a loop of the first wire such that a front surface of said load shoe is in direct engagement with the first wire and in opposed relationship to a backing element,
pressing said load shoe toward said backing element by means of pressure provided by a fluid medium, and
lubricating said front surface of said load shoe by directing the fluid medium thereto.

5,620,567

PROCESS FOR THE REMOVAL OF ALDEHYDES AND ACETALS FROM INDUSTRIALLY PREPARED ACETIC ACID

Andreas Seidel, Köln; Alfred Hauser, Erftstadt, and Peter Prinz, Hürth, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jul. 29, 1994, Ser. No. 283,280
Claims priority, application Germany, Aug. 12, 1993, 43 27 011.5
Int. Cl.[6] B01D *3/34;* **C07C** *51/44*
U.S. Cl. 203—34 **4 Claims**

1. A process for the removal of aldehydes and acetals from industrially prepared acetic acid prepared by catalytic oxidation of acetaldehyde or carbonylation of methanol, consisting essentially of reacting the industrially prepared acetic acid in the presence of a substance selected from the group consisting of methanesulfonic acid, toluenesulfonic acid and phosphoric acid, in an amount of 0.005 to 0.05 mol/l of contaminated acetic acid, at a temperature of 50° to 118° C. for a period of 1 to 5 hours, and isolating purified acetic acid by fractional distillation.

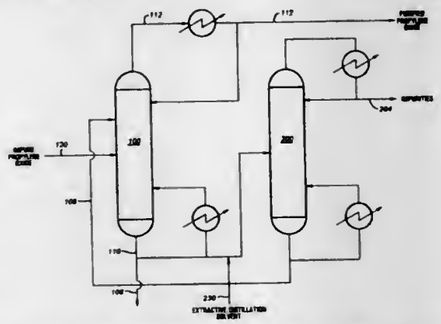
4. A process for the removal of aldehydes and acetals from industrially prepared acetic acid, which comprises reacting the industrially prepared acetic acid in the presence of 0.005 to 0.05 mol/l of contaminated acetic acid of a Brönstedt acid, in the presence of water and in the presence of 3–10 equivalents, based on aldehyde and acetal present in the industrially prepared acetic acid, of a high-boiling polyhydric alcohol selected from the group consisting of poly(vinyl alcohol), cane sugar, dextrose, starch and cellulose, at a temperature of 50° to 118° C. for a period of 1 to 5 hours, and isolating purified acetic acid by fractional distillation.

5,620,568

EXTRACTIVE DISTILLATION OF PROPYLENE OXIDE USING PROPANOL

William A. Smith, Round Rock, and Mark A. Mueller, Austin, both of Tex., assignors to Texaco Chemical, Inc., White Plains, N.Y.

Filed Jun. 3, 1996, Ser. No. 659,975
Int. Cl.[6] B01D *3/40;* **C07D** *301/32*
U.S. Cl. 203—63 **2 Claims**



1. An extractive distillation process for the distillation of impure propylene oxide in a distillation column to remove contaminants, including water, methanol and acetone, which comprises the steps of:

charging said impure propylene oxide feedstock to the lower half of a distillation column containing at least 25 theoretical plates, said impure propylene oxide feedstock comprising propylene oxide contaminated with from about 0.01 to 2 wt. % of water, from about 50 to about 4000 ppm of methanol and from about 0.01 to about 2 wt. % of acetone,
introducing an extractive distillation agent consisting essentially of 1-propanol at a point at least 4 theoretical plates above said impure propylene oxide feed point, said extractive distillation agent being introduced into said distillation column in the ratio of said feedstock to said extractive distillation agent of from about 1:1 to about 20:1,
withdrawing an overhead distillate fraction from said distillation column consisting of essentially anhydrous propylene oxide contaminated with reduced quantities of acetone and methanol, and
withdrawing a bottoms distillation fraction from said distillation column containing substantially all of the 1-propanol, water and a portion of the acetone and a portion of the methanol introduced into said distillation column.

2. An extractive distillation process for the distillation of impure propylene oxide in a distillation column, which comprises the steps of:
introducing an impure propylene oxide feedstock into the lower half of a distillation column containing at least 25 theoretical plates, said impure propylene oxide feedstock comprising propylene oxide contaminated with from about 0.01 to about 2 wt. % of water, from about 50 to about 4000 ppm of methanol and from about 0.01 to about 2 wt. % of acetone,
introducing an extractive distillation agent consisting essentially of 1-propanol at a point at least 4 theoretical plates above said impure propylene oxide feed point, said extractive distillation agent being introduced into said distillation column in the ratio of said feedstock to said extractive distillation agent of from about 1:1 to about 20:1,
distilling said impure propylene oxide feedstock in said distillation column under distillation conditions including a pressure of about 10 to about 40 psia, a reflux ratio of from about 1:1 to about 5:1, and a reboiler temperature within the range of about 90° to about 140° C. and a top temperature of about 20° to about 80° C., whereby a reduced quantity of lighter boiling by-products will be formed,
withdrawing an overhead purified propylene oxide distillate fraction from said distillation column consisting of essentially anhydrous propylene oxide, said purified propylene oxide distillate fraction being contaminated with reduced amounts of methanol and acetone,
withdrawing a higher boiling distillation fraction from said distillation column containing a reduced amount of the propylene oxide charged to said distillation column and containing substantially all of the 1-propanol, water, and a portion of the methanol and a portion of the acetone introduced into said distillation column, and
purging a portion of said higher boiling distillation fraction.

5,620,569

PROCESS FOR THE PHOTOOXIDATION OF TERPENE OLEFINS

Hans-Dieter Scharf, Roetgen; Peter Esser; Walter Kuhn, both of Holzminden, and Ralf Pelzer, Fürstenberg, all of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany

Filed Dec. 16, 1994, Ser. No. 358,129
Claims priority, application Germany, Dec. 23, 1993, 43 44 163.7
Int. Cl.[6] C07F *1/00;* **C07C** *29/00;401/00;41/00*
U.S. Cl. 204—157.6 **14 Claims**

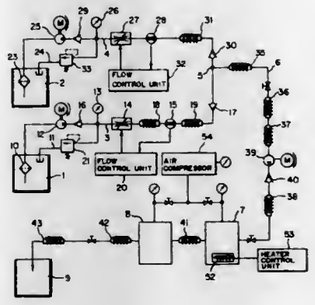
1. In the oxidation of an olefinic terpene with oxygen under radiation with light, the improvement which comprises utilizing a light source such that no more than 10% of the total energy of the light emitted is apportioned to the wavelength range of 200 to 400 nm, based on the wavelength range of 200 to 700 nm radiated by the light source, the radiation being of an intensity such that the reaction achieves a conversion rate of 95% in less than 12 hours.

5,620,570

METHOD OF MANUFACTURING HYDROUS OIL

Yoshihiro Iwata, 809-2, Higashiirushuzei-cho Sagaru Nijyo Senbondori, Kamigyo-ku, Kyoto-shi, 602, Japan, assignor to Yoshihiro Iwata, Kyoto, Japan

Filed Nov. 4, 1994, Ser. No. 334,531
Claims priority, application Japan, Sep. 9, 1994, 6-240775
Int. Cl.[6] C07C *5/00*
U.S. Cl. 204—157.15 **3 Claims**



1. A method of manufacturing hydrous oil comprising the steps of supplying water from a water tank to a water pipe and oil from an oil tank to an oil supply pipe, mixing the oil with the water, subjecting the water and oil to emulsification to produce a hydrous oil and storing the hydrous oil in a storage tank, said method further comprising the steps of:
applying through an application unit a low frequency and low voltage and current signal to the water supply pipe, thereby weakening the affinity between water molecules and increasing the amount of dissolved oxygen in the water;
applying through an application unit a low frequency and low voltage and current signal to the oil supply pipe, thereby weakening the affinity between oil molecules and increasing the amount of dissolved oxygen in the oil;
mixing the water and oil, which respectively have a weakened affinity between their molecules and an increase in their dissolved oxygen content, in a mixing pipe;
applying through an application a low frequency and low voltage and current signal to the mixing pipe, thereby mixing the water and oil more intimately and increasing the dissolved oxygen content in the mixture;
subjecting the mixture of the water and oil to emulsification in a heater-equipped emulsion tank and facilitating the emulsification with the addition of air to produce the hydrous oil;
flowing the hydrous oil from the emulsion tank to an aeration tank and applying through an application unit a low frequency and low voltage and current signal to the hydrous oil flowing from the emulsion tank to increase the dissolved oxygen content therein and then supplying air to the hydrous oil in the aeration tank to produce aerated hydrous oil;
flowing the aerated hydrous oil from the aeration tank to a storage tank and applying through an application unit a low frequency and low voltage and current signal to the aerated hydrous oil flowing from the aeration tank so that the air is uniformly dispersed therein and the hydrous oil is freed from impurities; and
storing the aerated hydrous oil in the storage tank, wherein said low frequency is from 40–320 Hz, said low voltage is from 0.5–2V and said current is from 1–3 mA.

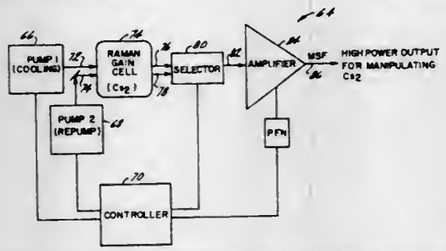
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5,620,571

MULTIPLE SINGLE FREQUENCY LASER SYSTEM AND METHOD OF OPTICAL MANIPULATON OF MOLECULES

John T. Bahns, Storrs; William C. Stwalley, Mansfield Center, and Phillip L. Gould, Coventry, all of Conn., assignors to The University of Connecticut, Storrs, Conn.

Filed Apr. 5, 1995, Ser. No. 419,860
Int. Cl.[6] B01D *59/00*
U.S. Cl. 204—157.15 42 Claims



26. A method for manipulating at least one degree of freedom of a first sample of molecules, comprising the steps of:

generating a first laser beam;

receiving said first laser beam in a cell containing a second, separate sample of the same species of molecules as said first sample, wherein said first laser beam interacts with said molecules therein to provide an output beam tuned to specific first optical transitions; and

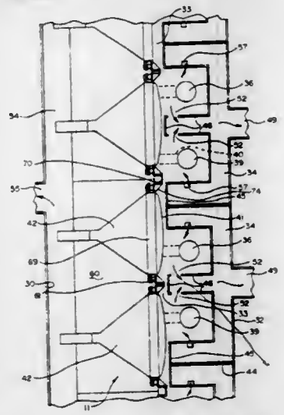
manipulating said at least one degree of freedom of said first sample of molecules with said output beam.

5,620,572

METHOD AND APPARATUS FOR THIN FILM COATING AN ARTICLE

Erik J. Bjornard; Eric W. Kurman, both of Northfield, and Debra M. Steffenhagen, Faribault, all of Minn., assignors to Viratec Thin Films, Inc., Faribault, Minn.

Division of Ser. No. 142,638, Oct. 25, 1993, Pat. No. 5,489,369. This application Jun. 7, 1995, Ser. No. 476,091
Int. Cl.[6] C23C *14/34;16/00;16/54*
U.S. Cl. 204—192.12 13 Claims



1. A continuous process for providing a thin film coating to the front surface of an assembled cathode ray tube, wherein said cathode ray tube includes said front surface to be coated and a rearward portion comprising the remaining surface which remains uncoated, said process comprising:

providing a process section with a cathode ray tube inlet, a cathode ray tube outlet and first and second zones extending from said cathode ray tube inlet to said cathode ray tube outlet wherein said first zone is a deposition zone adjacent to said second zone;

providing a thin film deposition device in said deposition zone;

providing a cathode ray tube support moveable through said process section, said cathode ray tube support substantially and continuously separating said first zone from said second zone throughout said process section and having at least one support opening;

supporting said cathode ray tube relative to said support opening such that said support opening surrounds said front surface, whereby said front surface faces said first zone and said rearward portion faces said second zone;

activating said at least one thin film deposition device and moving said cathode ray tube support through said process section, whereby said cathode ray tube enters said inlet end, moves through said process section with said front surface exposed to said thin film deposition device for application of a thin film thereon, and exits said cathode ray tube outlet.

5,620,573

REDUCED STRESS TUNGSTEN DEPOSITION

Charles W. Jurgensen, Colorado Springs, Colo.; Ratnaji R. Kola, Berkeley Heights; Gabriel L. Miller, Westfield, both of N.J.; Henry I. Smith, Sudbury, Mass., and Eric R. Wagner, South Plainfield, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 28, 1995, Ser. No. 431,355
Int. Cl.[6] C23C *14/00;14/32*
U.S. Cl. 204—192.13 7 Claims



1. A process for fabricating a device comprising the steps of depositing tungsten on a membrane and patterning said tungsten characterized in that at least some of the heat introduced into the membrane as a result of said deposition is conducted away from the membrane by introducing a gas onto the backside of the membrane as the tungsten is formed on the front side of the membrane and the stress generated during said deposition is monitored by measurement of a property relatable to said stress, and adjustment of said deposition process is made in accordance with said measurement sufficiently frequently such that said adjustment based on said measurement is possible at least 6 time per minute.

5,620,574

METHOD OF FABRICATING SPUTTER INDUCED, MICRO-TEXTURING OF THIN FILM, MAGNETIC DISC MEDIA

Edward F. Teng, Sunnyvale; Phuong Nguyen, Milpitas, and Atef H. Eltoukhy, Saratoga, all of Calif., assignors to Stor-Media, Inc., Santa Clara, Calif.

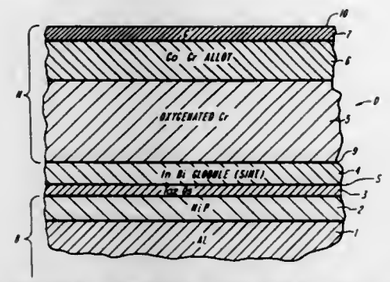
Filed Aug. 26, 1994, Ser. No. 296,958
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.15 4 Claims

1. A method of fabricating thin film, magnetic discs, said method comprising:

A) providing a disc substrate

said substrate having a surface wettable by a magnetic media nucleating, seed layer material;

B) depositing a substrate conditioning layer of an oxide of one of Tantalum and Titanium on said wettable substrate surface,



said substrate conditioning layer of an oxide of one of Tantalum and Titanium defining and providing a seed layer receptor which is relatively non-wettable by said seed layer material;

C) sputter depositing a eutectic alloy of Indium and Bismuth upon said substrate conditioning layer of an oxide of one of Tantalum and Titanium to define

a series of discrete globules of said eutectic alloy of Indium and Bismuth generally non-wettable engaging said substrate conditioning layer of an oxide of one of Tantalum and Titanium.

said discrete eutectic alloy globules of Indium and Bismuth defining a roughened exposed exterior on said substrate conditioning layer;

D) sputter depositing a thin film of magnetic media upon said roughened, exposed exterior with

the exterior of said deposited thin film of magnetic media being micro-textured in response to the depositing, over said substrate conditioning layer of an oxide of one of Tantalum and Titanium, of said eutectically alloyed globules of Indium and Bismuth; and

E) said eutectically alloyed globules

comprising substantially 65 percent by weight of Bismuth and 35 percent by weight of Indium,

having a low melting point of not more than about 90° C.,

said low melting point of about 90° C. being operable to enhance the formation of generally uniform and discrete globules of said eutectically alloyed Indium and Bismuth, and

having a substantially uniform but relatively large grain size of approximately 120 nanometers, with

said relatively large grain size reducing the stiction coefficient to about 0.5.

5,620,575

COMPOSITE PLATING APPARATUS AND APPARATUS FOR DISPERSING AIR BUBBLES WITHIN A COMPOSITE PLATING SOLUTION

Hitoshi Karasawa; Hiroyuki Nomura, and Hisayuki Sakurai, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, JPX

Filed Dec. 27, 1994, Ser. No. 364,320
Claims priority, application Japan, Dec. 27, 1993, 5-348610; Dec. 27, 1993, 5-348611
Int. Cl.[6] C25D *7/04*
U.S. Cl. 204—272 10 Claims

1. An apparatus for plating an inner surface of a hollow cylinder having an inner surface and an axis, the apparatus comprising:

an upper plating jig and a lower plating jig adapted to hold said hollow cylinder therebetween, said upper plating jig having an opening which is aligned with the inner surface of the hollow cylinder in use and which serves as an outlet for composite plating solution, said lower plating jig having an opening which is aligned with the inner surface of the hollow cylinder in use and which serves as an inlet for the composite plating solution;

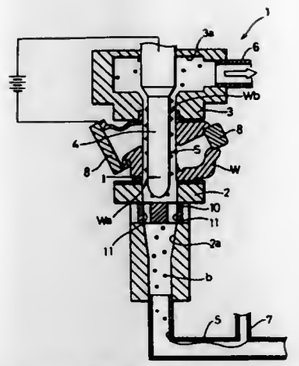
an insertion electrode for insertion within the opening of the upper plating jig and the hollow cylinder, the electrode being generally co-axial with the axis of the hollow cylinder to define an annular gap between said insertion electrode and the aligned opening of the upper plating jig and inner surface of the hollow cylinder;

a support member to support an upper portion of said insertion electrode when positioning said insertion electrode within the upper plating jig and hollow cylinder;

a liquid feeding pipe to supply the composite plating solution through the opening of the lower plating jig to the hollow cylinder and to flow the composite plating solution through said annular gap;

a bubble source to provide air bubbles for mixing in said plating solution within the hollow cylinder;

and a bubble dispersing member positioned downstream of the liquid feeding pipe and upstream of the opening of the lower plating jig to disperse said air bubbles in said composite plating solution within the hollow cylinder, said bubble dispersing member having a plurality of passage holes therethrough, at least a first passage hole of said plurality of passage holes having a diameter larger than a width of said annular gap, and at least a second passage hole of said plurality of passage holes being shaped as a slot.

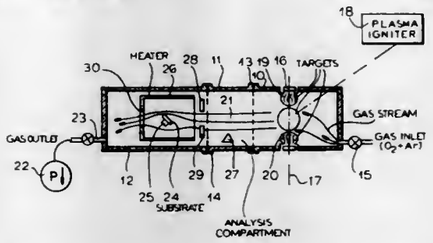


5,620,576

METHOD OF AND APPARATUS FOR PRODUCING A THIN LAYER OF A MATERIAL ON A SUBSTRATE

Roger Wördenweber, Niederzier, Germany, assignor to Forschungszentrum Julich GmbH, Julich, Germany

Continuation of Ser. No. 514,834, Aug. 14, 1995, abandoned, which is a continuation of Ser. No. 102,696, Aug. 5, 1993, abandoned, which is a division of Ser. No. 848,828, Mar. 10, 1992, Pat. No. 5,290,758. This application Jul. 19, 1996, Ser. No. 683,905
Claims priority, application Germany, Mar. 13, 1991, 41 080 01.7
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.07 3 Claims



1. An apparatus for producing a layer of a material containing an element contributed by a reactive gas, comprising:

(a) an elongated, gas-tight chamber,

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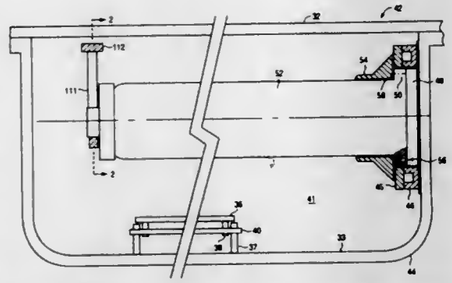
(b) a target compartment within said chamber comprising,
a gas inlet opening into said chamber at a location at one end of said chamber at an upstream end of the target compartment with respect to a direction of gas flow through said chamber,
at least one target, composed of a cathodic target material to be incorporated in said layer of a material,
an open downstream side opposite the gas inlet opening, and
means within said target compartment for generating a plasma at said target into which particles of said material pass from said target and in which said particles pass in an uninterrupted flow to the open downstream side of the target compartment;
(c) a substrate compartment within said chamber longitudinally spaced from said open downstream side of said target compartment and having an open upstream side and a downstream side with respect to said direction of gas flow, said substrate compartment comprising:
a gas outlet in a downstream end of the substrate compartment so that said inlet and said outlet communicate with said chamber at opposite ends of said chamber,
an elongated heating jacket located entirely within said substrate compartment with one end of said elongated heating jacket open and spaced downstream from the upstream side of the substrate compartment and the other end of said elongated heating jacket spaced further downstream from the upstream side of the substrate compartment, said other end of said heating jacket provided with an open outlet window, said heating jacket within said substrate compartment forming a substantially unobstructed gas flow path from said one end of said heating jacket to said open outlet window in said heating jacket, said gas passing in an unobstructed gas flow path from said window to said gas outlet,
a substrate holder surrounded by said heating jacket within said substrate chamber and spaced from a surface normal to said target in the target compartment, said surface normal being transverse to said flow direction, and
a baffle means within said substrate compartment at the open upstream side of the substrate compartment and upstream of said elongated heating jacket in said direction for guiding said stream of gas from the open downstream side of the target compartment to the open end of the elongated heating jacket in said substrate compartment to thereafter provide a substantially uninterrupted gas flow path through the heating jacket in the direction of and past said substrate holder to the other end of said heating jacket and through the outlet window; and
(d) a pump connected to said gas outlet communicating with said substrate compartment for maintaining a pressure of substantially 0.1 to 20 mbar in said chamber and for flowing a free-flowing stream of gas in said direction from said inlet, through said target compartment to said substrate compartment along said substrate holder and through the open outlet window in the heating jacket to said outlet whereby said particles are entrained in said stream onto a substrate on said substrate holder to form said layer.

5,620,577
SPRING-LOADED MOUNT FOR A ROTATABLE SPUTTERING CATHODE

Clifford L. Taylor, Nerstrand, Minn., assignor to Viratec Thin Films, Inc., Faribault, Minn.

Continuation of Ser. No. 296,295, Aug. 24, 1994, abandoned, which is a continuation-in-part of Ser. No. 174,533, Dec. 30, 1993, abandoned. This application Jan. 24, 1996, Ser. No. 590,811
Int. Cl.[6] C23C *14/35*
U.S. Cl. 204—298.22 **21 Claims**

1. A rotating magnetron cathode apparatus, comprising:
a cylindrical tubular structure with a first end which is rotatably supported and a second end which is distal from said first end;

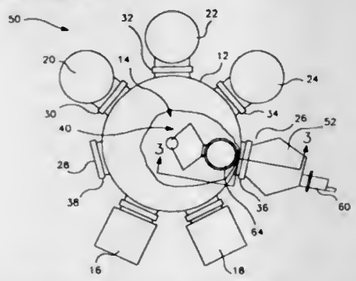


a frontal dark space shield at said second end of said cylindrical tubular structure;
mounting means for rotatably mounting said frontal dark space shield onto said second end of said cylindrical tubular structure without electrical conduction therebetween and such that said frontal dark shield remains stationary while said cylindrical tubular structure rotates; and
said frontal dark space shield including a cylindrical tubular sleeve having an outer diameter less than a diameter of said cylindrical tubular structure.
18. A rotating magnetron apparatus comprising:
an evacuable chamber;
a drive shaft;
a cathode disposed inside said evacuable chamber having a first end detachably attached to said drive shaft and a second end distal from said first end; and
spring loaded supporting means attached to a wall of said chamber for vertically supporting said second end of said cathode while allowing radial displacement of said second end.

5,620,578
SPUTTERING APPARATUS HAVING AN ON BOARD SERVICE MODULE

Steven Hurwitt, Park Ridge, N.J., assignor to Sony Corporation, Tokyo, Japan, and Materials Research Corp., Orangeburg, N.Y.

Continuation of Ser. No. 352,000, Dec. 8, 1994. This application Jan. 4, 1996, Ser. No. 583,200
Int. Cl.[6] C23C *14/56;16/00*
U.S. Cl. 204—298.25 **7 Claims**



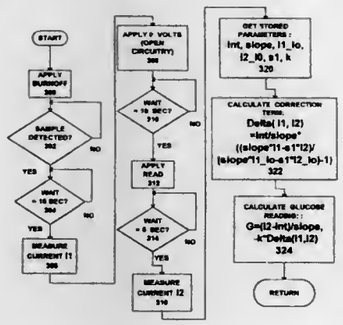
1. A cluster tool system for forming a layer on a substrate, comprising:
a plurality of process modules for forming said layer, each of said process modules including a process chamber having a first device which is subjected to a deposition process in said chamber during formation of said layer on said substrate;
a single service module having at least one replacement device suitable for replacing said first device in any of Said process modules wherein said service module is maintained at a vacuum suitable for reducing out gassing of said replacement device to a desired level;

a central housing removably affixed to each of said process modules and to said service module;
a valve for isolating said service module from said central housing and each of said process modules;
evacuation means for providing evacuation of each of said process modules and said service module and said central housing to said vacuum, wherein when said valve is opened said evacuation of each of said process modules and said service module and said central housing is sufficient for maintaining said vacuum thereby minimizing time needed for evacuation; and
a single robotic element located in said central housing, wherein said robotic element is adapted for transporting said first device from a selected process module selected from any of said process modules to said service module and for transporting said replacement device from said service module to said elected process module for replacing said first device under said vacuum.

5,620,579
APPARATUS FOR REDUCTION OF BIAS IN AMPEROMETRIC SENSORS

Marvin A. Genshaw, Elkhart; Dijia Huang; Matthew K. Musho, both of Granger, and Kin F. Yip, Elkhart, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed May 5, 1995, Ser. No. 435,993
Int. Cl.[6] G01N *27/26;27/327*
U.S. Cl. 204—402 **5 Claims**

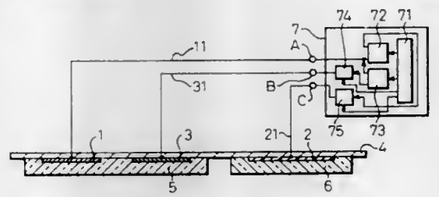


1. Apparatus for analyte determination in a test sample comprising:
amperometric sensor means for receiving the test sample;
timer means for identifying a burnoff time interval, a delay time interval, and a read time interval; said read time interval following said delay time interval;
voltage potential means responsive to said timer means for applying a first voltage potential which is a burnoff voltage potential to said amperometric sensor means during said burnoff time interval and for applying a second voltage potential which is a read voltage potential to said amperometric sensor means during said read time interval; said burnoff voltage potential and said read voltage potential having a common polarity;
means responsive to said timer means and said voltage potential means for measuring a first current i_1 resulting from said applied burnoff voltage potential and a second current i_2 resulting from said applied read voltage potential; and
means responsive to said current measuring means for determining an analyte value of the test sample.

5,620,580
IONTOPHORESIS DEVICE

Keiichiro Okabe, and Toyoji Hibi, both of Tokyo, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

Filed Jun. 23, 1994, Ser. No. 265,710
Claims priority, application Japan, Jun. 23, 1993, 5-174645; Jun. 30, 1993, 5-183399
Int. Cl.[6] A61N *1/30*
U.S. Cl. 204—550 **13 Claims**



1. An iontophoresis device comprising:
a reversible electrode;
a counter electrode;
an auxiliary electrode for regeneration of said reversible electrode;
a drug holding means for carrying an ionic drug therein, said drug holding means being arranged opposite to said reversible electrode and said auxiliary electrode and being constructed to make contact with a surface requiring therapy; and
a voltage applying control means for applying to said reversible electrode a voltage having a preset voltage level at a preset timing, said voltage applying control means including
first means for providing depolarized pulses between said reversible electrode and said counter electrode;
second means for providing a regeneration electrical output between said reversible electrode and said auxiliary electrode when said depolarized pulses are not provided, the polarity of said reversible electrode when said depolarized pulses are not provided being reverse to the polarity of said reversible electrode when said depolarized pulses are provided; and
switching means for breaking an electrical connection between said auxiliary electrode and said second means when said depolarized pulses are provided.

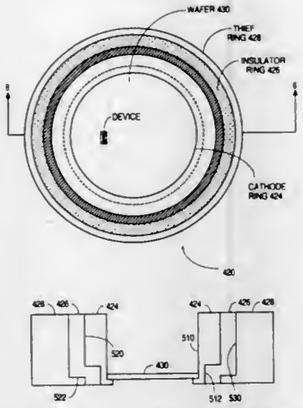
5,620,581
APPARATUS FOR ELECTROPLATING METAL FILMS INCLUDING A CATHODE RING, INSULATOR RING AND THIEF RING

Jane Ang, San Mateo, Calif., assignor to AIWA Research and Development, Inc., Fremont, Calif.

Filed Nov. 29, 1995, Ser. No. 564,508
Int. Cl.[6] B05B *5/025;* **C25D** *5/00;7/12;* **C25B** *15/00*
U.S. Cl. 205—96 **18 Claims**

1. A method of electroplating a thin metal film onto a workpiece comprising the steps of:
placing the workpiece into an interior aperture of a cathode assembly, the cathode assembly including:
a cathode ring having a notched outer surface and a flanged inner surface for holding the workpiece in electrical contact;
an insulator ring coupled to the outer surface of the cathode ring, having a flanged inner surface for nesting with the notched outer surface of the cathode ring and a notched outer surface; and
a thief ring coupled to the outer surface of the insulator ring, having a flanged inner surface for nesting with the notched outer surface of the insulator ring;
positioning the workpiece and cathode assembly in an electroplating cell having an anode therein;
applying an electroplating solution to the workpiece within the electroplating cell;

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conducting a current between the anode and cathode ring powered by a first power source; and

conducting a current in the thief ring powered by a second power source.

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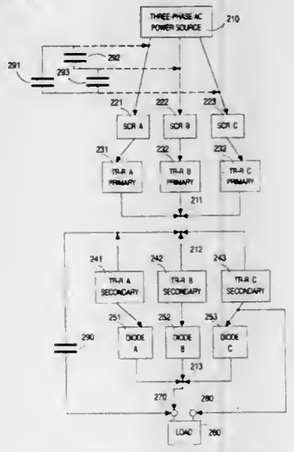
ENERGY-SAVING PROCESS FOR ARCHITECTURAL ANODIZING

Moisey M. Lerner, 75 Rolling La., Needham, Mass. 02192

Filed Jun. 2, 1995, Ser. No. 459,517

Int. Cl.[6] C25D *11/04*

U.S. Cl. 205—107 **9 Claims**



1. A method for architectural anodizing at least one aluminum or aluminum alloy article comprising the steps of:

immersing said article in an electrolyte composed of an aqueous solution of an acid;

applying for a time interval across said article and a cathode a DC voltage component with a superimposed AC voltage component, the positive potential of the DC voltage component being applied to said article and the negative potential of the DC voltage component being applied to said cathode;

said DC voltage component having a value during at least a portion of said time interval substantially in the range of 6–10 volts, said value being the highest DC voltage applied during said time interval to said article,

said DC voltage component with a superimposed AC voltage component being generated with three star-connected one-phase transformers, each transformer having a primary winding and a secondary winding, a first side of all secondary windings of said three one-phase transformers being star-connected to form a central point of secondary windings, and magnetic fields of said windings being decoupled, each field being enclosed in a magnetic core of its own transformer,

each transformer being coupled with an individual voltage control device at a first side of the transformer primary winding, said voltage control device being a saturable core reactor,

each transformer being connected with a rectifying circuit element at a second side of the transformer secondary winding,

two of said three transformers having their secondary windings used exclusively for supplying voltage to said rectifying circuit elements, the first side of said windings being connected to the central point of secondary windings and the second side being connected only to the corresponding rectifying element, said windings being called ordinary windings, and for the secondary winding of the third transformer, the first side of said winding being connected to the central point of secondary windings and the second side being connected to the corresponding rectifying element and to said cathode as well, said winding being also used for supplying an AC voltage component to said aluminum article, said winding being called an unbalancing winding.

5,620,583

PLATINUM PLATING BATH

Werner Kuhn, Rodenbach, and Wolfgang Zilske, Hanau, both of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1996, Ser. No. 624,806

Claims priority, application Germany, Apr. 15, 1995, 195 14 253.5; Dec. 21, 1995, 195 47 900.9

Int. Cl.[6] C25D *3/52*

U.S. Cl. 205—264 **10 Claims**

8. A method of electroplatingly depositing platinum on an article comprising placing said article in a platinum electroplating bath comprising 5 to 30 g/l platinum ions as amminesulphamato complex, 20 to 400 g/l of an acid sufficient to create a pH value less than 1 in said electroplating bath, and at most 5 g/l free amidosulphuric acid, subjecting said bath to a temperature of between 60° and 90° C. and operating said electroplating bath at an electric current density of 1 to 4 A/dm^2 for a sufficient period of time to deposit a bright layer of platinum on said article.

5,620,584

ELECTROCHEMICAL REDUCTION OF METAL SALTS AS A METHOD OF PREPARING HIGHLY DISPERSED METAL COLLOIDS AND SUBSTRATE FIXED METAL CLUSTERS BY ELECTROCHEMICAL REDUCTION OF METAL SALTS

Manfred T. Reetz; Wolfgang Helbig, and Stefan A. Quaiser, all of Mülheim an der Ruhr, Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim an der Ruhr, Germany

Filed Mar. 9, 1995, Ser. No. 401,750

Claims priority, application Germany, Mar. 14, 1994, 44 08 512.5; Dec. 6, 1994, 44 43 392.1

Int. Cl.[6] C25C *1/00;1/12;1/06;1/14*

U.S. Cl. 205—334 **17 Claims**

1. A method for the electrochemical preparation of a metal colloid of a particle size of 0.5 to 50 nm, which comprises cathodically reducing in an orfianic solvent optionally containing water at −78° C. to +120° C. at least one salt of at least one metal of groups Ib, IIb, III, IV, V, VI, VIIb, VIII, lanthanoides, or actinoides of the periodic table, there being present in the solvent a stabilizer comprising at least one quaternary ammonium salt of the formula

$R^1R^2R^3R^4N^+X^-$

or quaternary phosphonium salt of the formula

$R^1R^2R^3R^4P^+X^-$

in which

R^1 R^2 R^3 and R^4 each independently is at least one member selected from the group consisting of C_{1-18} alkyl, C_{1-18} alkylphenyl, and aryl, and

X is at least one member selected from the group consisting of Cl, Br, I, PF_6, R^1COO— and R^1SO_3.

5,620,585

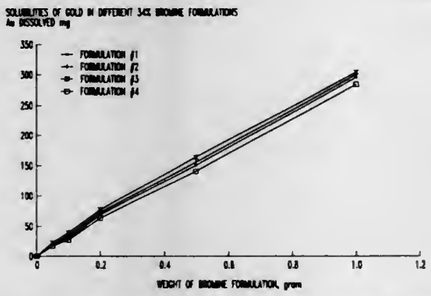
INORGANIC PERBROMIDE COMPOSITIONS AND METHODS OF USE THEREOF

Ahmad Dadgar; Jonathan N. Howarth; Rodney H. Sergent; Nicolai A. Favstritsky; Julie A. McKeown; Dennis W. Borden; Brent M. Sanders, and Jane Likens, all of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 577,677, Sep. 4, 1990, abandoned, , which is a continuation-in-part of Ser. No. 732,819, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 684,658, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 401,036, Aug. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 164,510, Mar. 7, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 466,405

Int. Cl.[6] C25B *1/20*

U.S. Cl. 205—565 **29 Claims**



1. A process for generating bromine in an aqueous solution containing bromide ion, comprising the steps of:

causing an aqueous solution containing bromide ions to flow through an electrogeneration system that comprises paired anode means and cathode means, said system having an inlet and an outlet for the flow of said solution, said solution at the inlet of said system having a pH of between about 0 and about 6 and a bromide ion concentration of between about 0.5 and about 8.8 moles per liter;

applying a direct electric potential via said anode means and said cathode means to cause an electric current to pass through said flowing solution in said system and to generate bromine at said anode means by electrolytic oxidation of bromide ions, the relationship between said electric current and the throughput of said solution through said system being such that between about 4% and about 50% of the bromide in said inlet solution is converted to bromine at said anode means, and the pH of the solution discharged from the outlet of said system is between about 0 and about 6.

9. A process for producing an aqueous leachate containing a metal or metals selected from the group consisting of gold, silver, platinum and palladium from a source thereof comprising the steps of:

causing an aqueous solution containing bromide ions to flow through an electrogeneration system that comprises paired anode means and cathode means, said system having an inlet and an outlet for the flow of said solution;

applying a direct electric potential via said anode means and said cathode means to cause an electric current to pass through said flowing solution in said system and to generate bromine at said anode means by electrolytic oxidation of bromide ions, thereby producing a brominated leaching solution, the relationship between said electric current and the throughput of said flowing solution through said system being such that between about 4% and about 50% of the bromide in said inlet solution is converted to bromine at said anode means;

contacting said source with said brominated leaching solution, thereby causing metal or metals contained in said source to react with said leaching solution producing said aqueous leachate containing metal or metals.

5,620,586

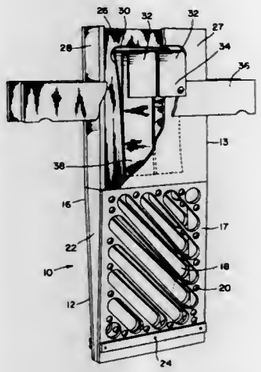
SILVER ELECTROLYSIS METHOD IN MOEBIUS CELLS

Pierre Claessens, St-Eustache, and John L. Cromwell, Pincourt, both of Canada, assignors to Noranda, Inc., Toronto, Canada

Filed Nov. 27, 1995, Ser. No. 563,079

Int. Cl.[6] C25C *1/20*

U.S. Cl. 205—571 **9 Claims**



9. A method for the continuous electrorefining of silver in a conventional Moebius cell comprising the steps of:

providing a Moebius cell;

inserting a silver anode in a basket made of nonconductive material and comprising a plurality of apertures in side walls and bottom thereof, the basket being provided with copper strips secured on two opposite side walls and connected to a power source at one end and in electrical contact with the anode at the other end, the copper strips being adapted to allow the anode to be continuously slid therebetween in the basket;

surrounding the basket with a cloth to retain gold mud remaining from electrolysis of the anode, the cloth allowing silver ions dissolved during the electrolysis to flow freely therethrough;

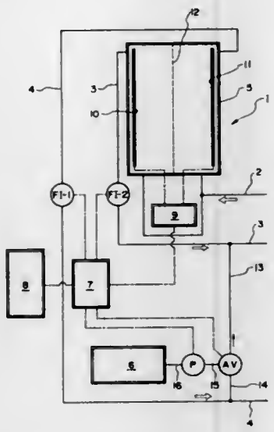
immersing the basket in an electrolyte and electrorefining in the Moebius cell by applying current to dissolve the silver anode and induce silver deposition on a cathode, with the proviso that the electrical contact between the copper strips and the anode is above a surface of the electrolyte and the copper strips are not in contact with the electrolyte;

continuously inserting a new silver anode in the basket over a dissolving anode while it is still immersed to maintain the electrical contact between the newly inserted anode, the dissolving anode and the copper strips; and

recovering silver deposited on the cathode.

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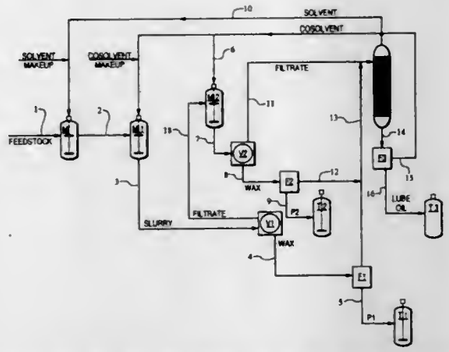
5,620,587
WATER PROCESSING METHOD AND APPARATUS
Tadamasa Nakamura, 5-2-401, 3-Chome, Toyogaoka, Tama, Tokyo, Japan
Filed Sep. 21, 1995, Ser. No. 531,922
Claims priority, application Japan, Oct. 14, 1994, 6-275884
Int. Cl.[6] C02F *1/461*
U.S. Cl. 205—742 **13 Claims**



11. A method for processing water, comprising:
electrolyzing water to produce cathodic water and anodic water;
controlling an amount of aqueous solution containing dissolved chitin chitosan to be added to at least one of said cathodic water and said anodic water; and
adding said controlled amount of aqueous solution to said at least one of said cathodic water and said anodic water to produce treated water comprising a predetermined quantity of chitin chitosan.

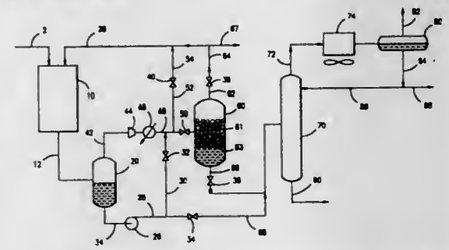
5,620,588
PETROLEUM-WAX SEPARATION
Michael D. Ackerson, 2916 Blueberry La., Fayetteville, Ark. 72703; Seyed-Hamid Arabshahi, 5401 Chimneyrock, Apt. 258, Houston, Tex. 77081, and Robert E. Babcock, 2100 Manor Dr., Rte. 10, Fayetteville, Ark. 72701
Division of Ser. No. 279,801, Jul. 25, 1994, Pat. No. 5,474,668, which is a continuation-in-part of Ser. No. 17,024, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 653,626, Feb. 11, 1991, Pat. No. 5,196,116. This application Jun. 6, 1995, Ser. No. 465,759
The portion of the term of this patent subsequent to Feb. 11, 2011, has been disclaimed.
Int. Cl.[6] C10G *73/06*
U.S. Cl. 208—33 **22 Claims**

1. A petroleum wax separation process for separating the wax from the oil in a waxy feedstock comprising the steps of:
combining a waxy feedstock at a temperature at least about its pour point with an ethyl tertiary butyl ether solvent to form a feedstock/solvent mixture having a pour point temperature below that of the waxy feedstock,
adding a cosolvent to the feedstock/solvent mixture to form a feedstock/solvent/cosolvent slurry, said cosolvent being essentially immiscible with the wax at and below the temperature of the feedstock/solvent mixture when the cosolvent is added, essentially immiscible with the oil, miscible with the feedstock/solvent mixture, and significantly miscible with water, and



removing wax that precipitates out of the feedstock/solvent/cosolvent slurry.

5,620,589
CHEMICALLY ACTIVE VAPOR/LIQUID SEPARATOR
Tsoung Y. Yan, Wayne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Dec. 30, 1994, Ser. No. 367,413
Int. Cl.[6] C10G *67/00;49/22;* **B01D** *53/02;* **C07C** *7/12*
U.S. Cl. 208—97 **17 Claims**



1. A process for removing acidic halides in a vapor and hydrocarbon liquid two-phase mixture and separating said mixture into a vapor phase and a liquid phase comprising:
a. charging to a vapor/liquid separator operating at vapor/liquid separation conditions a two phase mixture of liquid hydrocarbons and vapor, and wherein said liquid, said vapor or both contain acidic halogen components;
b. separating said two phase mixture into a vapor rich phase and a liquid phase in said separator and removing within said separator at least a majority of said acidic halogen components by reaction with a solid alkaline reagent within said separator;
c. separately removing a vapor phase and a liquid phase from said separator as a product of the process.

5,620,590
HYDROCRACKING PROCESS USING SMALL CRYSTAL SIZE ZEOLITE Y
Robert P. L. Absil, West Deptford; James R. Katzer, Morristown, both of N.J.; Daria N. Lissy, Glen Mills; Robert A. Ware, Wyndmoor, both of Pa., and Stephen S. Wong, Medford, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Continuation of Ser. No. 601,956, Oct. 23, 1990, abandoned. This application Apr. 29, 1994, Ser. No. 236,872
Int. Cl.[6] C10G *47/20*
U.S. Cl. 208—111 **22 Claims**

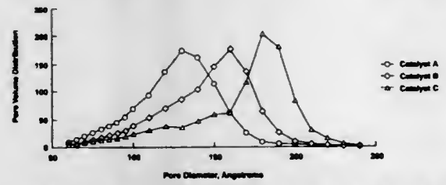
1. A process for hydrocracking and recovering hydrocarbons, said process comprising contacting a petroleum refinery fraction

with a catalyst and hydrogen under sufficient hydrocracking conditions, said catalyst comprising a combination of hydrogenation metals and zeolite Y, the crystal size of said zeolite Y being 0.2–0.4 microns, wherein said zeolite Y is in the form of an ultrastable zeolite Y having a unit cell size of 24.50 Angstroms or less, said process further comprising recovering a naphtha fraction.

5,620,591
HYDROCONVERSION PROCESS WITH PLUG-FLOW MOLYBDENUM CATALYST CONCENTRATE PREPARATION
Martin C. Poole; Thomas R. Halbert; Roby Bearden, all of Baton Rouge, La., and Stephen D. Reynolds, Kingwood, Tex., assignors to Exxon Research & Engineering Company, Florham Park, N.J.
Filed Dec. 22, 1994, Ser. No. 362,072
Int. Cl.[6] C10G *47/02*
U.S. Cl. 208—112 **7 Claims**

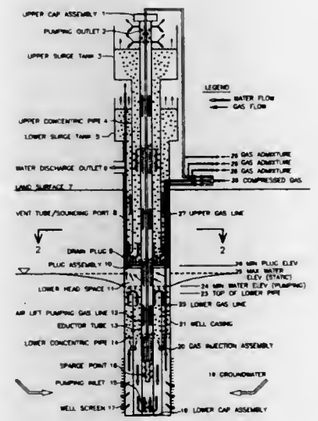
1. A process for hydroconverting a heavy hydrocarbonaceous chargestock to lower boiling products, which process comprises reacting the hydrocarbonaceous chargestock with a catalyst in the presence of hydrogen at hydroconversion conditions, said catalyst having been prepared by a method which comprises:
(a) forming a catalyst precursor concentrate by mixing together: (i) a sulfiding agent; (ii) a hydrocarbonaceous oil comprising constituents boiling above about 570° C.; (iii) an aqueous solution of a polyacid of molybdenum, in an amount to provide from about 0.2 to 2 wt. % metal, based on said hydrocarbonaceous oil, wherein the mixing is preformed in plug-flow mode in at least four equivalent stages, with the substantial absence of back-mixing;
(b) drying the catalyst precursor concentrate mixture at an effective temperature and for an effective amount of time;
(c) heating mixture in the substantial absence of oxided hydrogen at a temperature from about 275° to about 425° C. and a total pressure from about 0 psig to about 500 psig, for a time which is sufficient to convert said catalyst precursor to a solid molybdenum containing catalyst, thereby producing a catalyst concentrate.
(d) introducing said catalyst concentrate into a heavy hydrocarbonaceous stream;
(e) subjecting said catalyst-containing heavy hydrocarbonaceous stream to hydroconversion conditions which include temperatures from about 340° to 480° C. and hydrogen partial pressures from about 50 to 5000 psig, wherein at least 10 wt. % of said heavy hydrocarbonaceous stream contains components boiling above about 570° C.

5,620,592
LOW MACROPORE RESID CONVERSION CATALYST
Richard S. Threlkel, El Cerrito, Calif., assignor to Chevron U.S.A. Inc., San Francisco, Calif.
Continuation-in-part of Ser. No. 282,673, Jul. 29, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 477,340
Int. Cl.[6] C10G *45/04;45/60*
U.S. Cl. 208—216 PP **19 Claims**



1. An alumina support for a hydrodesulfurization catalyst, the support comprising a particle density less than 1.0 grams per cubic centimeter and a pore volume in the range of about 0.5 to about 1.1 cubic centimeters per gram, wherein at least about 70% of the pore volume is in pores having diameters of the range of 140 Å and 220 Å, less than 5% of the pore volume is in pores having diameters greater than about 500 Å, and less than 2% of the pore volume is in pores having diameters greater than about 1000 Å, the pores of the alumina support having a peak pore diameter greater than 170 Å.

5,620,593
MULTI-STAGE IN-WELL AERATOR
Joseph C. Stagner, 2305 Inverness Pl., El Dorado Hills, Calif. 95762
Filed Jun. 12, 1996, Ser. No. 662,079
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—90 **5 Claims**



1. A system for treating groundwater including a means for directing water flow by gravity along multiple separate paths within a water well during the pumping process and a means for injecting compressed gas into the water at separate locations within each of the multiple separate paths and a means for transporting the injected gas to the top of the water well for collection or dispersion into the atmosphere after it has passed through the water, and a means for discharging the water at the top of the well after it has been treated, wherein said means for directing water flow by gravity along multiple separate paths within a water well during pumping, said well having a minimum water level and a maximum static water level, includes:
one or more pipes mounted concentrically within a lower section of a well casing below the minimum water level within the well during pumping and sealed at the bottom of the well but allowing alternating upward and downward flow of water by gravity from one annular space to another commencing with an upward flow within an outermost annular space and ending with a downward flow to a pumping inlet at the bottom of the well within an innermost annular space;
one or more pipes mounted concentrically within an upper section of the well casing above the maximum static water level within the well which allows alternating upward and downward flow of water by gravity from one annular space to another commencing with a downward flow within an innermost annular space and ending with an upward flow to a discharge outlet at the top of the well within an outermost annular space and a means for supporting the pipes at their bottom and separating them from the well below; and
surge tanks mounted upon the tops of the concentric pipes mounted above the maximum static water level to prevent water flow during hydraulic surges.

VOL 1197 ISS 3 AP 15 1997 UMI

5,620,594

WATER MANAGEMENT SYSTEM

Robert M. Smith, Bechin; John E. Adams, Montrose, and James E. Delves, Bristol, all of United Kingdom, assignors to Merpro Tortek Limited, Scotland

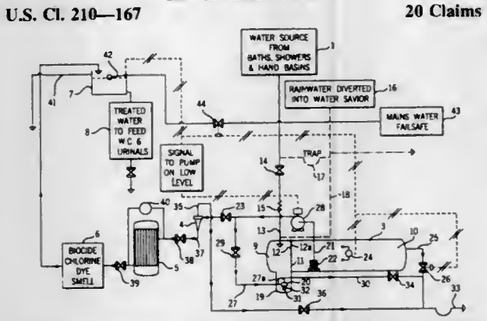
PCT No. PCT/GB93/02667, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO94/16157, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 29, 1993, Ser. No. 491,864

Claims priority, application United Kingdom, Dec. 30, 1992, 9227130; Feb. 19, 1993, 9303389; May 24, 1993, 9310641; Aug. 26, 1993, 9317745

Int. Cl.[6] B01D *21/00*

U.S. Cl. 210—167 **20 Claims**



1. A water management system comprising a first water distribution system having a waste water outlet connected to an inlet of a settling chamber for supplying waste water to the settling chamber, the settling chamber having an overflow to a discharge chamber; and means positioned in the lower part of the settling chamber for removing heavier than water contaminants from the waste water, the means for removing said contaminants comprising a fluidising unit having a supply duct connected to a supply of water under pressure, and a discharge duct within the supply duct for the discharge of a slurry of said contaminants from the settling chamber; the discharge chamber having an outlet connected to a storage tank for supplying cleansed water from the first distribution system to a second water distribution system.

5,620,595

SWIMMING POOL OR LIKE AQUEOUS SYSTEM CONTAINING AN IMIDAZOLIUM, PYRAZOLIUM OR TRIAZOLIUM SALT AS SANITIZER

Peter W. Austin, Bury; Clive H. Barlow, Heywood; Brian D. Bothwell, Rochdale; Andrew N. Collins, Marsh, and Mark R. James, Rawtenstall, all of United Kingdom, assignors to Zeneca Limited, London, England

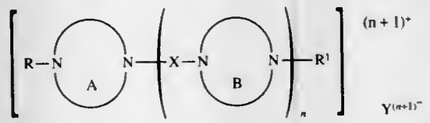
Division of Ser. No. 411,633, Apr. 11, 1995. This application Jun. 1, 1995, Ser. No. 456,706

Claims priority, application United Kingdom, Oct. 20, 1992, 92212997

Int. Cl.[6] C07D *233/58;233/56;* **A01N** *43/50;43/56;43/653;* **C02F** *1/50*

U.S. Cl. 210—169 **16 Claims**

1. An aqueous system selected from the group consisting of a swimming pool, spa, jacuzzi, whirlpool, recreational pond and hot tub, said system containing from 1 to 1000 ppm of a compound having the Formula I



wherein

R and R^1 are independently C_{4-20}-alkyl;

A and B are independently a pyrazolium, triazolium or imidazolium ring;

X is C_{6-18}-alkylene;

n is 1 to 6; and

Y is one or more anions providing (n+1) negative charges to give a neutral molecule.

5,620,596

FALLING FILM CROSS FILTRATION APPARATUS

Holger Engdahl, and Pekka Tormikoski, both of Savonlinna, Finland, assignors to Ahlstrom Machinery Oy, Helsinki, Finland

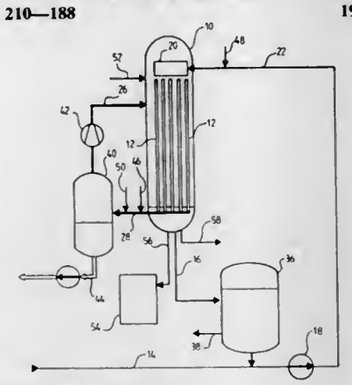
PCT No. PCT/FI94/00485, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/12446, PCT Pub. Date May 11, 1995

PCT Filed Oct. 27, 1994, Ser. No. 433,348

Claims priority, application Finland, Nov. 2, 1993, 934853; Mar. 14, 1994, 941194

Int. Cl.[6] B01D *29/00*

U.S. Cl. 210—188 **19 Claims**



1. Filtering apparatus, comprising:

a housing;

a plurality of filter elements generally vertically mounted in said housing, and including a top and a bottom;

each filter element comprising a filter surface with first and second sides both substantially free of filter cake;

means for providing a higher gas pressure on said first sides of said filter surfaces with respect to said second sides;

a first conduit for withdrawing a filtrate from said second side of at least one of said surfaces;

a second conduit for withdrawing a suspension liquid from adjacent the bottom of said elements; and

means for introducing a suspension onto said first sides of said surfaces, such that the suspension flows in a falling film down said first sides and in contact therewith, so that filter cake does not form during operation.

5,620,597

NON-FOULING FLOW-THROUGH CAPACITOR

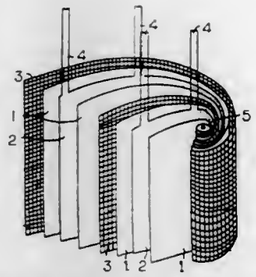
Marc D. Andelman, One Parkton Ave., Worcester, Mass. 01601

Continuation-in-part of Ser. No. 439,310, May 11, 1995, Pat. No. 5,547,581, which is a division of Ser. No. 194,609, Feb. 10, 1994, Pat. No. 5,415,768, which is a continuation-in-part of Ser. No. 27,699, Mar. 8, 1993, Pat. No. 5,360,540, which is a division of Ser. No. 819,828, Jan. 13, 1992, Pat. No. 5,200,068, which is a continuation-in-part of Ser. No. 792,902, Nov. 15, 1991, Pat. No. 5,192,432, which is a continuation of Ser. No. 512,970, Apr. 23, 1990, abandoned. This application Oct. 10, 1995, Ser. No. 541,880

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **28 Claims**

1. A foul-resistant, flow-through capacitor having at least one anode and cathode pair for use in the electrical purification, concentration, separation, recovery, or electrochemical breakdown of solutes or fluids, which capacitor comprises one or more monolithic, spaced apart pairs of cathode-anode electrodes incorporating a high surface area material and having a non-conductive spacer between the anode and cathode electrodes characterized by an open flow path between the electrodes to permit the unobstructed flow of the fluid across the electrode surface and of sufficient width to prevent the fouling of the capacitor and wherein the open flow path has at least one dimension open to an exterior of the capacitor.



5,620,598

SUCTION HEAD ARRANGED BETWEEN A FILTRATE CHANNEL AND A BAROMETRIC LEG OF A ROTATING FILTER

Kent Strid, Järbo, Sweden, assignor to Kvaerner Hymac AS, Lier, Norway

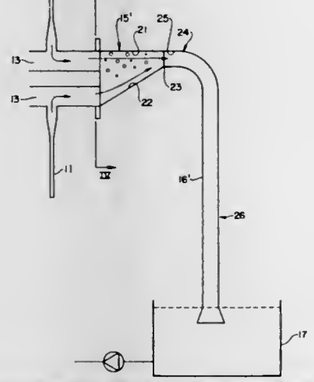
PCT No. PCT/SE93/01000, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO94/12261, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 436,406

Claims priority, application Sweden, Nov. 20, 1992, 9203495

Int. Cl.[6] B01D *33/80*

U.S. Cl. 210—324 **13 Claims**



1. A suction head (**15**; **28**) arranged between a filtrate channel (**13**) and a barometric leg (**16'**) of a rotating filter having at least one filter means (**10**, **11**) communicating with the filtrate channel (**13**), the filtrate channel (**13**) being connected to the barometric leg (**16'**) through the suction head (**15**; **28**), wherein an internal upper boundary (**21**; **33**) of the suction head (**15'**; **28**), as regards flow towards the barometric leg, is straight and horizontal and is nowhere located at a level above a likewise straight and horizontal internal upper boundary (**25**) of the barometric leg (**16'**), said internal upper boundary (**21**; **33**) of the suction head merging into said straight and horizontal internal upper boundary (**25**) of the barometric leg.

5,620,599

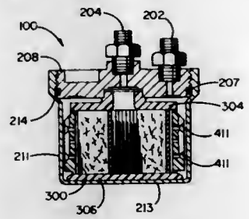
LOW HOLD-UP VOLUME FILTER ASSEMBLY

Scott D. Hopkins, Dryden, and Timothy P. Pierce, Syracuse, both of N.Y., assignors to PALL Corporation, East Hills, N.Y.

Continuation of Ser. No. 275,871, Jul. 15, 1994, Pat. No. 5,462,675. This application Jun. 6, 1995, Ser. No. 467,319

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—420 **12 Claims**



1. A filter assembly comprising:

(a) a housing having an inside diameter and an inlet port and an outlet port defining a fluid flow path therethrough;

(b) a filter element comprising a filter having a diameter less than the inside diameter of the housing, the filter being disposed within the housing in the fluid flow path; and

(c) a sleeve positioned between the housing and the filter, the sleeve dimensioned to occupy at least 80% of the volume between the filter and the housing.

5,620,600

IMPROVEMENTS TO SETTLERS

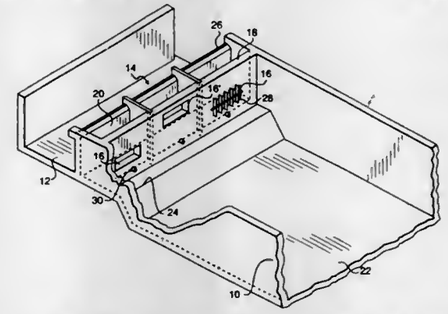
M. Adbellatif Smati, Suresnes, France, assignor to Degremont, Rueil Malmaison, France

Continuation of Ser. No. 353,382, Dec. 2, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 621,510

Claims priority, application France, Dec. 9, 1993, 93 14815

Int. Cl.[6] B01D *21/02*

U.S. Cl. 210—519 **4 Claims**



1. A settler for liquid treatment installations including a settlement tank fed with liquid from a feed channel having a wall thereof serving as a spillway, the settler including a system for distributing the liquid and comprising:

a plurality of separated inlet chambers longitudinally positioned along the feed channel, a first wall of the inlet chambers defined by the spillway and fed from the spillway;

a tank wall located in spaced parallel relation to the spillway and defining a second wall of the inlet chambers;

a plurality of differently gauged and vertically mutually staggered openings formed in the second wall, each opening receiving a fraction of liquid flowing from a corresponding inlet chamber to the tank;

the openings being positioned in at least two horizontal rows, and respective columns aligned with the separated inlet chambers;

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a lowest row of openings located at a height of between ⅓ H and ⅔ H, wherein H is the height of liquid in the tank, said location chosen to avoid the development of a bottom current liable to disturb a sediment layer on a floor of the tank; and further wherein

a highest row of openings creates a higher flow rate than the lowest row of openings and is located at a height greater than ⅔ H, said location chosen to limit mixing of a surface current with the rest of the liquid upon initial flow propagation in the tank whereby the mixing results in energy dissipation of the flow, thereby creating a flow rate in a final settling zone at a height less than ¼ H, while creating a high and more uniform flow rate in the settling zone at a height above ¼ H.

5,620,601

WEAR STRIP ASSEMBLY FOR USE IN A WASTE WATER TREATMENT FACILITY

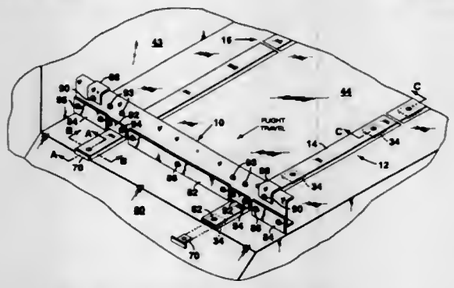
Stephen B. Wilcher, Harleysville, and John C. Lodholz, Doylestown, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 18, 1995, Ser. No. 530,679

The portion of the term of this patent subsequent to Jul. 1, 2014, has been disclaimed.

Int. Cl.[6] B01D *21/18*

U.S. Cl. 210—525 **15 Claims**



1. A waste water treatment system comprising:

at least one anchor plate secured to the bottom of a tank; and

at least one wear strip disposed around said anchor plate, said wear strip having a c-shaped cross section;

wherein said anchor plate comprises a top plate being generally parallel with the bottom of said tank, a first leg and a second leg arranged along a bottom side of said anchor plate, said first and second legs being disposed at opposing regions of said anchor plate at a distance from each side of said top plate forming extensions in said top plate for receiving said c-shaped wear strip.

5,620,602

METHOD AND APPARATUS FOR AEROBIC DIGESTION OF ORGANIC WASTE

Richard E. Stuth, 13232 - 138th Ave. SE., Renton, Wash. 98059

Filed Nov. 22, 1995, Ser. No. 561,519

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—608 **22 Claims**

1. A method of increasing the rate of aerobic digestion of an organic waste, the method comprising:

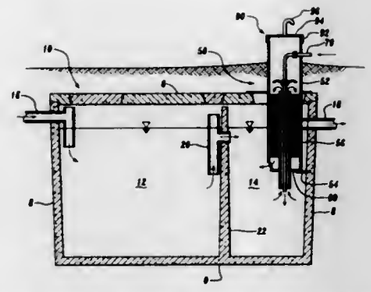
(a) discharging an aerobic gas to below the surface of a body of organic waste;

(b) bubbling the gas upward through the body of waste;

(c) carrying waste upward above the liquid level of the body of waste, by frothing the waste with the gas; and

(d) allowing the upwardly carded frothed waste to cascade downward over surfaces located above the liquid level of the waste, the surfaces coated with aerobic microbial organisms.

7. An apparatus for increasing the rate of digestion of an organic waste, the apparatus comprising:



(a) a longitudinally extending housing, the housing adapted for mounting in a body of liquid organic waste such that at least a base portion thereof is submerged in the waste and the waste is in fluid communication with the interior of the housing;

(b) a first pipe extending substantially along a central axis of the housing with a lower end extending to the vicinity of the base of the housing and an upper end adapted for connection to a supply of aerobic gas;

(c) a second pipe having a first end and a second end, the second pipe coaxial with and surrounding a portion of the first pipe, the first end thereof located in the vicinity of the lower end of the first pipe such that gas exiting from the lower end of the first pipe into a liquid waste can be carried upward in the second pipe, the second end of the second pipe located at a height that would extend above the surface of the waste when the housing is mounted in the waste; and

(d) media disposed in an annular space between the second pipe and an interior surface of the housing, the media extending from near the base of the housing up to a height that extends above the level of a liquid waste, when the housing is mounted in the waste.

5,620,603

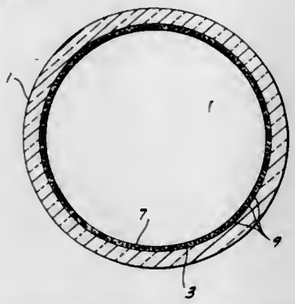
NUCLEOPHILIC BODIES BONDED TO SILOXANE AND USE THEREOF FOR SEPARATIONS FROM SAMPLE MATRICES

William R. Betz, Bellefonte, and James L. Desorcie, State College, both of Pa., assignors to Supelco, Inc., Bellefonte, Pa.

Division of Ser. No. 283,210, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 276,048, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 201,752, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,644, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,031

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—635 **14 Claims**



1. A chromatographic method for separation of a mixture of compounds comprising:

introducing said mixture into a chromatographic column containing a substrate having adsorbent bodies bonded thereto through a medium comprising a siloxane polymer, said adsorbent bodies comprising a nucleophilic composition bonded directly to silicon atoms of said siloxane polymer; and

eluting components of the mixture from the column.

5,620,604

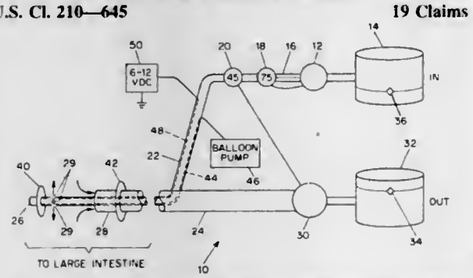
DIALYSIS SYSTEM AND METHOD FOR REMOVING TOXIC MATTER FROM THE SERUM OF THE LARGE INTESTINE

Andrew Stone, 5818 NW 34th Way, Boca Raton, Fla. 33496

Continuation-in-part of Ser. No. 922,673, Jul. 30, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,894

Int. Cl.[6] A61M *1/00;1/28;5/00;25/10*

U.S. Cl. 210—645 **19 Claims**



13. A dialysis method for removing toxic matter from the serum of the large intestine of a patient, comprising the steps of:

introducing into the large intestine of a patient a flexible input tube having a distal end with first and second inflatable balloons spaced from each other at the distal end thereof, wherein each of the first and second inflatable balloons have a first inflatable portion spaced from a second inflatable portion by an inner middle portion, said first and second inflatable portions being inflatable to a larger diameter then said inner middle portion;

inflating the first and second inflatable balloons to seal off a portion of the large intestine of the patient;

introducing a dialysis filtrate solution to the large intestine of the patient at a first location adjacent the first inflatable balloon independently after said inflating step, said dialysis filtrate solution providing a vehicle for removing toxic matter from the serum of the large intestine; and

removing waste filtrate from the large intestine at a second location spaced from the first location adjacent the second inflatable balloon to remove toxic matter from the serum between the first location and second location.

5,620,605

CASSETTE MEMBRANE SYSTEM AND METHOD OF USE FOR LOW PRESSURE SEPARATIONS

Jens K. Møller, Maribo, Denmark, assignor to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/EP93/01285, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/24210, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 341,548

Claims priority, application United Kingdom, May 22, 1992, 9210980

Int. Cl.[6] B01D *61/00;63/00*

U.S. Cl. 210—650 **11 Claims**

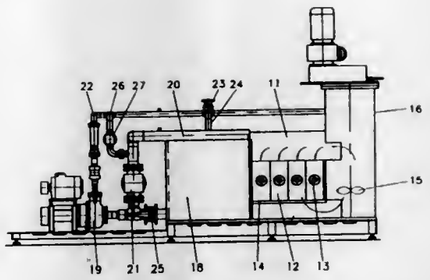
1. A membrane fluid separation apparatus comprising

a) one or more membrane cassettes, said cassettes comprising a plurality of membranes with a feed side an a permeate side, and a permeate collection chamber, the permeate being collected in said permeate collection chamber;

b. means for contacting the feed fluid with the feed side of the membranes;

c. means for removing the permeate from the permeate collection chamber;

d. a frame supporting said membranes at their peripheral edges and permitting feed flow access to the feed side of the separation membranes such that said feed side of the membranes is open to ambient pressure, said membranes being provided in the form of a plurality of membrane layers, each layers being sealed at two or more of its peripheral edges to one or more adjacent membrane layers, such that the membranes define a feed side and a permeate side, wherein the permeate side of each of said membrane opens to at least one permeate collection chamber common to another membrane permeate side, and wherein the membranes are sealed such the feed side and permeate side of the membranes do not communicate other than through the membranes.



10. A method of separating a feed fluid stream into two components which comprises

A. contacting the feed stream with the feed side of the membranes of apparatus according to claims **1**, **2**, **3**, **4**, **5**, or **6**;

B. reducing the pressure on the permeate surfaces of the membrane units to 10,000 to 80,000 Pa such that a portion of the feed fluid permeates through the membrane;

C. removing the portion of the feed fluid which permeates through the membrane from the vicinity of the internal surfaces of the membrane; and

D. removing the portion of the feed fluid which does not permeate through the membranes from the vicinity of the external surfaces of the membrane.

5,620,606

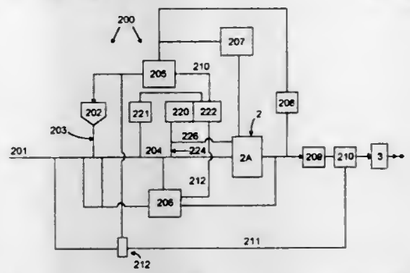
METHOD AND APPARATUS FOR REACTING OXIDIZABLE MATTER WITH PARTICLES

Roy N. McBrayer, Jr., Austin; Jimmy G. Swan, Alvin, and John S. Barber, Round Rock, all of Tex., assignors to RPC Waste Management Services, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 283,699, Aug. 1, 1994. This application Mar. 3, 1995, Ser. No. 400,239

Int. Cl.[6] C02F *1/72;11/08*

U.S. Cl. 210—696 **88 Claims**



1. A method of reacting a first stream comprising oxidizable matter in a reactor at reactor conditions of a pressure of at least about 2000 p.s.i.g. and a temperature of at least about 500 degrees F, comprising:

introducing the first stream into a reaction zone in the reactor at said reactor conditions;

adding solid particles to the first stream;

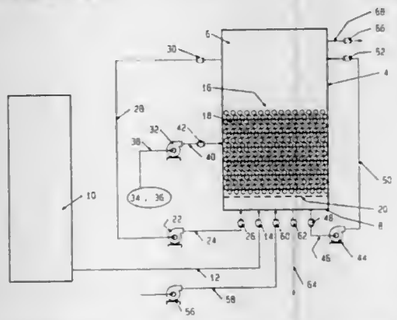
reacting at least a portion of the oxidizable matter in the reaction zone; and

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reducing pressure of effluent emerging from the reaction zone by:
sensing the pressure of the effluent;
mixing a second fluid stream with the effluent to form a mixed fluid stream;
reducing the pressure of the mixed fluid stream by at least about 500 p.s.i. by flowing the mixed fluid stream through a static restriction device; and
varying the flowrate of the second fluid stream as a function of the sensed pressure.

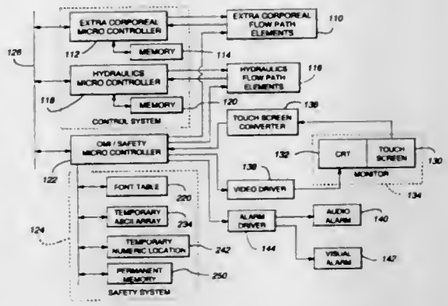
9. The method of claim 1, further comprising automatically monitoring the solids in the effluent downstream of the reaction zone.

5,620,607
FILTERING FLUIDIZED BED REACTOR
James E. Bowie, Jr., 110 Viator Dr., Lafayette, La. 70506
Filed May 30, 1995, Ser. No. 454,438
Int. Cl.[6] C02F *1/52;1/72*
U.S. Cl. 210—702 **14 Claims**



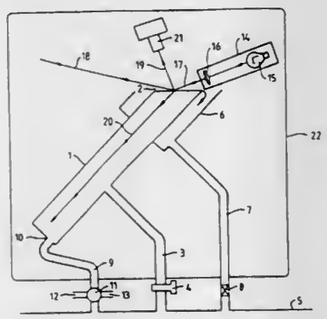
1. A method of treating an aqueous solution comprising the steps of:
providing a vessel with a media particle bed therein, the vessel having a top portion and a bottom portion;
filling said vessel with the solution to be treated;
circulating the solution through said vessel;
adding a second aqueous solution to said vessel so that a mixture solution is circulated;
precipitating a product from the reaction of said first aqueous solution with said second aqueous solution;
settling of said media particle bed and said product so that a filter bed is formed,
collecting said mixture solution and said product at the bottom portion of said vessel,
recycling said collected mixture solution and said product by introducing the collected mixture solution at the top portion of said vessel.

5,620,608
INFORMATION ENTRY VALIDATION SYSTEM AND METHOD FOR A DIALYSIS MACHINE
Jim Rosa, Conifer; Eric Zimmerman, Littleton; Steve Love, Bailey, and Scott Martin, Lakewood, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.
Filed Jun. 7, 1995, Ser. No. 484,015
Int. Cl.[6] B01D *61/32*
U.S. Cl. 210—739 **44 Claims**



23. A method of entering control and safety information into a dialysis machine for use in a control system and in a safety system of the dialysis machine during a dialysis treatment of a patient using the machine, comprising the steps of:
recording control information in a memory of the control system to control the dialysis machine during treatments,
recording safety information in a memory of the safety system to monitor the operation of the dialysis machine and the condition of the patient during treatment,
dividing the memory of the safety system into a first location and a second location,
entering treatment information,
converting the treatment information entered into a predetermined form and storing the converted information in the predetermined form in the first memory location,
copying the information stored in the first memory location into the second memory location, and
comparing the information in the first and second memory locations, and upon the information in the first and second memory locations indicating equality,
erasing the information in the first memory location, and
maintaining the information in the second memory location, and
copying the information from the second memory location into the control system memory.

5,620,609
PROCESS AND APPARATUS FOR DEWATERING CONTROLLED BY MONITORING LIGHT SCATTERED BY SUPERNATANT
John R. Field, West Yorkshire, United Kingdom, assignor to Allied Colloids Limited, West Yorkshire, United Kingdom
PCT No. PCT/GB94/00119, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO94/17394, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 21, 1994, Ser. No. 464,836
Claims priority, application United Kingdom, Jan. 22, 1993, 9301261
Int. Cl.[6] B01D *21/32*
U.S. Cl. 210—745 **15 Claims**



1. A process for controlling dewatering of a suspension in response to determining turbidity of a supernatant obtained from the suspension, which comprises the steps of:

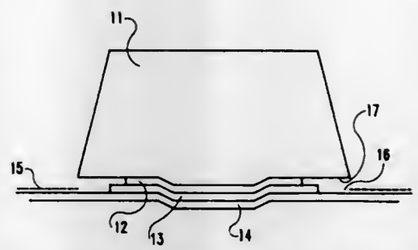
providing an upwardly extending elongate body defining a longitudinal central bore and having an open upper end,
filling the body with a portion of the suspension until a surface of suspension is formed across the open end,
establishing quiescent conditions and allowing the suspension portion to settle to form a supernatant layer,
directing a ray of light to strike the surface at an angle such that light is scattered by the supernatant layer,
positioning a collector to receive light scattered by the supernatant layer,
measuring by the collector the amount of scattered light it receives from the supernatant layer at different times after establishing quiescent conditions and thereby determining a rate of change of the amount of scattered light after establishing quiescent conditions, and
utilizing the rate of change of the amount of scattered light measured by the collector to control dewatering of the suspension.

5,620,610
CATALYST FOR TREATING WASTEWATER, PROCESS FOR PRODUCING IT, AND PROCESS FOR TREATING WASTEWATER WITH THE CATALYST
Tohru Ishii; Kiichiro Mitsui; Kunio Sano; Keniti Shishida, and Yusuke Shiota, all of Hyogo, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 878,978, May 6, 1992, Pat. No. 5,399,541. This application Nov. 18, 1993, Ser. No. 154,361
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—763 **40 Claims**

1. A process for treating wastewater, comprising wet oxidation treatment of the wastewater by using a solid catalyst under conditions that the wastewater is at a temperature of 100° to 370° C. and an oxygen gas is supplied at a pressure maintaining the wastewater in a liquid phase;
wherein a catalyst used as said solid catalyst comprises the following components of A_1, A_2 and either one or both of B_1 and B_2 wherein:
the A_1 component consists of 30–95.00% by weight of an oxide of iron.
the A_2 component consists of 4.95–69.95% by weight of at least one compound selected from the group consisting of titania, silica, zirconia and complex oxides of titania, silica and/or zirconia with each other,
the B_1 component consists of 0.05–50% by weight of a metal or compound of at least one element selected from the group consisting of cobalt, nickel, cerium and silver, and
the B_2 component consists of 0.05–10% by weight of a metal or compound of at least one element selected from the group consisting of gold, platinum, palladium, rhodium, ruthenium and iridium.

5,620,611
METHOD TO IMPROVE UNIFORMITY AND REDUCE EXCESS UNDERCUTS DURING CHEMICAL ETCHING IN THE MANUFACTURE OF SOLDER PADS
Madhav Datta, Westchester County; Thomas S. Kanarsky; Michael B. Pike, both of Dutchess County, and Ravindra V. Shenoy, Westchester County, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 6, 1996, Ser. No. 659,459
Int. Cl.[6] H01L *23/48*
U.S. Cl. 216—13 **8 Claims**

1. A method of improving uniformity and reducing excess undercuts in the manufacture of solder pad interconnects comprising the steps of:
providing a substrate having a layer of ball limiting metallurgy, at least a portion of said layer having a metal oxide film thereon; and

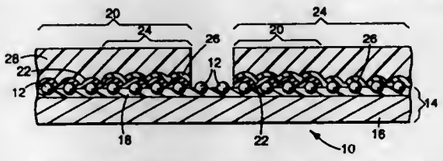


removing said metal oxide film with an acid solution prior to etching selected portions of the layer.

5,620,612
METHOD FOR THE MANUFACTURE OF PRINTED CIRCUIT BOARDS
Peter Kukanskis, Woodbury, and John J. Grunwald, New Haven, both of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.
Filed Aug. 22, 1995, Ser. No. 518,025
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—18 **8 Claims**

1. A process for producing printed circuit boards, which process comprises the steps of:
(a). forming holes in a desired array in copper clad laminate;
(b). activating said holes to accept plating thereon; thereafter
(c). applying an imaged etch resist;
(d). etching any exposed copper to form circuits;
(e). strip the etch resist;
(f). optionally, applying an imaged plating mask;
(g). plating the holes subsequent to the formation of the circuits;
(h). if a plating mask is used, then stripping the plating mask.

5,620,613
RETROREFLECTIVE TRANSFER SHEET MATERIAL METHOD
Ulf N. Olsen, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 181,619, Jan. 13, 1994, Pat. No. 5,503,906, which is a continuation-in-part of Ser. No. 58,155, May 5, 1993, Pat. No. 5,344,705. This application Jan. 16, 1996, Ser. No. 585,779
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—24 **18 Claims**



1. A method for making a transfer sheet material which is adapted to be used in transferring retroreflective graphic images from the sheet material to a substrate, comprising:
a) providing a carrier comprising a base sheet and a heat-softenable layer on the base sheet;
b) cascading a monolayer of transparent microspheres onto the heat-softenable layer and embedding the microspheres in the heat-softenable layer to a depth averaging between about 25 and about 50 percent of their diameters;
c) printing onto the microspheres in a first graphic segment of the sheet material in an imagewise Pattern with a colorant composition comprising a colorant in a transparent resin and drying the colorant composition to form a color layer;

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d) thereafter printing onto the microspheres in a second graphic segment of the sheet material with a reflective layer composition in an imagewise pattern in such a manner that any overlapping areas of the first and second graphic segments are characterized by the color layer being disposed between the microspheres and the reflective layer composition, the reflective layer composition comprising reflective flakes in a transparent binder, and drying the reflective layer composition to form a reflective layer, wherein the microspheres are partially embedded in at least one of the color layer and the reflective layer, the reflective flakes being small enough relative to the microspheres that individual microspheres have the reflective flakes arranged in cup-like fashion about their embedded portions; and

e) thereafter printing onto the first and second graphic segments of the sheet material with a bonding composition to a depth sufficient to embed all exposed surfaces of the color layer and the reflective layer and drying the bonding composition to form a bonding layer and the completed sheet material, the bonding layer being adapted for use in subsequently adhesively bonding the sheet material to a substrate.

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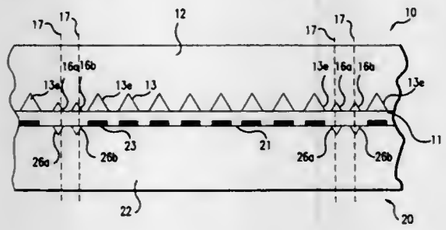
PRINTHEAD ARRAY AND METHOD OF PRODUCING A PRINTHEAD DIE ASSEMBLY THAT MINIMIZES END CHANNEL DAMAGE

Donald J. Drake, and Almon P. Fisher, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 367,619

Int. Cl.[6] **H01L** *21/00*; **G01D** *15/18*; **B44C** *1/22*

U.S. Cl. 216—27 **24 Claims**



1. A method of fabricating individual buttable die assemblies for use in a pagewidth array ink jet printing apparatus comprising the steps of:

forming a plurality of ink actuator plates on a first substrate, each ink actuator plate having a plurality of actuator elements disposed on a first surface of said first substrate;

forming a plurality of channel plates on a second substrate, each channel plate having an array of channels formed in a first surface of said second substrate, each array of channels having a first end channel positioned at one end of said array and a second end channel positioned at an opposite end of said array, said array of channels of each channel plate being alignable with said plurality of actuator elements on a corresponding one of said ink actuator plates;

forming pairs of grooves on said first surface of said second substrate, said pairs of grooves being parallel to said channels, one of said pairs of grooves being located between the first end channel of one channel plate and an adjacent second end channel of an adjacent channel plate;

bonding said first surface of said first substrate to said first surface of said second substrate such that each of said plurality of channels on a channel plate are aligned with a corresponding one of said plurality of actuator elements on one of said plurality of ink actuator plates; and

dicing said wafers along and through said grooves to form individual die assemblies.

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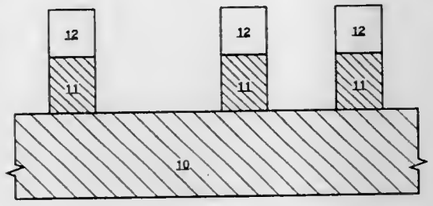
METHOD OF ETCHING OR REMOVING W AND WSI_X FILMS

David J. Keller, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 242,230, May 13, 1994, Pat. No. 5,492,597. This application Nov. 30, 1995, Ser. No. 565,524

Int. Cl.[6] **H01L** *21/02*

U.S. Cl. 438—720 **40 Claims**



1. An etchant chemistry for etching tungsten or tungsten silicide (WSi_x) films during a semiconductor fabrication process, said etchant chemistry having a composition of approximately 85% NF_3 and approximately 15% HeO_2.

5,620,616

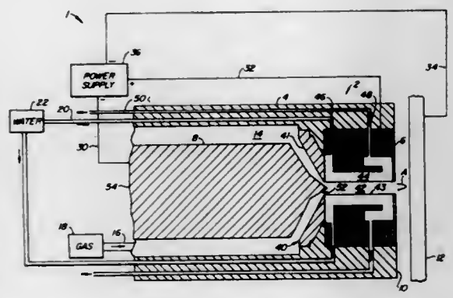
PLASMA TORCH ELECTRODE

Brad J. Anderson, Cameron Park, and Scott N. Sieger, Fair Oaks, both of Calif., assignors to Aerojet General Corporation, Rancho Cordova, Calif.

Continuation-in-part of Ser. No. 321,707, Oct. 14, 1994, Pat. No. 5,455,401. This application Jul. 27, 1995, Ser. No. 508,092

Int. Cl.[6] **B23K** *10/00*

U.S. Cl. 219—121.52 **15 Claims**



1. A plasma torch electrode comprising multiple electrically conductive plates having a thickness, the plates being transverse to an axis of said electrode in the direction of said thickness, and joined together to form an electrical connection there between, at least one of said plated defining a channel transverse to said electrode axis and having an inlet adapted for coupling to a source of gas, a first group of said plates having a perimetrical side surface and a first opening spaced radially inward therefrom, said first group of said plated being arranged so that said first openings are aligned to form a bore through said electrode, said bore having an inlet in fluid communication with said channel for gas injection into said bore.

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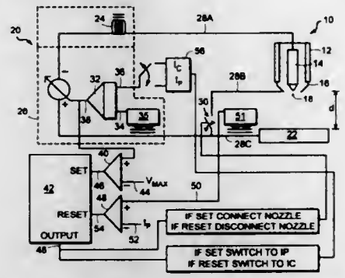
CIRCUITRY AND METHOD FOR MAINTAINING A PLASMA ARC DURING OPERATION OF A PLASMA ARC TORCH SYSTEM

Dennis M. Borowy, Hanover, and Jeffrey L. Peterson, Lebanon, both of N.H., assignors to Hypertherm, Inc., Hanover, N.H.

Filed Oct. 30, 1995, Ser. No. 544,987

Int. Cl.[6] **B23K** *10/00*

U.S. Cl. 219—121.54 **19 Claims**



1. An apparatus in a plasma arc torch system having an electrode and a nozzle for maintaining a plasma arc during operation of the system, comprising:

a power supply electrically coupled to the electrode, nozzle and a workpiece;

a power witch electrically coupled to the nozzle and power supply;

a logic device electrically connected to the power switch and generating a first output signal to open the power switch and thereby disconnect the nozzle from the power supply when a transferred arc is formed between the electrode and the workpiece;

an amplifier electrically connected to the power supply, the amplifier (i) comparing a sensed workpiece current to a selected operating current and (ii) increasing and decreasing the output voltage of the power supply to maintain the selected operating current in coordination with an increase or decrease in the distance between the workpiece and the plasma arc torch; and

a comparator electrically coupled to the logic device, the comparator (i) comparing the output voltage of the power supply to a maximum voltage and (ii) providing an output signal to the logic device which generates a second output signal to close the power switch, thereby initiating switching of the arc from the workpiece to the nozzle, when the output voltage of the power supply exceeds the maximum voltage.

5,620,618

MULTI-WAVELENGTH PROGRAMMABLE LASER PROCESSING MECHANISMS AND APPARATUS

Candace J. Freedenberg, Poughkeepsie; David C. Long, Wappingers Falls; Joshua M. Cobb, Millbrook; Mark J. LaPlante, Walden; Uldis A. Ziemins, Poughkeepsie; Daniel G. Patterson, Wappingers Falls, and James G. Balz, Maybrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,480

Int. Cl.[6] **B23K** *26/08*

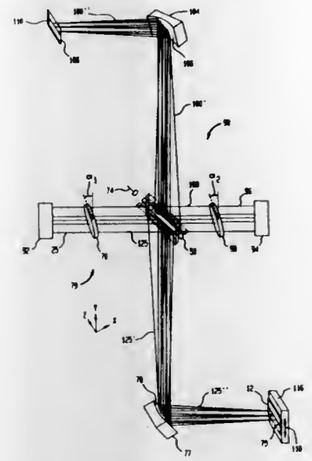
U.S. Cl. 219—121.74 **16 Claims**

1. A machining system comprising:

means for generating a machining beam having a variable firing rate;

means for generating a tracking beam, said tracking beam being separate from said machining beam;

means for scanning said machining and tracking beams along an axis, said scanning means being movable and having a first surface for reflecting said machining beam and a second surface for reflecting said tracking beam;



at least two concave cylindrical mirrors having curved reflective surfaces, the curvatures of the reflective surfaces being substantially identical, one concave cylindrical mirror being positioned to receive and interrupt said reflected machining beam directly from said scanning means first surface and least partially focus said machining beam at a workpiece, another concave cylindrical mirror being positioned to interrupt said reflected tracking beam directly from said scanning means second surface and at least partially focus said tracking beam at a detector;

a workpiece holder for securing a workpiece to receive said machining beam after reflection from the first surface of said scanning means and said one concave cylindrical mirror;

a detector for receiving said tracking beam after reflection from the second surface of said scanning means and said another concave cylindrical mirror; and

feedback control means for determining the position of the reflected tracking beam relative to said detector and controlling the firing rate of said machining beam as said machining beam is being scanned by determining the position of said machining beam relative to said work, piece based upon the position of the reflected tracking beam relative to said detector.

5,620,619

WEAVER FOR A WELDING TORCH CAPABLE OF COMPATIBLY USING A STRAIGHT WEAVING AND AN ANGULAR WEAVING

Kim Jong-Hee, and Kim Kyung-Seok, both of Ulsan-si, Rep. of Korea, assignors to Hyundai Heavy Industries Co., Ltd., Ulsan-si, Rep. of Korea

Filed Dec. 6, 1995, Ser. No. 568,117

Claims priority, application Rep. of Korea, Dec. 17, 1994, 94-34804

Int. Cl.[6] **B23K** *9/12*

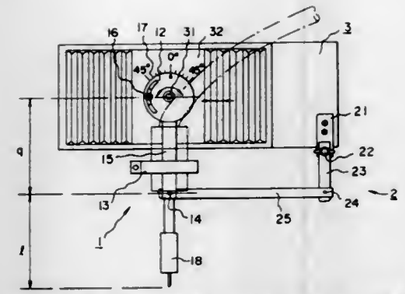
U.S. Cl. 219—125.12 **2 Claims**

1. A weaver for a welding torch wherein said welding torch has an increased productivity due to said weaver's capability of performing both straight weaving and angular weaving techniques without having to discontinue welding to change from a weaver solely for straight weaving to a weaver solely for angular weaving and vice versa, said weaver comprising:

a main body having a front surface;

a slider (32) slidably mounted on said front surface of said main body and movable to the right and left of an original resting position on said main body; (3)

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a rotary shaft (**31**) extending perpendicularly outwardly from said front surface of said main body and a front surface of said slider;

a torch operation angle adjusting means for adjusting a torch operation angle, said torch operation angle adjusting means including an rotating plate having a central aperture so that said rotating plate is bearing mounted around said rotary shaft (**31**) for rotation of said rotating plate about said rotary shaft, a first vertical lever(**15**) having two ends with a first end attached to said rotating plate and a second end having a hinge shaft, said first vertical lever extending radially outwardly from said rotary shaft (**14**) and a torch clamp attached to said first vertical lever and extending perpendicularly outwardly from said first vertical lever at a elevation so as to be located entirely below said front surface of said main body and a front surface of said rotating plate;

a fixing bolt for fixing a back surface of said rotating plate to said front surface of said slider so as to prevent rotation of said rotating plate when said fixing bolt is tightened;

a torch angle fixing means (**2**) for fixing a torch angle, wherein said torch angle fixing means includes a bracket (**21**) attached to said front surface of said main body (**3**), a connecting lever (**23**) connected by a butterfly bolt (**22**,) at a bottom portion of said bracket (**21**), and a horizontal lever (**25**) connected between a hinge shaft (**24**) at one end of a bottom portion of said connecting lever (**23**) and said hinge shaft (**24**) of said first vertical lever (**15**), wherein said torch operation angle adjusting means and said torch angle fixing means are used together simultaneously side-by-side each other so that any combination of adjustment of said torch angle as well as said straight weaving technique and angle weaving technique may be accomplished.

5,620,620

BASE WITH INTERNAL FOOT ACCESS

Joseph E. Feldhausen, and Jeffery P. Schroeder, both of Appleton, Wis., assignors to Miller Group, Ltd., Appleton, Wis.

Filed Feb. 3, 1995, Ser. No. 383,259
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—133 **20 Claims**

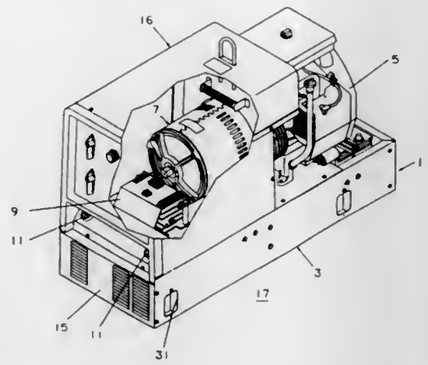
1. A base for a self-contained welding machine comprising:

a. a floor having a pair of opposed longitudinally extending edges and defining at least two holes therethrough proximate respective edges;

b. a pair of side walls upstanding from the floor edges, each side wall having inside and outside surfaces and defining an uncovered opening therethrough proximate a respective hole in the floor; and

c. cover means removably joined to the inside surfaces of the base side walls for cooperating with the base side walls and floor to create pockets inside the base, the holes in the base floor and the fasteners being within the associated pockets,

so that the base can be mounted to a horizontal surface by fasteners passing through the holes in the floor, and the openings in the base side walls provide unhindered access to the holes in the floor and to the fasteners from outside the base side walls.

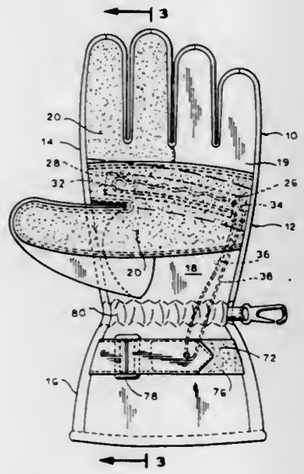


5,620,621

GLOVE HAVING HEATING ELEMENT LOCATED IN THE PALM REGION

Richard L. Sontag, 400 E. 71st St., New York, N.Y. 10021

Filed Apr. 19, 1994, Ser. No. 229,596
Int. Cl.[6] A41D *19/00*
U.S. Cl. 219—211 **25 Claims**



1. A heated glove comprising:

a glove body having an outer shell and an inner liner conforming to the shape of the glove body, the inner liner defining a hand receiving portion and including a palm side and an opposing back side, the hand receiving portion having a width and a length and an opening for receiving therethrough a hand of a glove wearer, the palm side of the inner liner including a region that lies adjacent the area substantially between the digital/palmar creases and the distal palmar creases of the palm of the glove wearer;

a heating element disposed at the region and substantially spanning across the width of the hand receiving portion, wherein the heating element does not overlap the digital/palmar creases and the distal palmar creases of the palm;

a source of energy for energizing the heating element; and

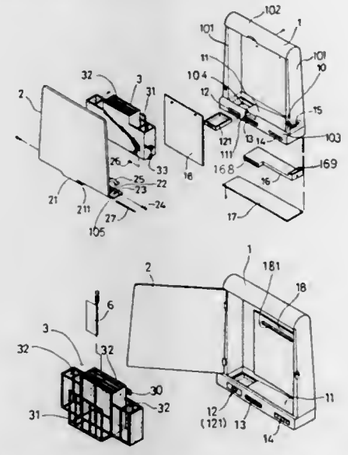
a seal to substantially seal the opening during use.

5,620,622

DEVICE FOR DRYING AND STORING COOKING UTENSILS

Kang M. Lang, P.O. Box 82-144, Taipei, Taiwan

Filed Jun. 12, 1995, Ser. No. 489,229
Int. Cl.[6] F26B *19/00;25/06;25/12*
U.S. Cl. 219—385 **1 Claim**



1. A device for drying and storing cooking utensils comprising:

a container open at a front side and having a top wall, two side walls, a rear wall, and a vertical wall mounted on a bottom of said container, said container having a recess at the bottom, said vertical wall being formed with a first opening communicated with said recess and a second opening provided with a filtering net;

a water tray fitted in said recess through said first opening;

a switch mounted on said vertical wall;

an inclined board mounted within said recess and having a slot at an end;

an electric forced hot air drier electrically connected with said switch and having an inlet and an outlet, said electric forced hot air drier being installed under said inclined board with said inlet aligned with said second opening and said outlet aligned with said slot;

a bottom plate mounted on the bottom of said container;

a supporting plate mounted on an inner side of said rear wall;

a cover pivotally connected with said vertical wall at a lower edge of said cover and having a flange extending towards said container; and

a rack mounted in said flange and having a hook adapted to hang on said supporting plate.

5,620,623

THERMAL BLEND CONVECTION OVEN

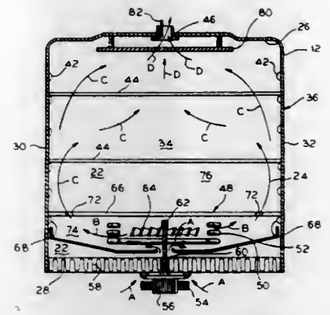
Richard L. Baker, Lewisburg, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 278,291, Jul. 21, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,773
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—400 **19 Claims**

1. A thermal convection oven for cooking food comprising:

enclosure having rear, top, bottom, and side walls defining an oven space with a front opening providing selective access to the oven space;

a door pivotally mounted to the enclosure at the front opening and moveable relative to the enclosure between an open and a closed position to cover and uncover the opening to provide selective access to the oven space;



a bottom plate mounted in the oven space above the bottom wall, separating the oven space into a heated space in a cooking space;

a heating element disposed in the heated space;

the bottom plate being sized to cover the heating element and the bottom plate having at least one vent opening positioned on the bottom plate not directly above the heating element so that any spills in the enclosure will not directly contact the heating element;

a fan disclosed in the heated space;

a deflector disposed within the heated space, a portion of which is positioned below the fan for deflecting the flow of air from the fan upwardly through the at least one vent opening and into the cooking space; and

the enclosure having an inlet opening and an outlet opening, wherein the fan draws air into the enclosure through the inlet opening, where it is heated by the heater and circulates the heated air through the vent opening, with the air finally exiting the enclosure through the outlet opening.

5,620,624

COOKING METHOD AND APPARATUS CONTROLLING COOKING CYCLE

Eugene R. Westerberg, Palo Alto, Calif., assignor to Quadlux, Inc., Fremont, Calif.

Continuation of Ser. No. 65,655, May 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 738,207, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 350,024, May 12, 1989, Pat. No. 5,036,179, which is a continuation-in-part of Ser. No. 195,967, May 19, 1988, abandoned. This application Feb. 23, 1995, Ser. No. 393,259
Int. Cl.[6] H05B *3/02*
U.S. Cl. 219—411 **7 Claims**

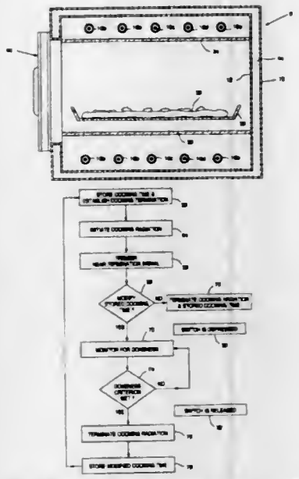
3. An apparatus for cooking a food item with radiant energy typically having a significant portion of the radiant energy in the visible light range of the electromagnetic spectrum comprising the steps of:

a. means for storing the desired cooking time and for establishing termination of cooking for the given food item,

b. means for initiating radiation of the radiant energy on the food item for said desired cooking time and for counting down to the termination of cooking the given food item,

c. means for triggering a signal within a predetermined time before termination of cooking radiation at the end of said stored desired cooking time, and

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d. means operable at least after triggering of said triggering means for terminating the radiation at a new cooking time when the food item is cooked to the desired degree.

5,620,625

METHOD OF BUTT-WELDING TWO PLASTIC PARTS WITH AN IDENTIFYING CODE, USING AN AUTOMATICALLY CONTROLLED ELECTRO-WELDING MACHINE

Jean Sauron, Draveil, and J. C. Hugueny, Ormesson, both of France, assignors to Gaz de France (Service National), Paris, and Ste. Joseph Sauron Materiel Industriel, (S.A.), Athis-Mons, both of France

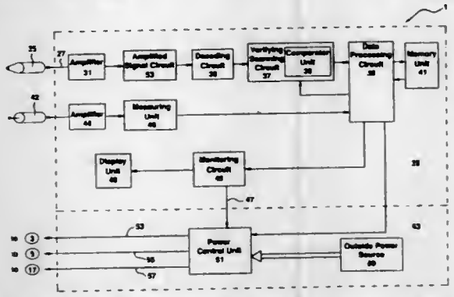
PCT No. PCT/FR93/00518, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24301, PCT Pub. Date Dec. 9, 1993

PCT Filed May 28, 1993, Ser. No. 338,624

Claims priority, application France, Jun. 1, 1992, 92 06616

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—494 **12 Claims**



1. A method of selectively butt-welding two tubular parts of plastic material using an automatically controlled machine, comprising the steps of:

scanning an identification code associated with each of two tubular parts of plastic material to be welded, said identification code comprising data related to certain characteristics of said tubular parts which are entered in an order and at specific positions for each code;

acquiring said data stored within said identification code at said scanning step;

comparing said data from said acquiring step, datum by datum;

determining if said acquired data relating to said characteristics contained within said codes are in accordance in pairs, whereby a compatibility between said codes is recognized and a series of values common to said two parts is determined; and

supplying said series of values to a welding program associated with said machine controlled by a computer unit with an integrated microprocessor and an associated memory unit for processing said data in order to allow welding of said tubular parts with a heating element as a function of said series of values.

5,620,626

METHOD FOR CONTROLLING READ-TIME OF A HUMIDITY SENSOR IN A MICROWAVE OVEN

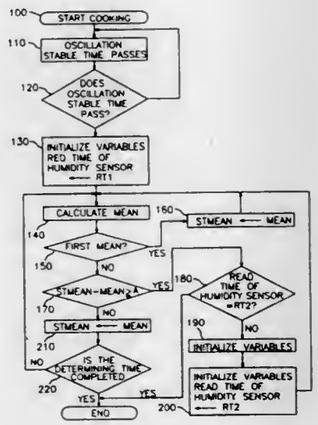
Seong J. Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 16, 1995, Ser. No. 515,740

Claims priority, application Rep. of Korea, Aug. 16, 1994, 94-20167

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—707 **5 Claims**



1. A method of controlling read-time of a humidity sensor of a microwave oven for cooking food using an oscillation of a magnetron, the method comprising the steps of:

(a) setting a first time and a second time respectively having a first phase and a second phase in each of half periods of a frequency of a power source of the microwave oven respectively as a first read time and a second read time, and then setting the first read time as a present read time;

(b) sensing humidity values at every said present read time according to an external interrupt signal generated in a zero-crossing point of a frequency signal of the power source and obtaining a mean value of said humidity values;

(c) setting an initial mean value with respect to a presently set read time as a reference value, and then comparing a difference between the reference value and a next mean value with a predetermined value;

(d) initializing the reference value and the mean value when the difference is larger than the predetermined value in step (c), and changing the read time from the first read time to the second read time, and then repeating the steps (b) and (c); and

(e) determining the read time at the comparing step (c) as a humidity sensing read time when the difference is smaller than the predetermined value in step (c).

5,620,627

DISCHARGE ASSEMBLY AND STATOR AND ROTOR MEMBERS THEREOF WITH TWO PART CONSTRUCTION

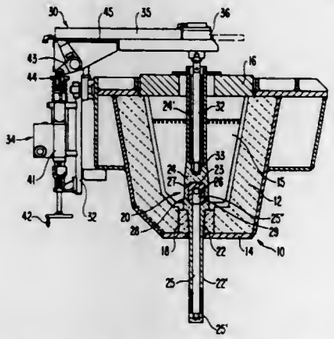
Werner Keller, Steinhausen, and Rolf Waltenspühl, Hünenberg, both of Switzerland, assignors to Stoping AG, Baar, Switzerland

Filed Jul. 14, 1995, Ser. No. 502,065

Claims priority, application Switzerland, Jul. 22, 1994, 02 326/94

Int. Cl.[6] B22D *41/08*

U.S. Cl. 222—598 **32 Claims**



1. A discharge assembly for controlling the discharge of material from a vessel, said assembly comprising:

a stator member to be mounted to extend through the vessel, said stator member having therein a longitudinal discharge passage, a lateral opening extending through an inlet end of said stator member to be within the vessel, and an outlet leading from said discharge passage at a location to be outwardly of the vessel;

a rotor member having a lateral opening extending through a portion thereof to be positioned within the vessel;

one of said inlet end of said stator member and said portion of said rotor member having therein a recess defining an interior sliding surface;

the other of said portion of said rotor member and said inlet end of said stator member having extending therefrom a projection defining an exterior sliding surface;

said rotor member being rotatably mounted to said stator member with said projection extending into said recess with said interior sliding surface confronting said exterior sliding surface, whereby rotational or axial movement of said rotor member relative to said stator member enables said lateral opening of said rotor member to be brought into or out of alignment with said lateral opening of said stator member, thus controlling discharge of material in the vessel through said lateral openings, said discharge passage and said outlet;

said projection comprising an insert formed separately from said other of said portion of said rotor member and said inlet end of said stator member and fixed thereto; and

said lateral opening of said other of said portion of said rotor member and inlet end of said stator member extending through said insert.

5,620,628

DEVICE FOR CONNECTING CONCRETE FORM PANELS ASSEMBLED ON STEPPED FOOTING

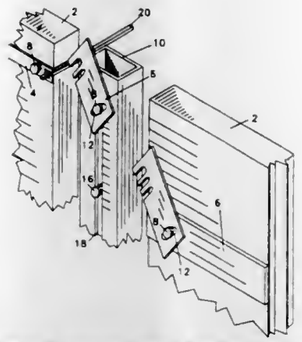
William M. Ritchie, IV, 1171 Saw Mill Hill Rd., Winsted, Conn. 06098

Filed Dec. 26, 1995, Ser. No. 578,438

Int. Cl.[6] E04G *11/08;17/00*

U.S. Cl. 249—193 **4 Claims**

1. A device for the connection of unframed concrete form panels vertically offset by stepped building footings, wherein the said unframed concrete form panels are provided with latch fastening means affixed to the left margin of the unframed concrete form



panels and latchbolt fastening means affixed to the right margin of the unframed concrete form panels, the improvement comprising a connecting element dimensioned to fit between the vertical edges of the unframed concrete form panels to be connected and having two faces, neither of which abut the unframed concrete form panels to be connected, one of the faces is provided with a centralized slot dimensioned to receive and locate a plurality of fixedly positioned latchbolt fastening means for engagement with fastening means of adjacent unframed concrete form panels and to receive an adjustably positioned latchbolt fastening means between each pair of fixedly positioned latchbolt fastening means.

5,620,629

COLLOIDAL SILICA/POLYELECTROLYTE BLENDS FOR NATURAL WATER CLARIFICATION

Kristine S. Salmen; Pek L. Choo, both of Naperville; David A. Picco, Shorewood, and Michio Kobayashi, Aurora, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 535,430, Sep. 28, 1995. This application Nov. 26, 1995, Ser. No. 613,791

Int. Cl.[6] C02F *1/56*

U.S. Cl. 252—180 **6 Claims**

1. A composition of matter comprising:

a) an aqueous conditioned silica sol with an average particle size within the range of from 1 to 150 nm wherein the silica sol is conditioned by contacting said sol with a strong acid cationic exchange resin, blended with

b) a water-soluble cationic polymer having a molecular weight within the range of about 2,000 to about 2,000,000 selected from the group consisting of poly(diallyl dimethyl ammonium chloride), poly(diallyl dimethyl ammonium chloride/acrylic acid), poly(epichlorohydrin/dimethyl amine), and cationized starch, wherein the water-soluble cationic polymer and the silica sol are present in a weight ratio of silica to polymer of from 100:1 to 1:1.

5,620,630

POLYMER DISPERSED LIQUID CRYSTAL DISPLAY DEVICE, AND A METHOD FOR PRODUCING THE SAME

Noriaki Onishi, Osaka; Nobuaki Yamada, Higashiosaka; Masahiko Kondo, Kitakatsuragi-gun; Nobukazu Nagae, Tenri; Toshiyuki Hirai, Kashihara, and Shuichi Kohzaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 128,300, Sep. 29, 1993, Pat. No. 5,450,220. This application Jun. 1, 1995, Ser. No. 456,809

Claims priority, application Japan, Sep. 30, 1992, 4-261365; Sep. 3, 1993, 5-220315

Int. Cl.[6] C09K *19/52*; G02F *1/13*

U.S. Cl. 252—299.01 **9 Claims**

1. A method for producing a polymer dispersed liquid crystal complex film including the steps of:

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a step for preparing a mixture of a polymerizable material and a liquid crystal material, wherein the polymerizable material includes a monofunctional monomer and at least one of a multi-functional monomer and a multi-functional oligomer mixed at a ratio in the range of 93:7 to 40:60; and

a phase separation step for processing the mixture into a polymer dispersed liquid crystal complex film by a phase separation conducted through polymerization, the polymer dispersed liquid crystal complex film consisting of a liquid crystal composition and a polymer resin composition,

wherein a value ΔT is 25° C. or less, and a glass transition temperature T_g of the polymer resin composition is 60° C. or more, the value ΔT being defined as a difference between a phase transition temperature T_{matrix} of the polymer dispersed liquid crystal complex film and a phase transition temperature T_{cf} of the liquid crystal composition between a liquid crystal phase and an isotropic liquid phase thereof.

5,620,631

PRESSURIZED-GAS PACK AND PROPELLANT FOR AEROSOLS

Elmar Heiskel, Dreieich, and Wilfred Schmieder, Hofheim am Taunus, both of Germany, assignors to Solvay (Société Ananyme), Brussels, Belgium

Continuation of Ser. No. 88,627, Jul. 6, 1993, which is a continuation of Ser. No. 483,118, Feb. 22, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 465,521

Claims priority, application Germany, Feb. 24, 1989, 39 05 726.7

Int. Cl.[6] **C11D** *17/00*; **A61L** *9/12*; **C09K** *3/30*

U.S. Cl. 252—305 **4 Claims**

1. A pressurized-gas pack consisting essentially of 10% by mass of a propellant and 90% by mass of an aqueous filling product, the propellant consisting essentially of a mixture of a pressure-liquified 2-hydro-heptafluoropropane and propane and/or n-butane, and said 2-hydro-heptafluoropropane and propane and/or n-butane is in a ratio by mass of about 70:30 to 80:20, the ratio of the components of propellant-mixture being selected such that the mixture has approximately the same density as the aqueous filling product and said density being approximately 1 gram/cm^3 and the filling product consists essentially of stearic acid, polyglycol, lauric acid monoethanolamide, glycerol, triethanolamine and distilled water.

5,620,632

DISPERSIONS OF EPOXY SCAVENGERS EXHIBITING IMPROVED RAW STOCK KEEPING

Krishnan Chari, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

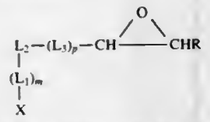
Filed Apr. 25, 1995, Ser. No. 427,763

Int. Cl.[6] **B01J** *13/00*; **C08K** *5/524*; **C09K** *15/26*

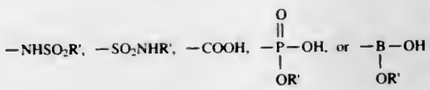
U.S. Cl. 252—311 **14 Claims**

1. A process for preparing a solid particle dispersion of an epoxy compound of the formula SI,

SI



wherein R is H, an alkyl group, or an aryl group; L_1 is an alkylene group or arylene group; L_2 is —O—, —CO—, —S—, —SO_2—, —PO_2—, —C_2—, —NHCO— or —$NHSO_2$—, wherein L_2 may be orientated in either direction; L_3 is an alkylene group; m is 0 or 1; p is 0 or 1; and X is



wherein R' is H or an alkyl or aryl group, with the proviso that where L_2 comprises an ionizable group, X may also be an alkyl group or an aryl group;

said process comprising the steps of:

(a) forming a coarse aqueous slurry of solid particles of said compound; and

(b) milling said slurry in the presence of a hydrophobic, photographically inert, liquid second component which has a $\log P_{(calc)}$ greater than about 6.0 for time sufficient to provide particles of the desired average particle size.

13. A product produced by the process of claim 1.

5,620,633

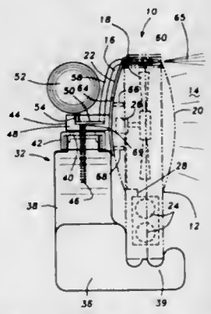
SPRAY MISTING DEVICE FOR USE WITH A PORTABLE-SIZED FAN

Eric F. Junkel, Des Plaines, and Linda M. Usher, Chicago, both of Ill., assignors to Circulair, Inc., Niles, Ill.

Filed Aug. 17, 1995, Ser. No. 516,388

Int. Cl.[6] **B01F** *3/04*

U.S. Cl. 261—28 **18 Claims**



1. A spray misting device for use with a portable fan for creating a cooling atomized mist spray, the fan having a predetermined outline and thickness with a front and a rear and enclosing a fan blade unit between a front grille and a rear grille, said spray misting device comprising:

a body of given dimension having a hollow interior capable of holding a predetermined volume of a liquid and an applicator for providing an atomized mist spray of said liquid;

means for releasably securing said body to the rear of the fan so that said body is positioned behind the fan and said applicator is positioned at a point above the fan blade unit; and

means for actuating said applicator to issue said mist spray from above and in a direction towards a front of the fan blade unit;

whereby the fan blade unit generates a current of air which cools said atomized mist spray and delivers said spray to a user thereof.

5,620,634

METHOD OF MAKING FIBER WAVEGUIDE CONNECTORS

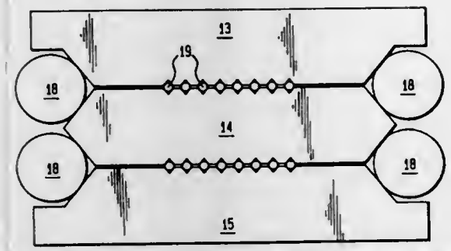
Muhammed A. Shahid, Ewing Township, Mercer County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 17, 1995, Ser. No. 516,473

Int. Cl.[6] **B29D** *11/00*

U.S. Cl. 264—1.25 **6 Claims**

1. A method for the manufacture of a fiber waveguide cable connector part by molding the connector part from a mold having



at least two plates, two plates of which are essentially replicas of each other, and each plate having a hollowed portion having a mold pattern formed therein with the hollowed portion of each plate adapted to form a mold cavity when the plates are mated together, the mold pattern of each plate comprising an elongated rectangular cavity, and a plurality of essentially v-shaped ridges extending parallel to one another along the length of the cavity and leaving elongated planar gaps between the edges of said v-shaped ridges, placing a first primary alignment dowel in a first of said gaps, placing a second primary alignment dowel in a second of said gaps, said second gap being separated from said first gap by at least one gap, attaching the said two plates of the mold together with the aid of said primary alignment dowels to form an elongated essentially rectangular cavity, forming, with said primary alignment dowels in place, registration means for aligning the two plates of the mold in precise registration, separating the two plates of the mold sufficiently to allow the primary alignment dowels to be removed from the mold cavity, removing the primary alignment dowels from the mold cavity, re-attaching the two plates of the mold together using said registration means to align the two plates of the mold in precise registration, filling the mold cavity with molding compound, allowing the mold compound to solidify, separating the plates of the mold, and removing the molded connector part.

5,620,635

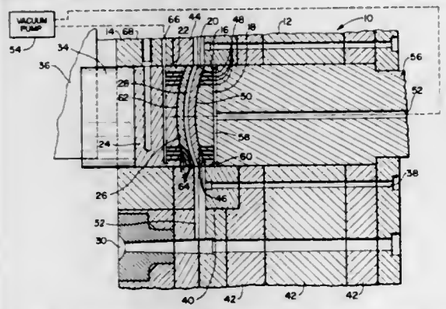
OPHTHALMIC LENS MANUFACTURING EQUIPMENT AND METHOD

Gaston DeRozier, 57, avenue de Conde, 94106 Saint Maur Cedex, France, and Kenneth W. Pugh, 1124 NW. 81st Ter., Plantation, Fla. 33322

Filed Jan. 11, 1995, Ser. No. 371,159

Int. Cl.[6] **B29D** *11/00*

U.S. Cl. 264—2.5 **16 Claims**



1. An ophthalmic lens die assembly for manufacturing ophthalmic lenses, said lens die assembly comprising:

a lens die having an uninterrupted mold surface for impressing an ophthalmic quality surface on a lens material;

a lens die support having a lens die interface surface removably engaging said lens die, said lens die support having a vacuum channel extending from said lens die interface surface to an external port for connection to a vacuum source, and at least one groove formed on said lens die interface surface and connected to said vacuum channel to permit supply of a vacuum pressure at said lens die interface surface and in said groove, whereby said lens die is secured to said lens die support by the vacuum pressure during the manufacture of the lens.

5,620,636

PROCESS FOR MANUFACTURING FOAM MOLDED PRODUCT

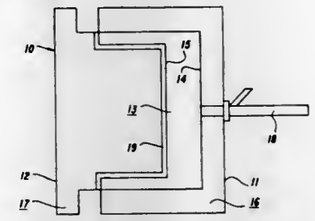
Tamotsu Kawai, Settsu; Kinzo Masuda, Ibaraki; Masao Ando, Toyonaka; Fukuzo Imada, Kashihara, and Masahiro Chikada, Settsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 949,638, Feb. 3, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,851

Claims priority, application Japan, Apr. 8, 1991, 3-103802; Jul. 1, 1991, 3-188154

Int. Cl.[6] **B29D** *9/00*

U.S. Cl. 264—45.4 **7 Claims**



1. A process for manufacturing a foam molded product from foamable particles of a polyolefin resin, which comprises:

heating at least a part of the molding surface of a two-portion mold for foam-in-place molding to at least the melting point of the particles;

mating the two portions of the mold to define a cavity therebetween leaving a clearance of 10 to 150 mm between the two portions;

feeding the foamable polyolefin resin particles to the cavity exerting pressure on the particles in the cavity to cause a part of the particles to contact the heated part of the molding surface and melt to form a molten resin layer thereon;

closing the mold completely, while continuing to form the molten resin layer; and

hardening the molten resin layer to form a continuous hardened surface containing closed cells flattened across the thickness of the hardened surface.

5,620,637

PREPARATION OF SINTERED ZIRCONIA BODY

Takao Kaga; Yuzi Hoshi, and Yutaka Kimura, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 35,404, Mar. 23, 1993, abandoned. This application Nov. 17, 1994, Ser. No. 343,881

Claims priority, application Japan, Mar. 25, 1992, 4-067065

Int. Cl.[6] **C04B** *35/48*

U.S. Cl. 264—57 **18 Claims**

1. A method for preparing a sintered zirconia body in sheet form, comprising the step of firing a green sheet of zirconia having a thickness of less than 1 mm and a surface area of more than 10 cm by 10 cm while placing at least one weight on said green sheet to apply a load thereto, wherein said weight having a weight per unit area W (g/cm^2) and a surface area S (cm^2) is placed on said green sheet to apply a load per unit area G (g/cm^2) to said green sheet so as to satisfy the following conditions

$S \leqq 200$, about $1.01 \leqq G \leqq 5$, and $1 \geqq W/G \geqq 0.5$,

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thereby producing a sintered zirconia body in sheet form having a thickness of 0.01 to 0.5 mm and a length to thickness ratio of 500 to 5,000.

5,620,638

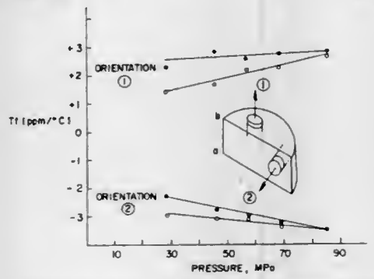
BARIUM OXIDE-RARE EARTH OXIDE-TITANIUM DIOXIDE BASED CERAMICS EXHIBITING ISOTROPY

Taki Negas, Frederick, and Steven Bell, Hagerstown, both of Md., assignors to Trans Tech, Inc., Adamstown, Md.

Continuation of Ser. No. 898,163, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 569,146, Aug. 17, 1990, abandoned. This application May 12, 1994, Ser. No. 241,668

Int. Cl.[6] C04B *35/465*

U.S. Cl. 264—61 **5 Claims**



1. A method of making a ceramic article manifesting isotropic values of electrical properties, where the ceramic is a member of the barium oxide-rare earth oxide-titanium oxide system having a composition whose boundaries are defined by mole ratios of the oxides of 3:2:9, 1:1:4, and 2:2.3:9, comprising presintering a powder of appropriate composition at a temperature of 1200° C. or higher, isostatically pressing the presintered powder at a pressure from 30 to about 90 MPa, followed by sintering the pressed powder at a temperature from about 1250° C. to about 1450° C.;

thereby obtaining a ceramic article having isotropic values of electrical properties.

5,620,639

METHOD OF MANUFACTURING NEEDLES

John F. Stevens, 29 Somers Rd., Warrandyte, Victoria 3113; Trevor G. Smith, 142 Lamond Ave., Kilsyth, Victoria 3137, and Jack H. Bartlett, 11 Nicholas Ave., Glen Waverley, Victoria 3150, all of Australia

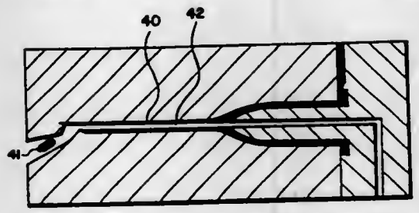
PCT No. PCT/AU94/00109, § 371 Date Oct. 17, 1995, § 102(e) Date Oct. 17, 1995, PCT Pub. No. WO94/20279, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 9, 1994, Ser. No. 513,920

Claims priority, application Australia, Mar. 9, 1993, PL7719

Int. Cl.[6] B29C *44/02*

U.S. Cl. 264—85 **15 Claims**



1. A method for manufacturing an integral one-piece needle having a cannula and a mounting hub, the method being characterized by feeding a molten polymeric resin into a mould having a mould cavity with a cannula forming portion and a mounting hub forming portion extending from the cannula forming portion, allowing a solidified layer of polymeric resin to form adjacent the mold surface of the cannula forming portion of the mould cavity, injecting a fluid under pressure into the cannula forming portion of the cavity to eject a molten central region of the polymeric resin from said cannula forming portion via an exit channel, leaving an annulus of solid polymeric resin having an orifice therethrough, the annulus of polymeric resin forming the cannula of the needle, and allowing soldified polymeric resin to form within said mounting hub forming portion of the mould cavity thereby forming the mounting hub of the needle.

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Patent Not Issued For This Number

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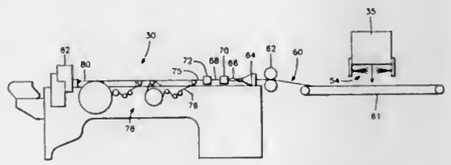
POLYETHYLENE TEREPHTHALATE SHEATH/THERMOPLASTIC POLYMER CORE BICOMPONENT FIBERS, METHOD OF MAKING SAME AND PRODUCTS FORMED THEREFROM

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 470,594, Jun. 6, 1995. This application Jul. 29, 1996, Ser. No. 688,215

Int. Cl.[6] B29D *28/00*

U.S. Cl. 264—103 **17 Claims**



1. A method of making a substantially self-sustaining elongated porous element comprising:

a) providing separate sources of a molten core-forming thermoplastic material and a molten sheath-forming material selected from the group consisting of amorphous polyethylene terephthalate and copolymers thereof;

b) continuously extruding said molten core-forming and sheath-forming materials through a multiplicity of openings in a conjugate sheath-core die to provide a multiplicity of bicomponent fibers, each fiber comprising a continuous core of core-forming material substantially totally surrounded by a sheath of sheath-forming material wherein the sheath forming material has a higher melting temperature than the core forming material;

c) collecting said bicomponent fibers on a continuously moving surface to form a highly entangled web of said bicomponent fibers in the form of an interconnecting network of highly dispersed continuous fibers randomly oriented primarily in the direction of movement of said moving surface;

d) gathering said web of bicomponent fibers;

e) heating said gathered web to bond said fibers to each other at their points of contact and crystallize said polyethylene terephthalate;

f) cooling said gathered web to form a three-dimensional continuous porous element comprising intercommunicating interstitial spaces; and

g) cutting said continuous porous element into discrete lengths.

5,620,642

SIMULATED WOOD PRODUCT MANUFACTURING METHOD AND SIMULATED WOOD PRODUCT

Masayuki Kamite, and Masami Katoh, both of Tokyo, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan

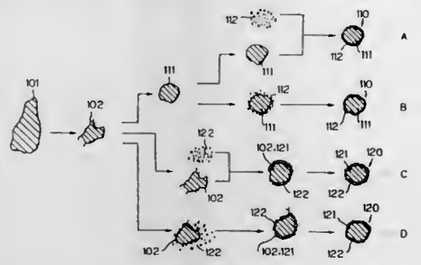
PCT No. PCT/JP94/00351, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO94/20280, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 4, 1994, Ser. No. 331,509

Claims priority, application Japan, Mar. 5, 1993, 5-45544

Int. Cl.[6] B29B *9/00;* **B29C** *47/00;45/00*

U.S. Cl. 264—115 **23 Claims**



1. A simulated wood product manufacturing method comprising subjecting pulverized dust obtained by pulverizing a cellulose material to a trituration process to produce powdery particles having an increased bulk specific gravity, fixing surface particles smaller in size and harder than said powdery particles to outer circumferential surfaces of said powdery particles to produce fixed particles, mixing a resin and a pigment with said fixed particles, and melting a resultant mixture to be later or simultaneously molded into a desired shape by extrusion or injection molding.

5,620,643

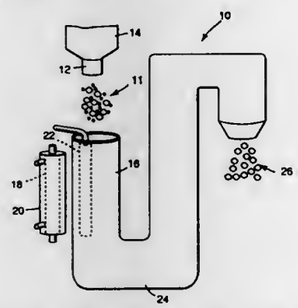
PROCESS FOR PRODUCING FUSED PARTICLE AGGLOMERATES

Joseph I. Maiden, Austin, Tex.; William A. Hendrickson, Houlton, Wis., and John T. Boden, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 26, 1995, Ser. No. 548,660

Int. Cl.[6] B29B *9/08;* **B01J** *2/16*

U.S. Cl. 264—117 **11 Claims**



1. A process for producing a free-flowing powder of agglomerated particles of controlled size distribution comprising the steps of,

a) introducing a powder into a tubular processor,

b) exposing said powder to pulsed energy from a high intensity light source thereby forming said agglomerated particles,

c) cooling said agglomerated particles and

d) collecting said agglomerated particles as said free-flowing powder.

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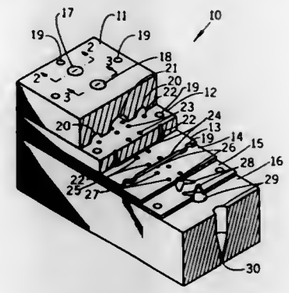
MELT-SPINNING SYNTHETIC POLYMERIC FIBERS

John A. Hodan, Arden, and Otto M. Ilg, Asheville, both of N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 138,907, Oct. 18, 1993, Pat. No. 5,533,883, which is a continuation of Ser. No. 968,557, Oct. 29, 1992, abandoned. This application May 23, 1995, Ser. No. 447,659

Int. Cl.[6] D01D *1/10;5/08;* **D01F** *8/04*

U.S. Cl. 264—169 **4 Claims**



1. A process for spinning fibers from synthetic polymers comprising:

(a) feeding at least one liquid polymer to a spin pack;

(b) in the spin pack, routing the at least one polymer to at least one patterned plate having edges defining a substantially regular two-dimensional geometric shape, a substantially planar upstream surface, a substantially planar downstream surface and at least one flow distribution pattern stenciled therein by cutting through, said flow distribution pattern connecting said upstream surface with said downstream surface and each patterned plate having at least one corresponding boundary plate stacked sealingly adjacent thereto and having edges which define a substantially regular geometric shape, a substantially planar upstream surface and a substantially planar downstream surface, the boundary plate having cut-through holes connecting said upstream surface with said downstream surface to form at least one flow-through channel to allow fluid flow through the patterned plate and otherwise being substantially solid with solid portions where the patterned plate is cut through to accomplish fluid flow in a direction transverse to the flow in the flow-through channel, the liquid polymer streams flowing as discrete streams through flow distribution channels formed by the at least one patterned plate and the at least one corresponding boundary plate to the spinneret; and

(c) extruding the polymer into fibrous strands.

5,620,645

PROCESS FOR FORMING HIGH TEMPERATURE RESISTANT ELEMENTS

Jill E. Crumpacker; Chuong Q. Dam, both of Peoria; Virgil R. Hester, Delavan, and Kurtis C. Kelley, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 13, 1994, Ser. No. 322,819

Int. Cl.[6] B29C *71/00*

U.S. Cl. 264—234 **10 Claims**

1. A process for forming elements for use in high temperature environments, comprising:

mixing one of a metal, metal compound, and mixtures thereof having water of hydration, with orthophosphoric acid, said orthophosphoric acid having three hydrogen ions, in an amount sufficient to substitute about 1 to about 2.8 of said three hydrogen ions of orthophosphoric acid;

adding a filler to the mixture and forming a resultant moldable material, said filler being a refractory material and being added in an amount in a range of about 50% to about 95% by weight;

exerting sufficient pressure on said moldable material to form a molded element;

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drying the molded element at a temperature less than about 100 degrees C. for a period of time sufficient to harden the element to a stable unitary mass;

increasing the temperature of the element to within the range of its temperature of "false melt"; and

applying pressure on the element, while maintaining the element within the range of its "false melt" temperature, removing a portion of said water of hydration and densifying the element and deforming the element to final dimensions.

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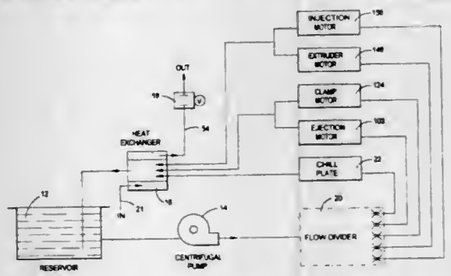
METHOD FOR COOLING ELECTRICAL COMPONENTS IN A PLASTICS PROCESSING MACHINE

Ronald M. Sparer, Madeira; Edward A. Chorey, Cincinnati, and Gregory L. Seibert, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 231,080, Apr. 22, 1994, Pat. No. 5,523,640. This application Oct. 23, 1995, Ser. No. 553,791

Int. Cl.[6] H05K *7/20*; H02K *9/00*

U.S. Cl. 264—328.14 **6 Claims**



1. In an electrically powered and electrically controlled plastics processing machine having a plurality of heat-producing electrical components, a method for cooling the electrical components comprising the steps of:

(a) circulating a liquid coolant through a first circuit including a coolant inlet, a coolant outlet, and a coolant passageway for circulating the liquid coolant through an electric motor, the coolant passageway being positioned interiorly of the motor, thereby cooling the motor when it is in operation;

(b) circulating the liquid coolant through a second circuit including a plate member having a coolant inlet, a coolant outlet, and an interiorly positioned coolant passageway for circulating liquid coolant through the plate member, wherein at least one electrical component is mounted on a side of the plate member so that heat is transferred from the electrical component to the plate member, thereby cooling the electrical component when a circuit including the electrical component is energized;

(c) controlling the flow of the liquid coolant so that it circulates through the first and second circuits concurrently; and

(d) controlling the temperature of the liquid coolant by means including a heat exchanger connected with the coolant outlets of the first and second circuits so that the heat accumulated by the liquid coolant is transferred from the liquid coolant to a heat sink, after the liquid coolant passes through the motor and after the liquid coolant passes through the plate member.

5,620,647

PROCESS FOR POTTING ELECTRICAL CIRCUITS

Prentiss Calhoun, Mendinhall, Miss., assignor to Calhoun Pitch Company, Inc., Puckett, Miss.

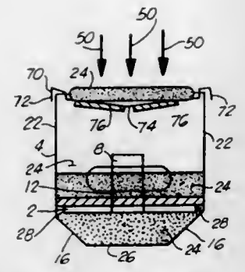
Filed Sep. 10, 1993, Ser. No. 120,022

Int. Cl.[6] B29C *35/08*; *39/10*

U.S. Cl. 264—493 **15 Claims**

1. A process for potting an electrical circuit within a container comprising the following steps:

a) providing an underpour strip of precast, meltable potting compound;



b) providing an overpour strip of precast, meltable potting compound;

c) placing said underpour strip into said container;

d) placing said electrical circuit onto said under pour strip within said container;

e) placing said overpour strip onto said electrical circuit in said container; and

f) applying direct radiant heat to the top of said overpour strip until said strip is melted upon said electrical circuit.

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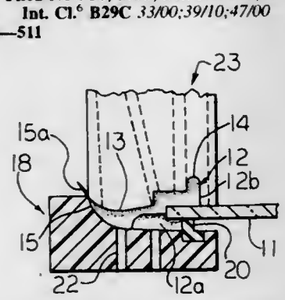
PROCESS FOR THE PREPARATION OF PREFABRICATED VEHICLE WINDOWS

Curtis L. Volkmann, Saginaw, and Henry W. Griffin, Bloomfield Hills, both of Mich., assignors to Essex Specialty Products, Inc., Auburn Hills, Mich.

Filed Nov. 30, 1995, Ser. No. 565,489

Int. Cl.[6] B29C *33/00*; *39/10*; *47/00*

U.S. Cl. 264—511 **10 Claims**



10. A process for preparing an article having a molding along its periphery, comprising the sequential steps of:

(a) placing a protective film inside a support fixture having a cavity, said film lining the cavity;

(b) depositing a bead of a first hardenable polymeric material on top of the protective film in an amount sufficient to fully cover the marginal edges of the outer surface of a glass sheet, plastic sheet, wood sheet or metal sheet subsequently placed on the support fixture;

(c) placing a glass sheet, plastic sheet, wood sheet or metal sheet having exposed side surfaces, inner surface and outer surface on the support fixture, with the outer surface facing toward the support fixture, and at least a portion of its periphery pressing against the first polymeric material which causes the first polymeric material to conform to the shape and contour of the film-covered support fixture cavity and cover the adjacent exposed marginal edges of the outer surface of the glass, plastic, wood or metal sheet, and squeezes out excess first polymeric material over the exposed side surfaces, thereby partially or fully covering the exposed side surfaces; and

(d) depositing a bead of a second hardenable polymeric material in the support fixture to cover the marginal edges of the inner and side surfaces of the glass, plastic, wood or metal sheets and/or the first polymeric material covering the side surfaces;

(e) removing the glass, plastic, wood or metal sheet with the protective film, the first polymeric material and the second polymeric material from the support surface;

(f) curing the first and second polymeric materials to form the article having a molding along its periphery.

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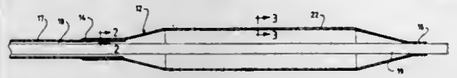
PUNCTURE RESISTANT BALLOON CATHETER

Thomas Trotta, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 189,496, Jan. 31, 1994, Pat. No. 5,478,320, which is a continuation-in-part of Ser. No. 442,568, Nov. 29, 1989, Pat. No. 5,290,306. This application Oct. 11, 1995, Ser. No. 540,781

Int. Cl.[6] B29C *49/22*

U.S. Cl. 264—515 **1 Claim**



1. A method for manufacturing a medical balloon catheter which comprises the steps of:

providing a tubular catheter comprised of nylon;

extruding a tubular, three layer plastic parison under conditions to provide a unitary parison having at least three bonded plastic layers of flexible plastic material;

said three layer parison comprising a pair of tubular nylon layers which surround a tubular intermediate layer made of a copolymer of a major amount of ethylene and a minor amount of an unsaturated carboxylic acid or an anhydride thereof;

thereafter placing said parison into a blow mold;

thereafter expanding the diameter of said parison by causing the plastic thereof to stretch through internal blow molding pressure, said expanded diameter parison comprising a medical balloon; and

thereafter attaching said medical balloon to an end of said tubular catheter.

5,620,650

METHOD FOR INJECTION STRETCH BLOW MOLDING OF POLYETHYLENE

Hisashi Nakajima, Nagano-ken, and Hideaki Koda, Ueda, both of Japan, assignors to A.K. Technical Laboratory Inc., Japan

Filed Oct. 18, 1994, Ser. No. 325,031

Claims priority, application Japan, Oct. 22, 1993, 5-286193; Feb. 28, 1994, 6-054751

Int. Cl.[6] B29C *49/64*

U.S. Cl. 264—520 **10 Claims**

1. A method for injection stretch blow molding of polyethylene comprising the steps of

injection molding a predetermined preform by filling an injection mold comprising a cavity die, a core die and a lip mold with molten polyethylene,

cooling the injection molded preform upon contact with the cavity die, core die and lib mold so that an inside skin layer and an outside skin layer are formed on the surface of the preform but an interior portion of the preform retains internal heat,

injecting a gas into the boundary between the core die and inside skin layer of the preform before releasing the preform from the injection mold so as to isolate the inside skin layer of the preform from the core die and thereby suppress the cooling of the inside skin layer while continuing the cooling of the outside skin layer by the cavity die,

releasing the preform from the cavity die and the core die of the injection mold while holding a mouth portion of the preform by the lip mold such that the surface temperature of the preform right after releasing is 80 to 90 deg. C. and the interior portion of the preform is at a higher temperature than the inside and outside skin layers, the internal heat warming the inside and outside skin layers after releasing the preform,

transferring the preform into a blow die, and

stretch blow molding the preform into a hollow thin-wall product before the surface temperature of the preform is elevated by the internal heat of the preform to 120° C.

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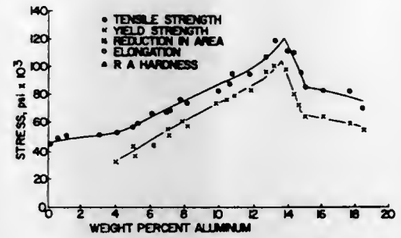
IRON ALUMINIDE USEFUL AS ELECTRICAL RESISTANCE HEATING ELEMENTS

Vinod K. Sikka; Seetharama C. Deevi, both of Oak Ridge, Tenn.; Grier S. Fleischhauer, Midlothian, Va.; Mohammad R. Hajaligol, Richmond, Va., and A. Clifton Lilly, Jr., Chesterfield, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 365,952, Dec. 29, 1994. This application Apr. 20, 1995, Ser. No. 426,006

Int. Cl.[6] C22C *38/06*

U.S. Cl. 420—81 **55 Claims**



1. An electrical resistance heating element of an iron-based alloy having improved room temperature ductility, resistance to cyclic oxidation, thermal fatigue resistance, electrical resistivity and high temperature sag resistance, and comprising, in weight %, 14 to 32% Al, ≦1% Cr, 0.05 to 1% Zr, balance Fe, the alloy further including Mo in an amount effective to promote solid solution hardening of the alloy and resistance to creep of the alloy when exposed to high temperatures.

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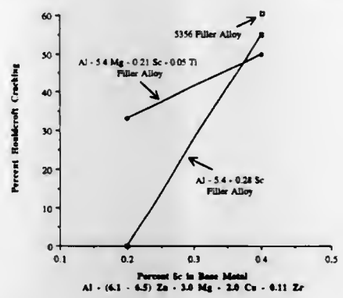
ALUMINUM ALLOYS CONTAINING SCANDIUM WITH ZIRCONIUM ADDITIONS

William T. Tack, Castle Rock, Colo., and Inge L. H. Hansson, Mississauga, Canada, assignors to Asburst Technology Corporation (Ireland) Limited, County Clare, Ireland

Continuation-in-part of Ser. No. 249,023, May 25, 1994, abandoned. This application Mar. 27, 1995, Ser. No. 410,801

Int. Cl.[6] C22C *21/00*

U.S. Cl. 420—532 **29 Claims**



1. Recreational products comprising aluminum alloys, said aluminum alloys comprising:

from about 0.2 to about 1.8 weight percent silicon;

from about 0.2 to about 0.8 weight percent manganese;

from about 0.4 to about 1.4 weight percent magnesium;

from about 0.02 to about 10.0 weight percent scandium;

from about 0.10 to about 1.0 weight percent zirconium; and

from about 60 to about 99 weight percent aluminum, wherein any presence of chromium in said alloy is as an unavoidable impurity.

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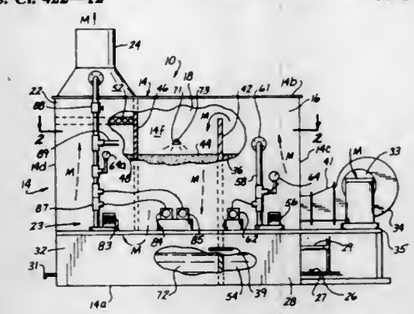
ODOR CONTROL SYSTEM

Roop C. Jain, San Diego, and Martin Scanlan, La Jolla, both of Calif., assignors to RJ Environmental, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 232,203, Apr. 28, 1994, Pat. No. 5,518,696, which is a continuation of Ser. No. 783,178, Oct. 28, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 427,128

Int. Cl.[6] C23F *11/04*; A62B *7/08*; B01D *50/00*

U.S. Cl. 422—12 **30 Claims**



1. A method of cleaning a gas stream by removing therefrom unwanted odorous substances, comprising the steps of:

providing a housing having a first treatment chamber for confining the gas stream for pretreatment, said chamber including a packed bed and a sump;

providing a second treatment chamber, within said housing in fluid communication with said first treatment chamber, for confining the gas stream for further treatment, said second treatment chamber also including a packed bed and a sump;

wetting the packed bed in the first chamber with a surplusage of an aqueous solution, said solution containing a chemical reagent reactive to the gas stream odorous substances for chemical reaction therewith for formation of reaction products;

wetting the packed bed in the second chamber with a surplusage of an aqueous solution, said solution containing a chemical reagent reactive to the gas stream odorous substances for chemical reaction therewith for formation of reaction products;

passing sequentially the gas stream through the first and second chambers including passing the gas stream through the respective packed beds wherein the odorous substances contact and react with a portion of the respective aqueous solutions with formation of reaction products;

collecting in the first and second sumps, respectively, the reaction products formed in the respective packed beds and the portion of the aqueous solution unreacted with odorous substances;

delivering the collected portion of the unreacted aqueous solution to the first chamber packed bed for reaction therein with gas stream odorous substances to clean the gas stream passing therethrough; and

discharging a cleaned gas stream from said housing.

5,620,654

METHOD AND EQUIPMENT FOR SANITIZATION OF MEDICAL WASTE

Beni Mosenson, Kiryat Tivon, Israel, assignor to Moledet, Kfar Bnei Brith, Moshav Shitufi Paklai Ltd., Moledet, Israel

Filed Jan. 5, 1995, Ser. No. 369,533

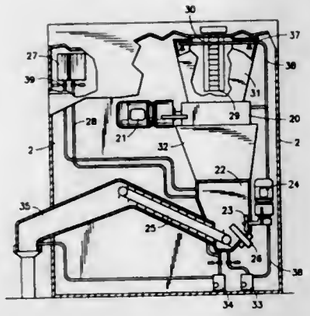
Claims priority, application Israel, Jan. 10, 1994, 108311

Int. Cl.[6] A62D *3/00*

U.S. Cl. 422—28 **13 Claims**

1. Equipment for treating and sanitizing medical waste, comprising:

a closed housing having first closable openings for inserting medical waste and removing treated waste, and second closable openings for inserting packaged sanitizing material and buffering material, said housing enclosing:



an electrically driven shredder connected by a hopper to a first said closable opening;

a mixing vessel mounted below said shredder, said mixing vessel having a top connected to said shredder and being provided with an electrically powered stirrer which stirs ground waste material;

means for adding water to said ground waste inside said mixing vessel;

a first container which holds liquid buffer material for neutralizing basic waste;

a second container which holds liquid buffer material for neutralizing acid waste;

means for holding said sanitizing material;

means for adding said sanitizing material to said shredder;

conveying means for drawing a quantity of buffering liquid from one of said containers and conveying said quantity of buffering liquid into said mixing vessel;

pumping means for:

drawing liquid out of said mixing vessel and for conveying said drawn liquid into said shredder and said hopper for additional sanitizing, and

draining liquid out of said waste in said mixing vessel;

means for emptying said mixing vessel and for conveying emptied waste into one of (a) a sewage main and (b) a separate container; and

electronic operating means for controlling operations of said shredder, said electrically powered stirrer, said means for adding water, said conveying means, said pumping means and said means for emptying.

5,620,655

COMPOSITION AND METHOD FOR KILLING PARASITES AND INVASIVE DURABLE FORMS OF SAID PARASITES

Eugen Nevermann, Hamburg, Germany, assignor to Menno-Chemie-Vertrieb GmbH, Norderstedt, Germany

PCT No. PCT/EP94/00382, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/17661, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 10, 1994, Ser. No. 501,075

Claims priority, application Germany, Feb. 11, 1993, 43 04 541.3; Feb. 24, 1993, 43 06 336.5; May 5, 1993, 43 17 083.8

Int. Cl.[6] A01N *27/00;25/00*; A61L *2/16*

U.S. Cl. 422—28 **19 Claims**

11. A method of killing invasive durable forms of parasites, including oocysts of ascarides and coccidia, said method consisting of the step of disinfecting with an effective amount of a disinfectant composition, said disinfectant composition consisting of water and a disinfection agent concentrate, wherein said disinfection agent concentrate consists of from 25 to 50% by weight of an active disinfectant ingredient consisting of at least one phenol combined with at least one keratolytically acting organic acid in a weight ratio of said at least one keratolytically acting organic acid to said at least one phenol between 1:9 and 9:1, said at least one keratolytically acting organic acid being selected from the group consisting of formic acid, salicylic acid and thioglycolic acid; from

15 to 60% by weight of at least one solvent ingredient selected from the group consisting of alcohols having from 2 to 4 carbon atoms, ethylene glycol, propylene glycol and ethylene glycol dialkyl ethers of the formula $H_3CO(CH_2—CH_2—O)_nCH_3$ with n=1 to 8; and from 5 to 30% by weight of at least one anionic surfactant ingredient selected from the group consisting of n-alkyl-aryl sulfonates having n-alkyl groups with from 10 to 13 carbon atoms sodium alkyl sulfonates, potassium salts of said n-alkyl-aryl sulfonates, sodium salts of said n-alkyl-aryl sulfonates, potassium alkyl sulfonates, sodium alkyl sulfonates, sodium alkyl sulfates and potassium alkyl sulfates, wherein said alkyl groups of said sodium and potassium alkyl sulfonates and said sodium and potassium alkyl sulfates have, independently, primary or secondary chains of from 8 to 18 carbon atoms.

5,620,656

PACKAGING SYSTEMS FOR PERACID STERILIZATION PROCESSES

Afaf Wensky, Pleasanton; Phillip A. Martens, Fremont, both of Calif., and Ross A. Caputo, Long Grove, Ill., assignors to Abtox, Inc., Mundelein, Ill.

Continuation of Ser. No. 213,112, Mar. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 111,989, Aug. 25, 1993, Pat. No. 5,498,526. This application Dec. 4, 1995, Ser. No. 566,477

Int. Cl.[6] G01N *31/22*; C12Q *1/22*

U.S. Cl. 422—28 **21 Claims**

1. A device useful to indicate sterilization cycle exposure of an article when the sterilization cycle includes an acidic gas or vapor, comprising:

a package capable of sealingly enclosing an article, the package having at least a portion with sufficient permeability to admit a sterilizing gas or vapor into contact with the article when sealingly enclosed within the package, the package being substantially bacteria impermeable when sealed; and,

an indicator associated with the package and adapted to be visually observed therewith, the indicator including a pH sensitive dye and a pH adjusting agent, the indicator having a first color under ambient conditions and adapted to change color from the first color to a second color in response to acidic gas or vapor exposure, the pH adjusting agent effective to place the pH of the indicator to an acidic point about where color change from the first color to the second color begins to occur, wherein said indicator is adapted to substantially maintain the first color under ambient conditions in the absence of exposure to a sterilization cycle and to substantially maintain the second color after acidic gas or vapor exposure is terminated.

5,620,657

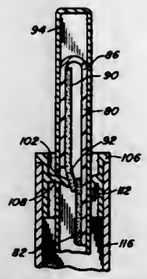
DEVICE AND METHOD FOR COMPLETING A FLUIDIC CIRCUIT

N. Chung Sizto; Nurith Kurn, both of Palo Alto; Rajesh D. Patel, Fremont; Martin Becker, Palo Alto, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Division of Ser. No. 821,338, Jan. 13, 1992, which is a continuation of Ser. No. 441,676, Nov. 27, 1989, abandoned. This application May 30, 1995, Ser. No. 453,859

Int. Cl.[6] G01N *33/558;21/00*

U.S. Cl. 422—56 **9 Claims**



1. A kit for conducting an assay comprising in packaged combination:

(a) a support having two pieces of bibulous material fixedly attached thereto in a non-capillary flow relationship to each other,

(b) a housing having a flexible member fixedly attached thereto, wherein said support is adapted for insertion into said housing and said flexible member is adapted to force one of said two pieces of bibulous material into contact with the other of said two pieces of bibulous material upon insertion of said support into said housing thereby forming a device which permits longitudinal capillary flow of a liquid through said two pieces of bibulous material and

(c) separately packaged reagents for conducting an assay said reagents comprising at least one member of a signal producing signal.

5,620,658

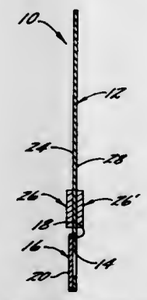
COLORIMETRIC TEST STRIP

Ivars Jaunakais, Rock Hill, S.C., assignor to Industrial Test Systems, Inc., Rock Hill, S.C.

Filed Sep. 11, 1995, Ser. No. 526,849

Int. Cl.[6] G01N *31/22*

U.S. Cl. 422—58 **19 Claims**



1. A colorimetric test strip comprising a support, a colorimetric indicator-bearing, water-permeable, first carrier attached to said support in a first region, wherein said support is provided with an aperture exposing a first face of said indicator-bearing carrier, which has an exposed second face permitting fluid flow therethrough, and attached to said support in a second region in a lateral relationship to said first region but not in fluid communication on

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said support with said indicator-bearing carrier, a water absorbent, second carrier bearing an effective amount of an analyte-modifying agent for converting a selected analyte in an aqueous sample from an ionic valence state undetectible by said indicator to a detectible valence state.

5,620,659

APPARATUS FOR PREVENTING EXPLOSIONS DURING MICROWAVE HEATED SOLVENT EXTRACTIONS

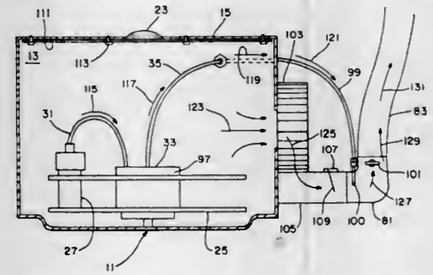
Robert N. Revesz, Monroe, N.C., assignor to CEM Corporation, Matthews, N.C.

Continuation-in-part of Ser. No. 74,324, Jun. 9, 1993, Pat. No. 5,443,795. This application Aug. 15, 1995, Ser. No. 515,357

The portion of the term of this patent subsequent to Jun. 9, 2013, has been disclaimed.

Int. Cl.[6] G05D *16/08;* **H05B** *6/80*

U.S. Cl. 422—90 **17 Claims**



1. An explosion proof microwave heated solvent extraction apparatus for extracting materials with an organic extracting solvent which is explosive in air, which apparatus comprises a walled chamber, a source of microwave radiation into said chamber, a microwave transmissive extraction container in said chamber, adapted to contain, under pressure, said organic extracting solvent, base material and extractable material with the base material, which extractable material is extractable by the solvent while the solvent is being heated by the microwave radiation, means for passing air through the chamber in an inlet and out an outlet in the chamber, means for detecting the presence of the solvent in said air leaving the chamber, and for modifying an electrical signal in response to the presence of the solvent in said air, said means comprising a switch that requires manual operation to reactivate the source of microwave radiation, and means for controlling operation of the source of microwave radiation in response to said modified electrical signal so that radiation from said source is terminated when the solvent is detected in the air leaving the chamber at a concentration which is not more than a predetermined explosive concentration.

5,620,660

PIPETTE SYSTEM

Herbert Belgardt, Hamburg, and Rolf-Günter Meyer, Bendestorf, both of Germany, assignors to Eppendorf-Netheler-Hinz GmbH, Hamburg, Germany

Filed Nov. 28, 1994, Ser. No. 345,671

Claims priority, application Germany, Dec. 3, 1993, 43 41 229.7

Int. Cl.[6] B01L *3/02*

U.S. Cl. 422—100 **15 Claims**

1. A manual pipette system, comprising:

a replaceable syringe having a syringe body with a mounting part and a plunger;

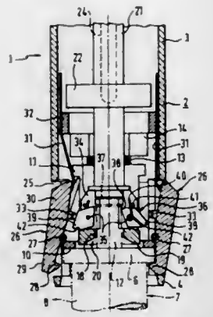
a manual pipette having a body including means for receiving said syringe mounting part and an axial lifting rod for axial movement within said pipette body with a receiving body at a lower end of said rod having means for receiving means and said plunger receiving means having respective openings through which said mounting part and said plunger move, upon relative axial displacement of said syringe and said pipette, into attachment positions thereof; and

fastening means for releasably securing said mounting part and said plunger in the attachment positions thereof;

wherein said fastening means comprises syringe gripping levers pivotally mounted in said pipette body and plunger gripping levers pivotally mounted in said receiving body,

wherein each of said syringe and plunger gripping levers has a gripping arm and a manually actuated operating arm, and

wherein said operating arms of syringe gripping levers have inwardly extending contact points which, upon actuation of the operating arms of said syringe gripping levers, are pivoted against the operating arms of said plunger gripping levers thereby simultaneously releasing said syringe body and plunger from said pipette.



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PIPETTE SYSTEM

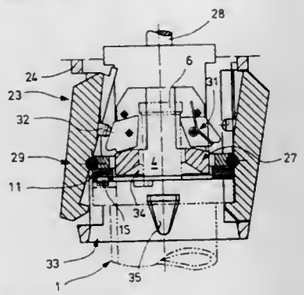
Klaus Schürbrock, Hamburg, Germany, assignor to Eppendorf-Netherler-Hinz GmbH, Hamburg, Germany

Filed Dec. 12, 1994, Ser. No. 353,752

Claims priority, application Germany, Dec. 10, 1993, 43 42 178.4

Int. Cl.[6] B01L *3/02*

U.S. Cl. 422—100 **19 Claims**



1. A pipette system, comprising:

a syringe having a syringe flange and a syringe plunger;

a pipette having a pipette body and an accommodation body displaceable within said pipette body, said pipette body and said accommodation body having flange and plunger accommodations, respectively, for receiving said syringe flange and plunger, respectively, and said flange and plunger accommodations having respective axial circular openings, through which said syringe flange and plunger axially move, respectively, into attachment positions thereof in said pipette;

fastening means for releasably securing said syringe flange and plunger to said flange and plunger accommodations, respectively;

plunger adjusting means for displacing said accommodation body;

a data carrier containing at least one of information characterizing said syringe and information characterizing conditions of said syringe, said data carrier comprising a ring supported on said syringe flange and having at least one axially extending sensed area characterizing an axial position of said syringe and enabling insertion of said syringe into said pipette in different rotational positions; and

means provided in said pipette for sensing said sensed area.

5,620,662

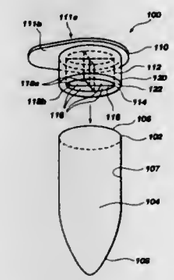
TEMPORARY LIQUID STORAGE CAVITIES IN A CENTRIFUGE TUBE LID

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Continuation-in-part of Ser. No. 219,840, Mar. 30, 1994, Pat. No. 5,462,881, which is a continuation-in-part of Ser. No. 215,132, Mar. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 110,313, Aug. 23, 1993, abandoned. This application May 19, 1995, Ser. No. 445,371

Int. Cl.[6] G01N *21/07*

U.S. Cl. 422—102 **13 Claims**



1. A centrifuge tube comprising:

a tube body defining a specimen enclosure therein and having an open end and an opposing closed end;

lid means for removably covering the open end of the tube body; and

liquid-holding cell means formed on the lid means and terminating in an open distal end for holding a liquid component therein even when the open distal end is facing downwardly, said liquid-holding cell means being disposed such that said distal end faces the specimen enclosure when the lid means is covering the open end of said tube body;

wherein the lid means and the liquid-holding cell means collectively comprise capping means including:

a cap member having opposing upper and lower surfaces;

a hollow holding cell extending outwardly from the lower surface of the cap member and terminating in an open distal end;

wherein the hollow holding cell includes interior side walls, said centrifuge tube further comprising at least one sector wall attached at opposing edges thereof to opposing portions of the interior side walls of the cell so as to extend across the hollow cell and divide the cell into a plurality of holding sectors configured to hold corresponding plurality of liquid components in isolation from contact with each other.

5,620,663

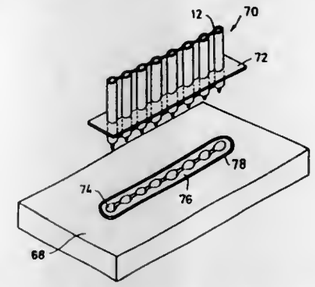
SUPPORT PLATE ACCOMMODATING AND BEING INTEGRALLY CONNECTED WITH A PLURALITY OF ADJACENT SAMPLE CONTAINERS

James E. Aysta, Stillwater, Minn., and Metin Colpan, Erkrath, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 153,463, Nov. 17, 1993, Pat. No. 5,464,541, which is a division of Ser. No. 671,448, Mar. 19, 1991, Pat. No. 5,264,184. This application Nov. 3, 1995, Ser. No. 552,704

Int. Cl.[6] B01D *35/00;* **B01L** *3/00;* **C12M** *1/12;1/16*

U.S. Cl. 422—104 **13 Claims**



1. A support plate accommodating and being integrally connected with a plurality of adjacent sample containers, each sample container being suitable to accommodate a liquid sample to be separated into components, each sample container having an inlet opening and an outlet opening between which a separation layer is arranged, said sample container having a bottom wall in which said outlet opening is located, said outlet opening enclosing an outlet spout having an inner diameter in the range of 0.1 to 1 mm.

5,620,664

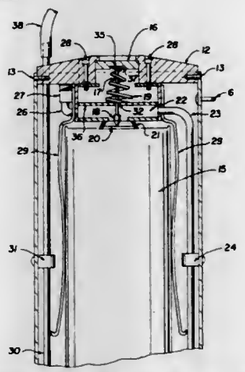
PERSONAL OXYGEN DISPENSER

Kenneth J. Palmer, Stand-By Systems, Inc. 10210 N. Central Expressway Suite 212 LB 33, Dallas, Tex. 75231

Filed Sep. 11, 1995, Ser. No. 526,155

Int. Cl.[6] A62B *7/08*

U.S. Cl. 422—122 **5 Claims**



1. A lightweight portable dispenser for the delivery of USP oxygen, the dispenser comprising:

a cylindrical dispenser body housing an oxygen producing generator and forming an annular space between the cylindrical dispensing body and the oxygen producing generator;

a mechanism for activating the oxygen producing generator, said mechanism including an activation button which when depressed first causes a perforation of a protective seal closing an orifice in the oxygen producing generator and thence

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causes the rupture of either a piston/cup or fracturable vial/ampoule container of starting liquid causing the initiation of the oxygen producing reaction;
an initial expansion chamber within the cylindrical dispenser body;
an inlet tube in open communication with the expansion chamber;
a cooling coil being in open communication at one end with the inlet tube;
an outlet tube in open communication with the end of the cooling coil opposite the inlet tube; and
a bottom web attached to the periphery of the bottom of the cylindrical dispenser body, wherein the web allows air from outside of the dispenser to enter the annular space formed between the cylindrical dispensing body and the oxygen producing generator and flow out the top of the cylindrical dispenser body, wherein the air flowing through the annular space cools the cooling coil and any oxygen flowing therethrough.

5,620,665

METHOD OF RECYCLING UNSATURATED POLYESTER RESIN WASTE AND RECYCLING APPARATUS

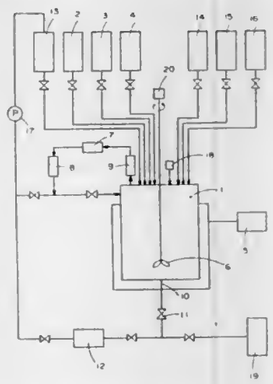
Shizuo Kubota; Osamu Ito, and Hiroyuki Miyamoto, all of Wakayama, Japan, assignors to Miyaso Chemical Co., Wakayama, Japan

Continuation-in-part of Ser. No. 398,689, Mar. 6, 1995, Pat. No. 5,468,780. This application Jun. 19, 1995, Ser. No. 492,147

Claims priority, application Japan, Jun. 21, 1994, 6-138762; Dec. 20, 1994, 6-316285; May 15, 1995, 7-116111

Int. Cl.[6] C08F *6/00;* **C08J** *11/04*

U.S. Cl. 422—135 **1 Claim**



1. Apparatus for recycling unsaturated polyester resin waste, which comprises a stainless steel reaction vessel equipped with:
a) a stirrer;
b) separate injection means attached to sources of a glycol, a catalyst and the unsaturated polyester resin waste;
c) an inlet tube for introducing a gas into the reaction vessel;
d) heating and cooling means for heating and cooling the reaction vessel;
e) a condenser for liquefying volatile components exiting from the reaction vessel;
f) a trap between the reaction vessel and the condenser for removing sublimed solids existing from the reaction vessel;
g) separate injection means attached to sources of reactants to be added to the reaction vessel;
h) an outlet port for removing liquid from the reaction vessel;
i) a centrifuge connected with the outlet port for separating solids from the liquid being removed from the reaction vessel; and
j) means for returning the liquid from which the solids have been removed to the reaction vessel.

5,620,666

EXHAUST GAS CLEANING METALLIC SUBSTRATE

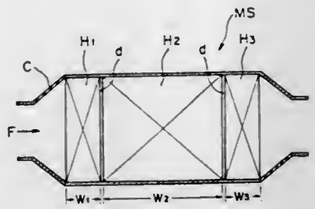
Masayoshi Usui, Shizuoka-ken, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Ltd., Shizuoka-ken, Japan

Filed Jul. 11, 1995, Ser. No. 500,562

Claims priority, application Japan, Jul. 11, 1994, 6-180495

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—171 **11 Claims**



1. An exhaust gas cleaning metallic substrate of the structure comprising three separate metallic honeycomb bodies for supporting thereon an exhaust gas cleaning catalyst, each of the metallic honeycomb bodies having a honeycomb structure composed of a planar band and a corrugated band made of metal sheets, and being sequentially arranged in a flowing direction of exhaust gas within a metallic casing so that the three metallic honeycomb bodies occupy front, middle and rear positions, respectively, wherein:
(i) the metallic honeycomb bodies at front and rear positions have a construction whereby at least some of the points of contact between the planar and corrugated bands of each of the front and rear position metallic honeycomb bodies are fixed together and at least some of points of contact between an outer peripheral wall of each of the front and rear position metallic honeycomb bodies and an inner peripheral wall of the metallic casing are fixed together; and
(ii) wherein the metallic honeycomb body at the middle position has a construction whereby the planar and corrugated bands of said middle position metallic honeycomb body are not fixed together and an outer peripheral wall of the metallic honeycomb body and an inner peripheral wall of the metallic casing are not fixed together.

5,620,667

WET PROCESS FLUE GAS DESULFURIZATION APPARATUS

Hiroyuki Nemoto; Klyoshi Okazoe, and Kenichi Sato, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

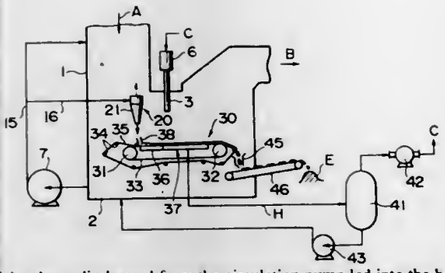
Filed Aug. 1, 1995, Ser. No. 509,864

Claims priority, application Japan, Sep. 12, 1994, 6-217002

Int. Cl.[6] B01D *50/00;* **C01B** *17/00;* **C01F** *11/46*

U.S. Cl. 422—171 **2 Claims**

1. A wet process flue gas desulfurization apparatus for a tank oxidation system comprising an absorption tower having an inlet at an upper portion of the tower for receiving flue gas and a tank at a lower portion of the tower, said tank having a slurry containing a calcium compound, a circulation pump for feeding the slurry into the upper portion of said tower, air feed means for feeding oxidizing air into the tank thereby absorbing and further oxidizing sulfur dioxide in the flue gas by the slurry to produce gypsum, a vacuum belt filter disposed along a surface of a side wall of the absorption tower with an evacuating pump attached to the belt filter and functioning as an air source of said air feed means and having part



of the slurry discharged from the circulation pump led into the belt filter to be dehydrated, thereby separating and recovering gypsum.

5,620,668

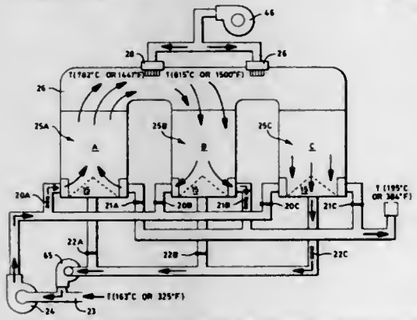
ANNULAR AIR DISTRIBUTOR FOR REGENERATIVE THERMAL OXIDIZERS

Thomas D. Driscoll; James T. Gallo, both of Greenbay; Michael P. Loos, New Franken, and David L. Petersen, Greenbay, all of Wis., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 291,653, Aug. 17, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,319

Int. Cl.[6] F01N *3/10*

U.S. Cl. 422—175 **10 Claims**



1. A regenerative oxidizer system for purifying a gas, comprising:
a combustion chamber for oxidizing constituents of a VOC laden gas to be decontaminated and a plurality of regenerator columns each having an upper portion in communication with said combustion chamber and having a base and an inside diameter containing heat exchange media operative to absorb and store heat from the VOC laden gas to be decontaminated, said combustion chamber in communication with said upper portion of each of said regenerator columns to permit the gas to flow in one of said columns in a first direction and through another of said columns in a second direction;
a cylindrical basket contained in said base of each of said regenerator columns for supporting the heat exchange media therein, each basket having a bottom and cylindrical outer diameter smaller than said inside diameter of said column base whereby an annular gap is defined around said basket a portion of said cylindrical basket adjacent to said column base being perforated to permit the gas to flow therethrough the bottom of said basket comprising a perforated cone for supporting the heat exchange media in said basket and defining a volume beneath the heat exchange media supported in said basket, said perforated cone having a base smaller than the inside diameter of said regenerator column base;
gas inlet and outlet means communicating with each of said annular gaps in the bases of each of said regenerator columns;
first valve means associated with said gas inlet and outlet means for alternately directing the gas into one of said columns in a first direction and through another of said columns in a second direction, said first valve means communicating with said annular gaps whereby the gas is introduced into and removed from said columns; and
second valve means coupled to said volume defined beneath said perforated cones, said second valve means operative to control gas flow out of said columns through said volume beneath said perforated cones.

5,620,669

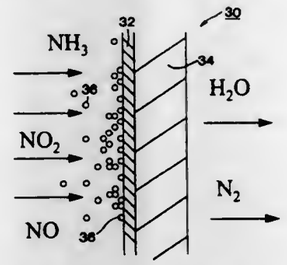
CATALYTIC FILTER MATERIAL AND METHOD OF MAKING SAME

Marc Plinke, Baltimore, Md.; Robert L. Sassa, Newark, Del.; William P. Mortimer, Jr., Conowingo, Md., and Glenn A. Brinckman, Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 15, 1995, Ser. No. 515,195

Int. Cl.[6] B01D *50/00;53/34*

U.S. Cl. 422—177 **16 Claims**



1. A catalytic filter for use in a fluid stream that comprises:
multiple fibers, each comprising catalytic particles attached to nodes and fibrils within a fibrillated polymer;
the multiple fibers of fibrillated polymer and catalytic particles combined to form a coherent catalytic filter material;
a sheet of microporous membrane mounted on at least one side of the coherent catalytic filter material, the sheet having a pore structure sufficiently small enough to serve as a barrier to isolate particles in the fluid stream away from the catalytic filter material.

5,620,670

PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Charles B. Benham, Arvada; Mark S. Bohn, Golden, and Dennis L. Yakobson, Westminster, all of Colo., assignors to Rentech, Inc., Denver, Colo.

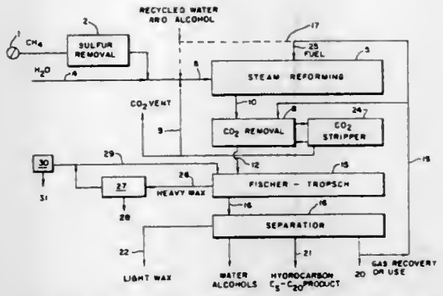
Division of Ser. No. 428,793, Apr. 24, 1995, which is a continuation of Ser. No. 140,479, Nov. 18, 1993, abandoned, which is a division of Ser. No. 867,456, Apr. 13, 1992, Pat. No. 5,324,335, which is a continuation-in-part of Ser. No. 806,267, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,499, May 25, 1990, abandoned, which is a continuation of Ser. No. 861,535, May 8, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 470,498

Int. Cl.[6] B01J *8/02;* **C10L** *1/18*

U.S. Cl. 422—213 **6 Claims**

1. A system for converting hydrocarbon gases into products including liquid hydrocarbon products containing five or more carbon atoms wherein the conversion of carbon from the hydrocarbon gases into hydrocarbon product containing five or more carbon atoms is at least 50% comprising:
catalytic conversion means for converting hydrocarbon gases, water and carbon dioxide into hydrogen, carbon monoxide and carbon dioxide and including means for introducing gases

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into said conversion means and means for removing product from said conversion means;

carbon dioxide absorption and recovery means for absorbing and recovering carbon dioxide from the product stream from the catalytic conversion means for introduction into the feed stream of the catalytic conversion means;

Fischer-Tropsch synthesis means for converting the hydrogen and carbon monoxide from the catalytic conversion means into liquid hydrocarbon compounds and carbon dioxide using an iron-based catalyst;

recycle means for taking the carbon dioxide produced by the Fischer-Tropsch synthesis means and the carbon dioxide absorption and recovery means and introducing said carbon dioxide into the catalytic conversion means in amounts sufficient to prevent elemental carbon formation in the catalytic conversion means while producing a ratio of from about 0.5 to 1 to about 2.5 to 1 of hydrogen to carbon monoxide entering the Fischer-Tropsch synthesis means.

5,620,671

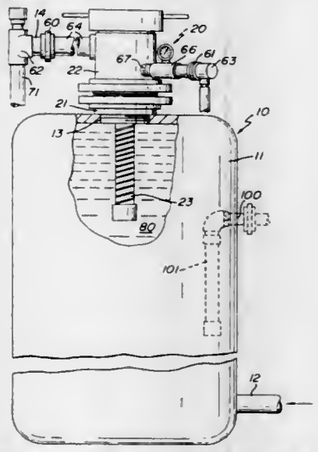
LIQUID DISPENSING APPARATUS

Donald P. Shoemaker, Birchrunville, Pa., assignor to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 350,880, Dec. 7, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,439

Int. Cl.[6] B01D *11/02*

U.S. Cl. 422—261 **6 Claims**



6. A liquid dispensing apparatus for dispensing liquid from a container containing a liquid and a solid halogen donor material, said apparatus comprising:

a) a container attachment means having a bore;

b) a pivotable liquid outlet means, removably attached to said container attachment means, said pivotable liquid outlet means having a first and a second bore, a liquid outlet port in fluid communication with said second bore and a pressure relief port in fluid communication with said first bore, said first bore in fluid communication with said bore of said container attachment means, said liquid outlet port removably connected to a vacuum breaker, said pressure relief port removably connected to a pressure relief value, said pivotable liquid outlet means secured to said container attachment means by a ring clamp wherein said pivotable liquid outlet means is pivotable about said first and second bores of said outlet means and said central bore of said container attachment means; and

c) a diffuser means removably attached to said pivotable liquid outlet means and disposed within said bore of said container attachment means and within said first and said second bores of said pivotable liquid outlet means, said diffuser means providing fluid communication from said first bore to said second bore of said pivotable liquid outlet means;

wherein liquid flowing into the container from a liquid inlet completely floods the solid halogen donor material and dissolves a portion of the solid halogen donor material, flows through and is filtered by said diffuser means, flows from said diffuser means into said second bore of said pivotable liquid outlet means, and is dispensed from said second bore through said liquid outlet port, and wherein said diffuser means is removable from said pivotable outlet means to facilitate said diffuser means inspection and replacement.

5,620,672

LAYERED CATALYST COMPOSITION

Michael P. Galligan, Clark, and Joseph C. Dettling, Howell, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 202,397, Feb. 25, 1994, Pat. No. 5,422,331. This application May 5, 1995, Ser. No. 435,263

Int. Cl.[6] C01B *13/00*

U.S. Cl. 423—219 **28 Claims**

1. A method for abating a noxious substance contained in air which method comprises contacting air containing such noxious substance with a catalyst composition comprising a catalytic material coated on a substrate, the catalytic material comprising: (a) an undercoat layer comprising a mixture of a fine particulate refractory metal oxide and a sol selected from the class consisting of one or more of silica, alumina, zirconia and titania sols; and (b) an overlayer comprising a refractory metal oxide support on which is dispersed at least one catalytic metal component.

5,620,673

PROCESS AND APPARATUS FOR SEPARATING POLYCYCLIC AND POLYHALOGENATED HYDROCARBONS FROM EXHAUST GAS OF A SINTERING PROCESS

Hansjoerg Herden, Rodgau; Stefan Federhen, Frankfurt; Gernot Mayer-Schwinning, Bad Homburg, and Hubert Roth, Bad Vilbel, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

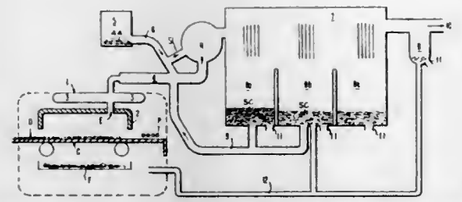
Filed Aug. 10, 1995, Ser. No. 513,527

Claims priority, application Germany, Aug. 16, 1994, 44 29 027.6

Int. Cl.[6] C01B *7/00*

U.S. Cl. 423—240 S **6 Claims**

1. A process of separating polycyclic and polyhalogenated hydrocarbons from an exhaust gas of a sintering process, said exhaust gas containing dust and said process comprising the steps of bringing the entire exhaust gas from the sintering process into contact with a solid adsorption agent consisting of at least one member selected from the group consisting of kaolinite, bentonite, illite, layer silicates, diatomaceous earth and mixtures thereof within a gas-solids suspension for a reaction time of from 0.5 to 10 seconds above a dew point of the exhaust gas at a temperature from 90° to 180° C. and at a velocity from 6 to 20 meters per



second; subsequently separating said solid adsorption agent and said dust jointly from the gas-solids suspension to form separated solids and contacting said exhaust gas for the sintering process with a part of the separated solids; wherein said solid adsorption agent has a median particle diameter, d_{50}, of from 5 to 100 micrometers and the gas-solids suspension has a mean suspension density of from 5 to 500 g solids per sm^3 of said exhaust gas.

5,620,674

CARBON FIBERS AND PROCESS FOR THEIR PRODUCTION

Iwao Yamamoto, and Hiroyuki Aikyo, both of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 4,541, Jan. 14, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 327,818

Claims priority, application Japan, Jan. 14, 1992, 4-024653; Jan. 28, 1992, 4-037287

Int. Cl.[6] B01F *9/12*

U.S. Cl. 423—447.2 **4 Claims**

1. A carbon fiber having a fiber diameter of at least 15 μm, a tensile modulus of elasticity of more than 104 ton/mm^2 and a value L of graphite crystallites at least 1000 Å long in the direction of axis a as determined from powder X-ray spectrum.

5,620,675

RADIOACTIVE PEPTIDES

William McBride, Manchester, and Richard T. Dean, Bedford, both of N.H., assignors to Diatech, Inc., Londonderry, Ill.

Continuation-in-part of Ser. No. 902,935, Jun. 23, 1992. This application Jul. 21, 1993, Ser. No. 95,760

Int. Cl.[6] A61K *38/31;38/00;51/00*

U.S. Cl. 424—1.69 **68 Claims**

1. A composition of matter that is linear somatostatin receptor-binding peptide reagent having the formula:

$$X^1\text{-}A^1A^2\text{-}B^1B^2B^3B^4\text{-}C^1C^2\text{-}X^2$$

wherein

X^1 and X^2 are each independently hydrophilic moieties wherein X^1 is an amino acid, or a peptide having an amino acid sequence of no more than 10 residues, or a monosaccharide, or an oligosaccharide comprising 10 or fewer saccharide units, or a polyoxyanion, and X^2 is a polyoxyanion, or an amino acid, or a peptide having an amino acid sequence of no more than 10 residues (including peptides wherein the carboxyl group of the carboxyl-terminal amino acid is reduced to an alcohol), or a monosaccharide or an oligosaccharide comprising 10 or fewer saccharide units;

A^1, A^2 and C^1 are each independently a lipophilic D- or L-amino acid, or S-alkylated cysteine, penicillamine, homocysteine or homohomocysteine;

B^1 is D- or L-Phe, or D- or L-Tyr, or D- or L-Nal, or Ain or substituted derivatives thereof;

B^2 is D- or L-Trp or substituted derivatives thereof;

B^3 is D- or L-Lys, or Hly, Achxa, Amf, Aec, Apc, Aes, Aps or substituted derivatives thereof;

B^4 and C^2 are each independently D- or L-Thr, Ser, Val, Phe, Ile, Abu, Nle, Leu, Nva, Nal or Aib or substituted derivatives thereof;

and wherein the somatostatin receptor-binding peptide reagent does not comprise a radiolabel chelating moiety.

5,620,676

BIOLOGICALLY ACTIVE ATP ANALOGS

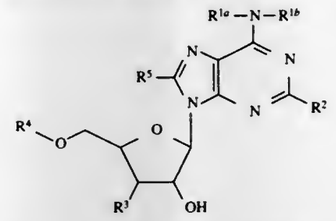
Kenneth A. Jacobson, Silver Spring, Md.; Bilha Fischer, Holon, Israel, and Michel Maillard, Cambridge, Mass., assignors to The United States of America as represented by the Secretary, Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 207,870, Mar. 8, 1994, abandoned. This application Mar. 31, 1995, Ser. No. 414,438

Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.73 **34 Claims**

1. A compound of the formula



wherein one of R^{1a} and R^{1b} is hydrogen, and the other of R^{1a} and R^{1b} is $(C_1\text{–}C_7)$alkyl, $(C_1\text{–}C_7)$alkylphenyl, or $(C_5\text{–}C_{10})$ aryl $(C_1\text{–}C_7)$alkyl; R^2 is selected from the group consisting of S-$(C_1\text{–}C_{11})$alkyl, S-$(C_1\text{–}C_7)$alkenyl, S-$(C_1\text{–}C_7)$alkylcyano, S-$(C_3\text{–}C_7)$cycloalkyl, S-phenyl, S-$(C_1\text{–}C_3)$alkylphenyl, S-$(C_1\text{–}C_7)$alkylamino, S-$(C_1\text{–}C_7)$alkylthio$(C_1\text{–}C_7)$alkyl, S-$(C_1\text{–}C_7)$alkylthiocyanato, S-$(C_1\text{–}C_3)$alkylaminophenyl, S-$(C_1\text{–}C_3)$alkylnitrophenyl, and hydrogen; R^3 is selected from the group consisting of $(C_1\text{–}C_7)$alkyl, $(C_1\text{–}C_7)$alkylamino, $(C_5\text{–}C_{10})$aryl, $(C_5\text{–}C_{10})$arylamino, amino, amido, and hydroxyl; R^4 is monophosphate, diphosphate, or triphosphate; and R^5 is selected from the group consisting of bromo, fluoro, chloro, amino $(C_1\text{–}C_7)$alkyl amino, and hydrogen; or a pharmaceutically acceptable salt thereof;

provided that when R^3 is hydroxyl, then at least one of R^2 and R^5 is not hydrogen; and further provided that when R^4 is triphosphate, R^3 is hydroxyl and R^5 is hydrogen.

5,620,677

COMPOSITIONS OF IODOPHENOXY ALKANES AND IODOPHENYL ETHERS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Carl R. Illig, Phoenixville; Eugene R. Cooper, Berwyn; John L. Toner, Downingtown; Donald A. Upson, West Chester; Brent D. Douty, Coatesville; Thomas J. Caulfield, Audubon, all of Pa.; Edward R. Bacon, East Greenbush, N.Y.; Kimberly G. Estep, Albany, N.Y.; Kurt A. Josef; Shaughnessy Robinson, both of Clifton Park, N.Y., and Paul P. Spara, Fairport, N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 12,189, Feb. 2, 1993, Pat. No. 5,316,755. This application Feb. 1, 1994, Ser. No. 189,949

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.45 **7 Claims**

1. A compound selected from the group consisting of: 2-(4-Iodophenoxy)-decane, and 1-(2,4,6-triiodo-3-trifluorophenoxy)octane.

174–420 O.G.–97–12: QL3

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5,620,678

WATER-SOLVENT-BASED AEROSOL INSECTICIDE

Terrence R. Burke, St. Louis County, Mo., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 377,664, Jan. 23, 1995, abandoned, which is a continuation of Ser. No. 53,320, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 689,180, Apr. 22, 1991, abandoned. This application May 31, 1996, Ser. No. 653,751

Int. Cl.[6] A01N 25/06

U.S. Cl. 424—45 9 Claims

1. A solvent-based aerosol insecticidal composition to be sprayed upon an insect that is embodied in a homogeneous liquid solution contained under pressure in an aerosol can which solution becomes a two-phase system upon release from the aerosol can, the insecticidal composition being produced by a method comprising:

placing in the aerosol can at least one active insecticidal ingredient selected from the group consisting of organophosphates and a co-solvent which dissolves the insecticidal ingredient and maintains the insecticidal ingredient in solution while it is contained in the aerosol can;

adding a diluent to said at least one insecticidal ingredient and co-solvent, said at least one insecticidal ingredient being insoluble in said diluent, said diluent being a hydrocarbon solvent;

adding dimethyl ether as a propellent and a solvent under pressure, said dimethyl ether holding said insecticidal ingredient, co-solvent and said diluent in a homogeneous liquid solution within the aerosol can and said insecticidal ingredient is a solid or an oil when not in solution; and

whereby upon releasing the aerosol insecticide, the dimethyl ether and co-solvent present flash, and the two-phase system forms, one phase comprising the diluent which separates, and a second phase comprising said insecticidal ingredient, said insecticidal ingredient returning to its solid or oil state when it separates from the diluent;

wherein the insecticidal composition consists essentially of organophosphate active insecticidal ingredient in the range of 0.01%–10.0%, co-solvent in the range of up to 25%, diluent in the range of 25.0%–90.0%, and dimethyl ether in the range of 10.0%–75.0%.

5,620,679

ORAL COMPOSITIONS

Michael F. Lukacovic, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 242,228, May 13, 1994, Pat. No. 5,578,294. This application Jun. 7, 1995, Ser. No. 485,223

Int. Cl.[6] A61K 7/16;7/18

U.S. Cl. 424—52 9 Claims

1. An oral composition providing improved oral cleansing with reduced desquamation comprising:

a. from about 0.1% to about 2.5% of an isethionate surfactant;

b. from about 0.1% to about 2.5% of a chelating agent selected from the group consisting of tartaric acid and pharmaceutically-acceptable salts thereof, citric acid and alkali metal citrates, and mixtures thereof;

c. an amphoteric betaine surfactant selected from the group consisting of decylbetaine, cocobetaine, myristylbetaine, palmitylbetaine, laurylbetaine, cetylbetaine, stearylbetaine, cocobetaine/cocamine oxide, cocamidoethyl betaine, cocoamidopropyl betaine, cocoamidopropyl hydroxysultaine, lauramidopropyl betaine, rincinoleicamidobetaine and mixtures thereof; and

d. a fluoride ion source selected from the group consisting of sodium fluoride, stannous fluoride, sodium monofluorophosphate, potassium fluoride and mixtures thereof;

wherein the level of a. and b. does not exceed 4.0% by weight of the total composition and wherein the composition has a pH of from about 6.5 to about 9.5 and wherein said composition is free of enzymes.

5,620,680

COSMETIC AND DERMATOLOGICAL LIGHT PROTECTION FORMULATIONS HAVING AN ACTIVE CONTENT OF CIS-UROCANINIC ACID

Franz Stäb, Echem; Gerhard Sauermann, Wiemersdorf, and Beate Uhlmann, Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Sep. 2, 1993, Ser. No. 115,528

Claims priority, application Germany, Sep. 9, 1992, 42 30 076.2

Int. Cl.[6] A61K 7/42;31/415

U.S. Cl. 424—59 13 Claims

1. In a cosmetic or dermatological composition comprising a galenic carrier, an active material and a light protection agent or antioxidant, the improvement wherein said light protection agent or antioxidant comprises an effective amount of cis-urocaninic acid.

5,620,681

SELF-TANNING COSMETIC COMPOSITION

Sadaki Takata, and Kenzo Ito, both of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00016, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/08980, PCT Pub. Date Apr. 6, 1995

PCT Filed Jan. 7, 1994, Ser. No. 436,470

Claims priority, application Japan, Sep. 30, 1993, 5-268169; Sep. 30, 1993, 5-268170

Int. Cl.[6] A61K 7/42;31/74

U.S. Cl. 424—59 15 Claims

1. A self-tanning cosmetic composition comprising: dihydroxy acetone, a polyoxyethylene-polyoxypropylene block copolymer surfactant, and less than 10% by weight of oil.

5,620,682

SUNSCREEN COMPOSITIONS

Arnold W. Fogel, Upper Saddle River, N.J., assignor to Bernel Chemical Co., Englewood Cliffs, N.J.

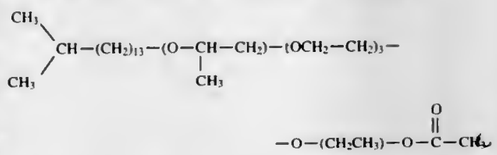
Filed Mar. 25, 1993, Ser. No. 37,338

Int. Cl.[6] A61K 7/42;7/44

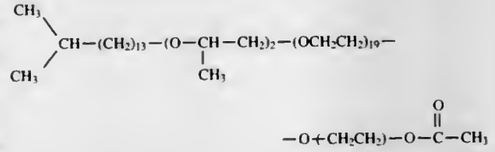
U.S. Cl. 424—60 8 Claims

1. A sunscreen compositon comprising an oil in water emulsion system wherein said emulsion system has an oil phase content from 20.0% to 40.0% by weight of said sunscreen composition wherein the said oil phase of the said emulsion system comprises

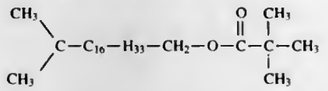
a) an alkoxylated ester having the structural formula:



b) a second alkoxylated ester having the structural formula:



c) a neopentanoate ester having the structural formula:



0.5% by weight methylchloroisothiazolinone (and) methylisothiazolinone of said sunscreen composition and a dionized water phase from 59.5% to 79.5% by weight of said sunscreen composition.

5,620,683

AQUEOUS, ACRYLIC HAIR FIXATIVES AND METHODS OF MAKING SAME

Quinn K. Tong, Belle Mead, and Charles W. Paul, Madison, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Sep. 13, 1995, Ser. No. 526,960

Int. Cl.[6] A61K 7/11

U.S. Cl. 424—70.11 14 Claims

1. An aqueous, acrylic, hair fixative composition, comprising to a total of 100 percent by weight,

about 3 to 10 weight percent of an acrylic hair fixative polymer which has been prepared utilizing from about 8 to about 25 weight percent of an acidic monomer which contains at least one carboxyl group and which is selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, maleic acid, fumaric acid, C_1–C_4 alkyl half esters of maleic acid and C_1–C_4alkyl half esters of fumaric acid, based on the total weight of monomer used to prepare the polymer,

25 to 97 weight percent of water,

0 to 40 weight percent of a propellant,

an amount of a neutralizing agent effective to neutralize from 40 to 80 mole percent of the carboxyl groups present in the polymer,

0 to 15 weight percent of an emulsifier; and

0 to 35 weight percent of an organic solvent;

characterized in that the polymer, the water, and the neutralizing agent are combined for a time period ranging from about 5 minutes to about 72 hours, at a temperature and a pressure ranging from standard temperature and pressure to a temperature of about 80° C. and a pressure of about 63 psi, thereby forming an aqueous, homogenous solution of the polymer in the water, wherein the water comprises greater than 50 weight percent of a solvent system which comprises the water and optionally the organic solvent, which solvent system is used in preparing the hair fixative composition.

5,620,684

COSMETIC COMPOSITIONS FOR MAINTAINING HAIRSTYLE POSSESSING IMPROVED FIXING POWER

Christine Dupuis, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 278,548, Jul. 21, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 636,270

Claims priority, application France, Jul. 23, 1993, 93 09096

Int. Cl.[6] A61K 7/11

U.S. Cl. 424—70.12 10 Claims

1. A method for enhancing the fixing power of a composition for maintaining hairstyle comprising the step of combining in a composition for maintaining hairstyle a polysiloxane/polyoxyalkylene linear block copolymer with an anionic polymer for the purpose of enhancing the fixing power of said anionic polymer, where said polysiloxane/polyoxyalkylene linear block copolymer corresponds to the formula:

$$[C_4H_8(C_nH_{2n}O)_b—C_4H_8—SiMe_2O(SiMe_2O)_aSiMe_2]_c$$

in which:

Me represents methyl;

n is an integer from 2 to 4;

a and b are integers greater than or equal to 4; and

c is a number greater than or equal to 4; wherein the average molecular weight of each siloxane block ranges from approximately 400 to approximately 10,000; wherein the average molecular weight of each polyoxyalkylene block ranges from approximately 300 to approximately 10,000; wherein the siloxane blocks represent from approximately 10% to approximately 90% by weight of the block copolymer; and further wherein the average molecular weight of the block copolymer ranges from at least 3,000 to 95,000;

and further wherein said anionic polymer is the copolymerization product of 2-acrylamido-2-methylpropanesulphonic acid (40 to 70%) and tert-butylacrylamide; a vinyl acetate/vinyl tert-butylbenzoate/crotonic acid terpolymer; a copolymer of vinylpyrrolidone and acrylic or methacrylic acid; a copolymer of vinylpyrrolidone, tert-butyl acrylate and acrylic or methacrylic acid; a copolymer of vinylpyrrolidone, lauryl methacrylate and acrylic or methacrylic acid; a methacrylic acid/methyl methacrylate copolymer; or an acrylic acid/N,N-dimethylacrylamide/ethyl methacrylate/N-tert-butylacrylamide copolymer.

6. A cosmetic composition for maintaining hairstyle comprising in a cosmetically acceptable carrier, a polysiloxane/polyoxyalkylene linear block copolymer and an anionic polymer, where said polysiloxane/polyoxyalkylene linear block copolymer corresponds to the formula:

$$[C_4H_8(C_nH_{2n}O)_b—C_4H_8—SiMe_2O(SiMe_2O)_aSiMe_2]_c$$

in which:

Me represents methyl;

n is an integer from 2 to 4;

a and b are integers greater than or equal to 4; and

c is a number greater than or equal to 4; wherein the average molecular weight of each siloxane block ranges from approximately 400 to approximately 10,000; wherein the average molecular weight of each polyoxyalkylene block ranges from approximately 300 to approximately 10,000; wherein the siloxane blocks represent from approximately 10% to approximately 90% by weight of the block copolymer; and further wherein the average molecular weight of the block copolymer ranges from at least 3,000 to 95,000;

and further wherein said anionic polymer is the copolymerization product of 2-acrylamido-2-methylpropanesulphonic acid (40 to 70%) and tert-butylacrylamide; a vinyl acetate/vinyl tert-butylbenzoate/crotonic acid terpolymer; a copolymer of vinylpyrrolidone and acrylic or methacrylic acid; a copolymer of vinylpyrrolidone, tert-butyl acrylate and acrylic or methacrylic acid; a copolymer of vinylpyrrolidone, lauryl methacrylate and acrylic or methacrylic acid; a methacrylic acid/methyl methacrylate copolymer; or an acrylic acid/N,N-dimethylacrylamide/ethyl methacrylate/N-tert-butylacrylamide copolymer.

5,620,685

PROTECTING AGENTS FROM RADIATION HAZARDS

Nobusuke Nishi, Maebashi; Haruhiko Tsumura, Tano-gun, and Hideo Inoue, Takasaki, all of Japan, assignors to Kirin Brewery Company, Limited, Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 357,125

Claims priority, application Japan, Dec. 16, 1993, 5-316914

Int. Cl.[6] A61K 38/18;38/19;38/20

U.S. Cl. 424—85.1 10 Claims

1. A pharmaceutical composition comprising:

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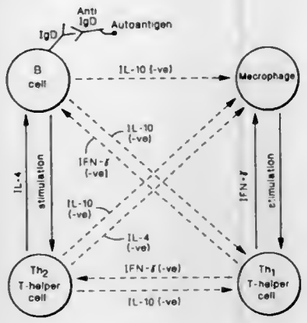
an effective amount of SCF protein;
an effective amount of IL-3 protein;
an effective amount of GM-CSF protein; and
an effective amount of IL-6 protein,
in combination with a pharmaceutically acceptable carrier.

5,620,686

ANTIGEN-ANTIBODY CONJUGATES

Donald W. Mason, Witney, England, assignor to British Technology Group Limited, London, England

Continuation of Ser. No. 304,223, Sep. 12, 1994, abandoned, and a continuation-in-part of Ser. No. 39,481, Apr. 26, 1993, abandoned. This application May 31, 1995, Ser. No. 454,747
Claims priority, application United Kingdom, Sep. 28, 1990, 9021210; May 14, 1991, 9110444
Int. Cl.[6] C07K *16/46;* **A01K** *39/395;* **C12N** *15/85*
U.S. Cl. 424—134.1 **4 Claims**



3. A method of treating a patient suffering from a disease associated with the cell-mediated immune response, said method comprising the step of administering to the patient a disease-alleviating amount of a conjugate consisting essentially of (1) an autoantigen which is a peptide which when present in the body gives rise to a harmful cell-mediated response with (2) an antibody to IgD surface molecules present predominantly on B cells.

5,620,687

INHIBITION OF INTIMAL HYPERPLASIA USING ANTIBODIES TO PDGF BETA RECEPTORS

Charles E. Hart, Brier; Richard D. Kenagy, and Alexander W. Clowes, both of Seattle, all of Wash., assignors to ZymoGenetics, Inc., and University of Washington, both of Seattle, Wash.

Continuation-in-part of Ser. No. 304,623, Sep. 12, 1994, abandoned, which is a continuation of Ser. No. 23,504, Feb. 25, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 366,860
Int. Cl.[6] A61K *39/395*
U.S. Cl. 424—143.1 **19 Claims**

1. A method of inhibiting intimal hyperplasia in the vasculature of a mammal, comprising:
administering to said mammal an antihyperplastically effective amount of an anti-platelet derived growth factor (PDGF) beta receptor antibody.

5,620,688

METHODS OF INHIBITING THE ACTIVATION OF FACTOR XIII

Guy L. Reed, Winchester, Mass.; Gary R. Matsueda, Princeton, N.J., and Edgar Haber, Salisbury, N.H., assignors to Bristol-Myers Squibb Company, Princeton, N.J., and General Hospital Corporation, The, Boston, Mass.

PCT No. PCT/US92/01926, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO92/15609, PCT Pub. Date Sep. 17, 1992
Continuation-in-part of Ser. No. 667,296, Mar. 11, 1991, abandoned. This PCT application Mar. 11, 1992, Ser. No. 117,052
Int. Cl.[6] A61K *39/395;38/48;38/49*
U.S. Cl. 424—145.1 **8 Claims**

1. A method for inhibiting the activation or active form of Factor XIII as a means of treating a patient with myocardial infarction or blood clots, said method comprising administering a therapeutically effective amount of an anti-Factor XIII antibody that binds the A subunit of Factor XIII at the thrombin cleavage site such that the ability of Factor XIII to catalyze the formation of γ—γ dimers of fibrin or the cross-linking of α_2-antiplasmin to fibrin is inhibited.

5,620,689

LIPOSOMES FOR TREATMENT OF B-CELL AND T-CELL DISORDERS

Theresa M. Allen, Edmonton, Canada, and Francis J. Martin, San Francisco, Calif., assignors to Sequus Pharmaceuticals, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 40,544, Mar. 31, 1993, Pat. No. 5,527,528, which is a continuation-in-part of Ser. No. 642,321, Nov. 15, 1991, Pat. No. 5,213,804, which is a continuation-in-part of Ser. No. 425,224, Oct. 10, 1989, Pat. No. 5,013,556. This application Jun. 7, 1995, Ser. No. 475,050
Int. Cl.[6] A61K *51/12;39/44;9/127;* **C07K** *17/00*
U.S. Cl. 424—178.1 **19 Claims**

1. A method of treating a subject having a disorder characterized by a neoplasm of B-lymphocyte lineage cells or T-lymphocyte lineage cells, comprising
administering to the subject, a suspension of liposomes having a surface coating of polyethylene glycol chains effective to increase the blood circulation lifetime of the liposomes severalfold over that of liposomes in the absence of such coating, a chemotherapeutic agent in liposome-entrapped form, and covalently attached to the distal ends of a portion of said chains, antibodies or antibody fragments effective to bind to an antigen specific for said cells.

5,620,690

IMMUNOGENIC COMPLEXES

Gideon F. A. Kersten, Utrecht; Arjan Spiekstra, Nieuwegein; Gerrit Van Der Werken, Utrecht, and Eduard C. Beuvery, Vianen, all of Netherlands, assignors to De Stat Der Nederlanden Vertegenwoordigd Door De Minister Van Welzijn Volksgezondheid En Cultuur, Rijswijk, Netherlands

PCT No. PCT/NL91/00211, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/06710, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 23, 1991, Ser. No. 39,294
Claims priority, application Netherlands, Oct. 23, 1990, 9002314
Int. Cl.[6] C07G *3/00;* **A61K** *39/00;* **C07H** *15/24;17/00*
U.S. Cl. 424—184.1 **10 Claims**

1. An immunogenic complex in the form of an iscom comprising at least one sterol, at least one phospholipid and at least one Quil A fraction derived from Quil A hydrophobic interaction chromatography, wherein said Quil A fraction exhibits adjuvant activity and reduced toxicity relative to Quil A, and wherein said Quil A

fraction is selected from the group consisting of fractions having the designations QA1, 3, 5, 6, 9, 12, 13, 14, 17, 18, 20 and 23.

5,620,691

CAUSATIVE AGENT OF THE MYSTERY SWINE DISEASE, VACCINE COMPOSITIONS AND DIAGNOSTIC KITS

Gert Wensvoort, Havelte; Catharinus Terpstra, and Joannes M. A. Pol, both of Lelystad, all of Netherlands, assignors to Stichting Centraal Diergeneeskundig Instituut, Lelystad, Netherlands

PCT No. PCT/NL92/00096, § 371 Date Nov. 26, 1993, § 102(e) Date Nov. 26, 1993, PCT Pub. No. WO92/21375, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 157,005
Claims priority, application European Pat. Off., Jun. 6, 1991, 91201398; Mar. 18, 1992, 92200781
Int. Cl.[6] A61K *39/00;31/193;39/38;39/12*
U.S. Cl. 424—184.1 **10 Claims**

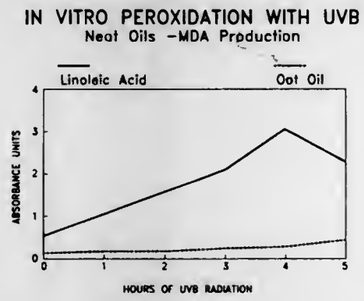
1. An isolated causative agent of Mystery Swine Disease identified as deposit number I-1102, deposited Jun. 5, 1991 with the Institut Pasteur, Paris, France.

5,620,692

OAT OIL COMPOSITIONS WITH USEFUL COSMETIC AND DERMATOLOGICAL PROPERTIES

Richard C. Potter, Seeley Lake; James M. Castro, and Lori C. Moffatt, both of Missoula, all of Mont., assignors to Nurture, Inc., Missoula, Mont.

Filed Dec. 23, 1993, Ser. No. 172,485
Int. Cl.[6] A61K *7/00*
U.S. Cl. 424—401 **23 Claims**



1. A method for producing a cosmetic formulation comprising the steps of:
providing an aqueous phase;
providing a lipophilic phase comprising crude oat oil;
providing an amount of an emulsifier effective to form an emulsion of the aqueous phase and the lipophilic phase;
mixing the aqueous phase, the lipophilic phase, and the emulsifier to form a mixture;
agitating the mixture such that an emulsion is formed.

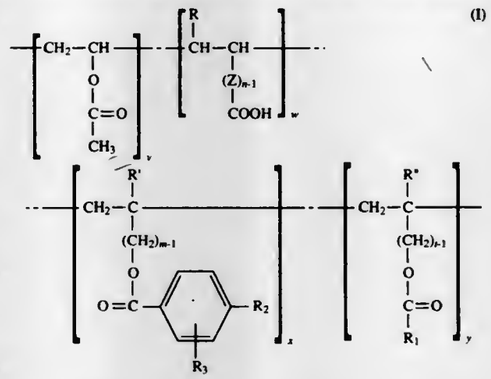
5,620,693

MASCARA CONTAINING WAX(ES) AND CARBOXYL-FUNCTIONAL FILM-FORMING POLYMER AQUEOUS DISPERSION

Bertrand Piot, La Garenne Colombes; Danièle Debert, Savigny Sur Orge, and Jeanne Patraud, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Nov. 16, 1994, Ser. No. 341,987
Claims priority, application France, Nov. 24, 1993, 93 14051
Int. Cl.[6] A61K *7/032*
U.S. Cl. 424—401 **13 Claims**

1. A mascara composition comprising in admixture:
a) an aqueous dispersion of particles of a film-forming polymer having carboxylic acid functional groups, said particles having a mean diameter of between 10 and 300 nm, and said polymer being selected from the group consisting of:
(i) vinyl acetate/crotonic acid copolymers,
(ii) vinyl acetate/crotonic acid/vinyl neodecanoate terpolymers,
(iii) N-octylacrylamide/methyl methacrylate/hydroxypropyl methacrylate/acrylic acid/tertbutylaminoethyl methacrylate copolymers,
(iv) methyl vinyl ether/maleic anhydride mono-esterified with butanol alternating copolymers,
(v) acrylic acid/ethyl acrylate/N-tertbutyl-acrylamide terpolymers, and
(vi) polymers corresponding to the following general formula:



in which:
R, R' and R", which are identical or different, represent a hydrogen atom or a methyl radical;
m, n and t are 1 or 2;
R_1 represents a saturated or unsaturated, linear or branched, alkyl radical having from 2 to 21 carbon atoms;
R_2 represents a hydrogen atom or a methyl, ethyl, tertbutyl, ethoxy, butoxy or dodecyloxy radical;
R_3 represents a hydrogen atom, an alkyl radical containing 1 to 4 carbon atoms or an alkoxy radical having from 1 to 4 carbon atoms; and
Z represents a divalent radical selected from the group consisting of:

—CH_2—, —CH_2—O—CH_2— and —CH_2—O—$(CH_2)_2$—;

v represents from 10 to 91% by weight,
w represents from 3 to 20% by weight,
x represents from 4 to 60% by weight, and
y represents from 0 to 40% by weight,
v+w+x+y being equal to 100%;
the carboxylic acid functional groups of said polymer being neutralized to a degree of neutralization of between 10 and 80% by a nonvolatile monobasic agent, said agent being used alone; and
said aqueous dispersion of particles being present in a proportion of between 0.8 and 20% by weight of solids with respect to the total weight of the composition; and

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b) at least one wax having a melting point of between 60° C. to 110° C., in a proportion of between 2 and 40% by weight with respect to the total weight of the composition.

5,620,694

LAMINATED DUAL TEXTURED TREATMENT PADS

Richard M. Girardot, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 236,869, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 104,233, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 919,678, Jul. 27, 1992, abandoned. This application May 3, 1995, Ser. No. 433,597

Int. Cl.[6] A01N *25/34*

U.S. Cl. 424—402 **15 Claims**

1. A dual textured laminated treatment pad comprising:

(a) at least one paper layer having a basis weight from about 35 gsy to about 155 gsy and a thickness from about 0.045 cm to about 0.30 cm, said paper layer comprising cellulosic fibers selected from the group consisting of wood pulp fibers, cotton fibers, hemp fibers, jute fibers, flax fibers, and mixtures thereof, and

(b) at least one synthetic fiber, nonwoven layer having a basis weight from about 20 gsy to about 105 gsy, having a repeating pattern comprising at least two adjacent delineated regions simultaneously not having the same mean thickness, wherein the first of said at least two adjacent delineated regions has a mean thickness from about 0.025 cm to about 0.30 cm and the second of said at least two adjacent delineated regions has a mean thickness from about 0.010 cm to about 0.050 cm,

whereby said paper layer is positioned parallel to and in contact with said synthetic nonwoven layer.

5,620,695

METHOD AND COMPOSITION FOR TREATING MINOR SKIN IRRITATIONS

Jennifer Elliott, 12495 148th Rd. North, Palm Beach Gdns, Fla. 33418

Filed May 13, 1996, Ser. No. 647,723

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—405 **7 Claims**

1. A composition for treating minor skin irritations comprising: about 96% fluid carrier oil; about 2% of lavender; about 1% of eucalyptus; and about 1% of ti tree.

5,620,696

POLYURETHANE INSECTICIDAL EAR TAG AND METHOD OF USE

Rudolf J. Krzewki, St. Joseph, and Stanley Ackers, Kansas City, both of Mo., assignors to Fermenta Animal Health Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 24,905, Mar. 2, 1993, Pat. No. 5,342,619, which is a continuation of Ser. No. 841,836, Feb. 26, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,598

Int. Cl.[6] A01N *25/10*

U.S. Cl. 424—411 **20 Claims**

1. A device for protecting animals from insects, said device comprising:

30% to 80% by weight of a polyurethane polymer which is the reaction product of 20% to 40% by weight 4,4'-diphenylmethane diisocyanate, 50% to 70% by weight polytetramethylene glycol and 2% to 10% by weight 1,4-butanediol and has a number average molecular weight of not less than about 90,000, said polymer being formed into a shape for attachment to said animals; and

20% to 70% by weight of an ectoparasiticidal active compound absorbed into and releasable from said polymer and selected from the group consisting of pyrethroids, endosulfan and methoxychlor.

5,620,697

METHOD FOR PREPARING MATRIX-TYPE PHARMACEUTICAL COMPOSITIONS THROUGH ULTRASONIC MEANS TO ACCOMPLISH MELTING

Pertti O. Törmälä , Tampere, and Saila S. Miettinen-Lähde, Raiso, both of Finland, assignors to Orion-Yhtyma Oy, Espoo, and Leiras Oy, Turku, both of Finland

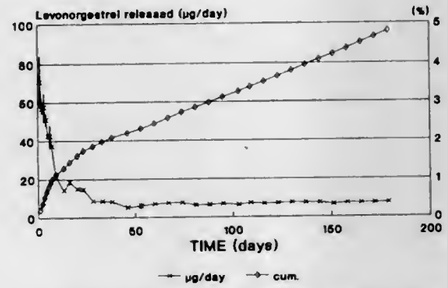
PCT No. PCT/FI93/00575, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/15588, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 31, 1993, Ser. No. 481,259

Claims priority, application United Kingdom, Dec. 31, 1992, 9227166

Int. Cl.[6] A61F *2/02;* **A61K** *47/30*

U.S. Cl. 424—426 **17 Claims**



1. A method for preparing a matrix-type solid drug releasing biodegradable composition comprising a solid biodegradable polymer matrix and at least one solid pharmaceutical substance mixed and/or dissolved within said matrix, comprising the steps of subjecting said biodegradable polymer matrix and said at least one pharmaceutical substance while in admixture as solids to the action of ultrasonic means whereby said mixture is at least partially melted, and thereafter cooling said mixture to form said matrix-type drug releasing biodegradable composition.

5,620,698

BLENDS OF ABSORBABLE POLYOXAESTERS CONTAINING AMINES AND/OR AMIDO GROUPS

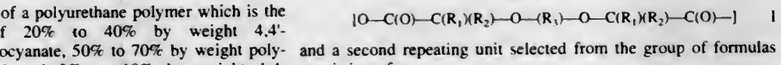
Rao S. Bezwada, Whitehouse Station, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 611,529, Mar. 5, 1996, which is a continuation-in-part of Ser. No. 554,011, Nov. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 399,308, Mar. 6, 1995, Pat. No. 5,464,929. This application Jun. 14, 1996, Ser. No. 665,141

Int. Cl.[6] A61F *2/00;* **C08F** *20/00*

U.S. Cl. 424—426 **33 Claims**

1. A polymer blend comprising an aliphatic polyoxaester composed of a first divalent repeating unit of formula I:

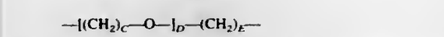


I

and a second repeating unit selected from the group of formulas consisting of:

XIV

wherein R_1 and R_2 are independently hydrogen or an alkyl group containing 1 to 8 carbon atoms; R_3 is an alkylene unit or is an oxyalkylene group of the following formula:



IV

wherein C is an integer in the range of from 2 to about 5, D is an integer in the range of from about 0 to about 2,000, and E is an integer in the range of from about 2 to about 5, except when D is zero in which case E will be an integer from 2 to 12; R_{12} is an alkylene unit containing from 2 to 8 carbon atoms and containing an internal amine (—$N(R_{10})$—) or amide (—$N(R_{11})$—); R_{10} and R_{11} are independently hydrogen or an alkyl group containing 1 to 8 carbon atoms; and U is an integer in the range of from 1 to about 2,000; and

a second polymer selected from the group consisting of homopolymer and copolymer of lactone type polymers with the repeating units described by formulas III and XI, aliphatic polyurethanes, polyether polyurethanes, polyester polyurethanes, polyethylene copolymers, polyamides, polyvinyl alcohols, poly(ethylene oxide), polypropylene oxide, polyethylene glycol, polypropylene glycol, polytetramethylene oxide, polyvinyl pyrrolidone, polyacrylamide, poly(hydroxy ethyl acrylate), poly(hydroxyethyl methacrylate) and combinations thereof.

5,620,699

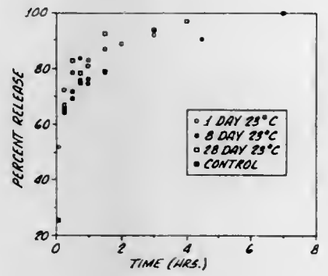
METHOD FOR DELIVERING NONAQUEOUS FLUORINATED DRUG DELIVERY VEHICLE SUSPENSIONS

David L. Meadows, Roanoke, Tex., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 260,482, Jun. 14, 1994, Pat. No. 5,518,731, which is a continuation of Ser. No. 853,827, Mar. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 588,697, Sep. 27, 1990, Pat. No. 5,173,298. This application Nov. 13, 1995, Ser. No. 556,277

Int. Cl.[6] A61K *9/10;9/14;47/24*

U.S. Cl. 424—428 **27 Claims**



1. A method for delivering a low delivery volume enhanced bioavailability pharmaceutical compound to a physiological target site, said method comprising the steps of:

providing a drop instillable mixture of a nonaqueous, physiologically acceptable perfluorocarbon liquid carrier and a therapeutic or diagnostic compound incorporated in a particulate polymer drug delivery vehicle, said mixture having a delivery volume on the order of 10 microliters; and

administering a pharmaceutically effective amount of said drop instillable mixture to said target site.

5,620,700

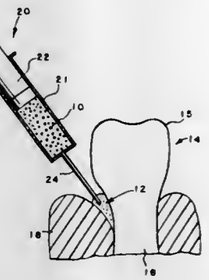
INJECTABLE DRUG DELIVERY SYSTEM AND METHOD

Randall G. Berggren, Livermore; David J. Enscore, Saratoga; Susan M. Marks, San Jose; James L. Osborne, Mountain View; Patrick S.-L. Wong, Palo Alto, and Wouter E. Roorda, Newark, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 923,275, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 605,863, Oct. 30, 1990, abandoned. This application May 9, 1995, Ser. No. 437,471

Int. Cl.[6] A61K *6/00*

U.S. Cl. 424—435 **30 Claims**



1. A method for delivering a drug into a periodontal pocket, the method comprising:

a) heating a drug-containing oligomeric or polymeric matrix material which is a less- to non-flowable polymer at or below body temperature and a flowable polymer at a physiologically compatible elevated temperature to impart flowability to the matrix material;

b) introducing the flowable drug-containing matrix material into the periodontal pocket at a physiologically compatible elevated temperature; and

c) allowing the drug-containing matrix material to cool to the body temperature of the periodontal pocket, so that the matrix material becomes less- to non-flowable and is retained in the periodontal pocket.

5,620,701

METHODS OF TREATMENT USING DI-LINOLEOYL-MONO-GAMMA-LINOLENYL GLYCEROL

David F. Horrobin, Guildford, England, and Yung-Sheng Huang, Kentville, Canada, assignors to Scotia Holdings PLC, England

Division of Ser. No. 158,986, Nov. 30, 1993, Pat. No. 5,552,150, which is a division of Ser. No. 891,037, Jun. 1, 1992, Pat. No. 5,328,691. This application Feb. 14, 1996, Ser. No. 600,005

Claims priority, application United Kingdom, Jun. 3, 1991, 91/11900

Int. Cl.[6] A61K *9/70;31/20;9/14;47/12*

U.S. Cl. 424—443 **7 Claims**

1. A cosmetic or skin care composition for topical application to persons in need of same for treating normal, damaged or diseased skin, said composition comprising at least 20% by weight of di-linoleoyl-mono-gamma-linolenyl-glycerol.

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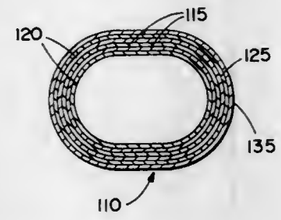
ADHESIVE BANDAGES, WOUND DRESSINGS, SUTURES, DRAPES ORTHODONTIC RUBBER BANDS, TOOTHBRUSHES, AND THE LIKE

Howard I. Podell, 28 Beachfront La., New Rochelle, N.Y. 10853; David L. Podell, Jr., 1100 Park Ave., New York, N.Y. 10021, and Albert Goldstein, 87 Glenwood Dr., Tinton Falls, N.J. 07724

Division of Ser. No. 846,549, Mar. 5, 1992, Pat. No. 5,419,913. This application May 9, 1995, Ser. No. 437,507

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 **6 Claims**



1. A flexible sheet of elastomeric material, a section of one surface of which is coated with a hydrophilic polymer so as to furnish a coated surface which can contact human skin over extended periods of time without causing inflammation or other allergic response, and an adhesive bonded to at least a section of the hydrophilic coating, wherein

said flexible sheet coated with hydrophilic polymer and adhesive is elastically stretchable for at least 100% of its normal length so as to lie in close contact with human skin surfaces located over an extensor and/or flexor when a section of the flexible sheet is fastened, and

said flexible sheet coated with hydrophilic polymer and adhesive permits the transfer of water vapor and oxygen therethrough without transfer of microbial agents.

5,620,703

STIMULATING HEMATOPOIETIC ACTIVITY WITH CARBOPLATIN OR LOBAPLATIN

Regina Reszka, Schwanebeck, and Iduna Fichtner, Berlin, both of Germany, assignors to Max-Delbrück-Centrum Fur Molekulare Medizin, Germany

Filed Mar. 31, 1994, Ser. No. 221,017

Claims priority, application Germany, Oct. 11, 1991, 41 34 158.9; WIPO, Oct. 9, 1992, PCT/DE92/00868

Int. Cl.[6] A61K *9/127;31/28;31/56*

U.S. Cl. 424—450 **6 Claims**

1. A process for stimulating hematopoietic activity in animals which comprises administering to a patient in need therefor a therapeutically effective amount of an agent containing as its active ingredient carboplatin or lobaplatin in a lyotropic mesophase, which is one of more micellar system, microemulsion, lamellar phase, or a hexagonal phase, the agent optionally containing one or more additional carriers for stimulating hematopoietic activity.

5. The process of claim 1, wherein said carboplatin or lobaplatin is in a liposomal form.

5,620,704

PROCESS FOR STABILIZING GELATIN PRODUCTS

Dominique Cade, Colmar, and Nicolas Madit, Mulhouse, both of France, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 7, 1994, Ser. No. 334,974

Int. Cl.[6] A61K *9/64*

U.S. Cl. 424—456 **11 Claims**

1. A process for the manufacturing of gelatin products with improved stability for storage under hot and humid conditions and/or aldehydes comprising the steps of:

incorporating at least one additive selected from the group consisting essentially of ammonium sulfate, ammonium hydrogen sulfate, ammonium hydrogencarbonate, ammonium phosphate, ammonium hydrogenphosphate, ammonium dihydrogenphosphate, ammonium thiocyanate, sodium sulfate, sodium chloride, potassium sulfate, potassium chloride, lithium sulfate, lithium chloride, calcium sulfate, calcium chloride, magnesium sulfate, magnesium chloride, iron (II) sulfate, iron (II) chloride, iron (III) sulfate, iron (III) chloride, manganese (II) sulfate, magnanese (II) chloride, glutamic acid, aspartic acid, asparagine, lysine, tryptophane, arginine, guanidine, urea, citric acid, ascorbic acid, ethylenediamine tetraacetate, nitrilotrismethylene phosphonic acid or mixtures thereof into gelatin before forming a final gelatin product; and

forming a final gelatin product.

5,620,705

PROGESTIN TABLET

Liang C. Dong, Mountain View; Patrick S.-L. Wong, Palo Alto, and Steven Espinal, Sunnyvale, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 286,125, Aug. 4, 1994. This application May 16, 1995, Ser. No. 441,889

Int. Cl.[6] A61K *9/24;31/56*

U.S. Cl. 424—472 **2 Claims**

1. A therapeutic bilayer tablet for hormone replacement therapy, wherein the bilayer comprises a drug layer comprising 60 wt % progesterone, 10.0 wt % sodium croscarmellose, 5.0 wt % polyethylene 40 stearate, 3.0 wt % hydroxypropylmethylcellulose and 21 wt % mannitol; and a displacement layer comprising 58.75 wt % sodium carboxymethylcellulose, 30 wt % sodium chloride, and, 5.0 wt % hydroxypropylethylcellulose.

5,620,706

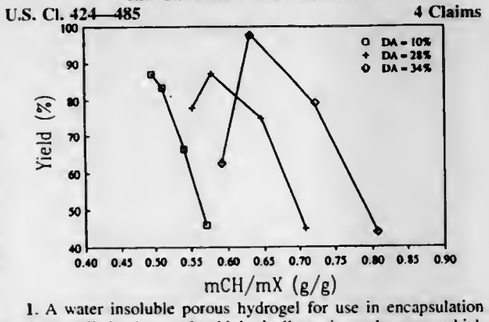
POLYIONIC INSOLUBLE HYDROGLES COMPRISING XANTHAN AND CHITOSAN

Severian Dumitriu; Esteban Chornet, both of Sherbrooke, and Pierre Vidal, Rock Forest, all of Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Apr. 3, 1995, Ser. No. 416,025

Int. Cl.[6] A61K *9/10;9/14;47/36*

U.S. Cl. 424—485 **4 Claims**



1. A water insoluble porous hydrogel for use in encapsulation and controlled release of a biologically active substance, which comprises:

chitosan;

xanthan; and

said biologically active substance;

the chitosan and xanthan being present in said hydrogel in proportions ranging from about 24–40% of chitosan and about 60–76% of xanthan.

5,620,707

BEADLETS FOR CUSTOMIZATION OF FLAVOR AND SWEETENER IN A BEVERAGE

Lowell A. Sanker, Montgomery; Liezl G. Peterson, Cincinnati, and James G. Upson, Springdale, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 312,843, Sep. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 85,222, Jun. 29, 1993, Pat. No. 5,370,864. This application Mar. 1, 1996, Ser. No. 609,411

Int. Cl.[6] A61K *9/50;9/16;* **A23F** *5/12;5/38*

U.S. Cl. 424—489 **11 Claims**

1. A spherical beadlet having a diameter of from about 3 mm to about 11 mm suitable for flavoring a coffee beverage comprising a shell material and an ingestible core composition in presolubilized liquid form consisting essentially of:

(a) from about 0.1 mg to about 400 mg of a flavor component selected from the group consisting of almond nut, amaretto, anisette, apple, brandy, cappuccino, chamomile, cherry, chocolate, chocolate mint, cinnamon, cinnamon almond, cinnamon-spice, creme, creme de menthe, french vanilla, grand marnier, grape, herb blends, Irish creme, kahlua, lemon, macadamia nut, orange, orange leaf, peppermint stick, peach, pistachio, raspberry, sambuca, strawberry, tea, and vanilla bean; and

(b) from about 0.02 mg to about 450 mg of a sweetener component consisting essentially of:

(1) acetosulfame; and

(2) a second artificial sweetener consisting of an aspartyl peptide ester sweetener, a sulfimide sweetener, and an ammoniated glycyrrhizin;

wherein the ratio by weight of (1) to (2) is from about 1:15 to about 15:1; and wherein the beadlet core contains from about 75 mg to about 650 mg of material.

5,620,708

COMPOSITIONS AND METHODS FOR THE ORAL DELIVERY OF ACTIVE AGENTS

Alfred A. Amkraut, and Heechung Yang, both of Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 20,481, Feb. 22, 1993, Pat. No. 5,413,796. This application Feb. 1, 1995, Ser. No. 382,476

Int. Cl.[6] A61K *9/14;9/18;47/48;38/00*

U.S. Cl. 424—491 **37 Claims**

1. A composition comprising a matrix carrier particle composed of a material which resists proteolytic degradation and which is sufficiently small to be absorbed by a mammalian enterocyte, covalently attached to a binding moiety which binds specifically to a target molecule present on the surface of a mammalian enterocyte, the target molecule being an endocytosis- or phagocytosis-promoting receptor, said composition further comprises a polypeptide drug protectively retained by the carrier particle.

5,620,709

CALCIUM CONTAINING COMPOSITION FROM SEA URCHIN WITH HIGH ORAL BIOAVAILABILITY

Yoshinari Kumagai, Fujisawa, and Azuma Kubo, Hirakata, both of Japan, assignors to Kabushiki Kaisha Megawave Japan, Tokyo, Japan

Filed Jul. 14, 1994, Ser. No. 274,867

Claims priority, application Japan, Jul. 16, 1993, 5-176503; Apr. 21, 1994, 6-083516; Apr. 28, 1994, 6-091694

Int. Cl.[6] A61K *33/06;33/00*

U.S. Cl. 424—682 **5 Claims**

1. A calcium-containing composition comprising calcium, which calcium is obtained by (1) providing sea urchin shells, and (2) heating the shells at a temperature not greater than 1500° C. so as to form a calcium-containing composition, and which calcium has an oral bioavailability, measured in terms of urinary calcium excretion and/or fecal calcium excretion in rate over a time period of 0–48 hours, superior to the oral bioavailability of an equal amount of calcium produced by heating oyster shells.

5,620,710

FROTH SYSTEM FOR CONTINUOUS MANUFACTURE OF POLYURETHANE FOAM SLAB-STOCKS

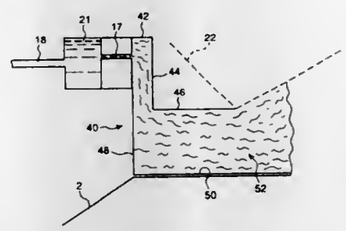
Carlo Fiorentini, Saronno, Italy, and Anthony C. Murray Griffiths, Paphos, Cyprus, assignors to Foaming Technologies Cardio BV, Netherlands

Division of Ser. No. 271,918, Jul. 8, 1994. This application Jun. 7, 1995, Ser. No. 480,242

Claims priority, application Italy, Jul. 14, 1993, M193A1546; Sep. 30, 1993, M193A2090

Int. Cl.[6] B29C *44/28;44/50*

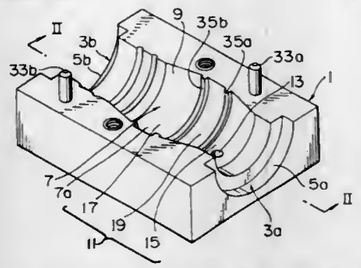
U.S. Cl. 425—4 C **5 Claims**



1. A device for controlling frothing of a polyol, isocyanate and liquid CO_2 blowing agent mixture comprised of a housing having a pressure equalization chamber provided therein and an inlet for the mixture leading into said pressure equalization chamber, at least one outlet aperture leading away from said pressure equalization chamber and a frothing cavity attached to said housing and positioned to receive the mixture flowing from said at least one outlet aperture, said at least one outlet aperture being dimensioned to maintain back pressure on the upstream mixture to keep the liquid blowing agent in a liquid state and to initiate frothing under pressure controlled conditions to avoid turbulent evaporation of the blowing agent upon discharge of the mixture from the outlet aperture, said frothing cavity being comprised of a series of interconnected and differently oriented wall members that deflect the direction of flow of the mixture flowing from said at least one outlet aperture.

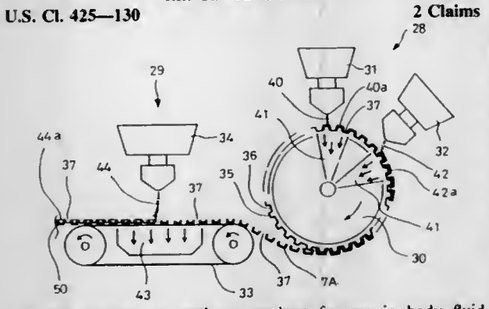
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5,620,711
MOLD FOR FORMING A WATERPROOF CABLE
Takahiro Saito, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Nov. 1, 1995, Ser. No. 551,647
Claims priority, application Japan, Nov. 4, 1994, 6-270953
Int. Cl.[6] B29C *33/12;45/14*
U.S. Cl. 425—116 **8 Claims**



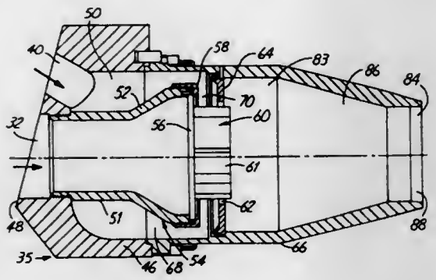
1. A mold for forming waterproof cables, comprising a mold main body having a wire introduction opening at each end and a cavity defined by a space between said wire introduction openings;
said mold main body having an inner surface surrounding said cavity, and said wire introduction openings defining a direction of wire insertion of said cavity;
said cavity having a substantially central portion which includes a parallel surface and two tapered surfaces, one on each side of said parallel surface;
wherein said inner surface of said mold main body is discontinuous at boundaries between said parallel surface and respective ones of said two tapered surfaces to form a ridge between said parallel surface and each of said two tapered surfaces, respectively, each said ridge extending in a direction substantially transverse with respect to said direction of wire insertion.

5,620,712
APPARATUS FOR MAKING THE TOPSHEET OF A FLUID ABSORPTIVE ARTICLE
Kazunari Nishino, Hiroshima-ken; Shigeyuki Motomura, Yamaguchi-ken; Shizuo Shimizu, Tokyo; Takamitsu Igaue, Ehime-ken; Tsutomu Kido, Ehime-ken, and Hisashi Takai, Ehime-ken, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd, Tokyo, and Uni-Charm Corporation, Ehime-Ken, both of Japan
Division of Ser. No. 210,997, Mar. 21, 1994, Pat. No. 5,449,352. This application Nov. 30, 1994, Ser. No. 351,197
Claims priority, application Japan, Mar. 24, 1993, 5-89101
Int. Cl.[6] B29C *31/04*
U.S. Cl. 425—130 **2 Claims**



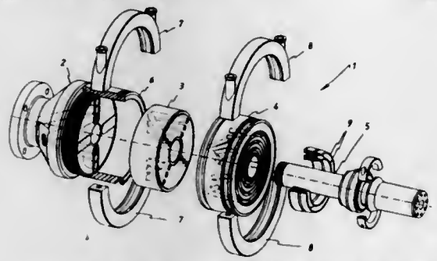
1. An apparatus to make a topsheet for use in body fluid absorptive articles, said topsheet being provided with a plurality of liquid passages each extending through the topsheet from an upper opening to a lower opening thereof and a skin-contacting area continuously formed around the upper openings of the respective liquid passages, said apparatus comprising:
(1) at least one melt blow extruder exclusively used to form a first sheet provided with said liquid passages and skin-contacting area;
(2) a mold against which molten fibres are blown from said melt-blow extruder exclusively used for formation of said first sheet to form blown nonwoven fabric, said mold being provided with a plurality of protrusions and indents alternately arranged and serving as forming dies to form said nonwoven fabric with said liquid passages and a skin-contacting area and receiving an output of molten fibres from said melt blow extruder exclusively used for formation of the first sheet;
(3) at least one second melt blow extruder exclusively used to form of a second sheet and adapted to blow molten fibres against a lower side of said first sheet released from said mold and thereby to form said second sheet comprising melt blow nonwoven fabric welded to the respective liquid passages around their lower openings;
(4) conveyor means to transport said first sheet toward said melt blow extruder exclusively used to form the second sheet; and
(5) suction means provided in opposition to said first and second melt blow extruders for the first sheet and the second sheet, respectively.

5,620,713
EXTRUSION DIE FOR DOUGH
Glenn O. Rasmussen, Champlin, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Jun. 6, 1995, Ser. No. 469,221
Int. Cl.[6] B29C *47/06*
U.S. Cl. 425—131.1 **17 Claims**



1. In an extruder die assembly for forming an elongated log of extrudable material having a cross sectional configuration including a center portion of a material having a first visually identifiable characteristic, and an outer portion of a material having a second visually identifiable characteristic, the center portion having an identifiable cross sectional configuration of an irregular outer periphery, the improvement comprising a die set for the extruder die assembly having an inner die for forming the center portion and an outer die, a feeder for feeding the material of the first characteristic to the inner die and the material of the second characteristic to the outer die, the inner die having a surface formed into the identifiable cross sectional shape and being positioned within the outer die, and a sizing housing having a sizing chamber including a throat portion surrounding the outer die and the inner die to receive the materials from the die set, the sizing chamber throat portion being defined by a surface larger than and downstream of the inner and outer dies, the throat portion surface being defined parallel to a central axis of the die set so the material passing through the outer die expands into a constant cross sectional area throat portion after exiting the dies and is moved along the constant cross sectional area downstream of the die set, and the sizing chamber surface having a second portion that gradually changes in cross sectional size from the throat portion to an outlet end of the sizing housing downstream of the die set.

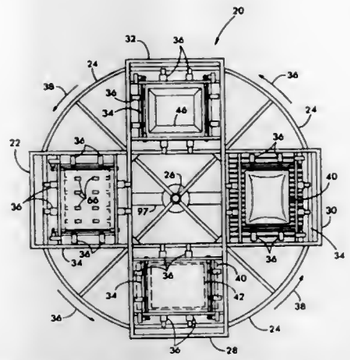
5,620,714
DISTRIBUTOR HEAD FOR FORMING A TUBULAR PROFILE FROM ONE OR MORE STREAMS OF EXTRUDED THERMOPLASTIC MATERIAL
Hendrik W. Veen, Ommen, Netherlands, assignor to Machinefabriek "de Rollepaal" B.V., Dedemsvaart, Netherlands
PCT No. PCT/NL93/00165, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/04341, PCT Pub. Date Mar. 3, 1994
PCT Filed Jul. 30, 1993, Ser. No. 381,921
Claims priority, application Netherlands, Aug. 14, 1992, 9201457
Int. Cl.[6] B29C *47/06;47/70*
U.S. Cl. 425—133.1 **5 Claims**



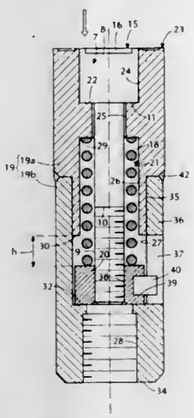
3. Distributor head for forming a tubular profile from one or more streams of thermoplastic material, comprising at least one flow channel system for a stream of thermoplastic material, extending between an inlet orifice, and an outlet orifice having an annular cross-section, said flow channel system comprising an inlet flow channel connected to the inlet orifice, which inlet flow channel branches into intermediate flow channels in a number of branching stages with associated branchings, said branching stages succeed one another in the outlet direction of said thermoplastic material stream along the center line of the outlet orifice, the last intermediate flow channels branching into outlet flow channels terminating on a periphery around the center line of the outlet orifice, each outlet flow channel connecting to a fan-shaped mouth which opens into the outlet orifice, wherein each flow channel of the flow channel system has an essentially circular cross-section and extends essentially rectilinearly;
wherein the distributor head comprises a plurality of successive axial bodies each being provided with all the flow channels corresponding to a single branching state of the flow channel system;
wherein the axial bodies are essentially disc-shaped;
wherein the axial bodies are fixed in the distributor head by clamping rings engaging on the outer periphery thereof and a core extending through an axial bore in the axial bodies.

5,620,715
THERMOFORMING MACHINE WITH CONTROLLED COOLING STATION
James P. Hart, Portage; Wesley W. Roberts, Lake Mills, and Charles G. Geurts, Cambria, all of Wis., assignors to Penda Corporation, Portage, Wis.
Filed Feb. 10, 1994, Ser. No. 195,299
Int. Cl.[6] B29C *51/42*
U.S. Cl. 425—143 **31 Claims**

1. A machine for thermoforming a thick gauge thermoplastic sheet against a rigid mold, the machine comprising:
a) a frame;
b) a carriage mounted for movement on the frame;
c) at least one subframe connected to the carriage, wherein the subframe is engageable with a sheet;
d) a heating station mounted to the frame, wherein the subframe is movable through the heating station for heating of the sheet;
e) a forming station mounted to the frame, wherein the forming station has a thermoforming mold positioned to engage a heated sheet on the subframe which has traversed the heating station, and the mold being operable to mold the heated sheet to a desired shape; and
f) a controlled cooling station mounted to the frame, the controlled cooling station including an upper portion, a lower portion, the upper and lower portions being relatively movable between a closed position wherein the upper and lower portions define a cavity which is adapted to surround the molded sheet to receive the molded sheet on the subframe after the forming station, and an opened position, a multiplicity of first ducts for introducing cooling air into the cavity to cool the molded sheet held in the subframe, each of the first ducts extending from one of the upper and lower portions to direct cooling air uniformly around the formed thermoplastic sheet, and at least one second duct extending from one of the upper and lower portions for removing heated air from the cavity, wherein the second duct is in fluid communication with the first ducts so recirculation of the cooling air can be effected.



5,620,716
TIME STAMP FOR INSERTION INTO A MOULD FOR METAL WORKING OR PLASTICS PROCESSING
Heiko Opitz, Aschaffenburg, Germany, assignor to Opitz GmbH, Aschaffenburg, Germany
Filed May 2, 1995, Ser. No. 432,690
Claims priority, application Germany, May 3, 1994, 44 15 583.2
Int. Cl.[6] B29C *33/00*
U.S. Cl. 425—169 **14 Claims**



1. A time stamp for insertion into a mould for metal working or plastics processing, comprising:

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a basic body for insertion into said mould, said basic body having a moulding surface and having an end face comprising a portion of said moulding surface, said end face having a cylindrical recess therein, the recess having a first axial bearing surface;

an insert formed as a screw, having a head portion and a shank portion with a second axial bearing surface formed therebetween, for rotatable insertion into the recess; and

a holding device disposed in the recess for engaging said insert so as to hold said insert in a predetermined circumferential position with respect to said basic body, said holding device having a holding part including a spring which is pretensioned, and wherein the holding part is brought into threaded connection with the shank portion of said insert so that the first bearing surface is pressed against the second bearing surface by the pretensioned spring.

5,620,717

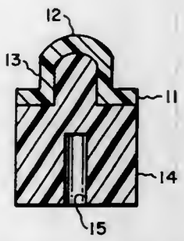
APPARATUS FOR MAKING PLASTIC MOLDS

George L. Wickes, Rochester; Kenneth L. Opdyke, Fairport; William J. Appleton, and Jeffrey M. Vandewinckel, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 440,395, May 12, 1995, abandoned, which is a division of Ser. No. 185,296, Jan. 24, 1994, Pat. No. 5,456,864, which is a continuation of Ser. No. 953,425, Sep. 29, 1992, abandoned. This application Jul. 29, 1996, Ser. No. 681,686

Int. Cl.[6] B29D *11/00*

U.S. Cl. 425—175 **9 Claims**



1. A tool for forming plastic molds, said tool being constructed of an engineering plastic resin that can withstand injection molding conditions and comprising a curved molding surface having an optically smooth finish as a molding portion, wherein the shape of said molding surface substantially corresponds to a desired shape of a contact lens surface.

5,620,718

FIXING DEVICE FOR RELEASABLY FASTENING A TOOL MEMBER TO A FIXING PLATE IN AN INJECTION MOLDING MACHINE

Georg Böhm, Kirchenthumbach, Germany, assignor to Staubli & Trumpelt GmbH, Bayreuth, Germany

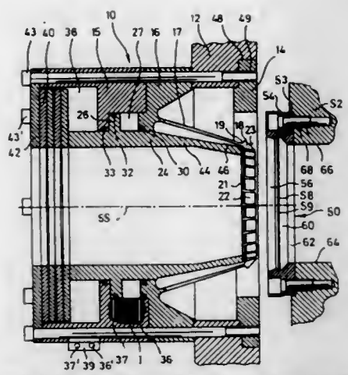
Filed May 12, 1995, Ser. No. 439,935

Claims priority, application European Pat. Off., Jun. 17, 1994, 94109420

Int. Cl.[6] B29C *45/66*

U.S. Cl. 425—190 **15 Claims**

1. A fixing device for an injection molding machine for releasably fastening a tool member to a fixing plate, said device comprising a profiled part having a profile on one of said fixing plate and said tool member and a fixing element attached to the other of said fixing plate and said tool member, said fixing element having a plurality of elongated carrier members extending in a longitudinal direction and moveable relative to said profiled part between a disengaged position where the members are disengaged from the



profiled part to thereby release the tool member from the fixing plate and an engaged position where the members are engaged with the profile of said profiled part to thereby fasten the tool member to the fixing plate, a locking component displaceable in a first direction in the longitudinal direction of said carrier members for moving said carrier members into the engaged position and in an opposite second direction to allow said carrier members to return to their disengaged position, said locking component having a sliding surface sloping in the direction of displacement of the locking component for sliding engagement with a compatible first sliding surface on said carrier members to form a first pair of sliding surfaces so that as the locking component is displaced in said first direction, said carrier members are moved into said engaged position and said carrier members having a second sliding surface sloping in the direction of displacement of the locking component for sliding engagement with a compatible sloping surface on the profile of said profiled part to form a second pair of sliding surfaces, and pretensioning means acting on the locking component for urging said locking component in said first direction and said carrier members into their engaged position, said pairs of sliding surfaces being held in abutting frictional contact by the protensioning means to hold the tool member to the fixing plate while permitting adjustment for variations between the fixing element and the profile of the profiled part.

5,620,719

MACHINE FOR BELL-FORMING ENDS OF THERMALLY PLASTICIZED PIPES

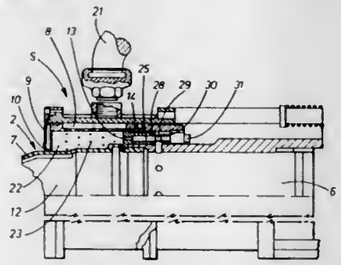
Leopoldo Savioli, Alfonsine, Italy, assignor to S.I.C.A. Serrande, Infissi, Carpenteria, Attrezzatura S.p.A., Alfonsine, Italy

Filed May 2, 1995, Ser. No. 432,720

Claims priority, application Italy, May 2, 1994, BO94A0189

Int. Cl.[6] B29C *57/06*

U.S. Cl. 425—387.1 **7 Claims**



1. A machine for forming bell-ends in thermally plasticized pipes, comprising in combination:

at least one vise for blocking pipes, having an upper and a lower jaw which are mobile along a vertical plane, wherein introduction and unloading of a pipe into the at least one vise occur tangentially to said vertical plane;

a forming device comprising a chuck that is associable to a thermally plasticized end of the pipe, said chuck being contained in a pressurized-fluid forming chamber having an elastic wall having a hole, through which hole the thermally plasticized end of the pipe accesses the forming chamber while in a pressurized state;

rigid striker elements borne directly by the upper jaw and lower jaw of the at least one vise, which rigid striker elements support the elastic wall during a pressurization phase of the forming chamber;

said forming device being provided with at least one intercommunicating conduit between said forming chamber and the internal cavity of the chuck;

means for reacting to a pressure of fluid contained in the forming chamber, being situated in said intercommunicating conduit and reacting to said pressure from a minimum threshold pressure thereof up to a maximum threshold pressure thereof, above which maximum threshold pressure a part of the fluid contained in the forming chamber, passing through said intercommunicating conduit, reaches the internal cavity of the chuck and cools said chuck.

5,620,720

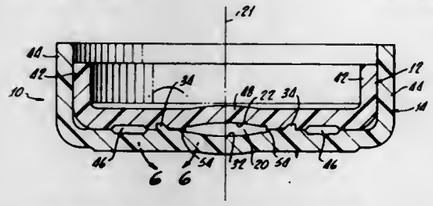
CAST MOLDING OF INTRAOCULAR LENSES

Robert E. Glick, Lake Forest; Jim Deacon, Capistrano Beach, and Bruce W. Kent, San Dimas, all of Calif., assignors to Allergan, Waco, Tex.

Filed Nov. 29, 1994, Ser. No. 346,974

Int. Cl.[6] B29D *11/00*

U.S. Cl. 425—408 **18 Claims**



1. A disposable plastic mold assembly, comprising:

a generally cylindrical male mold portion having a first substantially planar molding surface and a sidewall, said first molding surface being oriented exteriorly to space bounded by the first molding surface and the sidewall;

a generally cylindrical female mold portion having a second substantially planar molding surface and a sidewall, said female mold portion being adapted and sized to receive said male mold portion and the second molding surface being oriented interiorly to space bounded by the second molding surface and the sidewall of the female mold portion, such that when the male mold portion is fully received by the female mold portion, said first and second molding surfaces engage each other substantially along a single plane of contact to create a mold cavity;

the male and female mold portions being relatively shaped so that the female mold portion receives the male mold portion axially in an interference fitting relationship for substantially axially pre-aligning the male and female mold portions together, the respective sidewalls of each of the male and female mold portions being in interfering contact as the male mold portion is received within the space bounded by the sidewall of the female mold portion to create said interference fitting relationship;

wherein the sidewall of said female mold is oriented at a negative draft angle, so that after said male mold portion has been received by said female mold portion, said negative draft angle inhibits the male mold portion from backing away therefrom.

5,620,721

ASSEMBLY FOR PREPARING MOLDED ARTICLES

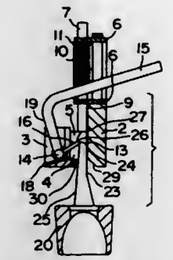
Bruno Delande, Marseille en Beauvaisis, and Claude G. Liegaux, Beauvaisis, both of France, assignors to Nestec S.A., Vevey, Switzerland

Filed Dec. 1, 1994, Ser. No. 347,866

Claims priority, application European Pat. Off., Dec. 21, 1993, 93120603

Int. Cl.[6] H23G *9/26*

U.S. Cl. 425—443 **16 Claims**



1. An assembly for gripping and releasing articles comprising:

gripping and releasing means comprising two opposing jaw clamp members for gripping and releasing an article;

a frame connected to the gripping and releasing means for supporting the gripping and releasing means so that the jaw clamp members extend from the frame; and

compressible reciprocative means supported by the frame at a position and configured so that upon positioning for gripping an article and when an article is gripped by the jaw clamp members, the reciprocative means contacts and bears upon the article and so that upon release of the grip, the reciprocative means pushes the article.

5,620,722

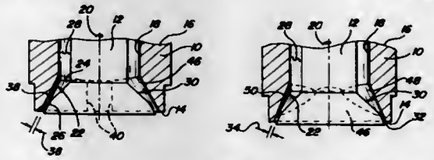
EXTRUSION HEAD FOR BLOW MOLDING

Dennis R. Spina, Onsted, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Oct. 3, 1995, Ser. No. 538,721

Int. Cl.[6] B29C *47/20;49/04*

U.S. Cl. 425—532 **16 Claims**



1. An improved extrusion head for extruding a molten plastic material into a parison for blow molding articles having increased thickness sections, said improvement comprising:

a die ring having a first end, a second end, and interior surfaces defining a bore extending from said first end to said second end along a longitudinal axis, said interior surfaces further defining a generally frustoconical portion in said bore and located adjacent to said second end, said frustoconical portion including an upstream end and an outlet end;

a mandrel positioned within said bore of said die ring and cooperating with said bore to define a passageway therebetween, said mandrel including a first end, a second end and exterior surfaces defining a generally frustoconical portion adjacent said second end, said frustoconical portion having an upstream end and an outlet end, said outlet end being located adjacent to said second end of said mandrel, said frustoconical portion being defined by exterior surfaces such that said frustoconical portion of said mandrel generally corresponds with said frustoconical portion of said die ring and cooperates

to define a generally annular outlet orifice through which polymer is extruded in the form of a parison;

a first shaping formed in said outlet end of one of said frustoconical portions, said first shaping being formed at substantially the same angle as said frustoconical portion and extending the full land length thereof, said first shaping providing said outlet orifice with a generally ovalized shape, said first shaping defining a maximum amount of ovalization and circumferentially progressing with a decreasing amount of ovalization until smoothly merging with said frustoconical portion;

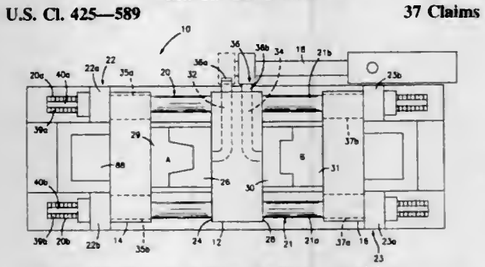
second shaping formed in said upstream end of one of said frustoconical portions, said second shaping being rotationally offset from said first shaping and being formed at an angle other than the back angle of said frustoconical portions, said second shaping extending less than the full land length of said frustoconical portion, said second shaping defining a maximum amount of ovalization and circumferentially progressing with a decreasing amount of ovalization until smoothly merging with said frustoconical portion whereby said first and second shapings result in a parison being extruded through said outlet orifice in a controlled manner and with a predetermined area of increased thickness resulting from said first shaping.

5,620,723

INJECTION MOLDING MACHINE

Pierre Glaesener, Bissen, Luxembourg, and Martin R. Kestle, Everett, Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Filed Jun. 7, 1995, Ser. No. 486,600
Int. Cl.[6] B29C *45/66*
U.S. Cl. 425—589 **37 Claims**



1. A tandem injection molding machine, comprising:

a stationary platen including at least two stationary mold halves, said at least two stationary mold halves located on opposed sides of said stationary platen;

a first movable platen movable relative to said stationary platen and having a mold half adapted to engage one of said stationary mold halves to form a first mold and a second movable platen movable toward said stationary platen and including a mold half adapted to engage the other of said stationary mold halves to form a second mold;

each of said first and second molds having a hot runner leading thereto;

at least one injection unit for delivering melt to said hot runners of said first and second molds; and

tie bars extending between and connecting said stationary platen, said first movable platen and said second movable platen;

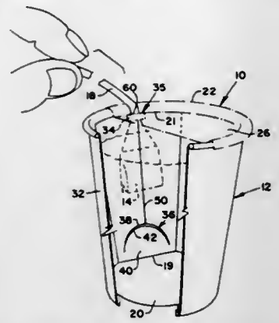
including means for securing at least one of said first movable platen, said second movable platen and said stationary platen to at least one of said tie bars, wherein said means for securing includes engagement means for placing said means for securing into and out of locking engagement with said at least one tie bar such that when said engagement means is out of locking engagement with said at least one tie bar, said means for securing and said at least one tie bar are relatively movable, wherein said engagement means is rotatable into and out of engagement with said at least one tie bar.

5,620,724

DRINK CONTAINER WITH HOLDER FOR USED CONCENTRATE PACKET

Richard S. Adler, 69 W. 9th St., New York, N.Y. 10011

Filed Jul. 26, 1993, Ser. No. 102,134
Int. Cl.[6] B65B *29/02*
U.S. Cl. 426—77 **80 Claims**



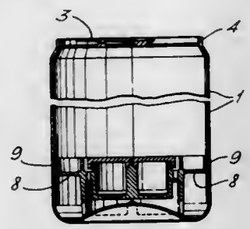
1. A drink container and a holder supported by said drink container, said holder having an opening thereto positioned such that a packet containing material used to make a drinkable liquid product in said drink container with the liquid in said drink container may be moved into said holder through said opening without removing the packet from said drink container, said opening of said holder within said drink container and at least a portion of said holder adjacent said opening being exposed to be contacted by the liquid in said container during normal use thereof, said holder being constructed to substantially inhibit liquid flow through the packet when in said holder and said holder is in said container with liquid in said container.

5,620,725

CARBONATED BEVERAGE CONTAINER AND METHODS FOR FILLING SAME

James G. Jamieson, Mauldon; David R. Maule, Bedford; Mark P. Radford, Silsoe; Ernest J. Cameron-Price, Stircbely; Edward R. Costello, Coventry, and Peter F. Kershaw, Catshill, all of England, assignors to Whitbread PLC., London, England, and Heineken Technical Services B.V., Amsterdam, Netherlands

Filed Jul. 22, 1993, Ser. No. 859,299
Claims priority, application United Kingdom, Nov. 22, 1989, 8926374; Dec. 21, 1989, 8928892; Jan. 12, 1990, 9000743; Mar. 2, 1990, 9004731
Int. Cl.[6] B65B *31/00;17/00;25/00*
U.S. Cl. 426—112 **14 Claims**



1. A sealed container (1) including a beverage (7) at a first superatmospheric pressure and a discrete insert (5) having a hollow chamber defined solely by said insert, said hollow chamber containing a non-oxidizing gas under a second superatmospheric pressure and containing substantially no oxidizing gas; said insert (5) further including means (6) normally sealing the hollow chamber from the beverage and being responsive to opening of the container (1) to provide communication between the inside of the insert (5) and the beverage (7) so that on opening the container (1), the means opens to inject gas from the insert into the beverage in the container to cause shearing of the beverage in the container and liberation of small bubbles throughout the contents of said container.

5,620,726

PROCESS FOR COLORING OLIVES

Pietro Casamassima, Via A. Moro, 129, Cerignola (Foggia) 71042, Italy

Filed Nov. 20, 1995, Ser. No. 561,132
Claims priority, application Italy, Nov. 25, 1994, B094A0526 U
Int. Cl.[6] A23L *1/275*
U.S. Cl. 426—254 **10 Claims**

1. A process for coloring olives, using an aqueous erythrosine solution as the colorant, comprising:

a. desalting the olives in water until the salt content is between 0 and 2%;

b. immersing the olives in an aqueous citric acid solution;

c. eliminating the excess citric acid by washing and drip-drying until the olive pH value is between 4.0 and 4.7;

d. immersing the olives in an aqueous erythrosine solution for a period of time between 20 and 50 minutes at a temperature of 40°–75° C., the weight ratio between the erythrosine solution and the olives being 4–6:0.5–2;

e. cooling and washing to remove traces of unfixed colorant;

f. inserting the olives in glass containers which are then immersed in boiling water for 25–30 minutes, after which they are immersed in water at 40°–45° C., cooled and packaged.

5,620,727

METHOD FOR PREPARING A FRIED POTATO FOOD

Timothy C. Gerrish, and Lawrence E. Carosino, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 616,474, Nov. 21, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 3,769
Int. Cl.[6] A23B *7/00;* A23L *1/00*
U.S. Cl. 426—302 **11 Claims**

1. A method for preparing fried potato food with reduced oil or fat absorption comprising

a. blanching the food,

b. treating the food with an aqueous solution having at least about 0.2% by weight of calcium ions,

c. at least partially coating the food with at least one calcium crosslinkable hydrocolloid gel forming compound having a molecular weight in the range of 2,000 to 30,000, and selected from the group consisting of pectin, amidated pectin, polygalacturonates, polygalacturonic acid, pectinic acid, pectinates, and mixtures thereof,

d. drying the coated food, and

e. frying the dried, coated food in cooking oil or fat in a temperature range of 100 to 200 degrees C. to form an at least partially coated, fried potato food product having reduced oil or fat content,

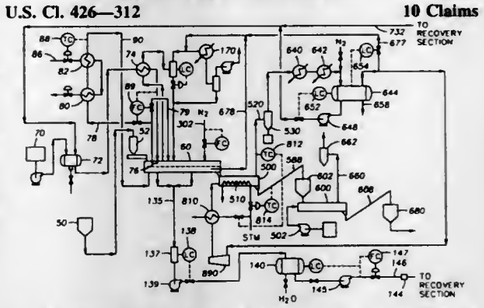
wherein steps b and c are performed separately.

5,620,728

METHOD AND APPARATUS FOR THE EXTRACTION OF OILS FROM GRAIN MATERIALS AND GRAIN-BASED FOOD PRODUCTS

Charles E. Langley, Jennings, La., and Stanley Finelt, The Woodlands, Tex., assignors to Food Sciences, Inc., Jennings, La.

Continuation-in-part of Ser. No. 12,118, Feb. 1, 1993, Pat. No. 5,445,841, and Ser. No. 19,978, Feb. 19, 1993, Pat. No. 5,408,924. This application Nov. 17, 1994, Ser. No. 341,519
Int. Cl.[6] A23L *1/015;* C11B *1/08*
U.S. Cl. 426—312 **10 Claims**



1. A method for extracting at least a portion of oil from an oil-containing vegetable material comprising the steps of:

establishing a continuously moving horizontal bed of the vegetable material, and

passing a solvent vapor through the bed;

condensing a portion of said solvent vapor above said bed and allowing it to fall back onto said bed;

spraying additional liquid solvent onto said bed;

allowing liquid to drain from said vegetable material; and

removing substantially all liquid from said vegetable material.

5,620,729

METHOD OF FREEZING A SUBSTANCE USING XANTHOMONAS CAMPESTRIS FERM BP-4191 TO FORM AN ICE-NUCLEUS

Michiko Watanabe, Higashimurayama; Takahiro Makino, Hamamatsu, and Kazuo Honma, Tama, all of Japan, assignors to Q. P. Corporation, Tokyo, Japan

Division of Ser. No. 290,771, Oct. 17, 1994, Pat. No. 5,532,160. This application Apr. 26, 1995, Ser. No. 429,118
Claims priority, application Japan, Feb. 24, 1992, 4-36665
Int. Cl.[6] C12N *1/12;1/20;* A21D *4/00*
U.S. Cl. 426—327 **8 Claims**

1. A method for freezing a substance which comprises

(a) adding to the substance to be frozen an ice-nucleus forming substance containing *Xanthomonas campestris* FERM BP-4191; and

(b) cooling said substance to be frozen to a temperature at which the substance to be frozen freezes.

5,620,730

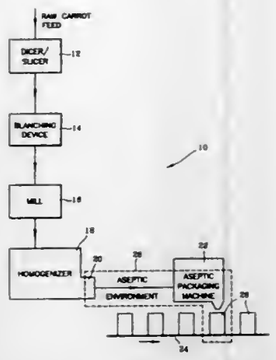
METHOD OF ENHANCING SHELF-STABILITY OF AN EDIBLE BIOLOGICAL PRODUCT

Gerard van Noort, 11 Krige Street, Stellenbosch 7600, South Africa

Filed Sep. 8, 1994, Ser. No. 302,509
Claims priority, application South Africa, Sep. 9, 1993, 93/6664
Int. Cl.[6] B65B *31/00*
U.S. Cl. 426—399 **8 Claims**

1. In a method of processing an edible biological product containing contaminating organisms wherein the product is subjected to a pressure change sufficient to cause rupture of cell walls of the

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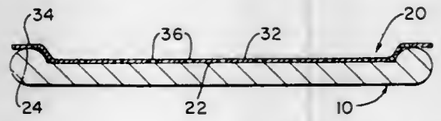
product, said product then being exposed to an atmosphere containing contaminating organisms after exposure to said pressure change, the improvement comprising: enhancing a shelf-stability of said product by passing said product through a homogenizing valve so as to subject the contaminating organisms in said product to an increasing pressure and then to a pressure decrease sufficient to cause rupturing of cell walls of substantially all of the contaminating organisms in said product, and thereafter immediately placing said product under aseptic conditions and maintaining said product under said conditions for aseptic packaging to thereby prevent re-contamination of said product by said contaminating organisms in said atmosphere.

5,620,731

METHOD OF PAR-BAKING A FOODSTUFF AND PRODUCT THEREOF

Phil McKee, Wichita, Kans., assignor to TurboChef, Inc., Dallas, Tex.

Filed Mar. 24, 1993, Ser. No. 35,629
Int. Cl.[6] A21B *3/13*; A21D *8/00*
U.S. Cl. 426—505 **22 Claims**



1. A method of par-baking a foodstuff intended to be subsequently cooked with an edible topping having a given thermal insulation value and a given moisture vapor permeability on the top surface thereof, comprising the steps of:

(A) providing a raw foodstuff having a top surface, the foodstuff once par-baked being adapted for completion of the baking with a topping on the top surface thereof;

(B) placing on the top surface of the raw foodstuff a topping-substitute having a thermal insulation value and moisture vapor permeability corresponding generally those of the topping;

(C) par-baking the foodstuff with the topping-substitute on the top surface thereof as both a thermal barrier and a moisture vapor barrier, thereby to decrease the rate of heat transfer to the foodstuff top surface and the rate of moisture vapor transfer from the foodstuff top surface during par-baking relative to par-baking without the topping-substitute; and

(D) removing the topping-substitute from the par-baked foodstuff;

whereby upon completion of the subsequent cooking of the foodstuff with the topping thereon, the foodstuff simulates a foodstuff baked entirely with the topping thereon.

5,620,732

METHOD OF MAKING ICE CREAM

John F. Clemmings, Parsippany, N.J.; Hans F. Zoerb, River Falls, Wis.; Diane R. Rosenwald, Shoreview, and Victor T. Huang, Mounds view, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 472,500
Int. Cl.[6] A23G *9/00*
U.S. Cl. 426—565 **4 Claims**

1. A method for preparing ice cream, the method comprising:

preparing a composition of ingredients that includes water;

adding an anti-freeze protein to the composition of ingredients;

cooling the composition containing the anti-freeze protein to a temperature no colder than about −30 degrees Fahrenheit prior to storage; and

storing the composition after cooling at a temperature warmer than about −30 degrees Fahrenheit and cool enough to freeze the composition, including the water;

wherein the composition does not require a cold hardening step at a temperature cooler than about −30 degrees Fahrenheit prior to storage to minimize ice crystal size in the composition.

5,620,733

PREPARATION OF MILK AND COFFEE COMPOSITION FOR BEVERAGE PREPARATION

Michel Chaveron, La Tour-de-Peilz; Jürg Schlaginhaufen, Ostermundigen, and Heinz Wyss, Oberdiessbach, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 10, 1995, Ser. No. 404,309
Claims priority, application European Pat. Off., Apr. 2, 1994, 94105214
Int. Cl.[6] A23C *9/156*; A23F *5/00*
U.S. Cl. 426—580 **14 Claims**

1. In a process for preparing a product for preparation of a beverage wherein a milk product comprising a substance selected from the group consisting of a milk and a milk derivative and combinations thereof is heat treated and concentrated to obtain a lactic concentrate and the lactic concentrate is heat treated and then spray dried, the improvements comprising:

adding a liquid coffee extract to the lactic concentrate to obtain a mixture and heat treating the mixture to flocculate whey protein and obtaining thereby a heat-treated mixture; and

spray drying the heat-treated mixture to obtain a spray-dried product.

5,620,734

SPREADS AND OTHER PRODUCTS INCLUDING MESOMORPHIC PHASES

Leendert H. Wesdorp, Ellicott City, and Keith D. Brilhart, Baltimore, both of Md., assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 262,198, Jun. 20, 1994, abandoned, which is a continuation of Ser. No. 952,452, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,311, Mar. 5, 1992, abandoned. This application Jun. 13, 1996, Ser. No. 661,857
Int. Cl.[6] A23D *7/015*
U.S. Cl. 426—601 **15 Claims**

1. A finished foodstuff having bulk regions of a mesomorphic phase of edible surfactant which structures the foodstuff, less than 80% wt edible oil and lactose, cake batters not constituting finished foodstuffs, said surfactant being selected from the group consisting of edible monoglycerides, diglycerides, non-ionic phospholipids, non-fatty carboxylic acid esters of fatty acid esters, partial sugar-fatty acid esters, partial fatty acid esters of polyols, mixtures thereof, cationic surfactants, and anionic surfactants and mixtures thereof, said mesomorphic phase not being made from a cake batter incorporating mesomorphic phase emulsifiers.

5,620,735

SIMULATED EGG PATTY

Michelle M. Manderfeld; John D. Efstathiou, both of Plymouth, and Arlene H. Voecks, Monticello, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Feb. 1, 1995, Ser. No. 381,779
Int. Cl.[6] A23L *1/32*
U.S. Cl. 426—614 **32 Claims**

1. A simulated egg patty comprising a shaped egg yolk portion and an egg white portion at least partially surrounding the shaped egg yolk portion, wherein the shaped egg yolk portion is frozen, prior to being combined with the egg white portion, at a temperature and for a time sufficient to provide a gel-like yolk structure which is self supporting and essentially retains its shape upon thawing, wherein the shaped egg yolk portion and the egg white portion, after combining, are cooked to form the simulated egg patty, and wherein the shaped egg yolk portion, after cooking, has similar mouthfeel and texture to cooked egg yolk prepared from fresh egg yolk.

5,620,736

PREPARATION OF COOLED, SPREADABLE FOAMED MEAT MOUSSE

Hubert Reinl, Tuessling; Stefan Klaus, Rielasingen-Worblingen, and Anita Pecher, Kastl, all of Germany, assignors to Nestec S.A., Vevey, Switzerland

PCT No. PCT/CH93/00226, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO94/07380, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 17, 1993, Ser. No. 302,928
Claims priority, application European Pat. Off., Sep. 28, 1992, 92116519
Int. Cl.[6] A23L *1/317*
U.S. Cl. 426—641 **10 Claims**

1. A process for preparing a meat mousse comprising:

heating a composition comprising a meat, which is size-reduced for preparing a mousse, at a temperature of from 80° C. to 100° C. and under pH conditions for avoiding growth of toxic spore-formers, to obtain a mousse base;

preparing a meat mousse which comprises mixing the mousse base and a fat so that the meat mousse by weight, comprises, from 20% to 50% mousse base meat and from 15% to 35% added fat and has a dry matter content of between 35% to 50% and a pH of from 5 to 6;

pasteurizing the meat mousse;

homogenizing the pasteurized mousse;

cooling the homogenized mousse to a temperature to obtain a cooled mousse suitable for foaming;

foaming the cooled mousse with a gas selected from the group consisting of nitrogen and air to increase the volume of the cooled mousse by an amount of from 25% to 75% to obtain a foamed mousse; and

cooling the foamed mousse to set the foamed mousse.

5,620,737

PROCESS FOR PREPARING HYDROLYZED FOOD PRODUCT FOR ANIMAL CONSUMPTION

Massoud Kazemzadeh, Bloomington, Minn., assignor to Ortech, Inc., Bloomington, Minn.

Continuation of Ser. No. 332,136, Oct. 31, 1994, abandoned. This application May 15, 1996, Ser. No. 648,485
Int. Cl.[6] A23L *1/31*; *1/314*
U.S. Cl. 426—641 **21 Claims**

1. A process for preparing a food product for animal consumption from an animal by-product, including the steps of:

applying a hydrolyzing agent heated above ambient temperatures to exposed surfaces of an animal by-product to alter the pH of an animal by-product over said exposed surfaces to initiate hydrolysis of the animal by-product;

after allowing the hydrolysis to proceed for at least one minute, mechanically working the animal by-product under conditions sufficient to increase its pressure to at least 250 psi and to dispersively mix the animal by-product and the hydrolyzing agent during further hydrolysis of the animal by-product to form a substantially homogeneous by-product mass;

during said mechanical working, heating the animal by-product to temperatures, including a maximum temperature of at least 250 degrees F., sufficient to sterilize the by-product mass and to at least partially hydrolyze the by-product mass whereby most of said hydrolysis of the animal by-product occurs during said mechanical working; and then

applying a neutralizing agent to the sterilized and at least partially hydrolyzed by-product mass, and blending the neutralizing agent and the by-product mass to substantially neutralize the by-product mass to a pH of 7.

5,620,738

NON-REACTIVE LUBICIOUS COATING PROCESS

You L. Fan, East Brunswick; Lawrence Marlin, Bridgewater; Lisa M. Bouldin, Cranford, and Isabel M. Marino, Somerset, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 7, 1995, Ser. No. 486,413
Int. Cl.[6] B05D *1/36*; *1/38*; *7/02*; *5/08*
U.S. Cl. 427—2.3 **15 Claims**

1. A process for applying a lubricious coating to a surface of a substrate comprising contacting the surface with:

(i) a hydrophilic polymer which is substantially more lubricious when wetted with an aqueous liquid than when dry; and

(ii) a binder polymer which is a copolymer of vinyl chloride, vinyl acetate and a carboxylic acid

wherein there is less than about 5% of covalent bonding between the binder polymer and the hydrophilic polymer based on the total number of bonding sites between the binder polymer and the hydrophilic polymer.

5,620,739

THIN FILM CAPACITORS ON GALLIUM ARSENIDE SUBSTRATE AND PROCESS FOR MAKING THE SAME

Masamichi Azuma; Carlos A. Paz De Araujo; Michael C. Scott, all of Colorado Springs, Colo., and Toshiyuki Ueda, Nara, Japan, assignors to Symetrix Corporation, Colorado Springs, Colo., and Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 165,082, Dec. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 132,744, Oct. 6, 1993, Pat. No. 5,514,822, which is a continuation-in-part of Ser. No. 993,380, Dec. 18, 1992, Pat. No. 5,456,945, which is a continuation-in-part of Ser. No. 660,428, Feb. 25, 1991, abandoned. This application Mar. 17, 1994, Ser. No. 214,401
Int. Cl.[6] B05D *5/12*; *3/02*
U.S. Cl. 427—79 **16 Claims**

1. A method of fabricating a high capacitance thin film integrated circuit capacitor device, said method comprising the steps of:

providing a gallium arsenide substrate;

forming a barrier layer on said substrate;

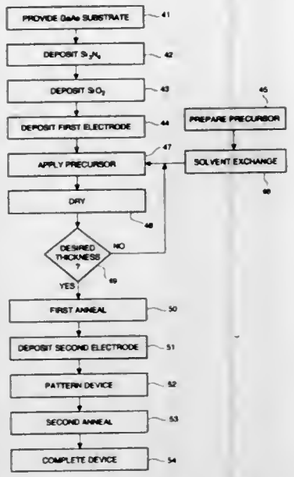
forming a first electrode;

providing a metalorganic liquid precursor comprising barium, strontium, and titanium metals in effective amounts for yielding a solid dielectric barium strontium titanate upon treating of said liquid precursor;

applying said liquid precursor on said first electrode;

treating said liquid precursor on said first electrode to form a thin film of said barium strontium titanate, wherein said treating step includes a step of annealing a dried form of said liquid precursor on said first electrode at a temperature rang-

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ing from 600° C. to 850° C. for a time ranging from one minute to ninety minutes to provide an essentially flat capacitance in said barium strontium titanate at frequencies within the interval from 0.1 to 0.2 gigahertz; and

forming a second electrode on said barium strontium titanate to complete said integrated circuit capacitor.

5,620,740

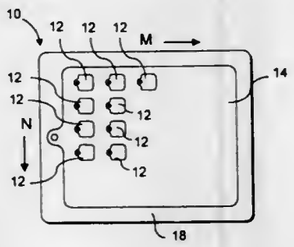
SPUN CAST IR DETECTOR ARRAYS WITH INTEGRATED READOUT ELECTRONICS AND METHOD OF MAKING THE SAME

Shankar B. Baliga, Bethpage; George Rullman, Dix Hills, and Alan P. Doctor, Sea Cliff, all of N.Y., assignors to Servo Corporation of America, Hicksville, N.Y.

Continuation-in-part of Ser. No. 228,960, Apr. 18, 1994, Pat. No. 5,502,307. This application Apr. 4, 1995, Ser. No. 416,136

Int. Cl.[6] B05D *5/12;* **H04R** *17/00;* **H01G** *7/00*

U.S. Cl. 427—100 **5 Claims**



1. A method of making an infrared detector array comprising the steps of:

providing a substrate including readout electronics with m * n portions;

forming an m * n array of first electrodes on said substrate, m and n being integers representing the number of first electrodes of said array in each of two mutually perpendicular directions, each of said first electrodes of said m * n array being in electrical communication with corresponding portions of said readout electronics;

depositing a layer of plastic material on said first electrodes, said plastic material having a polarization sensitive to IR radiation;

partitioning said layer into a plurality of films, with one film being superimposed on each of said first electrodes; and

applying an array of second electrodes on said films;

thereby forming an array of sensors, each array of sensors consisting of one first electrode, one second electrode, and one film disposed between said one first electrode and one second electrode.

5,620,741

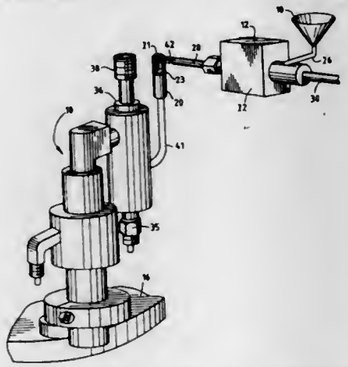
RESIN COATED FASTENER AND APPARATUS AND METHOD FOR MANUFACTURE OF SAME

Richard J. Duffy, Shelby Township, and Eugene D. Sessa, Mt. Clemens, both of Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Division of Ser. No. 188,065, Jan. 26, 1994, Pat. No. 5,511,510. This application Jan. 25, 1996, Ser. No. 591,714

Int. Cl.[6] B05D *7/22;* **F16B** *37/12*

U.S. Cl. 427—181 **10 Claims**



1. A method for applying a resin coating to both internal and external threads of a threaded fastener, comprising:

providing a powdered resin reservoir;

generating a first air-borne powdered resin stream from the powdered resin in said reservoir;

transporting said fastener along a path which first passes through a heating zone and thereafter through said first resin stream to apply said resin coating onto one of said internal or external threads; and

generating a second district powdered resin stream directed at said fastener to apply said resin coating to the other of said internal or external threads, said second stream being generated by positioning a resin receiver to traverse said first resin stream and thereby provide a powdered resin supply for said seconded powdered resin stream.

5,620,742

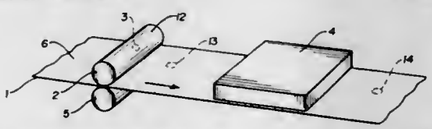
METHOD FOR MAKING ABSORBENT ARTICLES HAVING PRINTED POLYMER COATINGS

Nels J. Lauritzen, Piscataway, N.J., assignor to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 272,968, Jul. 11, 1994, Pat. No. 5,454,801, which is a continuation of Ser. No. 959,196, Oct. 9, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,777

Int. Cl.[6] B05D *1/28;5/00;3/02*

U.S. Cl. 427—209 **8 Claims**



1. A process for making an absorbent product comprising applying a fluid polymer coating to a first surface of an absorbent fibrous web in a repeating geometric pattern, curing said polymer coating,

applying a fluid polymer coating to a second surface of said web, opposite said first surface, and curing said polymer coating on said second surface to form a fluid-impermeable barrier.

5,620,743

COATING OR SURFACE TREATMENT OF SOLID PARTICLES BY MEANS OF A PLASMA FLUIDIZED BED

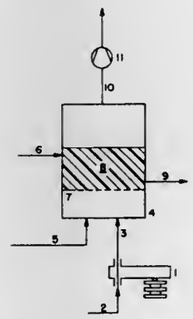
Klaus Harth, Altleiningen; Hartmut Hibst, Schriesheim, and Wolfgang Mattmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 29, 1994, Ser. No. 348,866

Claims priority, application Germany, Nov. 27, 1993, 43 40 480.4

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—213 **7 Claims**



1. A process for coating solid particles in a fluidized bed by application of a gaseous coating agent from a plasma, wherein the plasma is generated outside the fluidized bed under 0.01–500 mbar, and the plasma-activated gas is passed into the fluidized bed, which is operated under 0.1–500 mbar, where

a. the plasma is generated from the total amount of gaseous coating agent with or without another gas, or

b. the plasma is generated from a portion of the gaseous coating agent with or without another gas, and the remaining portion is introduced directly into the fluidized bed, or

c. the plasma is generated from another gas, and the total amount of gaseous coating agent is introduced directly into the fluidized bed.

5,620,744

METHOD OF PREVENTING CORROSION IN CONCRETE PIPE

Fred R. Huege, Colleyville, and Timothy L. Salter, Fort Worth, both of Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Filed Jan. 4, 1996, Ser. No. 582,968

Int. Cl.[6] B05D *7/22*

U.S. Cl. 427—236 **37 Claims**

1. A method of treating a concrete structure to protect the structure from acid corrosion comprising:

providing an aqueous lime slurry having a lime solids content above 35% by weight of the slurry; and

applying the aqueous lime slurry to surfaces of the concrete structure so that a protective coating of the time slurry is formed thereon.

5,620,745

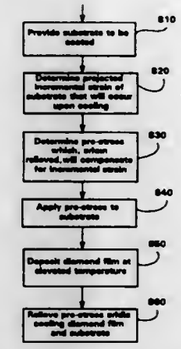
METHOD FOR COATING A SUBSTRATE WITH DIAMOND FILM

Matthew A. Simpson, Sudbury, Mass., assignor to Saint Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Dec. 19, 1995, Ser. No. 574,750

Int. Cl.[6] C23C *16/26;16/44*

U.S. Cl. 427—249 **18 Claims**



1. A method for depositing synthetic diamond film on a substrate, the substrate material having a coefficient of thermal expansion that is different than the coefficient of thermal expansion of the diamond film, comprising the steps of:

pre-stressing said substrate to obtain a pre-deposition compressive stress or tensile stress across a surface thereof;

depositing said diamond film on the pre-stressed substrate surface; and

cooling said film and substrate and relieving said pre-deposition stress during said cooling, the strain resulting from relieving said pre-deposition stress opposing the incremental displacement of the substrate with respect to the diamond film that results from the difference in the coefficients of thermal expansion of the diamond film and the substrate material.

5,620,746

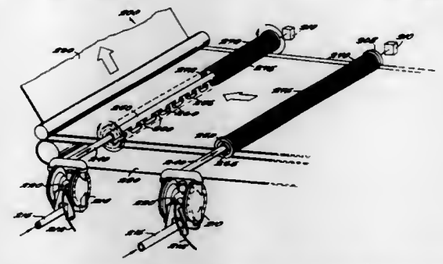
METHOD AND APPARATUS FOR REVERSIBLY PUMPING HIGH VISCOSITY FLUIDS

Guy T. Snyder, Jr., 143 Belle Chase Dr., Lexington, S.C. 29072

Continuation-in-part of Ser. No. 502,886, Sep. 22, 1995, Pat. No. 5,567,477. This application Dec. 4, 1995, Ser. No. 566,867

Int. Cl.[6] B05D *1/32;5/00*

U.S. Cl. 427—282 **24 Claims**



17. A method for supplying a high viscosity paint to a textile machine and applying said paint to a textile material, and then recovering an unused portion of said paint from said machine, said method comprising the steps of:

pumping said paint from a source using a double diaphragm pump into an apertured robe surrounded by a screen that engages said material, wherein said pumping takes place at a

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rate of less than 140 cycles per minute, said rate being controlled by limiting the flow of air from the housing of said pump;

issuing said paint from said apertured tube onto said screen;

forcing said paint through said screen onto said material; and

rotating a valve that is in fluid communication with said source, said pump, and said tube, so that said paint flows from said tube through said pump towards said source.

5,620,747

AQUEOUS COATING COMPOSITION

Alger E. Laura, New Boston; Ronald J. Easton, Clio; Kurt C. Frisch, Grosse Ile, and Han X Xiao, Farmington Hills, all of Mich., assignors to A-Line Products Corporation, Detroit, Mich.

Continuation of Ser. No. 220,729, Mar. 31, 1994, Pat. No. 5,427,856, Continuation of Ser. No. 20,654, Feb. 22, 1993, Pat. No. 5,300,363, which is a continuation of Ser. No. 599,664, Oct. 18, 1990, Pat. No. 5,227,198, which is a continuation-in-part of Ser. No. 340,845, Apr. 20, 1989, abandoned. This application Feb. 7, 1995, Ser. No. 384,770

Int. Cl.[6] B05B *3/02*

U.S. Cl. 427—385.5 **21 Claims**



1. An aqueous coating composition, comprising effective film-forming amounts of:

(a) up to about 40 percent of a polyol having a molecular weight of at least about 62 to about 500;

(b) about 0.5 percent to about 40 percent of a resin selected from halogenated polyolefinic resin materials, halogenated vinyl resins, epihydrin resins, halogenated epoxy resins, and mixtures thereof, said resin having a molecular weight of about 10,000 to about 30,000, or a softening point of about 150° F. to about 350° F.;

(c) about 0.05 to about 15 percent of a surfactant;

(d) an amine selected from primary, secondary and tertiary aliphatic amines having an amine functionality of 1 to 3, and mixtures thereof; and

(e) up to about 95% water, and wherein said composition is substantially free of aromatic organic solvents.

5,620,748

USE OF GRAFT POLYMERS FOR FATLIQUORING AND FILLING LEATHER AND FUR SKINS

Hermann Birkhofer; Peter Danisch, both of Ludwigshafen; Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof, and Michael Kneip, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/01831, § 371 Date Mar. 3, 1994, § 102(e) Date Mar. 3, 1994, PCT Pub. No. WO94/02650, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 13, 1993, Ser. No. 193,135

Claims priority, application Germany, Jul. 24, 1992, 42 24 456.0

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—389 **11 Claims**

1. A method of fatliquoring or filling a tanned leather or fur skin, comprising contacting said leather or fur skin with a water-soluble or water-dispersible graft polymer of an oil selected from the group consisting of vegetable oil, animal oil, and mixture thereof, wherein said graft polymer is prepared by a process comprising radically polymerizing in the presence of at least one of said oils a monomer or monomer mixture comprising:

(a) from 20 to 100% by weight of at least one monoethylenically unsaturated acid selected from the group consisting of monoethylenically unsaturated carboxylic acids, monoethylenically unsaturated carboxylic acid anhydrides, monoethylenically unsaturated sulfonic acids, monoethylenically unsaturated phosphonic acids and alkali metal, alkaline earth metal and ammonium salts thereof;

(b) from 0 to 80% by weight of one or more other monoethylenically unsaturated, copolymerizable monomers; and

(c) from 0 to 5% by weight of one or more unsaturated monomers having at least two unconjugated ethylenically unsaturated double bonds,

wherein said monomer or monomer mixture and said oil are present in amounts providing a weight ratio of said monomer or monomer mixture to said oil of from 80:20 to 1:99.

5,620,749

COATING SUBSTRATE WITH CROSSLINKED CONDUCTIVE POLYMER

John H. Bayless, Jr., and Donald K. Johnes, both of Hendersonville, N.C., assignors to Sterling Diagnostic Imaging, Inc., Glasgow, Del.

Division of Ser. No. 463,611, Jun. 5, 1995, Pat. No. 5,554,447, which is a continuation of Ser. No. 79,578, Jun. 22, 1993, abandoned. This application Aug. 1, 1996, Ser. No. 691,128

Int. Cl.[6] B05D *3/02;3/06;7/02;7/04*

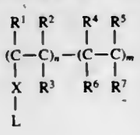
U.S. Cl. 427—393.5 **5 Claims**

1. A process for forming a conductive substrate, comprising:

(a) preparing an aqueous coating solution comprising:

(i) water;

(ii) a conductive crosslinkable polymer of the formula



wherein:

X is a divalent linking group;

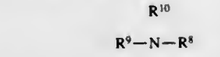
L is a charge carrying group;

R^1, R^2 and R^3 independently represent hydrogen, alkyl of 1–20 carbons, carboxyl, or alkylamine of 1–20 carbons;

R^4, R^5, R^6 and R^7 independently represent hydrogen, alkyl of 1–20 carbons, or a group capable of being crosslinked to form a film with a proviso that at least one of R^4, R^5, R^6 and R^7 represents the group capable of being crosslinked to form a film; and

n and m are chosen such that a ratio n/m is no less than 0.01 and no more than 100;

(iii) a volatile amine defined by



wherein R^8, R^9 and R^{10} independently represent hydrogen or an alkyl of 1–5 carbon atoms in an amount sufficient to maintain a pH of said aqueous coating solution above 7.0;

(iv) a crosslinking agent comprising a polyfunctional aziridine;

(b) coating said aqueous coating solution onto a polyethylene terephthalate substrate in an amount sufficient to provide 0.01 to 10.0 g of said conductive crosslinkable polymer per m^2 of said polyethylene terephthalate substrate; and

(c) forming a conductive layer by removing said water and said volatile amine from said aqueous coating solution wherein said removal of said volatile amine decreases said pH of said aqueous coating solution to below 7.0 allowing said crosslinking agent to react with said group capable of being crosslinked to form a film of said crosslinked conductive polymer.

5,620,750

METHOD FOR APPLYING METALLIC COATING

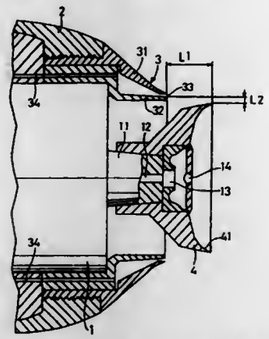
Shuji Minoura; Kazuo Nakagawa, and Daisuke Nakazono, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 400,754

Claims priority, application Japan, Oct. 21, 1994, 6-257184

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—421 **19 Claims**



1. A metallic coating method comprising first and second processes using a rotary atomizer with a bell-shaped atomizing head to apply a metallic paint,

wherein an amount of said metallic paint ejected from the rotary atomizer, a shaping air pressure, and a reciprocating coating speed of the rotary atomizer are maintained at the same or approximately the same values for both the first and second processes; and

wherein a peripheral speed of the bell-shaped atomizing head during the first process is higher than that during the second process, and a reduction rate of a nonvolatile (NV) value is maintained at at least 3%.

5,620,752

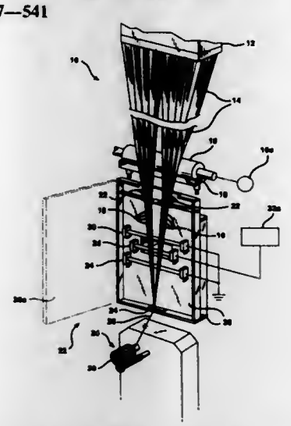
METHOD AND APPARATUS FOR DRYING SIZED GLASS FIBERS

Douglas B. Mann, Pickerington, Ohio, assignor to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.

Filed May 31, 1995, Ser. No. 455,961

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—541 **25 Claims**



13. A method for sizing fibers comprising:

applying a size to continuous fibers to form sized fibers;

drying said size on said sized fibers at least partially by producing current flow along said sized fibers to generate heat therein and form dried sized fibers, wherein said current flow is produced by passing said sized fibers by or in contact with at least one grounded electrode and by or in contact with a high-voltage electrode connected to a high-voltage source; and winding said dried sized fibers to form a package.

5,620,751

BINDERS FOR POWDER COATINGS

Gerhard Brindoepke, Sulzbach; Dietmar Fink, Taunusstein, and Gerd Walz, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 347,055, Nov. 30, 1994, abandoned, which is a division of Ser. No. 111,702, Aug. 25, 1993, abandoned. This application Mar. 14, 1996, Ser. No. 615,433

Claims priority, application Germany, Aug. 27, 1992, 42 28 514.3

Int. Cl.[6] C08J *7/04;7/18*

U.S. Cl. 427—506 **15 Claims**

1. In a method of forming a powder coating on a substrate by applying a coating of powder to a substrate and curing the same thermally or with electron beams or by high energy radiation or by irradiation with UV light, the improvement comprising using a binder in the powder which binder consists of A) solid unsaturated polyester and B) a polyurethane comprising (meth)acryloyl groups wherein the polyurethane B) is obtained by reacting B1) a polyisocyanate component comprising at least one organic polyisocyanate, B2) an alcohol component containing (meth)acryloyl groups, and comprising at least one mono- or polyhydric alcohol, and B3) a further structural component comprising at least one compound which is free from (meth)acryloyl groups and having groups which are reactive towards isocyanate groups, which is selected from the group consisting of ethylene glycol, 1,2- and 1,3-propane diol, neopentyl glycol, glycerol, trimethylol propane, tris hydroxyethyl isocyanurate, pentaerythritol and diethanolamine, polyamines, and amines containing hydroxyl groups in addition to secondary and primary amino groups.

5,620,753

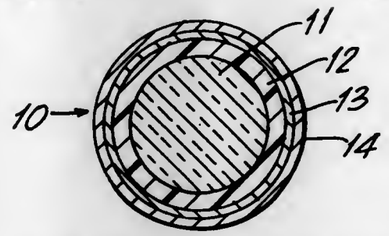
METHOD OF FORMING AN OPTICAL FIBER

Sam DiVita, West Long Branch, N.J.; James C. Lee, Plymouth, and James E. Lenz, Brooklyn Park, both of Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 555,248, Nov. 8, 1995. This application Sep. 16, 1996, Ser. No. 715,290

Int. Cl.[6] H01F *1/00*

U.S. Cl. 427—547 **8 Claims**



1. A method of forming a self supporting optical fiber which can be unwound from at least one end comprising the steps of:

placing an optical fiber in tensile stress; and

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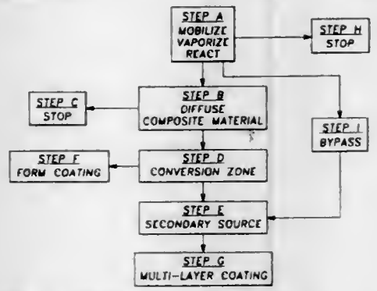
applying a thin film of magnetic material thereto while said fiber is in stress.

5,620,754

METHOD OF TREATING AND COATING SUBSTRATES

Manuel C. Turchan, Northville, and Pravin Mistry, Shelby Township, both of Mich., assignors to QQC, Inc., Dearborn, Mich.

Filed Jan. 21, 1994, Ser. No. 184,041
Int. Cl.[6] B05D *3/06*; C21D *1/00*
U.S. Cl. 427—554 **42 Claims**



1. Method of treating a substrate, comprising:

directing laser energy at a surface of the substrate, said substrate comprising a plurality of constituent elements, each constituent element of the substrate having an initial physical structure, and with the laser energy:

causing selected amounts of one or more of the constituent elements to move from within the substrate towards the surface of the substrate, thereby producing an increased concentration of the one or more constituent elements in a sub-surface region of the substrate immediately below the surface of the substrate;

vaporizing selected amounts of the one or more constituent elements from the sub-surface region; and

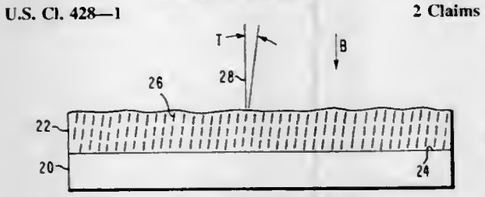
modifying the physical structure of the vaporized one or more constituent elements.

5,620,755

INDUCING TILTED PERPENDICULAR ALIGNMENT IN LIQUID CRYSTALS

Willis H. Smith, Jr., Newbury Park; Hugh L. Garvin, Malibu; Klaus Robinson, Woodland Hills, and Leroy J. Miller, Canoga Park, all of Calif., assignors to JVC - Victor Company of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 34,626, Mar. 22, 1993, Pat. No. 5,350,498, which is a continuation of Ser. No. 715,537, Jun. 14, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 260,146
Int. Cl.[6] C09K *19/00*
U.S. Cl. 428—1 **2 Claims**



1. A substrate prepared by a method for preparing a treated substrate to produce a uniformly tilted perpendicular alignment of a liquid crystal on the substrate, the liquid crystal comprised of elongated molecules whose combined long molecular axes define a macroscopic director, comprising the steps of:

supporting the substrate upon a pallet having a defined width;

depositing a layer of silica on the substrate using a magnetron in-line sputtering device employing an RF power source and a sputtering target composed of silica with the sputtering target arranged in an elliptical racetrack configuration having a length greater than the width of said pallet so that the sputtering target overhangs the substrate from two opposite ends thereof thereby causing silica to be deposited on the substrate substantially from only the non-overhanging portion of the target;

traversing the substrate at a rate of between 2 to 400 centimeters per minute at least once past the sputtering target so that deposition continues until the substrate is covered with a layer of liquid crystal having a thickness of between 250 to about 1500 Angstroms and,

with said director at all points across the surface of the substrate having an azimuthal direction that is substantially uniform and with the projection of the director onto the substrate surface being everywhere approximately parallel.

5,620,756

PRODUCTION OF A FERROELECTRIC OR ANTIFERROELECTRIC OR FERRIELECTRIC ORDER IN LIQUID CRYSTALS WHICH SOLIDIFY IN A GLASS-LIKE MANNER

Volker Bach, Neustadt; Karl-Heinz Etzbach; Karl Siemensmeyer, both of Frankenthal, and Gerhard Wagenblast, Weisenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 973,970, Nov. 9, 1992, abandoned. This application Jul. 6, 1995, Ser. No. 498,648
Claims priority, application Germany, Nov. 14, 1991, 41 37 408.8
Int. Cl.[6] G07F *1/137*; C09K *19/38*
U.S. Cl. 428—1 **9 Claims**

1. A process for the orientation of mesogenic polymeric liquid crystals in an electrical field wherein the mesogenic polymeric liquid crystalline material has a glass transition temperature of above 25° C., a molecular weight range of from 2,000 to 10,000 g/mol, an antiferroelectric smectic liquid crystalline behavior above its glass transition temperature, an optically uniaxial phase structure in the absence of an electrical field and solidifies into a glass phase, and wherein the process comprises the following steps:

heating a chiral polymeric material above its glass transition temperature

applying an electrical field of a strength sufficient to allow orientation of the liquid crystalline material into a ferroelectric, ferrielectric or, by applying an electrical field strength of about zero, into an antiferroelectric order and

cooling the liquid crystalline material below its glass transition temperature in the presence of the electrical field.

5,620,757

EDIBLE FILM AND METHOD OF MAKING SAME

Hirnfumi Ninomiya; Shoji Suzuki, and Kazuhiro Ishii, all of Toyama, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 526,735, May 22, 1990, Pat. No. 5,089,307. This application Sep. 30, 1991, Ser. No. 767,945
Claims priority, application Japan, May 23, 1989, 1-129386; May 24, 1989, 1-131024; May 25, 1989, 1-132356; Dec. 8, 1989, 1-319440
Int. Cl.[6] B65D *30/08*
U.S. Cl. 428—34.8 **9 Claims**

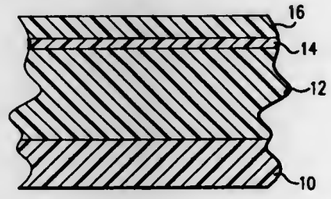
1. A multilayer heat-sealable edible film comprising (a) a film layer comprising a water-soluble polysaccharide as the principal component wherein the water-soluble polysaccharide is composed chiefly of carrageenan, a polyhydric alcohol and water, and (b) a subfilm layer formed on at least one surface of the film layer, the subfilm layer containing an alkali metal salt of casein, soybean protein or a combination of soybean protein and gelatin, as the principal component the film layer has a water content of not greater than 25% by weight, and the weight ration of the polyhydric alcohol to the water-soluble polysaccharide is in the range from 1:5 to 1:1.

5,620,758

MULTILAYER PACKAGING LAMINATE

Robert Babrowicz, Spartanburg, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S C.

Continuation of Ser. No. 138,904, Oct. 18, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 406,252
Int. Cl.[6] B65D *30/08*; B32B *13/12*
U.S. Cl. 428—35.2 **14 Claims**



1. A multilayer packaging laminate comprising:

a) a cross-linked by irradiation, heat sealable plastic layer;

b) a plastic oxygen barrier layer adhered to the heat sealable layer; and

c) an outside layer of plastic material bonded to the oxygen barrier layer;

wherein the abrasion resistant outside layer contains at least 25%, by weight of the outside layer, of a moisture curable polymer; and

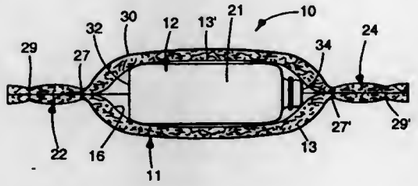
wherein the outside layer remains firmly adhered to the oxygen barrier layer when the heat sealable layer is sealed to form a package.

5,620,759

CONTAINER PROTECTED BY A CONFORMABLE SORBENT SLEEVE

Thomas I. Insley, Lake Elmo, Minn.; Tommie N. Lee, Omaha, Nebr., and Beth A. Schraeder, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 80,875, Jun. 21, 1993, Pat. No. 5,451,437. This application May 22, 1995, Ser. No. 445,626
Int. Cl.[6] B65D *81/26*
U.S. Cl. 428—35.2 **18 Claims**



1. A protected container that comprises:

(i) a container that has a side extending between first and second ends and that holds a fluid; and

(ii) a conformable sleeve that comprises (a) a tubular body that has an interior sized to receive the container that holds a fluid and (b) an opening sized to permit the container to enter the interior of the tubular body, wherein the tubular body comprises a nonwoven web that contains at least 5 weight percent microfibers based on the weight of fibrous material in the nonwoven web; and

the container being disposed in the tubular body of the sleeve and the sleeve being wrapped at least one full turn about the container such that (i) the side of the container is surrounded by the tubular body of the sleeve, (ii) the nonwoven web can sorb the fluid should the container fail, and (iii) first and second portions of the sleeve project axially from the first and second ends of the container.

5,620,760

SHAPED ARTICLES FOR BIOMEDICAL USE

Maurizio Galimberti, Milan; Emilio Martini, Sasso Marconi, and Enrico Albizzati, Arona, all of Italy, assignors to Montell Technology Company BV, Hoofddorp, Netherlands

Continuation-in-part of Ser. No. 85,009, Jun. 29, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,925
Claims priority, application Italy, Jun. 30, 1992, M192A1593
Int. Cl.[6] B29D *23/00*
U.S. Cl. 428—35.5 **7 Claims**

1. Shaped articles for biomedical use prepared starting from copolymers of ethylene with propylene and/or alpha olefins CH_2=CHR, wherein R is an alkyl containing from 2 to 10 carbon atoms, and optionally with lower proportions of units deriving from a diene or polyene, containing from 45 to 85% by mols of ethylene, from 15 to 55 % by mols of propylene and/or alpha olefins, and from 0 to 10% by mols of diene or polyene, characterized by the following properties:

crystallinity content, measured as melting enthalpy, lower than 20 J/g;

solubility in pentane at 25° C. higher than 90%;

content of propylene units or units deriving from alpha-olefin in form of triads between 4 and 50% of propylene or alpha olefin and percentage of said triads having isotactic structure of at least 70%;

product $r_1 \cdot r_2$ of the reactivity ratio of ethylene, r_1, and of propylene or alpha olefin, r_2, comprised between 0.4 and 1;

intrinsic viscosity higher than 1.5 dl/g.

5,620,761

ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,766
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—35.7 **51 Claims**

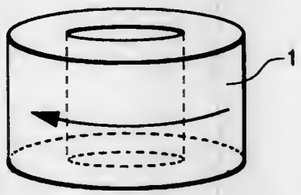
1. A bowl made by forming at least one sheet of material into a predetermined shape

for receiving an object, wherein the bowl comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed bowl is flexible and may be substantially flattened and unflattened to assume the oringinal shape of the formed bowl without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed bowl, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of

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material into a plurality of folds to form the base of the bowl and for cooperating to retain the bowl in the formed shape.

5,620,762
TEXTILE FIBER-WORKING UNITS AND COMPOSITIONS FOR THEIR FIBER-WORKING SURFACE LAYER
Kenneth K. Ko, West Grove, and James B. Krug, Pequea, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Continuation-in-part of Ser. No. 961,356, Oct. 15, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,548
Int. Cl.[6] B29D *22/00;* **D01D** *5/24*
U.S. Cl. 428—36.1 **18 Claims**



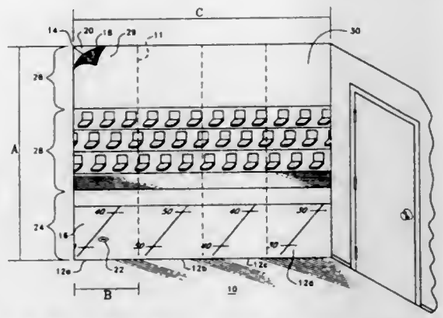
1. A textile cot comprising at least one layer, said layer having an outer surface which is a fiber-working surface with an endless path, wherein the layer is cylindrical and forms a ring, the layer being a composition consisting essentially of a mixture which contains no halide salt and further contains a polyamide at an amount of from about 9 to about 40% by weight of the composition, acrylonitrilebutadiene rubber at an amount of at least about 30% by weight of the composition, a plasticizer, a stabilizer, a crosslinking agent for the rubber, and optionally a filler up to a maximum amount of about 30% by weight of the composition further providing that the composition forms a smooth fiber-working surface and gives lap resistance to the fiber-working surface.

5,620,763
THIN-WALL, SEAMLESS, POROUS POLYTETRAFLUOROETHYLENE TUBE
Wayne D. House, Flagstaff; Kenneth W. Moll, Camp Verde, and Stanislaw L. Zukowski, Flagstaff, all of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation of Ser. No. 108,960, Aug. 18, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,840
Int. Cl.[6] B29D *23/00*
U.S. Cl. 428—36.9 **28 Claims**

1. An article comprising a seamless tube of porous polytetrafluoroethylene having a wall thickness of less than about 0.08 mm and a bulk density less than about 2.0 g/cc.

5,620,764
INTERACTIVE WALL COVERING SYSTEM
Daniel A. Schwarz, Phila., and Craig B. Sobel, Wyncote, both of Pa., assignors to Wall-Toons, Inc., Wyncote, Pa.
Filed Feb. 1, 1995, Ser. No. 382,516
Int. Cl.[6] B44C *5/04;* **E04F** *13/00*
U.S. Cl. 428—39 **14 Claims**

1. An interactive wall covering system comprising:
a) at least one substrate sheet having a first face and a second face, said first face receptive to an adhesive for permanently adhering said substrate to a wall surface and said second face receptive to an electrostatic cling material; and

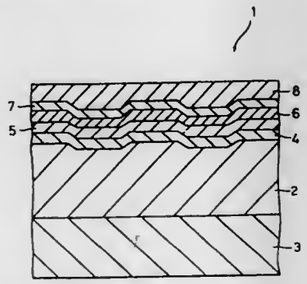


b) at least one non-adhesive applique comprising an electrostatic cling material adapted to be removably mounted on said substrate sheet by electrostatic cling bonding.

5,620,765
AQUEOUS BACKING FOR DIGITAL OPTICAL MEDIA
Lori J. Shaw-Klein, Rochester, and John B. Murphy, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 2, 1995, Ser. No. 432,735
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **20 Claims**

1. A substrate which is especially adapted for use as a base for an optical recording element; said substrate comprising a flexible support having a backing layer on one surface thereof, said backing layer comprising a film-forming water-dispersible polymeric binder and water-dispersible static-dissipative filler particles which are of dimensions such that they do not protrude above the surface of said backing layer; and a water-dispersible lubricant within said backing layer or forming a thin film over the surface of said backing layer.

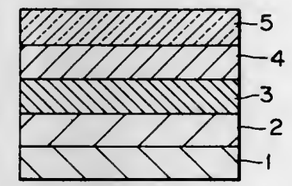
5,620,766
MAGNETO-OPTICAL DISK
Kenji Uchiyama; Masanori Shibahara, and Michiki Naganawa, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan
Continuation of Ser. No. 69,385, Jun. 1, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,467
Claims priority, application Japan, Jun. 29, 1992, 4-194745; Oct. 21, 1992, 4-307664
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—64.3 **6 Claims**



1. A magneto-optical disc, comprising:
a substrate having a pit forming region and a groove forming region on a surface thereof;
a recording layer covering the pit and groove forming regions;

a first protective layer between the substrate and the recording layer;
a second protective layer on the recording layer; and
a row of pits having a width of 0.40 to 0.55 μm and a depth of 600 to 900 Å formed in said pit forming region and a groove having a width of 0.95 to 1.15 μm and a depth of 600 to 900 Å formed in said groove forming region.

5,620,767
LIGHT REFLECTING AND HEAT DISSIPATING MATERIAL AND OPTICAL INFORMATION RECORDING MEDIUM USING THE SAME
Makoto Harigaya, Hiratsuka; Yukio Ide, Mishima; Osamu Nonoyama; Yoshiyuki Kageyama, both of Yokohama, and Hiroko Iwasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 9, 1993, Ser. No. 104,373
Claims priority, application Japan, Aug. 10, 1992, 4-234324
Int. Cl.[6] G11B *5/66;* **B32B** *3/02*
U.S. Cl. 428—64.4 **7 Claims**

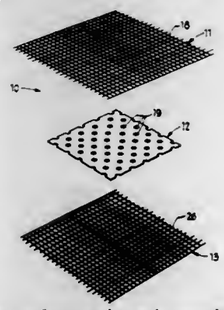


2. An optical information recording medium for performing information recording, reproduction and erasure by the application of electromagnetic wave thereto, comprising a substrate, a recording layer comprising a recording material overlying said substrate and a light reflection and heat dissipation layer overlying said recording layer, said light reflection and heat dissipation layer comprising a light reflecting and heat dissipating material comprising an alloy represented by formula (I):

$$Ag_xPd_{1-x} \quad (I)$$

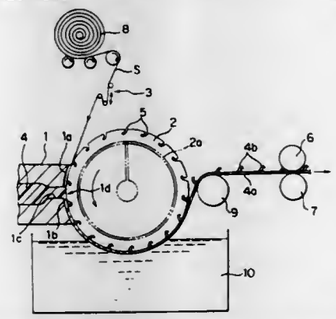
wherein $0.6 \leqq x \leqq 0.85$.

5,620,768
REPAIR PATCH AND METHOD OF MANUFACTURING THEREOF
Dennis Hoffmann, Sr., Palatine, Ill., assignor to Pro Patch Systems, Inc., Ill.
Continuation-in-part of Ser. No. 136,147, Oct. 15, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 555,300
Int. Cl.[6] B32B *3/02;35/00*
U.S. Cl. 428—77 **18 Claims**



1. A three-layer surface repair patch assembly for covering a hole in a wall under repair, the assembly comprising:
a deformable yet relatively rigid sheet means, the sheet means having an inward-facing side and an outward-facing side, both sides of the sheet means being free of adhesive prior to engagement of the sheet means with an inner and outer mesh means, the inward-facing side of the sheet means remaining free of adhesive after engagement of the sheet means with the inner and outer mesh means, the sheet means being disposed between the inner mesh means and the outer mesh means, an inward-facing side of the inner mesh means being coated with pressure-sensitive adhesive material for instantly adhering to the surface to be repaired under manual pressure, an outward-facing side of the inner mesh means being free of adhesive, an inward-facing side of the outer mesh means being coated with pressure-sensitive adhesive material for adhering to an outward-facing side of the sheet means and for adhering an outer margin of the outward-facing side of the inner mesh means under manual pressure,
the inner mesh means includes an outer margin disposed between an outer periphery of the sheet means and an outer periphery of the inner mesh means,
the outer mesh means includes an outer margin disposed between the outer periphery of the sheet means and an outer periphery of the outer mesh means,
the sheet means being held in place when the assembly is attached to a wall by adherence of the sheet means to the inward-facing side of the outer mesh means and by adherence of the outer margin of the outer mesh means to the outer margin of the inner mesh means, no pressure-sensitive adhesive material migrates from the inner mesh means to the inward-facing surface of the sheet means, no pressure-sensitive adhesive material migrates from the outer mesh means to the inward-facing surface of the sheet means,
the assembly being held in place when the assembly is attached to the wall by adherence of the inward-facing side of the inner mesh means to the wall.

5,620,769
MOLDED SURFACE FASTENER AND METHOD FOR MANUFACTURING THE SAME
Roger T. Wessels, and Piljae Cho, both of Macon, Ga., assignors to YKK Corporation, Tokyo, Japan
Filed May 2, 1995, Ser. No. 433,200
Int. Cl.[6] A44B *18/00;* **B29C** *47/02*
U.S. Cl. 428—100 **11 Claims**



1. A surface fastener molded of synthetic resin, comprising:
a plate-shaped substrate sheet;
a multiplicity of engaging elements standing from one surface of said plate-like substrate sheet molded by extrusion or continuous injection with said plate-shaped substrate sheet; and
a coarse mesh sheet integrally embedded in said plate-shaped substrate sheet during molding thereof across a width and length of the plate-shaped substrate sheet and closer to said one surface of said plate-shaped substrate sheet.

7. A method for continuously manufacturing a molded surface fastener, which is composed of a plate-shaped substrate sheet and a multiplicity of engaging elements standing on a surface of the

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substrate sheet, on a circumferential surface of a die wheel having on its circumferential surface a multiplicity of engaging-element-forming cavities, said method comprising the steps of:

driving the die wheel for one-way rotation;

continuously injecting molten resin from a molten resin outlet of an injection die, which confronts the die wheel with a selected gap therebetween, across a selected width and applied to the circumferential surface of the die wheel, said gap defining a thickness of a plate-shaped substrate sheet;

continuously introducing a coarse mesh sheet into said gap between the die wheel and the molten resin outlet of the injection die to embed the coarse mesh sheet in the molten resin injected from the injection die and to fill the engaging-element cavities with part of the molten resin through the coarse mesh sheet to form the molded surface fastener, said coarse mesh sheet held close to the circumferential surface of the die wheel to be molded within said substrate sheet closer to the circumferential surface of the die wheel than to an outside surface of said substrate sheet;

positively cooling the circumferential surface of the die wheel by a cooling means to cool the molded surface fastener; and

continuously removing the cooled molded surface fastener from the circumferential surface of the die wheel.

5,620,770

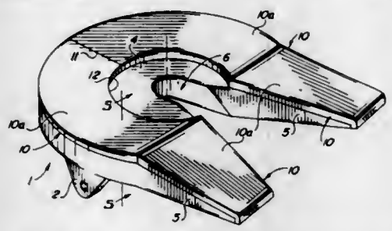
FIFTH WHEEL INSERT, LAMINATE COMPOSITE AND METHOD OF CONSTRUCTION

Michael S. Cork, Richardson, Tex., assignor to Superior Environmental Products, Inc., Addison, Tex.

Filed Jun. 1, 1995, Ser. No. 458,029

Int. Cl.[6] B32B *3/02;* **B62D** *53/08*

U.S. Cl. 428—121 **9 Claims**



1. A laminate composite bonded to a fifth wheel insert having a plurality of weld tabs for welding to a fifth wheel, said laminate composite comprising a sheet composite of polyethylene and a sufficient quantity of a component selected from the group consisting of carbon fibers, aramid fibers, boron nitride fibers and silicone carbide fibers to modify the modulus of elasticity of said polyethylene.

5,620,771

FABRIC OF COTTON/NYLON AND ELASTOMERIC NEOPRENE

Nigel J. Middleton, Cornwall, Great Britain, assignor to Micro Thermal Systems, Limited, Cornwall, United Kingdom

Continuation of Ser. No. 934,620, Aug. 27, 1992. This application Jun. 7, 1995, Ser. No. 483,409

Claims priority, application United Kingdom, Feb. 28, 1990, 9004428

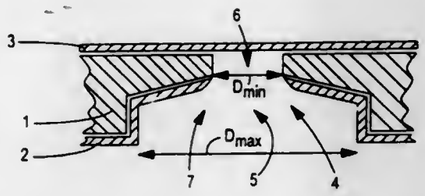
Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—131 **21 Claims**

1. A laminated fabric comprising:

(a) a sheet portion of a cotton or nylon material compatible with human skin, said sheet being adhered to

(b) a second sheet which is of a substantially water vapor-impermeable thermally insulating elastomeric neoprene material having a multiplicity of formed elongated perforations



extending through the thickness of said material, each perforation having a relatively narrow opening in one plane of the material and a relatively wider opening in the opposing plane of said material, each opening, with an associated depression in the material, thereby defining a chamber structure in which a volume of air may accumulate under increased pressure prior to passing through the material out to the other side, said fabric, when worn as a covering over human skin, retaining to a substantial extent the advantageous thermal properties of the impermeable second sheet, while permitting the natural biological functions of the user's skin to continue substantially unhindered.

5,620,772

DECORATING SHEET HAVING HAMMER TONE TEXTURE

Michio Taniguchi, Yamagata, Japan, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

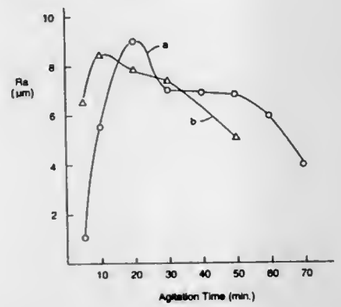
PCT No. PCT/US95/03371, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO95/26834, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 17, 1995, Ser. No. 403,688

Claims priority, application Japan, Mar. 30, 1994, 6-060647

Int. Cl.[6] B05D *5/06*

U.S. Cl. 428—143 **6 Claims**



1. A decorative sheet having a hammer tone texture, comprising a backing sheet having a thickness within the range between 20 and 200 μm, primer layer on the backing sheet, said primer layer consisting essentially of vinyl acetate resin and having a thickness within the range between 0.1 and 100 μm, and a decorative layer on the primer layer, said decorative layer having a thickness within the range between 30 and 150 μm formed by applying the decorative layer in the form of a hammer tone coating composition using a controlled means of delivery of the composition to the primer layer at a sufficient thickness after mixing with agitation time between 10 and 50 minutes at 500 revolutions per minute or below 50 minutes at 1000 revolutions per minute and then drying for a period of time ranging from 1 to 15 minutes at a temperature ranging from 120° C. to 200° C. in order to form a surface having a surface roughness Ra of 6 μm or more.

5,620,773

COMPOSITION AND METHOD FOR TEXTURING THE SURFACE OF GLOVES

Brian Nash, Carpinteria, Calif., assignor to Mcghan Nusil Corporation, Carpinteria, Calif.

Continuation-in-part of Ser. No. 995,323, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 794,292, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 483,550, Feb. 21, 1990, abandoned. This application Feb. 22, 1996, Ser. No. 605,647

Int. Cl.[6] B32B *5/14*

U.S. Cl. 428—145 **1 Claim**

1. A hand-shaped glove having a textured inner surface made by the process of: (a) presenting a hand-shaped mandrel and forming an uncured coating of a fluid silicone elastomer dispersion upon an outer surface of the hand-shaped-mandrel, the fluid silicone elastomer dispersion comprising silicone elastomer and hydrophilic silica particles dispersed in an organic solvent, and allowing said hydrophilic silica particles to accumulate on and project above the outer surface of the uncured coating to form a textured outer surface of a hand shaped glove; and (b) curing the uncured coating to form a cured coating; and (c) everting said hand-shaped glove, the cured coating forming a textured inner surface of the hand-shaped glove.

5,620,774

BIAXIALLY ORIENTED LAMINATED POLYESTER FILM

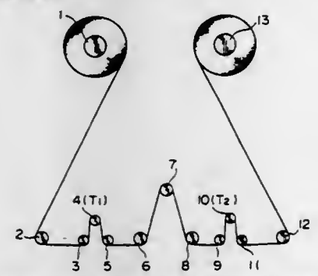
Masami Etchu, Yokohama, and Hirofumi Murooka, Sagamihara, both of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 65,896, May 25, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 387,242

Claims priority, application Japan, May 27, 1992, 4-135081; Jun. 15, 1992, 4-155013

Int. Cl.[6] G11B *5/704;* **B32B** *5/16;27/36*

U.S. Cl. 428—148 **2 Claims**



1. A biaxially oriented laminated polyester film comprising:

(A) a first polyester layer formed from an aromatic polyester containing:

(a) θ-form aluminum oxide particles having an average particle diameter, d_a, of 0.02 to 0.3 μm, a specific surface area of 50 to 120 m^2/g and a total pore volume of 0.5 to 1.0 ml/g, and

(b) externally added inert fine particles whose average particle diameter, d_b, is greater than d_a and is 0.2 to 1.5 μm,

the above θ-form aluminum oxide particles (a) being contained in an amount of 0.1 to 1.0% by weight, the inert fine particles (b) being contained in an amount of 0.05 to 1.0% by weight, and

(B) a second polyester layer formed from an aromatic polyester, on at least one surface of which the above first polyester layer is present,

the thickness of the first polyester layer being 3 to 20% of the total thickness of the biaxially oriented laminated polyester film, the total thickness of the biaxially oriented laminated polyester film being 5 to 25 μm, and the content of the θ-form aluminum oxide particles being less than 0.1% by weight based on the biaxially oriented laminated polyester film.

5,620,775

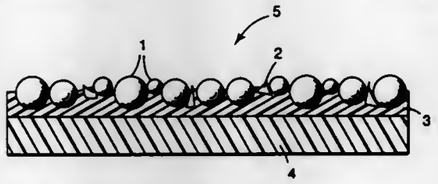
LOW REFRACTIVE INDEX GLASS MICROSPHERE COATED ARTICLE HAVING A SMOOTH SURFACE AND A METHOD FOR PREPARING SAME

James D. LaPerre, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1995, Ser. No. 552,850

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—149 **43 Claims**



1. A glass bead coated article comprising:

(a) a first adhesive layer;

(b) a layer of a mixture of transparent glass beads intermixed with irregularly shaped glass particles, said mixture optionally treated with an adhesion promoter, wherein the layer of glass beads and irregularly shaped glass particles are partially embedded in the first adhesive layer such that about 20% to about 70% of the average diameter of the glass beads is exposed, wherein the first adhesive layer is capable of adhering to the mixture of the glass beads and the irregularly shaped glass particles;

wherein the average cross-sectional diameter of the mixture of the glass beads and the irregularly shaped glass particles, for at least 95 percent by weight of the mixture ranges from about 20 microns to about 180 microns;

wherein at least 95% by weight of the total number of glass beads and irregularly shaped glass particles fall within a threefold range such that the smallest and largest cross-sectional diameters differ by a factor of about 3 or less;

wherein the bead coated article comprises at least about 3% irregularly shaped glass particles by average count per unit area of the glass bead coated article based on the average total count per unit area of the glass bead coated article of the glass beads plus the irregularly shaped glass particles, wherein the aforesaid average count of irregularly shaped glass particles is based on irregularly shaped glass particles having a cross-sectional diameter equal to or greater than the smallest cross-sectional diameter in the threefold range;

wherein the glass beads and irregularly shaped glass particles have refractive indices of between about 1.5 and about 1.6;

wherein the glass beads and irregularly shaped glass particles are positioned such that the coefficient of friction of a planer surface of the first adhesive having a continuous layer of the glass beads and irregularly shaped glass particles embedded therein is less than about 0.3.

5,620,776

EMBOSSED TISSUE PRODUCT WITH A PLURALITY OF EMBOSS ELEMENTS

Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Continuation-in-part of Ser. No. 169,628, Dec. 20, 1993, and Ser. No. 999,414, Dec. 24, 1992, Pat. No. 5,436,057. This application Apr. 4, 1995, Ser. No. 416,348

Int. Cl.[6] D04H *1/64;* **B32B** *31/20;3/30*

U.S. Cl. 428—156 **20 Claims**

1. A sheet of tissue exhibiting puffiness and bulk having a plurality of bosses formed therein comprising:

a plurality of stitch shaped bosses arrayed to form polygonal cells making up a lattice structure; and

a plurality of bosses forming a first signature emboss pattern being centrally arrayed within a plurality of cells, said first signature bosses being formed on linear continuous emboss-

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ments at a height exceeding 3 thousandths of an inch and a height less than 120 thousandths of an inch;

a plurality of bosses forming a second signature emboss pattern being centrally arrayed within a plurality of cells, said second signature bosses being formed of linear crenulated embossments at a height exceeding 3 thousandths of an inch and a height less than 120 thousandths of an inch and defining a plurality of merlons and crenels, wherein said crenels extend from the top of said adjacent merlon to a depth of at least 2 thousandths of an inch.

5,620,777

POROUS RUBBER STAMP MATERIAL HAVING OPEN CELLS

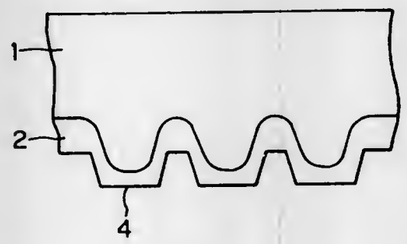
Kazumi Goto, and Shigehiro Sasaki, both of Yokohama, Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 341,427

Claims priority, application Japan, Nov. 30, 1993, 5-299807

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—158 **3 Claims**



1. A porous rubber stamp material having open cells which comprises a print layer having a spring hardness of greater than 30 and less than or equal to 40 and an ink-occluding layer having a spring hardness of 10 to 20, wherein lugs are uniformly formed on the outer bottom surface of the ink-occluding layer so as to occupy 15 to 30% of the outer bottom surface area of the ink-occluding layer, each of said lugs comprising a cylinder having a cross-sectional area of 0.12 to 1.13 mm^2.

5,620,778

CLAY TYPE LIQUID-RESISTANT PROTECTIVE LAYER

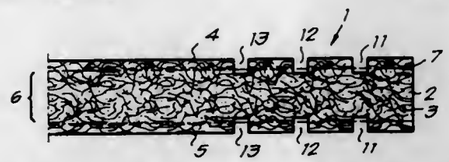
John Clatworthy, Harringay-London, Great Britain, assignor to Pharo Limited, Dublin, Ireland

Filed Jun. 6, 1995, Ser. No. 467,286

Claims priority, application Belgium, Mar. 14, 1995, 09500229

Int. Cl.[6] B32B *3/28*; **B09B** *1/00*; **G21F** *9/00*

U.S. Cl. 428—167 **9 Claims**



1. A liquid-resistant protective layer having opposed outer surfaces intersecting at least one edge and which at least includes a material layer containing clay, comprising at least one groove extending on at least one of said surfaces generally along said at least one edge of the layer and extending into the material layer containing the clay.

5,620,779

RIBBED CLOTHLIKE NONWOVEN FABRIC

Ruth L. Levy, Sugar Hill, and Ann L. McCormack, Cumming, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 172,339, Dec. 23, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 622,493

Int. Cl.[6] B05D *5/06*

U.S. Cl. 428—167 **10 Claims**

1. A ribbed clothlike nonwoven fabric comprising a web of thermoplastic polymer of staple length or longer fibers or filaments having a columnar pattern of fused bonded areas with columns of unbonded area which extend along the fabric;

wherein said bonded and unbonded areas line up substantially regularly through a given length of fabric in columns only;

said pattern has at least one space and at least one unit width in a ratio of at least 0.30, and;

wherein said fabric has been extended up to less than the breaking point of the fibers or filaments in the machine direction, and allowed to relax under low or no tension so as to produce ribs.

5,620,780

COMPOSITE MATERIALS AND PROCESS

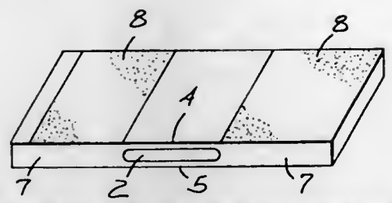
Dennis L. Krueger, Hudson, Wis.; Leigh E. Wood, Woodbury, Minn.; Michael R. Gorman, Lake Elmo, Minn., and Randall L. Alberg, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 225,095, Apr. 8, 1994, Pat. No. 5,429,856, which is a continuation of Ser. No. 971,277, Nov. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 502,331, Mar. 30, 1990, abandoned. This application Apr. 24, 1995, Ser. No. 427,424

Int. Cl.[6] D06N *7/04*; **C09J** *7/02*

U.S. Cl. 428—179 **15 Claims**

1. A fastening tab comprising a closure layer and a backing of a coextruded film having two faces comprising at least one discrete elastomeric core containing region capable of elastic elongation and a matrix of thermoplastic polymeric material, which polymeric matrix material is less elastic than the elastomeric core material, said matrix material completely circumscribing said at least one discrete elastomeric core so that there is at least two nonelastic film regions comprising matrix material, wherein the thickness and the presence of the elastomeric core material varies across the film length and/or width and wherein when said coextruded film is



stretched past the inelastic deformation limit of the matrix material around said at least one elastomeric core the film will be capable of recovery in the at least one elastomeric core containing region to form a microtextured skin layer, formed of the matrix material over the at least one elastomeric core, only in the elastomeric core containing region of said film, wherein at least one nonelastic film region contains the closure layer.

5,620,781

ERASABLE DISPLAY MEDIUM

Ryojiro Akashi, and Akinori Inoue, both of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 197,460, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 961,637, Oct. 16, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,309

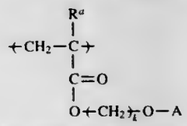
Claims priority, application Japan, Oct. 23, 1991, 3-302704; May 1, 1992, 4-137540

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—195 **9 Claims**

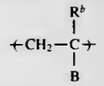


1. An erasable display medium comprising a substrate having thereon at least one liquid crystal polymer layer comprising a side chain liquid crystal polymer which repeatedly and reversibly switches from a transparent state and a light-scattered state by the action of at least one of heat, an electrical field, and a magnetic field, said side chain liquid crystal polymer being a block or graft copolymer comprising a repeating unit represented by formula (I):



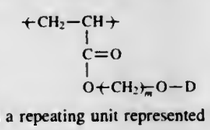
(I)

and a repeating unit represented by non-liquid crystal formula (II):



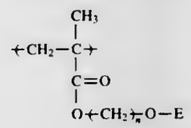
(II)

or a block or graft copolymer comprising a repeating unit represented by formula (III):



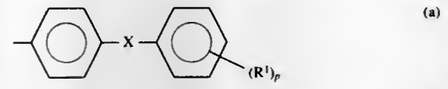
(III)

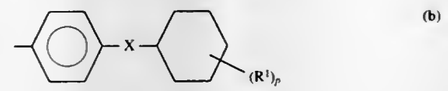
and a repeating unit represented by formula (IV):

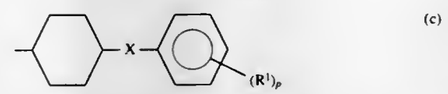


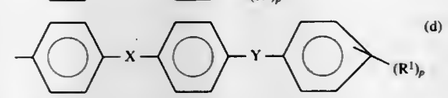
(IV)

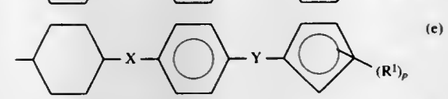
wherein R^a and R^b each represent a hydrogen atom, a methyl group, or a halogen atom; A, D, and E each represent a liquid crystal molecule residue composed of one or more groups selected from:

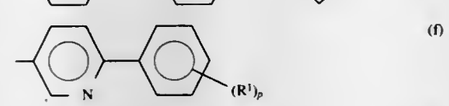
(a) 

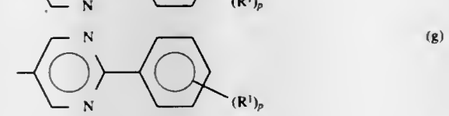
(b) 

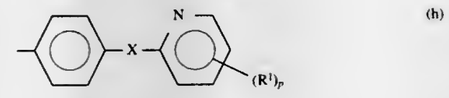
(c) 

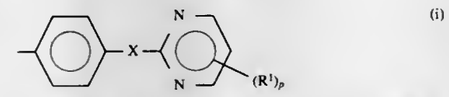
(d) 

(e) 

(f) 

(g) 

(h) 

(i) 

wherein X and Y each represent a single bond, —N=N—, —N(→O)=N—, —CH=N—, —N=CH—, —COO—, —O(C=O)—, or an ethynylene group; R^1 represents an alkoxy group, a halogen atom, a cyano group, a carboxyl group, or an alkyl group; and p represents an integer of from 1 to 5; when p is 2 or greater, the plural R^1 groups may be the same or different;

B represents a group composed of one or more of a hydroxyl group, a halogen atom, an alkyl group, an alkenyl group, a substituted or unsubstituted phenyl group, a heterocyclic group, an amino group, a cyano group, —$COOR^2$, —$OCOR^2$, and —$CONR^2R^3$, wherein R^2 and R^3 each represent a hydrogen atom, an alkyl group having from 1 to 30 carbon atoms which may be substituted with a halogen atom or a heterocyclic group, an alkenyl group, an alicyclic group, a hydroxyalkyl group, a hetero atom-containing alkyl group, or a substituted or unsubstituted phenyl group; and k, m, and n each represent an integer of from 1 to 30

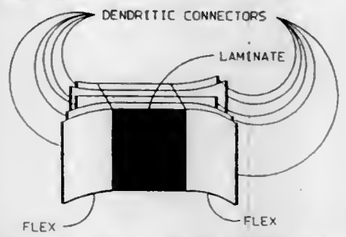
and wherein said copolymer has a weight average molecular weight between 1000 to 500,000; and said display medium further comprises an orientating film selected from the group consisting of rubbed film of polyvinyl alcohol, nylon-epoxy-organotitanium system, lecithin and hexadecylacylamine or a substrate film of stretched polyethylene terephthalate.

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5,620,782
METHOD OF FABRICATING A FLEX LAMINATE PACKAGE

Charles R. Davis; Thomas P. Duffy, both of Endicott; Steven L. Hanakovic, Vestal; Howard L. Heck, Endcott; John T. Kolias, Vestal; John S. Kresge, Binghamton, all of N.Y.; David N. Light, Friendsville, Pa., and Ajit K. Trivedi, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 97,544, Jul. 27, 1993, Pat. No. 5,384,690. This application Jun. 2, 1995, Ser. No. 459,929
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 **1 Claim**

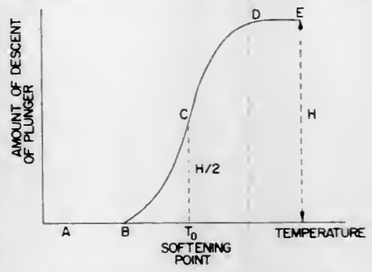


1. A sequentially built-up multilayer laminate of a plurality of stacked circuitized, adhesive bonded, polymeric dielectric panels with pad to pad electrical connection therebetween, wherein the pad to pad electrical connection is provided by a transient liquid phase formed metallurgical bond of a metallurgy characterized by a non-eutectic stoichiometry composition of a eutectic forming system, and prepared by (a) depositing non-eutectic stoichiometries of metals which are capable of forming eutectics with each other on facing pads, (b) bringing the deposits into contact with each other and heating the deposits above the eutectic temperature thereof to form a quickly solidifying melt of eutectic+solid metal, and (c)solidifying the melt to form the metallurgical bond between the facing pads; the eutectic temperature being below the melting temperature of the adhesive used in bonding the polymeric dielectric panels, and the melting temperature of the metallurgy being above the melting temperature of the adhesive used in bonding the polymeric dielectric panels.

5,620,783
TRANSFER PAPER FOR OUTPUTTING COLOR IMAGES AND METHOD OF FORMING COLOR IMAGES BY USING SAME

Tatsuo Takeuchi, Kawasaki; Masahiro Inoue, Yokohama, and Jiro Ishizuka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 128,724
Claims priority, application Japan, Mar. 30, 1992, 4-283423
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—211 **8 Claims**

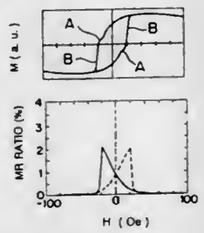


1. Transfer paper for outputting color images, suitable for use as a transfer member in a color electrophotographic apparatus capable of forming a multi-color toner image by using at least two colors of single-color toner, said paper being uncoated plain paper having a whiteness degree of 85% or more and an opaqueness degree of 90% or more.

5,620,784
MAGNETORESISTIVE FILM

Toshio Tanuma, and Minoru Kume, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Aug. 3, 1995, Ser. No. 511,012
Claims priority, application Japan, Aug. 4, 1994, 6-183722
Int. Cl.[6] H01F *10/14*
U.S. Cl. 428—212 **20 Claims**



1. A magnetoresistive film comprising:
a first ferromagnetic layer arranged on a substrate and having a first coercive force;
a non-magnetic metal film arranged on said first ferromagnetic layer; and
a second ferromagnetic layer arranged on said non-magnetic metal film and having a second coercive force that is different from said first coercive force;
wherein said first ferromagnetic layer and said second ferromagnetic layer are antiferromagnetically coupled with each other so that said magnetoresistive film has a magnetization hysteresis curve with at least one inflection point in a magnetization transition from a first saturation magnetization to a second saturation magnetization, wherein a total number of said at least one inflection point in said magnetization transition is an uneven number;
wherein $Ha/Hb \leqq 0.95$, where $Ha=|H_2-H_0|$ and $Hb=|H_1-H_0|$, with H_0 representing the magnetic field at an intermediate one of said at least one inflection point, H_1 representing the magnetic field corresponding to 95% of said first saturation magnetization, and H_2 representing the magnetic field corresponding to 95% of said second saturation magnetization; and
wherein said magnetoresistive film has an MR ratio that depends on an applied magnetic field such that a curve representing said MR ratio relative to said applied magnetic field has a first portion that increases to a maximum value of said MR ratio and has a second portion that then decreases from said maximum value of said MR ratio as said applied magnetic field is varied monotonously, wherein a maximum slope of said second portion is steeper than a maximum slope of said first portion.

5,620,785
MELTBLOWN BARRIER WEBS AND PROCESSES OF MAKING SAME

James M. Watt, Piedmont, and Deborah K. Lickfield, Easley, both of S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Jun. 7, 1995, Ser. No. 475,949
Int. Cl.[6] A62B *23/00;23/06;* **D04H** *1/72*
U.S. Cl. 428—219 **11 Claims**

1. A meltblown web useful as a barrier layer in a composite laminate fabric, said meltblown web having a basis weight of less than 10 grams per square meter and comprising a plurality of thermoplastic microfine meltblown fibers formed of a polymer having a melt flow rate greater than about 1000 g/10 min and having an average fiber diameter of less than 1.5 microns.

5,620,786
HOT WATER SOLUBLE TOWELS, SPONGES AND GAUZES

Travis W. Honeycutt, Gainesville, and Baosheng Lee, Duluth, both of Ga., assignors to Isolyser Co. Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 55,083, Apr. 29, 1993, abandoned. This application Aug. 5, 1994, Ser. No. 286,814
Int. Cl.[6] D03D *3/00*
U.S. Cl. 442—50 **30 Claims**

1. An article comprising a member selected from the group consisting essentially of a towel, sponge and gauze, said article being comprised of fibers of polyvinyl alcohol resin which are soluble in aqueous solutions only above approximately 93° C., said polyvinyl alcohol fibers being further characterized as having a degree of hydrolysis of at least approximately 99%, being composed of no more than ½% sodium acetate and ⅒% methyl alcohol and an average degree of polymerization between approximately 1300 to 1500, said polyvinyl alcohol fibers being produced by a process of dope extrusion and then treated with heat and stretching, the degree of crystallinity and the degree of orientation for the heated and stretched polyvinyl alcohol fibers are approximately 0.70 and 0.52 respectively.

5,620,787
ORGANOPOLYSILOXANE EMULSIONS AND FIBERS COATED THEREWITH

Isao Ona; Masaru Ozaki; Toshio Saruyama, and Masahiko Suzuki, all of Chiba Perfecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 362,626, Dec. 22, 1994, Pat. No. 5,521,238. This application Jan. 29, 1996, Ser. No. 592,979
Claims priority, application Japan, Dec. 24, 1993, 5-347513
Int. Cl.[6] B32B *7/00*
U.S. Cl. 442—102 **19 Claims**

1. A treated substrate prepared by a method comprising the steps of:
(I) mixing:
(A) 100 parts by weight of a diorganopolysiloxane having the general formula

$$R^2O(R_2SiO)_n(RR^1SiO)_mR^2$$

wherein R is a monovalent hydrocarbon group having from 1 to 8 carbon atoms, R^1 is a monovalent organic group, R^2 is selected from a hydrogen atom or an alkyl group, the value of m+n is at least 10, and has a viscosity at 25° C. in the range of 30–100,000 mm^2/s;
(B) 0.1–20 parts by weight of an organosilicon compound having the general formula

$$(R_3^3SiO)-Si(OR^5)_2$$
$$\quad\quad\quad

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5,620,790

MULTI-LAYER MICROFILTRATION MEMBRANE HAVING AN INTEGRATED PREFILTRATION LAYER AND METHOD OF MAKING SAME

Udo Holzki, Worrstadt; Heinz-Joachim Muller, Bad Kreuznach, and Tilo Renner, Langenionsheim, all of Germany, assignors to Seitz-Filter-Werke GmbH und Co., Kreuznach, Germany

Filed Jun. 23, 1995, Ser. No. 494,189

Claims priority, application Germany, Jun. 23, 1994, 44 21 871.0

Int. Cl.[6] B01D *69/12;71/06;71/16;71/68*

U.S. Cl. 428—315.9 20 Claims

1. A multi-layer, unsupported, integral microfiltration membrane of polymeric material that is suitable for a phase inversion process, said membrane comprising:

at least one final filtration layer having a thickness of from 50 to 300 μm and a symmetrical pore structure; and

at least one integrated prefiltration layer, wherein the ratio of said thickness of said final filtration layer to a thickness of said prefiltration layer is in the range of from 1:4 to 4:1, said multi-layered membrane having been formed by

pouring out a first layer of a solution of polymeric material onto a substrate and

subsequently successively pouring out one or more further layers of a solution of polymeric material onto said first layer prior the occurrence of turbidity in each successive immediately preceding layer, the viscosity of each successive layer of a solution of polymeric material having been the same as or less than that of the preceding layer.

5,620,791

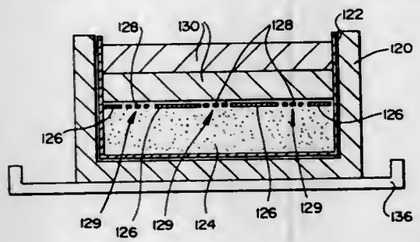
BRAKE ROTORS AND METHODS FOR MAKING THE SAME

Ratnesh K. Dwivedi, Wilmington, and John T. Burke, Hockessin, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 127,655, Sep. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 122,038, Sep. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 866,781, Apr. 3, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,122

Int. Cl.[6] B32B *5/16;* F16D *69/00;13/60*

U.S. Cl. 428—323 20 Claims



1. A brake rotor consisting essentially of a metal matrix composite material having a maximum operating temperature of at least about 482° C. (900° F.), wherein said metal matrix composite material comprises a preform infiltrated with a matrix metal comprising aluminum, said preform comprising at least one filler material bonded with a cured preceramic polymer, wherein said at least one filler material makes up at least about 20% by volume of said metal matrix composite material.

5,620,792

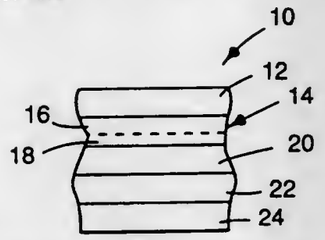
MAGNETO-OPTIC RECORDING MEDIUM HAVING CONSTANT REFLECTANCE OVER A RANGE OF WAVELENGTHS

William A. Challener, IV, Grant Township, Minn., assignor to Imation Corp., St. Paul, Minn.

Continuation of Ser. No. 152,204, Nov. 15, 1993, abandoned. This application May 18, 1995, Ser. No. 443,201

Int. Cl.[6] G11B *5/66;* B32B *5/16;* B05D *5/12*

U.S. Cl. 428—332 22 Claims



1. A magneto-optic recording medium, comprising, in order:

a substrate;

a first dielectric layer, comprised of at least one layer;

a magneto-optic recording layer;

a second dielectric layer; and

a reflective layer;

wherein the first dielectric layer has a first index of refraction n_1 at the interface with the substrate and a second index of refraction n_2 at the interface with the recording layer, wherein n_1-n_2, Δn, is within the range of from about 0.3 to 1.0, and wherein the medium is optically tuned over a range of wavelengths so that the medium has a specular reflectance at normal incidence within the range of about 18% to 30% over a range of wavelengths from 400 nm to 850 nm.

5,620,793

PRINTING PAPER AND METHOD OF IMAGE FORMATION EMPLOYING THE SAME

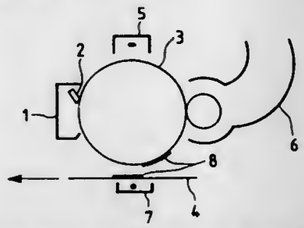
Akio Suzuki, Yokohama; Masayoshi Takahashi, Chofu; Yoshinobu Shimomura, Yokohama; Tatsuo Takeuchi; Yoshihiro Takada, both of Kawasaki; Mamoru Sakaki, Yamato, and Masato Katayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1994, Ser. No. 332,369

Claims priority, application Japan, Nov. 5, 1993, 5-299038; Nov. 5, 1993, 5-299039; Nov. 5, 1993, 5-299040

Int. Cl.[6] B41M *5/00*

U.S. Cl. 428—342 29 Claims



1. A printing paper suitable for use in ink-jet recording systems making use of an ink containing a nitrogen compound, comprising a base paper containing as a filler, a material which absorbs ammonia or ammonium ions released by the nitrogen compound in the ink, and an ink penetration-retarding agent provided on the base paper, wherein the printing paper has a water extract pH of not lower than 6 and a Stöckigt sizing degree of from 16 to 40 seconds, and contains a water-soluble inorganic salt on a surface thereof in an amount ranging from 0.01 to 0.2% by weight.

5,620,794

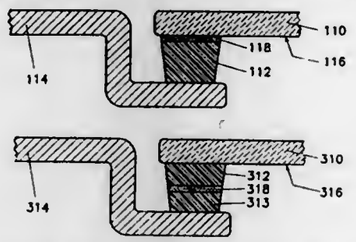
RELEASABLE ADHESIVE JOINT, A METHOD FOR ESTABLISHING A RELEASABLE ADHESIVE JOINT AND AN APPARATUS FOR RELEASING SUCH ADHESIVE JOINTS

Günter Burkart, Rufi; José Mena, Bülach, and Ulrich Tribelhorn, Ebikon, all of Switzerland, assignors to Gurit-Essex AG, Freienbach, Switzerland

Continuation of Ser. No. 907,485, Jul. 1, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,149

Int. Cl.[6] F06B *3/00;* B32B *7/12*

U.S. Cl. 428—343 6 Claims



1. A releasable adhesive joint between a vehicle pane component and a vehicle body frame component comprising:

a) a first adhesive bead directly contacting the vehicle pane component and a second adhesive bead directly contacting the vehicle body frame component,

b) a strip of thermoplastic polymeric material having opposed sides, said strip of thermoplastic polymeric material being between and directly contacting said first and second adhesive beads, said strip of thermoplastic material having an essentially uniform composition throughout and being heatable by radiation or flow of electric current to a temperature below that at which at least one of said beads is damaged and, when heated by said radiation or flow of electric current to said temperature, having reduced adherence to said at least one adhesive bead contacted by said strip of thermoplastic material.

5,620,795

ADHESIVES CONTAINING ELECTRICALLY CONDUCTIVE AGENTS

Christopher A. Haak, Oakdale; Michael A. Kropp, Cottage Grove, both of Minn., and Greggory S. Bennett, Ratinger, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 150,426, Nov. 10, 1993, and a continuation-in-part of Ser. No. 150,425, Nov. 10, 1993, and a continuation-in-part of Ser. No. 410,936, Mar. 27, 1995, Pat. No. 5,549,457, which is a continuation of Ser. No. 150,408, Nov. 10, 1993, abandoned, and a continuation of Ser. No. 343,247, Nov. 22, 1994. This application Jul. 10, 1995, Ser. No. 500,123

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—344 4 Claims

1. A tape comprising:

(a) a layer of a composition consisting essentially of a pressure sensitive adhesive polymer and an electrically conductive agent,

said pressure sensitive adhesive polymer consisting of the reaction product of:

(i) 25–97 parts by weight of an acrylic acid ester of a monohydric alcohol whose homopolymer has a Tg less than 0° C.;

(ii) 3–75 parts by weight of a non-polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter of no greater than 10.50 and a Tg greater than 15° C.; and

(iii) 0–5 parts by weight of a polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter of greater than 10.50 and a Tg greater than 15° C., the relative amounts of said acrylic acid ester, said non-polar ethylenically unsaturated monomer, and said polar ethylenically unsaturated monomer being chosen such that the 90° peel adhesion of said reaction product to a polypropylene surface is at least 2 lbs/0.5 in. after a 72 hour dwell at room temperature as measured according to Test Procedure B-1; and

(b) a tape substrate.

5,620,796

ACRYLIC EMULSION ADHESIVE, METHOD OF PRODUCTION, AND ADHESIVE TAPE OR SHEET, AND SURFACER

Kazuhiro Kawabata, Joyo, and Norio Numata, Sakyo, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1995, Ser. No. 419,532

Claims priority, application Japan, Apr. 13, 1994, 6-074877

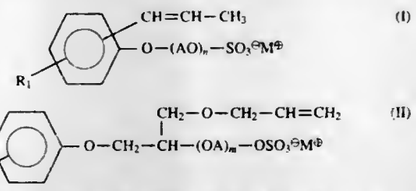
Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—355 AC 12 Claims

1. A method of producing an acrylic emulsion adhesive characterized by emulsion-polymerizing a mixture of

(1) 100 parts by weight of a monomeric mixture of 90 to 98 weight % of (a) a C4–14 alkyl (methy)acrylate and 2 to 10 weight % of (b) acrylic acid, methacrylic acid and a polar monomer selected from the group consisting of N-vinylpyrrolidone and N-vinylcaprolactam,

(2) 0.5 to 1.8 parts by weight of a surfactant mixture of 0.3 to 1.0 parts by weight of an anionic surfactant of formula (I) or (II) and 0.2 to 1.5 parts by weight of a nonionic surfactant,



(wherein R^1 and R^2 each represents an alkyl group of 6 to 18 carbon atoms, an alkenyl group of 6 to 18 carbon atoms or an aralkyl group of 6 to 18 carbon atoms: m and n each represents a whole number of 8 to 40; A represents a substituted or unsubstituted alkylene group of 2 to 4 carbon atoms; $M^{\oplus}$ represents an alkali metal, ammonium or alkanolamine ion) and

(3) 0.03 to 0.5 part by weight of a polymerization initiator.

5,620,797

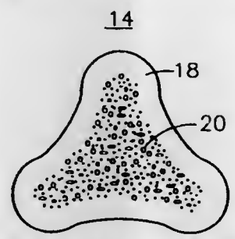
POLYPROPYLENE AND POLYESTER CONJUGATE CARPET FACE YARN

William C. Mallonee, P.O. Box 2318, Dalton, Ga. 30722

Filed Sep. 5, 1995, Ser. No. 523,470

Int. Cl.[6] D02G *3/00;* B32B *3/02;* C08F *8/00*

U.S. Cl. 428—373 12 Claims



1. A carpet face yarn having a denier in the range of from about 1350 to about 1550 per 72 filaments consisting essentially of

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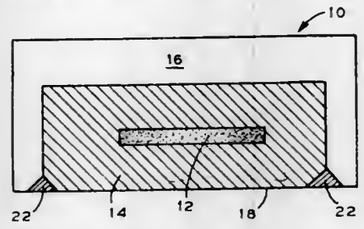
trilobal or delta cross-section filaments said filaments having a substantially continuous polyolefin phase containing a plurality of generally co-linear substantially discontinuous smaller elongate polyester fibrils embedded within the polyolefin phase wherein the polyester fibrils comprise from about 5 to about 40 wt. % and the polyolefin phase comprises from about 60 to about 95 wt. % of the filaments.

5,620,798

ALUMINUM STABILIZED SUPERCONDUCTOR SUPPORTED BY ALUMINUM ALLOY SHEATH

Xianrui Huang, Forest; Gregory A. Lehmann, Evington; Yury Lvovsky, Lynchburg, and Ronald G. Wood, Forest, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 17, 1995, Ser. No. 443,305
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—379 **9 Claims**



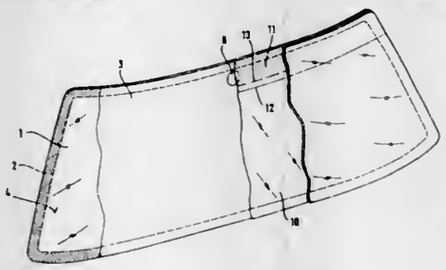
1. A conductor comprising:
(a) a intermetallic superconducting cable;
(b) a high purity aluminum stabilizer surrounding said superconducting cable; and,
(c) sheath for supporting said stabilizer, said sheath being constructed of aluminum alloy and partially surrounding the exterior of said stabilizer, said sheath being constructed and arranged to leave a portion of the exterior of said stabilizer uncovered or open for exposure to a coolant.

5,620,799

ELECTROMAGNETIC RADIATION PERMEABLE GLAZING

Gerd Sauer, Stolberg, Germany, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Sep. 18, 1995, Ser. No. 529,570
Claims priority, application Germany, Sep. 16, 1994, 44 33 051.0
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—426 **8 Claims**



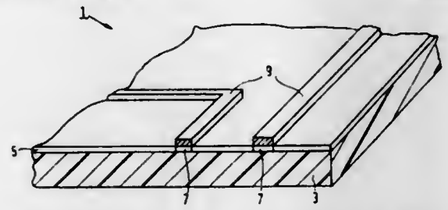
1. A glazing for an enclosed space, comprising:
at least one sheet of glass having a precisely delimited surface region; and
at least one of a transmitter and a receiver for electromagnetic radiation in a non-visible portion of the spectrum, said at least one of a transmitter and a receiver being positioned for respectively transmitting and receiving radiation in a non-visible portion of the spectrum via said precisely delimited surface region.
wherein the transmissivity of said precisely delimited surface region for electromagnetic radiation in said non-visible portion of the spectrum is higher than the transmissivity of a remainder of said at least one sheet of glass for electromagnetic radiation in said non-visible portion of the spectrum.

5,620,800

LAMINATED STRUCTURE OF A METAL LAYER ON A CONDUCTIVE POLYMER LAYER AND METHOD OF MANUFACTURING SUCH A STRUCTURE

Dagobert M. De Leeuw, and Cornelius M. J. Mutsaers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 203,104, Feb. 28, 1994, Pat. No. 5,427,841. This application Mar. 30, 1995, Ser. No. 413,747
Claims priority, application European Pat. Off., Mar. 9, 1993, 93200665; Sep. 7, 1993, 93202602
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—469 **12 Claims**



1. A method of manufacturing a laminated structure having an electrically insulating substrate carrying a polymer layer comprising first electrically conductive portions having a sheet resistance of maximally 1000 Ω/square and a pattern of second relatively substantially non-conductive portions when the sheet resistance of the polymer in the first portions is compared to the sheet resistance of the polymer in the second portions, a metal layer being electrodeposited onto the electrically conductive first portions of said polymer layer,
said method comprising the steps of:
providing a layer of a solution comprising 3,4-ethylene dioxythiophene monomers, an oxidation agent, a base and a solvent on the substrate,
exposing the layer to patterned radiation,
heating said exposed layer thereby forming conductive polymer areas in the unexposed areas and said substantially non-conductive polymer areas in the exposed areas,
and thereafter electrodepositing a metal layer selectively onto the conductive polymer from a metal salt solution.

5,620,801

THERMOSETTING POLYESTER RESIN

Malcolm R. Binns, Austinmer; Jim Viatos, Lugarno, and Jenny A. Maliphant, Mount Warrigal, all of Australia, assignors to BHP Steel (JLA) Pty. Ltd., Melbourne, Australia

PCT No. PCT/AU94/00783, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO95/18171, PCT Pub. Date Jun. 7, 1995
PCT Filed Dec. 21, 1994, Ser. No. 481,509
Claims priority, application Australia, Dec. 24, 1993, PM3161
Int. Cl.[6] B32B *27/36;* **C08F** *20/00*
U.S. Cl. 428—482 **23 Claims**

1. A polyester resin for use in a thermosetting metal-coating composition and providing good gloss retention and resistance to color change after three years exterior exposure, said polyester resin comprising units derived by polymerizing:
(a) an acid component comprising from 90 to 100 mole % of an aromatic acid, aromatic anhydride, or mixture thereof, and from 0 to 10 mole % of a polycarboxylic acid, polycarboxylic anhydride thereof, or mixture thereof;
(b) an alcohol component comprising at least 60 mole % of one or more glycols selected from the group consisting of neopentylglycol hydroxy pivalate, $CH_3—CH_2—C(CH_2OH)_2—R$ wherein R_1 is a C_1–C_4 alkyl, neopentylglycol, and mixtures thereof, with the proviso that neopentylglycol is present in an amount of no more than 20 mole % of the total alcohol component; and
(c) a polyol trifunctional branching agent present in an amount of from 10 to 20 mole % of the total alcohol component.

5,620,802

HEAT-SEALABLE AND PEELABLE FILM FOR POLYSTYRENE CONTAINERS AND PROCESS FOR SEALING BY MEANS OF SAID FILM

Jean-François Arsac, Pau; Catherine Bonabal, Billere, and Betty Laurent, Bernay, all of France, assignors to Elf Atochem S.A., Puteaux, France

Division of Ser. No. 420,809, Apr. 12, 1995, Pat. No. 5,486,571, which is a division of Ser. No. 286,903, Aug. 8, 1994, Pat. No. 5,432,235, which is a continuation of Ser. No. 960,765, Oct. 14, 1992, abandoned. This application Oct. 11, 1995, Ser. No. 540,879
Claims priority, application France, Oct. 18, 1991, 91 12899
Int. Cl.[6] C08L *33/08;23/08*
U.S. Cl. 428—483 **13 Claims**

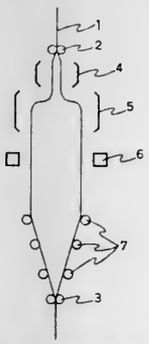
1. A heat-sealable and peelable film for polystyrene containers comprising at least one thin film comprising a mixture of (a) polystyrene, (b) two or more copolymers of ethylene and of acrylic esters of different melting points, one of the polymers having a melting point of between 60° and 80° C. and a melt index under 2.16 kg at 190° C. of from 5 to 10, and one of the polymers having a melting point of between 80° and 100° C. and a melt index under 2.16 kg at 190° C. of from 0.5 to 5, and (c) up to 5% of styrene/butadiene/styrene block copolymer wherein the weight ratio of the second copolymer to the first copolymer is from 0.5 to 2.

5,620,803

HEAT SHRINKABLE POLYPROPYLENE LAMINATE FILM

Toshikatsu Oyama; Shuichi Morita; Fumio Horita; Koji Sueoka, and Hideo Isozaki, all of Kumamoto, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01915, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO96/09931, PCT Pub. Date Apr. 4, 1996
PCT Filed Sep. 22, 1995, Ser. No. 648,011
Claims priority, application Japan, Sep. 29, 1994, 6-258979
Int. Cl.[6] B32B *27/08*
U.S. Cl. 428—516 **2 Claims**



1. A heat shrinkable polypropylene laminate film comprising surface layers and an intermediate layer and stretched at least two times in both the machine and transverse directions, wherein said surface layers comprise an isotactic polypropylene and said intermediate layer consists essentially of 50 to 100% by weight of a syndiotactic polypropylene and 0 to 50% by weight of an isotactic polypropylene, and wherein the thickness of said intermediate layer is at least 30% of the total thickness, the thickness of each of said surface layers is at least 1 μm, and the shrinkage at 100° C. is at least 25% in the machine and transverse directions.

5,620,804

METAL MATRIX COMPOSITE BODIES CONTAINING THREE-DIMENSIONALLY INTERCONNECTED CO-MATRICES

Christopher R. Kennedy, Newark, Del.; Michael K. Aghajanian, Bel Air, Md., and Alan S. Nagelberg, Wilmington, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Division of Ser. No. 897,617, Jun. 10, 1992, abandoned, which is a continuation of Ser. No. 685,781, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 269,369, Nov. 10, 1988, Pat. No. 5,007,475. This application Jun. 7, 1993, Ser. No. 72,673
Int. Cl.[6] C22C *1/09;1/10*
U.S. Cl. 428—609 **21 Claims**



1. A composite body, comprising:
discontinuous aluminum nitride and
a co-matrix embedding said aluminum nitride, said co-matrix comprising
a three-dimensionally interconnected matrix metal and a three-dimensionally interconnected material, said three-dimensionally interconnected material comprising
a three-dimensionally interconnected metal having a lower melting temperature than said matrix metal and disposed thereon a coating for supporting said interconnected metal while at a temperature above the melting temperature of said interconnected metal, said coating having a higher melting temperature than said matrix metal.

5,620,805

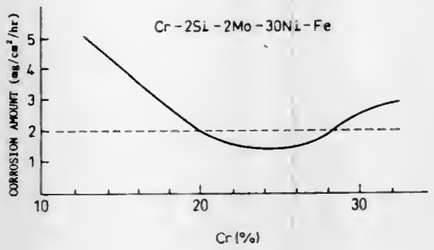
ALLOY AND MULTILAYER STEEL TUBE HAVING CORROSION RESISTANCE IN FUEL COMBUSTION ENVIRONMENT CONTAINING V, NA, S AND CL

Hiroyuki Ogawa; Tetsuo Ishitsuka, and Koichi Nose, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP95/00382, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO95/24512, PCT Pub. Date Sep. 14, 1995
PCT Filed Mar. 8, 1995, Ser. No. 535,120
Claims priority, application Japan, Mar. 8, 1994, 6-036893
Int. Cl.[6] B32B *15/18;* **C22C** *38/44;38/48*
U.S. Cl. 428—683 **2 Claims**

1. An alloy which has a corrosion resistance in an environment where fuel containing V, Na, S and Cl is burnt, comprising, in terms of % by weight, up to 0.05% of C, 1.0 to 2.6% of Si, 0.02 to 0.5% of Mn, 20.0 to 28.0% of Cr, 24.0 to 36.0% of Ni, up to 4% of Mo, up to 0.4% of Nb, up to 0.05% of Al, and the balance Fe and unavoidable impurities, and satisfying the following inequalities:

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Ni≧(Cr+2Si+0.5Mo),

Nb≧8C,

and

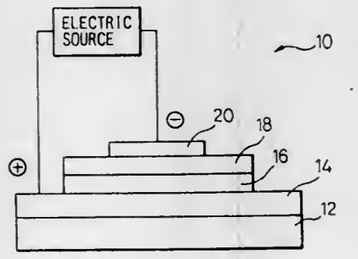
Mo(Cr−18)≧8

5,620,806

ORGANIC MATERIAL FOR EL DEVICE AND EL DEVICE

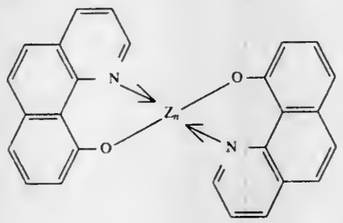
Norikazu Nakamura, and Shinichi Wakabayashi, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Nov. 7, 1994, Ser. No. 337,221
Claims priority, applicatioo Japan, Nov. 10, 1993, 5-280930
Int. Cl.[6] H05B *33/00*
U.S. Cl. 428—690 **5 Claims**



1. An organic material for EL devices comprising 10-hydroxybenzo[h] quinoline zinc complex represented by the following formula (I):

(1)

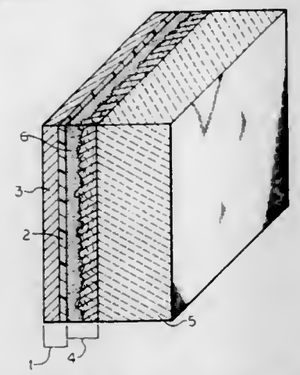


5,620,807

FLOW FIELD ASSEMBLY FOR ELECTROCHEMICAL FUEL CELLS

Robert D. Mussell; Steven P. Webb; Carey L. Scortichini, all of Midland, Mich., and Keith R. Plowman, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 31, 1995, Ser. No. 522,482
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—33 **23 Claims**



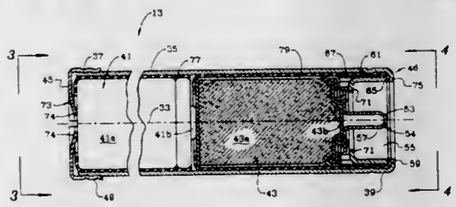
1. An electrochemical fuel cell having a membrane hydrated electrode assembly and a layer of an electrically conductive porous material adjacent thereto which has at least two portions with different mean pore sizes, wherein a first portion of the layer adjacent to the membrane electrode assembly has a porosity no greater than a second portion of the layer adjacent to the opposite side of the layer; the second portion has a porosity of at least about 82 percent; and the second portion has a mean pore size which is at least about 10 microns and at least ten times greater than the mean pore size of the first portion.

5,620,808

BATTERY PACK FOR CORDLESS DEVICE

Dale K. Wheeler, Fallston; Robert G. Moores, Jr., Reisterstown, and Richard T. Walter, Baldwin, all of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 239,437, May 6, 1994, Pat. No. 5,489,484, which is a continuation of Ser. No. 65,736, May 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 42,937, Apr. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,666
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—98 **15 Claims**



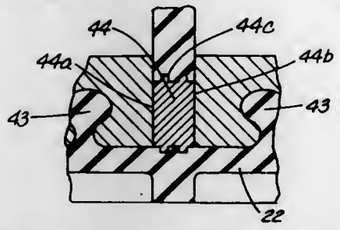
1. A battery pack comprising:
a casing having a longitudinal axis and having opposed rear and forward ends;
a plurality of cells in the casing, each cell having first and second cell terminals; and
first and second pack terminals having opposite polarities, coaxial with the casing axis, located adjacent to the casing forward end and electrically connectable in a cordless device regardless of the angular orientation of the pack about the casing axis.

5,620,809

STORAGE BATTERY AND METHOD OF MANUFACTURE

John K. Shannon, and James M. Shannon, both of Racine, Wis., assignors to Enersafe Corporation, Racine, Wis.

Filed May 8, 1995, Ser. No. 437,287
Int. Cl.[6] H01M *2/24*
U.S. Cl. 429—160 **18 Claims**



7. In a battery having a dielectric case with a first wall, an opposed second wall, surrounding wall structure extending between the edges of the first and second walls and thereby forming an internal cavity, and partitions formed of molded plastic and dividing the internal cavity into first, last and at least one middle cells, each cell containing a cell group of positive and negative plates and electrolyte, the improvement comprising:
the first wall having an inner surface in each cell with positive and negative wells thereon extending to the adjacent partitions in alignment with the negative and positive wells, respectively, of the adjacent cells:
a solid metal intercell connector across each partition and positionally secured with respect to such partition by the molded plastic; and
poured lead in each well, the positive and negative plates secured to the lead of the positive and negative wells, respectively, the poured lead being joined to each intercell connector when such poured lead hardens by cooling, the poured lead electrically connecting one well of a middle cell to the well of opposite polarity of an adjacent cell;
whereby the cells are completely sealed from one another.

5,620,810

SOLID, SOLVENT-CONTAINING ELECTROLYTES AND ELECTROLYTIC CELLS PRODUCED THEREFROM

Milton N. Golovin, San Jose; Dale R. Shackle, Morgan Hill, and Russel D. Moulton, San Jose, all of Calif., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Jul. 22, 1992, Ser. No. 918,509
Int. Cl.[6] H01M *10/36*
U.S. Cl. 429—192 **5 Claims**

1. An electrolytic cell which comprises:
an anode;
a cathode; and
interposed therebetween a solid, solvent-containing electrolyte which comprises:
a solid polymeric matrix;
an inorganic ion salt; and
a solvent comprising about a 10:1 to 1:10 mixture of an aliphatic carbonate and a triglyme represented by the Formula I:

$$RO(R_1O)_3R_2 \qquad I$$

where R and R_2 are independently selected from the group consisting of alkyl of from 1 to 6 carbon atoms, phenyl, alkphenyl of from 7 to 12 carbon atoms, and phenyl substituted with 1 to 3 substituents selected from the group consisting of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, chloro and bromo, and R_1 is $-(CR_3R_4CR_5R_6)-$ where R_3, R_4, R_5 and R_6 are independently selected from the group of hydrogen and alkyl of from 1 to 4 carbon atoms

and further wherein the aliphatic carbonate is and further wherein the aliphatic carbonate is selected from the group consisting of

$$R_{13}[OC(O)]_nOR_{14}$$

and

$$R_{13}[OC(O)OR_{15}]_pOC(O))R_{14}$$

where each R_{13} and R_{14} are independently selected from the group consisting of alkyl of from 1 to 4 carbon atoms; R_{15} is an alkylene group of from 2 to 4 carbon atoms; n is an integer of from 1 to 2, and p is an integer from 1 to 4

$$R_{13}[OC(O)]_nOR_{14}$$

and

$$R_{13}[OC(O)OR_{15}]_pOC(O)OR_{14}$$

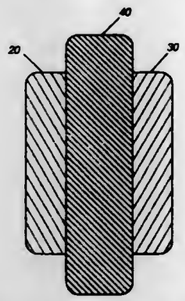
where each R_{13} and R_{14} are independently selected from the group consisting of alkyl of from 1 to 4 carbon atoms; R_{15} is an alkylene group of from 2 to 4 carbon atoms; n is an integer of from 1 to 2, and p is an integer from 1 to 4.

5,620,811

LITHIUM POLYMER ELECTROCHEMICAL CELLS

Jinshan Zhang, Coral Springs; Ganesh Venugopal, Plantation, and Anaba Anani, Lauderhill, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1995, Ser. No. 452,935
Int. Cl.[6] H01M *6/16;6/14;4/62;4/50*
U.S. Cl. 429—192 **27 Claims**



1. A lithium polymer secondary electrochemical cell comprising:
a first composite electrode including an electrode active material and a first polymer, said polymer being poly(tetrafluoroethylene);
a polymer electrolyte including an electrolyte active material and a second polymer different than said first polymer, said second polymer being poly(urethane); and
a second electrode.

5,620,812

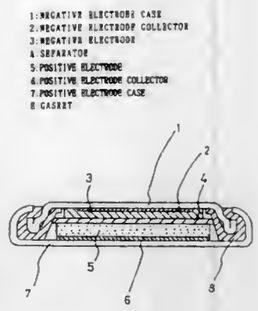
NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY

Kensuke Tahara; Fumiharu Iwasaki; Seiji Yahagi; Akifumi Sakata; Tsugio Sakai; Hideki Ishikawa, and Shinichi Takasugi, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Aug. 3, 1995, Ser. No. 511,068
Claims priority, application Japan, Aug. 4, 1994, 6-183816; Nov. 28, 1994, 6-293524; Jul. 7, 1995, 7-172517
Int. Cl.[6] H01M *4/52*
U.S. Cl. 429—223 **14 Claims**

1. A non-aqueous electrolyte secondary battery comprising: a negative electrode having an active material comprised of lithium

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or a material capable of absorbing and releasing lithium; a lithium ion conductive non-aqueous electrolyte; and a positive electrode having an active material comprised of a composite oxide represented by composition formula $Li_aR_bL_cM_dO_2$ where R is one or more metalloid elements selected from boron B and silicon Si, L is at least one element selected from among metals and metalloids of Groups IIIA and IVA of the periodic table, alkaline earth metals, and metals selected from the group consisting of Ti, Mn, Cu and Zn, M represents transition metal elements comprising at least Ni and Co, R, L and M are different, and a, b, c and d satisfy $0<a\leqq1.15$, $0.85\leqq b+c+d\leqq1.3$, $0<b+c\leqq0.5$, $0<b$ and $0\leqq c$.

5,620,813

POSITIVE NICKEL ELECTRODE FOR ALKALINE STORAGE BATTERY

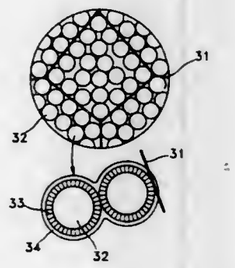
Sang-won Lee; Hwang-chul Bae; Geun-bae Kim; Jong-seo Choi; Kwi-seuk Chol, and Kyu-nam Joo, all of Suwon, Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 22, 1996, Ser. No. 651,540

Claims priority, application Rep. of Korea, Dec. 15, 1995, 95-50664

Int. Cl.[6] H01M *4/32*

U.S. Cl. 429—223 **6 Claims**



1. A positive electrode for an alkaline battery comprising:
a plate;
a nickel porous body disposed on said plate;
active material particles containing nickel hydroxide and additives permeating said nickel porous body;
a conductive layer coating said active material particles; and
a protective layer coating said conductive layer for increasing binding between said active material particles and preventing contact between said active material particles and an aqueous electrolytic solution wherein said protective layer includes at least one substance selected from the group consisting of benzene, n-butylacetate, sec-butylacetate, cyclohexane, cyclopentane, ethyl ether, heptane, hexane, toluene, and xylene.

5,620,814

PROCESS AND ARRANGEMENT FOR PRODUCING DOSE PROFILES FOR THE FABRICATION OF STRUCTURED SURFACES

Ernst-Bernhard Kley, Jena, Germany, assignor to Leica Lithographie Systeme Jena GmbH, Jena, Germany

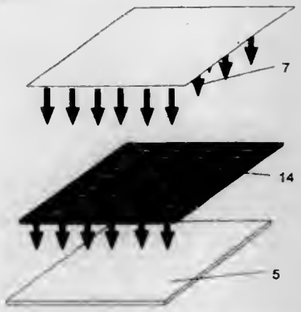
PCT No. PCT/EP94/03306, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/10799, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 6, 1994, Ser. No. 446,607

Claims priority, application Germany, Oct. 15, 1993, 43 33 620.5

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **14 Claims**



1. In an arrangement for producing dose profiles for the fabrication of microlens arrays with a beam used for exposure and directed on a surface of a substrate, the improvement comprising:
shaping means including a diaphragm assembly having a plurality of apertures for shaping the cross-section of a plurality of exposure beams, which shaping means generates a plurality of shaped beam cross-sections which are fixed relative to one another and movable relative to the surface and whose extents in the direction of the relative movement, in combination with the velocity of the relative movement, determines doses for a plurality of respective areas on said substrate, said apertures being arranged one behind the other in the direction of relative movement.

5,620,815

EXPOSURE MASK, EXPOSURE MASK SUBSTRATE, METHOD FOR FABRICATING THE SAME, AND METHOD FOR FORMING PATTERN BASED ON EXPOSURE MASK

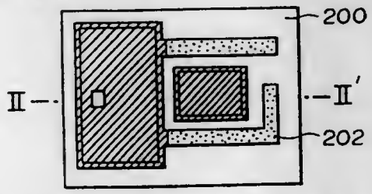
Shinichi Ito, Yokohama; Haruo Okano, Tokyo; Toru Watanabe, and Katsuya Okumura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 49,788, Apr. 21, 1993. This application Jun. 6, 1995, Ser. No. 471,782

Claims priority, application Japan, Apr. 22, 1992, 4-102695; Jul. 17, 1992, 4-191066; Mar. 9, 1993, 5-048301

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **14 Claims**



1. A method for manufacturing an exposure mask having a mask pattern on a light transmissive substrate, the mask pattern comprising:

a semi-transparent pattern zone comprising a semi-transparent film having at least one layer with an optical path length relative to a wavelength of exposure light different than an optical path length relative to the wavelength of exposure light, of a transparent part of the light transmissive substrate; and
a light shielding pattern zone comprising a light shielding film having a pattern identical to the semi-transparent film and being stacked on a partial zone of the semi-transparent film so that edges of the semi-transparent film and edges of the light shielding film are aligned,
the method comprising the steps of:
forming the semi-transparent film having a plurality of thin film layers by a sputtering method using an identical material as a target to form the thin film layers of different material compositions and to generate an optical path length of the semi-transparent pattern zone relative to the wavelength of exposure light, differentiated by a predetermined amount from that of the transparent part of the light transmissive substrate, each of the thin film layers containing one or more elements of the target as a common element, while controlling a refractive index n, an attentuation coefficient k, and a thickness d to yield a predetermined phase difference and an amplitude transmissivity T by modulating stoichiometry and thickness;
forming the light shielding film on the semi-transparent film; and
selectively removing the light shielding film and the semi-transparent film to form the semi-transparent pattern zone and the light shielding pattern zone.

5,620,816

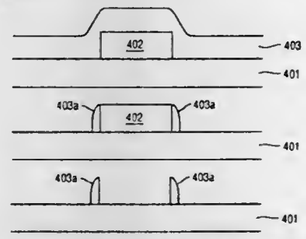
LAYOUT METHODOLOGY, MASK SET, AND PATTERNING METHOD FOR PHASE-SHIFTING LITHOGRAPHY

Giang T. Dao, Fremont, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 413,405, Mar. 30, 1995. This application Oct. 13, 1995, Ser. No. 543,062

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **6 Claims**



1. A set of masks for patterning a photosensitive layer comprising:
a first mask having a pattern of first regions and second regions, said first regions and said second regions transmitting at least a portion of radiation incident thereon, said first regions phase-shifting radiation transmitted therethrough with respect to radiation transmitted through said second regions, said pattern arranged to produce a plurality of substantially unexposed lines in said photosensitive layer;
a second mask comprising a plurality of device features, each of said plurality of device features overlying at least a portion of one of said lines;
wherein said first mask and said second mask are produced from a device layer layout produced by a method comprising the steps of:
defining said plurality of lines;
defining said plurality of device features, wherein at least some of said features comprise segments extending in a first and a second direction; and,
placing each of said plurality of device features in a known relationship with respect to one of said lines.

5,620,817

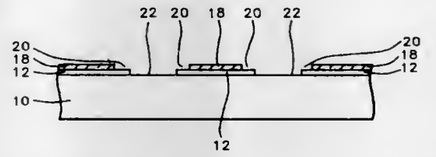
FABRICATION OF SELF-ALIGNED ATTENUATED RIM PHASE SHIFT MASK

Jung-Hsien Hsu; Chung-Kuang Lee, and Chia S. Tsai, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd, Hsin-Chu, Taiwan

Filed Nov. 16, 1995, Ser. No. 558,492

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **18 Claims**



1. A method of forming a rim phase shifting photomask mask, comprising the steps of:
providing a transparent mask substrate having a first surface and a second surface;
forming a patterned layer of attenuating phase shifting material on said first surface of said transparent mask substrate;
forming a layer of negative photoresist on said first surface of said transparent mask substrate covering said patterned layer of attenuating phase shifting material;
illuminating said second surface of said transparent mask substrate with light from a floodlight source having an intensity wherein that part of said layer of negative photoresist illuminated by light which does not pass through said patterned layer of attenuating phase shifting material is exposed and the remainder of said layer of negative photoresist is not exposed, whereby the boundary between said exposed and said not exposed regions of said negative photoresist is not perpendicular to said first surface of said transparent substrate but increasingly extends over said attenuating phase shifting material as said distance above said first surface of said transparent substrate
developing said layer of negative photoresist thereby forming photoresist pedestals by leaving only those parts of said layer of negative photoresist exposed by said light;
vertically anisotropically depositing a layer of opaque material on said photoresist pedestals and those parts of said patterned layer of attenuating phase shifting material not shielded by said photoresist pedestal thereby forming a rim of said patterned layer of attenuating phase shifting material which is not covered by said layer of opaque material; and
removing said photoresist pedestals and said layer of opaque material formed on said photoresist pedestals thereby forming said rim phase shifting photomask.

5,620,818

PHOTOLITHOGRAPHIC DOSE DETERMINATION BY DIFFRACTION OF LATENT IMAGE GRATING

Chi-Min Yuan, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 399,103, Feb. 27, 1995, which is a division of Ser. No. 241,546, May 12, 1994, Pat. No. 5,476,738. This application Feb. 13, 1996, Ser. No. 600,472

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **17 Claims**

1. A mask for use in semiconductor photolithography wherein the mask consists of transparent and semitransparent regions, said semitransparent regions allowing light transmission in the range of

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greater than 0% up to 70% when compared to said transparent regions, wherein said semitransparent regions are comprised of multiple opaque lines.

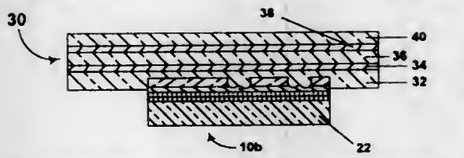
12. A mask for use in semiconductor photolithography wherein the mask is a single layer on a substrate, and the mask consists of transparent and semitransparent regions, said semitransparent regions allowing light transmission in the range of greater than 0% up to 70% when compared to said transparent regions.

5,620,819

PROTECTED IMAGE, AND PROCESS FOR THE PRODUCTION THEREOF

Robert M. Conforti, Woburn; Sun-Wook Kim, Cambridge, and Being-Kung Yao, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 118,882, Sep. 9, 1993, Pat. No. 5,547,534.
This application Feb. 21, 1995, Ser. No. 390,983
Int. Cl.[6] G03C *3/00*; G03F *1/12*
U.S. Cl. 430—14 **13 Claims**



1. A protected binary image, the image comprising a plurality of first areas at which a porous or particulate image-forming substance is adhered to a substrate and a plurality of second areas at which the substrate is free from the image-forming substance, a barrier layer covering the image and a durable layer also covering the image and disposed on the face of the barrier layer remote from the image, the barrier and durable layers being substantially transparent and being adhered to both the first and second areas of the image, and the barrier layer comprising polymerized vinylidene chloride units.

2. A protected binary image, the image comprising a plurality of first areas at which a porous or particulate image-forming substance is adhered to a substrate and a plurality of second areas at which the substrate is free from the image-forming substance, a barrier layer covering the image and a durable layer also covering the image and disposed on the face of the barrier layer remote from the image, the barrier and durable layers being substantially transparent and being adhered to both the first and second areas of the image, and the barrier layer comprising a polyurethane.

5,620,820

FOUR COLOR TONER SET

Jacques C. Bertrand, Ontario; Roger N. Ciccarelli, Rochester; Thomas R. Pickering, Webster, and Denise R. Bayley, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1995, Ser. No. 542,371
Int. Cl.[6] G03G *9/09*
U.S. Cl. 430—42 **29 Claims**

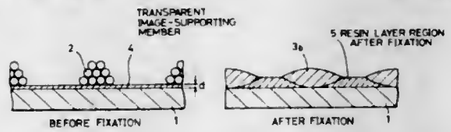
1. A combination of four color toners comprised of a cyan toner, a magenta toner, a yellow toner, and a black toner, each of said toners being comprised of resin and pigment, and wherein the pigment for the cyan toner is β type copper phthalocyanine, the pigment for the magenta toner is a xanthene silicomolybdic acid salt of Rhodamine 6G dye, the pigment for the yellow toner is an isoindoline, and the pigment for the black toner is carbon black, and wherein each of said magenta, yellow and cyan pigment is of a particle diameter size of from about 0.01 micron to about 0.3 micron, and said black pigment is of a particle diameter size of from about 0.001 micron to about 0.1 micron, and wherein each of said cyan, magenta and yellow pigment is dispersed in said toner resin by flushing said cyan, magenta and yellow pigment into said toner resin and wherein prior to flushing a cyan, magenta and yellow pigment water wet cake is mixed with said toner resin and the water is substantially removed to generate pigmented resin.

5,620,821

METHOD OF FORMING TRANSPARENT COLOR IMAGE

Motohiro Ogura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1996, Ser. No. 638,232
Claims priority, application Japan, May 1, 1995, 7-107459
Int. Cl.[6] G03G *13/01*; *13/20*
U.S. Cl. 430—42 **14 Claims**



1. A method of forming a transparent color image by electrophotography using a transparent image supporting member, a surface of which is provided with a resin layer miscible with toner, wherein the softening point of said resin layer is arranged within a range of the softening point of said toner ±10° C. and the thickness d of said resin layer satisfies the following formulae:

$$D-(\text{average particle size of toner})/4\ \mu m \leqq d \leqq D+(\text{average particle size of toner})/4\ \mu m;$$

and

$$D=2\times(1-\pi/4)\times(\text{average particle size of toner});$$

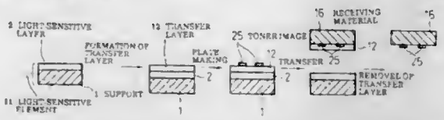
wherein D represents the optimum thickness of said resin layer.

5,620,822

METHOD FOR PREPARATION OF PRINTING PLATE BY ELECTROPHOTOGRAPHIC PROCESS

Eiichi Kato; Yusuke Nakazawa, and Sadao Osawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1994, Ser. No. 262,029
Claims priority, application Japan, Jun. 17, 1993, 5-169846; Aug. 26, 1993, 5-232181
Int. Cl.[6] G03G *13/22*
U.S. Cl. 430—49 **17 Claims**



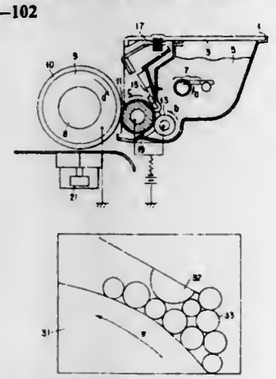
1. A method for preparation of a printing plate by an electrophotographic process comprising the steps of forming a peelable transfer layer comprising a resin (A) capable of being removed upon a chemical reaction treatment on a surface of an electrophotographic light-sensitive element, forming a toner image on the transfer layer by an electrophotographic process, heat-transferring the toner image together with the transfer layer onto a receiving material a surface of which is capable of providing a hydrophilic surface suitable for lithographic printing at the time of printing, and removing the transfer layer on the receiving material upon the chemical reaction treatment, wherein prior to or simultaneously with the formation of said peelable transfer layer a compound (S) which contains a fluorine atom and/or a silicon atom is applied to the surface of electrophotographic light-sensitive element to improve releasability of the surface of electrophotographic light-sensitive element.

5,620,823

DEVELOPING AGENT FOR ELECTROPHOTOGRAPHY AND DEVELOPING METHOD

Akira Kambayashi, Tokyo; Yukio Koizumi, and Shigeyuki Kuroiwa, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 1, 1995, Ser. No. 551,728
Claims priority, application Japan, Nov. 30, 1994, 6-296602
Int. Cl.[6] G03G *13/08*; *9/097*
U.S. Cl. 430—102 **18 Claims**



1. A developing method which comprises

feeding a one-component developing agent comprising toner particles containing a resin binder, a colorant, and silica particles, onto a developing means provided so as to face a photoreceptor on which an electrostatic latent image is formed,

frictionally charging said developing agent by a developing agent layer-regulating member provided so as to contact with said developing agent fed on said developing means in the feeding step, thereby forming a charged developing agent layer on said developing means, and

developing said latent image by supplying the latent image with the charged developing agent layer formed in said charging step,

wherein said toner particles include first particles which have diameters of 5 μm or less and which account for less than 10% by number of all particles, and second particles which have diameters of 20 μm or more and which account for less than 0.5% by weight, and wherein a weight average standard deviation of the diameters of the toner particles is 2.5 μm or less,

and wherein said silica particles comprise first silica particles having an average primary particle diameter ranging from 6 nm to less than 18 nm and second silica particles larger than the average primary particle diameter of the first silica particle, having an average primary particle diameter ranging from 18 nm to less than 46 nm, and

wherein the total amount of the first silica particles and the second silica particles is 0.4 part by weight to 1.5 parts by weight per 100 parts by weight of said toner particles.

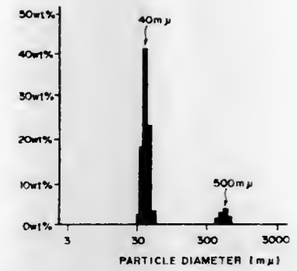
5,620,824

TONER, DEVELOPER AND IMAGE FORMING METHOD

Kenji Okado, Yokohama; Akihiko Nakazawa, Kanagawa-ken; Ryoichi Fujita, Kawasaki, and Makoto Kanbayashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 728,264, Jul. 11, 1991, abandoned.
This application Jul. 7, 1994, Ser. No. 272,507
Claims priority, application Japan, Jul. 12, 1990, 2-182670; Jul. 25, 1990, 2-194978; Jul. 30, 1990, 2-199253; Jul. 30, 1990, 2-199254; Aug. 1, 1990, 2-202449; Aug. 8, 1990, 2-208122; Aug. 27, 1990, 2-222567; Aug. 30, 1990, 2-226693; Jun. 18, 1991, 3-145992
Int. Cl.[6] G03G *9/08*
U.S. Cl. 430—106.6 **71 Claims**

1. A toner for developing an electrostatic image comprising:



colored resin particles (A) containing a coloring agent or a magnetic powder, and a powdery additive;

wherein said powdery additive comprises organic resin particles-(B) having peaks, respectively, in a region of particle diameters of 20 mμ to 200 mμ and a region of particle diameters of 300 mμ to 800 mμ in their particle size distribution, and at least one component (C) in amounts from 0.3 to 2% by weight selected from the group consisting of fine titanium oxide powder, fine alumina powder and a hydrophobic fine silica powder, wherein

the smaller diameter organic resin particles of particle diameters of 20 mμ to 200 mμ are contained in an amount of from 80% by weight to 93% by weight in said organic resin particles; and

the larger diameter organic resin particles of particle diameters of 300 mμ to 800 mμ are contained in an amount of from 2% by weight to 20% by weight in said organic resin particles.

5,620,825

POLYSILOXANE MODIFIED RESINS FOR TONER

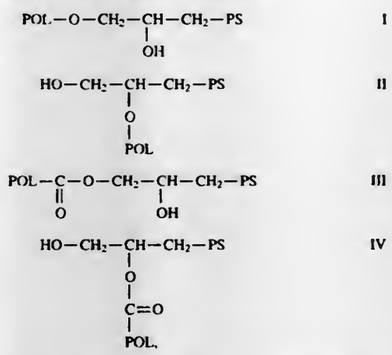
Serge Tavernier, Lint; August Marien, Westerlo, and Werner Op de Beeck, Keerbergen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 18, 1996, Ser. No. 617,327
Claims priority, application European Pat. Off., Mar. 23, 1995, 95200723
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—109 **13 Claims**

1. Dry toner particles comprising a toner resin and optionally a pigment, wherein

i) said toner resin comprises more than 3% by weight, with respect to the total resin content, a polysiloxane modified resin comprising polysiloxane moieties (PS) and other polymeric moieties (POL),

ii) said polysiloxane modified resin comprises recurring units corresponding to one of general formulas I to IV:



and

iii) said other polymeric moieties (POL) are derived from polymers comprising oxygen containing groups.

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POLYMER SUSPENSION METHOD FOR PRODUCING TONER PARTICLES

Serge Tavernier, Lint; Frank Ruttens, Overijse; Bart Van Hove, Niel; Gustaaf Piron, 's Gravenwezel, and Theophiel Stuer, Melsele, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 12, 1995, Ser. No. 570,960

Claims priority, application European Pat. Off., Jan. 30, 1995, 95200216

Int. Cl.[6] G03G *9/087; 9/093*

U.S. Cl. 430—137 **36 Claims**

1. A method for producing dry toner particles comprising the steps of:

(i) dissolving at least one organic polymer (toner resin) in a solvent therefor to form a solution, said solvent being immiscible with water,

(ii) dispersing said solution in an aqueous phase to form a dispersion of small droplets,

(iii) removing the solvent by evaporation from the dispersed droplets and

(iv) separating solid polymeric particles from the water of the aqueous phase, characterized in that:

I. the dispersion of said small droplets is stabilized, in the absence of silica, by the presence in the said aqueous phase of a dissolved water-soluble (co)polymer, comprising hydrophobic and hydrophilic moieties and that

II. after evaporation of said solvent said water-soluble (co)polymer is washed away.

5,620,827

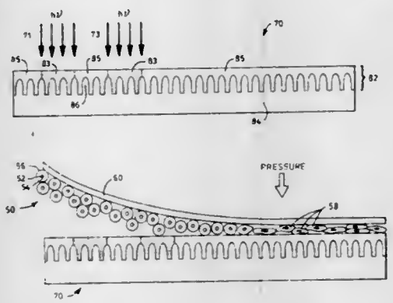
ON-PRESS DEVELOPABLE LITHOGRAPHIC PRINTING PLATE PRECURSOR

Chieh-Min Cheng, Arlington; Anthony C. Giudice, Wakefield; John M. Hardin, Jamaica Plain; Rong-Chang Liang, Lexington, and Leonard C. Wan, Chestnut Hill, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 146,710, Nov. 1, 1993, Pat. No. 5,516,620. This application Jun. 6, 1995, Ser. No. 469,475

Int. Cl.[6] G03C *1/72*

U.S. Cl. 430—138 **8 Claims**



1. A lithographic printing plate precursor comprising

a substrate having either a negative affinity or positive affinity to printing ink;

a polymeric photoresist deposited over said substrate having an affinity to said ink substantially converse to the affinity of the substrate to said printing ink; the polymeric photoresist capable of imagewise photodegradation or photohardening upon imagewise exposure to actinic radiation; and

a plurality of microcapsules, each microcapsule comprising an external shell phase and a non-photopolymerizable internal encapsulant phase, the internal encapsulant phase comprising a developer component capable of promoting the imagewise removal of either exposed or unexposed areas of the polymeric photoresist when the internal encapsulant phase is blanketwise released by the blanketwise rupturing of the microcapsules.

5,620,828

POSITIVE PHOTORESIST COMPOSITION CONTAINING QUINONEDIAZIDE ESTERIFICATION PRODUCT, NOVOLAK RESIN AND POCYHYDROXY ALKALI DISSOLUTION ACCELERATOR

Shiro Tan, and Yasumasa Kawabe, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1995, Ser. No. 579,410

Claims priority, application Japan, Dec. 28, 1994, 6-328119

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—191 **3 Claims**

1. A positive photoresist composition comprising an alkali-soluble novolak resin (A), a 1,2-quinonediazide compound (B), and an alkali dissolution accelerator (C), wherein

said alkali-soluble novolak resin (A) is a novolak resin which is obtained by condensing the following monomers (1) to (3):

(1) from 40 to 90 mol % of m-cresol,

(2) from 2 to 4 mol % of p-cresol, and

(3) from 10 to 60 mol % of at least one xylenol selected from 2,3-xylenol, 3,4-xylenol and 3,5-xylenol

with an aldehyde, and which has a weight average molecular weight of from 3,000 to 20,000, a degree of dispersion (Mw/Mn) of from 1.5 to 4.0, and an alkali dissolution speed in a 2.38% aqueous solution of tetramethylammonium hydroxide at 23° C. of from 3 to 100 Å/sec,

the 1,2-quinonediazide compound (B) is an esterified product of a polyhydroxy compound having from 3 to 7 phenolic hydroxyl groups in the molecule and 1,2-naphthoquinonediazido- 5-sulfonyl chloride and/or 1,2-naphthoquinonediazido- 4-sulfonyl chloride,

the alkali dissolution accelerator (C) is a polyhydroxy compound having a molecular weight of 1,000 or less and having from 2 to 7 phenolic hydroxyl groups in the molecule, and

the 1,2-quinonediazide compound (B) is present in an amount of from 35 to 100 parts by weight, and the alkali dissolution accelerator (C) is present in an amount of from 10 to 60 parts by weight, respectively, per 100 parts by weight of said alkali-soluble novolak resin (A).

5,620,829

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Lode Deprez, Wachtebeke, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 252,118, May 31, 1994, abandoned. This application Jun. 27, 1995, Ser. No. 495,075

Claims priority, application European Pat. Off., Jun. 15, 1993, 93201713

Int. Cl.[6] G03C *8/06; 8/32;* **G03F** *7/07*

U.S. Cl. 430—204 **7 Claims**

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the steps of image-wise exposing an imaging element comprising on a support a photosensitive layer comprising silver halide emulsion(s) wherein less than 1 mole % of the silver halide is silver bromide and an image receiving layer containing physical development nuclei and developing said imaging element using an alkaline processing liquid with a pH lower than 11.5 in the presence of developing agent(s), a meso-ionic compound and an alkanolamine.

5,620,830

ELEMENT WITH GELATIN ANTI-STRESS LAYER FOR MAKING PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; Eric Hoes, Lille; René De Keyzer, Waasmunster, and Bart Van der Linden, Boutersem, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 9, 1996, Ser. No. 628,900

Claims priority, application European Pat. Off., Apr. 21, 1995, 95201016

Int. Cl.[6] G03C *8/52; 1/76;* **G03F** *7/07*

U.S. Cl. 430—204 **9 Claims**

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer and (iii) an antistress composition in water permeable relationship with said image receiving layer, said antistress composition comprising unhardened gelatin in an amount ranging from 0.60 to 1.75 g/m^2, characterized in that at least 50% by weight of said unhardened gelatin belongs to one or more gelatin species whereof a 10% by weight aqueous solution at 36° C. and pH 6 has a viscosity lower than 35 mPa.s at a shearing rate of 1000 s^{-1}.

5,620,831

CYANOGUANIDINE DERIVATIVES, AND THERMOSETTING OR PHOTOCURABLE, THERMOSETTING RESIN COMPOSITION USING THE SAME

Osamu Kawana, Sakado, Japan, assignor to Taiyo Ink Manufacturing Co., Ltd., Japan

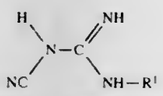
Filed Mar. 28, 1995, Ser. No. 412,115

Claims priority, application Japan, Apr. 5, 1994, 6-089191; Apr. 5, 1994, 6-089192; Sep. 9, 1994, 6-240833

Int. Cl.[6] C08L *63/02;* **C07C** *279/28;* **G03F** *7/004*

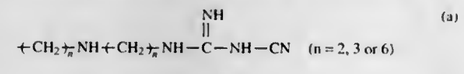
U.S. Cl. 430—280.1 **30 Claims**

1. A cyanoguanidine derivative represented by the following general formula (1):

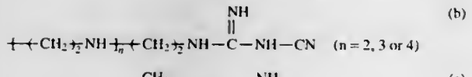


(1)

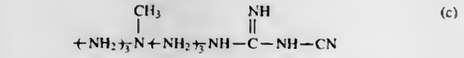
wherein R^1 represents a substituent selected from the group consisting of the following substituents: (a) through (i)



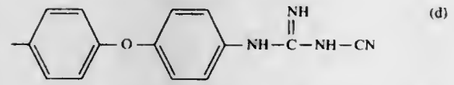
(a)



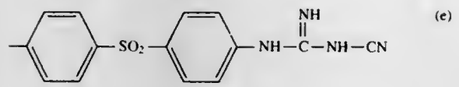
(b)



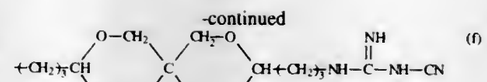
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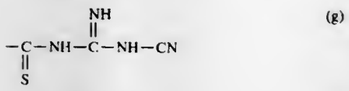
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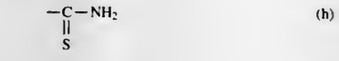
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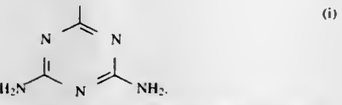
(f)



(g)

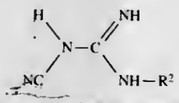


(h)



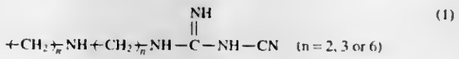
(i)

4. An epoxy resin curing agent represented by the following formula (1a):

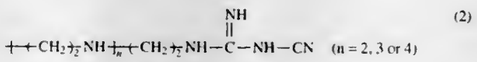


(1a)

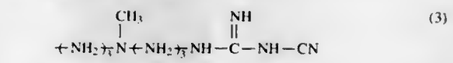
wherein R^2 represents a substituent selected from the group consisting of the following substituents:



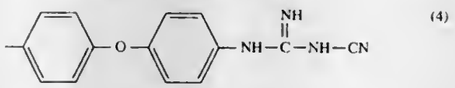
(1)



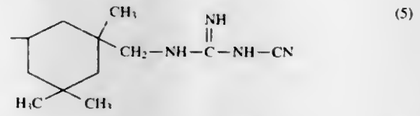
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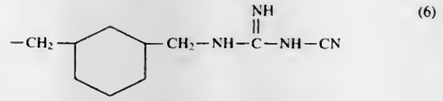
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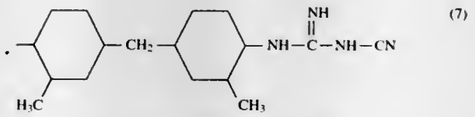
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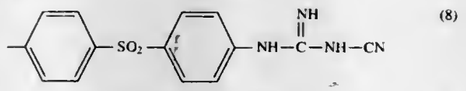
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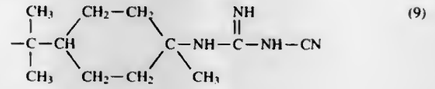
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(7)



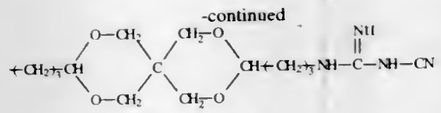
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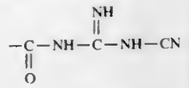
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VOL 1197 ISS 3 AP 15 1997 UMI

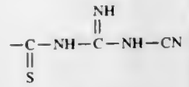
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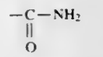
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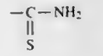
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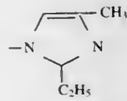
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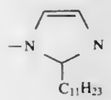
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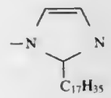
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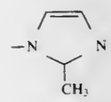
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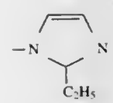
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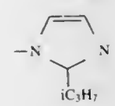
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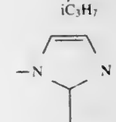
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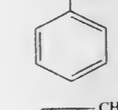
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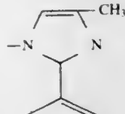
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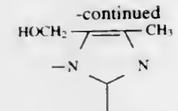
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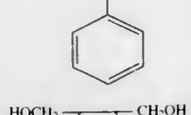
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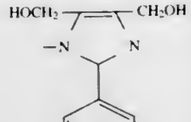
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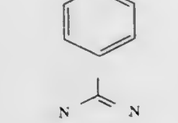
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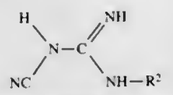
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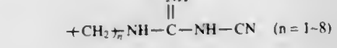


5. A thermosetting resin composition, comprising (a) an epoxy resin and (b) an epoxy resin curing agent represented by the following formula (1a):



(1a)

wherein R^2 represents a substituent selected from the group consisting of the following substituents:



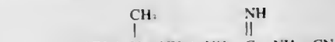
(1)



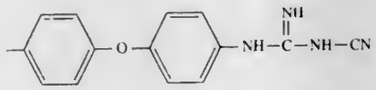
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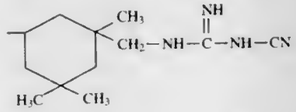
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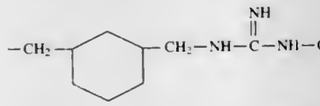
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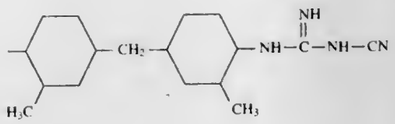
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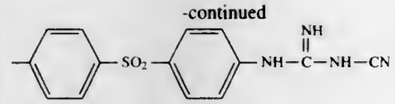


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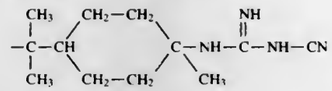


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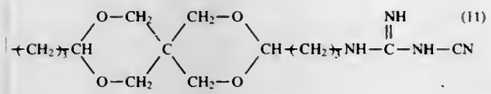
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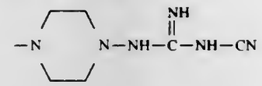
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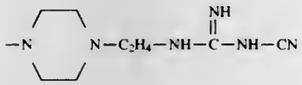
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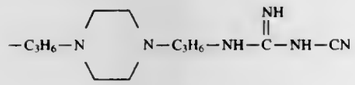
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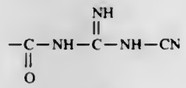
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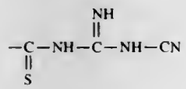
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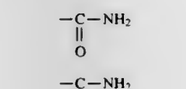
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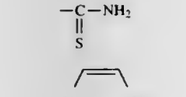
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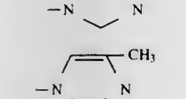
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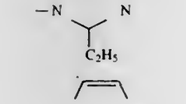
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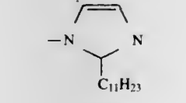
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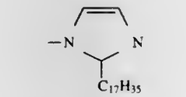
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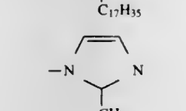
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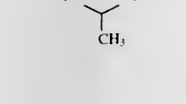
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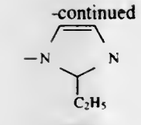
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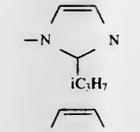
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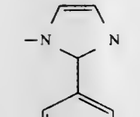
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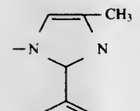
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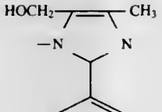
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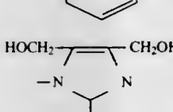
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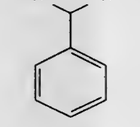
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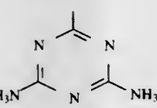
(28)



(29)



(30)



15. A photocurable and thermosetting resin composition, comprising:

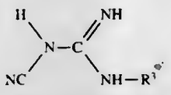
(A) a resin curable by active energy radiation, which has at least two ethylenically unsaturated bonds in combination with a carboxyl group in the molecular unit thereof,

(B) a photopolymerization initiator,

(C) a diluent,

(D) an epoxy resin, and

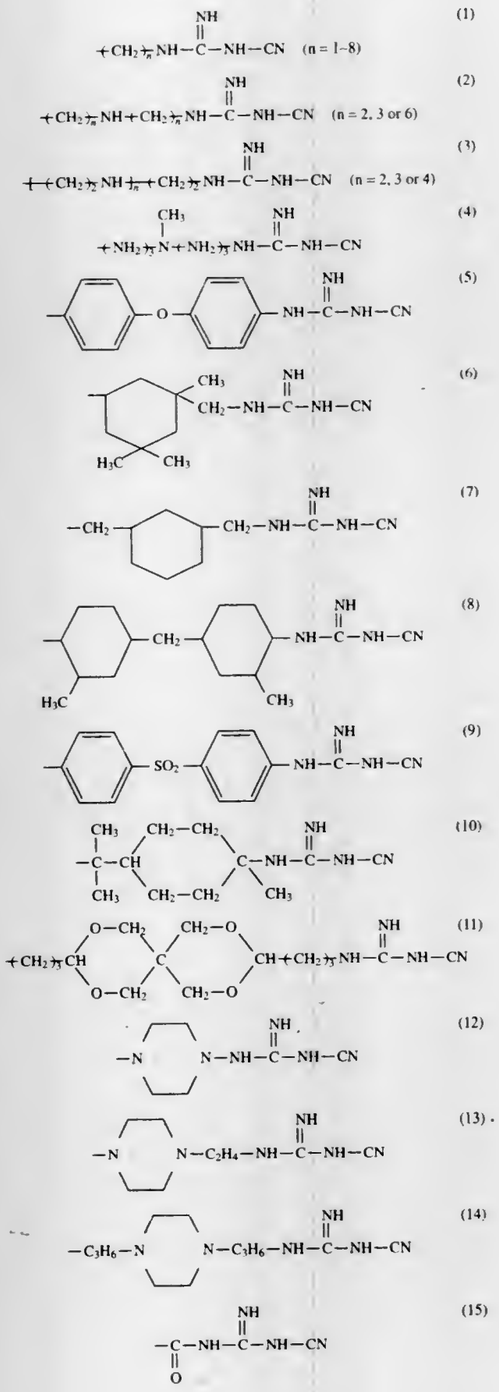
(E) an epoxy resin curing agent, the epoxy resin curing agent (E) being a cyanoguanidine derivative represented by the following formula (1b):



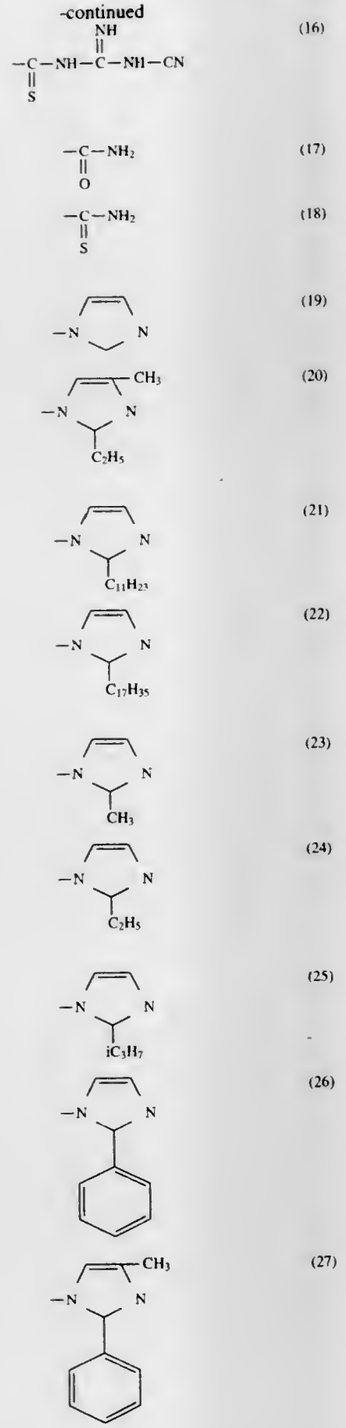
(1b)

wherein R^3 represents a substituent selected from the group consisting of the following substituents:

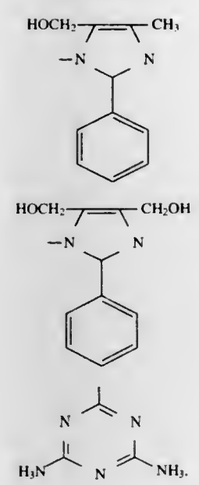
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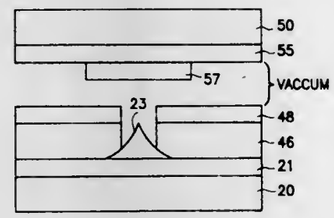


5,620,832

FIELD EMISSION DISPLAY AND METHOD FOR FABRICATING THE SAME

Kang H. Sung, and Chang W. Huh, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Apr. 14, 1995, Ser. No. 421,881
Int. Cl.[6] G03C 5/00
U.S. Cl. 430—311 12 Claims



1. A field emission display, comprising:

a first substrate;

a transparent electrode formed on the first substrate;

a fluorescent layer formed on a predetermined area of the transparent electrode;

an insulating layer formed around the fluorescent layer on the other areas of the transparent electrode;

a gate electrode formed on the insulating layer;

a second substrate;

a conductive cathode layer formed on the second substrate; and

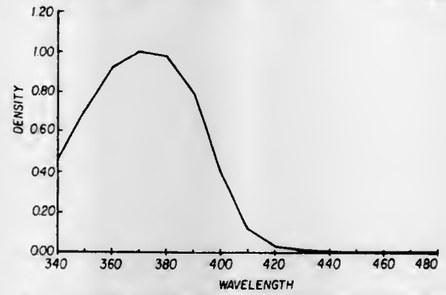
a tip for emitting electrons formed on the conductive cathode layer, said tip being aligned with said fluorescent layer in such a way that the tip and the fluorescent layer stand opposed to each other, said electrons being emitted from said tip to said fluorescent layer under control of said gate electrode.

5,620,833

CURVE SHAPE CONTROL IN A PHOTOGRAPHIC IMBIBITION DYE TRANSFER PROCESS

Mitchell J. Bogdanowicz, Spencerport; Charles P. Hagmaier, Rochester, and Roger W. Nelson, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,454
Int. Cl.[6] G03C 1/815;5/26
U.S. Cl. 430—394 14 Claims



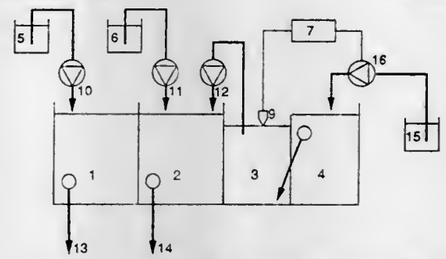
1. In a process for exposing a dye imbibition printing matrix film comprising imagewise exposing a matrix film comprising a visible light sensitive silver halide emulsion containing colloid layer on a support to blue, green or red light., the improvement wherein the visible light sensitive emulsion is also sensitive to UV light and the toe contrast of the imaged matrix film is controlled by (i) incorporating a UV absorber in the colloid layer of the matrix film, and (ii) flash exposing the matrix film with UV light in the substantial absence of light having a wavelength above 410 nm, wherein the UV absorber provides sufficiently low absorption above 410 nm such that it does not substantially alter the effective photographic speed of the matrix film during the imagewise exposure or the mid scale contrast of the imaged matrix film, and sufficiently high absorption to the UV light to decrease the resulting toe contrast of the imaged matrix film.

5,620,834

METHOD OF PROCESSING PHOTOGRAPHIC SILVER HALIDE MATERIALS

Jeffrey K. Green, Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1996, Ser. No. 612,615
Claims priority, application United Kingdom, May 4, 1995, 9509111
Int. Cl.[6] G03C 5/31
U.S. Cl. 430—398 8 Claims



1. A method of controlling the replenishment of fixer solutions in a black-and-white photographic silver halide material processing machine without any silver recovery means and requiring no water supply or drain, and which transports the material to be processed though a number of processing tanks including a developer tank, one or more fixer tanks and one or more wash or stabilizer tanks wherein the rate of replenishment of the fixer tank is a function of the level of one or more chemicals in the last tank though which the material is transported, said chemical(s) being those which

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affect the stability of the processed photographic material or those whose concentrations are related thereto.

5,620,835

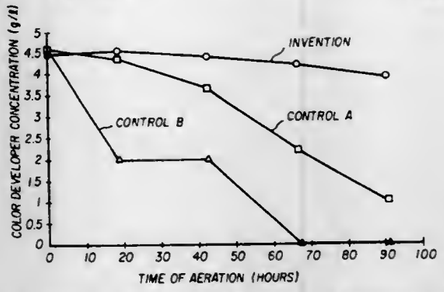
METHOD FOR PREPARING PHOTOGRAPHIC COLOR DEVELOPER AND REACTION MIXTURE USEFUL IN SAME

Carl A. Marrese, Penfield, and Paul A. Zielinski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 362,282, Dec. 22, 1994, Pat. No. 5,508,155. This applicatioo Dec. 11, 1995, Ser. No. 570,258

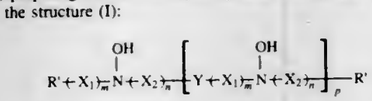
Int. Cl.[6] G03C *7/407*

U.S. Cl. 430—490 **7 Claims**



1. A method for preparing a photographic color developer composition comprising:

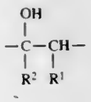
A) preparing a substituted hydroxylamine antioxidant which has the structure (I):



wherein

R' is an alkyl group of 1 to 10 carbon atoms, a hydroxyalkyl group of 1 to 10 carbon atoms, a cycloalkyl group of 5 to 10 carbon atoms, or an aryl group having 6 to 10 carbon atoms in the aromatic nucleus,

X_1 has the structure (II):



and

X_2 has the structure (III):



wherein R^1 and R^2 are independently hydrogen, an alkyl group of 1 to 2 carbon atoms, or a hydroxyalkyl group of 1 to 2 carbon atoms, or R^1 and R^2 together represent the carbon atoms necessary to complete a 5- to 8-membered saturated or partially saturated carbocyclic ring structure,

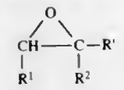
Y is an alkylene group of at least 4 carbon atoms and has an even number of carbon atoms, or Y is a divalent aliphatic group having an even total number of carbon and oxygen atoms in the chain, provided that said divalent aliphatic group has at least 4 atoms in the chain,

m and n are 1, and p is 0 or 1,

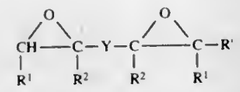
the antioxidant being prepared as a reaction product formed in a reaction mixture from the reaction of:

1) hydroxylamine or a mono-substituted hydroxylamine, and

2) an epoxide having either the structure (IV):



or (V):



wherein R', R^1, R^2 and Y are defined above, and

B) without separating said antioxidant from said reaction mixture, mixing said antioxidant with a photographic color developer.

5,620,836

ASSORTMENT OF SILVER HALIDE PHOTOGRAPHIC INDUSTRIAL X-RAY FILMS AND METHOD OF PROCESSING SAID ASSORTMENT

Luc Heremans, Leuven, and Raymond Florens, Edegem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Aug. 21, 1995, Ser. No. 517,466

Claims priority, application European Pat. Off., Aug. 22, 1994, 94202398

Int. Cl.[6] G03C *5/16*

U.S. Cl. 430—496 **11 Claims**

1. An assortment of at least five silver halide industrial X-ray photographic materials, to be processed in a processing cycle of an automatic processing machine following the steps of developing, rinsing, fixing, rinsing and drying, wherein each of said materials comprises at least one gelatino silver halide emulsion layer and at least one non-sensitive protective antistress coating on at least one side of a support, characterised in that for each of said materials the total amount of silver halide, expressed as the equivalent amount of silver nitrate, per square meter and per side is lying in the range from 7.5 to 15 grams, the total amount of gelatin coated in all of the hydrophilic layers present is such and the gelatin is hardened to such an extent that the amount of water absorption is substantially the same for each material and is not more than 2 grams per gram of gelatin after rinsing and before drying each material and that within said assortment the materials are differing in speed, and wherein the ratio of relative exposure factor for an exposure with a 200 kV radiation source with a copper filter of 8 mm thickness between a film of the said assortment having the lowest speed and a film of the said assortment having the highest speed is not less than 20.

5,620,837

COLOR PHOTOGRAPHIC ELEMENT CONTAINING BENZAZOLIUM COMPOUNDS

Sang H. Kim, Pittsford; Arlyce T. Bowne, Rochester, and Thomas J. Dannhauser, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

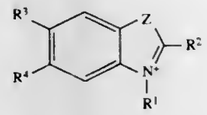
Filed Dec. 28, 1995, Ser. No. 579,984

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—506 **25 Claims**

1. A color silver halide photographic element comprising a support having situated thereon a red light-sensitive, cyan dye-forming unit comprising a photosensitive silver halide emulsion layer and an image dye-forming coupler; a green light-sensitive, magenta dye-forming unit comprising a photosensitive silver halide emulsion layer and an image dye-forming coupler; and a blue light-sensitive, yellow dye-forming unit comprising a photo-

sensitive silver halide emulsion layer and an image dye-forming coupler; wherein at least one of the dye-forming units comprises two or more emulsion layers spectrally sensitized to the same region of the visible spectrum, but exhibiting different photographic sensitivities, each such emulsion layer containing an image dye-forming coupler wherein at least one, but not all, of the emulsion layers of the dye-forming unit contains the hydrolyzed or unhydrolyzed form of a benzazolium compound represented by Formula (I):


(I)

wherein

Z represents S, Se, or Te;

R^1 is an anionic substituted alkyl group of 1 to 4 carbon atoms;

R2 is an alkyl or aryl group or hydrogen; and

R^3 and R^4 are individually selected from hydrogen atoms, halogen atoms; nitro groups; cyano groups; carboxy groups; alkyl or aryl groups; alkoxy groups; aryloxy groups, acylamino groups, sulfonamido groups; sulfamoyl groups; sulfamido groups; carbamoyl groups; diacylamino groups; aryloxycarbonyl groups; alkoxycarbonyl groups; alkoxysulfonyl groups; aryloxysulfonyl groups; alkylsulfonyl groups; arylsulfonyl groups; alkylthio groups; arylthio groups; alkoxycarbonylamino groups; aryloxycarbonylamino groups; alkylsulfoxyl groups; arylsulfoxyl groups; alkylureido groups; arylureido groups; alkylcarbonyl groups; arylcarbonyl groups; perfluroalkyl groups; acyl groups; thiocyano groups; heterocyclic groups and acyloxy groups.

5,620,838

PHOTOGRAPHIC ELEMENTS CONTAINING DIRECTLY DISPERSIBLE UV ABSORBING POLYMERS AND METHOD OF MAKING SUCH ELEMENTS AND POLYMERS

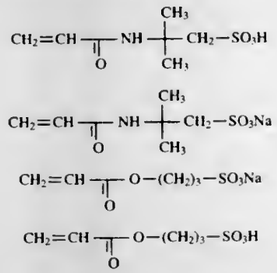
Tienteh Chen, Penfield; Hwei-Ling Yau, Rochester, and Edward Schofield, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1994, Ser. No. 361,276

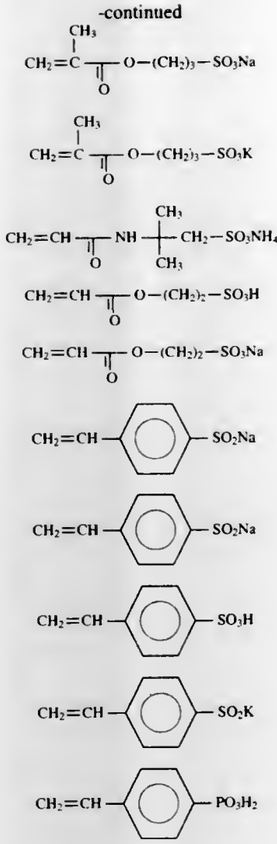
Int. Cl.[6] G03C *1/815;* **C07D** *249/16;403/00*

U.S. Cl. 430—512 **26 Claims**

1. A photographic element containing a polymeric UV absorbing compound, which compound comprises UV absorbing monomeric units formed from at least one UV absorbing ethylenically unsaturated monomer and at least 0.05 weight percent of ionic units which have an ionizable group which is ionized at all pH values between 5 to 10 and are formed from at least one ethylenically unsaturated monomer containing such an ionizable group and selected from the group consisting of:



-continued



and

$CH_2=CH-SO_3Na$.

5,620,839

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Fumio Kawamoto, and Shigeru Ohno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

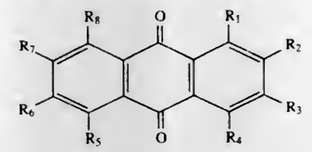
Filed Dec. 16, 1994, Ser. No. 357,749

Claims priority, application Japan, Dec. 16, 1993, 5-316676

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—523 **6 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein the support is polyester having a glass transition temperature of from 90° C. to 200° C. and contains at least one of a dye represented by the following formula (I) or (II):


(I)

VOL 1197 ISS 3 AP 15 1997 UMI

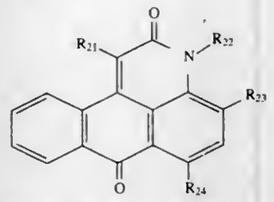
wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are the same or different and each represents a hydrogen atom, a hydroxyl group, an aliphatic group, an aromatic group, a heterocyclic group, a halogen atom, a cyano group, a nitro group, —COR_9, —$COOR_9$, —NR_9R_{10}, —$NR_{10}COR_{11}$, —$NR_{10}SO_2R_{11}$, —$CONR_9R_{10}$, —$CONHSO_2R_{11}$ or —SO_2 $NHCOR_{11}$,

in which R_9 and R_{10} each represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group,

R_{11} represents an aliphatic group, an aromatic group or a heterocyclic group, and

R_9 and R_{10} may be combined with each other to form a 5- or 6-membered ring; and

R_1 and R_2, or R_2 and R_3 may be combined with each other to form a ring;



(II)

wherein R_{21}, R_{23} and R_{24} are the same or different and each represents a hydrogen atom, a hydroxyl group, a nitro group, a cyano group, an aliphatic group, —COR_{29}, —$COOR_{29}$, —$NR_{29}R_{30}$, —$NR_{30}COR_{31}$ or —$NR_{30}SO2R_{31}$,

in which R_{29} and R_{30} each has the same meanings as defined for R9 and R_{10} respectively in formula (I), and

R_{31} has the same meaning as defined for R_{11} in formula (I);

R_{22} represents an aliphatic group or an aromatic group; and

at least one or R_{21}, R_{22}, R_{23} and R_{24} is a group other than a hydrogen atom; and wherein

said support has an increased amount of transmission density through a blue, green and red filter, respectively, of 0.01–0.3 at a wavelength of 400–700 nm;

said dye represented by formula (I) or (II) is present in a total amount of 0.001–1.0 g/m^2;

said support is heat-treated at a temperature of from 50° C. to its glass transition temperature after forming a film and before coating a light-sensitive layer; and

said film is resistant to curling.

5,620,840

HIGH BROMIDE TABULAR GRAIN EMULSIONS IMPROVED BY PEPTIZER SELECTION

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 574,664, Dec. 19, 1995. This application May 2, 1996, Ser. No. 643,225

Int. Cl.^{6} G03C *1/005*

U.S. Cl. 430—567 **13 Claims**

1. A radiation-sensitive emulsion comprised of

silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 50 mole percent bromide, based on silver,

(c) accounting for greater than 50 percent of total grain projected area, and

(d) having a thickness in the range of from at least 0.07 to 0.3 μm, and

a dispersing medium including a peptizer adsorbed to the silver halide grains,

wherein the peptizer is a water dispersible cationic starch.

5,620,841

PHOTOGRAPHIC ELEMENT CONTAINING NEW GOLD(I) COMPOUNDS

Roger Lok, Rochester, and Weimar W. White, Canaseraga, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 616,978, Mar. 18, 1996. This application Jun. 28, 1996, Ser. No. 672,781

Int. Cl.^{6} G03C *1/09*

U.S. Cl. 430—600 **18 Claims**

1. A photographic element comprising a support having situated thereon a silver halide emulsion layer, said emulsion layer comprising a compound of the formula:

$$Z—SO_2S—Au(I)—SQ$$

wherein

Z represents an alkyl, aryl, or heterocyclic group; and

Q represents an aryl or heterocyclic group.

5,620,842

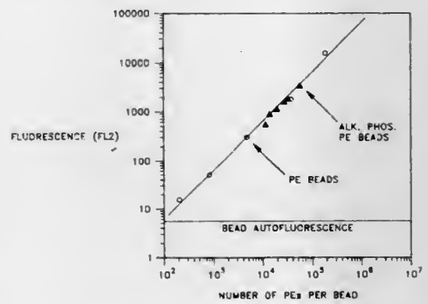
DETERMINATION OF THE NUMBER OF FLUORESCENT MOLECULES ON CALIBRATION BEADS FOR FLOW CYTOMETRY

Kenneth A. Davis, Los Altos, and James E. Bishop, Santa Cruz, both of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 29, 1995, Ser. No. 413,045

Int. Cl.^{6} G01N *31/00*

U.S. Cl. 435—4 **14 Claims**



1. A method for preparing calibration beads for use in calibrating a flow cytometer and for determining the concentration of fluorophore on the calibration beads comprising:

(i) preparing a stable complex consisting of fluorophore and enzyme such that the enzymatic activity is correlated to fluorophore concentration;

(ii) coating a bead with said fluorophore-enzyme complex;

(iii) experimentally measuring the activity of the enzyme in the bead-fluorophore-enzyme complex; and

(iv) determining the concentration of fluorophore per bead using the activity of the enzyme determined in (iii).

5,620,843

NON-A NON-B SEQUENCES

Jan A. Hellings, Boxtel, and Johannes J. Wilhelmus de Haard, Michleisgestel, both of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

PCT No. PCT/EP91/01110, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO92/00328, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 14, 1991, Ser. No. 867,194

Claims priority, application European Pat. Off., Jun. 30, 1990, 90201746

Int. Cl.^{6} C12Q *1/70*

U.S. Cl. 435—5 **15 Claims**

1. A nucleic acid molecule comprising a nucleic acid sequence that codes for a non-A non-B hepatitis virus peptide with the amino acid sequence of SEQ ID NO:6 or tandem repeats of SEQ ID NO: 6, wherein the nucleic acid molecule is free from polynucleotide segments which in the naturally occurring non-A non-B hepatitis genome flank the nucleic acid sequence that codes for said peptide.

5,620,844

ASSAYS FOR DETECTING HEPATITIS B VIRUS ENVELOPE ANTIGENS OR ANTIBODIES THERETO AND DIAGNOSTIC TEST KITS FOR USE IN PERFORMING THE ASSAYS

Alexander R. Neurath, New York, N.Y., and Stephen B. H. Kent, Pasadena, Calif., assignors to New York Blood, Inc., New York, N.Y., and California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 928,122, Aug. 10, 1992, abandoned, which is a division of Ser. No. 337,784, Apr. 13, 1989, Pat. No. 5,158,769, which is a continuation of Ser. No. 856,522, Apr. 28, 1986, Pat. No. 4,861,588, which is a continuation-in-part of Ser. No. 698,499, Feb. 5, 1985, Pat. No. 4,847,080, which is a continuation-in-part of Ser. No. 587,090, Mar. 7, 1984, abandoned. This application May 3, 1993, Ser. No. 57,200

Int. Cl.^{6} C12Q *1/70;* **G01N** *33/53;33/576;33/537;* **A61K** *38/08;* **C07K** *14/02*

U.S. Cl. 435—5 **13 Claims**

1. A process for the detection of antigens coded for by the pre-S gene in a sample comprising:

(a) coating a solid substrate with antibodies to a peptide, said peptide consisting of an amino acid sequence selected from the group consisting of pre-S (12–47), pre-S (21–47), pre-S (132–137), pre-S (53–73) and pre-S (128–139) of the envelope of hepatitis B virus;

(b) washing the coated substrate;

(c) contacting the washed coated substrate with a protein-containing solution to block non-specific binding sites;

(d) washing the substrate resulting from step (c);

(e) incubating the substrate resulting from step (d) with said sample to bind any pre-S antigen from said sample;

(f) washing the substrate resulting from step (e);

(g) adding radiolabeled or enzyme labeled antibody, said antibody being an antibody to said peptide or hepatitis B surface antigen, to the substrate resulting from step (f);

(h) incubating the substrate resulting from step (g);

(i) washing the substrate resulting from step (h); and either;

(j1) subjecting the substrate of step (i) to counting in a gamma counter wherein the presence of radioactivity as compared with a normal sera utilized as a control to steps (a) through (i) indicates the presence of antigens coded for by the pre-S gene in said sample; or

(j2) incubating the substrate of step (i) with a substance that can be converted by the enzyme labeled antibody to a detectable product, and measuring the detectable product wherein the presence of the detectable product as compared with a normal sera control indicates the presence of antigens coded for by the pre-S gene in said sample.

5,620,845

IMMUNOASSAY DIAGNOSTIC KIT

Martin Gould, Gibbstown, and Sudhakar Vulimiri, West Deptford, both of N.J., assignors to Ampcor, Inc., Bridgeport, N.J.

Continuation of Ser. No. 917,916, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 447,594, Dec. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 361,878, Jun. 6, 1988, abandoned. This application Sep. 14, 1994, Ser. No. 306,250

Int. Cl.^{6} G01N *33/543;33/544;33/569*

U.S. Cl. 435—5 **20 Claims**

1. An immunoassay process for the detection of a target immunologically active agent in a liquid sample comprising:

a) contacting said liquid sample containing said target immunologically active agent to be assayed with a labeled capture reagent against said target immunologically active agent, and with a controlled effective amount of a bound capture reagent against said target immunologically active agent bound to a solid carrier member over only a portion thereof in a controlled substantially specific array and wherein the remaining portion of said solid carrier member having been treated with animal serum and with a solution of a casein protein in an effective amount is substantially blocked against bonding to said labeled capture reagent and said target immunologically active agent; and

b) detecting the presence of said target immunologically active agent by determining the label bound to said bound capture reagent on said solid carrier member as an indication of the presence of the target immunologically active agent in said fluid sample.

5,620,846

DIAGNOSTIC AND PROGNOSTIC INDICES FOR CANCER AND AIDS

Nobuto Yamamoto, 1040 66th Ave., Philadelphia, Pa. 19126

Filed Jun. 7, 1995, Ser. No. 478,121

Int. Cl.^{6} C12Q *1/70*

U.S. Cl. 435—5 **6 Claims**

1. A process for determining α-N-acetylgalactosaminidase activity in plasma or serum of a patient suspected of containing human immunodeficiency virus comprising the steps of precipitating the plasma or serum containing α-N-acetylgalactosaminidase activity to produce a precipitate, dialyzing the precipitate and then incubating the precipitate with p-nitrophenyl-N-acetyl-α-D-galactosaminide.

5,620,847

METHODS AND REAGENTS FOR DETECTION OF BACTERIA IN CEREBROSPINAL FLUID

Kay S. Greisen, Oakland, and Diane U. Leong, Berkeley, both of Calif., assignors to Hoffman-La Roche Inc., Nutley, N.J.

PCT No. PCT/US92/06365, § 371 Date May 16, 1994, § 102(e) Date May 16, 1994, PCT Pub. No. WO93/03186, PCT Pub. Date Feb. 18, 1993

Continuation-in-part of Ser. No. 738,393, Jul. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,176, Oct. 5, 1990, abandoned, and Ser. No. 696,448, May 6, 1991, abandoned. This PCT application Jul. 31, 1992, Ser. No. 244,269

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **4 Claims**

1. A method for determining the presence or absence of a bacterium capable of causing meningitis, in a sample suspected of containing said bacterium, said method comprising:

(a) amplifying a target region of a polynucleotide of said bacterium to a detectable level using a pair of oligonucleotide primers consisting of the sequences

5'-AGGAGGTGATCCAACCGCA-3' (SEQ ID NO: 26),

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5'-AACTGGAGGAAGGTGGGGGAT-3' (SEQ ID NO: 27). or

the complementary sequences thereto;

(b) mixing the amplified target region of step (a) with an oligonucleotide probe consisting of the sequences selected from the group consisting

5'-CTAATCCCATAAAACTATTCTCAGT-3' (SEQ ID NO: 11),

5'-AAGCCGCGAGGCGGAGCCAATCT-3' (SEQ ID NO: 14),

5'-GGTGTGTACAAGCCCCGGGAACGTA-3' (SEQ ID NO: 17),

5'-TTGCGACTCGTTGTACCAACCATTG-3' (SEQ ID NO: 20),

5'-TATTCACCGCGGCATGCTGAT-3' (SEQ ID NO: 2),

5'-AGTAACCATTTGGAGCTAGCCGT-3' (SEQ ID NO: 3),

5'-CGGCTAGCTCCAAAAGGTTACTCTA-3' (SEQ ID NO: 4),

5'-CGGCTAGCTCTAAAAGGTTACTCTA-3' (SEQ ID NO: 5),

5'-CGACGGCTAGCTCCAAATGGTTACT-3' (SEQ ID NO: 6),

5'-CACATGCTACAAGGGTCGGTACAGT-3' (SEQ ID NO: 7),

5'-CCAACTTTCATGACTTGACGGG-3' (SEQ ID NO: 16),

5'-CCGGTGGAGTAACCTTTTAGGA-3' (SEQ ID NO: 19),

5'-AACTGAGATTGGCTTTAAGAGATTA-3' (SEQ ID NO: 21),

5'-AACTGAGACTGGCTTTAAGAGATTA-3' (SEQ ID NO: 24),

5'-AACTGAGACTGGCTTTAAGAGAT-3' (SEQ ID NO: 25), and

the sequences complementary thereto

(c) incubating the amplified target region with said probe under conditions which allow specificity of hybrid duplexes such that said probe should be capable of detecting bacterial species that cause meningicoccal disease and should be capable of excluding non-meningicoccal memingicoccal disease-causing bacterial species commonly found in cerebrospinal fluid; and

(d) detecting hybrids formed between said amplified target region and said probe, whereby the presence or absence of the bacterium is determined.

5,620,848

METHODS FOR DETECTING MUTANT P53

Arnold J. Levine; Thomas E. Shenk, both of Princeton, N.J., and Cathy A. Finlay, Yardley, Pa., assignors to Trustees of Princeton University, Princeton, N.J.

Continuation of Ser. No. 730,185, Jul. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 543,963, Jun. 27, 1990, abandoned. This application Jun. 30, 1994, Ser. No. 268,405

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **2 Claims**

1. A method of assessing a mutation in a human p53 gene from a patient comprising comparing 1) the degree of binding of the protein, encoded by said gene, to heat shock protein hsc70, with 2) the degree of binding of another mutant human p53 protein known to bind strongly to heat shock protein hsc70, wherein said resulting comparison indicates the type of cancer and severity of cancer in said patient possessing said mutation.

5,620,849

METHODS AND COMPOSITIONS FOR IDENTIFYING INHIBITORS OF PAPILLOMA VIRUS REPLICATION

Michael R. Botchan, Kensington; Liu Yang, Berkeley; Rong Li, El Cerrito; Ian J. Mohr, Berkeley, and Robin Clark, Oakland, all of Calif., assignors to Cetus Corporation, Emeryville, Calif., and The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 124,567, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 775,273, Oct. 11, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 311,406

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[6] C12Q *1/68;* **C12N** *7/00;* **A61K** *38/43;* **C07K** *2/00*

U.S. Cl. 435—6 **7 Claims**

4. A method of identifying a compound that inhibits papilloma virus DNA replication, comprising the steps of:

a) isolating a cell free extract that causes papilloma virus DNA replication in the presence of papilloma virus proteins E1 and E2;

b) forming a mixture comprising said cell free extract, E1 and E2, assay reagents that support and permit the determination of papilloma virus DNA replication, and said compound; and

c) measuring the amount of DNA replication that occurs in the presence of said compound compared to the amount that occurs in its absence.

5,620,850

MOLECULAR RECOGNITION AT SURFACES DERIVATIZED WITH SELF-ASSEMBLED MONOLAYERS

Cynthia C. Bamdad, Sharon; George B. Sigal, Arlington; Jack L. Strominger, Lexington, and George M. Whitesides, Newton, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Sep. 26, 1994, Ser. No. 312,388

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53;* **C07K** *2/00;5/00*

U.S. Cl. 530—300 **28 Claims**

1. A species having a formula:

X—R—Ch—M

wherein X represents a functional group and R represents a spacer moiety that, together, are able to promote formation from solution of a self-assembled monolayer on a surface, Ch represents a chelating agent that coordinates a metal ion, and M represents a metal ion coordinated to the chelating agent, wherein M also is coordinated to a biological binding partner of a biological molecule via coordination sites not filled by the chelating agent or includes coordination sites not filled by the chelating agent that, upon exposure to a polyamino acid tag, are able to become coordinated by the polyamino acid tag.

5,620,851

REPLICATIVE RNA-BASED AMPLIFICATION/ DETECTION SYSTEMS

Vladimir D. Axelrod; Fred R. Kramer, both of New York, N.Y.; Paul M. Lizardi, Cuernavaca, Mexico, and Donald R. Mills, Englewood, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

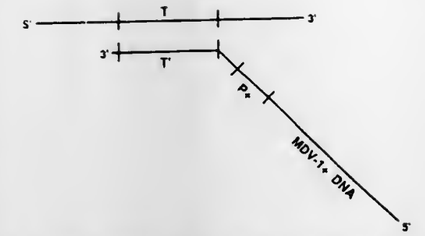
Continuation of Ser. No. 908,833, Jul. 2, 1992, Pat. No. 5,356,774, which is a continuation of Ser. No. 241,624, Sep. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 191,450, May 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 852,692, Apr. 16, 1986, Pat. No. 4,957,858. This application Oct. 17, 1994, Ser. No. 323,631

Int. Cl.[6] C07H *21/04;21/00;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **23 Claims**

1. An adduct for detecting a target, which adduct comprises:

(a) a probe moiety capable of specifically forming a complex with said target; linked to



(b) a single-stranded DNA moiety comprising a promoter sequence which recognizes and binds to a DNA-dependent RNA polymerase when hybridized to a nucleic acid sequence complementary thereto operably linked to a DNA template sequence encoding an RNA transcript replicatable by an RNA-dependent RNA polymerase.

5,620,852

NUCLEIC ACID PREPARATION METHODS

Lily Lin, Berkeley; George Cimino, and Yu S. Zhu, both of Richmund, all of Calif., assignors to HRI Research, Inc., Concord, Calif.

Continuation of Ser. No. 901,545, Jun. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 614,921, Nov. 14, 1990, Pat. No. 5,284,940. This application Oct. 31, 1994, Ser. No. 332,616

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **19 Claims**

1. A method for preparing nucleic acid samples comprising, in sequential order, the steps of:

a) providing in any order, i) a plasma sample suspected of containing ribonucleic acid, ii) an aqueous buffered solution consisting essentially of guanidinium thiocyanate, and beta-mercaptoethanol, iii) an alcohol, and iv) a reaction vessel;

b) adding to said reaction vessel, in any order, said sample and said aqueous buffered solution, to make a reaction mixture;

c) heating said reaction mixture to a temperature above 60° C.;

d) adding said alcohol to precipitate said ribonucleic acid; and

e) recovering said precipitated ribonucleic acid.

5,620,853

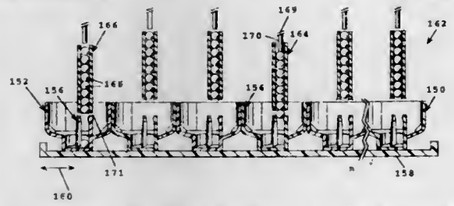
ASSAY DEVICE WITH CAPTURED PARTICLE REAGENT

Rick T. Smethers, Fremont, and Brian D. Warner, Martinez, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 110,435, Aug. 23, 1993, Pat. No. 5,382,512. This application Dec. 9, 1994, Ser. No. 353,501

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **8 Claims**



8. A method of carrying out a plurality of solid-phase diagnostic assays for selected analytes, comprising

(a) placing in a predetermined particle-dispensing relationship:

(i) an assay assembly having a plurality of assay wells defined by wall means, and flexible retaining means attached to said wall means for retaining a particle in a captured position within said well, when the retaining means is in an undeformed condition, and which can be deformed to admit said particle into the well, and

(ii) a particle dispensing device having a plurality of cartridges, each containing particles coated with a selected ligand,

(b) dispensing a particle from one or more of said cartridges into one or more selected wells in said assembly;

(c) forcing each dispensed particle into a captured position in the associated well;

(d) repeating steps (a)–(c) until particles have been dispensed and captured in a plurality of the wells; and

(e) performing diagnostic assay in each of the particle-containing wells.

5,620,854

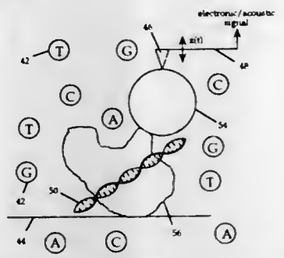
METHOD FOR IDENTIFYING BIOCHEMICAL AND CHEMICAL REACTIONS AND MICROMECHANICAL PROCESSES USING NANOMECHANICAL AND ELECTRONIC SIGNAL IDENTIFICATION

John F. Holzrichter, and Wigbert J. Siekhaus, both of Berkeley, Calif., assignors to Regents of the University Of California, Oakland, Calif.

Continuation of Ser. No. 111,445, Aug. 25, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,800

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53;21/00;* **C12P** *19/34*

U.S. Cl. 435—6 **19 Claims**



1. A method for detecting time-varying motions created on a microscopic scale using a scanning probe microscope having a physical tip for mechanical signal identification, comprising:

(a) locating a single site comprising a molecule or molecules of interest having microscopic dimensions by using the scanning probe microscope in a locator mode, wherein the molecule or molecules have time-varying motions due to a biological, chemical, mechanical, optical, or electrical process;

(b) positioning the physical tip of the scanning probe microscope in a stationary mode at the single site; and

(c) monitoring physical movements of the tip as a function of time as the process occurs by using the scanning probe microscope in a stationary, non-scanning mode, thereby detecting micromotions created at the site.

5,620,855

MAMMALIAN INFLUX PEPTIDE TRANSPORTER

Anne H. Dantzig, Crawfordsville; Jo A. Hoskins, Indianapolis, and Paul L. Skatrud, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 13,462, Feb. 4, 1993, abandoned. This application May 1, 1995, Ser. No. 431,560

Int. Cl.[6] G01N *33/567*

U.S. Cl. 435—6 **5 Claims**

1. A method for measuring uptake of a compound into a eucaryotic cell which comprises:

a) contacting said compound with a eucaryotic cell that is transformed with a recombinant DNA expression vector which encodes a mammalian influx peptide transporter, identified as SEQ ID NO. 1; and

b) assaying for transport of said compound into said cell.

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MONOCLONAL ANTIBODY ASSAY AND KIT FOR DETECTING METAL CATIONS IN BODY FLUIDS

Randall R. Carlson; Jay S. Stout; Dwane E. Wylie, all of Lincoln; Fred W. Wagner, Walton, all of Nebr., and Malcolm Riddell, Vero Beach, Fla., assignors to BioNebraska, Inc., Lincoln, Nebr.

Continuation of Ser. No. 96,671, Jun. 22, 1993, Pat. No. 5,532,136. This application Jun. 6, 1995, Ser. No. 469,489

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.1 **23 Claims**

1. A method for detecting a metallic cation in a sample of a body fluid of an animal, which comprises:

contacting an effective amount of a first antibody specific for an endogenous naturally occurring polypeptide with the sample of body fluid containing the metallic cation to form a first antigen-antibody complex, wherein the endogenous naturally occurring polypeptide is capable of binding the metallic cation;

adding an effective amount of a second antibody specific for an epitope on a cation/polypeptide complex to the first antigen-antibody complex to form a second antigen-antibody complex, wherein the cation/polypeptide complex is formed from the metallic cation and the endogenous naturally occurring polypeptide, and the second antibody does not substantially cross-react with an epitope found on the endogenous naturally occurring polypeptide alone; and

detecting the metallic cation in the body fluid by determining the amount of the second antigen-antibody complex.

5,620,857

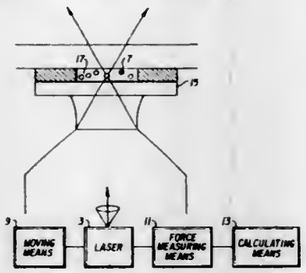
OPTICAL TRAP FOR DETECTION AND QUANTITATION OF SUBZEPTOMOLAR QUANTITIES OF ANALYTES

Howard H. Weetall, Rockville; Kristian P. Helmerson, Germantown, and Roni B. Kishore, North Potomac, all of Md., assignors to United States of America, as represented by the Secretary of Commerce, Washington, D.C.

Filed Jun. 7, 1995, Ser. No. 473,979

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.1 **10 Claims**



1. A method of detecting and quantitating an analyte in a sample, the method comprising:

(a) providing a laser light source for emitting a beam of laser light;

(b) providing first and second bodies, one of the first and second bodies being adapted to be manipulated by the beam of laser light and the other of the first and second bodies being immovable by the beam of laser light;

(c) adhering to the first body a first reagent selected from the group consisting of a substance identical to the analyte and analyte competitors;

(d) adhering to the second body a second reagent capable of binding to both the first reagent and to the analyte, but to only one at a time;

(e) bringing the first and second bodies into sufficient proximity in the presence of the sample to cause a competition between the first reagent and the analyte in the sample for binding to the second reagent, the competition resulting in a stable complex between the first reagent and the second reagent, the complex holding the first and second bodies together;

(f) breaking the complex between the first reagent and the second reagent by use of the beam of laser light to separate the first and second bodies;

(g) determining a force necessary to carry out step (f); and

(h) determining a quantity of the analyte in the sample from the force determined in step (f).

5,620,858

METHOD OF REMOVING SHIGA-LIKE TOXINS FROM BIOLOGICAL SAMPLES

Glen D. Armstrong, Edmonton, Canada, and Robert M. Ratcliffe, Carlsbad, Calif., assignors to Synsorb Biotech Inc., Calgary, Canada

Continuation of Ser. No. 778,732, Oct. 18, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 126,645

Int. Cl.[6] G01N *33/53*; **C07K** *14/25;1/22*

U.S. Cl. 435—7.8 **2 Claims**

1. A method to bind and remove shiga-like toxins (SLT) from a liquid comprising a biological sample, which method comprises:

mixing said liquid with a solid, inert affinity support having an affinity ligand covalently attached to the support through a $-(CH_2)_xC(O)-$ linking arm wherein said ligand is an oligosaccharide containing the disaccharide subunit αGal(1–4)βGal at the non-reducing terminus which binds the SLT, wherein said mixing is conducted under conditions wherein said SLT binds to the affinity support; and

separating the support containing the subunit to which said SLT is bound from the liquid.

5,620,859

METHOD TO AID IN THE DIAGNOSIS OF SILICONE RELATED DISEASE

Robert F. Garry; Scott A. Tenenbaum, and Douglas R. Plymale, all of New Orleans, La., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Oct. 5, 1994, Ser. No. 320,889

Int. Cl.[6] G01N *33/53;33/564*

U.S. Cl. 435—7.9 **5 Claims**

1. A method to aid the diagnosis of silicone related disease in a patient, comprising the steps of:

obtaining a sample of serum from the patient;

detecting an antipolymer antibody in said sample, wherein said antibody specifically binds with partially polymerized acrylamide; and

correlating the presence or absence of the antibody with silicone related disease, where if:

(i) said patient has no polymeric implant, then the presence of said antibody indicates that the patient may have a condition predisposing to silicone related disease;

(ii) said patient has a polymeric implant, then the presence of said antibody indicates that the patient may have silicone related disease;

(iii) said patient has a polymeric implant, then the absence of said antibody indicates that the patient may not have silicone related disease;

(iv) said patient has a polymeric implant and has been previously diagnosed as having undifferentiated rheumatoid disease selected from the group consisting of silicone related disease, atypical connective tissue disease, atypical rheumatic syndrome, nonspecific autoimmune condition, or overt autoimmune diseases, then the presence of said antibody indicates said rheumatoid disease may be silicone related disease; and

(v) said patient has no polymeric implant and has previously been diagnosed as having an undifferentiated rheumatoid disease selected from the group consisting of silicone related disease, atypical connective tissue disease, atypical rheumatic syndrome, nonspecific autoimmune condition, or overt autoimmune diseases, then the absence of said antibody indicates said rheumatoid disease may be predisposing to silicone related disease.

5,620,860

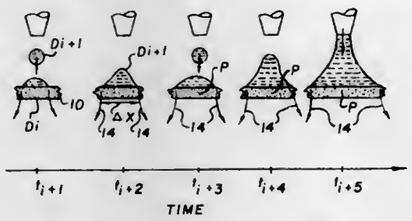
METHOD FOR WASHING IMMUNOASSAY ELEMENTS

Merrit N. Jacobs, Fairport, N.Y.; Russel H. Marvin, Riverton, Wyo., and Douglas J. Dychko, Rochester, N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Rochester, N.Y.

Filed Feb. 24, 1995, Ser. No. 393,632

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.9 **8 Claims**



1. In a method of separating bound labeled immunoreactant used to detect a target analyte from free labeled immunoreactant used to detect said analyte in an immunoassay conducted on a test element containing dried reagents prior to contact with a sample liquid and having a determinable rate of liquid uptake, the method comprising the step of depositing a wash liquid onto a portion of said test element having a surface and containing both said bound and said free labeled immunoreactants so as to separate said bound from said free labeled immunoreactants;

the improvement wherein the depositing step comprises the steps of

a) initially depositing the wash liquid a drop at a time at a rate that is less than the rate of uptake of each drop by said portion of said test element, so that a minimal remaining meniscus of the wash liquid remains at the surface of said portion when the next of the wash liquid is applied, said drops having a volume no larger than about 3 μL; and

b), after a plural number of drops are applied as per step a), applying the wash liquid at a rate that exceeds the rate of uptake of liquid as it currently exists in the test element portion being contacted by the wash liquid in step b) only, more than said minimal remaining meniscus of the wash liquid forms and remains during the washing of said surface, to effect the separation of said bound from said free labeled immunoreactants,

wherein the total wash volume is deposited within a time not exceeding about 60 seconds.

5,620,861

METHOD AND KIT FOR PYRIDINIUM CROSSLINK ASSAY

Mary J. Cerelli, Burlingame; Hsin-Shan J. Ju, Cupertino, and Robert F. Zuk, Burlingame, all of Calif., assignors to Metra Biosystems, Inc., Mountain View, Calif.

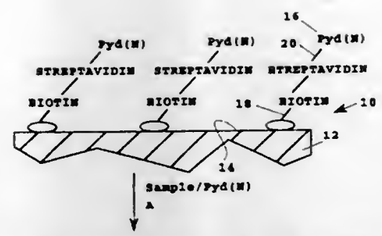
Continuation-in-part of Ser. No. 37,602, Mar. 26, 1993, abandoned, Ser. No. 209,924, Mar. 11, 1994, abandoned, Ser. No. 140,284, Oct. 20, 1993, abandoned, Ser. No. 992,936, Dec. 17, 1992, abandoned, and Ser. No. 992,888, Dec. 17, 1992, abandoned, said Ser. No. 37,602is a continuation-in-part of Ser. No. 992,888, and Ser. No. 922,906, Jul. 31, 1992, abandoned. This application Jun. 7, 1995. Ser. No. 484,212

Int. Cl.[6] G01N *33/53;33/543*

U.S. Cl. 435—7.9 **7 Claims**

1. A method of screening or monitoring bone collagen degradation activity in a human subject, comprising

reacting a non-hydrolyzed human urine sample with an antibody which is capable of reacting immunospecifically with pyridinium crosslinks selected from the group consisting of native free pyridinoline, native free deoxypyridinoline, or both, said antibody having been produced by immunizing an animal with hydrolyzed pyridinoline or hydrolyzed deoxypyridinoline, said antibody having a ratio of reactivity toward said



selected pyridinium crosslinks and urinary pyridinium peptides larger than 1,000 daltons in molecular weight, of greater than about 5:1,

by said reacting, forming an immunocomplex between the antibody and such selected pyridinium crosslinks present in the sample, and

from the amount of immunocomplex formed, determining the level of such selected pyridinium crosslinks in the sample, whereby a determined level which is above that characteristic of normal subjects indicates the presence of an elevated rate of bone collagen degradation in the subject.

5,620,862

METHODS FOR DIAGNOSING EARLY LYME DISEASE

Steven J. Padula, Simsbury, Conn., assignor to University of Connecticut, Storrs, Conn.

Filed Nov. 24, 1993, Ser. No. 158,353

Int. Cl.[6] G01N *33/569*

U.S. Cl. 435—7.32 **4 Claims**

1. A method for the detection of early stage of Lyme disease, comprising the steps:

a) contacting recombinant or substantially pure form of outer surface protein C (OspC) from *Borrelia burgdorferi* sensu stricto, wherein said recombinant form of OspC has been produced by host cells which express OspC encoded by heterologous DNA, to a biological sample from a mammal suspected of having Lyme disease, wherein said sample is taken from the mammal at the early stage of infection; and

b) detecting the presence or absence ok a complex formed between OspC and IgM antibodies, wherein the presence of an OspC/IgM complex is indicative of exposure to and infection by *Borrelia burgdorferi*.

5,620,863

BLOOD GLUCOSE STRIP HAVING REDUCED SIDE REACTIONS

Michael F. Tomasco, Mountain View; Maria Teodorczyk, Palo Alto; Remedios Dato, Pleasanton, and Edward G. Rice, Palo Alto, all of Calif., assignors to LifeScan, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 411,238, Mar. 27, 1995, which is a continuation-in-part of Ser. No. 960,579, Oct. 13, 1993, Pat. No. 5,418,142, which is a continuation of Ser. No. 691,192, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 399,055, Aug. 28, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 486,930

Int. Cl.[6] C12Q *1/54;1/28;* **G01N** *21/00*

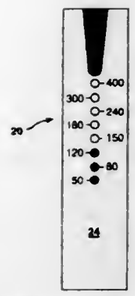
U.S. Cl. 435—14 **13 Claims**

1. A reagent strip for measuring glucose concentration in a biological fluid containing red blood cells, which comprises:

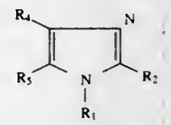
a porous matrix having a sample side and a testing side, the matrix being adapted to accept a sample of the biological fluid on the sample side and pass the sample toward the testing side; and

a testing reagent impregnated in the porous matrix, the testing reagent comprising a component for creating hydrogen peroxide from glucose and oxygen, a colored indicator for reacting with the hydrogen peroxide to cause a change in the color of the indicator, and, for minimizing side reactions of the glucose or the hydrogen peroxide with the biological fluid, a

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heavy metal-oxide-free solution of substituted imidazole of the general formula:



where R_1, R_2, R_4, and R_5 are independently either hydrogen or an alkyl group of from 1 to 3 carbons atoms.

5,620,864

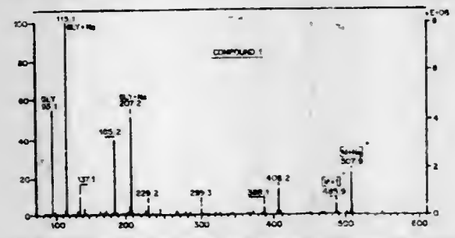
ACCEPTOR FOR FUCOSYL TRANSFERASE

Khushi L. Matta, Williamsville, N.Y.; E. V. Chandrasekaran, Northbrook, Ill., and Rakesh K. Jain, Palbichla Ajmer, India, assignors to Health Research, Inc., Buffalo, N.Y.

Filed Jun. 29, 1992, Ser. No. 905,797

Int. Cl.[6] C12Q *1/48;1/00;* **G01N** *33/48;* **A61K** *38/16*

U.S. Cl. 435—15 **39 Claims**



1. An oligosaccharide having at least two saccharide rings and 3' and 6 position carbon atoms and containing at least one sulfate group bound to at least one of the 3' or 6 carbon atoms which oligosaccharide binds to α1,3-L-fucosyltransferase enzyme with higher affinity than 2'-methyl N-acetyllactosamine binds to said enzyme.

5,620,865

MEDIUM FOR DETECTING ENTEROCOCCI IN A SAMPLE

Chun-Ming Chen, Falmouth, and Haoyi Gu, Portland, both of Me., assignors to Idexx Laboratories, Inc., Westbrook, Me.

Filed Nov. 4, 1994, Ser. No. 335,149

Int. Cl.[6] C12Q *1/04;1/10;1/54;* **G01N** *33/569*

U.S. Cl. 435—34 **16 Claims**

1. A medium for detecting the presence or absence of Enterococci in a liquified sample within 24 hours comprising:

a) an effective amount of vitamins, amino acids, trace elements and salts operable to allow viability and reproduction of Enterococci;

b) an effective amount of one or more nutrient indicators provided in an amount sufficient to provide a detectable characteristic signal in the medium during growth of said Enterococci; said nutrient indicator releasing a nutrient moiety in the presence of β-glucosidase; and

c) an effective amount of one or more selective agents active to prevent or inhibit the growth of microorganisms other than Enterococci.

5,620,866

HUMAN CRIPTO-RELATED GENE

David S. Salomon, Germantown, Md., and Maria G. Persico, Naples, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 749,001, Aug. 23, 1991, Pat. No. 5,264,557. This application Nov. 17, 1993, Ser. No. 154,198

Int. Cl.[6] C12N *15/12;5/10*

U.S. Cl. 435—69.1 **6 Claims**

1. A DNA segment coding for a polypeptide comprising an amino acid sequence of a human CRIPTO-related gene product (CR-3) shown in SEQ ID NO: 5.

5,620,867

BONE MORPHOGENETIC PROTEIN EXPRESSION AND DNA

Michael C. Kiefer, Clayton; Frank R. Masiarz, San Francisco, and Philip J. Barr, Oakland, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 819,662, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 382,805, Jul. 19, 1989, abandoned. This application Oct. 26, 1993, Ser. No. 142,847

Int. Cl.[6] C12N *15/18;15/11;5/10;15/63*

U.S. Cl. 435—69.4 **18 Claims**

1. An isolated DNA molecule comprising a nucleotide sequence that encodes a polypeptide, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of an amino acid sequence as shown in FIG. 3, comprising amino acid residues numbered 1 through 180, and an amino acid sequence as shown in FIG. 5, comprising amino acid residues numbered 1 through 182.

5,620,868

GENE CODED FOR INTERLEUKIN-2 POLYPEPTIDE, RECOMBINANT DNA CARRYING THE SAID GENE, A LIVING CELL LINE POSSESSING THE RECOMBINANT DNA, AND METHOD FOR PRODUCING INTERLEUKIN-2 USING THE SAID CELL

Tadatsugu Taniguchi, Tokyo; Masami Muramatsu, Tokorozawa; Haruo Sugano, Tokyo; Hiroshi Matsui, Yokohama; Nobukazu Kashima, Yokohama, and Junji Hamuro, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., and Japanese Foundation for Cancer Research, both of Tokyo, Japan

Continuation of Ser. No. 332,364, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 36,309, Apr. 7, 1987, abandoned, which is a continuation of Ser. No. 463,496, Feb. 3, 1983, Pat. No. 4,738,927. This application Dec. 26, 1991, Ser. No. 814,049

Claims priority, application Japan, Mar. 31, 1982, 57-51122; May 18, 1982, 57-82509; Dec. 15, 1982, 57-219518; Dec. 24, 1982, 57-229619; Dec. 27, 1982, 57-234607; Dec. 29, 1982, 57-230371

The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.

Int. Cl.[6] C12P *21/00;21/02;* **C12N** *15/00*

U.S. Cl. 435—69.52 **1 Claim**

1. A method of culturing a cell of a eukaryote or procaryote transformed with a recombinant DNA comprising a recombinant DNA encoding a polypeptide possessing a biological activity of interleukin-2 wherein said biological activity is promotion of growth of a cytotoxic T-lymphocyte cell line and wherein said polypeptide has 132 to 134 amino acids in total in the amino acid sequence of the polypeptide, and a vector DNA capable of propagating in said cell and the coding sequence of said gene being located at a position downstream of a promoter sequence, the steps of said method comprising (a) culturing said cell in an appropriate medium, and (b) collecting said polypeptide from said culture.

5,620,869

METHODS FOR REDUCING INHIBITION OF NUCLEIC ACID AMPLIFICATION REACTIONS

Daniel L. Woodard, Raleigh, N.C.; Adriann H. Walters, Baltimore, Md., and Michael C. Little, Raleigh, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 28, 1995, Ser. No. 535,605

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;1/70;* **C07H** *21/04*

U.S. Cl. 435—91.1 **8 Claims**

1. A method for amplifying nucleic acids in a sample containing nucleic acid amplification inhibitors comprising:

a) contacting the sample with an anionic silicaceous material such that the nucleic acid amplification inhibitors are bound to the anionic silicaceous material;

b) separating the anionic silicaceous material and the nucleic acid amplification inhibitors bound thereto from the sample, and;

c) amplifying the nucleic acids contained in the sample.

5,620,870

AUTOCATALYTIC REPLICATION OF RECOMBINANT RNA

Fred R. Kramer, Bronx; Eleanor A. Miele, Brooklyn, both of N.Y., and Donald R. Milis, Englewood, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 61,838, May 14, 1993, abandoned, which is a continuation of Ser. No. 784,620, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 256,746, Oct. 12, 1988, abandoned, which is a division of Ser. No. 614,350, May 25, 1984, Pat. No. 4,786,600. This application Dec. 5, 1994, Ser. No. 349,379

Int. Cl.[6] C12N *15/10;* **C12P** *19/34*

U.S. Cl. 435—91.21 **10 Claims**

1. A method of autocatalytically replicating in vitro a heterologous RNA sequence of interest present within a recombinant, single-stranded RNA molecule which comprises:

A) incubating the recombinant RNA molecule with an appropriate RNA-directed RNA polymerase under conditions permitting the synthesis of complementary single-stranded RNA molecules; and

B) thereafter simultaneously and repeatedly contacting the recombinant RNA molecule and the complementary single-stranded RNA molecules synthesized in step (a) with the RNA-directed RNA polymerase under conditions permitting simultaneous and repeated synthesis of RNA molecules complementary to both the recombinant RNA molecule and to the complementary single-stranded RNA synthesized in step (a);

the recombinant, single-stranded RNA molecule consisting essentially of (i) a recognition sequence for the binding of the RNA-directed RNA polymerase, which recognition sequence is also present in the complementary single-stranded RNA molecule synthesized in step (a); (ii) a sequence required for the initiation of synthesis of the complementary single-stranded RNA molecule; and (iii) the heterologous RNA sequence of interest inserted in an externally located hairpin loop between two nucleotides of the recombinant single-stranded RNA molecule, neither of such two nucleotides being a) present within the recognition sequence, b) present within the initiation sequence, or c) hydrogen bonded to any other nucleotide within the recombinant, single-stranded RNA molecule; and wherein the effect of the insertion upon the secondary structure of the recombinant single-stranded RNA molecule is minimal.

5,620,871

PROCESS FOR PREPARING OPTIONALLY HYDROGENATED INDIGESTIBLE POLYSACCHARIDES

Jean-Jacques Caboche, Bethune, France, assignor to Roquette Ferres, Lestrem, France

Continuation of Ser. No. 998,630, Dec. 30, 1992, abandoned. This application Feb. 16, 1995, Ser. No. 390,369

Claims priority, application France, Mar. 19, 1992, 92 03313

Int. Cl.[6] C12P *19/22;19/20*

U.S. Cl. 435—95 **15 Claims**

1. A process for preparing indigestible polysaccharides which comprises enzymatically hydrolyzing, with at least one saccharifying enzyme selected from the group consisting of β-amylase and amyloglucosidase, and at least one enzyme which hydrolyzes the 1–6 bonds of amylopectin, selected from the group consisting of isoamylase and pullulanase has been inserted at least one dextrin, said dextrin being obtained by dry roasting of starch in the presence of an acid or basic catalyst to obtain a D.E. of about 0.5 to 10, or one polyglucose, said polyglucose being a product predominantly composed of 1–6 bonds and obtained by condensation or rearrangement from glucose or from one or more optionally reduced sugars under the combined action of heat and acids in a medium substantially free of water, and then recovering said indigestible polysaccharides.

5,620,872

HAZE-FREE CYCLODEXTRINS

Wen Shieh, and Allan Hedges, both of Crown Point, Ind., assignors to American Maize-Products Company, Hammond, Ind.

Continuation of Ser. No. 792,022, Nov. 13, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,866

Int. Cl.[6] C12P *19/18;19/14;19/04*

U.S. Cl. 435—97 **19 Claims**

1. A process for making a cyclodextrin, which, when added to water, produces a substantially haze-free solution comprising the successive steps of:

(a) selecting a starch having an amylopectin content of at least about 90%;

(b) forming an aqueous starch slurry with said starch;

(c) treating said starch slurry with an alpha-amylase or an acid to hydrolyze said starch and form a starch hydrolysate having a DE of less than about 10;

(d) treating said starch hydrolysate with carbon to form a bleached starch hydrolysate;

(e) forming an aqueous slurry from the bleached starch hydrolysate;

(f) treating said bleached starch hydrolysate slurry with a cyclodextrin-glycosyl-transferase to form a cyclodextrin;

(g) recovering said cyclodextrin; and

(h) treating said cyclodextrin with carbon to form a bleached cyclodextrin which, when added to water, produces a substantially haze-free solution.

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5,620,873

PROCESS FOR PREPARING DEXTRIN CONTAINING FOOD FIBER

Kazuhiro Ohkuma, Sanda; Yoshio Hanno, Itami; Kazuyuki Inaba, Takarazuka; Isao Matsuda, Itami, and Yasuo Katsuda, Kawanishi, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 87,091, Jul. 7, 1993, abandoned, which is a continuation of Ser. No. 875,543, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 379,843, Jul. 14, 1989, abandoned. This application May 8, 1995, Ser. No. 438,113

Claims priority, application Japan, Oct. 7, 1988, 63-254540; Nov. 25, 1988, 63-299308; Dec. 5, 1988, 63-307194

Int. Cl.[6] C12P *19/22;19/14;* **C12N** *9/26;9/34*

U.S. Cl. 435—99 **17 Claims**

1. A process for preparing a dextrin containing at least 27% dietary fiber as measured by the Prosky-AOAC method or at least 45% dietary fiber as measured by HPLC method, said process comprising dissolving a pyrodextrin in water and causing α-amylase to act on the solution, said pyrodextrin having a dextrose equivalent of 1 to 10, and prepared by the steps of adding at least 300 ppm of HCl to a starch, heating at 100° to 120° C. until the water content is about 5%, followed by roasting at 150° to 220° C. for 1 to 5 hours.

5,620,874

PROCESS FOR PRODUCING PARASITICIDAL MILBEMYCIN DERIVATIVES BY CULTURING STREPTOMYCES

Rhona M. Banks, Tadworth; Geoffrey H. Baker; Roderick J. Dorgan, both of Epsom, and Mark E. Poulton, Tadworth, all of England, assignors to Pfizer Inc., New York, N.Y.

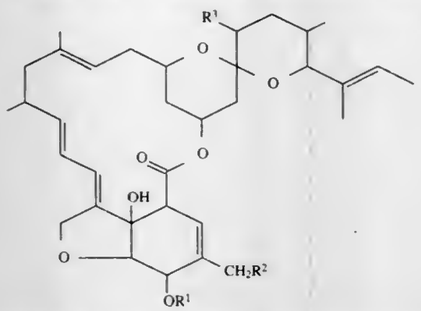
Continuation of Ser. No. 303,889, Sep. 9, 1994, abandoned, which is a continuation of Ser. No. 108,790, Aug. 18, 1993, abandoned, which is a continuation of Ser. No. 496,112, Mar. 19, 1990, abandoned, which is a continuation of Ser. No. 76,274, Jul. 22, 1987, abandoned. This application Jun. 1, 1995, Ser. No. 457,809

Claims priority, application United Kingdom, Jul. 24, 1986, 8618096; Jul. 29, 1986, 8618473; Aug. 22, 1986, 8620424; Sep. 11, 1986, 8621873; Sep. 11, 1986, 8621874; Oct. 25, 1986, 8625596; Jan. 13, 1987, 8700673

Int. Cl.[6] C12B *17/79*

U.S. Cl. 435—119 **5 Claims**

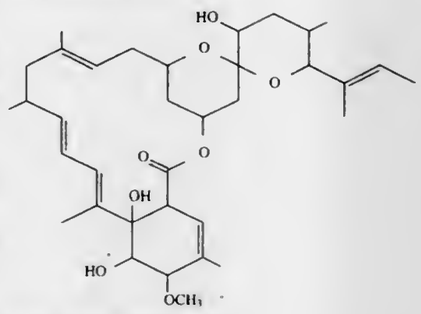
1. A process for the production of a compound of formula (I)



(I)

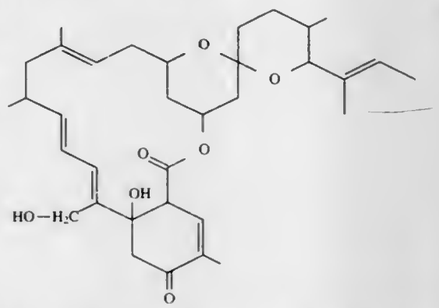
wherein R^1 is hydrogen or methyl, R^2 is hydrogen or E 2-methyl 2-butenoyloxy, and R^3 is hydrogen or hydroxy, with the proviso that when R^3 is hydrogen, R^1 and R^2 are both hydrogen, and when R^2 is E 2-methyl 2-butenoyloxy, R^1 is methyl,

or a compound of formula (II)



(II)

or a compound of formula (III)



(III)

which process comprises cultivating a microorganism selected from the group consisting of Streptomyces E225, NCIB 12310, Streptomyces E225B, NCIB 12509, and any VM 44857, VM 44864, VM 44865, VM 44866, VM 44867, or VM 44868 producing mutant thereof, and recovering the desired compound of formula (I), (II), or (III).

5,620,875

TRANSFER OF TAXOL FROM YEW TREE CUTTINGS INTO A CULTURE MEDIUM OVER TIME

Angela Hoffman, Beaverton; Courtney C. J. Voelker, and Alyssa T. Franzen, both of Portland, all of Oreg., assignors to University of Portland, Portland, Oreg.

Filed Feb. 17, 1995, Ser. No. 390,125

Int. Cl.[6] C12P *17/02;1/00*

U.S. Cl. 435—123 **10 Claims**

1. A method of obtaining a taxane from a cutting of a *Taxus* species, the method comprising the steps of:

(a) incubating a cutting from a *Taxus* species for from one to nine weeks in an aqueous plant culture medium comprising a plant nutrient under conditions sufficient for the cutting to transfer a taxane to the medium;

(b) removing at least a portion of the medium without removing the cutting;

(c) recovering the taxane from the medium removed in step (b);

(d) replacing the medium removed in step (b) with an equivalent volume of said plant culture medium; and after further incubating said cutting in the medium under conditions sufficient for the cutting to transfer additional taxane to the medium.

(e) repeating steps (b)–(c).

5,620,876

ENZYMATIC HYDROLYSIS AND ESTERIFICATION PROCESSES FOR THE PREPARATION OF HMG-COA REDUCTASE INHIBITORS AND INTERMEDIATES THEREOF

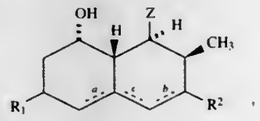
Brian L. Davis, Dayton; Paul M. Cino, Bound Brook, and Laszlo J. Szarka, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 29, 1992, Ser. No. 875,859

Int. Cl.[6] C12P *7/40;* **A61K** *31/425*

U.S. Cl. 435—136 **7 Claims**

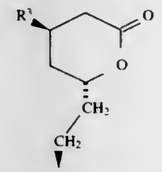
1. A method for the preparation of a compound of the formula I:



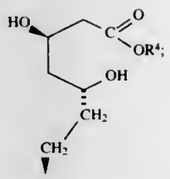
(I)

where

Z is the lactone:



or the open chain moiety:



R^1 and R^2 are independently selected from:

(i) hydrogen;

(ii) hydroxyl;

(iii) alkoxy;

(iv) alkyl;

(v) —OSO_2H; or

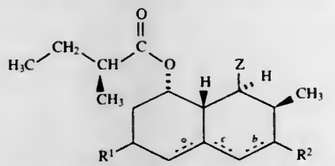
(vi) if not already included above, protected hydroxyl;

R^3 is hydroxyl or protected hydroxyl;

R^4 is hydrogen; a pharmaceutically acceptable cation; or a moiety which, together with the atoms to which it is bonded, forms a pharmaceutically acceptable ester group; and

a, b and c represent optional double bonds which double bonds, when any are present, are a and b in combination or a, b or c alone; or a salt thereof;

comprising the step of contacting a compound of the formula II:



(II)

where Z, R^1, R^2, a, b and c are as defined in formula I, or a salt thereof, with a microorganism, or with an enzyme derived from, or having the structure of an enzyme derived from, said microorganism, which is capable of catalyzing the hydrolysis of said compound of the formula II or salt thereof to yield said compound of the formula I or salt thereof, and effecting said hydrolysis;

where said microorganism is selected from the genera *Penicillium, Kibdelosporangium,* Chaetomium, Aspergillus, Emericella, Daldinia, Hypoxylan, Neurospora, Podospora, Sordaria, Xylaria, Cephalosporium, Gliocladium, Hypocrea, Nectriaor *Trichoderma,*

with the proviso that said microorganism is not *Emericella unguis* when, in formulae I and II, the double bonds a and b are present, R^1 is hydrogen or methyl, and R^2 is hydrogen.

5,620,877

METHOD OF FERMENTING SUGARS RESULTING FROM STRONG ACID HYDROLYSIS

William A. Farone, Irvine, and John E. Cuzens, Santa Ana, both of Calif., assignors to Arkenol, Inc., Mission Viejo, Calif.

Division of Ser. No. 38,628, Mar. 26, 1993. This application Jun. 6, 1995, Ser. No. 467,222

Int. Cl.[6] C12P *19/02;7/56;7/54;7/06*

U.S. Cl. 435—139 **7 Claims**

1. A method of fermenting a mixture of hexose and pentose sugars resulting from the acid hydrolysis of material containing cellulose and hemicellulose comprising:

adjusting the pH of the sugars to neutralize any remaining acid and to remove metal ions;

adding nutrients to allow growth of microbial organisms;

mixing the sugars with a microbial organism known to produce a useful fermentation product from hexose sugar, said organism having been grown on pentose solutions for about 1 to 2 weeks;

allowing the fermentation process to proceed for 3–5 days;

continuously removing volatile fermentation products from non-volatile fermentation products by recirculating carbon dioxide through a cooled condensing column;

collecting the volatile fermentation products from the condensing column;

separating the microbial organism from the non-volatile fermentation products; and

purifying the volatile and non-volatile fermentation products.

5,620,878

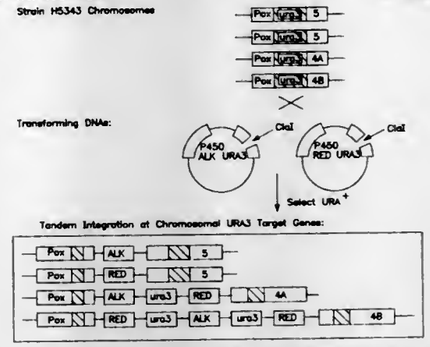
METHOD FOR INCREASING THE OMEGA-HYDROXYLASE ACTIVITY IN *CANDIDA TROPICALIS*

Stephen Picataggio, Santa Rosa; Tracy Rohrer, Cotati, and L. Dudley Eirich, Santa Rosa, all of Calif., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 975,154, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 495,502, Mar. 19, 1990, abandoned. This application Mar. 17, 1995, Ser. No. 407,429

Int. Cl.[6] C12P *7/44;* **C12N** *1/16*

U.S. Cl. 435—142 **18 Claims**



1. A process for producing alpha, omega-dicarboxylic acids comprising culturing a *C. tropicalis* strain having all four POX

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genes disrupted and having an increased copy number of at least one P450ALK gene, at least one P450RED gene, or a combination of said genes in a culture medium containing a nitrogen source, an organic substrate and a cosubstrate.

5,620,879

PROCESS FOR PRODUCING NATURAL CIS-3-HEXENOL FROM UNSATURATED FATTY ACIDS

Pascal Brunerie, 17 rue des Marais, 94440 Santeny, and Yvette Koziet, 83 rue Beauregard, 94350 Villiers sur Marne, both of France

Filed Jun. 30, 1995, Ser. No. 497,146
Claims priority, application France, Jun. 8, 1995, 95 06761
Int. Cl.[6] C12P *7/02;7/24*
U.S. Cl. 435—155 **13 Claims**

1. A process for producing cis-3-hexenol-1-ol from an unsaturated fatty acid that is convertable to a cis-3-hexenal via a plant-derived metabolic pathway, the process comprising the steps of, in a culture medium,

(a) converting the fatty to cis-3-hexenal by contacting the fatty acid with a natural system of enzyme(s), said system consisting of a ground plant mass obtained by grinding and cell disintegration of leaves harvested whole without predilacerating them, wherein said leaves comprise enzyme(s) suitable for converting the fatty acid to cis-3-hexenal, and

(b) converting cis-3-hexenal to cis-3-hexenol by contacting the cis-3-hexenal with a yeast comprising an alcohol dehydrogenase suitable for converting cis-3-hexenal to cis-3-hexenol.

5,620,880

PROTEASE DELETION

Alan Sloma, Watertown; Gerald A. Rufo, Jr., Burlington; Cathy F. Rudolph, Stoughton; Barbara J. Sullivan, Burlington, and Janice Pero, Lexington, all of Mass., assignors to Omnigene, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 396,521, Aug. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 347,428, May 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 273,423, Nov. 18, 1988, abandoned. This application Sep. 7, 1990, Ser. No. 579,401
Int. Cl.[6] C12N *9/54;1/21;15/57*
U.S. Cl. 435—172.3 **23 Claims**

1. A Bacillus cell containing a mutation in the RP-I-encoding gene (bpr) of said Bacillus cell, said gene being the same as, or an evolutionary homologue of the RP-I gene of *Bacillus subtilis*, and said mutation resulting in inhibition of the production by said cell of proteolytically active RP-I gene product.

5,620,881

GENE ENCODING MUTANT L3T4 PROTEIN WHICH FACILITATES HIV INFECTION AND TRANSGENIC MOUSE EXPRESSING SUCH PROTEIN

Kenneth J. Wieder, Dedham, and Terry B. Strom, Brookline, both of Mass., assignors to Beth Israel Hospital Associaton, Boston, Mass.

Continuation of Ser. No. 46,025, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 746,701, Aug. 16, 1991, abandoned. This application Apr. 4, 1994, Ser. No. 222,124
Int. Cl.[6] C12N *15/00;5/00;* **C07H** *21/00*
U.S. Cl. 435—172.3 **17 Claims**

1. A DNA sequence encoding a mutant L3T4 protein which, when expressed on the surface of a cell, is capable of facilitating infection of said cell by human immunodeficiency virus, said mutant protein comprising at least one amino acid residue substitution or deletion in a first segment corresponding to positions 49–54 of a native L3T4 protein so as to increase homology between said first segment and its counterpart in a CD4 protein.

17. A process of expressing a mutant L3T4 protein which is encoded by the DNA sequences of claim 1, said process including the step of transfecting mammalian cells with said DNA sequence.

5,620,882

GENETICALLY ENGINEERING COTTON PLANTS FOR ALTERED FIBER

Maliyakal John, Middleton, Wis., assignor to Agracetus, Inc., Middleton, Wis.

Continuation of Ser. No. 885,970, May 18, 1992, Pat. No. 5,495,070, which is a continuation-in-part of Ser. No. 617,239, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 253,243, Oct. 4, 1988, abandoned. This application Oct. 19, 1994, Ser. No. 298,829
Int. Cl.[6] C12N *15/82;15/29;* **A01H** *5/00*
U.S. Cl. 435—172.3 **5 Claims**

1. A method of expressing foreign genes in a fiber-producing plant comprising the steps of:

a) constructing a plant expression vector that comprises a protein coding sequence operably linked to a DNA sequence which promotes preferential gene expression in fiber cells, wherein the DNA sequence is not naturally associated with said protein coding sequence and is selected from the group consisting of truncated segments of the gene E6 4.5 Kb Mbo I/Nco I fragment wherein said fragment contains the first 541 bp of SEQ ID NO:20; the gene E6 2.7 Kb Mbo I/Nco I fragment wherein said fragment contains the first 581 bp of SEQ ID NO:21; the gene E6 4.1 Kb Nco I fragment wherein said fragment contains the first 567 bp SEQ ID NO:22; the gene E6 3.9 Kb Mbo I/Nco I fragment wherein said fragment contains the first 512 bp of SEQ ID NO:23; the gene E6 3.2 Kb Mbo I/Nco I fragment wherein said fragment contains the first 421 bp of SEQ ID NO:24; the gene H6 321 bp Fsp I/Mbo I fragment wherein said fragment contains the first 250 bp of SEQ ID NO:25; the gene A-11 2.1 Kb Mbo I/Eco RI fragment wherein said fragment contains the first 279 bp of SEQ ID NO:27; the gene B8 2.2 Kb Bam HI/Bst BI fragment wherein said fragment contains the first 287 bp of SEQ ID NO:28, wherein the truncated segment promotes preferential gene expression in fiber cells, and

b) introducing the expression vector into a fiber-producing plant cell, which is regenerated into a fiber-producing plant, wherein the protein coding sequence is expressed in the fiber cells of the fiber-producing plant.

5,620,883

LIVING CELLS MICROENCAPSULATED IN A POLYMERIC MEMBRANE HAVING TWO LAYERS

Wen Shao, Baltimore, and Kam W. Leong, Ellicott City, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 1, 1994, Ser. No. 221,627
Int. Cl.[6] C12N *11/00;11/02;11/10*
U.S. Cl. 435—174 **5 Claims**

1. A biocompatible microcapsule suitable for introduction into a host, said microcapsule comprising:

(a) bioactive cells enclosed within a membrane,

(b) said membrane comprising an inner layer and an outer layer, said inner layer comprising a cationic biopolymer consisting of collagen modified to have a pKI of at least about 9 or an anionic biopolymer selected from the group consisting of esterified hyaluronic acid and amine modified hyaluronic the cells and supporting acid and said inner layer containing the cells and supporting maintenance of cell function, said outer layer comprising a biocompatible synthetic polyelectrolyte having an electrolytic charge opposite to that of the inner layer, said inner and outer layer having charges sufficient to form a complex of said biopolymer and said polyelectrolyte when a solution of the biopolymer containing a suspension of the bioactive cells is introduced into a solution of the synthetic polyelectrolyte,

(c) said membrane being permeable to materials necessary to sustain the normal metabolic functions of the bioactive cells and to products released by the bioactive cells and impermeable to immune system components responsible for immunological reactions that result in immune rejection of the bioactive cells by the host.

5,620,884

GLYCOLIPID ENZYME-POLYMER CONJUGATES

Robert G. L. Shorr, Edison; Myung-Ok Cho, Highland Park; Carl W. Gilbert, Basking Ridge, all of N.J.; Edward J. Ginns, Bethesda, and Brian M. Martin, Rockville, both of Md., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 989,802, Dec. 10, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 346,680
Int. Cl.[6] C12N *9/96;9/42;* **A61K** *38/47*
U.S. Cl. 435—188 **15 Claims**

1. A glucocerebrosidase conjugate having enhanced enzymatic activity at pH ranges of from about 4.0–5.0 and about 6.5–7.5, comprising recombinant glucocerebrosidase and from about 1 to about 25 poly(alkylene oxide) strands, each strand having a molecular weight of from about 1,000 to about 15,000, and each strand being covalently linked via a urethane linkage to an amino group on said recombinant glucocerebrosidase.

5,620,885

COMPOSITIONS WHICH INHIBIT APOPTOSIS, METHODS OF PURIFYING THE COMPOSITIONS AND USES THEREOF

Ian C. Bathurst, Kensington; John D. Bradley, Oakland; L. David Tomei, Richmond, and Philip J. Barr, Berkeley, all of Calif., assignors to LXR Biotechnology Inc., Richmond, Calif.

Division of Ser. No. 320,155, Oct. 7, 1994, which is a continuation-in-part of Ser. No. 158,980, Nov. 30, 1993, abandoned. This application May 30, 1995, Ser. No. 452,952
Int. Cl.[6] C12N *5/00*
U.S. Cl. 435—404 **7 Claims**

1. A composition with anti-apoptotic activity, comprising a tissue culture media and an amount of at least one phytogenic apoptosis inhibitor effective to limit or prevent apoptosis of cells in culture, wherein the apoptosis inhibitor is derived from a plant powder.

5,620,886

ISOLATED NUCLEIC ACID SEQUENCE CODING FOR A TUMOR REJECTION ANTIGEN PRECURSOR PROCESSED TO AT LEAST ONE TUMOR REJECTION ANTIGEN PRESENTED BY HLA-A2

Vincent Brichard; Aline Van Pel, both of Brussels, Belgium; Catia Traversari, Milan, Italy; Thomas Wölfel, Mainz, Germany; Thierry Boon-Falleur, and Etienne De Plaen, both of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed Mar. 18, 1993, Ser. No. 32,978
Int. Cl.[6] C12N *5/00;* **C12P** *21/00;* **C07H** *19/00;* **C07K** *1/00*
U.S. Cl. 435—240.2 **13 Claims**

1. Isolated nucleic acid molecule which codes for or is complementary to a nucleic acid molecule which codes for a tumor rejection antigen precursor which is processed to a tumor rejection antigen presented by HLA-A2 molecules, wherein said tumor rejection antigen precursor comprises the amino acid sequence set forth in SEQ ID NO: 1.

5,620,887

TRANSCRIPTIONAL COFACTOR DCOH

Gerald R. Crabtree, Woodside, and Dirk B. Mendel, Santa Clara, both of Calif., assignors to The Board of Trustees fot the Leland Stanford Junior University, Palo Alto, Calif.

Division of Ser. No. 156,383, Nov. 22, 1993, Pat. No. 5,403,712, which is a continuation of Ser. No. 809,436, Dec. 17, 1991. This application Nov. 15, 1994, Ser. No. 340,136
Int. Cl.[6] C12N *15/85;15/12;* **C07H** *21/04*
U.S. Cl. 435—325 **7 Claims**

1. A purified mammalian nucleic acid sequence, having other than the naturally occurring wild-type flanking sequence when said nucleic acid sequence is DNA, encoding a transcription cofactor, wherein said transcription cofactor is characterized by:

having a molecular weight of about 11 kd;

having a domain of from about 20 to 50 amino acids, which is lipophilic in having a plurality of hydrophobic aliphatic and aromatic amino acids;

existing as dimers in a nuclear extract;

capable of enhancing dimerization of transcription factors; and

not having a specific binding affinity for the DNA sequence to which said transcription factors bind; and

fragments thereof of at least about 24 consecutive nucleotides.

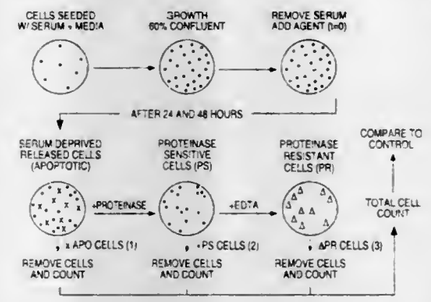
6. A host cell comprising a vector, said vector comprising a marker and a nucleic acid sequence according to claim 1, wherein said nucleic acid sequence is DNA.

5,620,888

CELL STRAINS FOR USE IN IDENTIFYING POTENTIALLY THERAPEUTICALLY EFFECTIVE AGENTS

L. David Tomei, Point Richmond, Calif., assignor to LXR Biotechnology, Inc., Richmond, Calif.

Division of Ser. No. 366,368, Dec. 29, 1994. This application Jun. 6, 1995, Ser. No. 484,876
Int. Cl.[6] C12N *5/00*
U.S. Cl. 435—325 **1 Claim**



1. A cell strain that retains responsiveness to apoptosis modulating agents obtained by the method comprising the steps of:

a) obtaining a cell sample;

b) culturing the cell sample for a time and under conditions sufficient to attain exponential proliferation without density dependent constraints;

c) exposing the cell sample to conditions that induce apoptosis while simultaneously treating the cell sample with an agent known to induce proteinase resistance;

d) culturing the cell sample for a time and under conditions suitable to maintain exponential proliferation without density dependent constraints;

e) removing cells that display diminished adherence to yield adherent cells;

f) exposing the adherent cells to a proteinase;

g) incubating the adherent cells for a time and under conditions suitable to release proteinase sensitive cells and yield proteinase resistant cells;

h) collecting the proteinase resistant cells; and

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i) retaining the cells of step h) and passaging the cells to generate a stable cell strain that retains responsiveness to apoptosis modulating agents.

5,620,889

HUMAN ANTI-FAS IGG1 MONOCLONAL ANTIBODIES

David H. Lynch, and Mark R. Alderson, both of Bainbridge Island, Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 159,003, Nov. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 136,817, Oct. 14, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,805

Int. Cl.[6] C12N *5/12*; C07K *16/18;16/22;16/28*

U.S. Cl. 435—332 **25 Claims**

1. An IgG1 monoclonal antibody that specifically binds to the extracellular domain of human Fas antigen and at a 10-fold molar excess inhibits binding of anti-Fas CH-11 monoclonal antibody to cells expressing Fas antigen within a range from about 4% to about 62%.

5,620,890

MONOCLONAL ANTIBODIES TO HYGROMYCIN B AND THE METHOD OF MAKING THE SAME

Carol Kamps-Holtzapple; Larry H. Stanker, and John R. DeLoach, all of College Station, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 14, 1995, Ser. No. 404,007

Int. Cl.[6] C12N *5/12;15/06*; C07K *16/44*

U.S. Cl. 435—345 **11 Claims**

1. A hybridoma cell line which produces and secretes monoclonal antibodies which bind hygromycin B and are effective to detect hygromycin B levels at about 1.4 ppm or lower.

5,620,891

BIOLOGICAL REACTION PROCESSES

Humphrey Drummond, South Windsor; Clinton Kopp, Castle Hill; Paul Khoo, Northmead; Warren Johnson, Bligh Park, and Aloke Vaid, South Windsor, all of Australia, assignors to Memtec Limited, South Windsor, Australia

PCT No. PCT/AU92/00102, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO92/15667, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 9, 1992, Ser. No. 108,713

Claims priority, application Australia, Mar. 8, 1991, PK4994

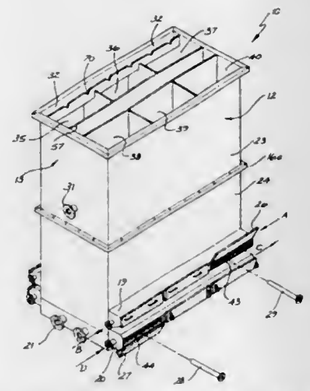
Int. Cl.[6] C12N *1/00*; C12M *1/14*

U.S. Cl. 435—243 **16 Claims**

1. A process for maintaining a high rate of mass transfer of nutrients contained in a liquid feed stream to a biofilm of microorganisms supported on a bed of particulate matter, said process comprising

A. feeding said microorganisms in said biofilm with a continuous, substantially uniform flow of said liquid feed stream and a countercurrent flow of respiratory air so as to support biofilm growth, and

B periodically pulsing said bed, while sustaining said continuous, substantially uniform flow of said liquid, with air at a pressure and for a time sufficient to shed at least an increment of said microorganisms from the biofilm and/or to disrupt and rearrange the bed of particulate matter and at intervals sufficient to prevent preferential channelling of the liquid feed stream through the bed.



5,620,892

STRAIN OF *SACCHAROMYCES CEREVISIAE* EXPRESSING THE GENE ENCODING POTASSIUM TRANSPORTER MINK

Stephen E. Kurtz, Princeton; Aron M. Knickerbocker, Titusville, both of N.J., and John R. McCullough, Newtown, Pa., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Sep. 7, 1993, Ser. No. 118,101

Int. Cl.[6] C12N *1/18;1/19*

U.S. Cl. 435—354.21 **10 Claims**

1. A modified *Saccharomyces cerevisiae* cell, wherein the cell expresses a nucleic acid sequence for a minK protein but does not express TRK1 and TRK2 wherein the minK protein is capable of conducting an inward potassium ion current.

5,620,893

MICROBIAL MEDIATED METHOD FOR SOIL AND WATER TREATMENT

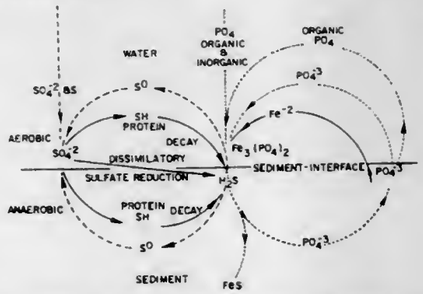
Delman R. Hogen, 7813 Madison St., Spring Lake Park, Minn. 55432, and James R. Robin, Excelsior, Minn., assignors to Delman R. Hogen, Spring Lake Park, Minn.

PCT No. PCT/US93/06455, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/02421, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 8, 1993, Ser. No. 362,509

Int. Cl.[6] B09B *3/00*; B09C *1/10*

U.S. Cl. 435—262 **38 Claims**



1. An anaerobic microbial mediated method of treating aqueous/sedimentary systems, the method being based on a) the presence of microbes having the identifying characteristics of ATCC 55339 and including the ability to oxidize Fe^0 to Fe^{+2}, and reduce Fe^{+3} to Fe^{+2} and oxidize S^{-2} to S^0, and b) the presence of amounts of Fe^0, Fe_2O_3, Fe_3O_4, or $FeCO_3$ as iron source material, comprising the steps:

a) determining the amounts of phosphorus, sulfur, and heavy metals and total hydrocarbon content to be treated in the system:

b) determining the presence or absence of the aforementioned microbes and inoculating the sediment of the system to be treated from a known source if the requisite microbes are not present, and

c) adding an iron source material which provides Fe^{+2} and Fe^{+3} to the system, the amount of iron source material being based on the first step above.

5,620,894

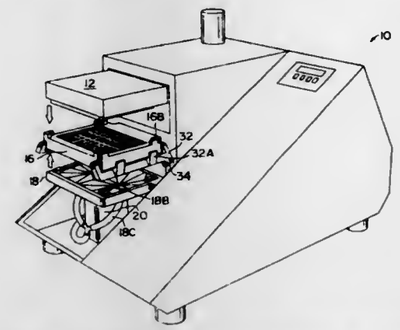
APPARATUS FOR AUTOMATED BIOLOGICAL CELL HARVESTING

Lee A. Barger, Cary; Brisco L. Harward, Apex, and Douglas K. Hoeppner, Raleigh, all of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Jun. 16, 1995, Ser. No. 491,417

Int. Cl.[6] C12M *1/12*; B01D *29/00*

U.S. Cl. 435—286.2 **21 Claims**



1. An automated apparatus for harvesting materials from fluid carried by a filter plate, comprising:

(a) a movable fluid dispensing head with a top and a bottom surface adapted to move from a first position to a second position and having a plurality of dispensing means on the bottom surface thereof;

(b) a fixed upper tray positioned beneath and spaced apart from said fluid dispensing head and adapted to support a filter plate thereon comprising a plurality of fluid permeable wells therein corresponding to said dispensing head plurality of dispensing means, and said upper tray being fluid permeable to allow fluid from said filter plate to flow therethrough;

(c) a movable lower tray positioned beneath said upper tray and adapted to move from a first spaced-apart and lowered position beneath said upper tray to a second raised position in engagement with said upper tray;

(d) clamping means operatively connected to said upper tray for sealingly securing a filter plate thereto in response to said lower tray being raised to said second raised position in engagement with said upper tray;

(e) first actuator means adapted to move said fluid dispensing head from said first position to said second position and back to said first position, and pump means to pump fluid through said fluid dispensing head when said fluid dispensing head is moved to its second position by said first actuator means;

(f) second actuator means adapted to move said lower tray from said first lowered position to said second raised position and back to said first lowered position, and vacuum means to create a vacuum between said upper and lower trays when said lower tray is moved to its second raised position by said second actuator means so as to draw fluid from the plurality of wells of a filter plate supported on said upper tray into said lower tray to isolate material within said wells of said filter plate; and

(g) controller means for selectively activating said first and second actuator means and said pump means and said vacuum means according to a predetermined time sequence.

5,620,895

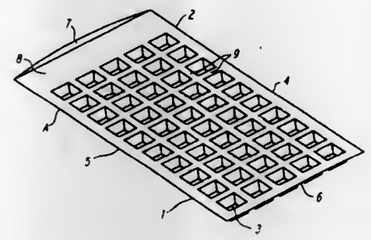
APPARATUS FOR QUANTIFICATION OF BIOLOGICAL MATERIAL IN A LIQUID SAMPLE

Ali Naqui, Falmouth; Mark W. Pierson, Saco; Thomas R. Weschler, Cape Elizabeth, all of Me.; Stephen C. Wardlaw, Old Saybrook, Conn.; Michael P. Finnerty, Auburn, and Charles R. Carpenter, Scarborough, both of Me., assignors to Idexx Laboratories, Inc., Westbrook, Me.

Division of Ser. No. 394,315, Feb. 22, 1995, which is a continuation-in-part of Ser. No. 201,110, Feb. 23, 1994, Pat. No. 5,518,892. This application May 30, 1995, Ser. No. 454,071

Int. Cl.[6] C12M *1/40*

U.S. Cl. 435—288.2 **22 Claims**



1. Article adapted for holding a liquid sample for quantification of biological material in the liquid sample, comprising:

a bag having an upper surface sheet and a lower surface sheet enclosing a volume therebetween, said bag having an upper opening through which the liquid sample can be poured into said volume in said bag and said lower surface sheet comprises a plurality of preformed wells;

a plurality of partitions along said lower surface sheet in said bag which are configured to divide said plurality of wells into a plurality of discrete non-permeable compartments for holding separate aliquots of the liquid sample in said wells;

a passage through which the liquid sample can be distributed throughout the volume in the bag.

5,620,896

DNA VACCINES AGAINST ROTAVIRUS INFECTIONS

John E. Herrmann, Northborough; Harriet L. Robinson, Southborough, and Ellen F. Fynan, Sterling, all of Mass., assignors to University of Massachusetts Medical Center, Worcester, Mass.

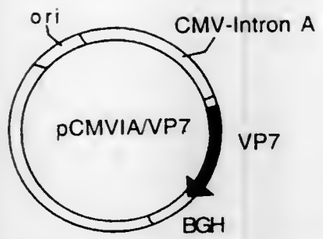
Continuation-in-part of Ser. No. 187,879, Jan. 27, 1994, which is a continuation-in-part of Ser. No. 9,833, Jan. 27, 1993, which is a continuation-in-part of Ser. No. 855,562, Mar. 23, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 426,169

Int. Cl.[6] C12N *15/63*; A61K *48/00*

U.S. Cl. 435—320.1 **5 Claims**

1. A plasmid vector comprising (1) a cytomegalovirus intron A transcriptional regulatory sequence and (2) cytomegalovirus enhancer and promoter sequences operably linked to a nucleotide sequence encoding a rotavirus polypeptide selected from the group

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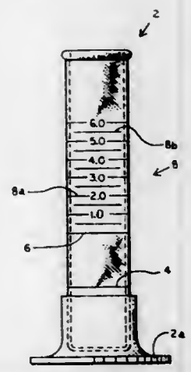
consisting of VP4, VP6 and VP7, wherein said rotavirus polypeptide is expressed in a cell of a mammal innoculated with said plasmid vector.

5,620,897

AUTOMATED METHOD AND TEST KIT FOR FREE FATTY ACIDS IN COOKING FATS AND OILS

Ronald J. Zappe, 326 Woodstone Dr., Baton Rouge, La. 70808

Filed Nov. 24, 1995, Ser. No. 562,469
Int. Cl.[6] G01N *33/06*
U.S. Cl. 436—23 **3 Claims**



2. An automated method for determining the concentration of free fatty acids in a sample of cooking fat or cooking oil, the method comprising the steps of:

(a) calibrating and marking a container for a particular, predetermined, and specific weight of the sample with a first mark indicating the level to which the container is to be filled with the sample of cooking fat or cooking oil;

(b) calibrating and marking the container for a particular, predetermined, and specific volume of an alcoholic solution of a visual acid-base indicator with a second mark disposed above the first mark;

(c) calibrating and marking the container for a particular, predetermined, and specific concentration of a standard solution of an alkali-metal hydroxide having a concentration of from about one one-hundredth to about one gram equivalent weight per liter with a plurality of third marks disposed above the second mark and so labeled as to be read directly and quantitatively as the percentage of free fatty acids in the sample, thereby automating the method;

(d) filling the container to the level indicated by the first mark with a liquid sample of the cooking fat or cooking oil at a temperature of from about 300° F. to about 350° F., thereby ensuring that the sample is a liquid and minimizing any inaccuracy due to the effect of temperature on the density and volume of the sample;

(e) admixing an alcoholic solution of a visual acid-base indicator to and with the sample up to the level indicated by the second mark;

(f) titrating the free fatty acids present in the sample by slowly admixing the standard solution of the alkali-metal hydroxide with the sample and the acid-base indicator solution present in the container until the equivalence point of the titration has been reached, as indicated by the change in color of the visual acid-base indicator; and

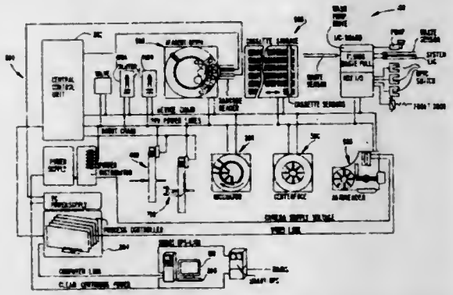
(g) reading the percentage of free fatty acids in the cooking fat or cooking oil directly and quantitatively from the third mark with indicated the volume of the standard solution of the alkali-metal hydroxide required to reach the equivalence point of the titration, without the necessity of any type of calculation.

5,620,898

AUTOMATED BLOOD ANALYSIS SYSTEM

Mykola Yaremko, Livingston; Rosemary Chachowski, Manville, both of N.J.; Marcel Frischknecht, Oberduerten, Switzerland; Gregor Batliner, Hombrechtikon, Switzerland; Linus Flueler, Bubikon, Switzerland; Marco Forster, Grueningen, Switzerland; Martin Gander, Landquart, Switzerland; Beat Gretener, Meilen, Switzerland; Walter Imfeld, Hombrechtikon, Switzerland; Hansjoerg Kunz, Zurich, Switzerland; Martin Kuster, Escheubach, Switzerland, and Karl Puchegger, Salzburg, Austria, assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Division of Ser. No. 163,997, Dec. 8, 1993, which is a continuation of Ser. No. 75,303, Jun. 11, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,852
Int. Cl.[6] G01N *35/10*
U.S. Cl. 436—45 **9 Claims**



1. A method for automatically analyzing aqueous solutions, comprising

depositing a multitude of containers in a first station said first station having (i) a multitude of container holders for simultaneously holding a multitude of containers, (ii) a container receiving and discharging position, and (iii) a fluid receiving position, said depositing step including the steps of, for each of the multitude of containers,

(i) moving one of the container holders of the first station to the container receiving and discharging position, and

(ii) depositing one of the containers into said one of the container holders;

holding reagents and sample solutions at a second station;

supporting a pipette assembly for three dimensional movement between the first and second stations;

for each of the multitude of containers,

i) moving the first station to move the container to the fluid receiving position,

ii) operating the pipette assembly to draw reagent and sample solution from the second station, and to dispense the drawn reagent and sample solution into the container to form a test solution therein when the container is in the fluid receiving position,

iii) after the container has received reagent and sample solution, moving the first station to move the container to the container receiving and discharging position, and

iv) when the container is in the container receiving and discharging position, removing the container from the first station;

positioning the removed containers in a centrifuge;

centrifuging the containers in the centrifuge;

positioning the containers in an auto reader station;

analyzing the containers to identify reactions therein at the auto reader station;

supporting a transport assembly for three dimensional movement between the first station, the centrifuge and the auto reader station; and

operating the transport assembly to transport the containers from the first station to the centrifuge after the test solutions have been formed in the containers, and to transport the containers from the centrifuge to the auto reader station.

5,620,899

METHOD FOR THE DETECTION OF GASTRIC EPITHELIAL DAMAGE

Jonathan B. Meddings, 16 Varshaven Place NW, Calgary, Canada; Lloyd Sutherland, 500 Eau Claire Ave., Calgary, Canada, and John L. Wallace, Site 5 RR #1, Cochrane, Canada

PCT No. PCT/CA92/00402, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO93/06484, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 17, 1992, Ser. No. 190,139
Claims priority, application Canada, Sep. 18, 1991, 2051787
Int. Cl.[6] G01N *33/66;33/50*
U.S. Cl. 436—63 **17 Claims**

1. A method for the detection of gastric epithelial damage in a patient who has ingested a metabolizable disaccharide, the method comprising:

(a) assaying for the presence of the disaccharide in the blood or urine of the patient; and

(b) comparing the disaccharide assay value obtained in (a) with a control disaccharide value for detecting gastric epithelial damage.

5,620,900

MEANS AND METHOD FOR THE DETERMINATION OF AMMONIUM IONS

Dieter Tanzer, c/o E. Merck Postfach 4119, D-64271 Darmstadt, Germany

Filed Oct. 13, 1995, Ser. No. 542,839
Claims priority, application Germany, Oct. 15, 1994, 44 36 948.4
Int. Cl.[6] G01N *33/00;21/77*
U.S. Cl. 436—113 **20 Claims**

14. A method for the determination of ammonium ions in aqueous solutions by the Berthelot method, comprising contacting an absorptive support impregnated with an amount of a phenol derivative with an alkaline sample solution containing hypochlorite or a hypochlorite former, and identifying the resultant color change on the support, wherein the phenol derivative is a hydroxyphenylalkyl alcohol, a hydroxyphenylalkylcarboxylic acid or a hydroxycinnamic acid, wherein the alkyl group contains 1–6 carbon atoms and wherein the amount of said phenol derivative is effective to determine ammonium ions in an aqueous solution by the Berthelot method.

5,620,901

DETERMINATION OF CONCENTRATION BY AFFINITY TITRATION

Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., South San Francisco, Calif.

Continuation of Ser. No. 39,786, Mar. 30, 1993, Pat. No. 5,356,784. This application May 5, 1994, Ser. No. 238,379
Int. Cl.[6] G01N *33/53*
U.S. Cl. 436—518 **11 Claims**

1. A solid support matrix which comprises a series of at least three test regions to each of which is covalently bound or absorbed a different ligand each of which different ligands is one of a series of ligands of systematically varying affinity for a specific binding partner capable of binding a desired analyte, and which test regions are arranged and said ligands are systematically varied so as to permit orderly retrieval of the results of a detecting step in an assay method to determine the concentration of an analyte in a sample, which method comprises applying a sample to said series of test regions on said solid support matrix in the presence of a constant amount of said specific binding partner under conditions wherein said ligand and said analyte compete for said specific binding partner;

detecting any said specific binding partner bound to the ligand in each test region; and

determining the concentration of analyte by determining the number of test regions to which specific binding partners is bound and comparing said number to the number that would be bound in the presence of a known concentration of analyte.

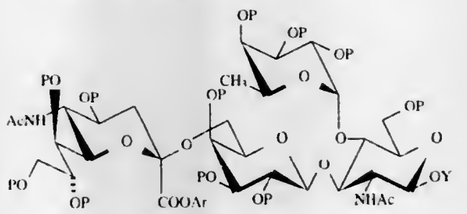
5,620,902

SIALIC ACID GLYCOSIDES, ANTIGENS, IMMUNOADSORBENTS, AND METHODS FOR THEIR PREPARATION

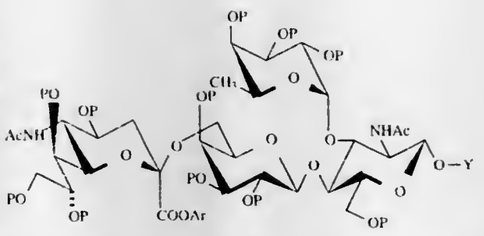
Robert M. Ratcliffe, Carlsbad; Andre P. Venot, Agoura Hills, both of Calif., and S. Zaheer Abbas, Chesterfield, Mo., assignors to Alberta Research Council, Edmonton, Canada

Continuation of Ser. No. 171,461, Dec. 22, 1993, Pat. No. 5,527,901, which is a division of Ser. No. 545,999, Jun. 28, 1990, Pat. No. 5,296,594, which is a division of Ser. No. 127,905, Dec. 2, 1987, Pat. No. 5,079,353. This application May 19, 1995, Ser. No. 446,525
Int. Cl.[6] G01N *33/543;* **C07H** *5/04;* **C07G** *17/00;* **A61K** *39/385*
U.S. Cl. 436—518 **10 Claims**

1. A compound of the formula:



or



wherein Ac is an acyl group of from 1 to 6 carbon atoms, Ar is an aromatic residue, each P is hydrogen or a protecting group, and Y

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is selected from the group consisting of hydrogen, lower alkyl of from 1 to 6 carbon atoms, a linking arm, a moiety comprising a label, and a moiety comprising a chromatographic support.

5,620,903

STABILIZED MICROSPHERES AND METHODS OF PREPARATION

Adrien Malick, Granite; Hans H. Feindt, Parkton, and Gerald D. Hahn, Severn, all of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 1,907, Jan. 4, 1993, Pat. No. 5,393,527. This application Jan. 18, 1995, Ser. No. 374,001

Int. Cl.[6] G01N *33/546;33/543;33/544;33/536*

U.S. Cl. 436—533 **14 Claims**

1. A method for detecting formation of immune complexes in an agglutination immunoassay, the method comprising:

a) contacting a sample suspected of containing an analyte with

i) a visualizer reagent comprising microspherical particles which do not bind to ligands or receptors present in the agglutination immunoassay, the microspherical particles comprising a liquid silicone or liquid fluorosilicone core, a water-insoluble dye contained in the core, and an amphiphilic compound, the amphiphilic compound forming a monolayer on the surface of the microspherical particle, and

ii) a ligand for the analyte;

b) allowing the immune complexes to form such that the microspherical particles become associated with the immune complexes, and;

c) detecting the formation of the immune complexes by means of the water-insoluble dye contained in the core of the associated microspherical particles.

5,620,904

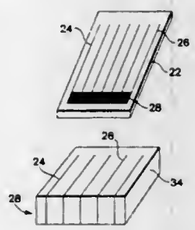
METHODS FOR FORMING WRAPAROUND ELECTRICAL CONTACTS ON SOLAR CELLS

Jack I. Hanoka, Brookline, Mass., assignor to Evergreen Solar, Inc., Waltham, Mass.

Filed Mar. 15, 1996, Ser. No. 616,822

Int. Cl.[6] H01L *31/18*

U.S. Cl. 438—98 **25 Claims**



1. A method of forming a wraparound electrical contact on a solar cell, comprising:

disposing a decal having a patterned electrically conductive material on a first surface of the solar cell;

wrapping a portion of the decal around at least one edge of the solar cell for contacting a second surface of the solar cell; and

processing the decal to remove organic matter and form an ohmic contact.

5,620,905

METHOD OF FABRICATING THIN FILM SEMICONDUCTOR INTEGRATED CIRCUIT

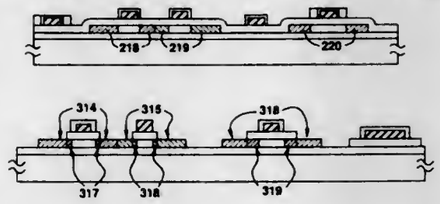
Toshimitsu Konuma; Masaaki Hiroki; Hongyong Zhang; Mutsuo Yamamoto, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 322,165, Oct. 13, 1994, abandoned. This application Mar. 29, 1995, Ser. No. 413,104

Claims priority, application Japan, Oct. 20, 1993, 5-285990

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—163 **6 Claims**



1. A method for producing a semiconductor device comprising the steps of:

forming first and second semiconductor regions on an insulating surface;

forming an insulating film on the semiconductor regions;

forming gate electrodes on the semiconductor regions respectively through the insulating film;

forming a porous anodic oxide on both sides of the gate electrode provided on only the first semiconductor region; and

forming barrier anodic oxides having same thickness on at least both sides of the gate electrodes provided on the first and second semiconductor regions; and

introducing impurity into the first and second semiconductor regions using the gate electrodes and the porous anodic oxide and the barrier anodic oxides as masks, to form offset regions in the first and second semiconductor regions of different widths between the first semiconductor region and the second semiconductor region.

5,620,906

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE BY INTRODUCING HYDROGEN IONS

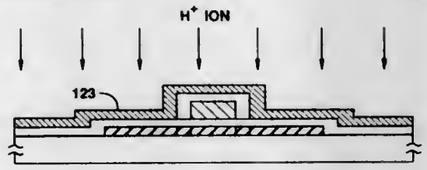
Naoaki Yamaguchi; Hongyong Zhang; Satoshi Teramoto, and Hideto Ohnuma, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Feb. 28, 1995, Ser. No. 395,434

Claims priority, application Japan, Feb. 28, 1994, 6-054865; Mar. 27, 1994, 6-080940; Apr. 5, 1994, 6-092958; Jun. 14, 1994, 6-156514

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—162 **13 Claims**



1. A method for producing a thin film transistor comprising the steps of:

forming an active layer;

forming a gate insulating film on the active layer;

introducing a hydrogen ion into the active layer through the gate insulating film;

forming a gate electrode on the gate insulating film;

forming a silicon nitride film to cover the gate insulating film and the gate electrode;

introducing a hydrogen ion into the active layer through the gate insulating film and the silicon nitride film; and

annealing the active layer containing the introduced hydrogen ion.

5,620,907

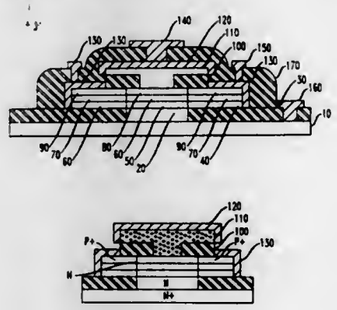
METHOD FOR MAKING A HETEROJUNCTION BIPOLAR TRANSISTOR

Bahram Jalali-Farahani, Los Angeles, Calif., and Clifford A. King, New York, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 419,627, Apr. 10, 1995, abandoned. This application Mar. 4, 1996, Ser. No. 610,646

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—320 **13 Claims**



1. A method for forming a heterojunction bipolar transistor, comprising:

a) forming a substantially single-crystalline silicon collector region of a first conductivity type within a window defined in a layer of dielectric material;

b) over the collector region and over at least a portion of the dielectric layer adjacent the collector region, forming a silicon nucleation layer by non-selective rapid thermal epitaxy and then forming a silicon-germanium alloy layer of a second conductivity type opposite to the first conductivity type by non-selective rapid thermal epitaxy, such that each resulting layer has a part to be referred to as intrinsic that overlies the collector region and a part to be referred to as extrinsic that overlies the dielectric layer, and such that each resulting layer is substantially epitaxial in the intrinsic part thereof and substantially polycrystalline in the extrinsic part thereof;

c) over the alloy layer, forming a silicon emitter layer of the first conductivity type by non-selective rapid thermal epitaxy, such that the resulting emitter layer comprises a substantially epitaxial part that overlies the collector region and a substantially polycrystalline part that overlies the dielectric layer, said parts to be respectively referred to as intrinsic and extrinsic parts of said emitter layer; and

d) implanting dopant species of the second conductivity type into the extrinsic parts of at least the alloy layer and the emitter layer while substantially excluding said species from the intrinsic parts of the alloy layer and emitter layer, wherein

e) the implanting step leads to a doping level of the second conductivity type in both the extrinsic part of the alloy layer and the extrinsic part of the emitter layer.

5,620,908

MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE COMPRISING BICMOS TRANSISTOR

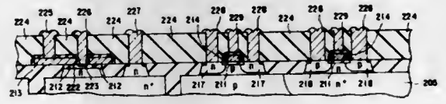
Kazumi Inob, Yokohama; Yasuhiro Katsumata, Chigasaki; Satoshi Matsuda, and Chihiro Yoshino, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 19, 1995, Ser. No. 530,578

Claims priority, application Japan, Sep. 19, 1994, 6-223800

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—207 **4 Claims**



1. A method of manufacturing a semiconductor device, which comprises the steps of:

forming selectively an element-isolating insulating layer on a surface of a semiconductor substrate to define a second conductive type active region that is to become a first conductive type MOS transistor, a first active region of a first conductive type that is to become a second conductive type MOS transistor, and a second active region of the first conductive type that is to become a bipolar transistor;

forming a first insulating layer on each of a surface of said second conductive type active region, a surface of said first active region of the first conductive type and a surface of said second active region of the first conductive type, said forming a first insulating layer step comprising removing portions of said first insulating layer disposed on the respective surfaces of said second conductive type active region and of said first active region of a first conductive type;

oxidizing the respective surfaces of said second conductive type active region and said first active region of a first conductive type to form a first oxide layer constituting a gate oxide layer;

forming a gate electrode of said first conductive type MOS transistor, a gate electrode of said second conductive type MOS transistor and a base-extracting electrode of said bipolar transistor, comprising the steps of,

forming a conductive layer disposed above and over all of the surface of said semiconductor substrate, and

patterning said conductive layer to form the respective gate electrodes and said base-extracting electrode;

forming in said base extracting electrode an opening extending to a surface of said first insulating layer, comprising the steps of,

etching a portion of said base-extracting electrode disposed over a region that is to become an emitter, and

forming a side wall insulating layer on an inner wall of said opening;

removing a first portion of said first insulating layer disposed on a bottom of said opening and a second portion of said first insulating layer disposed around said bottom of said opening, thereby forming an overhung portion underneath said base-extracting electrode;

epitaxially growing a second conductive type semiconductor layer that is to become a base by making use of said base-extracting electrode exposed at said overhung portion as well as making use of said second active region of a first conductive type as a seed crystal, said second conductive type semiconductor layer grown to such an extent as to bury said overhung portion; and

selectively forming a first conductive type semiconductor layer that is to become an emitter on a surface of said second conductive type semiconductor layer such that said first conductive type semiconductor layer does not contact said base-extracting electrode.

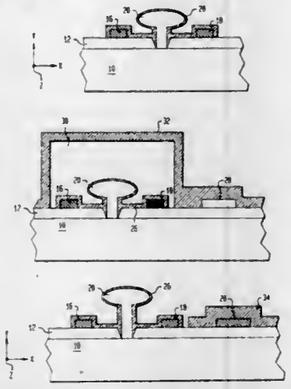
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5,620,909

METHOD OF DEPOSITING THIN PASSIVATING FILM ON MICROMINIATURE SEMICONDUCTOR DEVICES

Jenshan Lin, Flanders, N.J.; James R. Lothian, Bethlehem, Pa., and Fan Ren, Warren, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 4, 1995, Ser. No. 566,766
Int. Cl.[6] H01L *21/338;21/50;29/812*
U.S. Cl. 438—703 **5 Claims**



1. A method of fabricating an IC chip that comprises a semiconductor device that includes a sub-micron-size element, said method comprising the steps of

depositing a conformal dielectric film by ECR-CVD to cover the entirety of the surface of said element,

forming patterned resist over said dielectric film,

depositing additional dielectric material by ECR-CVD, at a temperature below the glass transition temperature of said resist, on the entire surface of said device including the surface of the patterned resist,

and lifting off said patterned resist and thereby removing the additional dielectric material on the surface of said resist,

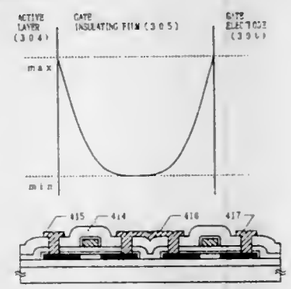
wherein said device element comprises the gate electrode of an HEMT device.

5,620,910

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE WITH A GATE INSULATING FILM CONSISTING OF SILICON OXYNITRIDE

Satoshi Teramoto, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 22, 1995, Ser. No. 494,560
Claims priority, application Japan, Jun. 23, 1994, 6-165931
Int. Cl.[6] H01L *21/318;21/84*
U.S. Cl. 438—151 **18 Claims**



1. A method for producing a semiconductor device comprising the steps of:

forming an active layer on a substrate having an insulating surface;

irradiating a laser into the active layer in an atmosphere including at least one of oxygen, nitrogen and halogen element; and

forming a film including silicon, oxygen and nitrogen on the active layer by plasma CVD,

wherein the substrate is not substantially exposed to an air atmosphere from the laser irradiating step to the film forming step; and

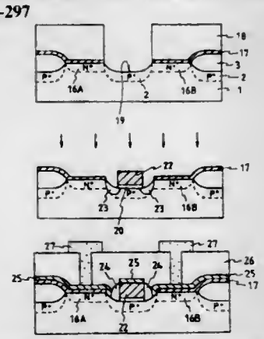
wherein composition ratios of nitrogen at an interface between the film and the active layer and at a surface of the film not in contact with the active layer are larger than in other portions of the film.

5,620,911

METHOD FOR FABRICATING A METAL FIELD EFFECT TRANSISTOR HAVING A RECESSED GATE

Sang H. Park, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,293
Claims priority, application Rep. of Korea, Dec. 31, 1993, 93-31827; Dec. 31, 1993, 93-31863; Dec. 31, 1993, 93-31879; Dec. 31, 1993, 93-31889
Int. Cl.[6] H01L *21/265;21/44;21/255;21/302*
U.S. Cl. 438—297 **6 Claims**



1. A method for fabricating a metal oxide semiconductor field effect transistor, comprising the steps of:

forming an element isolation mask pattern on a silicon substrate such that the silicon substrate has an exposed portion disposed at an active region including a region where a gate electrode is to be formed;

forming a field oxide film on the exposed portion of the silicon substrate by use of a thermal oxidation process and forming a temporary field oxide film at the region where the gate electrode is to be formed;

removing the element isolation mask pattern;

implanting impurity ions of a conduction type opposite to that of the silicon substrate in a first concentration in exposed portions of the silicon substrate, thereby forming a source and a drain;

depositing a polysilicon film on an entire exposed surface of a resulting structure obtained after the formation of the source and the drain;

forming a photoresist film pattern on the polysilicon film such that the photoresist film pattern is not disposed over the temporary field oxide film;

etching an exposed portion of the polysilicon film and the temporary field oxide film, thereby forming a trench in the silicon substrate;

removing the photoresist film pattern;

forming a gate oxide film and the gate electrode on a bottom surface of the trench;

implanting further impurity ions of a conduction type opposite to that of the silicon substrate in a second concentration in further exposed portions of the silicon substrate, said second concentration being lower than said first concentration, thereby forming lightly doped regions at opposite ends of the gate electrode; and

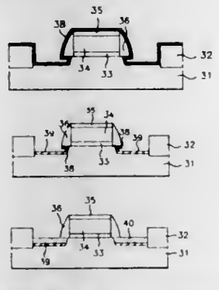
forming insulating film spacers on side walls of the gate electrode, and then selectively forming a silicide film on the gate electrode and the polysilicon film, so that the silicide film is deposited on the source and the drain.

5,620,912

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING A SPACER

Lee Y. Hwang, Cheongju-si, and Hong S. Kim, Daejeon-si, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jun. 5, 1995, Ser. No. 462,042
Claims priority, application Rep. of Korea, Jul. 21, 1994, 17683/1994
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 438—301 **14 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a gate insulating film on a semiconductor substrate;

forming a gate on the gate insulating film;

forming a spacer on respective sides of the gate;

etching the substrate at the respective sides of the gate to form respective recessed parts of the substrate so that the recessed parts extend underneath the spacer;

providing an insulating film on the recessed parts underneath the spacer;

depositing a semiconductor layer on the insulating film extending underneath the spacer to fill the recessed parts; and

forming impurity regions in the semiconductor substrate on the respective sides of the gate, the impurity regions contacting the semiconductor layer.

5,620,913

METHOD OF MAKING A FLASH MEMORY CELL

Hsiao-Lun Lee, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed May 28, 1996, Ser. No. 654,517
Int. Cl.[6] H01L *21/265;21/70;27/00*
U.S. Cl. 438—264 **16 Claims**

1. A method of forming a flash memory EEPROM transistor comprising the steps in the sequence as follows:

forming on a surface of a semiconductor substrate a sacrificial silicon oxide layer over a semiconductor substrate,

forming a doped source region in the surface of said substrate,

stripping said sacrificial silicon oxide layer from said semiconductor substrate,

forming a dielectric layer over said substrate including a gate oxide layer over said source region and a tunnelling dielectric layer over said substrate aside from said source region,

forming a stacked-gate structure for said transistor said stacked-gate structure overlapping one edge of said doped source region, said stacked-gate structure comprising a floating gate layer, an interelectrode dielectric layer, and a control gate layer, and

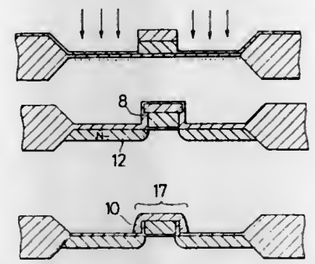
forming at another side of said stacked gate structure opposite from said one side of said stacked gate structure a doped drain region in the surface of said substrate with one edge of said doped drain region overlapping said gate structure.

5,620,914

MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE

Satoshi Hikida, Yamatokoriyama, and Norihiro Tokuyama, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 460,724
Claims priority, application Japan, Oct. 18, 1994, 6-252322
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 438—304 **6 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

(a) providing a semiconductor substrate laminated with an insulating film, a polysilicon layer, and a first conductive layer in this order, said first conductive layer formed of a high melting point metal or a silicide;

(b) removing by etching the first conductive layer and the polysilicon layer in a region other than a gate pattern formation region without exposing the insulating layer by retaining a residual polysilicon layer on the insulating layer;

(c) implanting a first impurity through the residual polysilicon layer into the semiconductor substrate to form a low concentration impurity region;

(d) converting the residual polysilicon layer in the region other than the gate pattern formation region and a polysilicon layer sidewall in the gate pattern formation region into a silicon oxide layer by subjecting to oxidation treatment;

(e) laminating the semiconductor substrate and the silicon oxide layer with a second conductive layer;

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(f) removing by anisotropic etching the second conductive layer so that conductive spacers remain on sidewalls of the gate pattern formation region; and

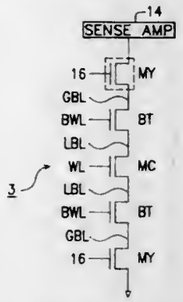
(g) using the conductive spacers as masks, implanting the semiconductor substrate with a second impurity to form a source and drain region.

5,620,915

METHOD FOR BYPASSING NULL-CODE SECTIONS FOR READ-ONLY MEMORY BY ACCESS LINE CONTROL

Hsin-Li Chen, and Te-Sun Wu, both of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 12, 1995, Ser. No. 501,659
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—278 **15 Claims**



1. A method for bypassing null-code sections in semiconductor read-only memory, the read-only memory having:

a plurality of memory cells each comprising a MOS transistor, the memory cells being arranged in a plurality of rows and a plurality of columns;

a plurality of word lines each connecting the gates of each of the MOS transistors of all the memory cells in each of the rows;

a plurality of bit lines each connecting one of the source/drain pair of each of the MOS transistors of all the memory cells in each of the columns;

a multiplexer means comprising a plurality of transmitting transistors, each of the transmitting transistors being connected to a corresponding one of the bit lines, forming a current flow path including the transmitting transistor, the connected bit line, and the memory cells correspondingly connected to the bit line; and

a sense amplifier means coupled to the multiplexer for sensing the current flowing therethrough the current flow path to output a corresponding sense output signal;

the method comprising:

programming the transmitting transistor in the current flow path into an off status when all memory cells in the column connecting to the bit line of the transmitting transistor is required to contain null code.

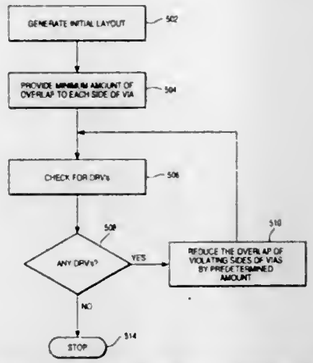
5,620,916

METHOD FOR IMPROVING VIA/CONTACT COVERAGE IN AN INTEGRATED CIRCUIT

Shmuel Eden, and Yosi Amir, both of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 53,604, Apr. 27, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 428,393
Int. Cl.[6] H01L *21/768*
U.S. Cl. 364—491 **7 Claims**

1. A method of improving via coverage by an interconnect layer of an integrated circuit comprising the steps of:



setting a design rule which specifies a minimum distance which must exist between interconnect lines of said interconnect layer;

generating an initial layout of said interconnect layer wherein said individual interconnect lines of said interconnect layer couple vias to one another and wherein said individual interconnect lines are separated by at least said minimum distance;

locating the position of a via to be coupled to one of said interconnect lines of said interconnect layer;

increasing to a first amount the amount of overlap of each side of said via by said interconnect line;

checking whether increasing said overlap of each side of said via to said first amount violates said design rule; and

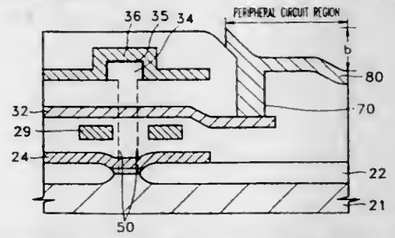
removing said first amount of overlap from those sides which violate said design rule.

5,620,917

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE HAVING A CAPACITOR

Joo-young Yoon, Euiwang, and In-ho Nam, Suseong-gu, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 158,851, Nov. 29, 1993. This application Mar. 14, 1996, Ser. No. 615,087
Claims priority, application Rep. of Korea, Nov. 27, 1992, 92-22570
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—253 **8 Claims**



1. A method for manufacturing a semiconductor memory device having a memory cell array comprising a plurality of memory cells on a semiconductor substrate and a peripheral circuit region formed on the periphery of said memory cell array, a memory cell adjacent said peripheral circuit region having a transistor comprised of a source region, a drain region and a gate electrode and a capacitor comprised of a storage electrode, a dielectric film and a plate electrode, the method comprising the steps of:

forming said transistor over said semiconductor substrate;

forming a first conductive layer over said gate electrode of said transistor;

forming a first planarization layer over said first conductive layer;

forming a first contact hole to a portion of the source region of said transistor;

forming a storage electrode on said first planarization layer, said storage electrode connected with the source region of said transistor via said first contact hole;

sequentially forming a dielectric film and a plate electrode on the surface of said storage electrode, to thereby form said capacitor; and

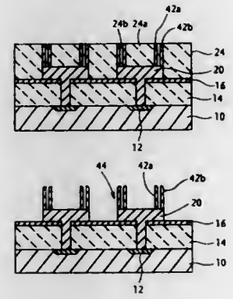
forming a second conductive layer on said peripheral circuit region, said second conductive layer being connected with said first conductive layer.

5,620,918

METHOD OF PRODUCING CYLINDRICAL STORAGE NODE OF CAPACITOR ON SEMICONDUCTOR SUBSTRATE

Kenji Kondoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 637,469
Claims priority, application Japan, Apr. 28, 1995, 7-106350
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—396 **6 Claims**



1. A method of producing a cylindrical storage node of a capacitor on a semiconductor substrate, the method comprising the steps of:

(a) forming a first conductor layer, which becomes a base part of the storage node, on the substrate;

(b) forming a sacrificing layer over the first conductor layer;

(c) overlaying the sacrificing layer with a positive resist layer for electron beam lithography which undergoes a reversal to negative and becomes undissolvable by a slight overexposure;

(d) exposing the positive resist layer to an electron beam in a circular area above the first conductor layer to perform a slight overexposure in a major region of the circular area and a proper exposure only in a peripheral region of the circular area;

(e) developing the resist layer to thereby form a cylindrical slit in the resist layer in the peripheral region of said circular area;

(f) etching said sacrificing layer by using the remaining resist layer as mask to thereby form a cylindrical slit in the sacrificing layer under the cylindrical slit in the resist layer and thereafter removing the resist layer;

(g) depositing a second conductor layer on the sacrificing layer to fill said cylindrical slit in the sacrificing layer with the deposited conductor; and

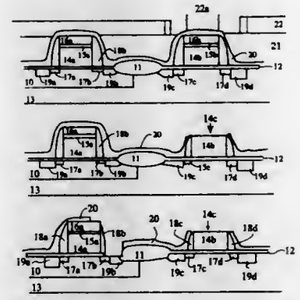
(h) etching the second conductor layer until the upper surface of the sacrificing layer is exposed and removing the sacrificing layer, whereby the conductor in said cylindrical slit in the sacrificing layer appears as a hollow cylinder standing on said first conductor layer.

5,620,919

METHODS FOR FABRICATING INTEGRATED CIRCUITS INCLUDING OPENINGS TO TRANSISTOR REGIONS

Norman Godinho, Los Altos Hills; Frank T.W. Lee, Monte Sereno; Hsiang-Wen Chen, Cupertino; Richard F. Motta, Los Altos; Juine-Kai Tsang, Palo Alto; Joseph Tzou, Belmont; Jai-man Baik, San Jose, and Ting-Pwu Yen, Fremont, all of Calif., assignors to Paradigm Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 260,671, Jun. 16, 1994, abandoned, which is a continuation of Ser. No. 759,016, Sep. 12, 1991, abandoned, which is a division of Ser. No. 464,496, Jan. 12, 1990, Pat. No. 5,166,771. This application Mar. 30, 1995, Ser. No. 413,976
Int. Cl.[6] H01L *21/8244*
U.S. Cl. 438—230 **1 Claim**



1. A method for fabricating an integrated circuit, the method comprising the steps of:

forming over a semiconductor substrate: (1) transistor gates G1 and G2; (2) a first dielectric (16*b*) over the gate G1, and (3) a second dielectric (16*a*) over the gate G2, the first and second dielectrics being formed of a first material;

introducing a dopant into the semiconductor substrate to dope source and drain regions adjacent to the gates G1 and G2, the source and drain regions including a region S2 adjacent to the gate G2;

forming dielectric spacers (18*a*, 18*b*, 18*c*, 18*d*) over the source and drain regions, the dielectric spacers being adjacent to sidewalls of the gates G1 and G2, the dielectric spacers being formed of a second material different from the first material, the dielectric spacers including a spacer SP2 over the region S2;

forming of the second material a third dielectric (20) over the gates G1 and G2, over the dielectric spacers and over the source and drain regions;

forming a first planar layer over the third dielectric;

blanket etching the first layer so as to expose the third dielectric over the gate G1 but not the entire third dielectric over the source and drain regions adjacent to the gate G1;

forming a second layer over the blanket-etched first layer;

removing a portion of the second layer selectively to the blanket-etched first layer to expose the third dielectric over a part of the gate G1 and over at least one of the source and drain regions adjacent to the gate G1;

removing portions of the third and first dielectrics and of the dielectric spacers through the opening to expose a part, but not all, of the gate G1, wherein the first layer prevents complete removal of the third dielectric from the source and drain regions adjacent to the gate G1;

removing the first and second layers; and

after removing the first and second layers, removing a portion of the third dielectric and of the spacer SP2 through a mask opening overlaying the region S2, wherein the mask opening overlays the gate G2 but wherein: (1) the portion of the third dielectric and of the spacer SP2 is removed selectively to the first material so that the first material protects a top of the gate G2, but not sidewalls of the gate G2, from being exposed, and

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(2) a remaining portion of the spacer SP2 protects a sidewall of the gate G2 from being exposed.

5,620,920

PROCESS FOR FABRICATING A CMOS STRUCTURE WITH ESD PROTECTION

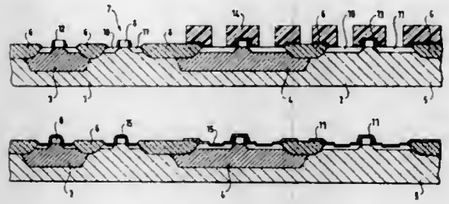
Klaus Wilmsmeyer, Denzlingen, Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Mar. 11, 1996, Ser. No. 613,290

Claims priority, application Germany, Mar. 24, 1995, 19510777

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—227 **10 Claims**



1. A process for fabricating a CMOS structure with ESD protection comprising the steps of:

forming, in a substrate of a first conductivity type, at least one well region of a second conductivity type;

forming field-oxide regions, gate-oxide regions and spacers on said substrate and said well region, said spacers adjoining said gate oxide regions;

forming source and drain regions associated with said gate-oxide regions, said source and drain regions being of said second conductivity type in said substrate and of said first conductivity type in said well region;

depositing a protective oxide layer on said substrate, said oxide layer being masked so as to cover those areas of said source and drain regions which adjoin said field-oxide regions and said gate regions and;

siliciding said substrate with said masked protective oxide layer as a mask, said oxide layer being characterized in that it has a greater etch rate than said field-oxide regions and said spacers.

5,620,921

OCULAR ANDROGEN THERAPY IN SJOGREN'S SYNDROME

David A. Sullivan, Acton, Mass., assignor to The Schepens Eye Research Institute, Inc., Boston, Mass.

Continuation of Ser. No. 871,657, Apr. 21, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 124,842

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—178 **12 Claims**

1. A method for treating keratoconjunctivitis sicca (KCS) comprising

providing a therapeutic agent comprising a therapeutically effective amount of an androgen or androgen analogue that has androgenic effectiveness and not estrogen effectiveness in topical application, said androgen or androgen analogue being in a pharmaceutically acceptable substance, and

administering said therapeutic agent topically to the ocular surface or immediate vicinity of an eye of a patient.

5,620,922

METHOD FOR FABRICATING CMOS DEVICE HAVING LOW AND HIGH RESISTANCE PORTIONS AND WIRE FORMED FROM A SINGLE GATE POLYSILICON

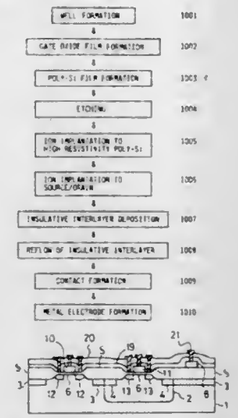
Yoshifumi Yoshida; Shinichi Yoshida; Yutaka Saitoh, and Jun Osanai, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 17, 1995, Ser. No. 414,003

Claims priority, application Japan, Mar. 18, 1994, 6-49310; Mar. 14, 1995, 7-54724

Int. Cl.[6] H01L *21/70*

U.S. Cl. 438—210 **16 Claims**



1. A method for fabricating a semiconductor device having high-resistance polysilicon and low-resistance polysilicon on the surface of a substrate, wherein the high-resistance polysilicon serves as a resistance and the low-resistance polysilicon serves as a wire and a gate electrode of a MOS transistor, comprising the steps of:

forming a gate oxide film;

forming a polysilicon film;

simultaneously forming a resistance, a wire, and a gate electrode from the polysilicon film by etching using a resist as a mask;

introducing impurities into the polysilicon for controlling a resistance value thereof to thereby form a high-resistance polysilicon resistance through ion implantation;

introducing impurities into the polysilicon to thereby form a low-resistance polysilicon wire through ion implantation;

introducing n-type impurities into the polysilicon to thereby form a gate electrode of a PMOS transistor and source and drain regions of the PMOS transistor through ion implantation; and

introducing p-type impurities into the polysilicon to thereby form a gate electrode of an NMOS transistor and source and drain regions of the NMOS transistor through ion implantation.

5,620,923

SYNTHESIS OF PEPTIDES AS CLONED UBIQUITIN EXTENSIONS

Martin C. Rechsteiner; Yung Yoo, both of Salt Lake City, Utah; Keith D. Wilkinson, Lilburn, Ga., and Kevin V. Rote, Lake Villa, Ill., assignors to The University of Utah, Salt Lake City, Utah

Division of Ser. No. 420,544, Oct. 12, 1989, abandoned. This application Apr. 3, 1992, Ser. No. 862,737

Int. Cl.[6] C12N *15/62*

U.S. Cl. 435—69.7 **7 Claims**

1. A method for synthesis and recovery of a peptide cloned as a ubiquitin-carboxyl terminal extended peptide wherein the peptide contains from about two to forty amino acid residues and wherein the N-terminal amino acid of the peptide is any amino acid except proline, the method comprising the steps of:

(a) cloning a synthetic oligonucleotide encoding the desired peptide to be prepared as an extension of a ubiquitin gene at an appropriate site in a plasmid to form a DNA segment encoding a ubiquitin-carboxyl terminal extension peptide;

(b) transforming said plasmid into an appropriate bacterial expression strain and inducing expression of the ubiquitin-carboxyl terminal extension peptide;

(c) recovering the protein from the cells of said bacteria and subjecting at least the ubiquitin-carboxyl terminal extension peptide from the recovered protein to the action of an eucaryotic enzyme specific to cleavage of the amide bond between the C-terminal glycine of the ubiquitin molecule and the N-terminal amino acid of the peptide; and

(d) separating the cleaved peptide from free ubiquitin and any proteins present.

5,620,924

METHOD OF PREVENTING DETERIORATION OF FILM QUALITY OF TRANSPARENT CONDUCTIVE FILM

Yutaka Takizawa, and Ken-ichi Yanai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

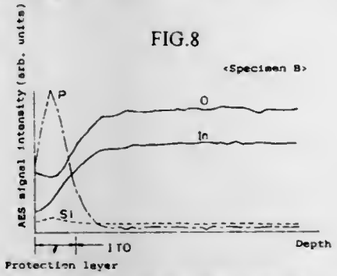
Division of Ser. No. 297,155, Aug. 29, 1994, Pat. No. 5,429,983. This application Mar. 22, 1995, Ser. No. 407,957

Claims priority, application Japan, Dec. 27, 1993, 5-330661; Mar. 18, 1994, 6-049528

Int. Cl.[6] G02F *1/13;* **H01L** *21/205*

U.S. Cl. 427—108 **11 Claims**

FIG.8



1. A method of preventing the deterioration of a transparent conductive oxide film, which comprises:

forming a film of a transparent conductive oxide on a transparent insulating substrate;

contacting the transparent conductive oxide film with a phosphorus-, arsenic- or antimony-containing reactive gas to form a layer of growth nuclei on the surface of the film; and

contacting said layer with a reducing atmosphere or an oxidizing atmosphere.

5,620,925

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE USING A HAGOLEN PLASMA TREATMENT STEP

Reinpei Nakata, Tokyo; Hitoshi Itoh, Kunitachi; Takashi Endo, Tokyo, and Johrn Watanabe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

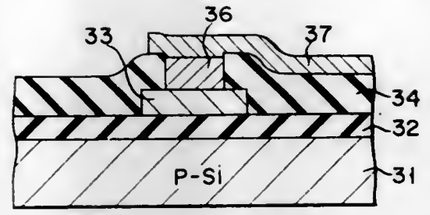
Continuation of Ser. No. 57,415, May 6, 1993, abandoned, which is a continuation of Ser. No. 819,674, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 439,608, Nov. 21, 1989, abandoned. This application Oct. 21, 1994, Ser. No. 327,450

Claims priority, application Japan, Nov. 21, 1988, 63-292329; Jan. 12, 1989, 1-5421; Jun. 1, 1989, 1-139720

Int. Cl.[6] H01L *21/255*

U.S. Cl. 438—641 **18 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of depositing an insulating layer on a first conductive layer formed on a substrate; patterning the insulating layer; treating the surface of the insulating layer and the exposed surface of the first conductive layer with a gas plasma containing halogen atoms at a pressure of 10^{-6}–10^{-3} Torr, and depositing selectively a conductive material by vapor growth on the exposed surface of the first conductive layer so as to form a second conductive layer.



5,620,926

METHOD FOR FORMING A CONTACT WITH ACTIVATION AND SILICIDE FORMING HEAT TREATMENT

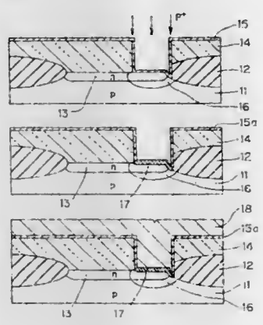
Hiroshi Itoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,687

Claims priority, application Japan, Jul. 21, 1994, 6-190190

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—530 **5 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

(1) forming an insulating film on a surface of a silicon substrate;

(2) forming an opening in said insulating film to partially expose the surface of said silicon substrate through said opening;

(3) depositing a refractory metal on the surface of said silicon substrate, said insulating film and a sidewall of said opening;

(4) implanting impurity ions selectively into the surface of said silicon substrate in said opening through said refractory metal;

(5) heat-treating the silicon substrate to activate the implanted impurity ions and to selectively form a refractory metal silicide on the surface of said silicon substrate in said opening; and

(6) growing a metal film on the refractory metal which has not been silicided and on the silicide generated in the heat-treating step (5).

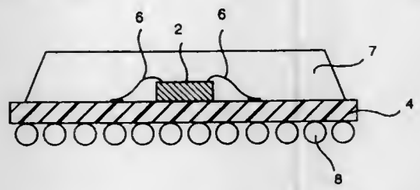
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5,620,927

SOLDER BALL ATTACHMENT MACHINE FOR SEMICONDUCTOR PACKAGES

Shaw W. Lee, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 25, 1995, Ser. No. 449,950
Int. Cl.[6] H01L 21/60
U.S. Cl. 29—841 13 Claims



1. A method of attaching solder balls to a substrate assembly for use in semiconductor package utilizing a solder ball attachment mechanism that includes a stencil having an array of holes thereon received in a stencil holder which together being received in said mechanism, said stencil having each stencil hole in the array adapted to receive a solder ball, the method comprising the steps of:

placing a substrate having an array of fluxed landing pads in the solder ball attachment machine wherein said array of landing pads are aligned with an associated hole array in the stencil;

rolling a multiplicity of solder balls over the stencil hole array such that each of the holes in the hole array are filled with a single associated solder ball; and

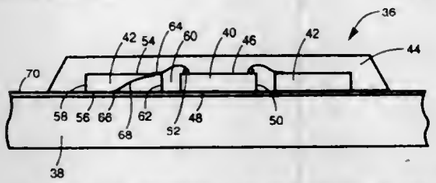
attaching the solder balls that fill the stencil hole array to said landing pads using a soldering process.

5,620,928

ULTRA THIN BALL GRID ARRAY USING A FLEX TAPE OR PRINTED WIRING BOARD SUBSTRATE AND METHOD

Shaw W. Lee, Cupertino; Anthony E. Panczak, Sunnyvale, and Jagdish G. Belani, Cupertino, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 11, 1995, Ser. No. 439,362
Int. Cl.[6] H01L 21/60
U.S. Cl. 438—118 21 Claims



1. A method of manufacturing an integrated circuit package assembly including (i) an integrated circuit die having a bottom surface and a plurality of input/output terminals, (ii) electrically conductive means accessible from outside said assembly, and (iii) an encapsulating material encapsulating said integrated circuit die and portions of said electrically conductive means, said method comprising the steps of:

a) providing a temporary support substrate having a top surface for supporting said integrated circuit package as said package is being assembled;

b) detachably supporting said integrated circuit die on the top surface of said temporary support substrate;

c) electrically connecting each of said input/output terminals on said integrated circuit die to said electrically conductive means;

d) encapsulating said integrated circuit die and at least a portion of said electrically conductive means with said encapsulating material such that the bottom surface of said integrated circuit die supported by said temporary support substrate is not covered by said encapsulating material; and

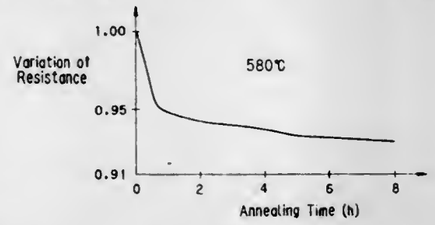
f) detaching said encapsulated integrated circuit die from said temporary support substrate.

5,620,929

METHOD OF MANUFACTURING A GAS FLOW TYPE SENSOR

Takashi Hosoi; Mizuho Doi, and Nariaki Kuriyama, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 390,362
Claims priority, application Japan, Feb. 23, 1994, 6-064321
Int. Cl.[6] H01L 21/302
U.S. Cl. 438—50 14 Claims



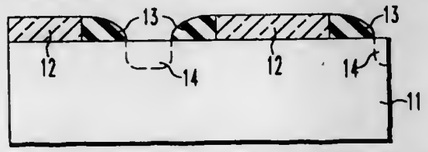
1. A method of manufacturing a gas flow type sensor, which includes steps in a process of sequentially depositing silicon nitride, platinum and silicon nitride onto a lower semiconductor substrate to form a three-layer film thereon, etching the three-layer film to form a heat-wire portion according to a specified pattern, etching a part of the lower semi-conductor substrate to form a groove and the heat-wire portion bridged over the groove, bonding an upper semiconductor substrate having a groove etched therein to the lower semiconductor substrate to match the grooves with each other to form a gas path in the assembled substrates, an improvement comprising a sputtering process for continuously forming the silicon nitride layer, the platinum layer and the silicon nitride layer by sputtering deposition on the lower semiconductor substrate with a following heat-treatment of the formed three-layer film at a temperature not exceeding 600° C.

5,620,930

TRENCH ETCHING IN AN INTEGRATED-CIRCUIT SEMICONDUCTOR DEVICE

Hans P. W. Hey, Phoenix, Ariz., and Kei Yoshida, Allentown, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 679,163, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 374,721, Jul. 3, 1989, abandoned. This application Apr. 20, 1995, Ser. No. 425,734
Int. Cl.[6] H01L 21/467
U.S. Cl. 438—421 16 Claims



1. In the manufacture of a semiconductor integrated circuit device, a method for forming a trench in a body of a semiconductor material comprising the steps of:

forming a patterned first layer on a first portion of said body, said first layer having a terminating edge at the intended location of a first edge of said trench;

forming a spacer on a second portion of said body, said spacer abutting said first layer along said terminating edge, the width of said spacer being essentially the intended width of said trench, an edge of said spacer thereby defining the location of a second edge of said trench;

forming an oxide region on said body abutting said spacer;

selectively removing said spacer; and

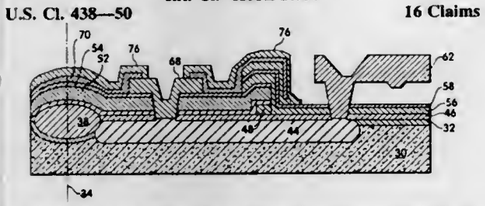
etching said trench.

5,620,931

METHODS FOR FABRICATING MONOLITHIC DEVICE CONTAINING CIRCUITRY AND SUSPENDED MICROSTRUCTURE

Robert W. K. Tsang, Bedford, and Theresa A. Core, North Andover, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 448,181, May 23, 1995, which is a continuation of Ser. No. 75,043, Jun. 10, 1993, Pat. No. 5,417,111, which is a division of Ser. No. 899,765, Jun. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 569,080, Aug. 17, 1990, abandoned, and a continuation-in-part of Ser. No. 872,037, Apr. 22, 1992, Pat. No. 5,314,572, which is a continuation-in-part of Ser. No. 569,080, Aug. 17, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,879
Int. Cl.[6] H01L 21/00
U.S. Cl. 438—50 16 Claims



1. A process for fabricating a monolithic device, comprising the steps of:

(1) providing a substrate having a first surface region for formation of a circuit and a second surface region for formation of a suspended microstructure;

(2) forming transistors in the first surface region of said substrate;

(3) forming a spacer layer over the second surface region of said substrate;

(4) forming at least one anchor opening in said spacer layer;

(5) forming a patterned polysilicon layer over said spacer layer and said anchor opening to define said microstructure;

(6) forming conductive paths for electrically interconnecting said transistors to form said circuit and for electrically interconnecting said microstructure to said circuit; and

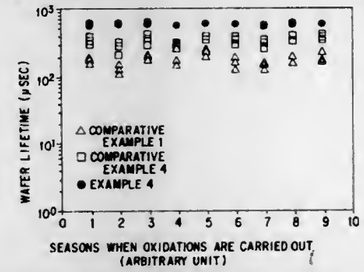
(7) removing said spacer layer to release said suspended microstructure.

5,620,932

METHOD OF OXIDIZING A SEMICONDUCTOR WAFER

Nobuyoshi Fujimaki, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 266,866
Claims priority, application Japan, Jul. 6, 1993, 5-192726
Int. Cl.[6] H01L 21/02
U.S. Cl. 438—770 13 Claims



1. A method of oxidizing a semiconductor wafer using a heat treatment furnace comprising the steps of:

oxidizing said wafer in said furnace:

taking said semiconductor wafer out of said heat treatment furnace after said oxidizing step while feeding an ambient gas through and out of said heat treatment furnace,

wherein:

said ambient gas contains water vapor; and

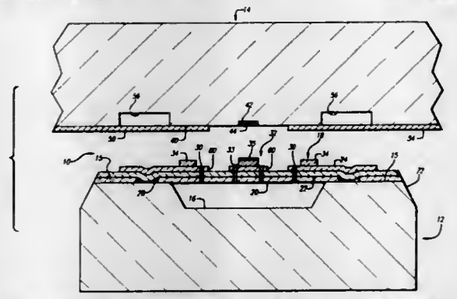
the flow rate of said ambient gas divided by the cross section of the gap between the interior cross sectional surface diameter of said heat treatment furnace and said semiconductor wafer is 200 cm/min or more.

5,620,933

MICROMACHINED RELAY AND METHOD OF FORMING THE RELAY

Christopher D. James, Carlsbad, and Henry S. Katzenstein, Arroyo Grande, both of Calif., assignors to Brooktree Corporation, San Diego, Calif.

Division of Ser. No. 12,055, Feb. 1, 1993, Pat. No. 5,479,042. This application May 19, 1995, Ser. No. 445,139
Int. Cl.[6] H01L 21/461;21/465
U.S. Cl. 216—2 31 Claims



1. In a method of forming a micromachined relay, the steps of:

providing a substrate made from semiconductor material having anisotropic properties,

forming bridging means on the substrate with dielectric properties and with properties in the bridging means of withstanding an etchant material,

forming at least one hole in the bridging means,

applying the etchant material through the hole in the bridging means to etch a cavity in the substrate at positions below the bridging means, with dimensions dependent upon the anisotropic properties of the substrate, to separate a portion of the length of the bridging means from the substrate, and

forming an electrical contact on the bridging means at an intermediate position along the separated portion of the length of the bridging means.

5,620,934

PRODUCTION PROCESS OF SILICON CARBIDE FROM ORGANOSILICON COMPOUNDS

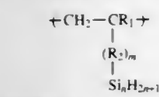
Masayoshi Itoh, Yokohama; Ryo Takeuchi, Kamakura; Kenji Iwata, and Mineo Kobayashi, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 383,712, Feb. 3, 1995, which is a division of Ser. No. 147,425, Nov. 5, 1993, abandoned, which is a continuation of Ser. No. 585,275, Sep. 17, 1990, abandoned, which is a continuation of Ser. No. 254,940, Aug. 22, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 413,169
Claims priority, application Japan, Jan. 28, 1987, 62-015929; Feb. 16, 1987, 62-031514; Feb. 20, 1987, 62-035696; Dec. 7, 1987, 62-307491; Dec. 7, 1987, 62-307493
Int. Cl.[6] C04B 35/571
U.S. Cl. 501—88 13 Claims

1. A process for the production of silicon carbide, which comprises firing at a temperature in a range of 500° to 2,500° C. a

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silicon-containing polymer which contains recurring units represented by the following general formula:



(IV)

wherein m is 0 or a positive integer of 1 to 20, n stands for 1, 2 or 3, R_1 is hydrogen, an alkyl group, an aryl group or a halogen. R_2 is an alkylene or phenylene group, and R_1 and R_2 may optionally contain one or more functional groups selected from the group consisting of COOH, NH_2, Cl and OH.

5,620,935

METHOD FOR THE REGENERATION OF A CATALYST

Georg Thiele, Hanau, Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 14, 1996, Ser. No. 664,010

Claims priority, application Germany, Aug. 1, 1995, 195 28 220.5

Int. Cl.[6] B01J *38/48;* **C07D** *301/12*

U.S. Cl. 502—22 **21 Claims**

1. A method for the regeneration of a catalyst which is a zeolite containing titanium atoms that is used as a catalyst for the reaction for the preparation of epoxides from olefins and hydrogen peroxide, comprising:

treating said catalyst after the catalytic activity of the catalyst is at least partially exhausted at a sufficient temperature and for a sufficient period of time to regenerate said catalyst with hydrogen peroxide in the absence of olefin.

7. A method for the preparation of an epoxide comprising reacting an olefin with hydrogen peroxide in the presence of a zeolite containing titanium atoms as catalyst to thereby obtain an epoxidation of said olefin, and wherein the catalytic activity of the catalyst declines, regenerating said catalyst by treating said catalyst with hydrogen peroxide in the absence of said olefin to thereby obtain the regenerated catalyst.

5,620,936

RECOVERY OF SPENT CATALYST

Vinci M. Felix, Kenneth Square; Charles E. Mosheim, Zionsville, both of Pa., and Norman A. Carlson, Hockessin, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del., and Cabot Performance Material, Boyertown, Pa.

Filed Dec. 14, 1993, Ser. No. 166,495

Int. Cl.[6] B01J *20/34;35/60*

U.S. Cl. 502—27 **18 Claims**

1. A method for treating spent niobium or tantalum containing catalyst comprising:

dissolving the spent catalyst in water or an aqueous acid to form a first aqueous solution comprising H_2TaF_7 or H_2NbF_7, wherein the spent catalyst contains organic impurities, and metallic impurities comprising at least one of Fe, Mo, Ni, and Cr,

separating said aqueous solution that contains niobium or tantalum compounds from any undissolved residue,

extracting the niobium or tantalum compounds from said aqueous solution with an extracting agent comprising MIBK thereby forming an extracting agent phase,

extracting the niobium or tantalum compound from said phase into a second aqueous solution,

precipitating the extracted niobium or tantalum compound from the second aqueous solution, and;

recovering niobium or tantalum salt products from the second aqueous solution.

5,620,937

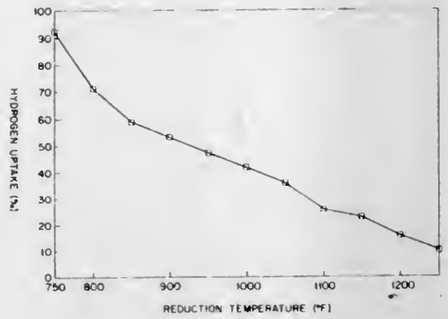
PRETREATMENT METHOD FOR INCREASING CONVERSION OF REFORMING CATALYST

Bernard F. Mulaskey, Fairfax; Robert L. Hise, Fairfield; Steven E. Trumbull, San Leandro; William J. Cannella, Hercules, and Robert A. Innes, San Rafael, all of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 151,814, Nov. 15, 1993, Pat. No. 5,382,353, which is a continuation-in-part of Ser. No. 976,786, Nov. 16, 1992, abandoned. This application Dec. 14, 1994, Ser. No. 357,308

Int. Cl.[6] B01J *29/064*

U.S. Cl. 502—66 **10 Claims**



1. A catalyst which comprises an L zeolite containing at least one Group VIII metal, which catalyst has been treated in a gaseous environment in a temperature range of from 1025° to 1275° F. while maintaining the water level of the effluent gas below 200 ppm.

5,620,938

EPOXYDATION CATALYST

Otto E. Sielcken, Sittard, Netherlands, assignor to DSM N.V., Heerlen, Netherlands

PCT No. PCT/NL93/00172, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04268, PCT Pub. Date Mar. 3, 1994

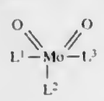
PCT Filed Aug. 16, 1993, Ser. No. 387,742

Claims priority, application Netherlands, Aug. 20, 1992, 9201482

Int. Cl.[6] B01J *31/16;* **C07D** *301/03*

U.S. Cl. 502—152 **21 Claims**

1. A catalyst for the epoxidation of alkenes using alkylhydroperoxide comprising molybdenum (IV) oxide, on a solid inorganic oxide carrier, wherein the molybdenum oxide is bound to the inorganic carrier via a polydentate organic ligand and is coordinated in the following manner:



wherein L^1 and L^2 represent the polydentate organic ligand bound to the solid inorganic carrier and wherein L^3 represents a weakly coordinated ligand.

5,620,939

INITIATIVE SYSTEM

Adel F. Halasa, Bath; Wen-Liang Hsu, Akron; David J. Zanzig, Uniontown; Paul H. Sandstrom, Tallmadge; Steven K. Henning, Cuyahoga Falls, all of Ohio, and Danielle Lucas, Welsdorf, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 531,841, Sep. 22, 1995, Pat. No. 5,534,592. This application Apr. 1, 1996, Ser. No. 627,792

Int. Cl.[6] C08F *4/48*

U.S. Cl. 502—154 **13 Claims**

1. An initiator system which is comprised of (a) a lithium initiator, (b) a sodium alkoxide, and (c) a polar modifier; wherein the sodium alkoxide is of the formula NaOR, wherein R represents an alkyl group containing from about 2 to about 12 carbon atoms; wherein the lithium initiator is an organolithium compound of the formula R-Li, wherein R represents a hydrocarbyl radical containing from 1 to about 20 carbon atoms; wherein the molar ratio of the sodium alkoxide to the polar modifier is within the range of about 0.5:1 to about 1:1; and wherein the molar ratio of the sodium alkoxide to the lithium initiator is within the range of about 0.2:1 to about 3:1.

5,620,940

PROCESS FOR FORMING A REGENERABLE SUPPORTED AMINE-POLYOL SORBENT

Philip J. Birbara, Windsor Locks, and Timothy A. Nalette, Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 307,968, Sep. 16, 1994, Pat. No. 5,492,683, which is a continuation of Ser. No. 989,277, Dec. 11, 1992, Pat. No. 5,376,614. This application Dec. 18, 1995, Ser. No. 573,840

Int. Cl.[6] B01J *20/26;20/22;20/02*

U.S. Cl. 502—402 **7 Claims**

1. A method for forming a supported amine-polyol sorbent comprising the steps of:

a. wetting a high surface area support;

b. contacting said wetted high surface area support with amine and polyol to form an amine-polyol mixture; and

c. drying said amine-polyol mixture to deposit said amine and said polyol on said high surface area support and to form the supported amine-polyol sorbent.

5,620,941

STABILIZERS FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Richard C. Van Hanehem, Rochester, and James P. Muehlhauer, North Chili, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 632,818

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **18 Claims**

7. A process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye in a polymeric binder, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image.

said dye layer also containing a stabilizer comprising a compound containing a nitroxyl free radical and having a molecular weight of at least about 400 or a hydroxylamine moiety and having a molecular weight of at least about 330, said stabilizer being present in the amount of 5–10 mole % based on the weight of the dye.

5,620,942

OVERCOAT FOR THERMAL DYE TRANSFER RECEIVING ELEMENT

Teh-Ming Kung, Rochester; David B. Bailey, Webster, and Brian T. Pope, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1996, Ser. No. 664,030

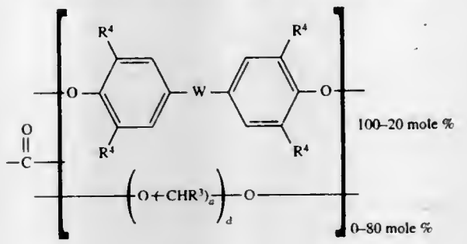
Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **20 Claims**

8. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer and transferring a dye image to a dye-receiving element to form said dye transfer image, said dye-receiving element comprising a support having thereon, in order, a dye image-receiving layer and an overcoat layer, said overcoat layer comprising:

a) a linear condensation copolymer containing block polysiloxane units copolymerized into a linear polymer chain, said linear copolymer comprising from about 1 to about 40 wt. % of polysiloxane units; and

b) a polycarbonate having a Tg of from about 10° C. to about 120° C. and a molecular weight of from about 1,000 to about 6,000, said polycarbonate having the following formula:



wherein

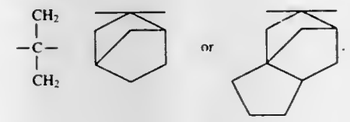
R^3 represents hydrogen, methyl or ethyl;

R^4 represents hydrogen, alkyl of 1 to 6 carbon atoms or halogen;

a represents an integer from 2 to 10;

d is an integer from 1 to 6; and

W represents



5,620,943

PROCESS FOR IDENTIFYING A LOCATION TO WHICH A SUBSTANCE HAS BEEN APPLIED

Ralph N. Brendle, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 674,434, Mar. 22, 1991, Pat. No. 5,387,745, which is a continuation of Ser. No. 70,333, Jul. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 902,138, Sep. 3, 1986, abandoned, which is a continuation of Ser. No. 778,153, Sep. 16, 1985, abandoned, which is a continuation of Ser. No. 464,664, Feb. 7, 1983, abandoned. This application Feb. 1, 1995, Ser. No. 382,069

Int. Cl.[6] A01N *25/00;* **C05G** *3/00*

U.S. Cl. 504—116 **29 Claims**

1. In a process for identifying the location to which an agricultural chemical composition has been applied, an improvement comprising incorporating an alkyleneoxy substituted fugitive colorant in the composition, prior to its application to the location, in

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an amount sufficient to identify the location, wherein the colorant is selected from the group consisting of azo and triphenylmethane colorants.

5,620,944

PHENYLIMIDAZOLE DERIVATIVES, HERBICIDES COMPRISING SAID DERIVATIVES, AND USAGES OF SAID HERBICIDES

Hiroyuki Nakanishi, Ibaraki; Masanori Yoshida, Hashimoto; Takashi Ootsuka, Kawachinagano, and Hideo Kanno, Ibaraki, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

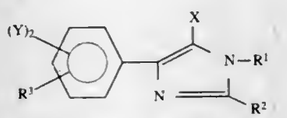
Continuation of Ser. No. 125,205, Sep. 23, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 543,065

Claims priority, application Japan, Sep. 26, 1992, 4-281021

Int. Cl.[6] A01N *43/50;* **C07D** *233/68;233/64*

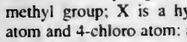
U.S. Cl. 504—275 **12 Claims**

1. A phenylimidazole derivative represented by the following formula (I)

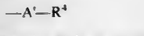


(I)

wherein R^1 is a hydrogen atom or difluoromethyl group; R^2 is a methyl group; X is a hydrogen atom; two Ys are 2-fluoro atom and 4-chloro atom; and R^3 is a group represented by the following formula



wherein A' is an oxygen atom; R^4 is a hydrogen atom or a group represented by the following formula



wherein R^6 is an alkyl group of 1–5 carbon atoms.

5,620,945

PROCESS FOR FORMING A SUPERCONDUCTIVE FIBERFORM CERAMIC COMPOSITE

Anna L. Baker, Seattle, and Michael Strasik, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 293,256, Aug. 19, 1994, which is a continuation of Ser. No. 833,862, Feb. 11, 1992, abandoned, which is a division of Ser. No. 381,489, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 698,496, Feb. 5, 1985, Pat. No. 5,041,321, which is a continuation-in-part of Ser. No. 667,568, Nov. 2, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 464,166

Int. Cl.[6] H01L *39/24;39/12;* **C23C** *18/12;* **H01B** *12/02*

U.S. Cl. 505—440 **18 Claims**

1. A process for forming a superconductive composite, said composite comprising a superconductive metal oxide and a ceramic; comprising the steps of:

(a) forming a slurry comprising superconductive metal oxide particles and ceramic fibers in a liquid;

(b) dispersing said slurry over a form-defining surface and separating a substantial amount of said liquid from said slurry to thereby form a mat of said particles upon said form-defining surface;

(c) drying said mat;

(d) contacting said mat with a sol-gel ceramic precursor binder;

(e) drying and curing said binder and mat at a sufficient temperature and for a period of time sufficient to convert said sol-gel precursor to said ceramic, to thereby form said composite.

5,620,946

COMPOSITIONS CONTAINING COMBINATIONS OF SURFACTANTS AND DERIVATIVES OF SUCCININC ACYLATING AGENT OR HYDROXYAROMATIC COMPOUNDS AND METHODS OF USING THE SAME

Richard W. Jahnke, Mentor; Lawrence J. Kocurek, Willowick, and James H. Bush, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 908,097, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 852,872, Mar. 17, 1992, Pat. No. 5,330,662. This application May 13, 1994, Ser. No. 242,589

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—131 **51 Claims**

1. A composition comprising a mixture of a brine and a synthetic liquid oil, and (A) an emulsifying amount of (i) at least one reaction product of a hydrocarbyl-substituted succinic acylating agent, and at least one of (a) ammonia, (b) an alcohol, or (c) an amine, or at least one salt of the reaction product; or (ii) at least one reaction product of a hydroxyaromatic compound, an aldehyde, and an amine, and (B) at least one surfactant selected from the group consisting of a polyoxyalkylene amine, a polyoxyalkylene amide, a polyoxyalkylene alcohol, a polyoxyalkylene phenol, a polyoxyalkylene ester, a fatty acid salt, an amine or an alkaline earth or transition metal sulfonate, or a reaction product of a hydroxyamine or a polyalkylene polyamine with an acylating agent selected from the group consisting of a fatty monocarboxylic acylating agent, a dicarboxylic acylating agent other than a succinic acylating agent, and a tricarboxylic acylating agent.

5,620,947

WATER-BASED HIGH TEMPERATURE WELL SERVICING COMPOSITION AND METHOD OF USING SAME

Julianne Elward-Berry, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 27, 1994, Ser. No. 364,341

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—229 **2 Claims**

1. A method comprising introducing into a wellbore a fluid produced from a saturated brine solution, a water soluble sized salt that is insoluble in the saturated brine solution, a water-soluble polymer produced from at least two monomers of 2-acrylamido-2-methylpropanesulfonate, acrylamide, or 2-vinylpyrrolidone, where said fluid is exposed to temperatures above 400° F.

5,620,948

ADDITIVE COMBINATIONS FOR LUBRICANTS AND FUNCTIONAL FLUIDS

Craig D. Tipton, Perry, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 444,186, May 18, 1995, Pat. No. 5,569,644. This application Jun. 20, 1996, Ser. No. 667,249

Int. Cl.[6] C10M *141/02*

U.S. Cl. 508—159 **12 Claims**

1. A lubricating composition having improved torque characteristics, said composition comprising:

An oil of lubricating viscosity and a concentrate package mixed therewith, said concentrate package comprising:

(A) 0.5–5 percent by weight of Mannich dispersant having total base number (TBN) of about 45–90;

(B) 0.5–5 percent by weight of a borated dispersant;

(C) 0.05–5 percent by weight of an organic phosphorus acid or ester;

(D) up to 2 percent by weight of a dithiocarbamate; and

(E) up to 7 percent by weight of a nitrogen-containing ester of a carbonyl-containing interpolymer,

wherein the percents by weight are based on the weight of said lubricating compositions.

5,620,949

CONDENSATION PRODUCTS OF ALKYLPHENOLS AND ALDEHYDES, AND DERIVATIVES THEREOF

Mark R. Baker, Lyndhurst, and Marvin B. DeTar, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 13, 1995, Ser. No. 571,485

Int. Cl.[6] C10M *129/00;145/00*

U.S. Cl. 508—452 **51 Claims**

1. A composition of matter suitable for use as an internal combustion engine lubricant additive, comprising the reaction product of one or more hydroxyaromatic compounds, most of the units of which are hydrocarbyl-substituted; provided that if the hydroxyaromatic compound comprises bridged ring units, then substantially all such units are hydroxyl- and hydrocarbyl-substituted; a carboxy-substituted carbonyl compound, or a source thereof; and a carbonyl compound other than a carboxy-substituted carbonyl compound, or a source thereof.

5,620,950

LUBRICATED REFRIGERANT COMPOSITION CONTAINING ALICYCLIC EPOXY COMPOUNDS

Tamiji Kamakura; Noriyoshi Tanaka; Kimiyoshi Namiwa; Yukio Tatsumi, and Masato Namiki, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

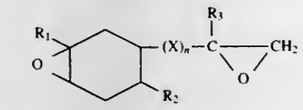
Continuation of Ser. No. 959,962, Oct. 13, 1992, abandoned. This application Aug. 8, 1995, Ser. No. 512,747

Claims priority, application Japan, Oct. 15, 1991, 3-266448

Int. Cl.[6] C09K *5/00;* **C10M** *105/38*

U.S. Cl. 508—485 **7 Claims**

1. A refrigerant composition comprising (a) an acid ester synthetic oil selected from the group consisting neopentyl polyol esters and dibasic acid esters, (b) an alicyclic epoxy compound represented by the following formula:



wherein R_1, R_2 and R_3 each independently represent a group selected from the class consisting of hydrogen and methyl, X represents a group selected from the class consisting of —CH_2—, —CH_2CH_2—and —$CH(CH_3)$—, and n is an integer of 0 or 1, and (c) a chlorine-free fluorinated hydrocarbon coolant, there being from 0.05 to 15 parts by weight of said alicyclic epoxy compound for each 100 parts by weight of said oil, and the weight ratio of the combined weight of said oil and said alicyclic epoxy compound to said coolant being from 1:99 to 99:1.

5,620,951

ETHOXYLATED ALKYL GLYCEROL ETHER SULFONATES CONTAINING COMPOSITIONS

Ravi Subramanyam, North Brunswick, and Ben Gu, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 373,140, Jan. 17, 1995, abandoned. This application Mar. 27, 1995, Ser. No. 411,358

Int. Cl.[6] C11D *3/12;1/18;9/30*

U.S. Cl. 510—153 **4 Claims**

1. A shaped solid personal cleansing composition comprising

a. about 80 to about 85 wt. % soap,

b. about 3 to 7 wt. % of a free fatty acid,

c. about 4 to about 8 wt. % of an ethoxylated alkyl glyceryl ether sulfonate wherein the average value of ethoxy is about 1 and alkyl is about 12 to about 15 carbon atoms, with no more than 50 wt. % branched alkyl, no more than 20 wt. % alkenyl, and no more than 25 wt. % of the sulfonate component having ethoxy groups with a value of four or more, and

d. about 4 to 10 wt. % of moisture wherein the value of b, c and d are selected so that a non-interrupted pressing rate of at least 40 strokes/minute sustained for at least 20 minutes is achieved in a SAS Conder presser to give a bar of about 96 grams.

5,620,952

FLUID COMPOSITIONS CONTAINING POLYHYDROXY FATTY ACID AMIDES

Yi-Chang Fu, Wyoming, Ohio; Peter R. Foley; Julie A. Dyet, both of Newcastle upon Tyne, England; Peter G. Mather, Brussels, Belgium; Robert Mermelstein, Cincinnati, and Brian J. Roselle, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 255,292, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 13,981, Feb. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 851,432, Mar. 16, 1992, abandoned. This application Mar. 11, 1996, Ser. No. 614,922

Int. Cl.[6] C11D *1/66;3/32;3/20*

U.S. Cl. 510—350 **1 Claim**

1. An improved process for preparing a stable, concentrated, fluidized mixture of a polyhydroxy fatty acid amide surfactant consisting of:

(a) preparing a stock mixture consisting of from about 30% to about 60%, by weight, of said polyhydroxy fatty acid amide surfactant in an aqueous solvent consisting of water or water containing about 15%, or less of organic solvents selected from the group consisting of methanol, ethanol, 1,2-propandiol, and mixtures thereof;

(b) heating said stock mixture to about 50° C.–80° C. sufficiently to provide an isotropic solution of said polyhydroxy fatty acid amide in said aqueous solvent;

(c) concurrently with or following step (b), adding an effective, viscosity controlling amount of a sodium salt of a carboxylate functional material selected from the group consisting of citrate, oxydisuccinate, tartrate, tartrate monosuccinate, tartrate disuccinate, gluconate, saccharate, and mixtures thereof to said isotropic solution of polyhydroxy fatty acid amide, whereby the viscosity of said solution remains at a pumpable viscosity below about 2000 cps. as measured at a temperature of about 30.6° C.

5,620,953

ANTIPROTOZOAL CYCLIC TETRAPEPTIDES

Christine L. Cannova, Toms River; Michael A. Goetz, Scotch Plains; Anne W. Dombrowski, East Brunswick; Sandra J. Rattray; Sheo B. Singh, both of Edison; Gerald F. Bills, Clark; Jon Polishook, Cranford; Joyce A. Greene, Clark, and Gary K. Darland, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

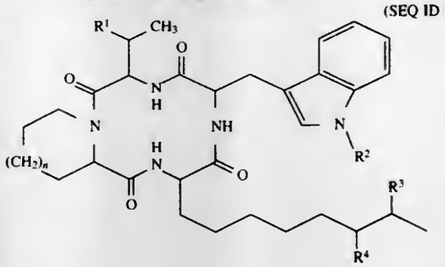
Continuation-in-part of Ser. No. 281,325, Jul. 27, 1994, abandoned. This application May 23, 1995, Ser. No. 447,664

Int. Cl.[6] C07K *5/12;* **A61K** *38/12;31/445;* **C07D** *471/04*

U.S. Cl. 514—10 **5 Claims**

1. A compound having the formula:

(SEQ ID No.1)



wherein

R^1 is CH_3 or CH_2CH_3;

R^2 is H or —OCH_3;

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R^3 is H and R^4 is =O or (H, OH); or
R^3 is OH and R^4 is =O or (H, H); and
n is 0 or 1;
with the proviso that when n is 0, R^1 is CH_2CH_3, R^3 is H and R^4 is =O; and that when R^1 is CH_3, R^3 is H and R^4 is =O; or a pharmaceutically acceptable salt thereof.

5,620,954

PEPTIDE COMPOSITIONS AND USES THEREFOR

W. Lee Maloy, Lansdale, Pa., assignor to Magainin Pharmaceuticals, Inc., Plymouth Meeting, Pa.

Continuation of Ser. No. 183,725, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 681,705, Apr. 8, 1991, abandoned. This application May 26, 1995, Ser. No. 451,307

Int. Cl.[6] A61K *38/10;* **C07K** *14/00*

U.S. Cl. 514—12 **11 Claims**

1. A pharmaceutical composition comprising a pharmaceutically effective amount of

a) a biologically active amphiphilic amide- or carboxy-terminated peptide having the following structural formula:

(SEQ ID NO: 3);

and

b) a non-toxic pharmaceutical carrier.

5,620,955

BOMBESIN RECEPTOR ANTAGONISTS AND USES THEREOF

Martha Knight, Washington, D.C.; Kazuyuki Takahashi, Germantown, and Bhaskar Chandrasekhar, Potomac, both of Md., assignors to Peptide Technologies Corporation, Gaithersburg, Md.

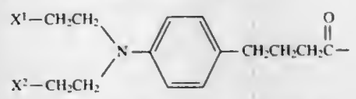
Continuation-in-part of Ser. No. 78,062, Jun. 18, 1993, abandoned. This application Dec. 17, 1993, Ser. No. 168,390

Int. Cl.[6] A61K *38/00;* **C07K** *7/08*

U.S. Cl. 514—14 **17 Claims**

1. A synthetic derivative of a peptide having

(a) an amino terminal chlorambucil group,



wherein X^1 is Cl or OH and X^2 is Cl or OH; and

(b) a peptide sequence derived from that of bombesin (SEQ ID No.:1), gastrin releasing peptide (SEQ ID No.:15), Neuromedin B (SEQ ID No.:16) or Neuromedin C (SEQ ID No.:2).

11. A method of inhibiting the growth of small cell lung cancer or pancreatic cells that are sensitive to the growth-promoting effect of bombesin or gastrin releasing peptide which comprises treating the cells with the bombesin receptor antagonist of any one of claims 1–9 in an amount effective to inhibit the growth-promoting effects of bombesin.

5,620,956

METHODS OF USING CD8 BINDING DOMAIN PEPTIDES

Carol Clayberger, and Alan M. Krensky, both of Stanford, Calif., assignors to The Board of Regents of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 791,925, Nov. 8, 1991, abandoned. This application Jul. 22, 1994, Ser. No. 279,501

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—14 **5 Claims**

1. A method of inhibiting the differentiation of a cytotoxic T-lymphocyte (CTL) precursor to a mature CTL specific for a foreign antigen, the method comprising:

before or within 24 hours after exposure to a foreign antigen, effecting the contact of human cytotoxic T-lymphocyte precursors with an effective differentiation inhibiting dose of a peptide of at least about 7 residues having the amino acid sequence of an MHC Class 1 α3 region, between residues 222–235;

wherein differentiation of said CTL precursor to a mature CTL specific for said foreign antigen is inhibited.

5,620,957

HEMOREGULATORY PEPTIDES

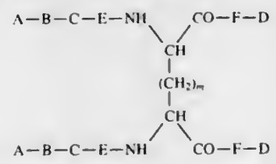
Pradip K. Bhatnagar, Exton; William F. Huffman, Malvern, both of Pa., and James E. Talmadge, Bellevue, Nebr., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 819,024, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 547,730, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 380,578, Jul. 14, 1989, abandoned. This application Jan. 8, 1993, Ser. No. 1,905

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—15 **11 Claims**

1. A compound of the following formula:



(I)

wherein:

m is 1, 2 or 4;

A is pyroglutamic acid, proline, glutamine, glutamic acid, picolinic acid, pipecolinic acid, pyrrole carboxylic acid, isopyrrole carboxylic acid, pyrazole carboxylic acid, isoimidazole carboxylic acid, triazole carboxylic acid, pyrimidine carboxylic acid, pyridine carboxylic acid, pyridazine carboxylic acid, pyrazine carboxylic acid, piperazine carboxylic acid, triazine carboxylic acid or morpholine carboxylic acid;

B is serine, glutamic acid, or aspartic acid;

C is glutamic acid, or aspartic acid;

D is lysine or the carboxyamide derivative thereof;

E is glutamic acid, aspartic acid or a peptide bond;

F is tyrosine or a peptide bond;

or a pharmaceutically acceptable salt thereof.

5,620,958

BRADYKININ ANTAGONISTS

John C. Cheronis, Lakewood; James K. Blodgett, Broomfield; Eric T. Whalley, Golden; Shadrach R. Eubanks, Arvada; Lisa G. Allen, Parker, all of Colo., and Khe T. Nguyen, San Diego, Calif., assignors to Coretech, Inc., Denver, Colo.

Continuation of Ser. No. 859,582, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 677,391, Apr. 1, 1991, abandoned. This application Apr. 13, 1994, Ser. No. 227,184

Int. Cl.[6] A61K *38/08;* **C07K** *7/18*

U.S. Cl. 514—15 **10 Claims**

1. A compound of the formula

$$BKA_1-X-BKA_2$$

wherein BKA_1 and BKA_2 are the same or different peptide antagonist of bradykinin; and X is a linker group;

said compound having bradykinin antagonist activity.

10. A pharmaceutical composition comprising a pharmaceutically effective amount of a bradykinin antagonist according to claim 1 and a pharmaceutically acceptable carrier therefor.

5,620,959

BOMBESIN ANTAGONISTS

Johann J. Lehan, Kittsee, Austria, and Frederick C. Kull, Durham, N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 972,447, Jan. 29, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,797

Claims priority, application United Kingdom, Jul. 31, 1990, 9016810

Int. Cl.[6] A61K *38/00;* **C07K** *7/06;7/08*

U.S. Cl. 514—16 **8 Claims**

1. A compound of formula (I)

$$XX^1TrpX^2X^3X^4X^5X^6X^7NH_2 \qquad \text{(I) (SEQ ID NO: 3)}$$

wherein

X is a group X^8Arg or D-Arg X^9X^{10}

and X^8 is des NH_2Pro,TyrPro,des NH_2TyrPro, Ada, Pro, D-Pro or is deleted;

X^9 is Gly, Ala, D-Ala or is deleted;

X^{10} is Asn, Phe, D-Phe, or Phe or D-Phe substituted by one or more halo atoms;

or X is a group A—(CH_2)n—CO— in which A is a group containing 1 to 3 rings of which at least one ring is aromatic, each ring system being optionally substituted; and the alkylene group is optionally substituted by one to four groups selected from amino, hydroxy C_{1-4} alkoxy and C_{1-4} alkyl optionally substituted by halo and n is 0 to 4.

or X is a group A—(CH_2)n—CO— in which A is an optionally substituted aromatic residue containing 1 to 3 rings and the alkylene group is optionally substituted by one to four groups selected from amino, C_{1-4} alkoxy and C_{1-4} alkyl optionally substituted by halo and n is 1 to 4,

or X is cyclopentylcarbonyl substituted by a group X^8 Arg (or D-Arg) X^9 X^{10} as hereinbefore defined;

X^1 is His, ThiAla or is deleted;

X^2 is Ala, D-Ala, CPenc, D-tBuGly or Pro;

X^3 is Val or Val substituted by one or more halo atoms;

X^4 is Gly, Ala, D-Ala, Sarcosine, Pro, D-Pro or D-Phe;

X^5 is His or ThiAla;

X^6 is D-Proψ, Proψ, 2-pyrrolidinyl-3-hydroxypropionyl or D-Pro; and

X^7 is Nle,Leu,Phe,Val,Mox, D-Phe or Phe, or D-Phe substituted by one or more halo atoms or naphthylAla or naphthyl D-Ala or a hydrophobic, substituted aromatic amino acid or aralkylamine or is deleted;

or a pharmaceutically acceptable salt thereof.

5,620,960

USE OF D-ALLOSE AS AN IMMUNOSUPPRESSIVE AGENT

Edward C. Arnold, Naperville, and Patrick J. Silady, Niles, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 15, 1994, Ser. No. 290,644

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—23 **3 Claims**

1. A method of suppressing formation of segmented neutrophils in warm blooded animals comprising administering to warm-blooded animals in need thereof an effective dose of a pharmaceutical preparation of D-allose.

5,620,961

FRUCTOSE ESTER-β-CYCLODEXTRIN COMPLEXES AND PROCESSES FOR MAKING AND USING SAME

Nenad S. Markovic, and Olivera T. Markovic, both of 259 Congressional La. Apt. 602, Rockville, Md. 20852

Continuation of Ser. No. 233,113, Apr. 25, 1994, abandoned. This application Oct. 24, 1994, Ser. No. 328,310

Int. Cl.[6] A61K *31/72;* **C07H** *15/06*

U.S. Cl. 514—23 **23 Claims**

1. A pharmaceutical composition comprising a synergistic combination of complexed active agents in an amount effective to inhibit cytotoxicity induced by doxorubicin, ischemia, chemotherapeutically-induced cardiomyopathy or radiation injury in a manunal, wherein said active agents are fructose hexanoate admixed with an approximately molar equivalent quantity of β-cyclodextrin and a pharmaceutically acceptable excipient.

5,620,962

ANTI-INFLAMMATORY COMPOSITIONS CONTAINING MONOGALACTOSYL DIEICOSAPENTAENOYL GLYCEROL AND METHODS OF RELATING THERETO

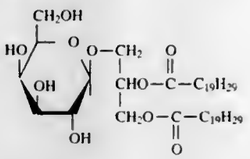
Rodner R. Winget, 13265 89th Ave. S., Rt. 3, Renton, Wash. 98055-1930

Continuation-in-part of Ser. No. 55,533, Apr. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,832

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—25 **3 Claims**

1. A topical dermal anti-inflammatory composition comprising about 0.1 percent to about 10 percent by weight of an anti-inflammatory microalgal lipid preparation and a vehicle comprising the remaining percent by weight, wherein the anti-inflammatory microalgal lipid preparation comprises 35 percent to 100 percent by weight of a monogalactosyl dieicosapentaenoyl glycerol having the structure:



wherein $C_{19}H_{29}$ represents the unsaturated hydrocarbon chain of the eicosapentaenoic acid having 5 carbon—carbon double bonds, and wherein the anti-inflammatory microalgal lipid preparation comprises less than about 65% by weight of one or more contaminants, wherein the contaminants are selected from among a diacylglyceryl-N,N,N-trimethylhomoserine, a chlorophyll, a carotenoid and a phosphatidyl choline, and

wherein the vehicle comprises a water washable pH neutral aqueous gel consisting in percentage weight of about 0.8% to about 1.2% of said microalgal lipid preparation, about 52.2% to about 78.2% of deionized water, about 0.16% to about 0.24% of Carbopol, about 9% to about 13.4% of L-Sorbitol, about 0.32% to about 0.48% of sodium hydroxymethyl glycinate, about 5.6% to about 8.4% of myristyl proprionate, about 3.2% to about 4.8% of mineral oil, about 0.4% to about 0.6% of Aloe Vera oil, about 0.06% to about 0.14% of retinol palmitate, about 0.16% to about 0.24% of dl-Tocopheryl acetate about 0.16% to about 0.24% of L-ascorbate-6-palmitate, about 4.8% to about 7.2% of stearic acid, about 3.2% to about 4.8% of glyceryl monostearate, and trace fragrance.

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5,620,963

OLIGONUCLEOTIDES FOR MODULATING PROTEIN KINASE C HAVING PHOSPHOROTHIOATE LINKAGES OF HIGH CHIRAL PURITY

Phillip D. Cook, San Marcos, Calif., and Glenn Hoke, Mt. Airy, Md., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 297,703, Aug. 29, 1994, Pat. No. 5,506,212, which is a continuation of Ser. No. 777,007, Oct. 16, 1991, abandoned, and a continuation-in-part of Ser. No. 58,023, May 5, 1993, Pat. No. 5,521,302, which is a division of Ser. No. 777,670, Oct. 15, 1991, Pat. No. 5,212,295, which is a continuation-in-part of Ser. No. 777,007, Oct. 16, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,569

Int. Cl.[6] **A61K** *31/70;* **C07H** *21/00*

U.S. Cl. 514—44 **6 Claims**

1. An oligonucleotide represented by SEQ ID NO: 8 wherein at least 75% of the nucleoside units are joined together by Sp phosphorothioate 3' to 5' linkages.

5,620,964

COMPOSITIONS FOR TREATING AND INHIBITING GASTRIC AND DUODENAL ULCERS

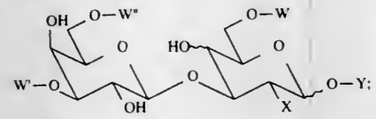
Stephen Roth, Gladwyne; Edward J. McGuire, Furlong, both of Pa., and Dennis H. Langer, Princeton, N.J., assignors to Neose Technologies, Inc., Horsham, Pa.

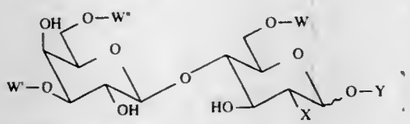
Continuation of Ser. No. 104,483, Jul. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 922,519, Jul. 31, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,000

Int. Cl.[6] **A61K** *31/715*

U.S. Cl. 514—53 **19 Claims**

1. A composition comprising, in association with a carrier or excipient suitable for enteral administration, an amount effective to inhibit binding of *Helicobacter pylori* to gastric and duodenal cells, of a composition comprising an oligosaccharide selected from the group consisting of Formula I





Formula II

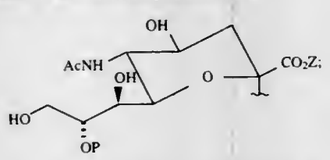
or a mixture thereof;

wherein:

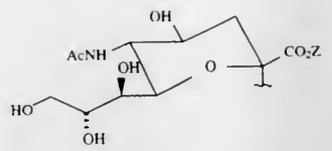
X is independently OH or NHAc;

Y is independently H, or an amino acid or a peptide of 2–100 amino acids; and

W, W', and W" are each independently H or



where Z is independently H or a pharmaceutically acceptable cation; and P is independently H or



where Z is defined as above;

wherein at least one of W, W' or W" is an α-N-acetylneuraminic acid moiety, and

wherein W' and W" are not simultaneously an α-N-acetylneuraminic acid moiety

with the proviso that the compound of Formula II is not NAN α(2→3) Galβ1–4 Glu or NAN α(2→6) Gal β1–4 Glu

wherein a plurality of molecules of said oligosaccharide are each covalently bonded to a pharmaceutically acceptable polymer via the free anomeric carbon of the galactose, N-acetylgalactosamine, glucose or N-acetylglucosamine moiety of Formula I or the glucose or N-acetylglucosamine moiety of Formula II when Y is H or via the amino acid or the 2 to 100 amino acids-long peptide moiety when Y is an amino acid or a 2 to 100 amino acids-long peptide.

5,620,965

SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy L. Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Aug. 7, 1996, Ser. No. 689,470

Int. Cl.[6] **A61K** *31/60;7/42;7/40*

U.S. Cl. 514—159 **2 Claims**

1. A method for preventing, retarding, arresting, or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) a safe and effective amount of salicylic acid,

(b) a safe and effective amount of a penetration enhancing agent, and

(c) a pharmaceutically-acceptable carrier.

5,620,966

11,21-BISPHENYL-19-NORPREGNANE DERIVATIVES

Ronald Gebhard, Oss, and Hendrikus A. A. van der Voort, Veghel, both of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

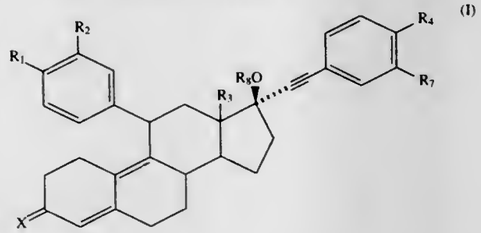
Filed May 19, 1995, Ser. No. 445,119

Claims priority, application European Pat. Off., May 19, 1994, 94201431

Int. Cl.[6] **A61K** *31/565;* **C07J** *1/00*

U.S. Cl. 514—174 **8 Claims**

1. A 11,21-bisphenyl-19-norpregnane derivative of the formula



(I)

wherein

R_1 is selected from H, halogen, (1–6C)alkoxy, and NR_5R_6, R_5 and R_6 being independently hydrogen or (1–6C)alkyl or R_5 and R_6 together being (3–6C)alkylene;

R_2 is hydrogen; or

R_1 and R_2 together are a (1–3C)alkylenedioxy group that is unsubstituted or substituted by at least one halogen atom;

R_3 is methyl or ethyl;

R_4 is selected from C(O)—NR_5R_6, a SO_n-(1–6C)alkyl that is unsubstituted or substituted by at least one halogen atom, SO_n-(3–6C) cycloalkyl, SO_2—NR_5R_6, 2-oxypyrrolidinyl, and NR_5R_6;

n is 1 or 2;

R_7 is H or (1–6C)alkyl;

R_8 is H or carboxy-1-oxo(1–6C)alkyl; and

X is selected from (H,OH), O, and NOH;

or a pharmaceutically acceptable salt thereof.

5,620,967

METHODS OF TREATING HYPERTENSION WITH VANADIUM COMPOSITIONS

John H. McNeill; Hamid R. Hoveyda; Chris Orvig; Ying Zhou, all of Vancouver, Canada, and Jere D. Fellmann, Livermore, Calif., assignors to The University of British Columbia, Vancover, Canada

Division of Ser. No. 210,642, Mar. 18, 1994, Pat. No. 5,527,790, which is a continuation-in-part of Ser. No. 40,113, Mar. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 767,510, Sep. 30, 1991, Pat. No. 5,300,496. This application Jun. 7, 1995, Ser. No. 484,972

Int. Cl.[6] **A61K** *31/555;31/28*

U.S. Cl. 514—186 **5 Claims**

1. A method of treating elevated blood pressure in a human or non-human mammalian body in need thereof, said method comprising administering to said body bis(maltolato)oxovanadium (IV).

5,620,968

7-SUBSTITUTED-AMINO-3-SUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACIDS

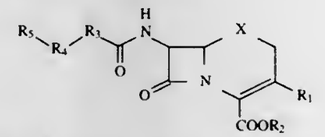
Ho-Shen Lin, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 95,383, Jul. 21, 1993, Pat. No. 5,525,599. This application May 24, 1995, Ser. No. 449,129

Int. Cl.[6] **C07D** *501/34;* **A61K** *31/545*

U.S. Cl. 514—202 **8 Claims**

1. The compound of the formula



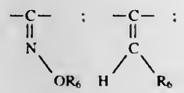
(I)

wherein X is S;

R_1 is hydrogen, hydroxy, halo, trifluoromethyl, C_2F_5, C_1–C_6 alkyl, C_1–C_6 substituted alkyl, C_1–C_6 alkenyl, C_1–C_6 alkynyl, $CH_2O(CO)R'$, $CH_2O(CO)NH_2$, CO_2R', thio(C_1–C_6)alkyl, thio(C_1–C_6)alkenyl, oxo(C_1–C_6)alkyl, phosphine oxide, quaternary ammonium group, substituted or unsubstituted thiazolothio, or oxo(C_1–C_6)alkenyl; wherein R' is hydrogen, C_1–C_6 alkyl, or C_1–C_6 alkenyl;

R_2 is hydrogen or a carboxy protecting group;

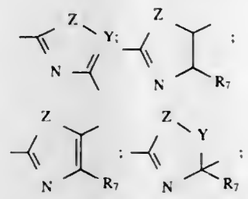
R_3 is



or $(CH_2)_n$;

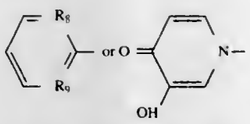
wherein R_6 is hydrogen Me, CH_2F, CF_3, C_2H_5, CH_2CH_2F, CH_2CF_3, C_2F_5, CH_2CO_2R', CH_2CONH_2, $C(Me)_2CO_2R'$, or $C(Me)_2CONH_2$; and n is 0–5;

R_4 is



wherein Z is O, S, NH, or CH_2; Y is CH or N; and R_7 is hydrogen, C_1–C_6 alkyl, $CONH_2$, or CO_2R'; and

R_5 is



wherein R_8 is CH, N, COH,CO(C_1–C_6 alkyl), CSH, or CNH_2; and R_9 is R_8 as defined; said R_5 optionally substituted 1–4 times with halo, OH, SH, NH_2, NO_2, CH_3, C_2H_5, CO_2R', $CONH_2$, SO_3H, or SO_2NHR'; and salts thereof.

5,620,969

CEPHALOSPORIN DERVIATIVES

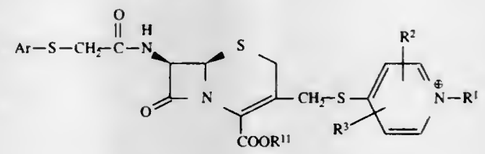
Joanne J. Bronson, Madison; Stanley V. D'Andrea; Shelley E. Hoeft, both of Middletown; John D. Matiskella, Wallingford; Peter F. Misco, Jr., Durham; Bing Y. Luh, Killingworth; Dane M. Springer, Madison; Yasutsugu Ueda, Clinton, and John A. Wichtowski, Deep River, all of Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Apr. 25, 1995, Ser. No. 427,778

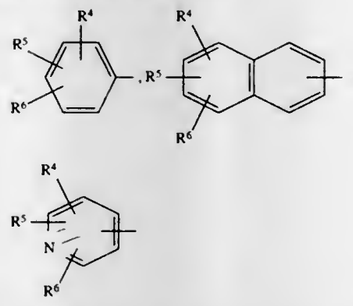
Int. Cl.[6] **C07D** *501/36;* **A61K** *31/545*

U.S. Cl. 514—203 **17 Claims**

1. A compound having the formula



wherein Ar is a group selected from

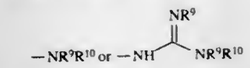


in which R^4, R^5 and R^6 are each independently hydrogen, halogen, trihalomethyl, nitro, amino, hydroxy, hydroxy(C_1–C_6) alkyl, C_1–C_6

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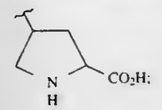
alkyl, $-(CH_2)_nOR^7$ or $-(CH_2)_nSR^7$; n is an integer of from 1 to 6; R^7 is hydrogen or C_1–C_6 alkyl; R^1 is selected from the group consisting of

(a) a C_2–C_{10} alkyl group substituted by a carboxyl or sulfonyl group and a group of the formula



in which R^9 and R^{10} are each independently hydrogen or C_1–C_6 alkyl, said C_2–C_{10} alkyl group being optionally interrupted by one or more nitrogen atoms or carbonyl groups; and

(b) a heterocyclic amino acid group of the formula



R^2 and R^3 are each independently hydrogen, C_1–C_6 alkyl or amino(C_1C_6)alkyl; and R^{11} is hydrogen, an anionic charge or a carboxyl-protecting group, provided that when R^{11} is hydrogen or a protecting group, there is also present a counter ion; or a pharmaceutically acceptable salt thereof.

5,620,970

TOPICAL OPHTHALMIC CARBONIC ANHYDRASE INHIBITOR FORMULATIONS

Wesley W. Han, Fort Worth; Thomas R. Dean, Weatherford; Steven H. Gerson, Fort Worth; Yusuf Ali, Fort Worth, and Rajni Jani, Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Jun. 5, 1995, Ser. No. 461,329

Int. Cl.[6] A61J *1/05;* **A61K** *9/08;31/355;47/34*

U.S. Cl. 514—211 **12 Claims**

1. A topical ophthalmic composition for treating and controlling glaucoma and ocular hypertension comprising 0.1–10.0 wt. % of a carbonic anhydrase inhibitor and 0.01–10.0 wt. % of a polyethoxylated derivative of castor oil resulting from the reaction of from 2–200 moles of ethylene oxide per 1 mole of castor oil, wherein said derivatives can be hydrogenated.

5,620,971

BIOLOGICALLY ACTIVE ACYLATED AMINO ACID DERIVATIVES

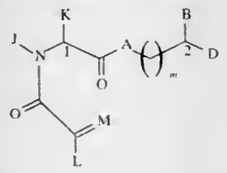
David M. Armistead, Maynard; Jeffrey O. Saunders, Acton, and Joshua S. Boger, Concord, all of Mass., assignors to Vertex Pharmaceuticals Incorporated, Cambridge, Mass.

Continuation-in-part of Ser. No. 881,152, May 11, 1992, abandoned, and a continuation-in-part of Ser. No. 127,814, Sep. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 952,299, Sep. 28, 1992, abandoned, said Ser. No. 881,152is a continuation-in-part of Ser. No. 697,785, May 9, 1991, abandoned. This application Mar. 25, 1994, Ser. No. 217,982

Int. Cl.[6] A61K *31/54;31/535;* **C07D** *403/14;403/06*

U.S. Cl. 514—212 **27 Claims**

1. A compound of formula (I):



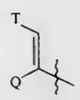
wherein:

A is O, NH, or N—(C1-C4 alkyl);

B and D are independently:

(i) Ar_2, (C5-C7)-cycloalkyl substituted (C1-C6)-straight or branched alkyl or (C2-C6)-straight or branched alkenyl, (C5-C7)-cycloalkenyl substituted (C1-C6)-straight or branched alkyl or (C2-C6)-straight or branched alkenyl, or Ar_2-substituted (C1-C6)-straight or branched alkyl or Ar_2-substituted (C2-C6)-straight or branched alkenyl, wherein in each case, any one of the CH_2 groups in said alkyl or alkenyl chains is optionally replaced by a heteroatom selected from the group consisting of O, S, SO, SO_2; or

(ii)



wherein Q is hydrogen, (C1-C6)-straight or branched alkyl or (C2-C6)-straight or branched alkenyl;

wherein T is Ar_2 or substituted 5–7 membered cycloalkyl with substituents at positions 3 and 4 which are independently selected from the group consisting of hydrogen, oxo, hydroxyl, O—(C1-C4-alkyl) and O—(C2-C4-alkenyl);

wherein Ar_2 is selected from the group consisting of phenyl, 1-naphthyl, 2-naphthyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, and other monocyclic and bicyclic heterocyclic ring systems with individual ring sizes of 5 or 6 which may contain in either or both rings a total of 1 to 4 heteroatoms independently selected from oxygen, nitrogen and sulfur;

wherein any occurrence of Ar_2 optionally contains one to three substituents which are independently selected from the group consisting of hydrogen, halogen, hydroxyl, hydroxymethyl, nitro, trifluoromethyl, trifluoromethoxy, (C1-C6)-straight or branched alkyl, (C2-C6)-straight or branched alkenyl, O-((C1-C4)-straight or branched alkyl), O—((C2-C4)-straight or branched alkenyl), O-benzyl, O-phenyl, 1,2-methylenedioxy, amino, carboxyl and phenyl;

L is U;

M is either oxygen or CH—U; provided that if L is hydrogen, then M is CH—U or if M is oxygen then L is not hydrogen;

wherein U is hydrogen, O—((C1-C4)-straight or branched alkyl), O—((C2-C4)-straight or branched alkenyl), (C1-C6)-straight or branched alkyl, (C2-C6)-straight or branched alkenyl, (C5-C7)-cycloalkyl, (C5-C7)-cycloalkenyl substituted with (C1-C4)-straight or branched alkyl or (C2-C4)-straight or branched alkenyl, ((C1-C4)-alkyl or (C2-C4)-alkenyl)-Ar_2 or Ar_2 (Ar_2 as defined above);

J and K are taken together with the N and C atom to which they are respectively attached to form a 5–7 membered heterocyclic ring containing only one N atom;

m is 0–3; and

the stereochemistry at carbon positions 1 and 2 are independently (R) or (S).

5,620,972

SUBSTITUTED BENZENE DERIVATIVES

Monique B. van Niel, Welwyn Garden City, England, assignor to Merck Sharp & Dohme Ltd., Hoddesdon, England

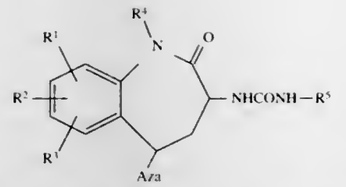
Filed Jun. 20, 1995, Ser. No. 492,558

Claims priority, application United Kingdom, Jun. 29, 1994, 9413090

Int. Cl.[6] A61K *31/55;* **C07D** *223/16*

U.S. Cl. 514—213 **16 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

(a) R^1 represents hydrogen, halogen, cyano, trifluoromethyl, nitro, $-OR^a$, $-SR^a$, $-SOR^a$, $-SO_2R^a$, $-SO_2NR^aR^b$, $-NR^aR^b$, $-NR^aCOR^b$, $-NR^aCO_2R^b$, $-COR^a$, $-CO_2R^a$, $-CONR^aR^b$, or a hydrocarbon group comprising a straight chained, branched or cyclic group each containing up to 9 carbon atoms;

wherein R^a and R^b independently represent hydrogen, or a hydrocarbon group comprising a straight chained, branched or cyclic group each containing up to 9 carbon atoms;

(b) R^2 represents hydrogen, halogen or trifluoromethyl;

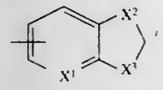
(c) R^3 represents hydrogen or halogen;

(d) R^4 represents hydrogen, an aliphatic group of up to 6 carbon atoms, a cycloaliphatic group of 3 to 6 carbon atoms, $(CH_2)_q$ imidazolyl, $(CH_2)_q$ tetrazolyl, $(CH_2)_q$triazolyl, where q is 1, 2 or 3;

(e) R^5 represents phenyl, naphthyl or pyridyl optionally substituted by one or more substituents selected from hydrogen, halogen, cyano, trifluoromethyl, nitro, $-OR^a$, $-SR^a$, $-SOR^a$, $-SO_2R^a$, $-SO_2NR^aR^b$, $-NR^aR^b$, $-NR^aCOR^b$, $-NR^aCO_2R^b$, $-COR^a$, $-CO_2R^a$, $-CONR^aR^b$, or a hydrocarbon group comprising a straight chained, branched or cyclic group each containing up to 9 carbon atoms;

wherein R^a and R^b independently represent hydrogen, or a hydrocarbon group comprising a straight chained, branched or cyclic group each containing up to 9 carbon atoms,

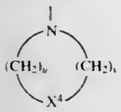
or R^5 represents a group



where X^1 represents CH or N, X^2 represents CH_2, X^3 represents CH_2 or NR^6, where R^6 represents hydrogen or an aliphatic group of up to 6 carbon atoms, or X^2 and X^3 each represent oxygen; and

(f) Aza represents:

(i) a heterocyclic group of formula:



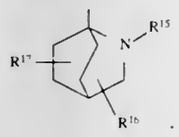
wherein:

X^4 represents O, S, NR^7 or CH_2, where R^7 represents H, C_{1-4} alkyl, $-CO_2R^8$, $-COR^8$ or $-SO_2R^8$ where R^8 is C_{1-6}alkyl, optionally substituted phenyl or benzyl optionally substituted in the phenyl ring by one or more substituents, where the phenyl substituents am selected from C_{1-4}alkyl, C_{1-4}alkoxy, halo and trifluoromethyl;

v is 2, 3 or 4;

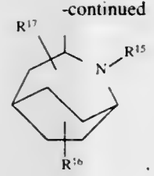
u is 1, 2, 3, 4, 5, 6, 7 or 8 when X is CH_2, or 2, 3, 4, 5, 6, 7 or 8 when X is O, S or NR^7;

(ii) an azabicyclic group of formula:

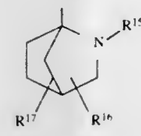


(A)

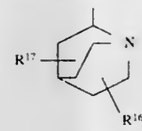
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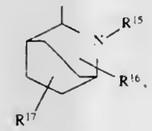
(B)



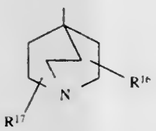
(C)



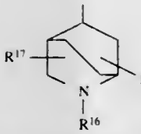
(D)



(E)



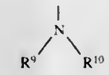
(F) or



(G)

wherein R^{15} represents H, C_{1-4}alkyl, optionally substituted phenyl or benzyl optionally substituted in the phenyl ring, where the phenyl substitutents are selected from C_{1-4}alkyl, C_{1-4}alkoxy, halo and trifluoromethyl; and R^{16} and R^{17} each represent H or C_{1-4}alkyl; or

(iii)



wherein

R^9 and R^{10} each independently represents H, C_{1-6}alkyl optionally substituted by $NR^{11}R^{11}$ where R^{11} and R^{11} are hydrogen or C_{1-4} alkyl or a heterocyclic group which is as defined above with the exception that X^4 represents NR^7 or CH_2 or an azabicyclic group as defined above, C_{3-9}cycloalkyl optionally substituted by one or more C_{1-4}alkyl groups, C_{4-9}cycloalkylC_{1-4}alkyl optionally substituted in the cycloalkyl ring by one or more C_{1-4}alkyl groups, optionally substituted phenyl, optionally substituted phenylC_{1-6}alkyl or a heterocyclic group which is as defined above with the exception that X^4 represents NR_7 or CH_2 or an azabicyclic group as defined above.

13. A pharmaceutical composition containing an effective amount of a compound according to claim **1**, together with a pharmaceutically acceptable carrier, diluent or excipient therefor.

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5,620,973

TETRACYCLIC CONDENSED HETEROCYCLIC COMPOUNDS AND THEIR USE

Giichi Goto, Osaka; Yuji Ishihara, and Masaomi Miyamoto, both of Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

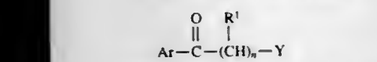
Filed Oct. 25, 1994, Ser. No. 330,133

Claims priority, application Japan, Nov. 30, 1993, 5-299799; Mar. 25, 1994, 6-055984

Int. Cl.[6] C07D *487/04;* **A61K** *31/55*

U.S. Cl. 514—214 **10 Claims**

1. A compound of the formula



(I)

wherein Ar represents a tetracyclic fused heterocyclic group selected from the group consisting of 7-oxo-7,11b,12,13-tetrahydro-5H-isoindolo(2,1-b) (2) benzazepin-3-yl, 9-oxo-6,7,9,13b-tetrahydro-5H-isoindolo (1,2-a) (2)benzazepin-2-yl and 5-oxo-7,8,13,13a-tetrahydro-5H-isoindolo(1,2-b) (3) benzazepin-10 or 11-yl;

n represents a whole number of 1 through 10;

R^1 represents a hydrogen atom or a hydrocarbon group which may be substituted and may be different from one another in the repetition of n; and

Y represents an unsubstituted or substituted amino or nitrogen-containing saturated heterocyclic group which may be substituted, or a salt thereof.

8. A method of treating a disease caused by cholinesterase activity which comprises administering a therapeutically effective amount of a compound of the formula (I) as claimed in claim 1 or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier to a mammal suffering from such disease.

5,620,974

5,11-DIHYRO-6H-DIPYRIDO[3,2-B:2',3'-E][1,3]DIAZEPINES AND THEIR USE IN THE PREVENTION OR TREATMENT OF HIV INFECTION

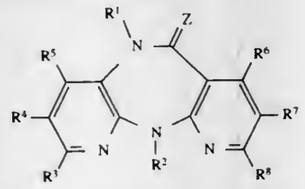
Karl D. Hargrave, Brookfield; John R. Proudfoot, Newtown; Julian Adams; Karl G. Grozinger, both of Ridgefield, all of Conn.; Gunther Schmidt, deceased, late of Munich, Germany; Wolfhard Engel, Biberach, Germany; Gunther Trummlitz, Warthausen, Germany, and Wolfgang Eberlein, Biberach, Germany, assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Division of Ser. No. 91,418, Jul. 13, 1993, Pat. No. 5,366,972, which is a continuation of Ser. No. 740,828, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 600,390, Oct. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 579,001, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 438,923, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 372,974, Jun. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 340,970, Apr. 20, 1989, abandoned. This application Jul. 22, 1994, Ser. No. 279,464

Int. Cl.[6] A61K *31/55;* **C07D** *471/14*

U.S. Cl. 514—220 **7 Claims**

1. A compound of the formula I



(I)

wherein,

Z is oxygen, sulfur, =NCN or a group of the formula =NOR[9] wherein R^9 is alkyl of 1 to 3 carbon atoms;

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, fluoroalkyl of 1 to 6 carbon atoms and 1 to 3 fluorine atoms, cycloalkyl of 3 to 6 carbon atoms, alkenylmethyl or alkynylmethyl of 3 to 6 carbon atoms, 2-halo-2-propen-1-yl, mono- or di-halovinyl, aryl or arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by methyl, methoxy or halogen), alkanoyl or thioalkanoyl of 2 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, aminocarbonyl, mono- or di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 2 carbon atoms, aminoethyl, mono- or di-alkylaminoethyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkyloxycarbonyl wherein the alkyl moiety contains 1 to 4 carbon atoms, alkenyloxycarbonyl wherein the alkenyl moiety contains 2 to 4 carbon atoms, hydroxy, alkyloxy of 1 to 4 carbon atoms, cyano, amino, mono- or di-alkylamino wherein each alkyl moiety contains 1 to 4 carbon atoms, aminocarbonylmethyl, mono- or di-alkylaminocarbonylmethyl wherein the alkyl moiety contains 1 to 2 carbon atoms, or cyanoalkyl wherein the alkyl moiety contains 1 to 4 carbon atoms;

R^2 is hydrogen (with the proviso that R^1 is not hydrogen), alkyl of 1 to 6 carbon atoms, fluoroalkyl of 1 to 6 carbon atoms and 1 to 3 fluorine atoms, cycloalkyl of 3 to carbon atoms, oxetanyl, thietanyl, tetrahydrofuranyl, tetrahydrothienyl, tetrahydropyranyl, tetrahydrothiopyranyl, alkenylmethyl or alkynyl methyl of 3 to 6 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 5 carbon atoms, alkanoyl or thioalkanoyl of 2 to 5 carbon atoms, cyano, cyanoalkyl of 2 to 5 carbon atoms, hydroxyalkyl or acyloxyalkyl wherein the alkyl moiety contains 2 to 6 carbon atoms and the acyl moiety contains 2 to 3 carbon atoms, oxazolyl, isoxazolyl, thiazolyl, aryl or arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkyloxy of 1 to 3 carbon atoms, hydroxyl or halogen), or alkyloxycarbonylmethyl wherein the alkyl moiety contains 1 to 5 carbon atoms;

one of R^3, R^4 and R^5 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl or alkynyl of 2 to 6 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 6 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 5 carbon atoms, alkyloxycarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, carboxyalkyl or cyanoalkyl wherein the alkyl moieties each contain 1 to 5 carbon atoms, mono- or di-alkylaminocarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, hydroxyl, mercapto, alkyloxy or alkylthio of 1 to 5 carbon atoms, hydroxyalkyloxy of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, alkyloxycarbonyl wherein the alkyl moiety contains 1 to 3 carbon atoms, mono- or dialkylaminocarbonyl wherein each alkyl moiety contains 1 to 3 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 3 carbon atoms, imidazol-2-yl, imidazol-4-yl, aryl or arylalkyl (wherein the aryl moiety is phenyl, thienyl, furanyl, or pyridyl, which is either unsubstituted or substituted by alkyl or alkyloxy of 1 to 3 carbon atoms, hydroxyl, amino, or halogen, and the alkyl moiety contains 1 to 3 carbon atoms which may be unsubstituted or substituted with a methyl, hydroxyl, or amino groups), a group of the formula $—NR^{10}R^{11}$, halogen, cyano, nitro, azido or carboxyl, with the other two substituents being hydrogen, methyl or halogen; or,

two of R^3, R^4 and R^5 are independently alkyl of 2 to 3 carbon atoms, hydroxyalkyl of 1 to 3 carbon atoms, trihalomethyl, alkyloxy or alkylthio of 1 to 2 carbon atoms, or a group of the formula $—NR^{10}R^{11}$, with the remaining substituent being hydrogen, methyl, or halogen; or,

two of R^3 and R^4 or R^4 and R^5 are joined to form a cycloalkyl with a 3 or 4 carbon bridge, or a fused pyridine ring; or,

R^3, R^4 and R^5 are each hydrogen;

one of R^6, R^7 and R^8 is alkyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkyloxycarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, hydroxyl, alkyloxy or alkylthio of 1 to 4 carbon atoms, hydroxyalkyloxy of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, alkanoyl of 2 to 6 carbon atoms, alkoxycarbonyl wherein the alkyl moiety contains 1 to 3 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, a group of the formula $—NR^{12}R^{13}$, halogen, cyano, nitro, azido or carboxyl, with the other two substituents being hydrogen; or,

two of R^6, R^7 and R^8 are independently alkyl of 1 to 2 carbon atoms, trihalomethyl, alkyloxy or alkylthio of 1 to 2 carbon atoms, halogen or a group of the formula $—NR^{12}R^{13}$, with the remaining substituent being hydrogen; or,

R^6, R^7 and R^8 are each hydrogen; and,

R^{10}, R^{11}, R^{12} and R^{13} are each independently hydrogen, alkyl of 1 to 4 carbon atoms, alkenylmethyl or alkynylmethyl of 3 to 4 carbon atoms, aryl or arylalkyl (wherein the aryl moiety is phenyl, thienyl, furanyl, or pyridyl which is either unsubstituted or substituted by methyl, methoxy, hydroxyl, or halogen, and the alkyl moiety contains 1 to 3 carbon atoms), mono- or dihydroxy(or acetoxy)alkylmethyl wherein the alkyl moiety contains 1 to 3 carbon atoms, alkyloxyethyl or alkylthioethyl of 3 to 4 carbon atoms, aminoalkylmethyl of 2 to 4 carbon atoms, mono- or dialkylaminoalkylmethyl wherein each alkyl moiety contains 1 or 2 carbon atoms, or alkanoyl of 1 to 4 carbon atoms; or,

R^{10} and R^{11} and R^{12} and R^{13} together with the nitrogen atoms between them, respectively and independently form azetidin-1-yl , pyrrol-1-yl, pyrrolin-1-yl, pyrrolidin-1-yl, pyrazol-1-yl, pyrazolin-1-yl, pyrazolidin-1-yl, imidazol-1-yl, imidazolin-1-yl, imidazolidin-1-yl, tetrahydropyridin-1-yl, piperidin-1-yl, morpholin-1-yl, (4-methyl)piperazin-1-yl, piperazin-1-yl, (2-hydroxy(or acetoxy)ethyl)amino, N-methyl-N-(2-hydroxy(or acetoxy)ethyl)amino, N-methyl-N-(2-methoxyethyl)amino;

or a pharmaceutically acceptable salt thereof.

6. A method for treating HIV-1 infection which comprises administering, to a human being infected by HIV-1, a therapeutically effective amount of a compound of formula I, as set forth in claims 1, 2, 3, 4, or 5, or a pharmaceutically acceptable salt thereof.

5,620,975

PHARMACEUTICAL COMPOSITION AND METHOD FOR THE CONTROL OF HYPERTENSION

Jean-Paul Clozel, St. Louis, France; Rita Müller, Basel, Switzerland, and Wolfgang Osterrieder, Grenzach-Wyhlen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 210,095, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 909,357, Jul. 6, 1992, abandoned. This application Nov. 2, 1994, Ser. No. 333,171

Claims priority, application Switzerland, Jul. 23, 1991, 2191/91

Int. Cl.[6] A61K *31/55;31/415*

U.S. Cl. 514—221 **2 Claims**

1. A pharmaceutical composition comprising [1S,2S]-2-[2-[[3-(2-benzimidazolyl)propyl] methylamino]ethyl]-6-fluoro-1,2,3,4-tetrahydro-1-isopropyl-2-naphthylmethoxyacetate dihydrochloride and 9(S)-[1(S)-ethoxycarbonyl-3-phenylpropylamino] octahydro-10-oxo-6H-pyridazo[1,2-a][1.2]diazepine-1-(S)-carboxylic acid hydrate wherein the weight ratio of [1S,2S]-2-[2-[[3-(2-benzimidazolyl)propyl]methylamino]ethyl- 6-fluoro-1,2,3,4-tetrahydro-1-isopropyl-2-naphthylmethoxyacetate dihydrochloride to 9(S)-[1-(S)-ethoxycarbonyl- 3-phenylpropyl-amino]octahydro-10-oxo-6H-pyridazo[1,2-a][1,2]diazepine-1-(S)-carboxylic acid hydrate is about 3:1.

5,620,976

BENZOXAZINE DERIVATIVES

Hachiro Sugimoto; Masahiro Yonaga; Norio Karibe; Youichi Iimura; Satoshi Nagato; Atsushi Sasaki; Yoshiharu Yamanishi, all of Ibaraki, Japan; Hiroo Ogura, Bethesda, Md.; Takashi Kosasa; Kumi Uchikoshi, both of Ibaraki, Japan, and Kiyomi Yamatsu, Kanagawa, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

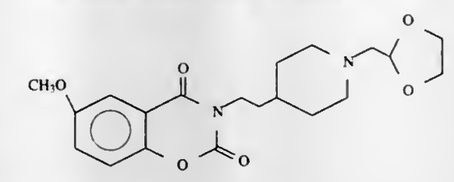
Division of Ser. No. 165,490, Dec. 13, 1993, Pat. No. 5,504,088, which is a division of Ser. No. 715,754, Jun. 14, 1991, Pat. No. 5,292,735. This application May 25, 1995, Ser. No. 449,739

Claims priority, application Japan, Jun. 15, 1990, 2-157134

Int. Cl.[6] A61K *31/535;* **C07D** *413/14*

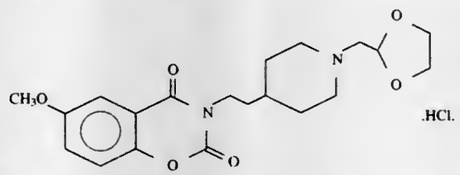
U.S. Cl. 514—230.5 **6 Claims**

1. A cyclic amide compound having the formula



or a pharmaceutically acceptable salt thereof.

2. The cyclic amide compound according to claim 1 having the formula



.HCl.

4. A method of preventing or treating diseases due to insufficiency of the central choline functions by administering a pharmacologically effective amount of the compound according to claim 2 to a human patient suffering from said diseases.

5,620,977

RETROVIRAL PROTEASE INHIBITORS

John J. Talley; Daniel P. Getman, both of Chesterfield; John N. Freskos, Clayton; Ko-Chung Lin, St. Louis; Robert M. Heintz, Ballwin; Donald J. Rogier, Jr., St. Louis, and Deborah E. Bertenshaw, Brentwood, all of Mo., assignors to G.D. Searle & Co., Chicago, Ill.

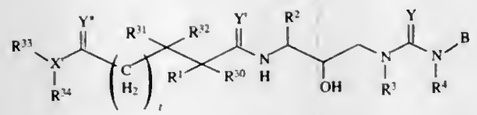
Division of Ser. No. 886,531, May 20, 1992, Pat. No. 5,475,013, which is a continuation-in-part of Ser. No. 789,642, Dec. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 474,569

Int. Cl.[6] A61K *31/435;* **C07C** *55/28*

U.S. Cl. 514—237.8 **59 Claims**

1. Compound represented by the formula:

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wherein

R^1 represents hydrogen, $-CH_2SO_2NH_2$, $-CO_2CH_3$, $-CH_2CO_2CH_3$, $-CONH_2$, $-CH_2C(O)NHCH_3$, $-CH_2C(O)N(CH_3)_2$, $-CONHCH_3$, $-CON(CH_3)_2$, $-C(CH_3)_2(SCH_3)$, $C(CH_3)_2(S[O]CH_3)$, $C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano alanine, and allo-threonine side chains;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals optionally substituted with a group selected from $-NO_2$, $-OR^9$, $-SR^9$, and halogen radicals, wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylakyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals where said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroalkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals or, in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

R^4 represents hydrogen and radicals as defined by R^3;

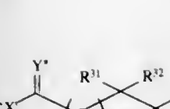
t is either 0 or 1;

X^t represents O, N and $C(R^{17})$ wherein R^{17} represents hydrogen and alkyl radicals;

R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical;

R^{33} and R^{34} independently represent hydrogen and radicals as defined for R^1, or R^{33} and R^{34} together with X^t represent cycloalkyl, aryl, heterocyclyl and heteroaryl radicals, provided that when X^t is O, R^{34} is absent;

B represents radicals represented by the formula:



wherein n represents an integer of from 0 to 6;

R^7 and $R^{7'}$ independently represent radicals as defined for R^3 and amino acid side chains selected from the group consisting of valine, isoleucine, alanine, allo-isoleucine, asparagine, leucine, glutamine, and t-butylglycine or R^7 and $R^{7'}$ together with the carbon atom to which they are attached form a cycloalkyl radical; and

R^8 represents cyano, hydroxyl, alkyl, alkoxy, cycloalkyl, aryl, aralkyl, heterocycloalkyl and heterocycloalkyl and heteroaryl radicals and radicals represented by the formulas $C(O)R^{16}$, CO_2R^{16}, SO_2R^{16}, SO_2R^{16}, SR^{16}, $C(O)NR^{16}R^{17}$, OR^{16}, CF_3 and $NR^{16}R^{17}$;

wherein R^{16} and R^{17} independently represent hydrogen and radicals as defined for R^3 or R^{16} and R^{17} together with a nitrogen to which they are attached in the formula $NR^{16}R^{17}$ represent heterocycloalkyl and heteroaryl radicals; and

Y, Y^t and Y^a independently represent O and S

with the provisos that (1) R^8 cannot be alkyl when (i) R^7 and $R^{7'}$ are the same and are selected from radicals as defined for R^3, or (ii) one of R^7 or $R^{7'}$ is alkyl, including an amino side chain of valine; isoleucine, alanine, allo-isoleucine, leucine, and t-butylglycine and the other is selected from radicals as defined for R^3, and (2) R^7 and $R^{7'}$ can not both be alkyl, including an amino side chain of valine, isoleucine, alanine, allo-isoleucine, leucine and t-butylglycine when R^8 is hydroxyl, alkyl, alkoxy, cycloalkyl, aryl, heterocycloalkyl, heteroaryl or $NR^{16}R^{17}$.

5,620,978

8-AZA, 6-AZA AND 6,8-DIAZA-1,4-DIHYDROQUINOXALINE-2,3-DIONES AND THE USE THEREOF AS ANTAGONISTS FOR THE GLYCINE/NMDA RECEPTOR

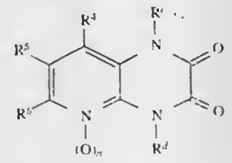
Sui X. Cai, Irvine, Calif.; John F. W. Keana, Eugene, Oreg., and Eckard Weber, Laguna Beach, Calif., assignors to State of Oregon, acting by and through The Oregon State Board of Higher Education, acting for and on behalf of The Oregon Health Sciences University and The University of Oregon, Eugene Oregnn. Eugene, Oreg.; The Regents of the University of California, Oakland, Calif., and ACEA Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 289,366, Aug. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 176,278, Jan. 3, 1994, abandoned. This application Jan. 3, 1995, Ser. No. 368,163

Int. Cl.[6] **A61K** *31/495;31/50*

U.S. Cl. 514—249 **10 Claims**

1. A method of treating or preventing neuronal loss associated with stroke or ischemia, comprising administering to an animal in need of such treatment or prevention an effective amount of a compound of the formula:



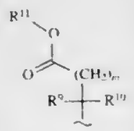
or a pharmaceutically acceptable salt thereof;

wherein n is 1.

R^4 is hydrogen or fluoro;

R^5 and R^6 are independently hydrogen, nitro, amino, halo, haloalkyl, cyano, alkyl, cycloalkyl, alkenyl, alkynyl, azido, acylamino, alkylsulfonyl, aryl, substituted aryl, heteroaryl, alkoxy, trialkylsilyl-substituted alkoxy, aryloxy, substituted aryloxy, heteroaryloxy, a heterocyclic group, a heterocyclicoxy group, aralkoxy, or haloalkoxy;

$R^{5'}$ is hydrogen; and $R^{6'}$ is hydrogen, hydroxy, amino, $-CH_2CONHAr$, $-NHCONHAr$, $-NHCOCH_2Ar$, or $-COCH_2Ar$, wherein Ar is an aryl group, or a radical having the Formula:



wherein R^9 is hydrogen, lower alkyl of 1–6 carbon atoms, or aryl; R^{10} is hydrogen or lower alkyl of 1–6 carbon atoms; m is an integer from zero to 5; and R^{11} is hydrogen, C_{1-8} alkyl, or aralkyl.

5,620,979

GLYCINE RECEPTOR ANTAGONISTS AND THE USE THEREOF

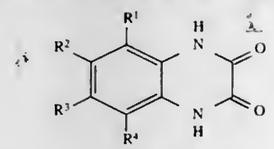
Eckard Weber, Laguna Beach, Calif., and John F. W. Keana, Eugene, Oreg., assignors to State of Oregon, Acting By and Through The Oregon State Board of Higher Education, Acting For and On Behalf of The Oregon Health Sciences University and The University of Oregon, Eugene Oregon, Eugene, Oreg., and The Regents of The University of California, Oakland, Calif.

Division of Ser. No. 148,259, Nov. 5, 1993, Pat. No. 5,514,680, which is a continuation-in-part of Ser. No. 69,274, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,167, Dec. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 903,080, Jun. 22, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 405,708

Int. Cl.[6] **A61K** *31/495*

U.S. Cl. 514—249 **18 Claims**

1. A method of treating neuronal loss associated with stroke, ischemia, CNS trauma, hypoglycemia or surgery, comprising administering by systemic means to an animal in need of such treatment an effective amount of a compound exhibiting high affinity for the strychnine-insensitive glycine binding site on the NMDA receptor complex, lacking PCP side effects and which crosses the blood brain barrier of said animal: wherein said compound is a 5,7-disubstituted or 5,6,7-trisubstituted 1,4-dihydroquinoxaline-2,3-dione having the formula:



or a tautomer or a pharmaceutically acceptable salt thereof;

wherein

R^1 is amino, hydroxylamino, acylamino, halo, haloalkyl, or nitro;

R^2 is hydrogen, amino, hydroxylamino, acylamino, nitro, haloalkyl, or halo;

R^3 is halo, amino, hydroxylamino, acylamino, or haloalkyl; and

R^4 is hydrogen;

with the proviso that said compound is not 5,7-dichloro-1,4-dihydroquinoxaline-2,3-dione.

5,620,980

METHOD FOR TREATING HAIR LOSS

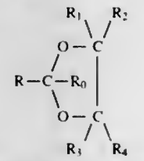
Carlos M. Samour, Newport, R.I., assignor to MacroChem Corporation, Lexington, Mass.

Filed Feb. 22, 1995, Ser. No. 392,231

Int. Cl.[6] **A61K** *31/505;31/335*

U.S. Cl. 514—256 **1 Claim**

1. A method for treating hair loss resulting from alopecia which comprises topically applying to skin at a desired area for hair regrowth, no more than once daily, a composition comprising a pharmaceutically effective amount, in the range of 0.5 to 3% by weight, of minoxidil, and a non-toxic penetration enhancing effective amount, in the range of 2 to 15% by weight, of a 1,3-dioxolane compound of formula (III)



(III)

wherein R represents a C_7 to C_{10} alkyl group, R_0 represents hydrogen and R_1, R_2, R_3 and R_4 each, independently, represent hydrogen or C_1 to C_4 alkyl, wherein the minoxidil and 1,3-dioxolane are applied in a cosmetically acceptable aqueous carrier comprising lower alkanol and lower alkyl glycol.

5,620,981

PYRIDO [2,3-D]PYRIMIDINES FOR INHIBITING PROTEIN TYROSINE KINASE MEDIATED CELLULAR PROLIFERATION

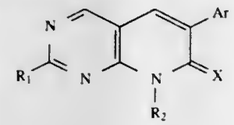
Clifton J. Blankley, Ann Arbor; Diane H. Boschelli, Plymouth; Annette M. Doherty, Ann Arbor; James M. Hamby, Ann Arbor; Sylvester Klutchko, Ann Arbor, and Robert L. Panek, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 3, 1995, Ser. No. 433,294

Int. Cl.[6] **A61K** *31/505;* **C07D** *487/02*

U.S. Cl. 514—258 **49 Claims**

1. A compound of the formula



1

wherein

X is NH, N-Acyl, O, or S;

R_1 is NR_3R_4, SR_3, or OR_3;

R_2 is $(CH_2)_nPh$ where Ph is phenyl or substituted phenyl and n is 0, 1, 2, or 3, heteroaromatic cycloalkyl, C_1–C_6 alkanoyl, C_1–C_6 alkyl, C_2–C_6 alkenyl, or C_2–C_6 alkynyl, where the alkyl, alkenyl, and alkynyl groups may be substituted by NR_5R_6, phenyl, substituted phenyl, thioalkyl, alkyloxy, hydroxy, carboxy, halogen, cycloalkyl, and where R_5 and R_6 are independently hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–$_6$ alkynyl, $(CH_2)_nPH$ where Ph is phenyl or substituted phenyl and n is 0, 1, 2, or 3, cycloalkyl, heteroaromatic, and R_5 and R_6 taken together with the nitrogen to which they are attached can complete a ring having 3 to 7 carbon atoms and optionally containing 1, 2, or 3 heteroatoms selected from nitrogen; oxygen, and sulfur,

R_3 and R_4 independently are hydrogen, $(CH_2)_nPh$ where Ph is phenyl or substituted phenyl and n is 0, 1, 2, or 3, heteroaromatic, cycloalkyl, C_1–C_6 alkanoyl, C_1–C_6 alkyl, C_2–C_6 alkenyl, or C_2–C_6 alkynyl, where the alkyl, alkenyl, and alklynyl groups may be substituted by NR_5R_6, phenyl, substituted phenyl, thioalkyl, alkyloxy, hydroxy, carboxy, halogen, cycloalkyl, and where R_5 and R_6 are independently hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $(CH_2)_nPh$ where Ph is phenyl or substituted phenyl and n is 0, 1, 2, or 3, cycloalkyl, heteroaromatic, and R_5 and R_6 taken together with the nitrogen to which they are attached can complete a ring having 3 to 7 carbon atoms and optionally containing 1, 2, or 3 heteroatoms selected from nitrogen, oxygen, and sulfur;

R_4 can additionally be $-C(=O)R_3$, $-C(=O)OR_3$, $-SO_2R_3$, $-SO_2NR_5R_6$, $-C(=O)NR_5R_6$, $-C(=S)NR_5R_6$, $-C(=NH)R_3$, $-C(=NH)NR_5R_6$, and R_3 and R_4 can be taken together with the nitrogen to which they are attached to complete a ring having 3 to 7 carbon atoms and optionally containing 1, 2, or 3 heteroatoms selected from nitrogen, oxygen, and sulfur;

Ar is phenyl, substituted phenyl, or heteroaromatic;

and the pharmaceutically acceptable salt thereof.

5,620,982

COMPOSITIONS AND METHODS FOR CONTROLLING PEST INSECTS

Heather N. Wren, New Castle, Va., assignor to Virginia Tech Intellectual Properties, Blacksburg, Va.

Division of Ser. No. 291,072, Aug. 17, 1994, Pat. No. 5,514,681. This application Jun. 1, 1995, Ser. No. 457,705

Int. Cl.[6] **A01N** *43/54;43/90*

U.S. Cl. 514—258 **8 Claims**

1. A composition for controlling an insect pest which salvages, stores, or excretes its nitrogenous wastes via the purine metabolic

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pathway, comprising a purine selected from the group consisting of xanthine, hypoxanthine and mixtures thereof, in amount of about 1% by weight, oxypurinol, in an amount of about 0.1% to about 3.0% by weight, and trimethoprim, in an amount of about 0.5% to about 6.0% by weight.

5,620,983

COMPOUNDS AND METHODS OF USE TO DERIVATIZE NEIGHBORING LYSINE RESIDUES IN PROTEINS UNDER PHYSIOLOGICAL CONDITIONS

Michael I. Bukrinsky, Glenwood Landing; Anthony Cerami, Shelter Island, both of N.Y., and Peter Ulrich, Old Tappan, N.J., assignors to The Picower Institute for Medical Research, Manhasset, N.Y.

Division of Ser. No. 463,405, Jun. 5, 1995, which is a continuation-in-part of Ser. No. 369,830, Jan. 6, 1995, Pat. No. 5,574,040. This application Jun. 6, 1995, Ser. No. 470,103
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—261 **6 Claims**

1. A method of preventing productive infection by a virus of a terminally differentiated cell having a nucleus, which comprises the step of preventing importation of a particle containing a viral genome into the nucleus.

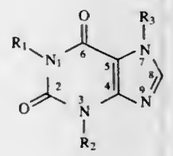
5,620,984

ENATIOMERICALLY PURE HYDROXYLATED XANTHINE COMPOUNDS TO TREAT INFLAMMATORY DISEASES

James A. Bianco, Seattle; Paul Woodson, Bothell; David Porubek, Edmonds, and Jack Singer, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 343,810, Nov. 22, 1994, which is a division of Ser. No. 307,554, Sep. 16, 1994, which is a continuation of Ser. No. 13,977, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,898
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—263 **3 Claims**

1. A method for treating or preventing an inflammatory disease, comprising administering an effective amount of a compound to an individual in need of such treatment, wherein the compound has a formula:



wherein:

R_1 is a substantially pure resolved R enantiomer ω-1, secondary alcohol-substituted alkyl (C_{5-8}) group; and

R_2 and R_3 are independently hydrogen atom or an alkyl (C_{1-12}) or alkoxyl (C_{1-12}).

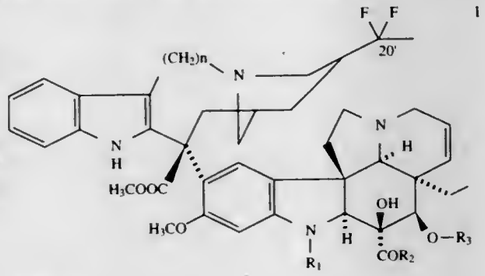
5,620,985

ANTIMITOTIC BINARY ALKALOID DERIVATIVES FROM *CATHARANTHUS ROSEUS*

Jean-Claude Jacquesy, Buxerolles; Jacques Fahy, Labrugulere; Christian Berrier, Chasseneuil-du-Poitou; Dennis Bigg, Castres; Marie-Paule Jouannetaud; Fabien Zunino, both of Poitiers; Anna Kruczynski, Castres, all of France, and Robert Kiss, Wauthler-Braine, Belgium, assignors to Pierre Fabre Medicament, Boulogne, France

PCT No. PCT/FR94/00898, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/03312, PCT Pub. Date Feb. 2, 1995
PCT Filed Jul. 19, 1994, Ser. No. 578,669
Claims priority, application France, Jul. 21, 1993, 93 08948
Int. Cl.[6] C07D *519/04;* A61K *31/475*
U.S. Cl. 514—283 **13 Claims**

1. An antimitotic derivative of a binary alkaloid from *Catharanthus roseus* selected from those corresponding to formula 1:



1

in which:

n is equal to 1 or 2,

R_1 represents a methyl group or a formyl group,

R_2 represents a methoxy group or an amino group,

R_3 represents a hydrogen atom or an acetyl group,

as well as the salts thereof with therapeutically-acceptable inorganic or organic acids, and mixtures of the diastereoisomers corresponding to the two configurations of carbon 20' of the compounds in all proportions.

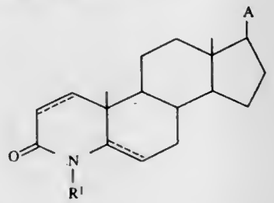
5,620,986

17 UREA, THIOUREA, THIOCARBAMYL AND CARBAMYL4-AZASTEROID 5-REDUCTASE INHIBITORS USEFUL IN THE PREVENTION AND TREATMENT OF HYPERANDROGENIC DISORDERS

Bruce E. Witzel, Westfield, and Richard L. Tolman, Warren, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/04634, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO93/23048, PCT Pub. Date Nov. 25, 1993
Continuation-in-part of Ser. No. 886,645, May 20, 1992, abandoned. This PCT application May 17, 1993, Ser. No. 338,574
Int. Cl.[6] A61K *31/45;* C07D *221/02*
U.S. Cl. 514—284 **18 Claims**

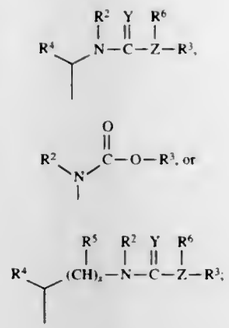
1. A compound of the formula:



1

and the pharmaceutically acceptable salts thereof, wherein:

A is:



wherein

R^1 is:

H, methyl or ethyl;

R^2 is:

H, or

C_{1-3} alkyl;

R^3 is:

H,

amino,

mono C_1-C_4 alkylamino,

di C_1-C_4 alkylamino,

mono C_1-C_4 alkylaminoaryl,

di C_1-C_4 alkylaminoaryl,

C_{1-20} alkyl,

aryl,

heteroaryl,

aryl C_{1-20} alkyl,

C_{3-20} cycloalkyl,

C_{3-20} cycloalkyl C_{1-20}alkyl,

heteroaryl C_{1-20}alkyl,

C_{2-20} alkenyl C_{1-20}alkyl,

halo C_{1-20} alkyl,

C_{1-20} alkyloxycarbonyl C_{1-20} alkyl,

C_{1-20} alkyloxy C_{1-20} alkyl,

carboxy C_{1-20} alkyl,

arylcarbonyl aryl C_{1-20} alkyl,

C_{1-20} alkylcarbonyl C_{1-20} alkyl,

aryl C_{1-20} alkyloxycarbonyl C_{1-20} alkyl,

heteroaryl C_{1-20} alkyloxycarbonyl C_{1-20} alkyl,

hydroxyl C_{1-20} alkyl,

halohydroxyl C_{1-20} alkyl,

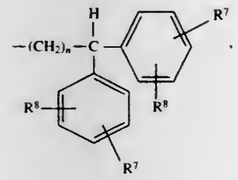
aryl C_{1-20} alkyloxy C_{1-20} alkyl,

heteroaryl C_{1-20} alkyloxy C_{1-20} alkyl,

carboxyl C_{1-20} alkyl,

thiosulfato C_{1-20} alkyl

diaryl C_{1-20} alkyl of the formula:

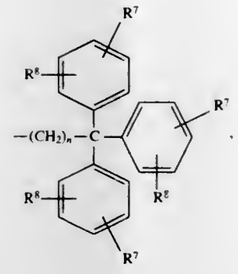


n equals 0–19;

triaryl C_{1-20} alkyl of the formula

(a)

(b)



(c)

n equals 1–19;

C_{2-20} alkenyl,

C_{2-20} alkenyl C_{1-20} alkyl,

C_{2-20} alkynyl C_{1-20} alkyl,

aryl C_{2-20} alkynyl C_{1-20} alkyl,

heteroaryl C_{2-20} alkynyl C_{1-20} alkyl,

C_{1-20} alkylthio C_{1-20} alkyl,

C_{1-20} alkylsulfonyl C_{1-20} alkyl, or

C_{1-20} alkylsulfinyl C_{1-20} alkyl;

wherein aryl is either unsubstituted for mono- or di-substituted with

R',

wherein R' is selected from H, C_{1-20} alkyl, hydroxyl, C_{1-20} alkyloxy, halo C_{1-20} alkyl, benzoyl, cyano, nitro, carboxamido, acetamido, C_{2-20} alkenyl, halogen, and aryl C_{1-20} alkyl,

wherein said alkyl is unsubstituted or substituted with one of C_{1-8} alkyloxy, amino, mono C_{1-4} alkylamino, di C_{1-4} alkylamino, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl, carboxy C_{1-10} alkyl, hydroxy, or halogen;

R^4 is:

H,

C_{1-20} alkyl,

aryl, either unsubstituted or substituted with one or R,

wherein R is H, C_{1-6} alkyl, aryl C_{1-20} alkyl with the alkyl groups unsubstituted or substituted with one of hydroxyl, C_{1-8} alkyloxy, carboxy C_{0-10} alkyl, or halogen or aryl directly substituted independently with one of amino, mono C_{1-4} alkylamino, di C_{1-4} alkylamino, mono C_{1-4} alkylaminoaryl, di C_{1-4} alkylaminoaryl, hydroxyl, halo C_{1-20} alkyl, carboxamido, benzoyl, C_{1-20} alkyloxy, C_{1-20} alkyl, C_{2-20} alkenyl, cyano, nitro, acetamide or halogen, or;

heteroaryl;

R^5 can be the same or different when x is greater than 1 and is:

H,

C_{1-12} alkyl,

heteroaryl, or

aryl;

wherein aryl is either unsubstituted or substituted with one of R',

wherein R' is selected from H, C_{1-20} alkyl, hydroxyl, C_{1-20} alkyloxy, halo C_{1-20} alkyl, benzoyl, cyano, nitro, carboxamido, acetamido, C_{2-20} alkenyl, halogen, and aryl C_{1-20} alkyl,

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wherein said alkyl is unsubstituted or substituted with one of C_{1-8} alkyloxy, amino, mono C_{1-4} alkylamino, di C_{1-4} alkylamino, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl, carboxy C_{1-10} alkyl, hydroxy, or halogen;

R^6 is present when Z equals N and is independently

H,

C_{1-20} alkyl, or

equivalent to R^3; or taken together with R^3 and the N to which they are attached represents a monocyclic mono N heteroaryl;

R^7 and R^8 are independently selected from:

H,

CH_3,

C_2H_5,

carboxamido,

OH,

OCH_3,

NO_2,

CN,

F,

RS,

RSO,

RSO_2,

R_2N, where R can be the same or different selected from H, C_{1-4} alkyl, or aryl;

Cl,

acetamido,

OC_2H_5,

CF_3,

isopropyl, and

isobutyl, n equals 1–10 and the C_{1-20} alkyl portion is optionally substituted with R^5;

Y is:

O, or

S;

Z is:

N, or

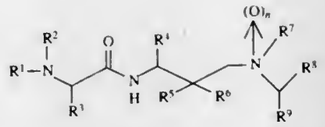
O;

x is an integer from 1–25;

at each occurrence, aryl is phenyl;

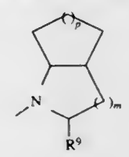
at each occurrence, heteroaryl is independently selected from pyrrolyl, imidazolyl pyrazolyl, pyridyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl, thiadiazolyl, benzopyranyl, benzothiazolyl, benzoxazolyl, furyl, thienyl, benzothienyl, benztriazolyl and oxadiazolyl;

and dashes indicate a double bond is optionally present.

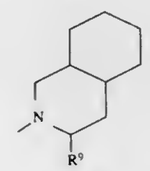


wherein n is zero or 1; R^1 is cycloalkylcarbonyl, aralkanoyl, and aroyl; R^2 is hydrogen; R^3 is alkyl, cycloalkyl, aryl, aralkyl, cyanoalkyl, alkylsulphinylalkyl, carbamoylalkyl or alkoxycarbonylalkyl or, when n is zero, R^3 is additionally alkylthioalkyl or, when n is 1, R^3 can also be alkylsulphonylalkyl; R^4 is alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl; R^5 is hydrogen and R^6 is hydroxy or R^5 and R^6 together are oxo; $—N(R^7)—CH(R^8)(R^9)$ is selected from the group consisting of

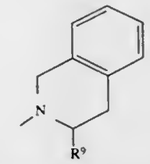
(f)



(g)

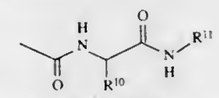


(j)



where m is 2 and p is 1 or 2, R^9 is alkoxycarbonyl, monoalkylcarbamoyl, monoarylcarbamoyl or a group of the formula

(b)



where R^{10} and R^{11} are alkyl, or the pharmaceutically acceptable addition salts thereof.

5,620,987

AMINO ACID DERIVATIVES

Balraj K. Handa, Welwyn Garden City; Peter J. Machin, Londoo; Joseph A. Martin, West Common; Sally Redshaw, Stevenage, and Gareth J. Thomas, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 916,812, Jul. 20, 1992, Pat. No. 5,446,161, which is a division of Ser. No. 362,621, Jun. 5, 1989, Pat. No. 5,157,041. This application Apr. 10, 1995, Ser. No. 398,478

Claims priority, application United Kingdom, Jun. 13, 1988, 8813940; Apr. 10, 1989, 8908035

Int. Cl.[6] **C07D** *217/16;* **A61K** *31/47*

U.S. Cl. 514—307 **11 Claims**

1. A compound of the formula

5,620,988

SUBSTITUTED TETRAHYDROPYRIDINES AND HYDROXYPIPERIDINES AS CENTRAL NERVOUS SYSTEM AGENTS

Shelly Glase, Ann Arbor; Juan C. Jaen, Plymouth, both of Mich.; Sarah J. Smith, Boulder, Colo., and Lawrence D. Wise, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

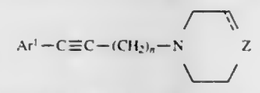
Division of Ser. No. 128,923, Sep. 29, 1993, Pat. No. 5,466,698, which is a continuation-in-part of Ser. No. 778,248, Oct. 24, 1991, Pat. No. 5,273,977, which is a continuation-in-part of Ser. No. 609,274, Nov. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,127

Int. Cl.[6] **A61K** *31/47;* **C07D** *215/38;217/24;403/06*

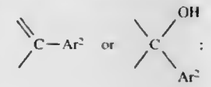
U.S. Cl. 514—307 **7 Claims**

1. A compound of Formula I:

wherein the dotted line represents a single or double bond;



wherein n is an integer of 2, 3, or 4; Z is



Ar^2 is

aryl,

aryl substituted by one to two substituents selected from the group consisting of

lower alkyl,

lower alkoxy,

lower thioalkoxy,

hydroxy,

lower acyloxy,

amino,

lower alkyl amino,

nitro,

wherein R is

aryl,

lower alkyl,

trifluoromethyl, 2-, 3-, or 4-pyridinyl or 2-, or 3-thienyl,

—NH—SO_2R, wherein R is as defined above or

—N—$(SO_2R)_2$, wherein R is as defined above;

Ar^1 is 2-, 3-, 4-, 5-, 6-, 7-, or 8-quinolinyl,

2-, 3-, 4-, 5-, 6-, 7-, or 8-quinolinyl substituted by

halogen,

lower alkyl,

lower alkoxy,

amino,

lower alkyl amino,

nitro,

wherein R is as defined above,

—NH—SO_2R, wherein R is as defined above, or

—N—$(SO_2R)_2$, wherein R is as defined above,

1-, 3-, 4-, 5-, 6-, 7-, or 8-isoquinolinyl,

1-, 3-, 4-, 5-, 6-, 7-, or 8-isoquinolinyl, substituted by

halogen,

lower alkyl,

lower alkoxy,

hydroxy,

lower acyloxy,

amino,

lower alkyl amino,

nitro,

wherein R is as defined above,

—NH—SO_2R, wherein R is as defined above, or

—N—$(SO_2R)_2$, wherein R is as defined above,

or a pharmaceutically acceptable acid addition salt thereof.

5,620,989

4-ARYLMETHYLOXYMETHYL PIPERIDINES AS TACHYKININ ANTAGONSITS

Timothy Harrison, Great Dunmow; Angus M. MacLeod, Bishops Stortford; Graeme I. Stevenson, Saffron Walden, and Brian J. Williams, Great Dunmow, all of United Kingdom, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB93/02214, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/10165, PCT Pub. Date May 11, 1994

PCT Filed Oct. 27, 1993, Ser. No. 416,813

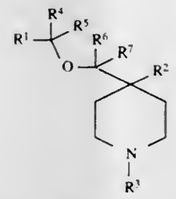
Claims priority, application United Kingdom, Oct. 28, 1992, 9222633; Apr. 30, 1993, 9308962; Jul. 2, 1993, 9313680; Aug. 4, 1993, 9316112

Int. Cl.[6] **C07D** *401/06;417/06;211/10;* **A61K** *31/445;31/47*

U.S. Cl. 514—317 **12 Claims**

1. A compound of formula (I)

(I)



wherein:

R^1 represents phenyl substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl,—OR^a, SR^a, SOR^a, SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^aor —$CONR^aR^b$, where R^a and R^b each independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;

R^2 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, SR^a, SOR^a, SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a or —$CONR^aR^b$; heteroaryl selected from indazolyl, thienyl, furyl, pyridyl, thiazolyl, tetrazolyl and quinolyl; benzhydryl; or benzyl; wherein each heteroaryl and each phenyl moiety of benzyl and benzhydryl may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

R^3 represents H, COR^9, CO_2R^{10}, $COCONR^{10}R^{11}$, $COCO_2R^{10}$, SO_2R^{15}, $CONR^{10}SO_2R^{15}$, C_{1-6}alkyl optionally substituted by a group selected from (CO_2R^{10}, $CONR^{10}R^{11}$, hydroxy, cyano, COR^9, $NR^{10}R^{11}$, C(NOH)$NR^{10}R^{11}$, CONHphenyl(C_{1-4}alkyl), $COCO_2R^{10}$, $COCONR^{10}R^{11}$, SO_2R^{15}, $CONR^{10}SO_2R^{15}$ and phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl), Y—R^8 or CO-Z-$(CH_2)_1$—R^{12};

R^4, R^5, R^6 and R^7 each independently represent H or C_{1-6}alkyl;

R^8 represents an aromatic heterocyclic group selected from thienyl, furyl, pyrrolyl, pyridyl, pyrazolyl, triazolyl, tetrazolyl, thiazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, triazinyl, oxazolyl, oxadiazolyl, thiadiazolyl, isoxazolyl, quinolyl, isothiazolyl, imidazolyl, benzimidazolyl, benzoxazolyl, benzothiophenyl, benzofuranyl and indolyl, any of which may be substituted by one or more groups selected from C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, oxo, thioxo, halo, trifluoromethyl, NR^aR^b, NR^aCOR^b, $CONR^aR^b$, CO_2R^a, SR^a, SO_2R^a and CH_2OR^a;

R^9 represents H, C_{1-6}alkyl or phenyl;

R^{10} and R^{11} each independently represent H or C_{1-6}alkyl;

R^{12} represents $NR^{13}R^{14}$ or an optionally substituted aromatic or non-aromatic azacyclic or azabicyclic group optionally containing in the ring one or more heteroatoms selected from O, S and N, or the group NR^{16}, and may be unsubstituted or substituted by a group selected from C_{1-6}alkyl, C_{1-6}alkoxy, oxo, SH, =S, halo, trifluoromethyl, NR^aR^b, NR^aCOR^b, $CONR^aR^b$, CO_2R^a and CH_2OR^a;

R^{13} and R^{14} each independently represent H, C_{1-6}alkyl, phenyl optionally substituted by one or more of C_{1-6}alkyl,

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C_{1-6}alkoxy, halo or trifluoromethyl or phenylC_{1-4}alkyl optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;
R^{15} represents C_{1-6}alkyl, trifluoromethyl or phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl;
R^{16} represents H, C_{1-6}alkyl or phenylC_{1-4}alkyl;
Y represents a hydrocarbon chain of 1,2,3 or 4 carbon atoms which may optionally be substituted by oxo;
Z represents CH_2, O, S or NR^{10}; and
q represents 0, 1, 2, 3, 4, 5 or 6;
or a pharmaceutically acceptable salt thereof.

5,620,990

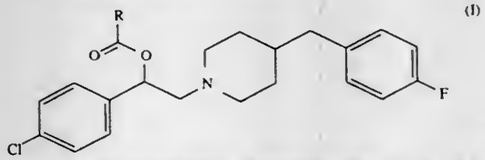
ALPHA-(4-CHLOROPHENYL)-4-[(4-FLUORPHENYL)-METHYL]PIPERIDINE-1-ETHANOL ESTERS, THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Jean P. Thenot, Gif sur Yvette; Jonathan Frost, Wissous; Patrick Lardenois, Bourg la Reine; Maria C. Renones, Enghien les Bains, and Alexander Wick, Saint Nom la Breteche, all of France, assignors to Synthelabo, Le Plessis Robinson, France

Filed Jul. 11, 1995, Ser. No. 499,918
Claims priority, application France, Jul. 13, 1994, 94 08711
Int. Cl.[6] A61K *31/445;* **C07D** *211/34;211/08*
U.S. Cl. 514—317 **8 Claims**

1. A piperidine derivative of formula (I)

(I)



in which R represents a straight- or branched-chain (C_1–C_{19}) alkyl group, a straight- or branched-chain (C_2–C_{19})alkenyl group, a (C_3–C_6)cycloalkyl group, a cycloalkylmethyl group in which the cycloalkyl moiety has from three to six carbon atoms, a phenyl group which is optionally substituted by a halogen atom or a phenyl methyl group which is optionally substituted by a halogen atom, or an addition salt thereof, in the form of an optically pure enantiomer or of a mixture of enantiomers.

5,620,991

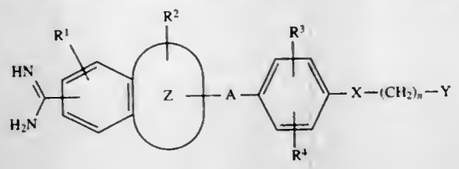
AROMATIC AMIDINE DERIVATIVES AND SALTS THEREOF

Takayasu Nagahara; Naoaki Kanaya; Kazue Inamura, and Yukio Yokoyama, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

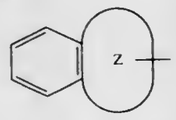
Continuation of Ser. No. 282,571, Jul. 29, 1994, abandoned, which is a continuation of Ser. No. 969,396, Oct. 30, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,173
Claims priority, application Japan, Oct. 31, 1991, 3-286088
Int. Cl.[6] A61K *31/445;* **C07D** *211/06*
U.S. Cl. 514—319 **7 Claims**

1. An aromatic amidine derivative represented by the following general formula (1) or a pharmaceutically acceptable salt thereof:

(1)



wherein R^1 is a hydrogen atom or a alkoxy group;
R^2 is a hydrogen atom, a alkyl group, a alkoxy group, a carboxyl group, an alkoxycarbonyl group, a carboxyalkyl group or an alkoxycarbonylalkyl group;
R^3 is a hydrogen atom, a carboxyl group, an alkoxycarbonyl group, a carboxyalkyl group, an alkoxycarbonylalkyl group, a carboxyalkoxy group or an alkoxycarbonylalkoxy group;
R^4 is a hydrogen atom, a hydroxyl group, a alkyl group or a alkoxy group;
n is an integer of 0 to 4;
A is an alkylene group having a carbon number of 1 to 4, which may have 1 or 2 substituents selected from the group consisting of hydroxyalkyl, carboxyl, alkoxycarbonyl, carboxyalkyl and alkoxycarbonylalkyl;
X is a single bond, an oxygen atom, a sulfur atom or a carbonyl group;
Y is a piperidinyl group optionally substituted with a member selected from the group consisting of an alkyl group, an alkanoyl group, a carbamoyl group, a mono- or dialkylcarbamoyl group, a formimidoyl group, an alkanoimidoyl group, a benzimidoyl group, a carboxyl group, an alkoxycarbonyl group, a carboxyalkyl group, an alkylcarbonylalkyl group, an aminoalkyl group, an alkanoylamino group, an alkanoylaminoalkyl group, an imino group, and alkoxycarbonylimino group,
the group represented by



is a member selected from the group consisting of indolyl, benzofuranyl, benzothienyl, benzimidazolyl, benzoxazolyl, benzothiazolyl, naphthyl, tetrahydronaphthyl and indanyl; and
said alkyl, alkoxy or akanoyl group has a carbon number of 1 to 6.

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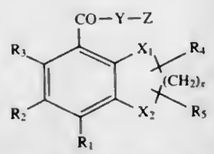
HETEROARYL COMPOUNDS USED AS PHARMACEUTICALS

Francis D. King; Laramie M. Gaster, both of Bishop's Stortford, and Keith R. Mulholland, Harlow, all of England, assignors to SmithKline Beecham plc, Brentford, England

PCT No. PCT/GB93/01895, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/03654, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 7, 1993, Ser. No. 397,229
Claims priority, application United Kingdom, Sep. 10, 1992, 9219163
Int. Cl.[6] A61K *31/445;* **C07D** *405/12*
U.S. Cl. 514—321 **19 Claims**

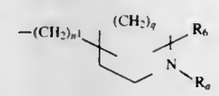
1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:

(I)



in which X_1—$(CH_2)_s$—X_2 forms a 5–7 membered ring wherein:
X_1 is O or S;

X_2 is O, S, NR or NRCO wherein R is hydrogen or C_{1-6} alkyl;
x is 1, 2 or 3;
R_1 is hydrogen, amino, halo, C_{1-6} alkyl, hydroxy or C_{1-6} alkoxy;
R_2 is hydrogen, halo, C_{1-6} alkyl, C_{1-6} alkoxy, nitro, amino or C_{1-6} alkylthio;
R_3 is hydrogen, halo, C_{1-6} alkyl, C_{1-6} alkoxy or amino;
R_4 and R_5 are independently hydrogen or C_{1-6} alkyl;
Y is O;
Z is of sub-formula (a).



(a)

wherein
—$(CH_2)_{n^1}$— is attached at carbon: and
n^1 is 0, 1, 2, 3 or 4;
q is 0, 1, 2 or 3;
R_a is $(CH_2)_n{}^2$-R_7 wherein n^2 is 2 or 3 and R_7 is selected from cyano, hydroxyl, C_{1-6} alkoxy, phenoxy, $C(O)C_{1-6}$ alkyl, COC_6H_5, —$CONR_8R_9$, NR_8COR_9, $SO_2NR_8R_9$ or $NR_8SO_2R_9$ wherein R_8 and R_9 are hydrogen or C_{1-6} alkyl; and
R_6 is hydrogen or C_{1-6} alkyl;
having 5-HT_4 receptor antagonist activity.

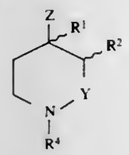
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ALPHA-1A ADRENERGIC RECEPTOR ANTAGONISTS

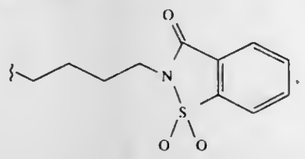
Michael A. Patane, Harleysville; Mark G. Bock, Hatfield, and Roger M. Friedinger, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 7, 1995, Ser. No. 488,267
Int. Cl.[6] A61K *31/445;* **C07D** *211/42*
U.S. Cl. 514—321 **23 Claims**

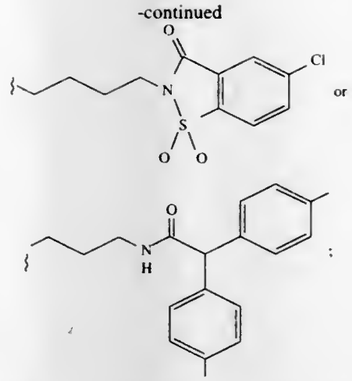
1. A compound of the formula:



wherein
Y is selected from CHR^3 or NR^5;
Z is selected from unsubstituted, mono- or poly-substituted phenyl where the substituents are independently selected from halogen or C_{1-4} alkyl; or unsubstituted, mono- or poly-substituted: pyridyl, thiophenyl, furanyl or naphthyl where the substituents on the pyridyl, thiophenyl, furanyl or naphthyl are independently selected from CF_3, phenyl, OR^5, halogen, C_{1-4} alkyl or C_{3-8} cycloalkyl;
R^1, R^2 and R^3 are each independently selected from hydrogen, cyano, tetrazole, isooxadiazole, $CONR^5R^6$, CO_2R^5 or SO_2R^6;
R^4 is selected from



-continued



R^5 and R^6 are each independently selected from hydrogen, C_{1-8} alkyl or C_{3-8} cycloalkyl;
or a pharmaceutically acceptable salts thereof.

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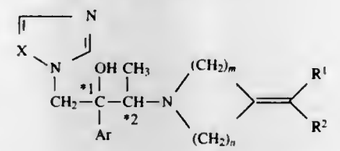
AZOLYLAMINE DERIVATIVE

Takanobu Naito; Haruhito Kobayashi; Hironobu Ogura; Kiyoshi Nagai; Tokiko Nishida; Tadashi Arika; Mamoru Yokoo, and Satoko Shusse, all of Kyoto, Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 532,800
Claims priority, application Japan, May 10, 1993, 5-132931
Int. Cl.[6] A61K *31/445;* **C07D** *401/06;403/06*
U.S. Cl. 514—326 **12 Claims**

1. A compound having the formula (I):

(1)



wherein
Ar is non-substituted phenyl group or a phenyl substituted with 1 to 3 substituents selected from a halogen atom and trifluoromethyl,
R^1 and R^2 are the same or different and are hydrogen atom, a lower alkyl group of 1 to 6 carbon atoms, a non-substituted phenyl, naphthyl or biphenyl group, a phenyl, naphthyl or biphenyl group substituted with 1 to 3 substituents selected from a halogen atom, a lower alkyl group of 1 to 6 carbon atoms, a trifluoromethyl group and a nitro group, an alkenyl group of 2 or 3 carbon atoms, an ethynyl group, a styryl group, a benzyl group, a naphthylmethyl group or a 4-nitrobenzyl group,
m is 2 or 3,
n is 1 or 2,
X is nitrogen atom, and
*1 and *2 mean an asymmetric carbon atom,
or an acid addition salt thereof.

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SUBSTITUTED HETEROCYCLIC CARBOXYAMIDES, THEIR PREPARATION AND THEIR USE AS PHARMACEUTICALS

Klaus Weidmann, Kronberg; Karl-Heinz Baringhaus, Wölfersheim; Georg Tschank, Klein-Winternheim, and Martin Bickel, Bad Homburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

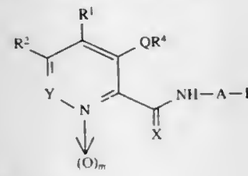
Filed Dec. 28, 1994, Ser. No. 365,411

Claims priority, application Germany, Dec. 30, 1993, 43 44 958.1; Nov. 9, 1994, 44 39 935.9

Int. Cl.[6] C07D *213/65;213/89;* **A61K** *31/44*

U.S. Cl. 514—350 **28 Claims**

1. A compound of the formula I



(I)

in which

Q is O or S,

X is O or S,

Y is CR^3,

m is 0 or 1,

A is $(C_1–C_4)$-alkylene, which is optionally substituted by:

one or two substituents selected from the group halogen, cyano, nitro, trifluoromethyl, $(C_1–C_6)$-alkyl, $(C_1–C_6)$-hydroxyalkyl, $(C_1–C_6)$-alkoxy, —O—$[CH_2]_s$—$C_tH_{(2t+1-u)}Hal_u$, $(C_1–C_6)$-alkylmercapto, $(C_1–C_6)$-alkylsulfinyl, $(C_1–C_6)$-alkylsulfonyl, $(C_1–C_6)$-alkylcarbonyl, $(C_1–C_6)$-alkoxycarbonyl, carbamoyl, N-$(C_1–C_4)$-alkylcarbamoyl, N,N-di-$(C_1–C_4)$-alkylcarbamoyl, $(C_1–C_6)$-alkylcarbonyloxy, $(C_3–C_8)$-cycloalkyl, phenyl, benzyl, phenoxy, benzyloxy, anilino, N-methylanilino, phenylmercapto, phenylsulfonyl, phenylsulfinyl, sulfamoyl, N-$(C_1–C_4)$-alkylsulfamoyl and N,N-di-$(C_1–C_4)$-alkylsulfamoyl; or

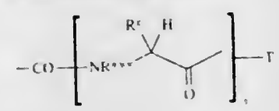
a $(C_6–C_{12})$-aryloxy, $(C_7–C_{11})$-aralkyloxy, $(C_6–C_{12})$-aryl or $(C_7–C_{11})$-aralkyl radical which carries in the aryl moiety 1, 2, 3, 4 or 5 identical or different substituents selected from the group halogen, cyano, nitro, trifluoro-methyl, $(C_1–C_6)$-alkyl, $(C_1–C_6)$alkoxy, —O—$[CH_2]_s$—$C_tH_{(2t+1-u)}Hal_u$, $(C_1–C_6)$-alkylmercapto, $(C_1–C_6)$-alkylsulfinyl, $(C_1–C_6)$-alkylsulfonyl, $(C_1–C_6)$-alkylcarbonyl, $(C_1–C_6)$-alkoxycarbonyl, carbamoyl, N-$(C_1–C_4)$-alkylcarbamoyl, N,N-di-$(C_1–C_4)$-alkylcarbamoyl, $(C_1–C_6)$-alkylcarbonyloxy, $(C_3–C_8)$-cycloalkyl, sulfamoyl, N-$(C_1–C_4)$-alkylsulfamoyl and N,N-di-$(C_1–C_4)$-alkylsulfamoyl; or

alternatively A is —CHR^5—, where R^5 differs from said substituent recited above for A and is a substituent of the α-carbon atom of an α-amino acid, said amino acid being a natural L-amino acid or its D-isomer, with the proviso that R^5 cannot be —CH_2SH;

B is selected from the group —CO_2H, —$CONHCOR^{**}$, —$CONHSOR^{**}$, $CONHSO_2R^{**}$, —$NHSO_2CF_3$, tetrazolyl, imidazolyl and 3-hydroxyisoxazolyl, or $(C_1–C_4)$-alkyl, optionally monosubstituted by $(C_6–C_{12})$-aryl, hetcroaryl, OH, SH, $(C_1–C_3)$-alkyl, $(C_1–C_4)$-alkoxy, $(C_1–C_3)$-thioalkyl, $(C_1–C_4)$-sulfinyl, $(C_1–C_4)$-sulfonyl, CF_3, Cl, Br, F, I, NO_2, —COOH, $(C_2–C_5)$-alkoxycarbonyl, NH_2, mono-$(C_1–C_4$-alkyl)-amino, di-$(C_1–C_4$-alkyl)-amino or $(C_1–C_4)$-perfluoroalkyl;

R^1, R^2 and R^3 are identical or different and are selected from hydrogen, hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, $(C_1–C_{20})$-alkyl, $(C_3–C_8)$-cycloalkyl, $(C_3–C_8)$-cycloalkyl-$(C_1–C_{12})$-alkyl, $(C_3–C_8)$-cycloalkoxy, $(C_3–C_8)$-cycloalkyl-$(C_1–C_{12})$-alkoxy, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_{12})$-alkyl, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_{12})$-alkoxy, $(C_1–C_8)$-cycloalkyl-$(C_1–C_8)$-alkyl-$(C_1–C_6)$-alkoxy, $(C_3–C_8)$-cycloalkyl-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkoxy, $(C_6–C_{12})$-aryl, $(C_7–C_{16})$-aralkyl, $(C_1–C_{20})$-alkoxy, $(C_2–C_{20})$-alkenyl, $(C_2–C_{20})$-alkynyl, $(C_2–C_{20})$-alkenyloxy, $(C_2–C_{20})$-alkynyloxy, retinyloxy, $(C_1–C_{20})$-alkoxy-$(C_1–C_{12})$-alkyl, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxy, $(C_1–C_{12})$-alkoxy-$(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy, $(C_7–C_{16})$-aralkyloxy, $(C_6–C_{12})$-aryloxy-$(C_1–C_6)$-alkoxy, $(C_7–C_{16})$-aralkoxy-$(C_1–C_6)$-alkoxy, $(C_1–C_{16})$-hydroxyalkyl, $(C_6–C_{16})$-aryloxy-$(C_1–C_8)$-alkyl, $(C_7–C_{16})$-aralkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_7–C_{12})$-aralkyloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_2–C_{20})$-alkenyloxy-$(C_1–C_6)$-alkyl, $(C_2–C_{20})$-alkynyloxy-$(C_1–C_6)$-alkyl, retinyloxy-$(C_1–C_6)$-alkyl, —O—$[CH_2—]_s$—$C_tH_{(2t+1-u)}Hal_u$, $(C_1–C_{20})$-alkylcarbonyl, $(C_3–C_8)$-cycloalkylcarbonyl, $(C_6–C_{12})$-arylcarbonyl, $(C_7–C_{16})$-aralkylcarbonyl, cinnamoyl, $(C_2–C_{20})$-alkenylcarbonyl, $(C_2–C_{20})$-alkynylcarbonyl, $(C_1–C_{20})$-alkoxycarbonyl, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxycarbonyl, $(C_6–C_{12})$-aryloxycarbonyl, $(C_7–C_{16})$-aralkoxycarbonyl, $(C_3–C_8)$-cycloalkoxycarbonyl, $(C_2–C_{20})$-alkenyloxycarbonyl, retinyloxycarbonyl, $(C_2–C_{20})$-alkynyloxycarbonyl, $C_6–C_{12}$-aryloxy-$(C_1–C_6)$-alkoxycarbonyl, $(C_7–C_{16})$-aralkoxy-$(C_1–C_6)$-alkoxycarbonyl, $(C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkoxycarbonyl, $(C_3–C_8)$-cycloalkoxy-$(C_1–C_6)$-alkoxycarbonyl, $(C_1–C_{12})$-alkylcarbonyloxy, $(C_3–C_8)$-cycloalkylcarbonyloxy, $(C_6–C_{12})$-arylcarbonyloxy, $(C_7–C_{16})$-aralkylcarbonyloxy, cinnamoyloxy, $(C_2–C_{12})$-alkenylcarbonyloxy, $(C_2–C_{12})$-alkynylcarbonyloxy, $(C_1–C_{12})$-alkoxycarbonyloxy, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxycarbonyloxy, $(C_6–C_{12})$-aryloxycarbonyloxy, $(C_7–C_{16})$-aralkoxycarbonyloxy, $(C_3–C_8)$-cycloalkoxycarbonyloxy, $(C_2–C_{12})$-alkenyloxycarbonyloxy, $(C_2–C_{12})$-alkynyloxycarbonyloxy, carbamoyl, N-$(C_1–C_{12})$-alkylcarbamoyl, N,N-di$(C_1–C_{12})$-alkylcarbamoyl, N-$(C_3–C_8)$-cycloalkylcarbamoyl, N,N-dicyclo-$(C_3–C_8)$-alkylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_1–C_8)$-cycloalkylcarbamoyl, N-$((C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkyl)carbamoyl, N-$(C_1–C_6)$-alkyl N-$((C_3–C_8)$-cycloalkyl-$(C_1–C_6)$alkyl)carbamoyl, N-(+)-dehydroabietylcarbamoyl, N-$(C_1–C_6)$-alkyl-N-(+)-dehydroabietylcarbamoyl,N-$(C_6–C_{12})$-arylcarbamoyl, N-$(C_7–C_{16})$-aralkylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_6–C_{16})$-arylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_7–C_{16})$-aralkylcarbamoyl, N-$((C_1C_{18})$-alkoxy-$(C_1–C_{10})$-alkyl)carbamoyl,N-$((C_6–C_{16})$-aryloxy-$(C_1–C_{10})$-alkyl)carbamoyl, N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C1–C_{10})$-alkoxy-$(C_1–C_{10})$-alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C_6–C_{12})$-aryloxy-$(C_1–C_{10})$-alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyl, or $CON(CH_2)_s$, in which a CH_2 group can be replaced by O, S, N-$(C_1–C_8)$-alkylimino, N-$(C_3–C_8)$-cycloalkylimino, N-$(C_3–C_8)$-cycloalkyl-$(C_1–C_4)$-alkylimino, N-$(C_6–C_{12})$-arylimino, N-$(C_7–C_{16})$-aralkylimino, N-$(C_1–C_4)$-alkoxy-$(C_1–C_6)$-alkylimino, and

a carbamoyl radical of the formula J



(J)

in which

R^c is the substituent of an L- or D- α-amino acid,

s is 1, 2, 3, 4 or 5, and

T is OH, OR or NR^*R^{**}, where R^*, R^{**} and R^{***} are identical or different and are hydrogen, $(C_6–C_{12})$-aryl, $(C_7–C_{11})$-aralkyl, $(C_1–C_8)$-alkyl, $(C_3–C_8)$-cycloalkyl, (+)-dehydroabietyl, $(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkyl, $(C_7–C_{12})$-aralkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_8)$-alkyl, $(C_1–C_{10})$-alkylcarbonyl, optionally substituted $(C_7–C_{16})$-aralkylcarbonyl or optionally substituted $(C_6–C_{12})$-arylcarbonyl, or

R^* and R^{**} are together —$[CH_2]_h$—, in which a CH_2 group can be replaced by O, S, SO, SO_2, N-acylamino, N-$(C_1–C_{10})$-alkoxycarbonylimino, N-$(C_1–C_8)$-alkylimino, N-$(C_3–C_8)$-cycloalkylimino, N-$(C_3–C_8)$-cycloalkyl-$(C_1–C_4)$-alkylimino, N-$(C_6–C_{12})$-arylimino, N-$(C_7–C_{16})$-aralkylimino or N-$(C_1–C_4)$-alkoxy-$(C_1–C_6)$-alkylimino,

and further wherein R^1, R^2, and R^3 are identical or different and are further selected from

carbamoyloxy, N-$(C_1–C_{12})$-alkylcarbamoyloxy, N,N-di-$(C_1–C_{12})$-alkylcarbamoyloxy, N-$(C_3–C_8)$-cycloalkylcarbamoyloxy, N-$(C_6–C_{12})$-arylcarbamoyloxy, N-$(C_7–C_{16})$-aralkyl-carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$(C_6–C_{12})$-arylcarbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$(C_7–C_{16})$-aralkylcarbamoyloxy, N-$((C_1–C_{10})$-alkyl)carbamoyloxy, N-$((C_6–C_{12})$-aryloxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_1–C_{10})$-alkoxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_6–C_{12})$-aryloxy-$(C_1–C_{10})$-alkyl) carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyloxy,

NR^vR^z, wherein R^v and R^z are independently selected from hydrogen, $(C_1–C_{12})$-alkyl, $(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkyl, $(C_7–C_{12})$-aralkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_8)$-alkyl, $(C_3–C_{10})$-cycloalkyl, $(C_3–C_{12})$-alkenyl, $(C_3–C_{12})$-alkynyl, $(C_6–C_{12})$-aryl, $(C_7–C_{11})$-aralkyl, $(C_1–C_{12})$-alkoxy, $(C_7–C_{12})$aralkoxy,

$(C_1–C_{12})$-alkylcarbonyl, $(C_3–C_8)$-cycloalkylcarbonyl, $(C_6–C_{12})$ arylcarbonyl, and $(C_7–C_{16})$-aralkylcarbonyl,

or further wherein R^v and R^z together are —$[CH_2]_k$— in which a CH_2 group can be replaced by O, S, N-$(C_1–C_4)$-alkylcarbonylimino or N-$(C_1–C_4)$-alkoxycarbonylimino,

and further wherein R^1, R^2, and R^3 are identical or different and are further selected from

$(C_1–C_{12})$-alkylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_3–C_8)$-cycloalkylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-arylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_7–C_{16})$-aralkylcarbonylamino-$(C_1–C_8)$-alkyl, amino-$(C_1–C_{10})$-alkyl, N-$(C_1–C_{10})$-alkylamino-$(C_1–C_{10})$-alkyl, N,N-di-$(C_1–C_{10})$-alkylamino-$(C_1–C_{10})$-alkyl, $(C_3–C_8)$-cycloalkylamino-$(C_1–C_{10})$-alkyl, $(C_1–C_{20})$-alkylmercapto, $(C_1–C_{20})$-alkylsulfinyl, $(C_1–C_{20})$-alkylsulfonyl, $(C_6–C_{12})$-arylmercapto, $(C_6–C_{12})$-arylsulfinyl, $(C_6–C_{12})$-arylsulfonyl, $(C_7–C_{16})$-aralkylmercapto, $(C_7–C_{16})$-aralkylsulfinyl, $(C_7–C_{16})$-aralkylsulfonyl, $(C_1–C_{12})$-alkylmercapto-$(C_1–C_6)$-alkyl, $(C_1–C_{12})$-alkylsulfinyl-$(C_1–C_6)$-alkyl, $(C_1–C_{12})$-alkylsulfonyl-$(C_1–C_6)$-alkyl, $(C_6–C_{12})$-arylmercapto-$(C_1–C_6)$-alkyl, $(C_6–C_{12})$-arylsulfinyl-$(C_1–C_6)$-alkyl, $C_6–C_{12}$-arylsulfonyl-$(C_1–C_6)$-alkyl, $(C_7–C_{16})$-aralkylmercapto-$(C_1–C_6)$-alkyl, $(C_7–C_{16})$-aralkylsulfinyl-$(C_1–C_6)$-alkyl, $(C_7–C_{16})$-aralkylsulfonyl-$(C_1–C_6)$-alkyl,

sulfamoyl, N-$(C_1–C_{10})$-alkylsulfamoyl, N,N-di-$(C_1–C_{10})$-alkylsulfamoyl, $(C_3–C_8)$-cycloalkylsulfamoyl, N-$(C_6–C_{12})$-arylsulfamoyl, N-$(C_7–C_{16})$-aralkylsulfamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_6–C_{12})$-arylsulfamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_7–C_{16})$-aralkylsulfamoyl, $(C_1–C_{10})$-alkylsulfonamido, N-$((C_1–C_{10})$alkyl)-$(C_1–C_{10})$alkylsulfonamido, $(C_7–C_{16})$-aralkylsulfonamido and N-$((C_1–C_{10})$-alkyl)-$(C_7–C_{16})$-aralkylsulfonamido, where the radicals which contain an aryl radical or moiety may be substituted on the aryl by from 1 to 5 identical or different radicals selected from the group:

hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, $(C_1–C_{16})$-alkyl, $(C_3–C_8)$-cycloalkyl, $(C_3–C_8)$-cycloalkyl-$(C_1–C_{12})$-alkyl, $(C_3–C_8)$-cycloalkoxy, $(C_3–C_8)$-cycloalkyl-$(C_1–C_{12})$-alkoxy, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_{12})$-alkyl, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_{12})$-alkoxy, $(C_3–C_8)$-cycloalkyl-$(C_1–C_8)$-alkyl-$(C_1–C_6)$-alkoxy, $(C_3–C_8)$-cycloalkyl-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkoxy-$(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkoxy, $(C_6–C_{12})$-aryl, $(C_7–C_{16})$-aralkyl, $(C_2–C_{16})$-alkenyl, $(C_2–C_{12})$-alkynyl, $(C_1–C_{16})$-alkoxy, $(C_2–C_{16})$-alkenyloxy, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkyl, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxy, $(C_1–C_{12})$-alkoxy-$(C_1–C_8)$-alkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy, $(C_7–C_{16})$-aralkyloxy, $(C_6–C_{12})$-aryloxy-$(C_1–C_6)$-alkoxy, $(C_7–C_{16})$-aralkoxy-$(C_1–C_6)$-alkoxy, $(C_1–C_8)$-hydroxyalkyl, $(C_6–C_{16})$-aryloxy-$(C_1–C_8)$-alkyl, $(C_7–C_{16})$-aralkoxy-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, $(C_7–C_{12})$-aralkyloxy-$(C_1–C_8)$-alkoxy-$(C_1–C_6)$-alkyl, —O—$[CH_2–]_s$—$C_tH_{(2t+1-u)}F_u$—OCF_2Cl, —OCF_2—CHFCl,

$(C_1–C_{12})$-alkylcarbonyl, $(C_3–C_8)$-cycloalkylcarbonyl, $(C_6–C_{12})$-arylcarbonyl, $(C_7–C_{16})$-aralkylcarbonyl,

$(C_1–C_{12})$-alkoxycarbonyl, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxycarbonyl, $(C_6–C_{12})$-aryloxycarbonyl, $(C_7–C_{16})$-aralkoxycarbonyl, $(C_3–C_8)$-cycloalkoxycarbonyl, $(C_2–C_{12})$-alkenyloxycarbonyl, $(C_2–C_{12})$-alkynyloxycarbonyl, $(C_6–C_{12})$-aryloxy-$(C_1–C_6)$-alkoxycarbonyl, $(C_7–C_{16})$-aralkoxy-$(C_1–C_6)$-alkoxycarbonyl, $(C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkoxycarbonyl, $(C_3–C_8)$-cycloalkoxy-$(C_1–C_6)$-alkoxycarbonyl,

$(C_1–C_{12})$-alkylcarbonyloxy, $(C_3–C_8)$-cycloalkylcarbonyloxy, $(C_6–C_{12})$-arylcarbonyloxy, $(C_7–C_{16})$-aralkylcarbonyloxy, cinnamoyloxy, $(C_2–C_{12})$-alkenylcarbonyloxy, $(C_2–C_{12})$-alkynylcarbonyloxy,

$(C_1–C_{12})$-alkoxycarbonyloxy, $(C_1–C_{12})$-alkoxy-$(C_1–C_{12})$-alkoxycarbonyloxy, $(C_6–C_{12})$-aryloxycarbonyloxy, $(C_7–C_{16})$-aralkyloxycarbonyloxy, $(C_3–C_8)$-cycloalkoxycarbonyloxy, $(C_2–C_{12})$-alkenyloxycarbonyloxy, $(C_2–C_{12})$-alkynyloxy-carbonyloxy,

carbamoyl, N-$(C_1–C_{12})$-alkylcarbamoyl, N,N-di-$(C_1–C_{12})$-alkylcarbamoyl, N-$(C_3–C_8)$-cycloalkylcarbamoyl, N,N-dicyclo-$(C_3–C_8)$-alkylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_3–C_8)$-cycloalkylcarbamoyl, N-$((C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkyl)carbamoyl, N-$(C_1–C_6)$-alkyl-N-$(C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkyl)carbamoyl, N-(+)-dehydroabietylcarbamoyl, N-$(C_1–C_6)$-alkyl-N-(+)-dehydroabietylcarbamoyl, N-$(C_6–C_{12})$-arylcarbamoyl, N-$(C_7–C_{16})$-aralkylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_6–C_{16})$arylcarbamoyl, N-$(C_1–C_{10})$-alkyl-N-$(C_7–C_{16}$-aralkylcarbamoyl, N-$((C_1–C_{16})$-alkoxy-$(C_1–C_{10})$alkyl)carbamoyl, N-$((C_6–C_{16})$-aryloxy-$(C_1–C_{10})$alkyl)carbamoyl, N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C_1–C_{10})$-alkoxy-$(C_1–C_{10})$-alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C_6–C_{12})$-aryloxy$(C_1–C_{10})$alkyl)carbamoyl, N-$(C_1–C_{10})$-alkyl-N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyl, $CON(CH_2)_s$ in which a CH_2 group can be replaced by O, S, N-$(C_1–C_8)$-alkylimino, N-$(C_3–C_8)$cycloalkylimino, N-$(C_3–C_8)$-cycloalkyl-$(C_1–C_4)$alkylimino, N-$(C_6–C_{12})$-arylimino, N-$(C_7–C_{16})$-aralkylimino or N-$(C_1–C_4)$-alkoxy-$(C_1–C_6)$-alkylimino,

carbamoyloxy, N-$(C_1–C_{12})$-alkylcarbamoyloxy, N,N-di-$(C_1–C_{12})$-alkylcarbamoyloxy, N-$(C_3–C_8)$-cycloalkylcarbamoyloxy, N-$(C_6–C_{16})$-arylcarbamoyloxy, N-$(C_7–C_{16})$-aralkylcarbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$(C_6–C_{12})$arylcarbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$(C_7–C_{16})$-aralkylcarbamoyloxy, N-$((C_1–C_{10})$alkyl)-carbamoyloxy,

N-$((C_6–C_{12})$-aryloxy-$(C_1–C_{10})$alkyl)carbamoyloxy, N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$alkyl)carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_1–C_{10})$-alkoxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_6–C_{12})$-aryloxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, N-$(C_1–C_{10})$-alkyl-N-$((C_7–C_{16})$-aralkyloxy-$(C_1–C_{10})$-alkyl)carbamoyloxy, NR^vR^z, wherein R^v and R^z are as defined above,

$(C_1–C_{12})$-alkylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_3–C_8)$-cycloalkylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-arylcarbonylamino-$(C_1–C_8)$-alkyl, $(C_7–C_{16})$-aralkylcarbonylamino-$(C_1–C_8)$-alkyl, amino-$(C_1–C_{10})$-

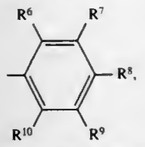
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alkyl, N-(C_1–C_{10})-alkylamino-(C_1–C_{10})alkyl, N,N-di-(C_1–C_{10})alkylamino-(C_1–C_{10})alkyl, (C_3–C_8)-cycloalkylamino-(C_1–C_{10})-alkyl, (C_1–C_{12})-alkylmercapto, (C_1–C_{12})-alkylsulfinyl, (C_1–C_{12})-alkylsulfonyl, (C_6–C_{16})-arylmercapto, (C_6–C_{16})-arylsulfinyl, (C_6–C_{16})-arylsulfonyl, (C_7–C_{16})-aralkylmercapto, (C_7–C_{16})-aralkylsulfinyl, (C_7–C_{16})-aralkylsulfonyl, sulfamoyl, N-(C_1–C_4)-alkylsulfamoyl, and N,N-di-(C_1–C_4)-alkylsulfamoyl, or

alternatively, in the case when said radicals which are aryl or which contain an aryl moiety are substituted by up to 3 of said radicals, then two adjacent carbon atoms of an aralkyloxy radical recited in the definition of R^1 and R^3 together carry at least one chain selected from —[CH_2—]$_n$ and —CH=CH—CH=CH—, where a CH_2 group of the chain is optionally replaced by O, S, SO, SO_2 or NR', and further wherein R^1, R^2, and R^3 are identical or different and are further selected from a radical of the formula Z:

$$—[CH_2]_v—[O]_w—[CH_2]_t—E, \qquad (Z)$$

where E is a phenyl radical of the formula F



(F)

a heteroaryl radical or a (C_3–C_8)-cycloalkyl radical,

where

v is 0, 1, 2, 3, 4, 5 or 6, w is 0 or 1, and t is 0, 1, 2, or 3, with the restriction that v is not 0 if w is 1, and the further restriction that v, w, and t cannot simultaneously be 0 if E is the phenyl radical of formula F or is a cycloalkyl, and

R^6, R^7, R^8, R^9 and R^{10} are identical or different and are selected from hydrogen, halogen, cyano, nitro, trifluoromethyl, (C_1–C_6)-alkyl, (C_3–C_8)-cycloalkyl, (C_1–C_6)-alkoxy, —O—[CH_2]$_s$—$C_fH_{(2f+1-g)}F_g$, —OCF_2Cl, —O—CF_2—CHFCl, (C_1–C_6)-alkylmercapto, (C_1–C_6)-hydroxyalkyl, (C_1–C_6)-alkoxy-(C_1–C_6)-alkoxy, (C_1–C_6)-alkoxy-(C_1–C_6)-alkyl, (C_1–C_6)-alkylsulfinyl (C_1–C_6)-alkylsulfonyl, (C_1–C_6)-alkylcarbonyl, (C_1–C_8)-alkoxycarbonyl, carbamoyl, N-(C_1–C_8)-alkylcarbamoyl, N,N-di-(C_1–C_8)-alkylcarbamoyl, (C_7–C_{11})-aralkylcarbamoyl optionally substituted by fluorine, chlorine, bromine, trifluoromethyl or (C_1–C_6)-alkoxy, N-(C_3–C_8)-cycloalkylcarbamoyl, N-(C_3–C_8)-cycloalkyl-(C_1–C_4)-alkylcarbamoyl, (C_1–C_6)-alkylcarbonyloxy, phenyl, benzyl, phenoxy, benzyloxy, NR^3R^2, phenylmercapto, phenylsulfonyl, phenylsulfinyl, sulfamoyl,N-(C_1–C_8)-alkylsulfamoyl and N,N-di-(C_1–C_8)-alkylsulfamoyl, or R^6 and R^7, R^7 and R^8, R^8 and R^9, or R^9 and R^{10} together are a chain —[CH_2]$_n$ or —CH=CH—CH=CH—, where a CH_2 group of the chain is optionally replaced by O, S, SO, SO_2 or NR',

or, alternatively, wherein R^2 is as defined above and R^1 and R^3 are identical or different and are selected from a radical of the formula D:

$$OZ \qquad (D),$$

in which Z is

as previously defined, and if one of R^1 and R^3 is not (D), said one is as defined above,

or, alternatively, R^1 is as defined above and R^2 and R^3 together with the atoms to which they are bonded form an aromatic or partially unsaturated ring in which one or two CH_2 groups of the partially unsaturated ring can be replaced by O, S, SO, SO_2 or NR',

R^1 is hydrogen, (C_6–C_{12})-aryl, (C_1–C_8)-alkyl, (C_1–C_8)-alkoxy-(C_1–C_8)-alkyl, (C_7–C_{12})-aralkoxy-(C_1–C_8)-alkyl, (C_6–C_{12})-aryloxy-(C_1–C_8)-alkyl, (C_1–C_{10})-alkylcarbonyl, (C_7–C_{16})-aralkylcarbonyl or (C_6–C_{12})-arylcarbonyl,

R^4 is hydrogen,

f is 1 to 8,

g is 0 or 1 to (2f+1),

n is 3 or 4,

x is 0 to 3 and

h is 3 to 7,

or a physiologically active salt thereof or a prodrug of said compound of formula (I), wherein said prodrug differs from said compound of formula (I), with 3-hydroxypyridine-2-carboxylic acid N-(carboxymethyl)amide, 3-hydroxypyridine-2-carboxylic acid N-(carboxy-2-hydroxypropyl)amide, 3-hydroxypyridine-2-carboxylic acid-N-(glycyl ethyl ester)-amide and 3-hydroxypyridine-2-carboxylic acid-N-(threonyl benzyl ester)amide being excluded.

5,620,996

SULFONAMIDOCARBONYL PYRIDINE-2-CARBOXESTERAMIDES AND THEIR PYRIDINE-N-OXIDE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Klaus Weidmann, Kronberg; Martin Bickel, Bad Homburg, and Volkmar Günzler-Pukall, Marburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

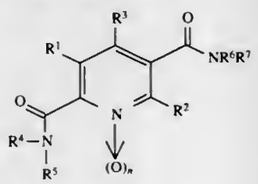
Filed Mar. 24, 1995, Ser. No. 410,610

Claims priority, application Germany, Mar. 25, 1994, 44 10 480.4

Int. Cl.^{6} C07D *213/82;* A61K *31/44*

U.S. Cl. 514—350 **13 Claims**

1. A sulfonamidocarbonylpyridine-2-carboxesteramide or its pyridine-N-oxide of the formula I



formula I

in which

R^1 is hydroxyl or (C_1–C_6)-alkoxy,

R^2 and R^3 are identical or different and are hydrogen, unsubstituted or substituted (C_1–C_6)-alkyl, (C_1–C_6)-alkoxy, halogen, nitrile, hydroxyl or amino,

R^6 is hydrogen, (C_1–C_6)-alkyl, (C_1–C_8)-alkanoyl, (C_1–C_6)-alkylcarbamoyl, (C_1–C_6)-alkoxycarbonyl, benzyloxycarbonyl, (C_1–C_{10})-acyloxy-(C_1–C_6)-alkyl, benzoyloxy-(C_1–C_6)-alkyl, benzyloxycarbonyloxy-(C_1–C_6)-alkyl or (C_1–C_6)-alkoxycarbonyloxy-(C_1–C_6)-alkyl, a 1-, 2-, 3- or 4-valent physiologically utilizable cation, optionally substituted 1–3 times by (C_1–C_8)-alkyl, (C_1–C_8)-hydroxyalkyl, (C_1–C_4)-alkoxy-(C_1–C_8)-alkyl, phenyl, benzyl or (C_1–C_8)-alkyl which can be substituted 1 to 3 times by hydroxyl or (C_1–C_4)-alkoxy, or a cation of a basic amino acid derivative,

R^7 is a radical of the formula II, excluding —SO_2H,

$$—Y—[C—U]_r—D—W \qquad (II)$$

in which

Y is —SO_2— or —CO—,

C is a bond or a branched or unbranched aliphatic (C_1–C_{16})-alkanediyl or cycloaliphatic (C_3–C_{10})-alkanediyl radical or a branched or unbranched (C_2–C_{16})-alkenediyl or cycloalkenediyl radical, or a (C_2–C_{16})-alkynediyl radical or a (C_2–C_{16})-alkenynediyl radical, which in each case can contain one or more C—C multiple bonds,

U is a bond or hydrogen or —CO—, —O(CO)—, —(CO)—O—, —(CO)NR—, —NR(CO)—, —O—, —SO—, —SO_2—, —NR, in which R is (C_1–C_3)alkyl (C_1–C_8)alkanoyl, (C_7–C_{16})aralkanoyl, (C_6–C_{12})aroyl or hydrogen,

r is 1, 2, 3 or 4,

D is a bond or hydrogen or a branched or unbranched aliphatic (C_1–C_{10})-alkanediyl radical, or a branched or unbranched (C_2–C_{10})-alkenediyl radical, a (C_2–C_{10})-alkynediyl radical or a (C_2–C_{10})-alkenynediyl radical, which in each case can contain one or more C—C multiple bonds,

W is a bond or hydrogen or a (C_3–C_{10}) cycloaliphatic alkyl, alkenyl, alkynyl or alkenynyl radical or a (C_6–C_{16})-aryl radical or a 5- or 6 -membered heteroaryl radical, where at least one of the variables C or D or W is not a bond and U is only a heteroatom group if C is not a bond or if D and/or W are not a bond and

C and/or W, if these are not a bond or hydrogen, for their part are unsubstituted or substituted,

R^4 is hydrogen, (C_1–C_6)-alkyl, phenyl or phenyl-(C_1–C_4)-alkyl,

R^5 is a branched or unbranched, aliphatic (C_1–C_8)-alkyl radical which is substituted once by (C_1–C_{16})alkoxycarbonyl, (C_1–C_{12})-alkoxy-(C_1–C_{12})-alkoxycarbonyl, (C_6–C_{12})-aryloxycarbonyl, (C_7–C_{16})-aralkyloxycarbonyl, (C_3–C_8)-cycloalkoxycarbonyl, (C_2–C_{12})-alkenyloxycarbonyl or (C_2–C_{12})-alkynyloxycarbonyl, and which can carry one or more substituents, and

n is 0 or 1.

5,620,997

ISOTHIAZOLONES

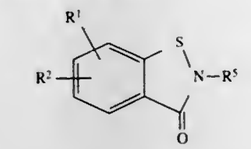
Gary L. Bolton, Ann Arbor; John M. Domagala, Canton; Edward F. Elslager, Ann Arbor; Rocco D. Gogliotti, Pinckney; Terri S. Purchase, Ann Arbor; Joseph P. Sanchez, Novi, and Bharat K. Trivedi, Farmington Hills, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 31, 1995, Ser. No. 456,149

Int. Cl.^{6} C07D *275/06;* A61K *31/41*

U.S. Cl. 514—373 **16 Claims**

1. A compound having Formula V



V

wherein:

R^1 and R^2 independently are hydrogen, halo, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, substituted or unsubstituted phenyl-(CR^6R^7)$_m$-, substituted or unsubstituted Het(CR^6R^7)$_m$-, O—C_1–C_6 alkyl, hydroxy, cyano, NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, SO_3H, $S(O)_mNR^3R^4$, COR^3 or taken together are oxo (O=) or methylenedioxy(—O—CH_2—O—);

m is 0, 1, or 2;

R^3 and R^4 independently are hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, Het (CR^6R^7)$_m$-, or phenyl-(CR^6R^7)$_m$-;

R^5 is C_1–C_6 alkyl, COC_1–C_6 alkyl, C_3–C_6 cycloalkyl, substituted phenyl-(CR^6R^7)$_m$-, unsubstituted or substituted Het(CR^6R^7)$_m$-, wherein the alkyl, COC_1–C_6 alkyl and cycloalkyl groups are substituted with 1 to 3 groups selected from NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, SO_3H, $S(O)_mNR^3R^4$ and COR^3, and wherein the phenyl and Het groups may optionally be substituted with halo, hydroxy, NR^3R^4, NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, SO_3H, $S(O)_mNR^3R^4$, and COR^3;

R^6 and R^7 independently are hydrogen, C_1–C_6 alkyl, CO_2R^3, hydroxy, $CONR^3R^4$, or cyano;

provided that R^5 is other than substituted phenyl-(CR^6R^7)$_m$- when the substituent on the phenyl ring is alkyl, halo, alkoxy, or NR^3R^4;

and the pharmaceutically acceptable salts and solvates thereof.

5,620,998

N-ACYL-N-HETEROCYCLYLALKYLAMINO ACID COMPOUNDS AND METHOD OF USE THEREOF

Tibur Schmidlin, Basel; Paul Zbinden, Witterswil, and Peter Bühlmayer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 97,740, Jul. 27, 1993, Pat. No. 5,506,240, which is a division of Ser. No. 929,616, Aug. 13, 1992. This application Jun. 7, 1995, Ser. No. 472,102

Claims priority, application Switzerland, Aug. 15, 1991, 2405/91; Feb. 7, 1992, 375/92; Apr. 8, 1992, 1141/92

Int. Cl.^{6} C07D *405/02;* A61K *31/34*

U.S. Cl. 514—382 **17 Claims**

1. A compound of the formula



(I)

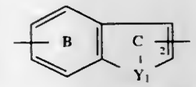
wherein

R_1 is C_1–C_7alkyl that is unsubstituted or substituted by halogen or by hydroxy, or is C_2–C_7 alkenyl, C_3–C_7cycloalkyl, $_3$–C_7cycloalkoxy, C_1–C_7alkoxy or C_3–C_7 cycloalkyl-C_1–C_7alkoxy; R_2 is 1H-tetrazol-5-yl, carboxy, C_1–C_7alkoxycarbonyl, SO_3H, PO_2H_2, PO_3H_2 or halo-C_1–C_7alkanesulfonylamino;

R_3 is 1H-tetrazol-5-yl, hydroxymethyl, C_1–C_7alkoxymethyl, formyl, carboxy, C_1–C_7 alkoxycarbonyl, C_1–C_7alkoxy-C_1–C_7alkoxycarbonyl, phenyl-C_1–C_4alkoxycarbonyl or carbamoyl, the amino group of which is unsubstituted or monosubstituted by C_1–C_7alkyl, C_3–C_7alkenyl or by phenyl-C_1–C_7alkyl or di-substituted by C_1–C_7alkyl, C_3–C_7alkenyl or by phenyl-C_1 –C_7alkyl independently of one another, or is di-substituted by C_2–C_7alkylene or by C_2–C_4 alkyleneoxy-C_2–C_4alkylene;

Alk is methylene, ethylene or ethylidene;

Het is



(i)

wherein Y_1 is O, S or N(R) and R is hydrogen or C_1–C_7alkyl;

X_1 is —CO— or —$S(O)_m$— and the index m is 0, 1 or 2;

one of the variables X_2 and X_4 is C_1–C_4alkylene and the other of the variables X_2 and X_4 is a bond; or each of the variables X_2 and X_4 is a bond;

X_3 is C_3–C_7cycloalkylidene or the structural element —$C(X_a)(X_b)$— and X_a is hydrogen or C_1–C_7alkyl and X_b is C_1–C_7alkyl;

and the rings A, B and C, with the exception of the substituents indicated in the formula, and also aromatic substituents are, independently of one another, unsubstituted or mono- or polysubstituted by substituents selected from the group consisting of halogen, C_1–C_7alkyl, C_1–C_7alkoxy, C_2–C_7alkenyloxy, phenoxy, benzyloxy, trifluoromethyl and $S(O)_m$—R, wherein m is 0, 1 and 2 and R is hydrogen or C_1–C_7alkyl;

or a salt thereof.

VOL 1197 ISS 3 AP 15 1997 UMI

5,620,999

BENZENESULFONAMIDE SUBTITUTED IMIDAZOLYL COMPOUNDS FOR THE TREATMENT OF INFLAMMATION

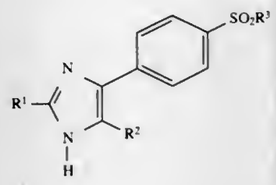
Richard M. Weier, 240 Hickory Ct., Lake Bluff, Ill. 60044; Paul W. Collins, 1557 Hawthorne Pl., Deerfield, Ill. 60015; Michael A. Stealey, 502 Juniper Pkwy., Libertyville, Ill. 60048, and Thomas E. Barta, 1133 Maple Ave. Apt. 3-W, Evanston, Ill. 60602

Filed Jul. 28, 1994, Ser. No. 281,903

Int. Cl.[6] A61K *31/415;* **C07D** *233/58;405/04*

U.S. Cl. 514—398 **23 Claims**

1. A compound of Formula I



I

wherein R^1 is selected from alkyl, haloalkyl, aralkyl, acyl, cyano, alkoxy, alkylthio, alkylthioalkyl, alkylsulfonyl, haloalkylsulfonyl, arylsulfonyl, halo, hydroxyalkyl, alkylcarbonyl, arylcarbonyl, aralkylcarbonyl, cyanoalkyl, aralkenyl, aminoalkyl, alkylaminoalkyl, N-arylaminoalkyl, N-alkyl-N-aryl-aminoalkyl, carboxyalkyl, alkoxycarbonylalkyl, alkoxycarbonyl, haloalkylcarbonyl, carboxyl, alkoxyalkyl, aminocarbonyl, alkylaminocarbonyl, alkylaminocarbonylalkyl, aralkoxy, aralkylthio, arylthioalkyl, aryloxyalkyl, haloaryloxyalkyl, arylthio, aryloxy, aralkylthioalkyl, aralkoxyalkyl, alkoxyaralkoxyalkyl and aryl optionally substituted at a substitutable position with one or more radicals selected from halo, alkylthio, alkylsulfinyl, alkyl, cyano, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl and haloalkoxy;

wherein R^2 is aryl optionally substituted with one or more radicals selected from halo, alkylthio, alkylsulfinyl, alkyl, cyano, carboxyl, alkoxycarbonyl, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl, alkoxyalkyl, haloalkoxy, amino, alkylamino, arylamino and nitro; and

wherein R^3 is amino;

or a pharmaceutically-acceptable salt thereof.

5,621,000

NITRIC ESTERS HAVING A PHARMACOLOGICAL ACTIVITY AND PROCESS FOR THEIR PREPARATION

Barbara Arena, and Piero Del Soldato, both of Monza, Italy, assignors to Nicox S.A., Paris, France

PCT No. PCT/EP93/03193, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12463, PCT Pub. Date Jun. 9, 1994

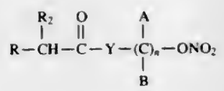
PCT Filed Nov. 15, 1993, Ser. No. 446,624

Claims priority, application Italy, Nov. 26, 1992, MI92A2699

Int. Cl.[6] A61K *31/40;* **C07D** *209/88*

U.S. Cl. 514—411 **17 Claims**

1. A nitric ester which has the following general formula:

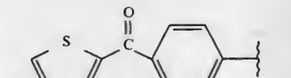


(I)

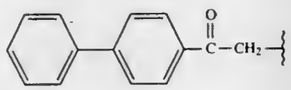
where:

A and B are hydrogen, linear or branched alkyl chains;

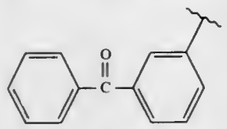
R is:



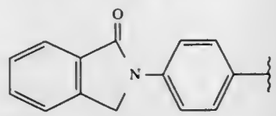
(II)



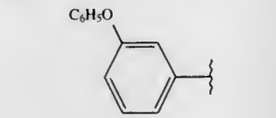
(III)



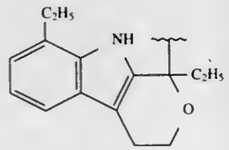
(IV)



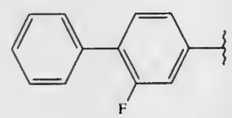
(VI)



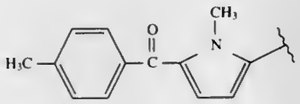
(VII)



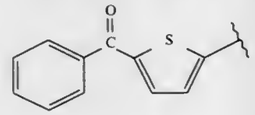
(VIII)



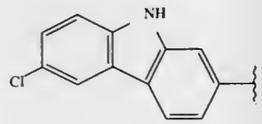
(IX)



(X)



(XXV)



(XXI)

R_2 is methyl, ethyl, or a linear or branched alkyl chain of 3 to 12 carbon atoms;

Y is oxygen, NH, or NR_1, where R_1 is a linear or branched alkyl group; and,

n is an integer between 1 and 10.

5,621,001

METHODS FOR ADMINISTRATION OF TAXOL

Renzo M. Canetta, Madison, Conn.; Elizabeth Eisenhauer, Kingston, Canada, and Marcel Rozencweig, Brandford, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 232,404, Apr. 25, 1994, abandoned, which is a continuation of Ser. No. 923,628, Aug. 3, 1992, abandoned. This application Nov. 20, 1995, Ser. No. 559,890

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—449 **2 Claims**

1. A method for reducing peripheral neurotoxicity symptoms in patients suffering from ovarian cancer and undergoing TAXOL therapy comprising reducing peripheral neurotoxicity symptoms in said patients while maintaining an antitumor effect by administering about 135 mg/m^2 over a period of about 24 hours.

5,621,002

PRODRUGS FOR ENZYME MEDIATED ACTIVATION

Klaus Bosslet; Jörg Czech, both of Marburg; Dieter Hoffmann, Marburg-Elnhausen, all of Germany; Andrea Vasella; Roland Hoos, both of Zürich, Switzerland; François Tillequin, Paris, France; Jean-Claude Florent, Les Ulis, France; Michel Azoulay; Claude Monneret, both of Paris, France; Jean-Claude Jacquesy, Buxerolles, France; Jean-Pierre Gesson, Chansseneuil du Poitou, France, and Michel Koch, La Celle Saint Cloud, France, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany, and Laboratoires Hoechst S/A, Paris La Défense, France

Filed Sep. 9, 1994, Ser. No. 302,459

Claims priority, application European Pat. Off., Sep. 9, 1993, 93114475

Int. Cl.[6] A61K *31/335;31/34*

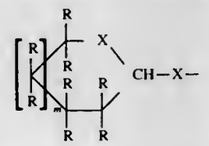
U.S. Cl. 514—451 **9 Claims**

1. A compound having the formula (I)

S—Z—W (I)

wherein

S is an inhibitor of a human glycosidase and has the formula



wherein

each R is independently H, OH, F, NH_2, COOH, CH_2—COOH, CH(OH)—COOH, PO_3H_2, CH_2—PO_3H_2 or CH(OH)—PO_3H_2,

X is NH, O or S, and

m is 0 or 1;

W is a pharmacologically active substance; and

Z is a direct bond or a self-immolative spacer,

provided that S is not β-D-glucuronic add or 2-amino-β-D-glucuronic acid when W is an anthracycline.

5,621,003

MAILLARD REACTION INHIBITOR

Kiichi Sawai; Takahiko Mitani, both of Nagoya; Naohisa Ninomiya, and Yoshiro Ishiwata, both of Aichi, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

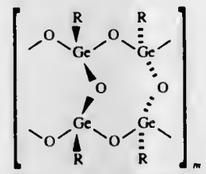
Filed Aug. 15, 1995, Ser. No. 515,330

Claims priority, application Japan, Aug. 26, 1994, 6-201616

Int. Cl.[6] A61K *31/28*

U.S. Cl. 514—492 **2 Claims**

1. A method for inhibiting the Haillard reaction, other than when treating diabetes, comprising administering an effective amount of an eight-structural polymer of 3-oxygermylpropionic acid represented by the following stereostructure (I):



(I)

wherein R represents —CH_2CH_2COOH, and m is a we ight average polymerization degree calculated on the basis of the weight average molecular weight of propagermanium propyl ester and is 137±84, 137 on average with a standard deviation of ±3σ; and having the following minimum constitutional unit:

$(O_{1/2})_3GeCH_2CH_2COOH$

and the following empirical formula:

$C_9H_{10}Ge_2O_7$.

5,621,004

METHOD FOR TREATING EMESIS

Robert W. Dunn, P.O. Box 894, Old Lyme, Conn. 06371, and Robert L. Gregory, New Providence, N.J., assignors to Robert W. Dunn, Old Lyme, Conn.

Filed Jun. 3, 1994, Ser. No. 253,467

Int. Cl.[6] A61K *31/22;31/195*

U.S. Cl. 514—551 **7 Claims**

1. A method of treating emesis in a warm blooded animal comprising administering to said warm blooded animal an anti-emesis effective amount of a nitric oxide synthase inhibitor.

5,621,005

AQUEOUS PHARMACEUTICAL SUSPENSION FOR SUBSTANTIALLY WATER INSOLUBLE PHARMACEUTICAL ACTIVES

Walter G. Gowan, Jr., Glenside, Pa., assignor to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 219,009, Mar. 28, 1994, Pat. No. 5,374,659, which is a continuation of Ser. No. 675,122, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 372,734, Jun. 28, 1989, abandoned. This application Sep. 28, 1994, Ser. No. 314,168

Int. Cl.[6] A61K *31/19;47/44*

U.S. Cl. 514—557 **7 Claims**

1. A process for preparing an aqueous pharmaceutical suspension composition comprising about 0.13 to 0.24% xanthan gum, about 1.05 to 1.60% pregelatinized starch, about 20 to 35% sugar, about 5 to 30% glycerin, 0 to about 10% sweet polyhydric alcohol, about 0.01 to 1.00% polyoxyethylene sorbitan monooleate and about 0.2 to 20.0% substantially water insoluble pharmaceutical

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active, weight by volume of the total suspension, and water, comprising the steps of:

(a) dry blending the xanthan gum, pregelatinized starch and a portion of the sugar;

(b) separately mixing the glycerin, sweet polyhydric alcohol and a portion of the water;

(c) adding the dry blend of step (a) with the aqueous mixture of step (b) and mixing until the xanthan gum and pregelatinized starch are uniformly dispersed throughout the mixture;

(d) adding the remaining portion of sugar to the dispersion of step (c) and mixing until the ingredients are uniformly dispersed in the mixture;

(e) mixing the polyoxyethylene sorbitan monooleate and the substantially water insoluble pharmaceutical with the mixture of step (d) until the ingredients are uniformly dispersed throughout the mixture; and

(f) mixing sufficient water to the mixture of step (e) to produce an aqueous pharmaceutical suspension of 100% of the desired volume.

5,621,006

METHOD FOR TREATING ACNE USING BENZILIC ACID

Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 3 Hidden La., Abington, Pa. 19001

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,112, Jan. 22, 1993, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 472,314

Int. Cl.[6] A01N *37/00*

U.S. Cl. 514—557 **38 Claims**

1. A method of treating acne comprising topically applying to said acne a composition comprising an effective amount of benzilic acid in a topically acceptable vehicle for a period of time sufficient to effect a substantial clearing of acne lesions.

5,621,007

METHOD FOR REGULATION OF TRANSMEMBRANE CHLORIDE CONDUCTANCE

Valentin K. Gribkoff, Wallingford; Steven I. Dworetzky, Middletown, and Davis L. Temple, Wallingford, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 147,212, Nov. 3, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 431,695

Int. Cl.[6] A61K *31/415;* **A61L** *9/04*

U.S. Cl. 514—387 **4 Claims**

1. A method for the treatment of a disorder characterized by reduced chlorine channel conductance with the disorder being cystic fibrosis, the method comprising administering to a patient suffering from such a disorder, an effective amount of the compound 5-trifluoromethyl-1-(5-chloro-2-hydroxyphenyl)-1,3-dihydro-2H-benzimidazol-2-one or a pharmaceutically acceptable salt thereof.

5,621,008

N-ACYL-ETHYLENE-TRIACETIC ACIDS

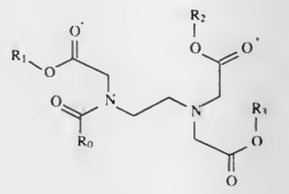
Dmitri Ptchelintsev, Mahwah, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Oct. 27, 1995, Ser. No. 549,419

Int. Cl.[6] A01N *37/12;* **A61K** *31/195*

U.S. Cl. 514—561 **11 Claims**

1. A topical formulation comprising N-acyl-N,N',N'-ethylenediaminetriacetic acid or a physiologically acceptable salt thereof, said N-acyl-N,N',N'-ethylenediaminetriacetic acid having the general formula:



wherein R_0 is an alkyl chain consisting of 2–18 carbons, and R_1, R_2 and R_3 are, together or separately, a hydrogen or an alkyl substituent consisting of 2–18 carbons wherein at least one of R_1, R_2 and R_3 must be said hydrogen, with the sum of carbon atoms in R_1, R_2 and R_3 not exceeding 20; and

wherein said formulation is in the form selected from the group consisting of a water-in-oil emulsion, an oil-in-water emulsion, a suspension, a lotion, a cream, an ointment, a liposomal complex, a polymer encapsulated powder, a surface absorption complex, an aerosol, a monomeric gel and a polymeric gel and wherein said topical formulation has a pH which ranges between about 3.85 and 7.55.

5,621,009

CHONDROPROTECTIVE AGENTS

Koju Watanabe; Koichi Niimura, both of Saitama, and Kiyonori Umekawa, Chiba, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 272,574, Jul. 11, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,516

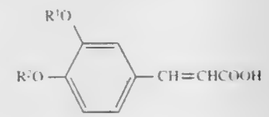
Claims priority, application Japan, Jul. 9, 1993, 5-194183

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—568 **3 Claims**

1. A method for treating arthropathy accompanying the cartilage destruction of a joint, comprising the step of:

administering an effective amount of a chondroprotective agent to a mammal in need of said chondroprotective agent, wherein said chondroprotective agent comprises a carboxylic acid compound of general formula (I):



(I)

wherein R^1 and R^2 are, independently, a hydrogen atom or an alkyl group of 1 to 6 carbon atoms, or a cis- or trans-isomer thereof, or a pharmaceutically acceptable salt or ester thereof, with the proviso that when R^1 is a methyl group and R^2 is a hydrogen atom, the carboxylic acid is a cis-isomer, and a pharmaceutically acceptable carrier.

5,621,010

UREA DERIVATIVES AND THEIR USE AS ACAT INHIBITORS

Noriyoshi Sueda, Saitama-ken; Kazuhiko Yamada, Komoro; Makoto Yanai, Saitama-ken; Katsutoshi Miura, Saitama-ken; Masato Horigome, Saitama-ken; Norio Oshida, Saitama-ken; Shigeru Hiramoto, Saitama-ken; Koichi Katsuyama, Saitama-ken; Fumihisa Nakata, Saitama-ken; Nobuhiro Kinoshita, Saitama-ken, and Yoko Tsukada, Saitama-ken, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

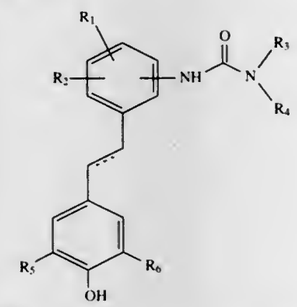
Filed May 18, 1994, Ser. No. 245,013

Claims priority, application Japan, May 21, 1993, 5-119786; Oct. 21, 1993, 5-285525; Feb. 4, 1994, 6-032040

Int. Cl.[6] A61K *31/17;* **C07C** *273/00;* **C07D** *249/08;217/12*

U.S. Cl. 514—596 **8 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof



(I)

in which:

R_1 and R_2, which may be the same or different, each represents

a hydrogen atom,

a halogen atom,

a straight or branched $(C_1–C_6)$alkyl group or

a straight or branched $(C_1–C_6)$alkoxy group,

R_3 and R_4, which may be the same or different, each represents

a hydrogen atom,

a straight or branched $(C_1–C_{12})$alkyl group,

a straight or branched $(C_2–C_{20})$alkenyl group,

a $(C_1–C_6)$alkoxy$(C_1–C_6)$alkyl group,

a $(C_1–C_6)$alkoxycarbonyl $(C_1–C_9)$alkyl group,

a benzyloxycarbonyl$(C_1–C_6)$alkyl group in which the alkyl moiety is optionally substituted by phenyl,

a N,N-di$(C_1–C_6)$alkylamino$(C_1–C_6)$alkyl group,

a N-$(C_1–C_6)$alkyl-N-benzylamino$(C_1–C_6)$alkyl group,

a $(C_1–C_6)$alkylthio$(C_1–C_6)$alkyl group,

an oxo$(C_1–C_9)$alkyl group,

a hydroxy$(C_1–C_6)$alkyl group,

a dihydroxy$(C_1–C_6)$alkyl group,

a cyclo$(C_3–C_{15})$alkyl group,

a cyclo$(C_3–C_8)$alkyl$(C_1–C_6)$alkyl group,

a dicyclo$(C_3–C_9)$alkyl$(C_1–C_6)$alkyl group,

a bicyclo$(C_6–C_9)$alkyl group,

a tricyclo$(C_9–C_{12})$alkyl group,

in which in all cases the cycloalkyl group or the cycloalkyl moiety is optionally substituted by one or two substituents selected from the group consisting of $(C_1–C_6)$alkyl, hydroxy, amino, acetoxy, acetamido, phenyl, benzyloxy, dimethylaminophenyl, and methylenedioxyphenyl, which may be further fused with a benzene ring,

an aryl group,

an aryl$(C_1–C_6)$alkyl group,

a diaryl$(C_1–C_6)$alkyl group,

in which in all cases the aryl group or the aryl moiety is optionally substituted by one, two or three substituents selected from the group consisting of $(C_1–C_6)$alkyl, $(C_1–C_6)$alkyloxy, halogen, nitro, hydroxy, amino, dimethylamino, methylenedioxy, and pyrrolidinyl,

a heterocyclic group or

a heterocyclic group attached to a $(C_1–C_6)$alkylene chain,

in which in all cases the heterocyclic group represents a saturated or unsaturated, 5 to 8 membered ring monocyclic or bicyclic, heterocyclic group containing 1 to 3 heteroatoms selected from the group consisting of S, O and N, and the heterocyclic group is optionally substituted by one or two substituents selected from the group consisting of acetyl, hydroxy, $(C_1–C_9)$alkyl, $(C_1–C_9)$alkyloxy, cyclo$(C_3–C_8)$alkyl, cyclo$(C_3–C_9)$alkyl$(C_3–C_{10})$alkyl, pyridyl$(C_1–C_6)$alkyl, phenyl, phenyl$(C_1–C_6)$alkyl, diphenyl $(C_1–C_6)$alkyl, and phenylpiperazinyl, the phenyl group or the phenyl moiety being optionally substituted by one or two substituents selected from the group consisting of halogen, hydroxy, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, cyano, diethylamino and trifluoromethyl, which may be further fused with a benzene ring,

and further R_3 and R_4, together with the nitrogen atom to which they are attached, may form a saturated or unsaturated heterocyclic group,

in which the heterocyclic group represents a 5 to 8 membered ring monocyclic or bicyclic, heterocyclic group or a group derived from a heterocyclic spiro compound, which may contain one or two heteroatoms selected from the group consisting of S, O or N, the heterocyclic group being optionally substituted by one or two substituents selected from the group consisting of $(C_1–C_6)$alkyl, hydroxy, hydroxy$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy$(C_1–C_6)$alkyl, acetoxy$(C_1–C_6)$alkyl, $(C_1–C_9)$alkylcarbonyl, $(C_1–C_6)$alkoxycarbonyl, amino, tosyl, phenyl, halogenophenyl, $(C_1–C_6)$alkoxyphenyl, phenyl$(C_1–C_6)$alkyl, benzyloxy, benzyloxy$(C_1–C_6)$alkyl, tolyl, xylyl, benzoyl, methylenedioxyphenyl$(C_1–C_6)$alkyl, pyridyl, pyridylcarbonyl, piperidyl, pyrrolidinyl $(C_1–C_6)$alkyl and pyrrolidinylcarbonyl$(C_1–C_6)$alkyl, which may be further fused with a benzene ring,

in which in all cases the alkyl and alkoxy moieties may be either straight or branched,

with the proviso that both R_3 and R_4 do not represent a hydrogen atom at the same time;

R_5 and R_6, which may be the same or different, each represents a straight or branched $(C_1–C_6)$alkyl group; and the line



represents —CH_2CH_2— or —CH=CH—.

5,621,011

[α-TERT.BUTYL AMINOMETHYL)-3,4-DICHLOROBENZYL] THIOACETAMIDE, A PROCEDURE FOR ITS PREPARATION AND ITS USES

Louis L. Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Division of Ser. No. 186,877, Jan. 19, 1993, abandoned, which is a division of Ser. No. 542,948, Jun. 25, 1990, abandoned. This application Jun. 29, 1995, Ser. No. 496,452

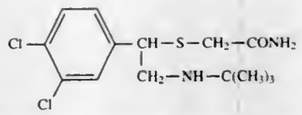
Claims priority, application France, Jun. 26, 1989, 89 08480

Int. Cl.[6] A61K *31/165*

U.S. Cl. 514—618 **2 Claims**

1. A method for promoting appetite in humans and animals comprising administering to a human or an animal an effective amount of [α-(tert.butyl aminomethyl)-3,4-dichlorobenzyl] thioacetamide having the formula

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or a pharmaceutically acceptable acid-addition salt thereof.

5,621,012

ACTIVE COMPOUND COMBINATIONS HAVING A CONTENT OF GLYCERYL ALKYL ETHERS AND COSMETIC AND DERMATOLOGICAL FORMULATIONS COMPRISING SUCH ACTIVE COMPOUND COMBINATIONS

Uwe Schönrock, Norderstedt; Joachim Degwert, Tostedt, and Friedhelm Steckel, Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Jun. 1, 1995, Ser. No. 457,770

Claims priority, application Germany, Jun. 14, 1994, 44 20 625.9

Int. Cl.[6] A61K *31/16;7/42;31/08*

U.S. Cl. 514—629 **9 Claims**

1. Active compound combinations comprising active contents of

(a) one or more glycerol ethers of saturated and/or unsaturated, branched and/or unbranched aliphatic alcohols having 12 to 24 carbon atoms,

(b) bisabolol and/or panthenol,

(c) and optionally one or more substances chosen from the group consisting of cosmetically or dermatologically acceptable antioxidants, wherein the ratio of the total amount of (a) to the total amount of (b) ranges from 1:20 to 20:1.

5,621,013

INSECT REPLELLENT BLENDS, LOTIONS, AND SPRAYS

Donald T. Beldock, Rye, N.Y.; John A. Beldock, Evergreen, Colo., and Grant Mudge, West Redding, Conn., assignors to Primavera Laboratories, Inc., Rye, N.Y.

Continuation-in-part of Ser. No. 298,839, Aug. 31, 1994, which is a division of Ser. No. 37,260, Mar. 26, 1993, Pat. No. 5,346,922, which is a division of Ser. No. 905,166, Jun. 24, 1992, Pat. No. 5,227,406. This application Aug. 28, 1995, Ser. No. 520,101

Int. Cl.[6] A01N *31/02;31/04;31/06*

U.S. Cl. 514—703 **19 Claims**

1. An insect repellent, comprising:

a blend of geraniol, citronella, crystalline 3,8 P-menthanediol, and terpineol and/or rhodinol.

5,621,014

Patent Not Issued For This Number

5,621,015

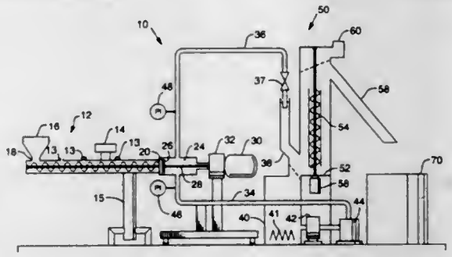
PROCESS FOR THE TREATING OF SURFACES OF THERMOPLASTIC ADDITIVES

Rodrigo A. Garcia, Montgomery, Tex., and Joseph G. Gho, Vancouver, Canada, assignors to Gaia Reserch Limited Partnership, Conroe, Tex.

Division of Ser. No. 61,102, May 13, 1993, which is a division of Ser. No. 974,109, Nov. 10, 1992, Pat. No. 5,234,963, which is a continuation-in-part of Ser. No. 882,279, May 13, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,236

Int. Cl.[6] B05D *7/00;* **C08J** *9/00*

U.S. Cl. 521—76 **5 Claims**



1. A process for the treating of surfaces of an additive having the propensity to be hydrophilic and which is added to thermoplastics selected from the group consisting essentially of polyolefins, polystyrenes, ionomers and polycarbonates comprising:

blending glycerol tristearate with said additive in a high intensity mixer for less than 5 minutes at ambient conditions.

5,621,016

POLYISOCYANATE COMPOSITIONS AND LOW DENSITY FLEXIBLE POLYURETHANE FOAMS PRODUCED THEREWITH

Vabilisetti S. Murty, Rochester Hills, Mich.; Gabriel Verhelst, Herent, and Mireille B. De Witte, Merelbeke, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 46,570, Apr. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 77,597, Jun. 15, 1993, abandoned. This application Mar. 16, 1994, Ser. No. 214,876

Claims priority, application United Kingdom, Apr. 16, 1992, 9208377; Oct. 12, 1992, 9221368

Int. Cl.[6] C08G *18/04*

U.S. Cl. 521—159 **29 Claims**

1. A polyisocyanate composition comprising the reaction product of a diphenylmethane diisocyanate composition comprising 25 to 70% by weight of 2,4'-diphenylmethane diisocyanate and an isocyanate-reactive polyoxyethylene polyoxypropylene polyahl having an ethylene oxide content of at least 30% by weight, a number average hydroxyl equivalent weight of 700 to 2000 and an average nominal hydroxyl functionality of 2 to 6, the reaction product having a free NCO content of 26.5 to 31% by weight.

5,621,017

PHOTOCHROMIC COMPOSITION AND METHOD PRODUCING PHOTOCHROMIC CURED PRODUCT

Takashi Kobayakawa, and Junji Momoda, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Apr. 25, 1995, Ser. No. 428,641

Claims priority, application Japan, Apr. 27, 1994, 6-089418

Int. Cl.[6] C08F *2/46;* **G02B** *5/23*

U.S. Cl. 522—16 **14 Claims**

1. A photochromic composition comprising:

(A) at least one radical polymerizable monomer,

(B) 0.001 to 0.2 part by weight of a photochromic compound selected from the group consisting of a chromene compound, a spiro-oxazine compound and mixtures thereof, per 100 parts by weight of (A), and

(C) 0.01 to 1 part by weight of a photopolymerization initiator, per 100 parts by weight of (A).

5,621,018

FUNCTIONALIZED PHOTOINITIATORS, MACROMERS THEREOF, AND THE USE THEREOF

Peter Chabrecek, Basel, and Dieter Lohmann, Münchenstein, both of Switzerland, assignors to CIBA GEIGY Corporation, Tarrytown, N.Y.

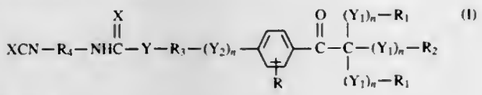
Division of Ser. No. 265,597, Jun. 24, 1994, Pat. No. 5,527,925. This application Jun. 6, 1995, Ser. No. 469,410

Claims priority, application Switzerland, Jul. 2, 1993, 2006/93

Int. Cl.[6] C08J *7/04;5/00;3/28*

U.S. Cl. 522—35 **7 Claims**

1. A material comprising (a) an inorganic or organic substrate to whose surface is bonded (b) as photoinitiator, at least one compound of the formula I



in which

X is O;

Y is O, NH or NR_6;

Y_1 is O;

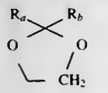
Y_2 is —O—, —O—(O)C—, —C(O)—O— or —O—C(O)—O—;

each n, independently of one another, is 0 or 1;

R is H, C_1–C_{12}alkyl, C_1–C_{12}alkoxy or C_1–C_{12}alkyl-NH—;

R_1 and R_2, independently of one another, are H, linear or branched, C_1–C_8alkyl, C_1–C_8hydroxyalkyl or C_6–C_{10}aryl, or two groups R_1—$(Y_1)_n$— together are —$(CH_2)_s$— or the R_1—$(Y_1)_n$— and

R_2—$(Y_1)_n$— groups together form a radical of the formula:



R_3 is a direct bond or linear or branched C_1–C_8alkylene, which is unsubstituted or substituted by —OH and/or is uninterrupted or interrupted by one or more —O—, —O—C(O)— or —O—C(O)—O— groups;

R_4 is branched C_3–C_{18}alkylene, C_6–C_{10}arylene, which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_5alkoxy, C_7–C_{18}aralkylene which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_3–C_8cycloalkylene which is substituted by C_1–C_4alkyl or C_1–C_4alkoxy, C_3–C_8cycloalkylene-C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or —C_yH_{2y}—C_3–C_8cycloalkylene-C_yH_{2y}— which is unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy;

each R_5, independently of one another, has the same meaning as R_4 or is linear C_3–C_{18}alkylene;

R_6 is linear or branched C_1–C_6alkyl;

x is an integer from 3 to 5;

y is an integer from 1 to 6; and

R_a and R_b, independently from one another, are H, C_1–C_8alkyl, C_3–C_8cycloalkyl, benzyl or phenyl;

with the provisos:

that n in the —$(Y_1)_n$—R_1 groups is 0 if R_2 is H;

that at most two Y_1 radicals in the —$(Y_1)_n$— groups in the formula I are O and n in the other —$(Y_1)_n$— groups is 0;

that at most one Y_1 is the —$(Y_1)_n$— groups in the formula Ia is O and n in the other —$(Y_1)_n$— groups is 0,

that R_4 provides different reactivity to the two NCX groups, and that n in the —$(Y_2)_n$— group is 0 if R_3 is a direct bond;

which is covalently bonded to the substrate via O atoms, S atoms, N—C_1—C_6alkyl groups or NH groups and the isocyanate group of the photoinitiators.

5,621,019

MONOMER HAVING VINYL GROUP, POLYMER THEREOF AND PHOTOSENSITIVE RESIN INCLUDING THOSE

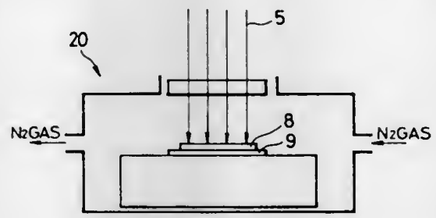
Kaichiro Nakano; Shigeyuki Iwasa, and Etsuo Hasegawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 380,994

Claims priority, application Japan, Jan. 31, 1994, 6-009030; Nov. 15, 1994, 6-280695

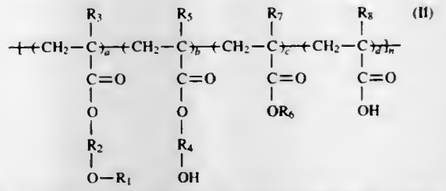
Int. Cl.[6] C08F *2/48;* **C08J** *3/20;3/28*

U.S. Cl. 522—49 **11 Claims**



1. A photosensitive resin comprising a resin and a photo acid generator,

said resin including a polymer represented by formula (II)



wherein R_1 and R_6 are independently selected from the group consisting of a hydrogen atom, a tert-butoxycarbonyl group, a tetrahydrofuran-2-yl group, a 4-methoxytetrahydropyranyl group, a 1-ethoxyethyl group, a 1-butoxyethyl group and a 1-propoxymethyl group, R_2 and R_4 each represents a hydrocarbon residue including a bridged hydrocarbon group and having a carbon number ranging from 7 to 12, both inclusive, R_3, R_5, R_7 and R_8 each represent a hydrogen atom or methyl group, "a" is a variable ranging from 0 to 0.9 both inclusive, "b" is a variable ranging from 0 to 0.9 both inclusive, "c" is a variable ranging from 0 to 0.7 both inclusive, "d" is a variable ranging from 0 to 0.5 both inclusive, the sum of "a", "b", "c" and "d" is one, provided that both "a" and "b" are not 0, and wherein n represents a positive integer ranging from 10 to 500 both inclusive,

said resin being included in said photosensitive resin by weight percent in the range from 75 to 99.8 both inclusive, and said photo acid generator being included in said photosensitive resin by weight percent in the range from 0.2 to 25 both inclusive.

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5,621,020

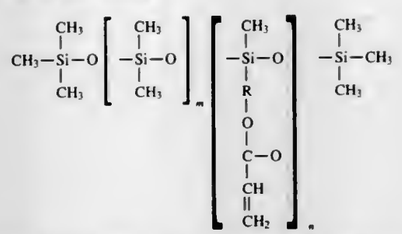
RELEASE COMPOSITION FOR PRINTABLE LINERLESS LABELS

Khaled Khatib, Youngstown, and Joseph W. Langan, Cheekatowaga, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 19, 1996, Ser. No. 666,833
Int. Cl.[6] C08F 2/48
U.S. Cl. 522—99 4 Claims

1. A release composition comprising a mixture of:

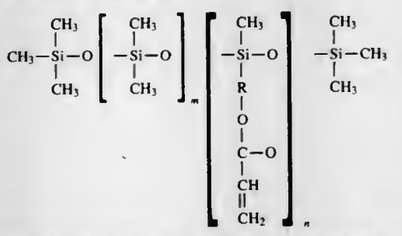
(a) about 55 to about 95 parts by weight based upon the total weight of the composition of a first acrylated polysiloxane having the formula I:



(I)

wherein R is a divalent C_4–C_{12} alkyl group, m is about 40 and n ranges from about 8 to about 12;

(b) about 5 to about 45 parts by weight based upon the total weight of the composition of a second acrylated polysiloxane having the formula II:



(II)

wherein R is a divalent C_4–C_{12} alkyl group, m is about 180 and n ranges from about 8 to about 12; and

(c) about 2 to about 6 parts by weight based upon the total weight of the composition of a photoinitiator.

5,621,021

ERASABLE WRITING INK COMPOSITION

Koji Yoshioka, Fujioka; Yasuaki Ogiwara, Tomioka; Mitsuhiko Furusawa, Gumma-ken, and Kyoko Kobayashi, Fujioka, all of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,602
Claims priority, application Japan, Feb. 7, 1992, 4-056090
Int. Cl.[6] C03C 17/00
U.S. Cl. 523—160 11 Claims

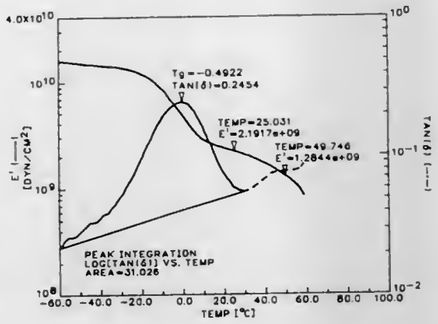
1. An erasable writing ink composition having a viscosity of 5 to 35 mPa-sec comprising a resin having film-forming temperature of 0° C. or less or a glass transition temperature of 0° C. or less selected from the group consisting of styrene-butadiene rubber and acrylonitrile-butadiene rubber, resinous colored spherical fine particles having a particle diameter of 1 to 20 μm, a surface active agent and water.

5,621,022

USE OF POLYMERIC DYES IN HOT MELT INK JET INKS

C. Wayne Jaeger, Beaverton; Loc V. Bui, Portland; Donald R. Titterington, Tualatin, and Clifford R. King, Salem, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 231,598, Apr. 22, 1994, abandoned, which is a division of Ser. No. 981,677, Nov. 25, 1992, Pat. No. 5,372,852. This application Jan. 30, 1995, Ser. No. 381,610
Int. Cl.[6] C09D 11/10
U.S. Cl. 523—161 52 Claims



1. A phase change ink composition comprising a composition comprising a fatty amide-containing material, said fatty amide-containing material selected from the group consisting of a tetra-amide compound, a mono-amide compound and mixtures thereof, and a compatible colorant, said phase change ink composition being in a solid phase at ambient temperature and in a liquid phase at elevated operating temperature, said ink composition having a high degree of lightness and chroma, and being rectilinearly light transmissive in a thin film of substantially uniform thickness, wherein said colorant is selected from the group consisting of (1) an organic chromophoto having a polyoxyalkalene substituent and (2) an organic chromophore having a polyoxyalkylene substituent and a carboxylic acid or non-reactive ester or amide derivative thereof covalently bonded to the polyoxyalkylene substituent.

5,621,023

METHOD FOR MANUFACTURE OF COLORED PARTICLES

Yoshihiko Nishimura, Toyonaka, and Tadamitsu Hirata, Hirakata, both of Japan, assignors to Asahipen Corporation, Japan

Filed Dec. 9, 1994, Ser. No. 353,540
Int. Cl.[6] C08K 9/00
U.S. Cl. 523—200 17 Claims

1. A method for manufacture of colored particles, comprising mixing in water water-insoluble particles and a polyvalent carboxylic acid resin with an acid value (solid-based) of about 20–120, the resin selected from the group consisting of water-soluble and water-dispersable resins, to form primary coated particles; mixing the primary coated particles with dispersion-stabilized emulsion resin the dispersion-stabilized emulsion resin containing a colored pigment; and adding a metal salt to obtain colored particles with an average particle size of about 10–200 μm with a surface colored coating.

5,621,024

PREPARATION OF THERMOPLASTIC POLYURETHANES

Peter Eberhardt, Schwarzheide; Ruediger Krech, Diepholz; Udo Rotermund, Ortrand, and Klaus Techritz, Bischheim, all of Germany, assignors to BASF Schwarzheide GmbH, Germany

Filed Oct. 12, 1995, Ser. No. 542,274
Claims priority, application Germany, Oct. 20, 1994, 44 37 586.7
Int. Cl.[6] C08G 18/08
U.S. Cl. 523—324 17 Claims

1. A process for the preparation of thermoplastic polyurethanes by reacting

a) organic or modified organic polyisocyanates with

b) at least one oligomeric polyhydroxy and/or polyamino compound having an average molecular weight of from 400 to 10 000 g/mol,

in the presence or absence of

c) chain extenders having at least two Zerewitinoff-active hydrogen atoms and an average molecular weight of less than 400 g/mol,

d) catalysts,

e) compounds which are less than difunctional with respect to isocyanates and/or isocyanates which are less than difunctional and

f) assistants and/or additives

in a twin-screw extruder in which both screws rotate in the same direction and which has a length/diameter ratio of from 20 to 60, and discharging the resulting thermoplastic polyurethane from the extruder with shaping, wherein at least some of the components a) and b) and of the components c) to f) which may also be used are introduced into a first zone (Z_1) of the twin-screw extruder, which zone is equipped with single-flight screw conveying elements which are arranged in a length region beginning from 0 to 3/100 and ending at least at 8/100 and at most at 30/100 of the total screw length L, the low-viscosity mixture is then passed through a mixing zone (Z_2) having a small shearing effect and comprising double-flight screw conveying elements or mixing elements, this mixing zone (Z_2) being arranged within a length region from 8/100 to 45/100 with a total length within this region of from 5/100 to 25/100 of the total screw length L, the product is then passed into a retarding zone (Z_3) having little shearing effect, this retarding zone (Z_3) being arranged within a length region from 20/100 to 50/100 with a total length of the retarding stage within this region of from 0.2/100 to 10/100 of the total screw length L, the polymerization is then carried out at high viscosity in a polymerization zone (Z_4) equipped with double-flight conveying screws, the zone (Z_4) being present in a length region from 30/100 to 100/100 of the total screw length L, and the polyurethane is discharged, with the proviso that the process is carried out in such a way that the value E, defined as

$$E = \frac{M \times n \times D_G^2}{V},$$

where

M—is the total torque, in [Nm], acting on the two extruder shafts,

n—is the speed of the extruder screws in [min^{-1}],

D_G—is the smallest internal diameter of the extruder barrel in [cm] and

V—is the free reactor volume available between the extruder barrel and the screw elements and any other elements as equipment on the extruder shafts in [cm^3],

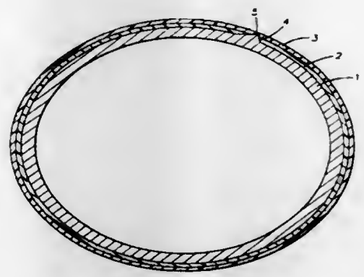
is greater than 750.

5,621,025

POLYMER CONCRETE COATING FOR PIPE TUBULAR SHAPES, OTHER METAL MEMBERS AND METAL STRUCTURES

Thomas J. Toerner, The Woodlands; Paul E. Titus, Houston, and Bang T. Tran, Sugar Land, all of Tex., assignors to Power Lone Star, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 39,521, Mar. 29, 1993, Pat. No. 5,464,886, which is a continuation of Ser. No. 600,543, Oct. 19, 1990. This application Jun. 6, 1995, Ser. No. 467,617
Int. Cl.[6] C08K 3/40; C08L 63/00
U.S. Cl. 523—444 3 Claims



1. A protective coating for a metal member, comprising:

a mixture of an organic resin comprising between about 60–75% by weight of a bisphenol A based epoxy and between about 25–40% by weight of a polyglycol diepoxide;

a filler material wherein the ratio by weight of said filler material to said organic resin is between about 2.3:1 and 5.7:1; and

an amine, selected from the class consisting of aminoethylpiperazine and tetraethylene pentamine.

5,621,026

GAS BARRIER FILM AND PRODUCTION PROCESS THEREOF

Hideaki Tanaka; Hiroyuki Oba; Tomoaki Sato, and Tomohisa Hasegawa, all of Ibaraki-ken, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 324,541, Oct. 18, 1994, Pat. No. 5,498,662. This application Dec. 5, 1995, Ser. No. 567,512
Claims priority, application Japan, Oct. 20, 1993, 5-285739; Jul. 27, 1994, 6-194940
Int. Cl.[6] C08L 33/02
U.S. Cl. 524—52 12 Claims

1. A process for the production of a gas barrier film, which comprises forming a film from a mixture containing (A) at least one poly(meth)acrylic acid polymer selected from the group consisting of poly(meth)acrylic acid and partially neutralized products of poly(meth)acrylic acid and (B) a saccharide in a weight ratio of 95:5 to 20:80, and then subjecting the film to a heat treatment under conditions in which the heat-treating temperature and the heat-treating time satisfy the following relationships (a) and (b):

(a) $\log t \geqq -0.0622 \times T + 28.48$

(b) $373 \leqq T \leqq 573$

wherein t means the heat-treating time (min), and T denotes the heat-treating temperature (K).

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DYESTUFFS FOR BULK DYEING PLASTICS

Peter Roschger; Volker Hederich, both of Köln; Stephan Michaelis, Leverkusen, and Friedrich W. Kröck, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 12, 1995, Ser. No. 439,809

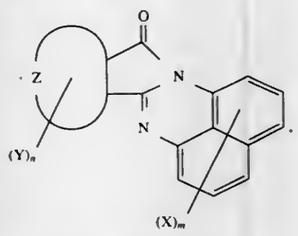
Claims priority, application Germany, May 20, 1994, 44 17 746.1

Int. Cl.[6] C08K *5/34;* **C07D** *239/70;* **C09B** *57/12*

U.S. Cl. 524—90 **10 Claims**

1. Dyestuffs of the formula

(I)



wherein

Z denotes a radical to complete a 3,4- or 2,3-pyridinylene, a 4,5-pyrimidinylene, a 3,4- or 4,5-pyridazinylene or a 2,3-pyrazinylene system,

X is alkyl, halogen, nitro, chlorosulphonyl, aryloxysulphonyl, hydroxyl, alkoxy, acyloxy, an aminosulphonyl which is unsubstituted or substituted by alkyl or aryl, or a fused-on cycloaliphatic ring,

Y is alkyl, aryl, halogen, nitro, hydroxyl, alkoxy, acyloxy, aryloxysulphonyl, chlorosulphonyl, an amino group which is unsubstituted or substituted by acyl or alkyl, an aminosulphonyl radical which is unsubstituted or substituted by alkyl or aryl, or a fused-on cycloaliphatic or aromatic ring,

m is a number between 0 and 6,

n is a number between 0 and 3

and for m > 1

X can in each case have different or identical meanings as mentioned above,

and for n>1

Y can in each case have different or identical meanings as mentioned above.

5,621,028

LIGHT-SCATTERING TRANSLUCENT POLYMETHACRYLATE MOLDED ARTICLES WITH GOOD RESISTANCE TO ELEVATED TEMPERATURE AND WEATHERING

Hans Lichtenstein, Reinheim, and Silvia Ebert, Darmstadt, both of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Continuation of Ser. No. 54,218, Apr. 30, 1993, abandoned. This application Mar. 3, 1994, Ser. No. 205,359

Claims priority, application Germany, May 16, 1992, 42 16 341.2

Int. Cl.[6] C08L *25/08;33/12*

U.S. Cl. 524—91 **19 Claims**

1. A light-scattering polymethacrylate resin with high heat and weather resistance, comprising:

(a) a polymer matrix comprising at least 80 weight % of units of methyl methacrylate;

(b) light-scattering crosslinked polymer particles consisting essentially of ethylenically unsaturated phenyl-group-containing monomers, which are formed prior to addition to the polymer matrix;

(c) a UV protecting agent; and

(d) a radical scavenger.

5,621,029

FLAME RETARDANT THERMOPLASTIC POLYCARBONATE MOULDING COMPOSITIONS

Thomas Eckel, Dormagen; Karl Fuhr, Krefeld; Dieter Wittmann, Leverkusen, and Heinrich Alberts, Odenthal, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Nov. 24, 1995, Ser. No. 562,585

Claims priority, application Germany, Dec. 5, 1994, 44 43 164.3

Int. Cl.[6] C08K *5/523*

U.S. Cl. 524—127 **20 Claims**

1. Halogen-free thermoplastic moulding compositions consisting of

A) 50 to 95 wt. % of thermoplastic aromatic polycarbonate,

B) 0 to 20 wt. % of copolymer or polycondensation product consisting of

B.1) thermoplastic copolymer prepared from

B.1.1) 50 to 95 wt. % of styrene, α-methylstyrene, ring-alkylated styrene, C_1–C_8 alkyl acrylate, C_1–C_8 alkyl methacrylate or mixtures thereof and

B.1.2) 5 to 50 wt. % of acrylonitrile, methacrylonitrile, C_1–C_8 alkyl acrylate, C_1–C_8 alkyl methacrylate, maleic anhydride, N-substituted maleimide, vinyl acetate or mixtures thereof and/or

B.2) thermoplastic polyalkylene terephthalate,

C) 3 to 18 wt. % of graft polymer produced from

C.1) 5 to 90 wt. % of a mixture prepared from

C.1.1) 50 to 95 wt. % of styrene, α-methylstyrene, ring-alkylated styrene, C_1–C_8 alkyl acrylate, C_1–C_8 alkyl methacrylate or mixtures thereof and

C.1.2) 5 to 50 wt. % of acrylonitrile, methacrylonitrile, C_1–C_8 alkyl acrylate, C_1–C_8 alkyl methacrylate, maleic anhydride, N-substituted maleimide or mixtures thereof on

C.2) 10 to 95 wt. % of rubber with a glass transition temperature T_g of ≦10° C.,

D) 1 to 20 wt. % of a combination with flame retardant action prepared from

D.1) 5 to 50 wt. % of silicone resin containing hydroxyl groups and having the empirical formula (IV)

$$R_xSi(OR^3)_yO_{4-x-y/2} \quad \text{(IV)}$$

in which

R denotes a monovalent hydrocarbon residue, which may optionally itself be substituted,

R^3 is a hydrogen residue,

x has a value of 0.75 to 1.75,

y has a value of 0.0001 to 0.5 and

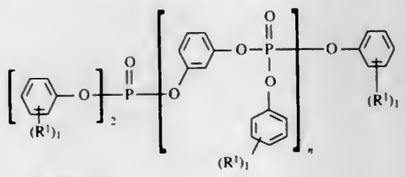
in which the silicone resin is synthesized from units of the formula $SiO_{4/2}$, $RSiO_{3/2}$, $R_2SiO_{2/2}$ and/or $R_3SiO_{1/2}$, and

D.2) 50 to 95 wt. % of thermoplastic polyphenylene ether,

E) 3 to 18 wt. % of phosphoric acid ester prepared from

E.1) phosphorus compounds of the formula (I),

(I)



in which

n is a number from 1 to 5,

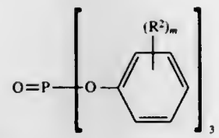
R^1 is methyl and

l is a number from 0 to 5,

or

E.2) a mixture of phosphorous compounds of the formula (I) and phosphorus compounds of the formula (II),

(II)



in which

R^2 is methyl and

m is the number 0 to 5,

wherein the quantity of phosphorus compounds of the formula (II) in the phosphate mixture prepared from E.1) and E.2) is at most 35 wt. %.

5,621,030

PRINTABLE RELEASE

Adele C. Shipston, Williamsville, and David K. Rice, II, N. Tonawanda, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 189,632, Feb. 1, 1994, Pat. No. 5,478,880. This application Jun. 7, 1995, Ser. No. 488,360

Int. Cl.[6] C08K *5/42;5/41;* **C08L** *31/00;33/04*

U.S. Cl. 524—157 **4 Claims**

1. A release composition comprising:

(a) about 10 to about 80 parts by wet weight of a sulfosuccinamate surfactant; and

(b) about 20 to about 90 parts by wet weight of an acrylic copolymer;

suitable for use as a release for a repositionable adhesive.

5,621,031

SHEATHING MATERIAL FOR OPTICAL FIBERS, BASED ON POLYALKYLENE TEREPHTHALATE/ POLYCARBONATE

Gerhard Leimann, Solingen; Friedemann Paul, Bergisch Gladbach; Rainer Kamps, Grub am Forst; Gerhard Lange, Munich, and Walter Pfandl, Ahorn, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Continuation of Ser. No. 138,393, Oct. 18, 1993, abandoned. This application Jul. 10, 1995, Ser. No. 500,035

Claims priority, application Germany, Oct. 21, 1992, 42 35 463.3

Int. Cl.[6] C08K *5/29*

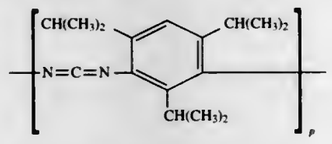
U.S. Cl. 524—195 **11 Claims**

1. A sheathing material for optical fibres, comprising a polymer blend of

A) 40 to 80 weight percent of a polyalkylene terephthalate,

B) 20 to 60 weight percent of an aromatic polycarbonate based on bisphenol A, and

C) 0.1 to 6 weight percent of a carbodiimide corresponding to the following formula



where p=0 to 50 (on average) and the sum of A+B+C=100.

5,621,032

FLUXED COMPOSITES

Richard D. Cortelezzi, Mentor, and Clifford C. Martin, Chardon, both of Ohio, assignors to Elastochem, Inc., Chardon, Ohio

Division of Ser. No. 135,125, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 774,587, Oct. 10, 1991, abandoned. This application Apr. 26, 1995, Ser. No. 430,150

Int. Cl.[6] C08K *5/36*

U.S. Cl. 524—262 **23 Claims**

1. A solid homogeneous composite comprising at least one sulfur-containing organosilane and a binder, the binder comprising a wax and oxidized polyethylene.

5,621,033

POLYVINYLCHLORIDE PROCESSING AND COMPOSITIONS USING A POLYOL REACTED WITH A MONOCARBOXYLIC ACID AND A DICARBOXYLIC ACID

Robert A. Lindner, 115 Hemlock Dr., North Wales, Pa. 19454

Filed Jan. 19, 1993, Ser. No. 4,840

Int. Cl.[6] C08K *5/11*

U.S. Cl. 524—314 **22 Claims**

1. An intimate mixture comprising polyvinylchloride and the reaction product of a polyol with respect to the —OH groups, a monocarboxylic acid and a dicarboxylic acid with respect to the carboxylic groups wherein sufficient excess dicarboxylic acid is employed to give a reaction product having an acid number from 6.5 to 40, provided further that the dicarboxylic acid cross-links the hydroxyl groups of the polyol while leaving a free carboxylic group from the dicarboxylic acid in the reaction molecule.

5,621,034

STABILIZATION OF REACTIVE ORGANOPOLYSILOXANE RESINS

Konrad Mautner, Kastl, Germany, assignor to Wacker-Chemie GmbH, Munich, Germany

Filed Feb. 29, 1996, Ser. No. 608,830

Claims priority, application Germany, Apr. 27, 1995, 195 15 540.8

Int. Cl.[6] C08K *5/09*

U.S. Cl. 524—321 **7 Claims**

1. A storage-stable composition consisting essentially of;

(A) an organopolysiloxane resin having hydroxyl and/or alkoxy groups bonded to silicon atoms, and

(B) a stabilizer selected from the group consisting of:

(B1) aliphatic polycarboxylic acids having at least 2 carboxyl groups selected from the group consisting of malonic, succinic, glutaric, adipic, pimelic, suberic, fumaric, tartronic, mesoxalic, racemic tartaric, tartaric, malic, chlorosuccinic, citric and acetonedicarboxylic acid and

(B2) carboxylic anhydrides of (B1) aliphatic polycarboxylic acids having at least 2 carboxyl groups.

5,621,035

CERAMIC FUSED FIBER ENHANCED DENTAL MATERIALS

Mark B. Lyles, and Ronald G. Ritsco, both of San Antonio, Tex., assignors to M.E.D. USA, San Antonio, Tex.

Filed Feb. 8, 1995, Ser. No. 386,305

Int. Cl.[6] C08K *3/38;3/08;3/40;* **A61F** *2/00*

U.S. Cl. 524—404 **21 Claims**

1. In a method for the direct filling of a cavity in a tooth, wherein said method includes filling said cavity with an initially liquid, settable filing material comprising a filler and a binder admixed therewith, thereafter permitting said material to harden in

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situ, the improvement in said method comprising utilizing as the predominant component of said filler, a fused-fibrous matrix compound comprised of:

from about 1% to about 50% by weight alumina;

from about 50% to about 98% by weight silica; and

from about 1% to about 5% by weight boron nitride.

5,621,036

BOUND MULTI-COMPONENT SAND ADDITIVE

Michael M. Geoffrey, Lombard, and Robert A. Laitar, Woodridge, both of Ill., assignors to Borden Chemical, Inc., Columbus, Ohio

Filed Feb. 21, 1995, Ser. No. 391,038

Int. Cl.[6] C08K *9/04;* **B22C** *1/20*

U.S. Cl. 524—431 **14 Claims**

1. A process for introducing additives into a foundry sand, said process comprising:

providing at least two different foundry sand additives bound together using an additive binder to obtain free-flowing particles comprising said at least two different foundry sand additives, and

introducing said free-flowing particles into a foundry sand.

5,621,037

RUBBER SOLUTION AND RUBBER CONCRETE USING THE SAME

Young-keun Hong, 1-1508, Sunkyung Apt., 506, Dacchi-dong, Kangnam-gu, Seoul, and Kyung-ho Chung, Seoul, both of Rep. of Korea, assignors to Young-Keun Hong, Seoul, Rep. of Korea

Filed Nov. 9, 1994, Ser. No. 336,578

Claims priority, application Rep. of Korea, Feb. 18, 1994, 94-2857; Nov. 3, 1994, 94-28698

Int. Cl.[6] C08J *5/10;* **C08K** *5/02;* **C08L** *17/00*

U.S. Cl. 524—464 **10 Claims**

1. A rubber concrete manufactured by a molding process, said concrete free of cement and having a composition comprising a rubber solution prepared by dissolving vulcanized rubber in a chlorine-substituted hydrocarbon solvent wherein said chlorine-substituted hydrocarbon solvent is at least one solvent selected from the group consisting of 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloreoethylene and 1,1,2,2-tetrachloroethane.

5,621,038

AQUEOUS SILYLATED POLYMER CURABLE COMPOSITIONS

Ming J. Chen, Garnerville, and Frederick D. Osterholtz, Pleasantville, both of N.Y., assignors to Osi Specialties, Inc., Danbury, Conn.

Filed May 26, 1995, Ser. No. 452,163

Int. Cl.[6] C08L *83/04*

U.S. Cl. 524—547 **24 Claims**

1. A curable composition comprising:

(a) a stable, water dispersible, curable polymer containing a sterically hindered alkoxylated silane group at 0.1 to 75 weight percent of the total composition;

(b) water dispersible or water soluble, hydrolytically stable organometallic catalyst, at 0.1 to 10 weight percent of the total composition; and

(c) water at 99.8 to 24.9 weight percent of the total composition.

5,621,039

FACTOR IX- POLYMERIC CONJUGATES

Terrence W. Hallahan, 82 Hazelwood Ave., Metuchen, N.J. 08840, and Carl W. Gilbert, 26 Hampton Ct., Basking Ridge, N.J. 07920

Filed Jun. 8, 1993, Ser. No. 73,531

Int. Cl.[6] A61K *38/00*

U.S. Cl. 525—54.1 **9 Claims**

1. A biologically active conjugate comprising a first substance having Factor IX activity bound to a substantially non-antigenic polymeric substance by a linkage containing a hydrazide or hydrazone functional group.

5,621,040

HIGH IMPACT POLYESTER COMPOSITIONS

Murali K. Akkapeddi, Morristown, and Bruce VanBuskirk, Dover, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris Co., N.J.

Continuation of Ser. No. 317,106, Oct. 3, 1994, abandoned, which is a continuation of Ser. No. 43,056, Apr. 5, 1993, abandoned. This application Aug. 11, 1995, Ser. No. 514,365

Int. Cl.[6] C08L *67/02*

U.S. Cl. 525—64 **27 Claims**

1. A polymer blend comprising:

i. a thermoplastic polyester;

ii. a phosphite graft coupling agent; and

iii. an elastomer comprised of a polymer having a backbone derived from polymerization of at least one monomer comprising alpha-beta-unsaturated monomers, diene monomers, or combinations thereof and having a functionality comprising a pendant amine, a terminal amine, or combinations thereof, or a polymer blend thereof.

5,621,041

COMPATIBLE LIQUID CRYSTAL POLYMER/ POLYOLEFIN BLENDS

Donald G. Baird, and Arindam Datta, both of Blacksburg, Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Apr. 17, 1991, Ser. No. 686,603

Int. Cl.[6] C08L *23/02;67/03;67/04;77/12*

U.S. Cl. 525—66 **15 Claims**

1. A polymer alloy or blend comprising a polyolefin, a maleated polyolefin, and a liquid crystal polymer copolyester or polyester (coamide).

5,621,042

COATING COMPOSITIONS

Kazuyuki Hanada; Seisuo Hirose, and Katsumi Kuriyama, all of Nihonbashi, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan

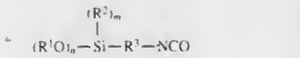
Continuation-in-part of Ser. No. 63,050, May 19, 1993, abandoned, which is a continuation of Ser. No. 806,327, Dec. 13, 1991, abandoned. This application Jul. 20, 1995, Ser. No. 504,689

Claims priority, application Japan, Dec. 17, 1990, 2-411066; Dec. 25, 1990, 2-412859; Dec. 25, 1990, 2-412860

Int. Cl.[6] C08G *18/62*

U.S. Cl. 525—102 **6 Claims**

1. A coating composition comprising as a film-forming component a fluoropolymer reacted with a silane-coupling agent containing at least one free isocyanate group represented by the formula



(1)

wherein R^1 is a lower alkyl group, R^2 is a lower alkyl or lower alkoxy group, R^3 is C_{1-6} alkyl group, m stands for an integer of 1–3 and n is 3-m, and further reacted with the reaction product between (1) a polysiloxane compound containing a reactive organic functional group selected from the group consisting of amino-, epoxy-, alcohol-, mercapto- and carboxyl-modified siloxane oils and (2) an organic polyisocyanate, said reaction product containing at least one free isocyanate group.

5,621,043

ELASTOMERIC SEALANTS

Thomas S. Croft, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 268,319, Jun. 30, 1994, abandoned. This application Aug. 2, 1995, Ser. No. 510,471

Int. Cl.[6] C08G *18/58*

U.S. Cl. 525—111 **29 Claims**

1. An elastomer composition, resistant to hydrocarbon fluid and water absorption, comprising

a) an isocyanate reactive component comprising a polypropylene ether polyol containing from about 5 to about 60 percent by weight dispersed polymer particles comprising a condensation or addition polymer,

b) from about 5 to about 35 percent by weight of a liquid epoxy polymer containing more than one α-epoxy group, and

c) a polyurethane formed from said polypropylene ether polyol, having active hydrogen atoms and at least one isocyanate component in the presence of said dispersed polymer particles and said liquid epoxy polymer,

said polyurethane having an isocyanate index of less than 100, said elastomer exhibiting less than about 20 percent weight gain after being immersed in kerosene for 24 hours at 38° C., said elastomer exhibiting substantially no syneresis after 18 hours in a 104° C. oven.

5,621,044

INTERVULCANIZED ELASTOMER BLENDS

Hsien-Chang Wang, Bellaire, Tex., assignor to Exxon Chemicals Patents, Inc., Wilmington, Del.

Division of Ser. No. 305,547, Sep. 14, 1994, Pat. No. 5,473,017, which is a continuation-in-part of Ser. No. 129,292, Sep. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,627

Int. Cl.[6] C08L *9/00;7/00;23/16;23/26*

U.S. Cl. 525—193 **28 Claims**

1. A composition vulcanizable by free-radical vulcanization comprising a mixture of:

a) an ethylene propylene diene terpolymer elastomer having a number average molecular weight of at least 10,000 and containing from about 0.01 up to about 10 mole % Y functional groups randomly along and pendant to the elastomeric polymer chain, said Y functional groups containing a substituent group and an olefinic or vinyl double bond alpha, beta to the substituent group, said substituent group selected from the group consisting of carbonyl, phosphoryl, sulfonyl, nitrile, and aromatic ring-containing group, the substituent group being capable of activation said double bond towards free radical addition reactions; and

b) a diolefin homopolymer or copolymer rubber;

the weight ratio of said elastomeric copolymer and diolefin homopolymer or copolymer rubber present in said mixture being within the range of about 1:99 to 99:1.

5,621,045

THERMOPLASTIC VULCANIZATES FROM ISOBUTYLENE RUBBER AND EITHER EPDM OR A CONJUGATED DIENE RUBBER

Raman Patel, 578 Sun Valley Dr., and Sabet Abdou-Sabet, 3568 Knollwood La., both of Akron, Ohio 44313

Filed Nov. 13, 1995, Ser. No. 556,673

Int. Cl.[6] C08L *15/02;23/16*

U.S. Cl. 525—237 **13 Claims**

1. A thermoplastic vulcanizate, comprising:

(a) from about 10 to about 90 parts by weight of a semicrystalline polyolefin having from 2 to 14 carbon atoms per repeat unit

(b) from about 10 to about 90 parts by weight of a blend of at least two rubbers comprising

(1) from about 30 to about 90 weight percent of a rubber copolymer of isobutylene and para-alkylstyrene; said copolymer optionally being halogenated, and

(2) from about 10 to about 70 weight percent of an ethylene/propylene diene rubber, natural rubber or a polymer polymerized predominantly from one of more conjugated diene monomers having from 4 to 10 carbon atoms or combinations thereof,

wherein said weight percents are based on said blend of at least two rubbers and the parts by weight are based on 100 parts by weight of the total amount of said polyolefin and said rubbers, and

wherein said thermoplastic vulcanizate is dynamically vulcanized so that at least 85 mole percent of said rubbers have one or more crosslinks.

5,621,046

POLYPROPYLENE RESIN COMPOSITION

Kunio Iwanami; Masatoshi Ohkura; Satoshi Ueki; Shigeyuki Toki, all of Tokyo; Takeyoshi Nishio, Okazaki, and Takao Nomura, Toyota, all of Japan, assignors to Tonen Chemical Corporation, Tokyo, and Toyota Jidosha Kabushiki Kaisha, Aichi-ken, both of Japan

Filed Jul. 11, 1995, Ser. No. 499,908

Claims priority, application Japan, Jul. 11, 1994, 6-181898; Jul. 11, 1994, 6-181899; Jul. 11, 1994, 6-181904

Int. Cl.[6] C08L *23/00*

U.S. Cl. 525—240 **3 Claims**

1. A polypropylene resin composition comprising;

(A) 50–90 parts by weight of a resin mixture of 3–30 weight % of a polypropylene insoluble in hot heptane and soluble in hot octane and 70–97 weight of an ultra-high stereospecific polypropylene, said ultra-high stereospecific polypropylene having a melt flow rate (MFR, 230° C., 2.16 kg load) of 0.1–1,000 g/10 minutes in which an average meso chain length Nm calculated from a triad percentage determined from ^{13}C-NMR spectrum by the following formula (1)

$$Nm=2[mm]/[mr]+1 \quad (1),$$

wherein

[mm] is (isotactic triad/total triad)×100 (%), and [mr] is (heterotactic triad/total triad)×100 (%), meets a relation expressed by the following formula (2)

$$Nm>250+29.5 \log (MFR) \quad (2),$$

and said polypropylene insoluble in hot heptane and soluble in hot octane having a weight-average molecular weight of 5,000–1,000,000, a percentage of five continuous propylene monomer units in which all propylene bonds are meso bonds and a percentage of five continuous propylene monomer units in which all propylene bonds are racemic bonds, both determined from pentad percentages in ^{13}C-NMR spectrum, being 70% or more and 5% or more, respectively, relative to the all propylene bonds, and

(B) 50–10 parts by weight of an olefinic rubber and/or a polyolefin other than said (A).

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5,621,047

PROCESS FOR PREPARING LINEAR MONOFUNCTIONAL AND TELECHELIC DIFUNCTIONAL POLYMERS AND COMPOSITIONS OBTAINED THEREBY

Philip O. Nubel; Howard B. Yokelson; Steven A. Cohen, and William G. Bouslog, all of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 68,236, May 27, 1993, Pat. No. 5,403,904, and a continuation-in-part of Ser. No. 68,240, May 27, 1993, Pat. No. 5,519,101, and a continuation-in-part of Ser. No. 167,668, Dec. 15, 1993, Pat. No. 5,512,635. This application Oct. 13, 1995, Ser. No. 543,080

The portion of the term of this patent subsequent to Jun. 2, 2015, has been disclaimed.

Int. Cl.[6] C08G *61/12*

U.S. Cl. 525—247 **14 Claims**

1. A process for the preparation of linear monofunctional and telechelic difunctional unsaturated polymers having at least one internal carbon-to-carbon double bond and containing terminal functional reactive groups other than vinyl groups, from olefinic compound reactants in a process comprising a cross-metathesis reaction of an olefinic compound selected from the group consisting of a cyclic olefinic non-conjugated compound of from about 4 to 30 carbon atoms and a linear hydrocarbon unsaturated polymer with an acyclic olefinic compound selected from the group consisting of an alkyl acrylate and an alkyl methacrylate, wherein the alkyl group contains from 1 to 12 carbon atoms, to prepare a linear functional unsaturated polymer wherein said reaction is a cross-metathesis reaction in the presence of a catalyst composition comprising a metathesis catalyst (a) comprising a transition metal compound selected from the group consisting of transition metal halides, oxyhalides, oxides and organic ammonium salts; an activator (b) selected from the group consisting of organic tin compounds, alkylaluminum halides, alkoxyalkylaluminum halides and aryloxyalkylaluminum halides, and an organic Lewis base (c), said metathesis catalyst (a) is present in an amount of from about 0.01 to about 50 millimoles per mole of carbon-to-carbon double bond units present in said olefinic compound reactants, activator (b) is present in a molar ratio to metathesis catalyst (a) of from about 0.001:1 to about 200:1, and organic Lewis base (c) is present in a molar ratio to metathesis catalyst (a) of from about 0.1:1 to about 10,000:1, said cross-metathesis reaction conducted at a temperature of from about 0° C. to about 200° C. and a pressure of from about 1×10^{-6} mm Hg to about 30 atmospheres.

5,621,048

Patent Not Issued For This Number

5,621,049

Patent Not Issued For This Number

5,621,050

COATING FOR TISSUE DRAG REDUCTION

Peter K. Jarrett, New Haven; George Jessup, Brookfield; Louis Rosati, Norwalk, all of Conn.; Chris Martin, Guildford, Australia, and John W. Maney, Spring Valley, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 230,267, Apr. 20, 1994, Pat. No. 5,442,016, which is a division of Ser. No. 843,053, Mar. 2, 1992, Pat. No. 5,352,515. This application Jun. 7, 1995, Ser. No. 477,685

Int. Cl.[6] C08L *71/02;* **C08G** *63/08*

U.S. Cl. 525—415 **11 Claims**

1. A block copolymer comprising a first block having a polyalkylene oxide and a second block having ϵ-caprolactone linkages, the improvement to the second block comprising linkages subject to hydrolytic degradation in-vivo being randomly configured with the ϵ-caprolactone linkages.

5,621,051

PROCESS FOR PREPARATION OF POLYURETHANE-POLYCARBODIIMIDE FOAM

Tatsuya Okutani; Yasuo Imashiro; Eiji Sasaki; Shiro Nagahata, and Kiyotake Morimoto, all of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 128,077, Sep. 29, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 617,430

Claims priority, application Japan, Sep. 29, 1992, 4-282293

Int. Cl.[6] C08L *75/08*

U.S. Cl. 525—453 **11 Claims**

1. A process for preparation of a polyurethane-polycarbodiimide foam which comprises reacting a polyol component containing a benzylic ether phenol resin having hydroxymethyl groups and further containing a phthalic ester polyol, an ethereal Mannich polyol or an ethereal ethylenediamine polyol each having a hydroxy value of 50 to 800 mg KOH/g, with an aromatic polyisocyanate component in the presence of an organotin catalyst for urethane formation and a carbodiimidating catalyst which is 1-phenyl-3-methyl-phospholene oxide, wherein the polyol component and the aromatic polyisocyanate component are used in such a ratio that the NCO/OH equivalent ratio is 1 to 4.

5,621,052

AMINOPLAST-ANCHORED ULTRAVIOLET LIGHT STABILIZERS

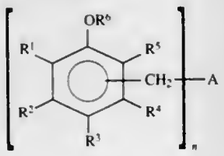
Jeno G. Szita, Norwalk, and Paul S. Waterman, Shelton, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Dec. 29, 1992, Ser. No. 998,099

Int. Cl.[6] C08F *283/00;* **C08G** *8/28;* **C08L** *61/20*

U.S. Cl. 525—509 **32 Claims**

1. A composition of matter comprising a monomeric or oligomeric aminoplast anchor having more than 0.5 mole of phenolic light stabilizer group per mole of aminoplast pendently attached thereto, represented by the formula



wherein

A is an m functional monomeric or oligomeric aminoplast anchor molecule to which n phenolic light stabilizer groups are attached through n methylene bridges, the bridges replacing the R^2, R^3, R^4 or R^5 groups on the phenolic ring;

R^1 is a group which, together with the phenolic ring, comprise the phenolic light stabilizer group;

R^2, R^3, R^4 and R^5 are substituents independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, hydroxy, alkoxy, and alkyl which is interrupted, substituted, or interrupted and substituted by one or more oxygen, carbonyl or carboxy groups;

R^6 is hydrogen or a blocking group selected from the group consisting of alkyl, acyl, aminocarbonyl and silyl groups;

m is at least 1; and

n is more than 0.5.

5,621,053

POLYANILINE DERIVATIVES AND THEIR PRODUCTION PROCESS

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Shizuoka-ken, Japan

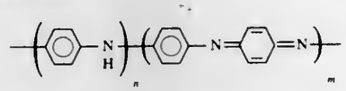
Division of Ser. No. 128,570, Sep. 30, 1993, which is a continuation-in-part of Ser. No. 858,058, Mar. 26, 1992. This application May 10, 1995, Ser. No. 438,729

Claims priority, application Japan, Apr. 1, 1991, 3-92650; May 1, 1991, 3-126506; May 1, 1991, 3-126507; Jun. 21, 1991, 3-175704; Jun. 28, 1991, 3-183858; Jul. 5, 1991, 3-191218; Aug. 26, 1991, 3-236907; Aug. 26, 1991, 3-236908; Oct. 9, 1991, 3-289437; Oct. 11, 1991, 3-290373; Dec. 6, 1991, 3-166122; Dec. 12, 1991, 3-350616; Jan. 17, 1992, 4-25952; Jan. 17, 1992, 4-25954

Int. Cl.[6] C08G *71/00;* **C08L** *79/00*

U.S. Cl. 525—540 **1 Claim**

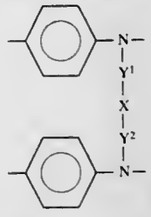
1. A polyaniline derivative which comprises a polyaniline having number average molecular weight in a range of from 2,000 to 500,000 represented by the following formula (I) as the main polymer chain,



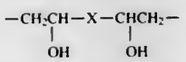
wherein m and n are 0 or an integer of at least 1,

m/(m+n)=0–1, and m+n=10–5,000,

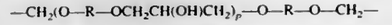
and cross-linking units represented by the following formula (II)



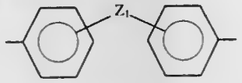
wherein Y^1 —X—Y^2 in the formula (II) is



and X is a group represented by the following formula:



wherein R denotes a substituted or unsubstituted alkylene group, substituted or unsubstituted arylene group, or a group represented by the following formula



wherein Z^1 is a direct bond, —CH_2—, —$CH(CH_3)$— or —$C(CH_3)_2$—, and p is 0–2.

5,621,054

COPOLYMERIZATION PROCESS FOR THE PREPARATION OF CRYSTALLINE COPOLYMERS OF OLEFINS AND CYCLIC OLEFINS

Bruce A. Harrington, Houston, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 472,372

Int. Cl.[6] C08F *4/643:232/04:232/08*

U.S. Cl. 526—126 **10 Claims**

1. A copolymerization process suitable for the preparation of high crystalline melting point cyclic olefin copolymers comprising contacting ethylene and at least one cyclic olefin, under suitable polymerization conditions, with an active polymerization catalyst comprising a hafnium or zirconium transition metal compound containing an asymmetrically substituted monocyclopentadienyl ancillary ligand, a bulky substituent-containing heteroatom ligand, the monocyclopentadienyl and heteroatom ligands being covalently bridged.

5,621,055

PROCESS FOR PRODUCING POLYMER PARTICLES WITH IRREGULAR SHAPE

Seiichi Miyanaga; Yoshimitsu Ina; Takahide Minami, and Takayuki Amiya, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 111,437, Aug. 25, 1993, abandoned. This application Sep. 19, 1995, Ser. No. 530,759

Claims priority, application Japan, Sep. 10, 1992, 4-242219

Int. Cl.[6] C08F *2/20;2/18*

U.S. Cl. 526—225 **6 Claims**

1. A process for producing polymer particles with an irregular shape, comprising polymerizing at a temperature of from 20° to 120° C. a water-soluble polymerizable monomer in a reverse phase polymerization system comprising (a) a hydrophobic organic solvent inert to the polymerization, (b) an aqueous solution of said water-soluble polymerizable monomer, wherein the concentration of said water-soluble polymerizable monomer in said aqueous solution is 1 to 70% by weight, and (c) a surfactant consisting essentially of an anionic surfactant, wherein said anionic surfactant comprises an anionic surfactant having at least one SO_3^{2-} or SO_4^{2-} group.

5,621,056

POLYMERS HAVING ENHANCED THERMAL STABILITIES AND METHODS FOR THEIR PREPARATION USING 1',2,3,3',4,4',6,6'-OCTA-O-ALLYLSUCROSE

Navzer D. Sachinvala; Redford F. Ju, both of Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaii Agriculture Research Center, Aiea, Hi.

Division of Ser. No. 199,695, Feb. 28, 1994, Pat. No. 5,470,931, which is a continuation-in-part of Ser. No. 28,545, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,340

Int. Cl.[6] C08F *224/00*

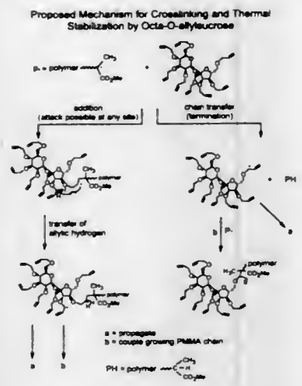
U.S. Cl. 526—238.23 **6 Claims**

1. A method for producing bulk thermal stable polymers which are thermal stable at 200° C. which comprises polymerizing a mixture comprising:

(a) a polymerizable monomer which comprises a long chain allyl-containing ether of a saccharide compound containing more than one double bond in its carbon skeleton, and which monomer contains at least two $H_2C{=}CH{-}CH_2{-}$ groups; and

(b) one or more monomers selected from the group consisting of methacrylate ester monomers, acrylate ester monomers, acrylamide monomers, acrylonitrile monomers and styrene mono-

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mers, in relative amounts sufficient to produce a polymer which is thermal stable at 200° C. and having enhanced thermal stability relative to polymers comprised of a monomer or monomers according to (b) but lacking said long chain allyl-containing ether of a sugar compound monomer.

2. The polymer produced by the method of claim 1.

5,621,057

ALKENYL ETHER-SILOXANE COMPOSITIONS WHICH CAN BE CROSSLINKED BY FREE RADICALS

Christian Herzig, Tacbing am See; Bernward Deubzer, Burghausen; Martina Bloechl, Tann, all of Germany; David Huettner, Tecumseh, and Walter Magee, Adrian, both of Mich., assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 31, 1995, Ser. No. 455,489

Claims priority, application Germany, Jun. 8, 1994, 44 20 062.5

Int. Cl.[6] C08F *26/00*

U.S. Cl. 526—248 **8 Claims**

1. Alkenyl ether-siloxane compositions comprising

(A) an oligomeric or polymeric organosilicon compound having on average more than one alkenyloxy group of the formula

$$R^2—CH=CH—O— \quad (VI)$$

in which

R^2 is a hydrogen atom or a methyl radical,

(B) a monomeric maleic and/or fumaric acid compound of the formula



(VII)

or



(VIII)

in which

R^3 is identical or different and is a hydrogen atom, a hydrocarbon radical having 1 to 16 carbon atoms, which is optionally interrupted by oxygen, sulfur or oxygen- or silicon-containing units, a substituted hydrocarbon radical having 1 to 6 carbon atoms, a silyl radical or a siloxanyl radical,

R^4 is identical or different and is a hydrogen atom, chlorine, bromine, fluorine or an optionally substituted alkyl radical and

Z is an oxygen atom or a radical —NR^5—, where R^5 has one of the meanings given for R^3,

optionally

(C) initiators which form free radicals and

optionally

(D) inhibitors for regulating pot life.

5,621,058

HYDROPHILIC CROSSLINKED POLYMER FINE PARTICLES AND PROCESS FOR PRODUCTION THEREOF

Masahiro Kondo; Hiromi Harakawa, and Hiroshi Inoue, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken, Japan

Filed Oct. 24, 1995, Ser. No. 547,539

Claims priority, application Japan, Oct. 24, 1994, 6-284340

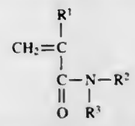
Int. Cl.[6] C08F *226/10;220/58*

U.S. Cl. 526—264 **13 Claims**

1. Hydrophilic crosslinked polymer fine particles made of a copolymer composed of:

2–50% by weight of (a) a hydrophilic monomer having, in the molecule, at least one polymerizable double bond and a polyoxyalkylene or polyvinylpyrrolidone chain,

20–97% by weight of (b) at least one (meth)acrylamide monomer selected from the group consisting of the compounds represented by the following general formula 1:



1

wherein R^1 is a hydrogen atom or a methyl group; and R^2 and R^3 may be the same or different and are each a hydrogen atom or an alkyl group having 1–5 carbon atoms with a proviso that the sum of the carbon atoms of R^2 and R^3 is 5 or less,

1–30% by weight of (c) a crosslinkable unsaturated monomer having, in the molecule, at least one N-methylol or N-alkoxymethyl group and a polymerizable double bond, and

0–50% by weight of (d) a monomer other than the above (a), (b) and (c), having a polymerizable unsaturated group in the molecule.

5,621,059

POLYMERIC FLOW MODIFIERS

William A. Dupont; Marilyn A. Grolitzer, both of Wilbraham; Meshach Ojunga-Andrew, Springfield, and Linda A. Paradis, Ludlow, all of Mass., assignors to Monsanto Company, Springfield, Mass.

Continuation of Ser. No. 383,626, Feb. 6, 1995, abandoned.

This application Oct. 27, 1995, Ser. No. 549,449

Int. Cl.[6] C08F *20/10*

U.S. Cl. 526—318.44 **9 Claims**

1. Flow modifiers for coating formulations consisting essentially of polymers having a weight average molecular weight of between 4,000 to 450,000 of polymerized monomers on a weight basis as follows:

40 to 96% C_1 or C_2 alkyl acrylate or mixtures thereof;

4 to 12% acrylic acid; and

0 to 48% copolymerized C_3 or higher acrylic acid ester monomer; said polymers serving to modify flow of said coating formulations during application to a substrate.

5,621,060

SOLVENTLESS TWO COMPONENT PRIMER COMPOSITION FOR IMPROVED ADHESION OF RTV SILICONE ELASTOMERS TO SUBSTRATES

Brian P. Bayly, Middle Grove; Gary M. Lucas, Scotia, and Van W. Stuart, Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 400,938, Mar. 8, 1995, abandoned.

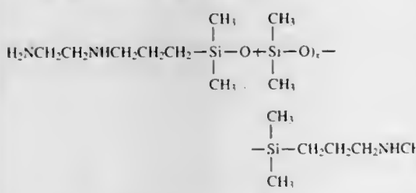
This application Apr. 11, 1996, Ser. No. 630,229

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—17 **11 Claims**

1. A rapidly curing two component primer composition for room temperature vulcanizable silicone elastomers said primer consisting essentially of from about 100.1 parts by weight to about 120 parts by weight of:

(A) 100 parts by weight of a low viscosity dimethylsiloxane oligomer end capped with amino-ethyl-amino-propyl-dimethoxysiloxyl having the formula:



where x varies from about 6 to about 12, and;

(B) from about 0.1 to about 20 parts by weight of an organotitanate having the formula:

$$Ti(OR)_4$$

where R is a hydrocarbon radical having from 1 to about 8 carbon atoms.

5,621,061

PROCESS FOR STABILIZING ORGANOPOLYSILOXANES

Rudolf Hager, Altoetting; Rudolf Braun, Kastl; Otto Schneider, and Bernward Deubzer, both of Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Continuation of Ser. No. 479,738, Jun. 7, 1995, abandoned.

This application Oct. 4, 1996, Ser. No. 726,850

Claims priority, application Germany, Jun. 29, 1994, 44 22 813.9

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—21 **9 Claims**

1. A process for stabilizing organopolysiloxanes containing phosphazenes and/or reaction products thereof which promote the condensation and/or equilibrium of said organopolysiloxanes by removing said phosphazenes and/or reaction products thereof from said organopolysiloxanes, said process comprising bringing said phosphazenes and/or reaction products thereof into contact with at least one non-basic solid adsorbent, said non-basic solid adsorbent comprising activated carbon, carbon black, or mixtures thereof, and separating said organopolysiloxane from said non-basic solid adsorbent, such that following said contact and said separating, the phosphazene content of said organopolysiloxanes expressed as phosphorus is less than about 0.2 mg phosphorus/Kg organopolysiloxanes.

5,621,062

AMBIENT RAPID-CURING AMINO AND EPOXIDE POLYTHIOETHER REACTANTS COMPOSITIONS

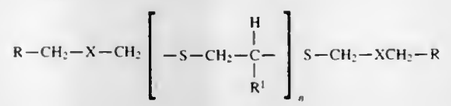
Nicholas T. Castellucci, Lomita, and Roger M. Heitz, Palos Verdes Estates, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 2, 1995, Ser. No. 552,031

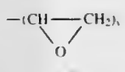
Int. Cl.[6] C08G *75/04*

U.S. Cl. 528—30 **7 Claims**

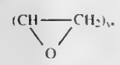
1. A solvent free, fluid polythioether composition which is rapidly curable at room temperature to form an elastomer which is flexible and stable over a temperature range between about −60° F. and +360° F., comprising a mixture of co-reactive polythioether polymer precursors of the formula:



in which R is a radical from the group consisting of —OH, $—OSi(OR^2)_3$ and $—Si(OR^2)_3$; R^2 is a C_1-C_4 alkyl group; R^1 is $—R^3—Z$; R^3 is a phenylene, phenylene ether, alkylene or alkylene ether radical; n is a whole number between 2 and 20; Z is $—(NH_2)$, or



and y is 1 to 3 and X is —O— or $—CH_2—$ said composition containing an amino precursor in which Z is $—(NH_2)$, and an epoxide precursor in which Z is



said amino and epoxide precursors being reactive to form said elastomer.

5,621,063

BLOCKED POLYISOCYANATES AND A PROCESS FOR THEIR PREPARATION

Elmar Wolf, Recklinghausen, and Christoph Theis, Niederkassel, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Feb. 29, 1996, Ser. No. 609,924

Claims priority, application Germany, May 26, 1995, 195 19 396.2

Int. Cl.[6] C08G *18/81;18/28*

U.S. Cl. 528—45 **12 Claims**

1. (Cyclo)aliphatic polyisocyanates which are completely or partially blocked with malonic ester and having a reduced deblocking temperature, the polyisocyanates being:

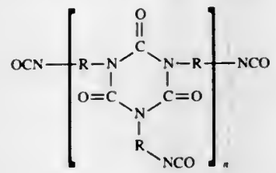
A) diisocyanates of the formula:

$$OCN\text{-}R\text{-}NCO,$$

in which R is a (cyclo)aliphatic hydrocarbon radical having about 6 to 14 carbon atoms, and/or

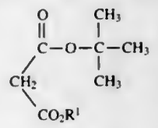
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B) polyisocyanatoisocyanurates of the formula:



wherein n is 1 to 3, R is as defined under A) above, and the weight ratio of B being from (100-0):(0-100);

said blocking agents being malonic esters of the formula:



wherein R^1 is an alkyl radical having 1 to 10 carbon atoms or the group:



and wherein free NCO groups are present in the reaction product to an extent of not more than 4%.

5,621,064

URETDIONE POWDER COATING CROSS-LINKING AGENTS HAVING A LOW MELT VISCOSITY

Hans-Josef Laas, Köln; Reinhard Halpaap, Odenthal; Hans-Ulrich Meier-Westhues, Leverkusen, and Wolfgang Schultz, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 286,088, Aug. 4, 1994, abandoned. This application Nov. 29, 1995, Ser. No. 556,549

Claims priority, application Germany, Aug. 17, 1993, 43 27 573.7

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—60 **2 Claims**

1. A powder coating composition which comprises

I) a polyaddition compound that is solid below 40° C. and liquid above 125° C., based on diisocyanates having aliphatically and/or cycloaliphatically bound isocyanate groups and contains, based on the weight of the polyaddition compound,

a) 0 to 2% by weight of free isocyanate groups (calculated as NCO; molecular weight =42),

b) 7 to 14% by weight of uretdione groups (calculated as $C_2N_2O_2$; molecular weight=84),

c) 10 to 22% by weight of urethane groups (calculated as —NH—CO—O; molecular weight =59),

d) 0 to 20% by weight of carboxylic acid ester groups (calculated as —CO—O—; molecular weight =44) and

e) of 0 to 25% by weight of carbonate groups (calculated as —O—CO—O—; molecular weight=60),

provided that the total content of carboxylic acid ester groups and carbonate groups is at least 1% by weight and

II) a hydroxy-functional resin,

wherein components I and II are present at an equivalent ratio of isocyanate groups to hydroxyl groups of 0.8:1 to 1.2:1.

5,621,065

POLYCARBONATE DIOLS, THEIR PREPARATION AND USE AS STARTING PRODUCTS FOR POLYURETHANE PLASTICS

Heinz Pudleiner, Krefeld; Hans-Georg Hoppe, Leichlingen, and Klaus König, Odenthal, all of Germany, assignors to Bayer Aktiengesellschift, Leverkusen, Germany

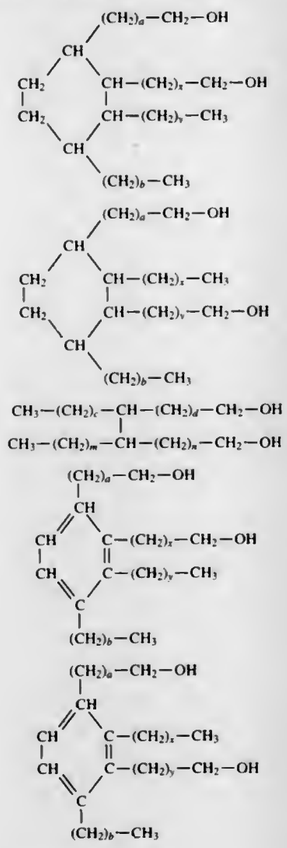
Filed Mar. 29, 1996, Ser. No. 626,229

Claims priority, application Germany, Apr. 7, 1995, 195 13 164.9

Int. Cl.[6] C08G *18/34;64/00*

U.S. Cl. 528—84 **4 Claims**

1. Polycarbonates having hydroxyl end groups and average molecular weights of 500 to 12,000, and being based on one or more dimer diols containing either 36 or 44 carbon atoms which correspond to the general formulae (I) to (V)



(I)

(II)

(III)

(IV)

(V)

wherein:

in formulae I, II, IV and V: a+b=12 and x+y=14, or a+b=16 and x+y=18

and

in formula III: c+d=15 and m+n=15, or c+d=19 and m+n=19, and wherein up to 95 mol. % of the dimer diols corresponding to formulae (I) to (V) may be replaced by aliphatic diols containing from 3 to 12 carbon atoms.

5,621,066

ENVIRONMENTALLY FRIENDLY METHOD FOR POLY(PHENYLENE ETHER) POLYMERIZATION AND CATALYST RECYCLE

Jilles J. H. Edema, LX Bergen Op Zoom, Netherlands, assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 10, 1994, Ser. No. 288,176

Int. Cl.[6] C08G *65/38*

U.S. Cl. 528—215 **15 Claims**

1. A process for preparing poly(phenylene ether) resins comprising:

(a) oxidatively coupling in a reaction solution at least one monovalent phenol species using an oxygen containing gas and a complex metal catalyst;

(b) recovering the complex metal catalyst of step (a) with an aqueous containing solution;

(c) reducing the recovered metal catalyst of step (b) to a lower oxidation state; wherein the reduction involves the use of a disproportionating metal salt; and

(d) recycling the reduced metal catalyst of step (c) into the reaction solution of step (a).

5,621,067

WHOLLY AROMATIC POLYAMIDES WITH IMPROVED FLAME RESISTANCE

Jin-Chyueh Lin, Kao-Hsiung Shiann; Jen-Chang Yang, Taipei, and Ting-Hsiu Chen, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 30, 1995, Ser. No. 413,846

Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—310 **13 Claims**

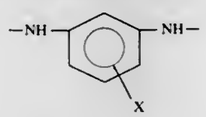
1. A wholly aromatic copolyamide with improved flame resistance and good thermal stability produced by polycondensation of:

(a) a meta aromatic diamine;

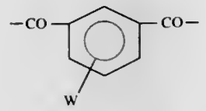
(b) a meta aromatic diacid chloride; and

(c) no more than 15 mole percent, but no less than 2 mole percent of one or more comonomers having repeat units of the following general formulas:

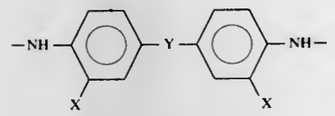
(I)



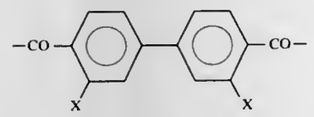
(II)



(III)

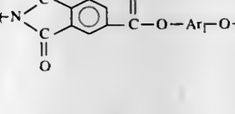


(IV)



-continued

(V)



wherein W represents halogen, COOH, or C_nH_{2n+1}, where n represents 0, 1, or 2; X represents halogen, CH_3, H; Y represents $C_nH_{2n'}$ where n' represents 1 or 2, O, S, or SO_2 or Y is absent and Z represents halogen, COOH, or $C_{n''}H_{2n''+1}$ where n'' represents 1 or 2.

5,621,068

THERMOPLASTIC POLYIMIDE POLYMER; THERMOPLASTIC POLYIMIDE FILM; POLYIMIDE LAMINATE; AND METHOD OF MANUFACTURING THE LAMINATE

Yoshifumi Okamoto; Hiroyuki Furutani; Kazuhisa Danno; Junya Ida, and Hirosaku Nagano, all of Otsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/01286, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO95/04100, PCT Pub. Date Feb. 9, 1995

PCT Filed Aug. 3, 1994, Ser. No. 381,890

Claims priority, application Japan, Aug. 3, 1993, 5-212273; Aug. 9, 1993, 5-218175; Aug. 31, 1993, 5-240677

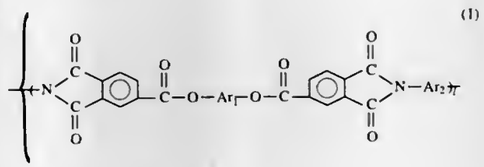
The portion of the term of this patent subsequent to Dec. 16, 2013, has been disclaimed.

Int. Cl.[6] C08G *73/10*

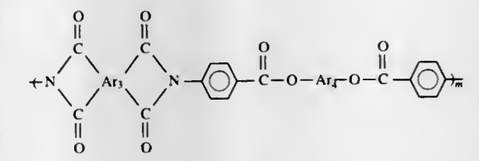
U.S. Cl. 528—353 **12 Claims**

1. Thermoplastic polyimide film comprising a thermoplastic polyimide polymer which is represented by the general formula (1) specified below:

(I)

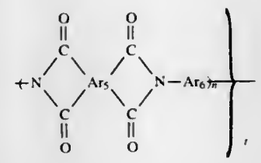


(II)



(III)

(IV)



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where Ar_1, Ar_2, Ar_4, and Ar_6, respectively represent divalent organic radical; Ar_3 and Ar_5 respectively represent quadrivalent organic radical; l, m, and n, respectively designate a positive integer of 0 to 15; and the sum of l and m is one or more than one; and t represents positive integer of one or more than one.

5,621,069

METHOD FOR PREPARATION OF CONJUGATED ARYLENE AND HETROARYLENE VINYLENE POLYMERS

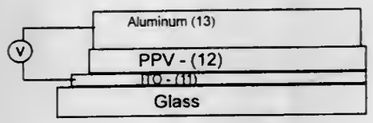
Mary Galvin-Donoghue, Titusville, and Sehwan Son, Murray Hill, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 321,287, Oct. 11, 1994, abandoned. This application Sep. 15, 1995, Ser. No. 528,820

Int. Cl.[6] C08G *61/02;75/00*

U.S. Cl. 528—379 **5 Claims**

Electroluminescent Device



1. Method for the preparation of conjugated arylene and hetrroarylene vinylene polymers which comprises the steps of

(a) preparing a precursor polymer by reacting an aromatic ring structure of the general formula

X-R-X

wherein X is selected from the group consisting of chloromethyl and bromomethyl groups and R is an aromatic group selected from the group consisting of thiophene, naphthalene, anthracene and benzene with an aqueous solution of an alkyl xanthic acid potassium salt of the general formula

$$(CH_3)-(CH_2)_n-OCS^-K^+$$

wherein n is an integer ranging from 0–3 in the presence of a phase transfer catalyst to obtain a monomer, and reacting the monomer so obtained with potassium tertiary butoxide to obtain a precursor polymer of the general formula

$$(-R-CH_2-CH)^-$$

wherein n is an integer ranging from 0–3, and R is an aromatic ring selected from the group consisting of benzene, thiophene, naphthalene and anthracene, and

(b) subjecting said precursor polymer to thermal conversion at a temperature ranging from 150° to 250° C. in the presence of a gas.

5,621,070

ULTRA HIGH MOLECULAR WEIGHT LINEAR POLYETHYLENE PROCESSES OF MANUFACTURE

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 417,313, Apr. 5, 1995, abandoned, which is a division of Ser. No. 245,394, May 18, 1994, Pat. No. 5,478,906, which is a continuation-in-part of Ser. No. 800,868, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 500,054, Mar. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 426,916, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 288,577, Dec. 22, 1988, abandoned, which is a continuatinn-in-part of Ser. No. 278,913, Dec. 2, 1988, abandoned. This application Dec. 5, 1995, Ser. No. 567,684

Int. Cl.[6] C08F *6/00*

U.S. Cl. 528—481 **13 Claims**

1. A process for preparing an improved folded chain ultrahigh molecular weight linear polyethylene having a molecular weight of at least 800,000 consisting essentially of the following steps:

(a) forming an article of an ultrahigh molecular weight linear polyethylene having a molecular weight of at least 800,000;

(b) subjecting said article to a temperature of 320°–345° C. in an inert atmosphere without the application of external pressure for at least 0.5 hour; and

(c) cooling the article without the application of external pressure non-precipitously to a temperature of about 130° C. or below, the rate of cooling being such that temperature gradients in the article are substantially avoided.

5,621,071

MESOGENIC NOVOLACS AND RESINS

Mark D. Newsham, Midland, Mich.; Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

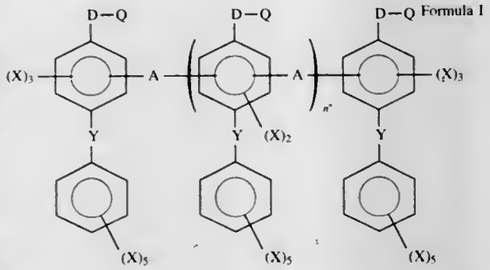
Division of Ser. No. 338,897, Nov. 14, 1994, Pat. No. 5,486,385. This application Aug. 4, 1995, Ser. No. 511,390

Int. Cl.[6] C08F *6/00;* **C08J** *3/00*

U.S. Cl. 528—503 **14 Claims**

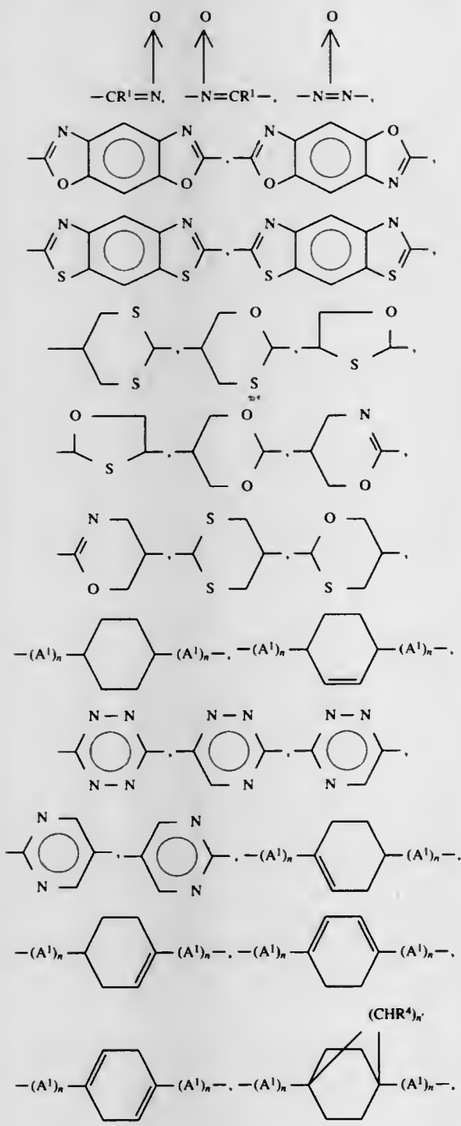
1. A cured or polymerized polymer resulting from curing or polymerizing a composition comprising

(A) a compound represented by the following Formula I:

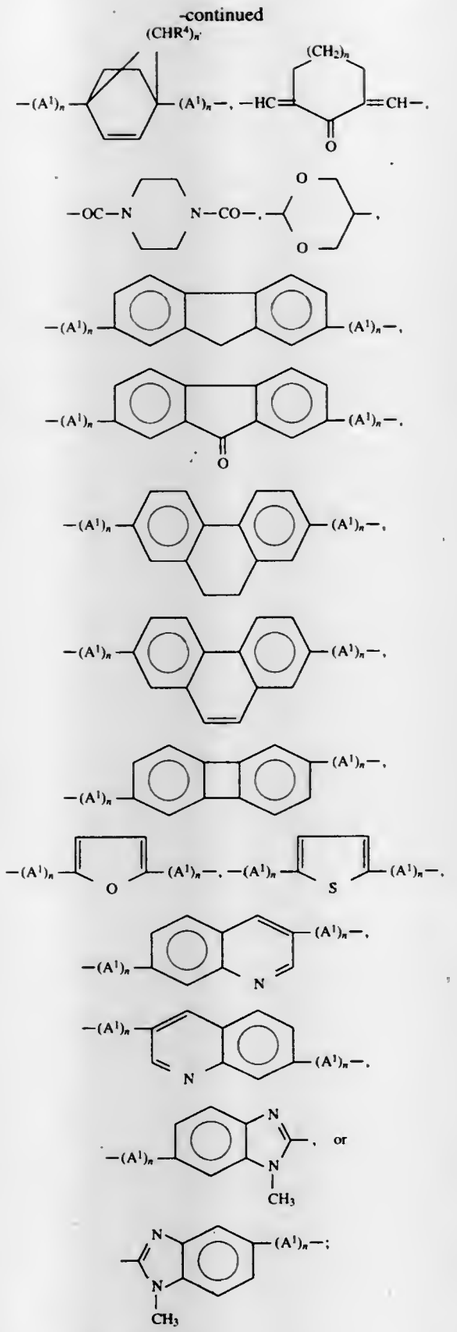


Formula I

wherein A is a divalent C_1–C_{12} aliphatic or cycloaliphatic hydrocarbyl group, D is O or NR with the proviso that when R in NR is hydrogen then Q is hydrogen or cyanamide; Q is hydrogen, epoxy, thiirane, vinylester, cyanamide, or cyanate; n" has a value from 1.01 to about 10; X is hydrogen, a hydrocarbyl or hydrocarbyloxy group having from one to about 10 carbon atoms, a halogen atom, a nitro group, a phenyl group, a ketone group, an ester group, a carboxyl acid group with the proviso that when X is a carboxyl group Q is hydrogen, $—SO_2R$, $—SO_2CH_2F$, $—SO_2CHF_2$, $—SO_2CF_3$, $—S(NSO_2CF_3)CF_3$, $—CF_3$, $—COCF_3$, cyano, cyanovinyl, dicyanovinyl, tricyanovinyl; with the proviso that only one X can be a group other than hydrogen; R is hydrogen or a C_1 to C_{20} hydrocarbyl group; and Y is a rigid central linkage group selected from the group consisting of $—CR^1═CR^1—$, $—C≡C—$, $—N═N—$, $—CR^1═N—$, $—N═CR^1—$, $—O—CO—$, $—CO—O—$, $—NR^1—CO—$, $—CO—NR^1—$, $—CR^1═N—N═CR^1—$, $—CO—O—N═CR^1—$, $—CR^1═N—O—CO—$, $—CO—NR^1—NR^1—OC—$, $—CR^1═CR^1—O—OC—$, $—CO—O—CR^1═CR^1—$, $—O—OC—CR^1═CR^1—$, $—CR^1═CR^1—CO—O—$, $—(CHR^1)_n—O—CO—CR^1═CR^1—$, $—CR^1═CR^1—CO—O—(CHR^1)_n—$, $—(CHR^1)_n—CO—O—CR^1═CR^1—$, $—CR^1═CR^1—O—CO—(CHR^1)_n—$, $—S—CO—$, $—CO—S—$, $—CH_2CH_2—CO—O—$, $—O—OC—CH_2—CH_2—$, $—C≡C—C≡C—$, $—CR^1═CR^1—CR^1═CR^1—$, $—CR^1═C(—Cl)—C(—Cl)═CR^1—$, $—CR^1═C(—C≡N)—$, $—C(—C≡N)═CR^1—$, $—C(—C≡N)═N—$, $—N═C(—C≡N)—$, $—CO—O—$, $—O—CO—C≡C—$,



-continued


(CHR⁴)n'
(CH2)n
—(A¹)n—
—HC═
═CH—
—OC—N
N—CO—
O
—(A¹)n—
—(A¹)n—
—(A¹)n—

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group; each R^1 is independently hydrogen or a hydrocarbyl group having from one to about 3 carbon atoms; R^4 is hydrogen or a methyl group; n has a value of zero or one; and n' has a value of 1 or 2; and

(B) a curing amount of a curing agent or a catalyst amount of a polymerization catalyst and/or a cure accelerating amount of an accelerating agent.

5,621,072

PURIFIED GUAIACUM RESIN AND METHOD FOR MAKING SAME

Masanao Watanabe, Tokyo-To; Kohji Kuroda, Chofu, and Yoshiko Fujita, Tokyo-To, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 138,181, Oct. 20, 1993, abandoned, which is a continuation of Ser. No. 803,551, Dec. 9, 1991, abandoned, which is a division of Ser. No. 242,690, Sep. 9, 1988, Pat. No. 5,093,082. This application Apr. 7, 1995, Ser. No. 418,857

Claims priority, application Japan, Aug. 17, 1988, 63-204525

Int. Cl.[6] C11D *15/00;* **G01N** *21/00*

U.S. Cl. 530—200 **5 Claims**

1. A method for preparing a purified guaiacum resin comprising:

subjecting guaiacum resin to reversed phase chromatography using a fixed gel phase for development with an initial developing solvent of higher polarity than a solvent of water and methanol at a mixing ratio by volume of 1:9 so as to eliminate an initially eluted non-color-developing constituent group and a color-developing unstable constituent group from the guaiacum resin;

collecting a solution containing a hydrophilic color-developing constituent group by the use of a solvent having polarity lower than the initial developing solvent; and

removing the solvent from said collected solution.

5,621,073

CHROMATOGRAPHIC PROCESS FOR PURIFICATION OF INSULIN

Rainer Dickhardt; Bernhard Unger, both of Kelkheim, and Claudia Gräfe, Königstein/Tanus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

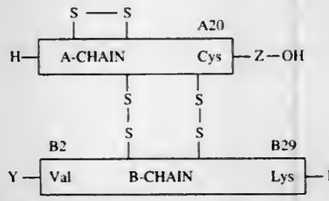
Continuation of Ser. No. 991,261, Dec. 16, 1992, abandoned. This application Apr. 28, 1995, Ser. No. 430,273

Claims priority, application Germany, Dec. 18, 1991, 41 41 794.1; Jun. 20, 1992, 42 20 293.0

Int. Cl.[6] A61K *38/28*

U.S. Cl. 530—305 **11 Claims**

1. A process for obtaining insulin which is virtually free from both trypsin and insulin acetylated at position A9, wherein said insulin is of formula I,



(I)

in which

R^{30} is the residue of a genetically encodable L-amino acid,

X is a hydroxyl group, a genetically encodable L-amino acid whose terminal carboxyl group, if present, can exist free, as an ester function, as an amide function, as a lactone, or reduced to CH_2OH,

n is an integer from 0 to 10,

Y is hydrogen or L-phenylalanine

Z is a genetically encodable L-amino acid, and the A and B chains have the sequences of animal or human insulin,

said process comprising:

1A) dissolving a mixture of insulin and trypsin or a mixture of insulin and insulin acetylated at position A9 in a buffer;

1B) eluting the product of step 1A with a buffered eluent comprising zwitterions selected from amino acids or betaine;

1C) concentrating the insulin fractions obtained in step 1B;

2A) dissolving the insulin fractions obtained in step 1C in a dissolving buffer comprising acetone or acetonitrile;

2B) adding the solution obtained in step 2A to a column comprising a lipophilically modified silica gel;

2C) washing the column with the dissolving buffer; and

2D) eluting the product of step 2C with a buffered eluent comprising zwitterions selected from amino acids or betaine.

5,621,074

APROTININ ANALOGS

Soren E. Bjørn, Lyngby; Kjeld Norris, Hellerup; Viggo Diness, Charlottenlund; Leif Nørskov-Lauritsen, Køge; Niels D. Christensen, Køvenhavn; Claus Bregengaard; Fanny Norris, both of Hellerup, and Lars C. Petersen, Hørsholm, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 84,718, Jun. 23, 1993, which is a continuation-in-part of Ser. No. 24,925, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 466,408, Jun. 21, 1990, abandoned, said Ser. No. 443,977is a continuation-in-part of Ser. No. 598,737, Nov. 19, 1990, Pat. No. 5,373,090, and a continuation-in-part of Ser. No. 827,687, Jan. 29, 1992, abandoned. This application May 18, 1995, Ser. No. 443,977

Claims priority, application Denmark, Aug. 28, 1987, 4501/87; Apr. 26, 1988, 2254/88; Oct. 1, 1990, 2361/90; Jun. 12, 1991, 1118/91

Int. Cl.[6] A61K *38/00;38/28;* **C07K** *5/00;1/00*

U.S. Cl. 530—324 **3 Claims**

1. An aprotinin analog having an inhibitory effect against serine protease, reduced nephrotoxicity, reduced positive net charge, reduced stability compared to native aprotinin, and having the following formula:

X'-aprotinin(3–40)-Y'$_n$-Z'$_m$-aprotinin(43–48)

in which X' is Pro or hydrogen, aprotinin(3–40) is the amino acid sequence from amino acid residue 3 to 40 in native aprotinin, Y' is Lys or a non-basic amino acid residue, Z' is Arg or a non-basic amino acid residue, wherein at least Y' or Z' is a non-basic amino acid residue, n and m are each 0 or 1, and aprotinin(43–48) is the amino acid sequence from amino acid residue 43 to 58 in native aprotinin.

5,621,075

INSULIN RECEPTOR SUBSTRATE

C. Ronald Kahn, West Newton; Morris F. White, West Roxbury, both of Mass., and Paul L. Rothenberg, Narberth, Pa., assignors to Joslin Diabetes Center, Inc., Boston, Mass.

Division of Ser. No. 962,023, Oct. 15, 1992, Pat. No. 5,260,200, which is a continuation of Ser. No. 643,982, Jan. 18, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 94,948

Int. Cl.[6] C07K *14/47*

U.S. Cl. 530—350 **4 Claims**

1. A purified preparation of IRS-1, of sufficient purity to allow protein sequencing, said IRS-1 having the following properties:

(a) a molecular weight, as determined by SDS-PAGE, of about 165 kDa;

(b) phosphatidylinositol (PI) 3-kinase activity;

(c) it is phosphorylated in response to insulin binding to the insulin receptor;

(d) it is a substrate for the insulin receptor.

5,621,076

POULTRY MYCOPLASMA ANTIGENS AND RECOMBINANT VECTORS CONTAINING THE GENE AS WELL AS DIAGNOSTICS AND VACCINES UTILIZING THE SAME

Kazumi Kodama, Yokohama; Shuji Saito; Noboru Yanagida, both of Kawasaki; Kouichi Kamogawa, Yokohama; Yoshikazu Iritani, Kyoto, and Shigemi Aoyama, Shiga-ken, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, and Shionogi & Co., Ltd., Osaka, both of Japan

Continuation of Ser. No. 888,320, May 27, 1992, abandoned, which is a continuation of Ser. No. 359,779, May 31, 1989, abandoned. This application Sep. 2, 1994, Ser. No. 299,662

Claims priority, application Japan, Jun. 2, 1988, 63-136343

Int. Cl.[6] C07K *14/30*

U.S. Cl. 530—350 **9 Claims**

1. An isolated and purified polypeptide which reacts with anti-*Mycoplasma gallisepticum* chicken sera through an antigen-antibody reaction, wherein said polypeptide is selected from the group consisting of MG-1, MG-2, MG-3, MG-7, MG-8, MG-9 and TMG-1.

6. A fused protein whose C-terminus is a polypeptide which reacts with anti-*Mycoplasma gallisepticum* chicken sera through an antigen-antibody reaction, wherein said polypeptide is selected from the group consisting of MG-1, MG-2, MG-3, MG-7, MG-8, MG-9 and TMG-1; and whose N-terminus is an enzyme protein derived from bacteria.

5,621,077

SOLUBLE IFN-β2/IL-6 BINDING PROTEIN ITS PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Daniela Novick, Rehovot; Louise Chen, Ramat Aviv, both of Israel; Hartmut Engelmann, Munich, Germany; Michel Revel, Rehovot, Israel; Menachem Rubinstein, Givat Shmuel, Israel, and David Wallach, Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation of Ser. No. 43,976, Apr. 7, 1993, abandoned, which is a division of Ser. No. 530,580, May 30, 1990, Pat. No. 5,216,128. This application Oct. 27, 1994, Ser. No. 329,785

Claims priority, application Israel, Jun. 1, 1989, 090488; Nov. 26, 1989, 092444

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—350 **2 Claims**

1. Substantially purified protein having the same amino acid sequence as human interferon-β2/interleukin-6 receptor (IFN-β2/IL-6-R) soluble extracellular fragment, isolatable from human urine, having an apparent molecular weight of about 40–60K when analyzed by SDS-PAGE under non-reducing conditions, moving as a single peak on reversed-phase high performance liquid chromatography (HPLC), and containing the following N-terminal amino acid sequence:

Leu-Ala-Pro-Arg-Arg-Cys-Pro-Ala-Gln-Glu-Val-Ala-Arg-Gly-Val-Leu-Thr-Ser-Leu-Pro-Gly-Asp-Ser-Val-Thr-Leu-Thr-Cys-Pro-Gly-.

5,621,078

MODIFIED PSEUDOMONAS EXOTOXIN PE_{40}

Mark W. Riemen, Carmel, Ind., and Steven M. Stirdivant, Warrington, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 120,698, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 879,037, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 708,267, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 327,214, Mar. 22, 1989, abandoned. This application Feb. 21, 1995, Ser. No. 391,259

Int. Cl.[6] C07K *14/21*

U.S. Cl. 530—350 **3 Claims**

1. A modified PE_{40} polypeptide selected from the group consisting of PE_{40}aB and PE_{40}ab, wherein the PE_{40}aB is a PE_{40} polypeptide that comprises an alanine at residues 265 and 287 and wherein the PE40ab is a PE_{40} polypeptide that comprises an alanine at residues 265, 287, 372 and 379.

5,621,079

NEUROPEPTIDE Y RECEPTOR

Margaret A. Cascieri, E. Windsor; David L. Linemeyer, Westfield; Douglas J. Macneil, Westfield; Lin-Lin Shiao, Avenel; Catherine D. Strader, Verona; David H. Weinberg, Westfield, and Carina P. Tan, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 383,746, Feb. 3, 1995. This application Apr. 3, 1995, Ser. No. 415,818

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—350 **8 Claims**

1. A neuropeptide Y Yx receptor produced by culturing a cell transformed by an expression vector containing a DNA sequence selected from the group consisting of a sequence as shown in SEQ. I.D. NO. 5 and a fragment of the sequence shown in SEQ. I.D. NO. 5 comprising bases 822 to 1934 and optionally recovering the neuropeptide Y Yx receptor.

5,621,080

PRODUCTION OF ERYTHROPOIETIN

Fu-Kuen Lin, Thousand Oaks, Calif., assignor to Kirin-Amgen, Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 202,874, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 113,178, Oct. 23, 1987, abandoned, which is a continuation of Ser. No. 675,298, Nov. 30, 1984, Pat. No. 4,703,008, which is a continuation-in-part of Ser. No. 655,841, Sep. 28, 1984, abandoned, which is a continuation-in-part of Ser. No. 582,185, Feb. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 561,024, Dec. 13, 1983, abandoned. This application Jun. 6, 1995, Ser. No. 468,556

The portion of the term of this patent subsequent to Aug. 20, 2013, has been disclaimed.

Int. Cl.[6] C07K *14/505;* **A61K** *38/00*

U.S. Cl. 530—350 **7 Claims**

1. An isolated erythropoietin glycoprotein having the in vivo biological activity of causing bone marrow cells to increase production of reticulocytes and red blood cells, wherein said erythropoietin glycoprotein comprises the mature erythropoietin amino acid sequence of FIG. 6 and has glycosylation which differs from that of human urinary erythropoietin.

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5,621,081

GLIAL MITOGENIC FACTORS

Andrew Goodearl, Chorleywood; Paul Stroobant, London, both of United Kingdom; Luisa Minghetti, Bagnacavallo, Italy; Michael Waterfield, Newbury, United Kingdom; Mark Marchioni; Mario S. Chen, both of Arlington, Mass., and Ian Hiles, London, England, assignors to Ludwig Institute for Cancer Research, N.Y., and Cambridge Neuroscience, Cambridge, Mass.

Division of Ser. No. 36,555, Mar. 24, 1993, which is a continuation-in-part of Ser. No. 863,703, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 907,138, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 940,389, Sep. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 965,173, Oct. 23, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,855

Int. Cl.[6] C07K *14/475*

U.S. Cl. 530—350 **4 Claims**

1. A basic polypeptide factor having a molecular weight, under non-reducing conditions, of from about 55 kD to about 63 kD on SDS-polyacrylamide gel electrophoresis, said polypeptide factor having mitogenic activity stimulating the division of rat Schwann cells in the presence of fetal calf plasma, and when isolated using reversed-phase HPLC retains at least about 50% of said activity after 4 days incubation in 0.1% trifluoroacetic acid at 4° C.

5,621,082

DNA ENCODING AN 18 KD CDK6 INHIBITING PROTEIN

Yue Xiong, Chapel Hill, N.C., and Kunliang Guan, Ann Arbor, Mich., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C., and The University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 263,935, Jun. 21, 1994. This application Jun. 7, 1995, Ser. No. 482,069

Int. Cl.[6] C07K *14/47;* **C07H** *21/04;* **C12N** *15/12*

U.S. Cl. 530—350 **2 Claims**

1. An isolated cyclin-dependent kinase 6 (CDK6) inhibiting protein encoded by a nucleic acid selected from the group consisting of:

(a) DNA having the nucleotide sequence given herein as SEQ ID NO: 1;

(b) nucleic acids which differs from the DNA of above due to the degeneracy of the genetic code, and which encodes a CDK6 inhibiting protein encoded by a DNA of (a) above.

5,621,083

IMMUNOTOXINS COMPRISING RIBOSOME-INACTIVATING PROTEINS

Marc D. Better, Los Angeles; Stephen F. Carroll, Walnut Creek, and Gary M. Studnicka, Santa Monica, all of Calif., assignors to XOMA Corporation, Berkeley, Calif.

Continuation of Ser. No. 64,691, May 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 988,430, Dec. 9, 1992, Pat. No. 5,416,202, which is a continuation-in-part of Ser. No. 901,707, Jun. 19, 1992, Pat. No. 5,376,546, which is a continuation-in-part of Ser. No. 787,567, Nov. 4, 1991, abandoned. This application Apr. 18, 1995, Ser. No. 425,336

Int. Cl.[6] C07K *16/28;16/46;* **C12P** *19/34*

U.S. Cl. 530—391.9 **10 Claims**

1. A fusion protein comprising a toxin sequence that is gelonin SEQ ID NO: 2 or 101 and a targeting sequence comprising an antibody variable domain specifically reactive with a human CD5 antigen recognized by an antibody having a heavy chain variable region sequence that is SEQ ID No; 126 and light chain variable region that is SEQ ID No. 125.

5,621,084

PROCESS FOR REMOVAL OF ALLYL GROUP OR ALLYLOXYCARBONYL GROUP

Msanori Honda, Handa; Hiromasa Morita, Chita, and Isao Nagakura, Aichi-ken, all of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 3, 1995, Ser. No. 417,285

Int. Cl.[6] C07H *1/06;* **C07C** *29/10;41/00;* **C07K** *1/00*

U.S. Cl. 536—1.11 **28 Claims**

1. A process for a removal of an allyl or allyloxycarbonyl group from an allyl or allyloxycarbonyl group protected compound, which comprises contacting the allyl or allyloxycarbonyl group protected compound with a sulfinic acid compound, in the presence of a palladium catalyst in a reaction-inert solvent.

5,621,085

PROCESS FOR THE PREPARATION OF AMIKACIN PRECURSORS

Leone Dall'Asta, Pavia, and Eugenio Garegnani, Marcallo con Casone, both of Italy, assignors to Biochimica Opos S.p.A., Milan, Italy

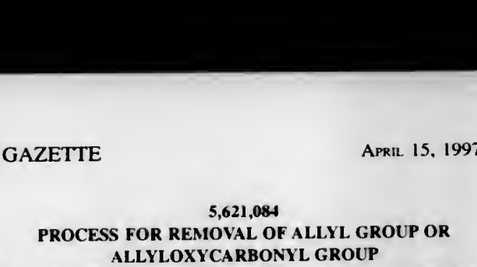
Division of Ser. No. 402,328, Mar. 10, 1995. This application Jun. 2, 1995, Ser. No. 459,649

Claims priority, application Italy, Mar. 8, 1990, 19620/90; Jul. 30, 1990, 21127/90

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—13.8 **11 Claims**

1. A process for the preparation of an amikacin precursor having the formula (I)

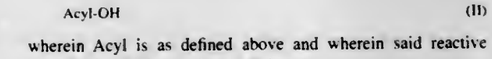


(I)

in which Acyl is an acylating N-protecting group, which comprises:

(a) reacting kanamycin A with an aluminum salt in an aqueous-organic medium;

(b) reacting the aluminum complex of kanamycin A thus obtained with a reactive derivative of an acid of formula (II)

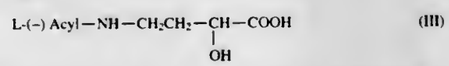


(II)

wherein Acyl is as defined above and wherein said reactive derivative acylates primary amines,

(c) treating the aluminum complex of the 3,6'-di-N-Acyl-kanamycin A thus obtained, as such or after having decomposed it in a basic medium, with a proton donor to a pH of about 6 to produce a fully protonated 3,6+-di-N-Acyl-kanamycin A;

(d) treating the solution thus obtained with a reactive derivative of a N-protected L-(−)-4-amino-2-hydroxybutyric acid of formula (III)



(III)

wherein Acyl has the above-stated meaning, and isolating the thus obtained 1-N-acylated product of formula (I).

5,621,086

SIALIC ACID DERIVATIVE AND METHOD OF MANUFACTURING IT

Yasuhiro Kajihara; Takashi Ebata, and Hisashi Kodama, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

PCT No. PCT/JP95/00418, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO95/25115, PCT Pub. Date Sep. 21, 1995

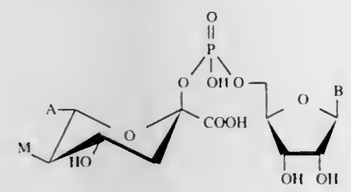
PCT Filed Mar. 14, 1995, Ser. No. 530,255

Claims priority, application Japan, Mar. 14, 1994, 6-042859

Int. Cl.[6] C07H *13/00;15/00;* **A61K** *31/70*

U.S. Cl. 536—17.4 **3 Claims**

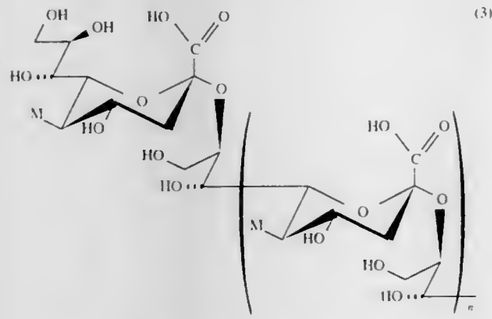
1. A method of manufacturing a sialic acid derivative (1) represented by the following formula:



(1)

wherein

M is a hydroxyl group or an acetamide group, and A is a group represented by the following formula (3):

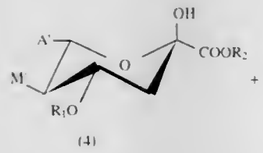


(3)

wherein n is an integer of 0–3 , M is the same as defined above,

and B is a substituted or unsubstituted nucleic acid base, comprising:

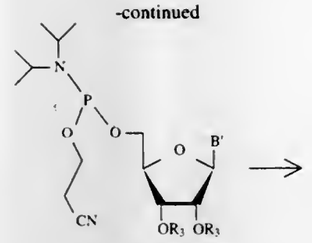
(a) performing a condensation between a compound (4) and a compound (5) represented by the following formulas, in the presence of an acid catalyst, thereby obtaining a phosphite derivative (6) represented by the following formula,



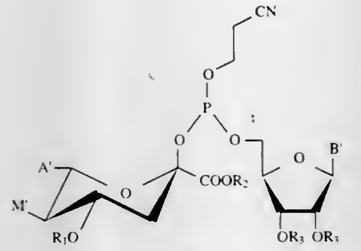
(4)

+

-continued



(5)



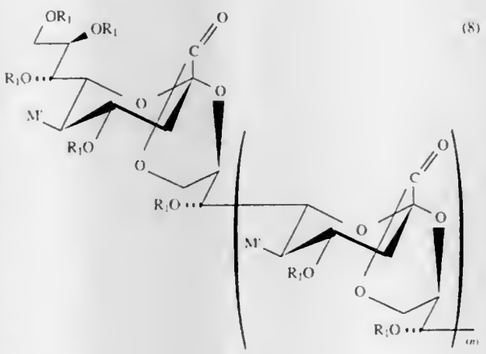
(6)

wherein M' indicates —OR_1 or an acetamide group,

R_1 and R_3 are an acyl group or a silyl group and may be the same or different from each other,

R_2 is an alkyl group, and

A' indicates a group represented by the following formula (8):



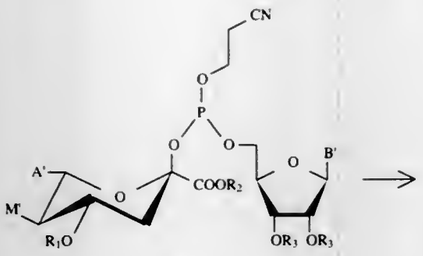
(8)

wherein n is an integer of 0–3 , R_1 and M' are the same as defined above,

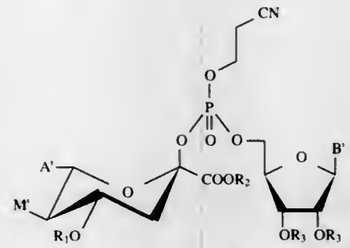
and B' is a nucleic acid base whose exocyclic amino group is protected by an acyl group or a silyl group:

(b) oxidizing said phosphite derivative (6) with an oxidizing agent, thereby obtaining a phosphate derivative (9) represented by a formula (9) shown below.

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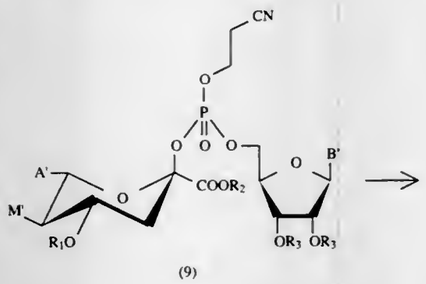
(6)



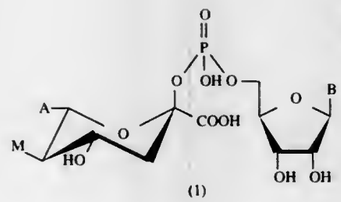
(9)

wherein M', A', B' and R_1 to R_3 are the same as defined above; and

(c) deprotecting said phosphate derivative (9) with an alkali, thereby obtaining a sialic acid derivative (1),



(9)



(1)

wherein M', M, A, A', B, B' and R_1 to R_3 are the same as defined above.

5,621,087

PROCESS FOR MAKING MORPHINE-6-GLUCURONIDE OR SUBSTITUTED MORPHINE-6-GLUCURONIDE

Feodor Scheinmann, Cheshire; Keith W. Lumbard, Stockport; Richard T. Brown, Cheadle Hulme; Stephen P. Mayalarp, and Neil E. Carter, both of Manchester, all of United Kingdom, assignors to Salford Ultrafine Chemicals and Research Limited, Manchester, United Kingdom

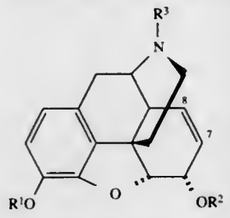
Filed Feb. 4, 1994, Ser. No. 192,281

Claims priority, application United Kingdom, Aug. 6, 1991, 9116909

Int. Cl.[6] C07H *15/00;15/24*

U.S. Cl. 536—17.4 **17 Claims**

1. A process for making a compound of the formula 1:



1

wherein

positions 7,8 can be olefin as shown or dihydro-, dihydroxy-, hydroxyhalo-, epoxy-, dihalo-, hydrohalo-, hydrohydroxy-, or CXY (X,Y is halogen or hydrogen) adducts, and

wherein

R^1 is alkyl, aryl, acyl, silyl, phosphate, sulphate, hydrogen or glycoside,

R^2 is glycoside ester group, or β-D-glucuronyl group, and

R^3 is alkyl,

aryl,

hydrogen,

alkoxy,

aryloxy,

halogen,

both methyl and →O each attached to nitrogen of the ring, or $(CH_2)_nX$ where X is NRR^4, OR or halogen and wherein n is an integer and R and R^4 are hydrogen, alkyl, aryl or acyl,

the process comprising the steps of using acid catalysis to conjugate a glucuronate ester with morphine or substituted morphine to obtain a morphine glucuronate derivative, followed by replacement of R^1 (of formula 1) by hydrogen and ester hydrolysis of the glucuronate at R^2 (of formula 1).

5,621,088

PROCESS FOR DERIVATIZING POLYGLUCOSAMINES

James V. Gruber, Somerville, N.J., assignor to Amerchol Corporation, Edison, N.J.

Filed Apr. 10, 1995, Ser. No. 416,140

Int. Cl.[6] C07M *1/00*

U.S. Cl. 536—18.5 **21 Claims**

1. A process for making a covalently bonded polyglucosamine derivative which comprises:

(a) dispersing a salt of a polyglucosamine selected from the group consisting of chitosan lactate, chitosan epoxysuccinate, chitosan monochloroacetate, chitosan salicylate, chitosan itaconate, chitosan pyrrolidone carboxylate, chitosan glycolate, chitosan hydrochloride and mixtures thereof in an effective amount of an aqueous medium containing from about 1 to 50 weight percent caustic based on the weight of the aqueous medium to neutralize the polyglucosamine salt, promote swelling of the polyglucosamine and form a slurry of the neutralized polyglucosamine, said slurry having a pH of from about 7.5 to 14.0 and said neutralized polyglucosamine containing free amine groups;

(b) introducing an electrophilic organic reagent which is capable of reacting with the free amine groups of the neutralized polyglucosamine into the slurry;

(c) maintaining the slurry at a temperature and time effective to promote;

(i) the substitution of the electrophilic organic reagent onto the polyglucosamine to form a covalently bonded polyglucosamine derivative; and

(ii) the dissolution of the covalently bonded polyglucosamine derivative into the aqueous medium.

5,621,089

NUCLEIC ACID CONSTRUCTS FOR THE PRODUCTION OF A BACILLUS ALKALINE PROTEASE

Alan P. Sloma, Davis, Calif.; Helle Outtrup, Ballerup, Denmark; Claus Dambmann, Søborg, Denmark, and Dorrit A. Aaslyng, Roskilde, Denmark, assignors to Novo Nordisk Biotech, Inc., Davis, Calif., and Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation-in-part of Ser. No. 325,386, Oct. 26, 1994, Pat. No. 5,597,720. This application May 3, 1995, Ser. No. 434,255

Claims priority, application Denmark, May 27, 1992, 702/92

Int. Cl.[6] C12N *15/57;15/63;15/74;15/75*

U.S. Cl. 536—23.2 **23 Claims**



1. A nucleic acid construct comprising a nucleic acid sequence encoding an alkaline protease wherein said alkaline protease-encoding sequence comprises a region encoding a mature protease having the amino acid sequence of SEQ ID NO:8.

5,621,090

NUCLEIC ACIDS ENCODING SOLUBLE HUMAN FLK-2 EXTRACELLULAR DOMAIN

Ihor R. Lemischka, Princeton, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Continuation-in-part of Ser. No. 813,593, Dec. 24, 1991, Pat. No. 5,185,438, which is a continuation-in-part of Ser. No. 793,065, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 728,913, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,666, Apr. 2, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 906,397

Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—23.5 **2 Claims**

1. A recombinant nucleic acid molecule that encodes a protein comprising the extracellular domain of human flk-2 having the sequence shown in FIG. 1B and in SEQ. ID. NO. 3, wherein the protein lacks the flk-2 intracellular catalytic domain.

5,621,091

PROBES FOR AND NUCLEIC ACID ENCODING THE MUSCULAR DYSTROPHY PROTEIN, DYSTROPHIN

Louis M. Kunkel, Hyde Park; Anthony Monaco, Boston; Eric P. Hoffman, Newton, and Michel Koenig, Boston, all of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Division of Ser. No. 342,793, Nov. 21, 1994, Pat. No. 5,541,074, which is a continuation of Ser. No. 971,057, Nov. 3, 1992, abandoned, which is a continuation of Ser. No. 136,618, Dec. 22, 1987, Pat. No. 5,239,060, which is a continuation-in-part of Ser. No. 890,694, Jul. 25, 1986, abandoned. This application Mar. 17, 1995, Ser. No. 405,701

Int. Cl.[6] C12N *15/11;* **C07H** *21/04*

U.S. Cl. 536—23.5 **6 Claims**

1. A substantially pure, single-stranded nucleic acid which selectively hybridizes to a region of DNA on a human X chromosome between the deletion break point at Xp21.3 and the translocation break point at X;11, under conditions that are sufficiently stringent to prevent hybridization to other sequences.

5,621,092

Patent Not Issued For This Number

5,621,093

STEAM-STERILIZING SOLID HYALURONIC ACID

David A. Swann, Cambridge; Jing-wen Kuo, Wakefield, and Vladimir Pinsky, Brighton, all of Mass., assignors to Anika Research, Inc., Woburn, Mass.

Filed Jun. 6, 1995, Ser. No. 468,262

Int. Cl.[6] C07H *5/06;13/02;1/06*

U.S. Cl. 536—55.2 **7 Claims**

1. A method for sterilizing solid hyaluronic acid, comprising the step of steam-sterilizing the solid hyaluronic acid.

5,621,094

METHOD OF PRESERVING AGAROSE GEL STRUCTURE DURING DEHYDRATION BY ADDING A NON-REDUCING GLYCOSIDE OF A STRAIGHT-CHAIN SUGAR ALCOHOL

Bruce J. Roser, Balsham, and Camilo Colaco, Trumpington, both of England, assignors to Quadrant Holdings Cambridge Limited, Cambridge, England

Continuation of Ser. No. 965,384, Dec. 14, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,565

Claims priority, application United Kingdom, May 14, 1990, 9010742

Int. Cl.[6] C12Q *1/68;* **C07G** *3/00;17/00;* **C07H** *15/04*

U.S. Cl. 536—114 **11 Claims**

1. A method of preserving dehydrated agarose gel structure comprising dehydrating a hydrated agarose gel formed from a mixture comprising agarose and an amount of a non-reducing glycoside of a straight chain sugar alcohol sufficient to maintain gel structure upon dehydration wherein the non-reducing glycoside of a straight chain sugar alcohol does not form crystals during dehydration and wherein the agarose gel retains its structure upon rehydration.

5,621,095

CEPHALOSPORINS

Jean-François Chantot, Gressy en France; Solange Gouin d'Ambrieres, Paris; Daniel Humbert, Fontenay Sous Bois, and Jean-Georges Teutsch, Pantin, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 313,745, Sep. 27, 1994, Pat. No. 5,538,963, which is a division of Ser. No. 903,610, Jun. 24, 1992, Pat. No. 5,378,697. This application Jan. 31, 1996, Ser. No. 594,764

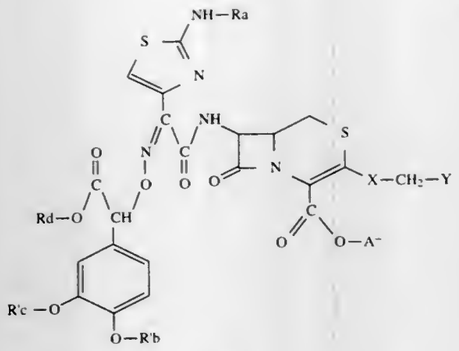
Claims priority, application France, Jun. 25, 1991, 91 07785

Int. Cl.[6] C07D *513/04*

U.S. Cl. 540—214 **1 Claim**

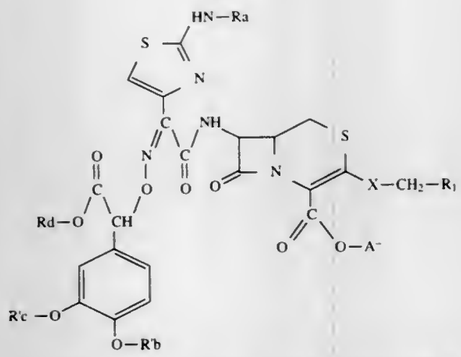
1. A compound having a formula selected from the group consisting of

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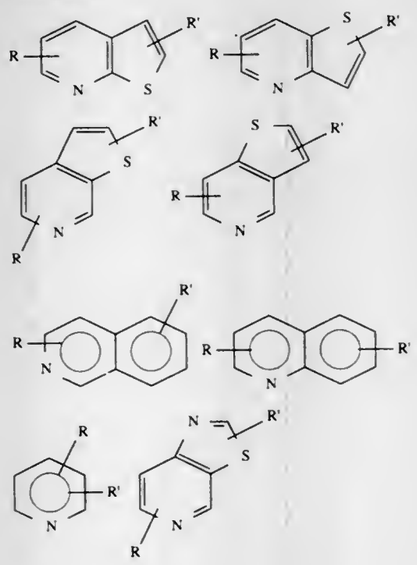
IV

and

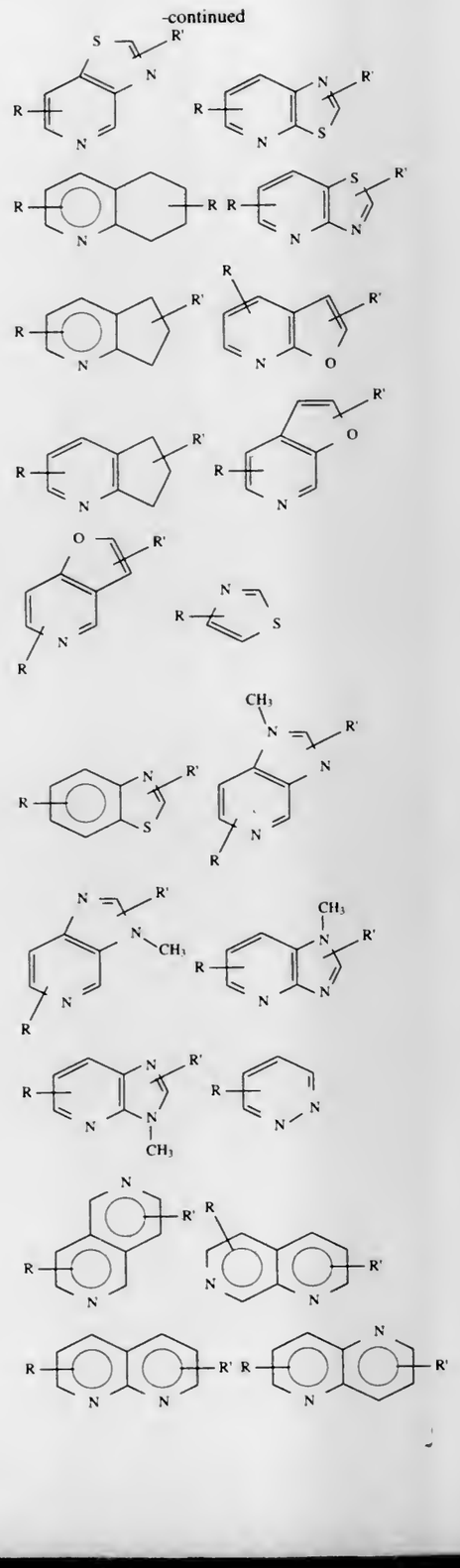


V

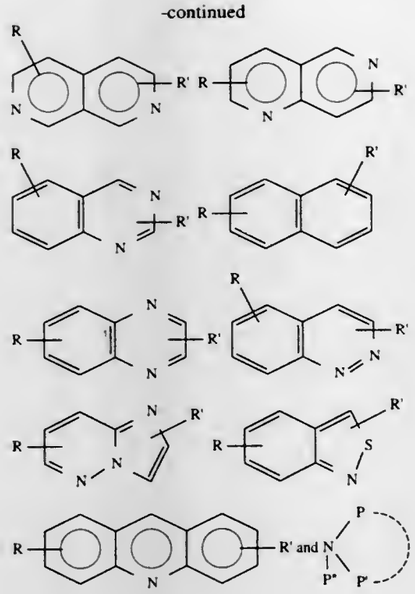
wherein R_4 is an amino protective group, Y is —OH or halogen A' is hydrogen or an easily clearable ester group, R'_b and R'_c are individually hydrogen or a hydroxy protective group, R_d is hydrogen or a easily clearable ester group and R_1 is selected from the group consisting of



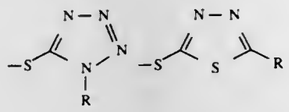
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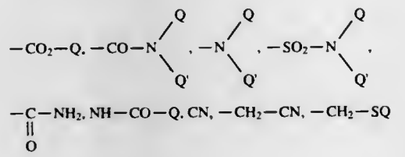
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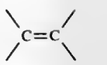
in the form of quaternary ammonium, or



R and R' are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen,



Q and Q' are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, P, P' and P" are individually alkyl of 1 to 4 carbon atoms optionally substituted by one of the substituents of R and R', the dotted line indicating that P and P' can optionally form with the nitrogen atom to which they are attached at heterocycle with 5 or 6 ring members, or R_1 is -S-Het wherein Het is selected from the group consisting of thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizaolyl, oxadizaolyl, tetrazolyl, imidazolyl, pyrazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, trazinyl and dihydrotriazinyl, all optionally substituted by at least one subtituent selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkyl or dialkylamino, hydroxy, oxo, alkylthio, free, esterified or salified carboxy and carboxyalkyl, X is a single bond or



in E or Z form.

5,621,096

PROCESS FOR PREPARING PENEMS

Walter Cabri, Rozzano, and Angelo Bedeschi, Milan, both of Italy, assignors to Pharmacia S.p.A., Milan, Italy

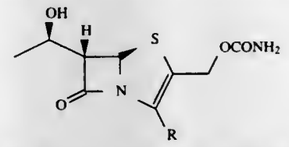
Continuation of Ser. No. 381,570, Jan. 31, 1995, abandoned. This application Nov. 16, 1995, Ser. No. 558,209

Claims priority, application United Kingdom, Feb. 9, 1904, 9402459

Int. Cl.[6] C07D *499/00*; C12P *37/00*

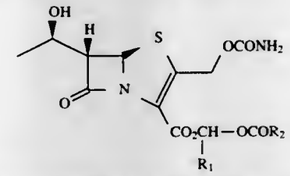
U.S. Cl. 540—310 **5 Claims**

1. A process for the preparation of a compound of the formula I



(I)

wherein R is a carboxy group or a carboxylate anion, by enzymatic hydrolysis with a lipase or an acylase immobilized or supported in an alcoholic solution, containing up to 10% of water, of a compound of the formula II



(II)

wherein R_1 represents a hydrogen atom or a C_1–C_6 alkyl group, and R_2 is a hydrogen atom, an alkyl, alkenyl, phenyl, phenylalkyl or phenylalkenyl group having from 1 to 18 carbon atoms or an alkoxy group.

5,621,097

OXIDATION OF ORGANOSULPHUR COMPOUNDS

Scott W. Brown, Standish; Angela M. Lee, West Derby, and Stephen C. Oakes, Widnes, all of United Kingdom, assignors to Solvay Interox Limited, Barrington, England

Filed Nov. 3, 1995, Ser. No. 553,009

Claims priority, application United Kingdom, Nov. 5, 1994, 9422391

Int. Cl.[6] C07D *499/48*

U.S. Cl. 540—342 **18 Claims**

1. In a process for oxidation of oxidisable organosulphur compounds, wherein a substrate organosulphur compound is contacted with hydrogen peroxide in a reaction medium in the presence of a solid supported polyacid catalyst, the improvement wherein the polyacid comprises one or more of tungsten, molybdenum and vanadium, and the support is selected from the group consisting of:

a) compounds of Group IIa, IIb, IIIb, IVa and IVb elements, and

b) strong base ion exchange resins.

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5,621,098
PROCESS FOR PREPARING BIS-INDOLYL MACROCYCLES

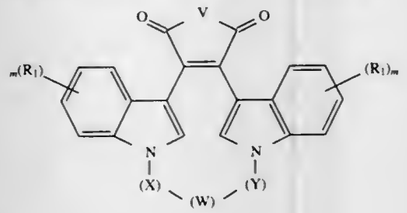
William F. Heath, Jr., Fishers; Michael R. Jirousek, Indianapolis; John H. McDonald, III, Carmel, and Christopher J. Rito, Mooresville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 413,735, Mar. 30, 1995, which is a continuation-in-part of Ser. No. 316,973, Oct. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 163,060, Dec. 7, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,657

Int. Cl.[6] C07D *498/22;223/14*

U.S. Cl. 540—472 12 Claims

1. A process of preparing a compound of the formula:



wherein:

V is —O— N—CH_3;

W is —O—, —S—, —SO—, —SO_2—, —CO—, C_2-C_6 alkylene, optionally protected substituted alkylene, C_2-C_6 alkenylene, -aryl-, -aryl$(CH_2)_mO$—, -heterocycle-, -heterocycle-$(CH_2)_mO$-, -fused bicyclic-, -fused bicyclic-$(CH_2)_mO$-, —NR_3—, —NOR_3—, —CONH—, or —NHCO—;

X and Y are independently C_1-C_4 alkylene, optionally protected substituted alkylene, or together X, Y, and W combine to form —$(CH_2)_n$—AA—;

R_1 is independently hydrogen, halo, C_1-C_4 alkyl, hydroxy, C_1-C_4 alkoxy, haloalkyl, nitro, NR_4R_5, or —NHCO(C_1-C_4 alkyl);

R_3 is hydrogen, $(CH_2)_m$aryl, C_1-C_4 alkyl, —COO(C_1-C_4 alkyl), —$CONR_4R_5$, —(C=NH)NH_2, —SO(C_1-C_4 alkyl), —$SO_2(NR_4R_5)$, or —SO_2(C_1-C_4 alkyl);

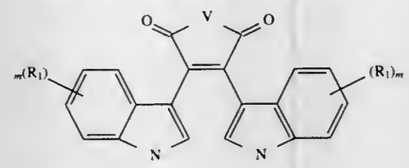
R_4 and R_5 are independently hydrogen, C_1-C_4 alkyl, phenyl, benzyl, or combine to the nitrogen to which they are bonded to form a saturated or unsaturated 5 to 6 member ring;

AA is an amino acid residue;

m is independently 0, 1, 2, or 3; and

n is independently 2, 3, 4, or 5; which comprises:

Combining a mixture of a compound at a concentration of about 1.5 molar to about 0.001 molar of the formula:



and an alkylating agent at a concentration of about 1.5 molar to about 0.001 molar of the formula:



wherein:

L is a leaving group;

with about 0.5 to about 10 equivalents of Cs_2CO_3 at a rate from about 0.1 mL/hour to about 2.0 mL/hour in a polar aprotic solvent.

5,621,099
SYNTHETIC METHOD OF HYMENIALDISINE AND ITS DERIVATIVES AND THEIR SYNTHETIC INTERMEDIATES, AND THOSE SYNTHETIC INTERMEDIATES

Hirokazu Annoura, Nagaokakyo, and Toshio Tatsuoka, Nishinomiya, both of Japan, assignors to Suntory Limited, Osaka, Japan

PCT No. PCT/JP95/00941, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/31462, PCT Pub. Date Nov. 23, 1995

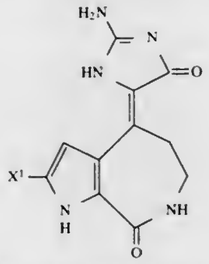
PCT Filed May 17, 1995, Ser. No. 586,638

Claims priority, application Japan, May 18, 1994, 6-104030

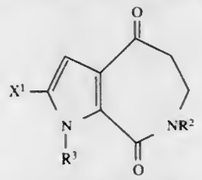
Int. Cl.[6] C07D *487/04*

U.S. Cl. 540—521 5 Claims

1. A process for producing hymenialdisine or its derivatives of the formula (I):



wherein X^1 is a halogen atom or a hydrogen atom, which process comprises reacting a compound having the formula (II):



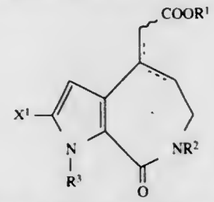
wherein R^2 is a trimethylsilylethoxymethyl group, benzyloxymethyl group, p-methoxybenzyloxymethyl group, methoxymethyl group, methoxyethoxymethyl group, tert-butoxymethyl group, p-anisyloxymethyl group, guaiacolmethyl group, tert-butyldimethylsiloxymethyl group, dimethyltexylsiloxymethyl group, or tert-butyldiphenylsiloxymethyl group, R^3 is a trimethylsilylethoxymethyl group, benzyloxymethyl group, p-methoxybenzyloxymethyl group, tert-butyldimethylsiloxymethyl group, dimethyltexylsiloxymethyl group, or tert-butyldiphenylsiloxymethyl, and X^1 is as defined above,

with a dialkylphosphoroacetic acid ester having the formula (III):

$$(R'O)_2POCH_2COOR^1 \quad \text{(III)}$$

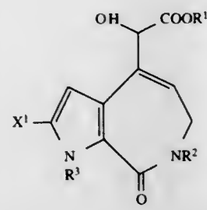
wherein R' is a substitutable alkyl group having 1 to 4 carbon atoms and R^1 is an alky group having 1 to 4 carbon atoms,

to synthesize a compound having the formula (IV):



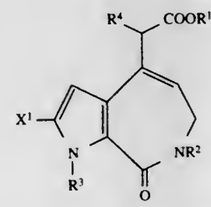
wherein R^1, R^2, R^3, and X^1 are as defined above, and the dotted line indicates a single bond existing at one or the other position;

reacting the compound having the formula (IV) with an oxidizing agent to synthesize the compound having the formula (V):

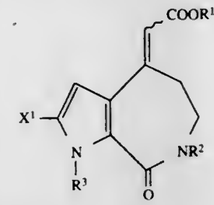


wherein R^1, R^2, R^3, and X^1 are as defined above;

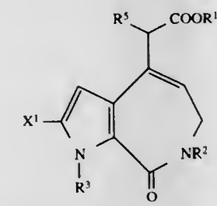
reacting the compound having the formula (V) with a halogenated alkylsulfonyl, halogenated arylsulfonyl, alkylsulfonyl acid anhydride, or arylsulfonyl acid anhydride to synthesize a compound of the formula (VIa):



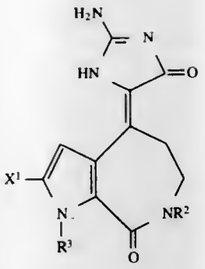
wherein R^1, R^2, R^3, and X^1 are as defined above and R^4 is an alkylsulfonyloxy group or arylsulfonyloxy group, or reacting a compound having the formula (IVa):



wherein R^1, R^2, R^3, and X^1 are as defined above with a halogenating agent to synthesize a compound having the formula (VIb):



wherein R^1, R^2, R^3, and X^1 are as defined above and R^5 is a halogen atom; reacting guanidine with a compound having the formula (VIa) or (VIb) to synthesize a compound having the formula (VII):



wherein R^2, R^3, and X^1 are as defined above;

and deprotecting the compound having the formula (VII).

5,621,100
K-252A DERIVATIVES FOR TREATMENT OF NEUROLOGICAL DISORDERS

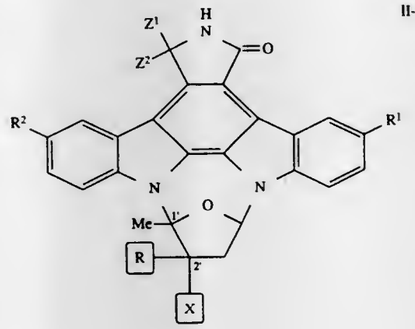
Michael E. Lewis, West Chester; James C. Kauer, Kennett Square; Nicola Neff, Wallingford; Jill Roberts-Lewis, West Chester, all of Pa.; Chikara Murakata, Hachioji, Japan; Hiromitsu Saito, Mishima, Japan; Yuzuru Matsuda, Koganei, Japan; Marcie A. Glicksman, Swarthmore, Pa.; Fumihiko Kanai, Machida, and Masami Kaneko, Sagamihara, both of Japan, assignors to Cephalon, Inc., West Chester, Pa., and Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 96,561, Jul. 22, 1993, Pat. No. 5,461,146, which is a continuation-in-part of Ser. No. 920,102, Jul. 24, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,540

Int. Cl.[6] C07D *498/22;* A61K *31/55*

U.S. Cl. 540—545 1 Claim

1. A composition of the formula (II-51):



II-51

wherein R^1 and R^2 are $CH_2SC_2H_5$; X is CO_2CH_3; R is OH; and Z^1 and Z^2 are H.

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5,621,101

PROTEIN KINASE INHIBITORS FOR TREATMENT OF NEUROLOGICAL DISORDERS

Michael E. Lewis, West Chester; James C. Kauer, Kennett Square; Nicola Neff, Wallingford; Jill Roberts-Lewis, West Chester, all of Pa.; Chikara Murakata, Hachioji, Japan; Hiromitsu Saito, Mishima, Japan; Yuzuru Matsuda, Koganei, Japan; Marcie A. Glicksman, Swarthmore, Pa.; Fumihiko Kanai, Machida, and Masami Kaneko, Sagamihara, both of Japan, assignors to Cephalon, Inc., West Chester, Pa., and Kyowa Hakko Kogyo, Tokyo, Japan

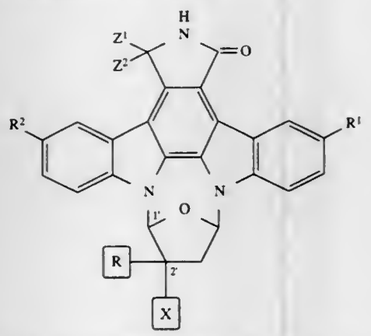
Continuation-in-part of Ser. No. 329,540, Oct. 26, 1994, Pat. No. 5,621,100, which is a continuation-in-part of Ser. No. 96,561, Jul. 22, 1993, Pat. No. 5,461,146, which is a continuation-in-part of Ser. No. 920,102, Jul. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,739

Int. Cl.[6] **C07D** *498/22;* **A61K** *31/55*

U.S. Cl. 540—545 **16 Claims**

1. A composition of the formula (II-14):

II-14



wherein R^1, R^2, Z^1, and Z^2 are each H; X is CH_2—NH—Ser; and R is OH.

5,621,102

PROCESS FOR PREPARING ENANTIOMERICALLY PURE XANTHINE DERIVATIVES

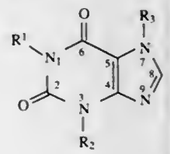
James A. Bianco, Seattle; Paul Woodson, Bothell; David Porubek, Edmonds, and Jack Singer, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 343,810, Nov. 22, 1994, abandoned, which is a division of Ser. No. 307,554, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 013,977, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,897

Int. Cl.[6] **C07D** *473/06;473/08;473/12*

U.S. Cl. 544—267 **10 Claims**

1. A method for preparing a final product, the final product being a compound having a formula:



wherein:

R_1 is a substantially pure resolved enantiomer ω-1, secondary alcohol-substituted alkyl (C_{5-8}) group; and

R_2 and R_3 are independently hydrogen atom or an alkyl (C_{1-12}) or alkoxyl (C_{1-12}), comprising the steps of:

preparing independently a chiral director, which determines the stereochemistry of reaction intermediate products and the final product, and a haloalkyl dialkoxy metaloid starting material, the metaloid starting material being terminally substituted by the halo leaving group;

allowing the chiral director and metaloid starting material to undergo a homologation reaction to form a chiral intermediate, the homologation reaction serving to add a halogenated methyl group and establish a chiral center;

reacting the chiral intermediate with a Grignard reagent to invert the chiral center of the chiral intermediate;

treating the chiral intermediate, having the inverted chiral center, to obtain a secondary alcohol;

protecting the secondary alcohol functional group with a side chain intermediate;

coupling the side chain intermediate with sodium theobromine to obtain a final product precursor; and

reacting the final product precursor under acidic conditions to form the final product, wherein the terminal halo leaving group of the metaloid starting material remains unreacted until the side chain intermediate and sodium theobromine are coupled to form the final product.

5,621,103

TETRAHYDROPYRIDINE DERIVATIVE HAVING SUBSTITUENTS ON THREE RINGS

Hiromu Kawakubo; Tadashi Nagatani, both of Nobeoka, and Showa Ueki, deceased, late of Fukuoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00460, § 371 Date Dec. 28, 1994, § 102(e) Date Dec. 28, 1994, PCT Pub. No. WO93/21189, PCT Pub. Date Oct. 28, 1993

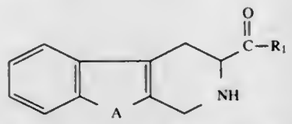
PCT Filed Apr. 10, 1992, Ser. No. 307,779

Int. Cl.[6] **C07D** *495/04;471/04;* **A61K** *31/44*

U.S. Cl. 546—80 **2 Claims**

1. A tetrahydropyridine derivative represented by the following formula (1):

(1)



wherein A represents a sulfur atom, a sulfoxide group or a sulfone group; R_1 represents a piperonylamino group, a 2-methoxybenzylamino group, a 3-methoxybenzylamino group, a 4-methoxybenzylamino group, a 2,3-dimethoxybenzylamino group, a 2,4-dimethoxybenzylamino group, a 3,4-dimethoxybenzylamino group, a 3,5-dimethoxybenzylamino group, a 2,4,6-trimethoxybenzylamino group, a 3,4,5-trimethoxybenzylamino group, an α-methylbenzylamino group, a 4-methylbenzylamino group, a 4-(trifluoromethyl)benzylamino group, a 4-(isopropyl)benzylamino group, or a 4-(tert-butyl)benzylamino group, or a pharmaceutically acceptable acid addition salt thereof.

5,621,104

SUBSTITUTED 3-PHENANTHRIDINONE DERIVATIVES AS 5-ALPHA-REDUCTASE INHIBITORS

Donald W. Graham, Mountainside, and William K. Hagmann, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/03080, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/21614, PCT Pub. Date Sep. 29, 1994

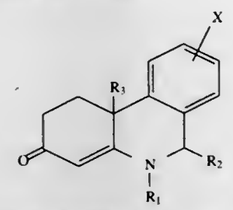
Continuation of Ser. No. 36,645, Mar. 24, 1993, abandoned. This PCT application Mar. 22, 1994, Ser. No. 522,350

Int. Cl.[6] **C07D** *221/12;401/12*

U.S. Cl. 546—108 **1 Claim**

1. A compound of the formula I

I



or a pharmaceutically acceptable salt or ester thereof,

wherein

R_1 and R_3 are independently selected from the group consisting of hydrogen and C_{1-6} alkyl;

R_2 is selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} alkoxyl and C_{1-6} alkylcarbonyloxy;

X is selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} alkoxyl, C_{1-6} alkoxy-C_{1-6} alkyl, halogen, cyano, C_{1-6} alkylcarbonyl, Ar-carbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylaminocarbonyl, Ar-aminocarbonyl and di-C_{1-6} alkylaminocarbonyl; and

Ar is phenyl or pyridyl.

5,621,105

PREPARATION OF 7-(AMINOMETHYL-OXA-7-AZA-BICYCLO[3.3.0]OCT-7-YL) QUINOLONECARBOXYLIC AND 7-(AMINOMETHYL-OXA-7-AZA-BICYCLO[3.3.0]OCT-7-YL NAPHTHYRIDONECARBOXYLIC ACID DERIVATIVES

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Klaus Grohe, Odenthal; Klaus-Dieter Bremm, Wuppertal; Rainer Endermann, Wuppertal, and Karl G. Metzger, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 320,035, Oct. 7, 1994, which is a division of Ser. No. 124,129, Sep. 20, 1993, Pat. No. 5,395,944. This application Jun. 6, 1996, Ser. No. 660,022

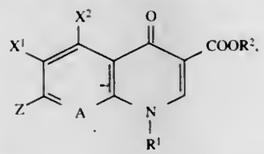
Claims priority, application Germany, Sep. 25, 1992, 42 32 172.7

Int. Cl.[6] **C07D** *471/04;491/048*

U.S. Cl. 546—167 **3 Claims**

1. A process for the preparation of a compound of the formula

(I)



in which

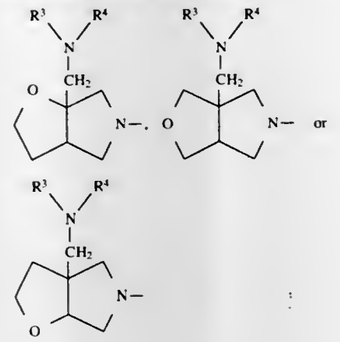
X^1 represents halogen or nitro,

X^2 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen or methyl,

R^1 represents alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, which is optionally substituted by halogen, bicyclo[1.1.1]pent-1-yl, 1,1-dimethylpropargyl, 3-oxetanyl, 2-hydroxyethyl, 2-fluoroethyl, methoxy, amino, methylamino, ethylamino, dimethylamino, or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms, which is optionally substituted by hydroxyl, methoxy, amino, methylamino or dimethylamino, or (5-methyl-2-oxo-1,3-diaxol-4-yl)-methyl,

Z represents a residue of the structure



in which

R^3 represents hydrogen, methyl or ethyl,

R^4 represents hydrogen, acyl having 1 to 3 carbon atoms, alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety, or methyl, and

A represents N or C—R^5, in which

R^5 represents hydrogen, halogen, methyl, alkenyl having 2 to 3 carbon atoms, alkinyl having 2 to 3 carbon atoms, hydroxyl or methoxy, or, together with R^1, can form a bridge of the structure

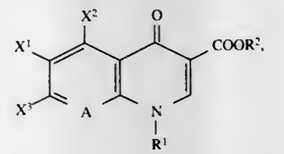
$-O-CH_2-{}^{*}CH(CH_3)-$, $-S-CH_2-{}^{*}CH(CH_3)-$ or

$-CH_2-CH_2-{}^{*}CH(CH_3)-$ $-O-CH_2-N(R^6)-$,

in which R^6 denotes hydrogen, methyl or formyl,

which comprises reacting a compound of the formula

(II)



in which

X^3 represents halogen,

with a compound of the formula

Z'—H (III)

in which

Z' has the meaning given above for Z or represents a residue Z whose amino group is blocked by a protective group,

optionally in the presence of an acid-capturing agent, and optionally eliminating any protective group which may be present.

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5,621,106

METHOD OF MAKING IMMUNOSTIMULATING SWAINSONINE ANALOGS

David Dime, Toronto, Canada, assignor to Toronto Research Chemicals, Inc., Downsview, Canada

Division of Ser. No. 232,231, Jul. 12, 1994, Pat. No. 5,466,809, which is a continuation-in-part of Ser. No. 788,583, Nov. 6, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 456,764

Int. Cl.[6] C07D *471/04*

U.S. Cl. 546—183 **6 Claims**

1. A method of making an analog of swainsonine comprising the steps of treating swainsonine with dialkyltin oxide in a solvent to yield a cyclic tin derivative, reacting said tin derivative with an agent selected from the group consisting of an acylating agent, a protecting agent and an alkylating agent to result in an analog of swainsonine which is selectively derivatized at the C2 hydroxyl group,

wherein when a protecting agent is employed, said protecting agent forms a protected compound with hydroxyl groups at the 1 and 8 positions and

said protected compound is subsequently derivatized at the C2 hydroxyl group by reacting said protected compound with an alkylating or acylating agent and then removing the protecting groups therefrom by hydrolysis or hydrogenolysis.

5,621,107

SULFOPYRIDONES AND A PROCESS OF MAKING THEREFOR

Gunther Lamm, Hassloch; Helmut Reichelt, Neustadt, and Matthias Wiesenfeldt, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

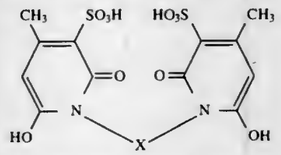
Division of Ser. No. 432,815, May 2, 1995, Pat. No. 5,554,737. This application Dec. 28, 1995, Ser. No. 580,124

Claims priority, application Germany, May 7, 1994, 44 16 266.9

Int. Cl.[6] C07D *211/36;211/40;211/54;211/56;213/04*

U.S. Cl. 546—188 **7 Claims**

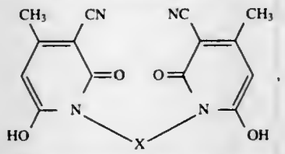
1. A sulfopyridone of the formula V



(V)

where X is C_2–C_8-alkylene with or without interruption by an ether oxygen atom, in the form of the free acid or its salts.

4. A process for preparing the sulfopyridone of claim 1, which comprises reacting a cyanopyridone of the formula VI



(VI)

where X is as defined in claim 1, with concentrated sulfuric acid at from 80° to 130° C.

5,621,108

PROCESSES AND INTERMEDIATES FOR PREPARING MACROCYCLES

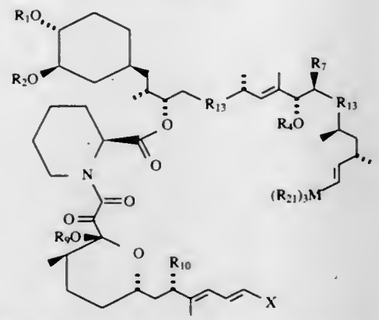
Amos B. Smith, III, Merion; Stephen M. Condon; Johnnie L. Leazer, Jr., both of Philadelphia; Robert E. Maleczka, Media; John A. McCauley, Philadelphia, all of Pa., and James W. Leahy, San Leandro, Calif., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Dec. 5, 1994, Ser. No. 349,413

Int. Cl.[6] C07D *405/06*

U.S. Cl. 546—207 **10 Claims**

1. A compound of formula VII:



VII

wherein:

R_1, R_4, and R_9 are, independently, hydrogen or a hydroxyl protecting group;

R_2 is alkyl having from one to about six carbon atoms;

R_7 is hydrogen or alkoxy having one to about six carbon atoms;

R_{10} is H, OH, or alkoxy having one to about six carbon atoms;

R_{13} is a carbonyl group or a protected derivative thereof;

R_{21} is alkyl having one to about six carbon atoms;

M is a tetravalent metal atom; and

X is halogen.

5,621,109

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

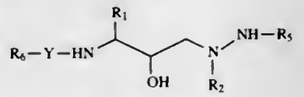
Daniel W. Norbeck, Crystal Lake; Hing L. Sham, Mundelein; Dale J. Kempf, Libertyville, and Chen Zhao, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 185,666, Feb. 1, 1994, Pat. No. 5,461,067, which is a continuation-in-part of Ser. No. 23,226, Feb. 25, 1993, abandoned. This application May 31, 1995, Ser. No. 455,922

Int. Cl.[6] C07D *263/34;277/54;413/12;417/12*

U.S. Cl. 548—182 **10 Claims**

1. A compound of the formula:



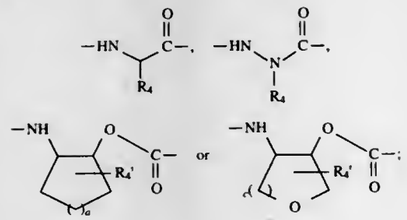
wherein R_1 and R_2 are independently selected from:

(i) hydrogen,
(ii) loweralkyl,
(iii) aryl,
(iv) thioalkoxyalkyl,
(v) (aryl)alkyl,
(vi) cycloalkyl,
(vii) cycloalkylalkyl,
(viii) hydroxyalkyl,
(ix) alkoxyalkyl,
(x) aryloxyalkyl,
(xi) haloalkyl,
(xii) carboxyalkyl,

(xiii) alkoxycarbonylalkyl,
(xiv) aminoalkyl,
(xv) (N-protected)aminoalkyl,
(xvi) alkylaminoalkyl,
(xvii) ((N-protected)(alkyl)amino)alkyl,
(xviii) dialkylaminoalkyl,
(xix) guanidinoalkyl,
(xx) loweralkenyl,
(xxi) heterocyclic,
(xxii) (heterocyclic)alkyl),
(xxiii) arylthioalkyl,
(xxiv) arylsulfonylalkyl,
(xxv) (heterocyclic)thioalkyl,
(xxvi) (heterocyclic)sulfonylalkyl,
(xxvii) (heterocyclic)oxyalkyl,
(xxviii) arylalkoxyalkyl,
(xxix) arylthioalkoxyalkyl,
(xxx) arylalkylsulfonylalkyl,
(xxxi) (heterocyclic))alkoxyalkyl,
(xxxii) (heterocyclic)thioalkoxyalkyl,
(xxxiii) (heterocyclic)alkylsulfonylalkyl,
(xxxiv) cycloalkyloxyalkyl,
(xxxv) cycloalkylthioalkyl,
(xxxvi) cycloalkylsulfonylalkyl,
(xxxvii) cycloalkylalkoxyalkyl,
(xxxviii) cycloalkyithioalkoxyalkyl,
(xxxix) cycloalkylalkylsulfonylalkyl,
(xl) aminocarbonyl,
(xli) alkylaminocarbonyl,
(xlii) dialkylaminocarbonyl,
(xliii) aroylalkyl,
(xliv) (heterocyclic)carbonylalkyl,
(xlv) polyhydroxyalkyl,
(xlvi) aminocarbonylalkyl,
(xlvii) alkylaminocarbonylalkyl,
(xlviii) dialkylaminocarbonylalkyl,
(xlix) aryloxyalkyl and
(l) alkylsulfonylalkyl,

wherein heterocyclic is selected from thiazolyl, isothiazolyl, oxazolyl, isooxazolyl, furanyl, thienyl, tetrahydrofuranyl, tetrohydrothienyl, and tetrohydropyranyl and wherein the heterocyclic is unsubstituted or monosubstituted or disubstituted with substituents independently selected from hydroxy, halo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, —COOH, —SO_3H, loweralkenyl and loweralkyl:

Y is



a is 0–3;

c is 1–2;

R_4' is hydrogen or loweralkyl;

R_4 is selected from:

(i) hydrogen,
(ii) loweralkyl,
(iii) aryl,
(iv) thioalkoxyalkyl,
(v) (aryl)alkyl,
(vi) cycloalkyl,
(vii) cycloalkylalkyl,
(viii) hydroxyalkyl,
(ix) alkoxyalkyl,
(x) aryloxyalkyl,
(xi) haloalkyl,
(xii) carboxyalkyl,
(xiii) alkoxycarbonylalkyl,
(xiv) aminoalkyl,
(xv) (N-protected)aminoalkyl,
(xvi) alkylaminoalkyl,
(xvii) ((N-protected)(alkyl)amino)alkyl,
(xviii) dialkylaminoalkyl,
(xix) guanidinoalkyl,
(xx) loweralkenyl,
(xxi) heterocyclic,
(xxii) (heterocyclic)alkyl),
(xxiii) arylthioalkyl,
(xxiv) arylsulfonylalkyl,
(xxv) (heterocyclic)thioalkyl,
(xxi) (heterocyclic)sulfonylalkyl,
(xxvii) (heterocyclic)oxyalkyl,
(xxviii) arylalkoxyalkyl,
(xxix) arylthioalkoxyalkyl,
(xxx) arylalkylsulfonylalkyl,
(xxxi) (heterocyclic))alkoxyalkyl,
(xxxii) (heterocyclic)thioalkoxyalkyl,
(xxxiii) (heterocyclic)alkylsulfonylalkyl,
(xxxiv) cycloalkyloxyalkyl,
(xxxv) cycloalkylthioalkyl,
(xxxvi) cycloalkylsulfonylalkyl,
(xxxvii) cycloalkylalkoxyalkyl,
(xxxviii) cycloalkylthioalkoxyalkyl,
(xxxix) cycloalkylalkylsulfonylalkyl,
(xl) aminocarbonyl,
(xli) alkylaminocarbonyl,
(xlii) dialkylaminocarbonyl,
(xliii) aroylalkyl,
(xliv) (heterocyclic)carbonylalkyl,
(xlv) polyhydroxyalkyl,
(xlvi) aminocarbonylalkyl,
(xlvii) alkylaminocarbonylalkyl,
(xlviii) dialkylaminocarbonylalkyl,
(xlix) aryloxyalkyl and
(l) alkylsulfonylalkyl,

wherein heterocyclic is selected from, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, furanyl, thienyl, tetrahydrofuranyl, tetrahydrothienyl and tetrahydropyranyl and wherein the heterocyclic is unsubstituted or monosubstituted or disubstituted with substituents independently selected from hydroxy, halo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, —COOH, —SO_3H, loweralkenyl and loweralkyl;

R_5 and R_6 are —C(T)—G—R_7 wherein at each occurrence T is independently selected from O and S; at each occurrence G is independently selected from —CH_2—, —O—, —S— and —N(R_8)— wherein at each occurrence R_8 is independently selected from hydrogen, loweralkyl and cycloalkyl; and at each occurrence R_7 is independently selected from:

(i) heterocyclic and (ii) (heterocyclic)alkyl, wherein at each occurrence the heterocyclic is independently selected from thiazolyl and oxazolyl wherein the thiazolyl or oxazolyl ring is unsubstituted or monosubstituted or disubstituted with substituents independently selected from hydroxy, halo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, —COOH, —SO_3H, loweralkenyl and loweralkyl; or

a pharmaceutically acceptable salt, ester or prodrug thereof.

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5,621,110

PROCESS FOR PREPARING N-ACYLATED 4-HYDROXYPENYLAMINE DERIVATIVES WITH ANALGESIC PROPERTIES

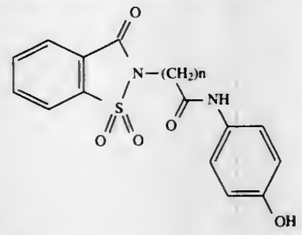
Nicolas G. Bazan, New Orleans, La., and Julio Alvarez-Builla Gomez, Alcala De Henares, Spain, assignors to LSU Medical Center Foundation, New Orleans, La.

Division of Ser. No. 426,234, Apr. 21, 1995, Pat. No. 5,554,636. This application Sep. 18, 1995, Ser. No. 529,549

Int. Cl.[6] C07D *275/06*

U.S. Cl. 548—210 **1 Claim**

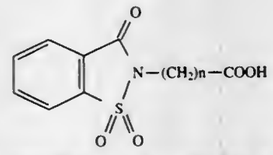
1. A process for preparing a compound of formula I



I

comprising:

reacting a compound of formula IV, wherein n is a number from 1 to 5,



IV

with 4-aminophenol, to give a compound of formula I.

5,621,111

PROCESS FOR THE PREPARATION OF SIDE CHAIN-FLUORINATED ALKYLOXAZOLES, AND NEW SIDE CHAIN-FLUORINATED ALKYLOXAZOLES

Norbert Lui, Cologne, and Albrecht Marhold, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

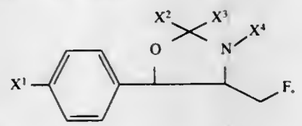
Filed Oct. 17, 1995, Ser. No. 544,245

Claims priority, application Germany, Oct. 24, 1994, 44 37 932.3

Int. Cl.[6] C07D *263/04;263/14*

U.S. Cl. 548—215 **8 Claims**

1. A process for the preparation of a side chain-fluorinated alkyloxazole of the formula



(I)

in which

X^1 represents hydrogen, nitro, C_1–C_6-alkylthio, C_1–C_6-alkylsulpho, C_1–C_6-alkylthio substituted by fluorine, C_1–C_6-alkylsulphonyl substituted by fluorine C_1–C_6-alkoxy substituted by fluorine,

X^2 represents C_1–C_6-alkyl, C_1–C_6-halogenoalkyl, C_5–C_7-cycloalkyl, C_2–C_6-alkenyl, C_2–C_6-alkinyl, C_1–C_6-alkoxy, C_7–C_{14}-aralkyl, C_8–C_{15}-aralkenyl, C_6–C_{12}-aryl or a heterocyclic radical having 4 to 11 C atoms and 1 to 3 oxygen, sulphur and/or nitrogen atoms,

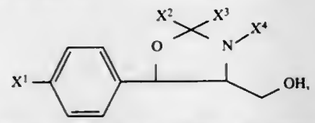
X^3 represents hydrogen or one of the radicals indicated in the case of X^2 or

X^2 and X^3 together represent an oxygen atom and

X^4 represents hydrogen or

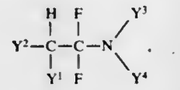
X^3 and X^4 together represent a covalent bond,

in which the appropriate hydroxyalkyloxazole of the formula (II)



(II)

in which the radicals X^1 to X^4 have the meaning indicated in formula (I), is reacted with an α,α-difluoroalkylamine of the formula (III)



(III)

in which

Y^1 represents fluorine or chlorine,

Y^2 represents fluorine, chlorine or trifluoromethyl and

Y^3 and Y^4 independently of one another represent C_1–C_6-alkyl or

Y^3 and Y^4 together represent a saturated or unsaturated hydrocarbon chain having 4 to 5 C atoms,

in which process the reaction is carried out at pressures of 0.1 bar to atmospheric pressure and in the presence of an inert solvent boiling at above 100° C. (at normal pressure).

5,621,112

PROCESS FOR THE PREPARATION OF THE HERBICIDE ETHYL α-2-DICHLORO-5-[4-(DIFLUOROMETHYL)-4,5-DIHYDRO-3-METHYL-5-OXO-1H-1,2,4-TRIAZOL-1-YL]-4-FLUOROBENZENEPROPANOATE

John W. Ager, Princeton, N.J., and Craig A. Polsz, Newtown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 18, 1996, Ser. No. 683,444

Int. Cl.[6] C07D *249/12*

U.S. Cl. 548—263.2 **3 Claims**

1. A process for the preparation of ethyl α2-dichloro-5-[4-(difluoro-methyl)- 4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]-4-fluorobenzenepropionate (the Product) by the simultaneous diazotization of 4-difluoro-methyl- 4,5-dihydro-3-methyl-5-oxo-1-(5-amino-2-fluoro-4-chlorophenyl)-1H-1,2,4-triazole (the Amine) and arylation of ethyl acrylate with the diazotized Amine, which consists of the following steps in which the amounts of all components other than the Amine are given in molar equivalents relative to one molar equivalent of the Amine:

(a) adding to a stirred solution of the Amine in 10 to 30 equivalents of acetone 0.05 to 0.5 equivalents of cuprous chloride;

(b) cooling the solution to a temperature in the range of −20° to 30° C. and maintaining the temperature in that range while stirring and adding sufficient hydrochloric acid to convert the Amine to the hydrochloride salt;

(c) maintaining the temperature below about 10° C. while adding to the resultant slurry, with stirring, 5 to 20 equivalents of ethyl acrylate;

(d) bringing the temperature of the stirred reaction mixture to about 0° C. and adding 1.0 to 2.0 equivalents of sodium nitrite over a period of 1 to 6 hours while maintaining the temperature below about 20° C. and then continuing stirring for 15 to 90 minutes;

(e) recovering the Product.

5,621,113

4-[(THIEN-2-YL)METHYL]-IMIDAZOLE ANALGESICS

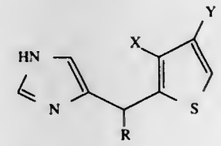
Robert E. Boyd, Horsham; Chris R. Rasmussen, Lansdale, both of Pa., and Jeffrey B. Press, Brewster, N.Y., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 28, 1996, Ser. No. 625,447

Int. Cl.[6] C07D *411/06*

U.S. Cl. 548—315.1 **2 Claims**

1. A compound of the formulae:



wherein

R is hydrogen or methyl,

X is hydrogen, C_{1-4}alkyl, bromine or chlorine, and

Y is hydrogen, C_{1-4}alkyl, bromine or chlorine;

with the proviso that X and Y are not both simultaneously hydrogen.

5,621,114

METHOD FOR PREPARING 1, 2, 3, 3A, 8, 8A-HEXAHYDRO-3A, 8 (AND 1, 3A, 8)—DI (AND TRI) METHYLPYRROLO[2,3-B] INDOLES

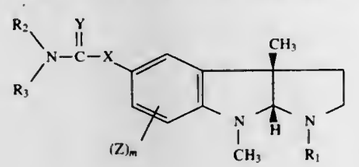
Richard L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, all of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Continuation of Ser. No. 967,534, Oct. 28, 1992, Pat. No. 5,541,216, which is a continuation of Ser. No. 828,751, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 252,309, Oct. 3, 1988, abandoned, which is a division of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 479,197

Int. Cl.[6] C07D *487/04*

U.S. Cl. 548—429 **4 Claims**

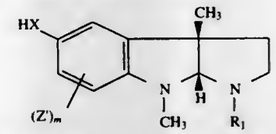
1. A method of preparing a compound of the formula



(II')

where X is O or S; R_1 is H; Y is O or S; R_2 is bicycloalkyl, cycloalkenyl, arylloweralkyl, heteroaryl, or heteroaryllower-alkyl; R_3 is H or alkyl; each Z is independently hydrogen, loweralkyl, halogen, nitro, amino, loweralkylcarbonylamino, arylcarbonylamino, loweralkoxycarbonylamino, or loweralkylamino; and m is 1 or 2, comprising:

reacting a compound of the formula



(I')

wherein each Z' is independently hydrogen, loweralkyl, halogen, or nitro; R_1, X, and m are as defined above; and the nitrogen at the 1-position of formula (II') is protected, with 1,1'-carbonyldiimidazole or 1,1'-thiocarbonyldiimidazole;

reacting the resultant product with a secondary amine of the formula R_2R_3NH, wherein R_2 and R3 are as defined above, to afford said compound of formula (II'), wherein one or both of the groups $(Z)_m$ is independently hydrogen, loweralkyl, halogen, or nitro, and the nitrogen at the 1-position of formula (II') is protected;

optionally reducing said compound of formula (II'), wherein one or both of the groups $(Z)_m$ is nitro and the nitrogen at the 1-position of formula (II') is protected, to afford said compound of formula (II'), wherein one or both of the groups $(Z)_m$ is amino, and the nitrogen at the 1-position of formula (II') is protected;

optionally reacting said compound of formula (II') wherein one or both of the groups $(Z)_m$ is amino, and the nitrogen at the 1-position of formula (II') is protected, with an acylating agent or alkylating agent to afford said compound of formula (II'), wherein one or both of the groups $(Z)_m$ is loweralkylcarbonylamino, arylcarbonylamino, loweralkoxycarbonylamino, or loweralkylamino, and the nitrogen at the 1-position of formula (II') is protected; and

deprotecting the nitrogen at the 1-position of formula (II').

5,621,115

METHODS FOR PREPARING 5-AROYL-1,2-DIHYDRO-3H-PYRROLO-[1,2-A]PYRROLE-1-CARBOXYLIC ACIDS

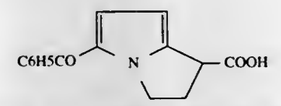
Ralph A. Lessor, New Providence; Linas V. Kudzma, Annandale, and Keith Ramig, Orange, all of N.J., assignors to Ohmeda Pharmaceutical Products Division Inc., Liberty Corner, N.J.

Filed Feb. 21, 1996, Ser. No. 604,551

Int. Cl.[6] C07D *487/04;207/12;207/16*

U.S. Cl. 548—453 **22 Claims**

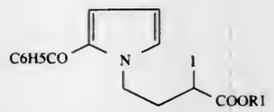
1. A method for preparing a compound represented by formula (I):



(I)

which comprises the sequential steps of cyclizing, via a free radical ring closure reaction, and hydrolyzing a compound represented by formula (IV):

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(IV)

wherein R_1 is lower alkyl and recovering said compound of formula (I).

5,621,116

1-AMINO-3,3-BIS(THIENYLALKYL)-1,3-DIHYDRO-2H-INDOL-2-ONES

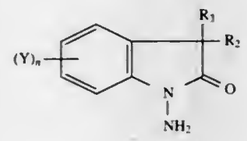
Richard C. Effland, Bridgewater, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 243,654, May 13, 1994, Pat. No. 5,464,846, which is a continuation of Ser. No. 961,947, Oct. 16, 1992, abandoned, which is a division of Ser. No. 736,366, Jul. 26, 1991, Pat. No. 5,179,119, which is a division of Ser. No. 535,640, Jun. 11, 1990, Pat. No. 5,053,511, which is a continuation-in-part of Ser. No. 388,437, Aug. 2, 1989, Pat. No. 5,006,537. This application Apr. 27, 1995, Ser. No. 429,445

Int. Cl.[6] C07D *409/06*

U.S. Cl. 548—468 **3 Claims**

1. A compound of the formula



wherein R_2 and R_3 are independently thienylmethyl or thienylethyl; Y is hydrogen, halogen, hydroxy, loweralkyl, loweralkoxy, nitro, amino, or trifluoromethyl; n is 1, 2, or 3; the geometric isomer thereof, the optical isomer thereof, the racemic mixture thereof, or the pharmaceutically acceptable acid addition salt thereof.

5,621,117

METHOD FOR THE RACEMIZATION OF ENANTIOMERS OF α-LIPOIC ACID

Horst Bethge, Hanau; Roland Moeller, Hammersbach; Gerhard Sator, Dieburg; Stefan Merget, Rodgau, and Thomas Beisswenger, Radebeul, all of Germany, assignors to ASTA Medica Aktiengesellschaft, Dresden, Germany

Filed Jul. 20, 1995, Ser. No. 504,557

Claims priority, application Germany, Jul. 30, 1994, 44 27 079.8

Int. Cl.[6] C07D *339/04*

U.S. Cl. 549—39 **16 Claims**

14. A method for the racemization of pure L-(−)-α-lipoic acid, said method comprising racemizing the pure L-(−)-α-lipoic acid in at least one inert organic solvent at temperatures of between 110° C. and 200° C. at pressures of from normal pressure up to 50 bar for a reaction time of 10 to 48 hours, distilling off said inert organic solvent while maintaining a temperature between 40° to 50° C. to produce an oily residue, adding at least two inert organic solvents to said oily residue and heating at 40° to 50° C. until a clear yellow solution is obtained, adding a cellulose filtration accelerator to said clear yellow solution and stirring for approximately 5 minutes, filtering and washing with said at least two inert organic solvents, cooling to at least about 5° C. for the α-lipoic acid to crystallize out, further cooling to about −5° C. followed by stirring at about −5° C. for about 2 hours, filtering and rewashing using at least one inert organic solvent, and drying under vacuum at 20° to 25° C.

5,621,118

OXIDATION PROCESS

Craig W. Jones, Whittle Hall; William R. Sanderson, Penketh, and John P. Sankey, Latchford, all of United Kingdom, assignors to Solvay Interox Limited, Cheshire, England

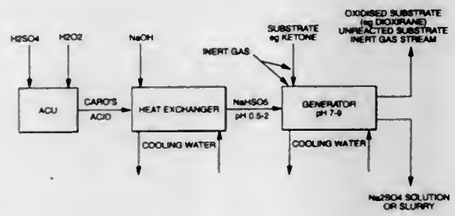
PCT No. PCT/GB92/01879, § 371 Date Apr. 14, 1994, § 102(e) Date Apr. 14, 1994, PCT Pub. No. WO93/08144, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 14, 1992, Ser. No. 211,660

Claims priority, application United Kingdom, Oct. 19, 1991, 9122223

Int. Cl.[6] C07B *33/00;* **C07D** *321/00;* **D21C** *9/16*

U.S. Cl. 549—200 **22 Claims**



1. A process for the oxidation of a substrate susceptible to nucleophilic oxidation by reacting, in a reaction zone, a monopersulfate with the substrate which comprises the following steps:

(a) neutralizing an aqueous Caro's acid solution with at least an equimolar equivalent of base in said reaction zone by a process which comprises (1) reacting aqueous Caro's acid solution with less than an equimolar equivalent of base in said reaction zone to form partially neutralized Caro's acid solution containing monopersulfate and generate heat, (2) removing a portion of said heat generated in step (a)(1) to form cooled partially neutralized Caro's acid solution in said reaction zone, and (3) reacting said cooled partially neutralized Caro's acid solution with additional base in said reaction zone to fully neutralize the Caro's acid and form a final solution, which final solution has a pH of from 7 to 9, and wherein the total amount of base in steps (a)(1) and (a)(3) is equal to said at least equimolar equivalent; and

(b) introducing said substrate into said reaction zone during step (a) when the aqueous Caro's acid solution is at least partially neutralized and thereby contains monopersulfate, and reacting said substrate and said monopersulfate in said reaction zone at an approximately neutral or alkaline pH to form oxidized substrate.

5,621,119

DI(METH)ACRYLATES HAVING CYCLIC CARBONATE GROUPS

Wolfgang Podszun, Köln; Klaus Schäpers, Pulheim; Werner Finger, Neuss; Ludger Heiliger, Leverkusen, and Carl Casser, Köln, all of Germany, assignors to Heraeus Kulzer GmbH & Co., KG, Hanau, Germany

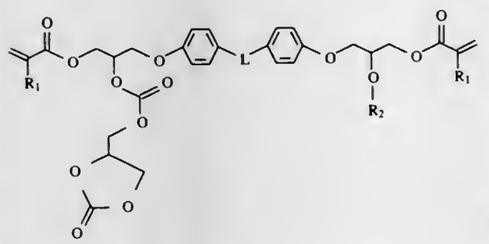
Filed Jul. 14, 1995, Ser. No. 502,340

Claims priority, application Germany, Jul. 22, 1994, 44 26 129.2

Int. Cl.[6] C07D *317/36;* **A61C** *13/23*

U.S. Cl. 549—229 **7 Claims**

1. Compounds of the formula (II)

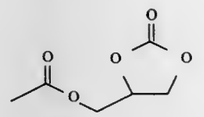


(II)

wherein

R_1 independently of one mother represent hydrogen or methyl,

R_2 represents hydrogen or



and

L represents a direct C—C bond, —O—, —S—, —SO_2—, —CO— or a C_1- to C_{15}-alkylene radical which may be substituted by alkyl, hydroxyl or halogen, or a cyclohexylidene radical which may be substituted by methyl up to 3 times.

5,621,120

PROCESS FOR THE MANUFACTURE OF FORM 1 RANITIDINE HYDROCHLORIDE

Jag M. Khanna; Naresh Kumar; Brij Khera, all of New Delhi, and Mahavir S. Khanna, Delhi, all of India, assignors to Ranbaxy Laboratories Limited, New Delhi, Ind.

Filed Jun. 24, 1994, Ser. No. 265,307

Claims priority, application Ind., May 13, 1994, 589/94

Int. Cl.[6] C07D *307/02*

U.S. Cl. 549—492 **23 Claims**

1. A process for producing stable Form 1 ranitidine hydrochloride comprising dissolving Form 2 ranitidine hydrochloride in an organic solvent, and crystallizing Form 1 ranitidine hydrochloride from said solvent.

5,621,121

PROCESS FOR THE PREPARATION OF TAXANE DERIVATIVES

Alain Commercon, Vitry-sur-Seine; Eric Didier, Paris, and Elie Fouque, Saint Maur des Fosses, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00969, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO94/07879, PCT Pub. Date Apr. 14, 1994

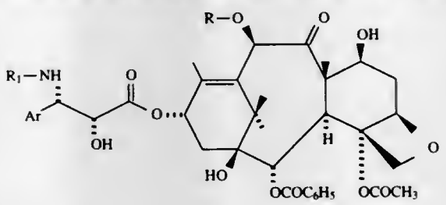
PCT Filed Oct. 4, 1993, Ser. No. 411,690

Claims priority, application France, Oct. 5, 1992, 92 11743

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **21 Claims**

1. Process for the preparation of taxane derivatives of formula:



in which:

R represents a hydrogen atom or an acetyl radical, R_1 represents a benzoyl radical or a radical R_2—O—CO-in which R_2 represents:

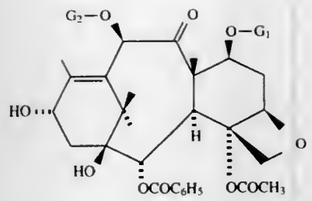
a straight or branched alkyl radical containing 1 to 8 carbon atoms, an alkenyl radical containing 2 to 8 carbon atoms, an alkynyl radical containing 3 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a cycloalkenyl radical containing 4 to 6 carbon atoms or a bicycloalkyl radical containing 7 to 10 carbon atoms, these radicals optionally being substituted by at least one substituent selected from the halogen atoms and the hydroxyl radical, alkyloxy radical containing 1 to 4 carbon atoms, dialkylamino radical, each alkyl part of which contains 1 to 4 carbon atoms, piperidino radical, morpholino radical, 1-piperazinyl radical (optionally substituted in the 4-position by an alkyl radical containing 1 to 4 carbon atoms or by a phenylalkyl radical, the alkyl part of which contains 1 to 4 carbon atoms), cycloalkyl radical containing 3 to 6 carbon atoms, cycloalkenyl radical containing 4 to 6 carbon atoms, phenyl radical, cyano radical, carboxyl radical or alkyloxycarbonyl radical, the alkyl part of which contains 1 to 4 carbon atoms,

or a phenyl radical optionally substituted by at least one atom or radical selected from the alkyl radicals containing 1 to 4 carbon atoms or the alkyloxy radicals containing 1 to 4 carbon atoms,

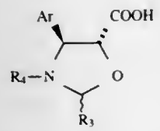
or a saturated or unsaturated nitrogen-containing heterocyclyl radical containing 5 or 6 members, optionally substituted by at least one alkyl radical containing 1 to 4 carbon atoms, the cycloalkyl, cycloalkenyl or bicycloalkyl radicals optionally is substituted by at least one alkyl radical containing 1 to 4 carbon atoms, and Ar represents a phenyl or α- or β-naphthyl radical optionally substituted by at least one atom or radical selected from the halogen atoms including fluorine, chlorine, bromine or iodine and the alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkoxy, alkylthio, aryloxy, arylthio, hydroxyl, hydroxyalkyl, mercapto, formyl, acyl, acylamino, aroylamino, alkoxycarbonylamino, amino, alkylamino, dialkylamino, carboxyl, alkoxycarbonyl, carbamoyl, dialkylcarbamoyl, cyano and trifluoromethyl radicals, the alkyl radicals and the alkyl portions of the other radicals contain 1 to 4 carbon atoms, the alkenyl and alkynyl radicals contain 3 to 8 carbon atoms and the aryl radicals are phenyl or α- or β-naphthyl radicals, comprising

1) esterifying a derivative of the protected baccatin III or of the protected 10-deacetylbaccatin III of formula:

VOL 1197 ISS 3 AP 15 1997 UMI

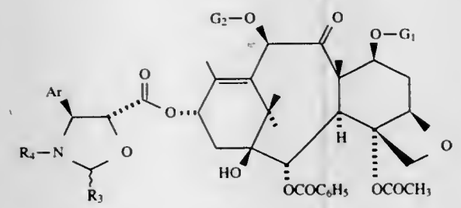


in which G_1 and optionally G_2 represent a protective group of the hydroxyl functional group, an acid of formula:

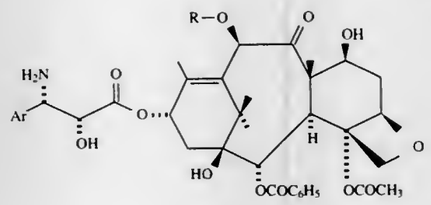


in which Ar is defined as above, R_3 represents a trihalomethyl

2) radical or phenyl radical substituted by a trihalomethyl radical, R_4 represents a hydrogen atom or is identical to R_1 defined above, or of a derivative of this acid, to produce a product of formula:



in which Ar, R_3, R_4, G_1 and G_2 are defined as above, replacing the protective groups of the hydroxyl and amino functional groups of the product obtained by hydrogen atoms to produce a product of formula:



in which Ar and R are defined as above, then

3) treating the product thus obtained with a reagent which makes it possible to introduce a substituent R_1 onto the amino functional group, and

4) isolating the product obtained.

5,621,122

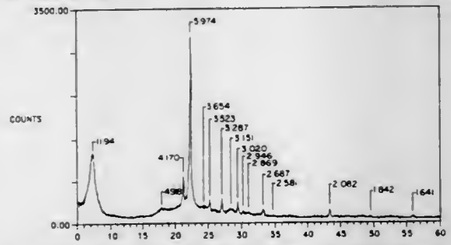
EPOXIDATION PROCESS

Robert J. Saxton, West Chester; John G. Zajacek, Devon, both of Pa.; Guy L. Crocco, Wilmington, Del., and Kanthi S. Wijesekera, Glen Mills, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 329,732, Oct. 26, 1994, Pat. No. 5,453,511, which is a continuation-in-part of Ser. No. 302,554, Sep. 8, 1994, which is a division of Ser. No. 172,405, Dec. 23, 1993, Pat. No. 5,374,747. This application Apr. 11, 1995, Ser. No. 419,775

Int. Cl.[6] C07D *301/19;303/04*

U.S. Cl. 549—529 **19 Claims**



1. A process for epoxidation of an olefin comprising contacting said olefin with an organic hydroperoxide in the presence of a catalytically effective amount of an crystalline titanium-containing molecular sieve for a time and at a temperature effective to selectively form an epoxide of the olefin, wherein the crystalline titanium-containing molecular sieve is characterized by a framework structure isomorphous to zeolite beta comprised of Si and Ti, but essentially free of framework Al, corresponding to the general formula SiO_2:yTiO_2 wherein y is from 0.01 to 0.25.

5,621,123

CYCLIC HYDROCARBONS WITH AN AMINOALKYL SIDECHAIN

Roy A. Johnson, Kalamazoo; Gordon L. Bundy, Portage; Gilbert A. Youngdale, Portage; Douglas R. Morton, Portage; Donald P. Wallach, deceased, late of Kalamazoo, and Vera M. Wallach, legal representative, Richland, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 976,751, Nov. 16, 1992, Pat. No. 5,334,712, which is a division of Ser. No. 657,721, Feb. 20, 1991, Pat. No. 5,196,542, which is a division of Ser. No. 394,396, Aug. 15, 1989, abandoned, which is a division of Ser. No. 117,851, Jun. 16, 1987, Pat. No. 4,917,826, which is a continuation-in-part of Ser. No. 843,120, Mar. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,995, Oct. 18, 1985, abandoned. This application May 20, 1994, Ser. No. 247,169

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[6] C07J *41/00*

U.S. Cl. 552—522 **4 Claims**

1. A compound selected from the group consisting of:

a) 3-hydroxy-17β-(((3-trifluoromethyl)phenylmethyl)amino)-estra-1,3,5(10)-triene tetrahydrofuran solvate;

b) 3-methoxy-17β-((2-(4-chlorophenyl)ethyl)amino)-estra-1,3,5(10)-triene;

c) 3-(2,3-dihydroxypropoxy)-17β-((4-chlorophenylmethyl)amino)-estra-1,3,5(10)-triene;

d) 3-methoxy-17β-((4-methoxycarbonylphenylmethyl)amino)-estra-1,3,5(10)-triene;

e) 3-methoxy-17β-((4-bromophenylmethyl)amino)-estra-1,3,5(10)-triene;

f) 3-methoxy-17β-((3-chlorophenylmethyl)amino)-estra-1,3,5(10)-triene;

g) 3-methoxy-17β-((3-phenylpropyl)amino)-estra-1,3,5(10)-triene;

h) 3-methoxy-17β-((4-phenylbutyl)amino)-estra-1,3,5(10)-triene;

i) 3-methoxy-17β-((4-methylphenylmethyl)amino)-estra-1,3,5(10)-triene;

j) 3-methoxy-17β-((1-phenylethyl)amino)-estra-1,3,5(10)-triene;

l) 3-methoxy-N-methyl-17β-(((3-trifluoromethyl)-phenylmethyl)amino)-estra-1,3,5(10)-triene;

m) 3-methoxy-N-ethyl-17β-(((3-trifluoromethyl)-phenylmethyl)amino)-estra-1,3,5(10)-triene;

n) 3-methoxy-N-(propyl)-17β-(((3-trifluoromethyl)phenylmethyl)amino)-estra-1,3,5(10)-triene;

o) 3-methoxy-N-(3-methylbutyl)-17β-(((3-trifluoromethyl)phenylmethyl)amino)-estra- 1,3,5(10)-triene hydrochloride;

p) 3-methoxy-N-(octyl)-17β-(((3-trifluoromethyl)phenylmethyl)amino)-estra-1,3,5(10)-triene hydrochloride;

q) 3-methoxy-N-(tetradecyl)-17β-(((3-trifluoromethyl)phenylmethyl)amino)-estra-1,3,5(10)-triene;

r) 3-methoxy-N-ethyl-17β-((4-chlorophenylmethyl)-amino)estra-1,3,5(10)-triene;

s) 3-methoxy-N-ethyl-17β-((2-(4-aminosulfonylphenyl)ethyl)amino)-estra-1,3,5(10)-triene;

t) 3-methoxy-N-ethyl-17β-(((2-trifluoromethyl)phenylmethyl)amino)-estra-1,3,5(10)-triene;

u) 3-methoxy-N-(3-phenylpropyl)-17β-((3-phenylpropyl)amino)-estra-1,3,5(10)-triene;

and pharmacologically acceptable salts thereof.

5,621,124

PROCESS FOR THE ALKYLATION OF ESTRONE DERIVATIVES

Carsten Seilz, Kamen, and Dieter Hübl, Werne, both of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/EP93/02905, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/09024, PCT Pub. Date Apr. 28, 1994

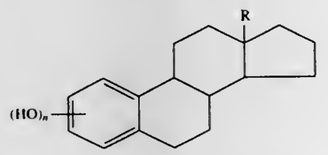
PCT Filed Oct. 21, 1993, Ser. No. 424,280

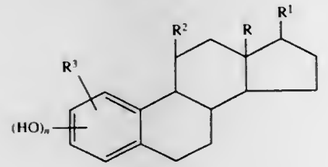
Claims priority, application Germany, Oct. 22, 1992, 42 35 657.1

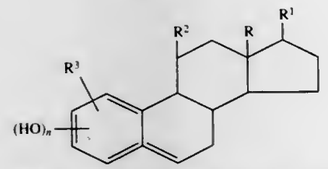
Int. Cl.[6] C07J *75/00*

U.S. Cl. 552—613 **9 Claims**

1. A process for the alkylation of the —OH groups on an —OH group-containing estrone compound of one of the formulae 1a, 1b or 1c:


1a


1b


1c

in which R is $—CH_3$ or $—C_2H_5$, R^1 is —OH or =O, R^2 and R^3, independently of one another, are —OH or R and n is 1 or 2; which comprises:

forming a reaction mixture containing a 5–20% by weight suspension of the estrone compound in dimethylformamide and 1–5 mol per mol of the —OH groups to be alkylated of a carbonic acid diester and 1–10 mol % relative to the estrone compound of guanidine and/or an alkyl guanidine dissolved therein,

removing, substantially, the oxygen contained in the reaction mixture,

heating the reaction mixture to a reaction temperature of 100°–200° C., and

performing the reaction for 3–36 hours under the system pressure which is established.

5,621,125

FRACTIONATION OF TRIGLYCERIDE OILS UTILIZING CERAMIDE-BASE CRYSTALLIZATION MODIFIERS

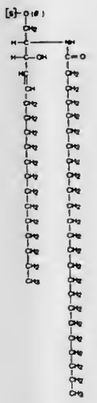
Paul R. Smith, Wellingborough, Great Britain, and Marcelle Van Den Kommer, Gouda, Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jul. 29, 1994, Ser. No. 283,005

Claims priority, application European Pat. Off., Jul. 30, 1993, 93306057

Int. Cl.[6] C11B *7/00*

U.S. Cl. 554—211 **9 Claims**



1. A process for separating solid fatty material from a triglyceride oil comprising the steps of:

a) heating the oil or a solution of the oil in an inert solvent until a substantial amount of solid material is no longer present;

b) adding a crystallization modifying substance to the heated oil or to the heated solution of the oil, the substance being a membrane lipid selected from the group consisting of lipids having a formula:

$$C_{13}H_{27}—CH=CH—CH(OH)—CH(NHCOR_2)—CH_2—OR_4,$$

wherein

$C_{13}H_{27}$— is an unbranched alkyl chain,

R_2 is an unbranched (C1–C24)-hydrocarbon chain

R_4 is hydrogen or a sugar moiety which comprises a monosaccharide residue, a disaccharide residue or an oligosaccharide residue, including glucose, fructose, galactose, saccharose, lactose and maltose residues;

c) cooling the oil of step b to crystallize a solid stearin phase in combination with a liquid olein phase; and

d) recovering the stearin phase by separating it from the olein phase.

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5,621,126

MONOCYCLOPENTADIENYL METAL COMPOUNDS FOR ETHYLENE-α-OLEFIN-COPOLYMER PRODUCTION CATALYSTS

Jo Ann M. Canich, Webster; Howard W. Turner, and Gregory G. Hlatky, both of Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

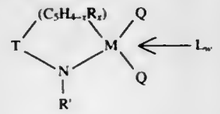
Continuation-in-part of Ser. No. 850,751, Mar. 13, 1992, Pat. No. 5,264,405, which is a continuation-in-part of Ser. No. 581,841, Sep. 19, 1990, Pat. No. 5,096,867, which is a continuation-in-part of Ser. No. 533,245, Jun. 4, 1990, Pat. No. 5,055,438, which is a continuation-in-part of Ser. No. 406,945, Sep. 13, 1989, abandoned, Ser. No. 542,236, Jun. 22, 1990, and Ser. No. 938,198, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 133,480, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,800, Jan. 30, 1987, abandoned, and a continuation-in-part of Ser. No. 875,165, Apr. 28, 1992, Pat. No. 5,278,119, which is a continuation of Ser. No. 133,052, Dec. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 11,471, Jan. 30, 1987, abandoned. This application Oct. 15, 1993, Ser. No. 138,169

Int. Cl.[6] C07F *17/00;7/00*

U.S. Cl. 556—9 **10 Claims**

1. A compound of the formula:

Formula I



wherein:

M is Zr, Hf or Ti;

$(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring which is substituted with from zero to four substituent groups R, "x" is 0, 1, 2, 3, or 4 denoting the degree of substitution, and each substituent group R is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen radical, an amido radical, a phosphido radical, and alkoxy radical, C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from Group IV A of the Periodic Table of Elements; halogen radicals, amido radicals, phosphido radicals, alkoxy radicals, alkylborido radicals or any other radical containing Lewis acidic or basic functionality; or $(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring in which at least two adjacent R-groups are joined forming a C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;

R' is a radical selected from C_1–C_{20} aliphatic and alicyclic hydrocarbyl radicals wherein one or more hydrogen atoms may be replaced by radicals selected from halogen, amido, phosphido, alkoxy or any other radical containing a Lewis acidic or basic functionality, with the proviso that R' is covalently bonded to the nitrogen atom through a 1° or 2° carbon atom;

each Q may be independently an univalent anionic ligand, or both Q together may be an alkylidene or a cyclometallated hydrocarbyl or any other divalent anionic chelating ligand with the proviso that where any Q is a hydrocarbyl such Q is not a substituted or unsubstituted cyclopentadienyl radical;

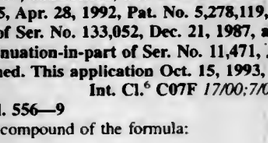
T is a covalent bridging group containing a Group IV A or V A element;

L is a neutral Lewis base; and

"w" is a number from 0 to 3.

2. A compound of the formula:

Formula III



wherein:

M represents Ti, Hf or Zr;

$(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring which is substituted with from zero to four substituent groups R, "x" is 0, 1, 2, 3, or 4 denoting the degree of substitution, and each substituent group R is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen radical, an amido radical, a phosphido radical, and alkoxy radical, C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from Group IV A of the Periodic Table of Elements; halogen radicals, amido radicals, phosphido radicals, alkoxy radicals, alkylborido radicals or any other radical containing Lewis acidic or basic functionality; or $(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring in which at least two adjacent R-groups are joined forming a C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;

each of R^1 and R^2 are independently selected from C_1–C_{20} hydrocarbyl radicals;

each Q is independently selected from halide, hydride, substituted or unsubstituted C_1–C_{20} hydrocarbyl radical, alkoxide, aryloxide, amide and phosphide radicals with the proviso that Q is not a substituted or unsubstituted cyclopentadienyl radical;

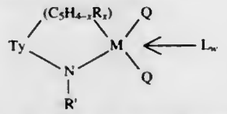
R' is selected from C_1–C_{20} aliphatic and alicyclic hydrocarbyl radicals with the proviso that R' is covalently bonded to the nitrogen atom through a 1° or 2° carbon atom;

L is a neutral Lewis base; and

"w" is a number from 0 to 3.

6. A compound of the formula:

Formula IV



M is Zr, Hf or Ti in its highest formal oxidation state (+4, d^0 complex);

$(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring which is substituted with from zero to four substituent groups R, "x" is 0, 1, 2, 3, or 4 denoting the degree of substitution, and each substituent group R is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen radical, an amido radical, a phosphido radical, and alkoxy radical, C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from Group IV A of the Periodic Table of Elements; halogen radicals, amido radicals, phosphido radicals, alkoxy radicals, alkylborido radicals or any other radical containing Lewis acidic or basic functionality; or $(C_5H_{4-x}R_x)$ is a cyclopentadienyl ring in which at least two adjacent R-groups are joined forming a C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;

R' is a radical selected from C_1–C_{20} aliphatic and alicyclic hydrocarbyl radicals wherein one or more hydrogen atoms may be replaced by radicals selected from halogen, amido, phosphido, alkoxy or any other radical containing a Lewis acidic or basic functionality, with the proviso that R' is covalently bonded to the nitrogen atom through a 1° or 2° carbon atom;

each Q may be independently an univalent anionic ligand selected from a halide, hydride, or substituted or unsubstituted C_1–C_{20} hydrocarbyl, alkoxide, aryloxide, amide, phosphide, or both Q together may be an alkylidene or a cyclometallated hydrocarbyl or any other divalent anionic chelating ligand with the proviso that where any Q is a hydrocarbyl such Q is not a substituted or unsubstituted cyclopentadienyl radical.;

"w" is a number from 0 to 3;

T is selected from radicals of the formula (CR^3R^4) wherein R^3 and R^4 are independently selected from hydrogen and C_1–C_{20} hydrocarbyl radicals; and

y is 1 or 2.

5,621,127

PREPARATION OF BRIDGED HALF SANDWICH COMPLEXES

Franz Langhauser, Bad Dürkheim; Hans-Joachim Müller, Grünstadt; Jürgen Kerth, Carlsberg; Günther Schweier, Friedelsheim, and Bernhard Rieger, Nehren, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 5, 1995, Ser. No. 435,447

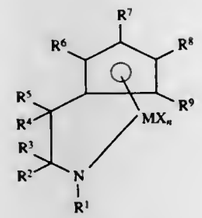
Claims priority, application Germany, May 13, 1994, 44 16 876.4

Int. Cl.[6] C07F *17/00;7/28*

U.S. Cl. 556—11 **3 Claims**

1. A process for preparing bridged half sandwich complexes of the formula I

I



where

M is a metal of Group IVb or Vb of the Periodic Table or a metal from the lanthanide group,

X is halogen, hydrogen, C_1–C_{10}-alkyl, C_3–C_{10}-cycloalkyl, C_6–C_{15}-aryl, alkylaryl having 7 to 15 carbon atoms or $-OR^{10}$,

where

R^{10} is C_1–C_{10}-alkyl, C_6–C_{15}-aryl, alkylaryl, arylalkyl, fluoroalkyl or fluoroaryl having in each case 1 to 10 carbon atoms in the alkyl radical and 6 to 20 carbon atoms in the aryl radical,

n is the valency of M minus two,

R^1 is hydrogen, C_1–C_{10}-alkyl, C_3–C_{10}-cycloalkyl which in turn can carry C_1–C_{10}-alkyl groups as substituents, or C_6–C_{15}-aryl or arylalkyl having 1 to 10 carbon atoms in the alkyl radical and 6 to 20 carbon atoms in the aryl radical or $Si(R^{11})_3$,

where

R^{11} is C_1–C_{10}-alkyl, C_6–C_{15}-aryl or C_3–C_{10}-cycloalkyl,

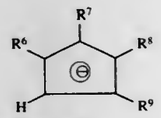
R^2 to R^9 are each hydrogen, C_1–C_{10}-alkyl, C_3–C_{10}-cycloalkyl, which in turn can carry C_1–C_{10}-alkyl groups as substituents, or C_6–C_{15}-aryl or arylalkyl having 1 to 10 carbon atoms in the alkyl radical and 6 to 20 carbon atoms in the aryl radical, it also being possible for two adjacent radicals together to be cyclic groups having 4 to 15 carbon atoms, or $Si(R^{12})_3$,

where

R^{12} is C_1–C_{10}-alkyl, C_6–C_{15}-aryl or C_3–C_{10}-cycloalkyl,

which comprises in a first step reacting cyclopentadienides of the formula II

II



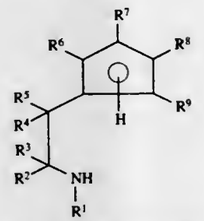
with aziridines of the formula III

III



to give ligand systems of the formula IV

IV



and subsequently reacting the ligand systems of the formula IV with metallating agents and MX_{n+2}.

2. A process as claimed in claim 1, wherein M is a metal of group IVb of the Periodic Table.

3. A process as claimed in claim 1, wherein R^1 is C_6–C_{15}-aryl.

5,621,128

HALOGENATED BIPHENYL-2,2'-DIYLBISDIPHENYLPHOSPHINES, THEIR PREPARATION AND THEIR USE

Joachim-Heiner Jendralla, Frankfurt, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 28, 1995, Ser. No. 495,978

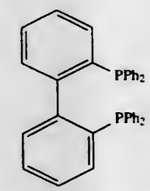
Claims priority, application Germany, Jun. 30, 1994, 44 22 672.1

Int. Cl.[6] C07F *9/02;15/00*

U.S. Cl. 556—18 **14 Claims**

1. A compound of the formula I

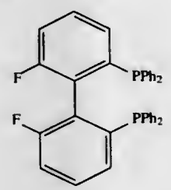
I



in which the phenyl rings of the biphenyl molecule are substituted with from 1 to 8 atoms selected from the group consisting of fluorine, chlorine, and a mixture thereof, at least two of said atoms being fluorine.

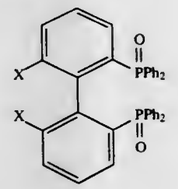
2. A compound of the formula II

II



7. A compound of the formula 4

4



VOL 1197 ISS 3 AP 15 1997 UMI

in which X is F or Cl and in which the phenyl rings of the biphenyl molecule are unsubstituted or substituted with up to 6 additional atoms selected from the group consisting of fluorine, chlorine, and a mixture thereof.

5,621,129

OPTICALLY ACTIVE TERTIARY PHOSPHINE COMPOUND, TRANSITION METAL COMPLEX COMPRISING THE SAME AS LIGAND AND PROCESS FOR PREPARING OPTICALLY ACTIVE ORGANIC SILICON COMPOUND USING SAID TRANSITION METAL COMPLEX

Tamio Hayashi; Masayoshi Minai, both of Shiga, and Kazunori Iwakura, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Mar. 7, 1996, Ser. No. 612,108

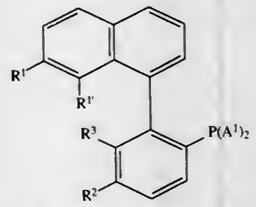
Claims priority, application Japan, Mar. 9, 1995, 7-049685; Mar. 10, 1995, 7-051094; Mar. 10, 1995, 7-051482; Sep. 18, 1995, 7-238204

Int. Cl.[6] C07F *9/02;15/00*

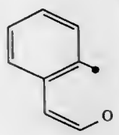
U.S. Cl. 556—21 **5 Claims**

1. A tertiary phosphine compound of the formula (1):

(1)



wherein R^1 and $R^{1'}$ are hydrogen atoms or together form a group of the formula: —CH=CH—CH=CH—; R^2 and R^3 together form a group of the formula (a):



in which —● represent a bond to be bonded to the R^3 group, and —○ represents a bond to be bonded to the R^2 group when R^1 and $R^{1'}$ together form a group of the formula: —CH=CH—CH=CH—, or when R^1 is a hydrogen atom, R^2 and R^3 together form a group of the formula: —CH=CH—CH=CH— or R^2 is a hydrogen atom and R^3 is an alkyl group which may be substituted by a halogen atom, a lower alkoxy group or a halogenated lower alkyl group, or a phenyl group which may be substituted by a halogen atom, a lower alkyl group or a halogenated lower alkyl group; A^1 is a 3-trifluoromethylphenyl group or a 3,5-bis(trifluoromethyl)phenyl group when R^1 is a hydrogen atom and R^2 and R^3 together form a group of the formula: —CH=CH—CH=CH—, or a phenyl group which may be substituted by a halogen atom, a lower alkyl group, a lower alkoxy group or a halogenated lower alkyl group when R^1 is not a hydrogen atom or when R^2 and R^3 do not together form a group of the formula: —CH=CH—CH=CH—.

5,621,130

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, ELETROPHOTOGRAPHIC APPARATUS AND APPARATUS UNIT INCLUDING THE PHOTOSENSITIVE MEMBER

Wataru Ando; Takeshi Akasaka, both of Tsukuba; Shigeru Nagase, Yokohama; Kaoru Kobayashi, Yokohama, and Hajime Miyazaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 141,630

Claims priority, application Japan, Oct. 22, 1993, 5-264717

Int. Cl.[6] C07F *7/08;7/18*

U.S. Cl. 556—465 **15 Claims**

1. A fullerene compound having a organosilicon group divalently bonded thereto.

5,621,131

CONJUGATED POLYMERS HAVING SPIRO CENTERS AND THEIR USE AS ELECTROLUMINESCENCE MATERIALS

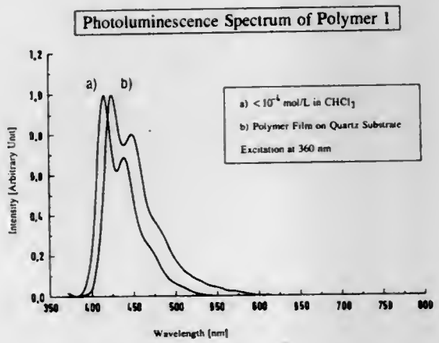
Willi Kreuder, Mainz; Donald Lupo, Frankfurt; Josef Salbeck, Kelkheim; Hermann Schenk, Hofheim, and Thomas Stehlin, Kriftel, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 12, 1995, Ser. No. 541,237

Claims priority, application Germany, Oct. 14, 1994, 44 36 773.2

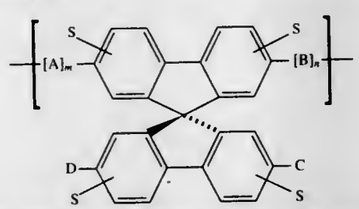
Int. Cl.[6] C07C *22/00;* **C08G** *59/00*

U.S. Cl. 558—46 **8 Claims**



1. A conjugated polymer comprising 2 to 1000 recurring units of the formula (I),

(I)



where the symbols and indices have the following meanings:

A, B, C, D are identical or different and are each from one to fifteen identical or different arylene and/or heteroarylene and/or vinylene groups which, like the spirobifluorene skeleton itself, may be unsubstituted or substituted;

S are identical or different and are each H or a substituent;

m, n are 0 or 1.

5,621,132

PROCESS FOR MAKING ALKYL N-ALKYL OR N-ARYL-THIOCARBAMATES

Abdul R. A. S. Deshmukh; Rajan H. Naik; Sagun K. Tandel, and Srinivasachari Rajappa, all of Maharashtra, India, assignors to Council of Scientific and Industriai Research, New Delhi, India

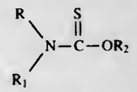
Divison of Ser. No. 962,774, Oct. 19, 1992, abandoned. This application Aug. 4, 1995, Ser. No. 511,411

Int. Cl.[6] C07C *67/02*

U.S. Cl. 558—234 **7 Claims**

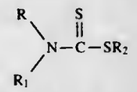
1. A process for the preparation of alkyl esters of N-alkyl or N-aryl thiocarbamic acid having the formula:

I



wherein R is alkyl or aryl, R_2 is alkyl and R_1 is hydrogen or alkyl which comprises reacting the S-alkyl ester of N-alkyl or aryl dithiocarbamic acid having the formula:

II



wherein R, R_1, R_2 have the meanings stated above with an appropriate alkali metal alkoxide in the presence of one or more alcoholic solvents.

5,621,133

DOPAMINE AGONISTS

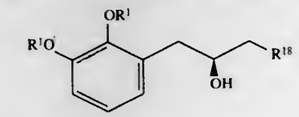
Michael P. DeNinno, 9 Hermitage Dr., Gales Ferry, Conn. 06335, and Richard J. Perner, 1655 Pinetree Dr., Gurnee, Ill. 60031

Division of Ser. No. 442,236, May 30, 1995, which is a continuation-in-part of Ser. No. 998,161, Dec. 29, 1992, abandoned, which is a division of Ser. No. 776,258, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 359,448, May 31, 1989, Pat. No. 4,963,568. This application Jun. 5, 1995, Ser. No. 465,481

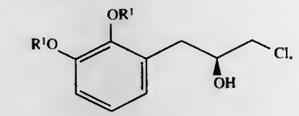
Int. Cl.[6] C07F *5/04;* **C07C** *43/205;49/105*

U.S. Cl. 558—286 **1 Claim**

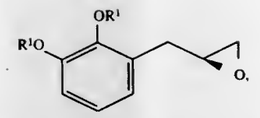
I. A process for preparing a compound according to formula



wherein R^1 is a catechol-protecting group, and R^{18} is substituted C_3–C_9-alkyl, comprising the steps of (a) reacting an intermediate having the formula



where R^1 is a catechol-protecting group, with a strong base to form a chiral epoxide of the formula



and (b) reacting the epoxide with an organometallic substituted C_3–C_9-alkyl compound in a non-polar organic solvent to provide the compound.

5,621,134

METHOD FOR PRODUCING 4'-BROMOMETHYL-2-CYANOBIPHENYL

Tadashi Katsura, Toyonaka, and Hiroshi Shiratani, Osaka, both of Japan, assignors to Sumika Fine Chemicals Co., Ltd., Osaka, Japan

Filed Oct. 17, 1995, Ser. No. 543,948

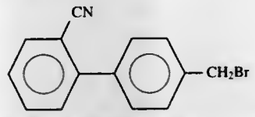
Claims priority, application Japan, Oct. 27, 1994, 6-289079

Int. Cl.[6] C07C *253/30*

U.S. Cl. 558—388 **6 Claims**

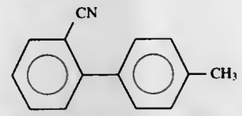
1. A method for producing 4'-bromomethyl-2-cyanobiphenyl represented by formula (II):

(II)



comprising a step of treating 4'-methyl-2-cyanobiphenyl represented by formula (I):

(I)



with Br_2 in a halogenated hydrocarbon solvent or an alkane solvent having 5 to 7 carbon atoms wherein the step is carried out in the presence of a radical initiator, wherein said radical initiator is selected from the group consisting of 2,2'-azobis(4-methoxy-2,4-dimethylvaleronitrile), 2,2'-azobisisobutyronitrile, and dibenzoyl peroxide.

5,621,135

DYE-DONOR ELEMENT COMPRISING TRICYANOVINYLANILINE DYES

Luc Vanmaele, Lochristi, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Division of Ser. No. 138,256, Oct. 20, 1993, Pat. No. 5,438,030. This application May 23, 1995, Ser. No. 445,557

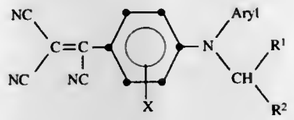
Claims priority, application European Pat. Off., Oct. 20, 1992, 92203207

Int. Cl.[6] C07C *255/34*

U.S. Cl. 558—403 **1 Claim**

1. Tricyanovinylaniline dyes represented by the following formula (I):

(I)



wherein

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X represents hydrogen, methyl or methoxy, Aryl represents a phenyl group or a phenyl group substituted with CH_3O—, $CH_3OCH_2CH_2O$—, C_2H_5—, $C_2H_5OCH_2CH_2O$—, $CH_3OCH_2(CH_3)CHO$—, each of R^1 and R^2 independently represents an alkyl group, a cycloalkyl group, an alkenyl group, an arylalkenyl group, or aryl group, or R^1 and R^2 together complete a 5- or 6-membered cycloalkyl group, or R^1 and R^2 together complete a 5- or 6-membered heterocyclic ring.

5,621,136

COLORLESS, NON-TOXIC, STABILIZED AQUEOUS SOLUTION OF A C1-C5 ALKYL VINYL ETHER AND MALEIC ACID COPOLYMER

Chi-San Wu; James Curry, both of Wayne, N.J.; James P. Cullen, Bartonsville, Pa., and John S. McEwan, Paducah, Ky., assignors to ISP Investments Inc., Wilmington, Del.

Filed Oct. 13, 1995, Ser. No. 542,579
Int. Cl.[6] C07C *69/00;69/007;69/01*
U.S. Cl. 560—2 **4 Claims**

1. A method of stabilizing an aqueous solution consisting essentially of an acid copolymer of maleic acid and a C_1–C_5 alkyl vinyl ether against degradation in viscosity or molecular weight upon storage for an extended period of time in aqueous solution at ambient conditions which comprises forming the acid copolymer directly from a slurry of corresponding anhydride in an organic solvent by hydrolysis in water, and adding superoxide dismutase in an amount of 50 to 10,000 ppm as the single stabilizing agent to the solution either before or after hydrolysis.

5,621,137

METHOD OF DISSOLVING CRYSTALS OF L-α-ASPARTYL-L-PHENYLALANINE METHYL ESTER

Masayoshi Naruse, Yokohama; Haruo Kawasaki, Tokyo; Shinichi Kishimoto, Yokkaichi; Harutoshi Oura, Kawasaki; Masao Nakamura, Yokohama, and Hideo Takeda, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 173,946, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 879,120, May 5, 1992, abandoned, which is a continuation of Ser. No. 475,403, Feb. 5, 1990, abandoned, which is a continuation of Ser. No. 293,565, Jan. 3, 1989, Pat. No. 5,041,607, which is a continuation of Ser. No. 54,494, May 27, 1987, abandoned, which is a continuation of Ser. No. 839,819, Mar. 12, 1986, abandoned, which is a continuation of Ser. No. 482,542, Apr. 6, 1983, abandoned. This application Jun. 5, 1995, Ser. No. 462,551
Claims priority, application Japan, Apr. 12, 1982, 57-60671
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—41 **12 Claims**

1. A method of dissolving L-α-aspartyl-L-phenylalanine methyl ester, comprising dissolving in water, L-α-aspartyl-L-phenylalanine methyl ester obtained by the steps comprising:

(1) preparing a solution of L-α-aspartyl-L-phenylalanine methyl ester, adjusting the initial concentration of the said ester in the solution so that the amount of precipitated solid phase formed after cooling is about 10 grams, or more, per liter of solvent;

(2) charging the solution into a crystallizer equipped with solid cooling surfaces comprising cooling plates or cooling tubes, and a cooling jacket, to cool the aqueous solution without affecting forced flow and by conductive heat transfer, by contacting the solution with the cooling surfaces having a refrigeration medium circulating therein at a temperature of from −5° C. to +35° C. and keeping a distance between the solution and the cooling surface of 500 mm or less to form a sherbet-like pseudo solid phase; and

(3) isolating the sherbet-like pseudo solid phase to obtain the crystalline L-α-aspartyl-L-phenylalanine methyl ester product, wherein the crystals of said product have a static specific volume of from 3 to 4 cc gram $^{-1}$, a close specific volume of 2 to 3 cc gram $^{-1}$, and a rate of dissolution, in water, of 5 to 6 minutes.

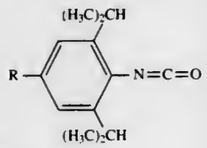
5,621,138

4-SUBSTITUTED BIS (2,6-DIISOPROPYLPHENYL)-CARBODIIMIDES, THEIR PREPARATION, THEIR USE, AND 4-SUBSTITUTED 2,6-DIISOPROPYLPHENYL ISOCYANATES WHICH CAN BE USED FOR THEIR PREPARATION

Friedhelm Lehrich, Lemfoerde; Siegmund Pohl; Bernd Bruchmann, both of Ludwigshafen; Helmut Tesch, Roedersheim-Gronau; Roland Minges, Gruenstadt; Johann Swoboda, Ludwigshafen; Manfred Genz, Damme; Guenter Scholz, Lemfoerde, and Joachim Streu, Dachau, all of Germany, assignors to BASF Aktiengesellschaft, Germany

Division of Ser. No. 494,452, Jun. 26, 1995, abandoned, which is a division of Ser. No. 126,292, Sep. 24, 1993, Pat. No. 5,532,414. This application Jan. 30, 1996, Ser. No. 593,100
Claims priority, application Germany, Nov. 11, 1992, 42 38 046.4
Int. Cl.[6] C07C *265/12*
U.S. Cl. 560—358 **1 Claim**

1. A 4-substituted 2,6-diisopropylphenyl isocyanate of the formula (II)



(II)

where R is phenyl.

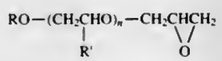
5,621,139

PROCESS FOR PREPARING ALKOXYLATED ALKYL GLYCERYL ETHER SULFONATES

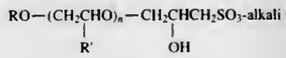
Salvatore J. Silvis, Lambertville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 18, 1994, Ser. No. 324,953
Int. Cl.[6] C07C *309/00*
U.S. Cl. 562—111 **18 Claims**

1. A continuous process for preparing alkoxylated alkyl glyceryl ether sulfonates which comprises reacting in a reactor in the presence of water, a mixture of an alkali metal sulfite and bisulfite with a mixture of alkoxylated glycidyl ethers comprising a major quantity of



wherein R is alkyl or alkenyl of about eight to twenty carbon atoms, R' is H, n is an average value of 1 to 3 to obtain alkoxylated sulfonated product comprising a major quantity of



at an elevated temperature of at least 125° C., a pressure sufficient to maintain the reaction mass liquid at the reaction temperature and at least 40 wt % of the reaction mass is sulfonated product, wherein prior to reaction completion the reaction mass is withdrawn from the reactor and transferred to a storage vessel where the reaction is allowed to go to completion.

5,621,140

RESOLUTION OF IBUPROFEN

George C. Schloemer, Longmont; Eric Lodewijk, and Gregory P. Withers, both of Boulder, all of Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 22, 1994, Ser. No. 361,627
Int. Cl.[6] C07C *55/00*
U.S. Cl. 562—401 **19 Claims**

1. A process for separating (S)-ibuprofen from a mixture of (S)-ibuprofen and (R)-ibuprofen, comprising using an N-alkyl-D-glucamine as the resolving agent.

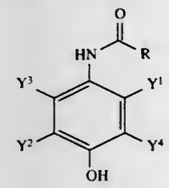
5,621,141

PROCESS FOR THE PREPARATION OF ALKYLCARBOXYLIC ACID 4-HYDROXYANILIDES

Reinhard Lantzsch, Wuppertal; Eric Rivadeneira, Leverkusen, and Werner Lindner, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 28, 1995, Ser. No. 579,924
Claims priority, application Germany, Jan. 4, 1995, 19 50 0119.2
Int. Cl.[6] C07C *231/02*
U.S. Cl. 564—142 **5 Claims**

1. A process for preparing a compound of the formula



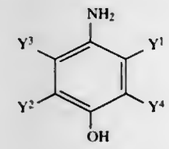
in which

R represents alkyl which is optionally mono- or polysubstituted in an identical or different manner by halogen, or represents cycloalkyl which is optionally mono- or polysubstituted in an identical or different manner by alkyl, halogenoalkyl or halogen and

Y^1, Y^2, Y^3, Y^4 are identical or different and represent hydrogen, halogen, cyano, in each case optionally halogen-substituted alkyl, alkoxy or alkylthio,

which comprises

dissolving or forming a suspension of an amino phenol of the formula



wherein Y^1, Y^2, Y^3 and Y^4 have the above-mentioned meanings, in an organic solvent, and

reacting the mixture produced above with a carboxylic acid derivative of the formula



in which

R has the above-mentioned meaning, and

X represents halogen,

in the absence of a base and in the absence of water at a temperature from 50° to 180° C.

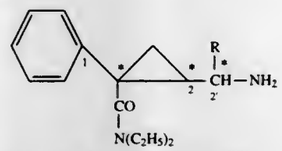
5,621,142

AMINOALKYLCYCLOPROPANE DERIVATIVES

Daisuke Mochizuki, Shizuoka-ken, and Satoshi Shuto, Sapporo, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/00254, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO95/22521, PCT Pub. Date Aug. 24, 1995
PCT Filed Feb. 22, 1995, Ser. No. 682,776
Claims priority, application Japan, Feb. 22, 1994, 6-024513
Int. Cl.[6] C07C *233/58*
U.S. Cl. 564—164 **3 Claims**

1. An optically active compound represented by formula (1), a racemic modification thereof, or a pharmaceutically acceptable acid addition salt of said optically active compound or said racemic modification:



(1)

wherein R is a straight chain or branched C_1–C_5 aliphatic group which is saturated or unsaturated, or a phenyl group which is unsubstituted or substituted with 1 to 3 substituents which are each independently selected from the group consisting of a halogen atom, a C_1–C_4 alkyl group, a nitro group, an amino group, a hydroxyl group and a C_1–C_4 alkoxy group; and mark * indicates an asymmetric carbon atom.

5,621,143

ORGANOBORANE POLYOXYALKYLENEPOLYAMINE COMPLEXES AND ADHESIVE COMPOSITIONS MADE THEREWITH

Alphonsus V. Pocius, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1995, Ser. No. 422,429
Int. Cl.[6] C07F *5/02;* **C08F** *4/52*
U.S. Cl. 564—8 **18 Claims**

1. A complex comprising organoborane and polyoxyalkylenepolyamine.

5,621,144

FLUORINATED COMPOUNDS AS OXYGEN TRANSPORT AGENTS

Stephen R. Cooper, Maryland Heights, Mo., assignor to Isis Innovation Limited, Oxford, Great Britain

Continuation of Ser. No. 90,187, Jul. 23, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,239
Claims priority, application United Kingdom, Nov. 29, 1991, 9125454
Int. Cl.[6] C07C *233/12*
U.S. Cl. 564—189 **8 Claims**

1. A compound for medical use in biological systems as an oxygen transport agent, consisting of:

a carbon atom to which is attached:

a) a non-hemolytic biocompatible hydrophilic head group and

b) three lower alkylene groups, which are the same or different and to each of which is attached:

a c3 to c16 carbon atom chain, saturated or unsaturated, straight chain or branched or cyclic or aromatic, in which more than half the H atoms are replaced by F atoms;

wherein the said carbon atom chains are attached to the lower alkylene groups by linkages selected from the group consisting of ether, ester, amide, amine, sulfonamide and phosphoramide bond; and

wherein the three lower alkylene groups and the carbon atom chains attached to them are constrained or predisposed to

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adopt a mutually cis relationship to each other to form or predispose to form a preorganized cage for oxygen incorporation.

5,621,145

BISAMIDOXIME COMPOUND, PROCESS FOR PREPARING THE SAME AND A FLUORINE-CONTAINING ELASTOMER COMPOSITION COMPRISING THE SAME

Satoru Saito; Haruyoshi Tatsu, both of Ibaraki, Japan; Lev Solomonovich, deceased, late of Moscow, Russian Federation; Ziefman Y. Vilovich, Moscow, Russian Federation; Postovoi S. Anatol'evich, Moscow region, Russian Federation, and Sterlin S. Rafailovich, Moscow, Russian Federation, assignors to Nippon Mektron, Limited, Tokyo, Japan

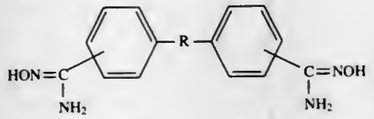
Filed Jan. 5, 1996, Ser. No. 583,469

Claims priority, application Japan, Feb. 16, 1995, 7-051977

Int. Cl.[6] C07C *259/18*

U.S. Cl. 564—229 **8 Claims**

1. A bisamidoxime compound represented by the following general formula:



where R is an alkylidene group having 1 to 6 carbon atoms, or a perfluoroalkylidene group having 1 to 10 carbon atoms.

5,621,146

PROCESS FOR PRODUCING 2,4-DIHYDROXYACETOPHENONE

Takashi Fukumoto; Katsuji Ujita; Toshiki Mori, all of Nakajomachi; Kozo Nakao, Yokohama, and Yoshin Tamai, Shibata, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 7, 1995, Ser. No. 568,485

Claims priority, application Japan, Dec. 7, 1994, 6-330744

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—319 **10 Claims**

1. A process for producing 2,4-dihydroxyacetophenone, comprising:

reacting resorcinol and acetic acid in a reaction medium containing a proton acid catalyst, and removing water as it is formed by the reaction of resorcinol with acetic acid.

5,621,147

TRIFLUORO-2-(TRANS-4-SUBSTITUTED CYCLOHEXYL) ETHYLENES AND PROCESS FOR THEIR PRODUCTION

Osamu Yokokoji; Tamaki Simizu, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 4, 1995, Ser. No. 433,967

Claims priority, application Japan, Jun. 24, 1994, 6-143480

Int. Cl.[6] C07C *22/00;43/188;43/192;17/25*

U.S. Cl. 568—669 **10 Claims**

1. A 1,1,2-trifluoro-2-(trans-4-substituted cyclohexyl)ethylene of the formula (1):

$$R\text{—}(A)_m\text{—}Cy\text{—}CF{=}CF_2 \quad (1)$$

wherein R is a halogen atom, a cyano group, a C_{1-10} alkyl group, a C_{1-10} alkyl group wherein at least one hydrogen atom is replaced with a fluorine atom, a C_{1-10} alkoxyl group, a C_{1-10} alkoxyl group wherein at least one hydrogen atom is replaced with a fluorine atom, a C_{1-10} alkenyl group containing at least one carbon-carbon double bond, a C_{1-10} alkenyl group containing at least one carbon-carbon double bond and wherein at least one hydrogen atom is replaced with a fluorine atom, a C_{1-10} alkynyl group containing at least one carbon-carbon triple bond, a C_{1-10} alkynyl group containing at least one carbon-carbon triple bond and wherein at least one hydrogen atom is replaced with a fluorine atom, a C_{1-10} alkyl group containing therein one carbonyl group, or a C_{1-10} alkyl group containing therein one carbonyl group and wherein at least one hydrogen atom is replaced with a fluorine atom;

Cy is an unsubstituted trans-1,4-cyclohexylene group;

A is a trans-1,4-cyclohexylene group, a trans-1,4-cyclohexylene group substituted with at least one halogen atom or cyano group, a trans-1,4-cyclohexylene group wherein at least one $—CH_2—$ group is replaced by an oxygen or sulfur atom, a trans-1,4-cyclohexylene group wherein at least one =CH— group is replaced by a nitrogen atom, a trans-1,4cyclohexylene group substituted with at least one halogen atom or cyano group and wherein at least one $—CH_2—$ group is replaced with an oxygen or sulfur atom, a trans-1,4-cyclohexylene group substituted with at least one halogen atom or cyano group and wherein at least one =CH— group is replaced by a nitrogen atom, a 1,4-phenylene group, a 1,4-phenylene group substituted with at least one halogen atom or cyano group, a 1,4-phenylene group wherein at least one =C— group is replaced with a nitrogen atom, a 1,4-phenylene group substituted with at least one halogen atom or cyano group and wherein at least one =C— group is replaced with a nitrogen atom, a 1,4-cyclohexenylene group, a 1,4-cyclohexenylene group substituted with at least one halogen atom or cyano group, a 1,4-cyclohexenylene group wherein at least one $—CH_2—$ group is replaced with an oxygen or sulfur atom, a 1,4-cyclohexenylene group wherein at least one =CH— group is replaced with a nitrogen atom, a 1,4-cyclohexenylene group substituted with at least one halogen atom or cyano group and wherein at least one $—CH_2—$ group is replaced with an oxygen or sulfur atom, or a 1,4-cyclohexenylene group substituted with at least one halogen atom or cyano group and wherein at least one =CH— group is replaced with a nitrogen atom; and

m is 0 or 1.

5,621,148

CONDENSATES AND THEIR USE AS OXYALKYLATION ADJUVANTS

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 21,823, Feb. 24, 1993, Pat. No. 5,405,980. This application Feb. 1, 1995, Ser. No. 382,312

Claims priority, application Germany, Feb. 26, 1992, 42 05 844.9

Int. Cl.[6] C07C *43/11*

U.S. Cl. 568—619 **6 Claims**

1. A process for the production of a condensate (K), wherein

(A) at least one oligohydroxyalkane, that contains 3 to 8 carbon atoms and at least 3 hydroxy groups

is condensed with such an amount of

(B) potassium hydroxide

that the condensation product (K) contains at least 5% by weight of K^+ and at least one alcoholic hydroxy group.

5,621,149

PROCESS FOR PREPARING FUNCTIONALIZED INITIATORS FOR ANIONIC POLYMERIZATION

James A. Schwindeman, Shelby; Eric J. Granger, Charlotte; John F. Engel, Belmont, and Conrad W. Kamienski, Gastonia, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 332,217, Oct. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 198,914, Feb. 18, 1994, abandoned. This application May 8, 1995, Ser. No. 436,784

Int. Cl.[6] C07C *41/00;* **C08F** *4/08*

U.S. Cl. 568—659 **5 Claims**

1. A process for the preparation of hydrocarbon solutions of monofunctional ether initiators of the following structure:

$$M\text{—}Z\text{—}O\text{—}C(R^1R^2R^3)$$

characterized in that M is an alkali metal selected from the group consisting of lithium, sodium, and potassium; Z is selected from the group consisting of branched and straight chain hydrocarbon groups which contain 3–25 carbon atoms, optionally containing aryl groups; and R^1, R^2, and R^3 are independently selected from hydrogen, alkyl groups, and aryl groups containing 3 to 25 carbon atoms, comprising reacting an omega-protected-1-haloalkyl with an alkali metal dispersion having a particle size between 10 and 300 microns in size, under an inert atmosphere, at a temperature between 35° and 130° C. in an inert liquid hydrocarbon solvent containing 5 to 10 carbon atoms.

5,621,150

PROCESS FOR THE PRODUCTION OF ETHYL TERT.-ALKYL ETHERS

Henry Rastelli, New Fairfield, Conn.; Carmen M. Yon, Carmel, N.Y., and Stanley J. Frey, Palatine, Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 337,805, Nov. 14, 1994, Pat. No. 5,475,150, which is a division of Ser. No. 201,590, Feb. 25, 1994, Pat. No. 5,401,887. This application Apr. 26, 1995, Ser. No. 429,402

Int. Cl.[6] C07C *41/34*

U.S. Cl. 568—697 **18 Claims**

1. A process for the separation of ethanol from a mixture thereof, said mixture comprising ethanol, tertiary alcohol, and an ethyl tert. alkyl ether, said process comprising:

a) passing said mixture to an adsorption zone containing an adsorbent for the adsorption of ethanol to provide an effluent stream essentially free of ethanol, said effluent stream comprising ethyl tert. alkyl ether and said tertiary alcohol; and

b) regenerating said adsorbent to recover said ethanol.

5,621,151

HALOCARBON HYDROGENOLYSIS

William H. Manogue, Newark, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 242,503, May 13, 1994, Pat. No. 5,430,204, which is a continuation of Ser. No. 122,102, Sep. 16, 1993, Pat. No. 5,364,992, and a continuation of Ser. No. 847,987, Apr. 9, 1992, abandoned. This application Apr. 21, 1995, Ser. No. 426,534

Int. Cl.[6] C07C *17/42*

U.S. Cl. 570—101 **20 Claims**

1. A process for the hydrogenolysis of carbon tetrachloride comprising:

contacting said carbon tetrachloride with at least 0.1 mole of hydrogen per mole of said carbon tetrachloride in an empty reaction vessel of nickel, iron or their alloys at a pressure within the range of from 0 psig to 1000 psig, at a temperature within the range of from 350° C. to 700° C. and for a time sufficient to produce CH_2Cl_2.

5,621,152

PROCESS FOR REMOVING OLEFINIC IMPURITIES FROM 2H-HEPTAFLUOROPROPANE (R 227)

Rolf-Michael Jansen, Kelkheim, and Peter Hopp, Hofheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 19, 1996, Ser. No. 616,483

Claims priority, application Germany, Mar. 21, 1995, 195 10 159.6

Int. Cl.[6] C07C *17/38;17/389;19/08*

U.S. Cl. 570—179 **5 Claims**

1. A process for removing olefinic impurities from 2H-heptafluoropropane (R 227), which comprises passing the contaminated R 227 in the gas phase at from −20° to 100° C. over aluminum oxide.

5,621,153

PROCESS FOR THE PREPARATION OF CHLOROALKYLBENZENES AND NOVEL COCATALYSTS THEREFOR

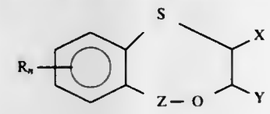
Ramesh Krishnamurti, Williamsville; Sandor Nagy, Grand Island, and Thomas F. Smolka, West Seneca, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,208

Int. Cl.[6] C07C *17/12;* **C07D** *291/02;327/02*

U.S. Cl. 570—209 **13 Claims**

1. A process for the direct ring chlorination of alkylbenzenes which comprises reacting an alkylbenzene with a chlorine in the presence of a Lewis acid catalyst and a co-catalyst comprising a compound or mixture of compounds characterized by the formula:



wherein Z is:

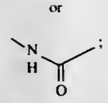


[1]



[2]

or



[3]

R is Cl, Br, F, C_1 to C_8 alkyl, or C_1 to C_8 alkoxy; x and y are each hydrogen, or taken together form a fused cyclopentyl or cyclohexyl ring; n is 0, 1, or 2, with the proviso that when Z is [3], n is 0 or 1.

5,621,154

METHODS FOR REDUCING FOULING DEPOSIT FORMATION IN JET ENGINES

Bruce E. Wright, The Woodlands, and William L. Witzig, Montgomery, both of Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 230,031, Apr. 19, 1994, abandoned. This application Jan. 3, 1995, Ser. No. 368,076

Int. Cl.[6] C10L *1/10;10/00*

U.S. Cl. 585—3 **17 Claims**

1. A method for cleaning and inhibiting fouling deposit formation on jet engine component surfaces during the combustion of

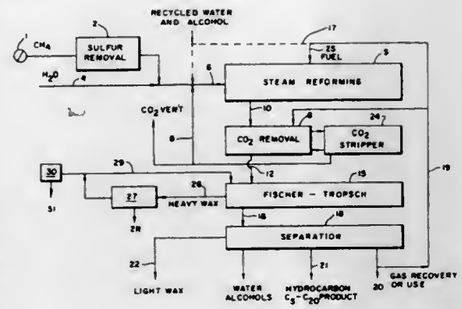
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turbine combustion fuel oils comprising adding to said turbine combustion fuel oils an effective inhibiting amount of a derivative of polyalkenylthiophosphonic acid, wherein such derivative is selected from the group consisting essentially of polyalkenylthiophosphonic acid, polyalkenylthiophosphonic esters, polyalkenylphososphonic acid, polyalkenylphosphonic esters.

5,621,155
PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Charles B. Benham, Arvada; Mark S. Bohn, Golden, and Dennis L. Yakobson, Westminster, all of Colo., assignors to Rentech, Inc., Denver, Colo.

Continuation of Ser. No. 140,479, Nov. 18, 1993, abandoned, which is a division of Ser. No. 867,456, Apr. 13, 1992, Pat. No. 5,324,335, which is a continuation-in-part of Ser. No. 806,267, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,499, May 25, 1990, abandoned, which is a continuation of Ser. No. 861,535, May 8, 1986, abandoned. This application Apr. 24, 1995, Ser. No. 428,793
Int. Cl.[6] C07C *7/04*
U.S. Cl. 585—310 **22 Claims**



1. A process for the conversion of hydrocarbon-containing gases into liquid hydrocarbon products including hydrocarbon products having more than five carbon atoms which are useful as a fuel or a fuel additive comprising the steps of:

converting the hydrocarbon-containing gases in the presence of carbon dioxide and water into hydrogen and carbon monoxide in the ratio of from about 1.0 to about 2.5 parts of hydrogen to one part of carbon monoxide by volume;

removing carbon dioxide from the hydrogen and carbon monoxide produced by the step of converting and recycling at least a portion of this carbon dioxide back to the first converting step;

reacting the hydrogen and carbon monoxide in the said ratios and having a reduced carbon dioxide content in a Fischer-Tropsch synthesis reaction vessel in the presence of a hydrocarbon slurry containing a catalyst consisting essentially of a promoted iron catalyst at a sufficient temperature, pressure and space velocity to promote the formation of predominately hydrocarbons having more than five carbon atoms, said hydrocarbon slurry containing from between about 5% by weight to about 20% by weight of said promoted iron catalyst and the reaction forming carbon dioxide;

separately recovering gaseous and liquid hydrocarbon products produced by said Fischer-Tropsch reaction; and

recycling at least a portion the carbon dioxide formed in the reaction in the recovered gaseous products back to a carbon dioxide separating means to obtain separated carbon dioxide and recycling said separated carbon dioxide back to the first converting step.

5,621,156
HYPERGOLIC FUEL FORMULATION: DIETHYLETHANOLAMINE, TRIETHYLAMINE, AND CARBON

Darren M. Thompson, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 11, 1996, Ser. No. 712,524
Int. Cl.[6] C10L *7/02;7/04*
U.S. Cl. 44—266 **2 Claims**

1. A hypergolic fuel formulation which is consistently hypergolic with inhibited red fuming nitric acid, said hypergolic fuel formulation comprising:

(i) diethylethanolamine in an amount from about 44 to about 72 weight percent;

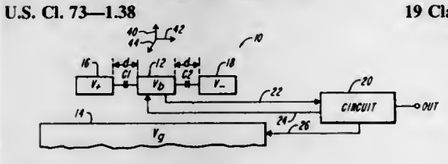
(ii) triethylamine in an amount from about 11 to about 18 weight percent; and,

(iii) carbon in an amount from about 45 to about 10 weight percent.

5,621,157
METHOD AND CIRCUITRY FOR CALIBRATING A MICROMACHINED SENSOR

Yang Zhao, North Andover, and Richard S. Payne, Andover, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 7, 1995, Ser. No. 480,330
Int. Cl.[6] G01L *1/14*
U.S. Cl. 73—1.38 **19 Claims**



15. A sensor comprising:

a conductive ground plane lying in a first plane;

a first fixed beam suspended over and fixed relative to the ground plane;

a second fixed beam suspended over and fixed relative to the ground plane;

a movable beam suspended over and movable relative to the first and second fixed beams and the ground plane in a first direction in a second plane parallel to the ground plane, wherein the first and second fixed beams and the movable beam lie in the second plane; and

calibration circuitry including:

a voltage source for providing a known voltage to the ground plane to cause the movable beam to move in the first direction with an expected acceleration, and

output circuitry for providing an output signal indicating a measured acceleration of the movable beam in the first direction, the circuitry being adjustable so that the measured acceleration can be made to be substantially the same as the expected acceleration to calibrate the sensor.

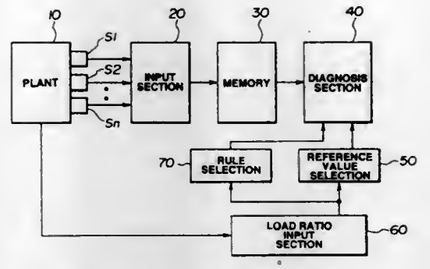
5,621,158
MEASUREMENT VALUE JUDGING METHOD

Tatsuya Kitamura, and Tatsuya Ariga, both of Hiratsuka, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP94/02043, § 371 Date Jun. 6, 1996, § 102(e) Date Jun. 6, 1996, PCT Pub. No. WO95/16226, PCT Pub. Date Jun. 15, 1995
PCT Filed Dec. 6, 1994, Ser. No. 666,331
Claims priority, application Japan, Dec. 6, 1993, 5-305369
Int. Cl.[6] G01R *7/10*
U.S. Cl. 73—1.01 **4 Claims**

1. A measurement value judging method in which comparison is made between measurement values of sensors provided in various locations in a system and previously set reference values, and judgement is made as to whether the sensors are normal or abnormal on the basis of results of the comparison, comprising the steps of:

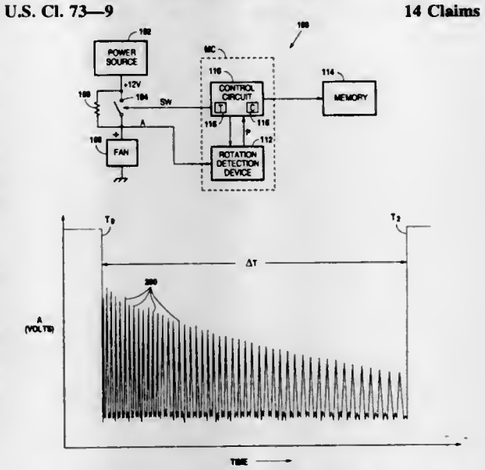
detecting state quantities corresponding to loads of the system, and altering normal operation ranges of the sensors in accordance with results of the detection.



5,621,159
METHOD AND APPARATUS FOR DETERMINING FAN BEARING FRICTION

Alan E. Brown, Georgetown, and Louis E. Cano, Pflugerville, both of Tex., assignors to Dell USA L.P., Austin, Tex.

Filed Nov. 2, 1995, Ser. No. 552,179
Int. Cl.[6] G01N *19/02*
U.S. Cl. 73—9 **14 Claims**



1. A fan test system for measuring the bearing friction of a fan receiving power from a power source during normal operation, comprising:

a switch for coupling between the fan and the power source;

a current limiter coupled in parallel with said switch;

a power controller coupled to said switch to test the fan by controlling said switch to interrupt power to the fan for at least a predetermined time period; and

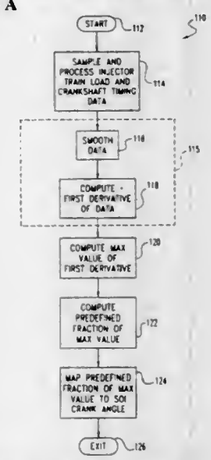
a measuring device coupled to said current limiter for detecting voltage pulses of the fan to determine a spin-down rate value during said predetermined time period indicative of the bearing friction of the fan.

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5,621,160
APPARATUS AND METHOD FOR DETERMINING START OF INJECTION IN A FUEL INJECTED INTERNAL COMBUSTION ENGINE

John T. Carroll, III, and Thomas L. Bailey, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Apr. 1, 1996, Ser. No. 625,372
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—119 A **36 Claims**



1. In an internal combustion engine having a fuel injector actuated by a crank shaft via an injector train, a method of determining a crank shaft angle, relative to a predefined position thereof, at which start of injection (SOI) of fuel from the fuel injector occurs, the method comprising the steps of:

obtaining injector train load data as a function of crank shaft timing;

smoothing the injector train load data;

computing a first derivative of the smoothed injector train load data with respect to crank shaft timing;

locating a maximum value of the first derivative;

multiplying the maximum value of the first derivative by a predefined fraction; and

mapping the predefined fraction of the maximum value of the first derivative to its corresponding crank shaft angle, said corresponding crank shaft angle defining the crank shaft angle at which SOI occurs.

5,621,161
METHOD FOR MONITORING FOR THE PRESENCE OF DISSOLVED GAS IN A FLUID UNDER PRESSURE

Robert H. Leyse, 12136 Brookglen Dr., Saratoga, Calif. 95070

Filed Apr. 11, 1995, Ser. No. 419,700
Int. Cl.[6] G01N *7/00;33/497*
U.S. Cl. 73—19.01 **20 Claims**

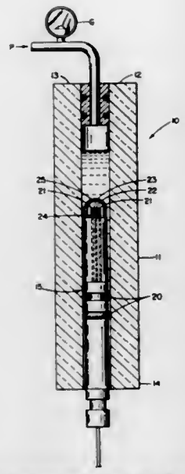
1. A method for determining the presence of dissolved gas in a fluid under pressure comprising the steps of:

providing a test cell capable of containing fluid and withstanding pressure of at least 2500 psi,

providing a test instrument disposed in the fluid, the test instrument having a sensor element to which electrical power can be applied,

providing means for measuring the electrical resistance of the sensor element,

calibrating the sensor element at a measured temperature and a measured pressure using gas-free fluid, recording the power applied to the sensor element versus the resistance of the sensor element to determine the power-resistance characteristic of the sensor element in the gas-free degassed, demineralized fluid,



locating said sensor element within the fluid within the process equipment in which the presence of dissolved gas in the fluid is to be determined,

measuring the temperature and the pressure of the fluid within the process equipment,

increasing the electrical power applied to the sensor element in a continuous manner and recording the power,

measuring the electrical resistance of the sensor element continuously with the increase in electrical power,

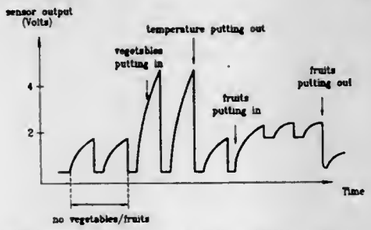
recording the power applied to the sensor element versus the resistance of the sensor element to determine the power-resistance characteristic for the sensor element in the fluid suspected of containing dissolved gas,

comparing the recordings showing the power-resistance characteristics for the sensor element in the degassed fluid and for the sensor element in the fluid suspected of containing dissolved gas and determining the presence of dissolved gas in the suspect fluid.

5,621,162
GAS SENSOR FOR DETECTING GASES GENERATED FROM FOOD PRODUCTS

Dong H. Yun, Anyang-si; Chul H. Kwon, Seoul; Kyuchung Lee, Seoul; Hyeon S. Park, Seoul; Hyung K. Hong; Hyun W. Shin, both of Kwacheon-si, and Sung T. Kim, Seoul, all of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jan. 23, 1996, Ser. No. 590,299
Claims priority, application Rep. of Korea, Jan. 24, 1995, 1178/1995
Int. Cl.[6] G01N *31/00;27/12*
U.S. Cl. 73—23.34 **9 Claims**



1. A gas sensor for detecting a gas component from a food item comprising:

a sensing layer having an electrical resistance value that varies in accordance with a characteristic of the gas component generated from the food item to thereby sense the gas component;

first and second electrodes coupled across said sensing layer and connected to a power supply;

a heater for heating the gas sensor to a temperature of sensing operation; and

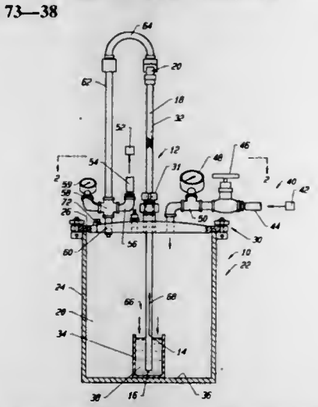
a switch connected to a voltage supply for controlling whether said heater is operated in a first temperature range or in a second temperature range;

wherein the sensing layer comprises a mixture of SnO_2 and WO_3 in a predetermined ratio.

5,621,163
APPARATUS FOR TESTING RESIN FLOW

David H. Johnson, 7060 Koll Center Pkwy., Ste. 316, Pleasanton, Calif. 94566

Filed Dec. 20, 1995, Ser. No. 580,073
Int. Cl.[6] G01N *15/08;33/44*
U.S. Cl. 73—38 **12 Claims**



1. An apparatus for determining resin flows through a solid porous material comprising:

a. a tube of a certain cross-sectional size for carrying the resin, said tube including first and second openings;

b. a vessel having an interior chamber, said vessel including an opening for said tube to permit said tube first opening to lie in said chamber of said vessel and said tube second opening to lie outside said chamber;

c. a reservoir for the resin located within said vessel chamber, said tube first opening communicating with the resin in the reservoir;

d. pressure means for urging said resin from said reservoir along said tube toward said second opening of said tube; and

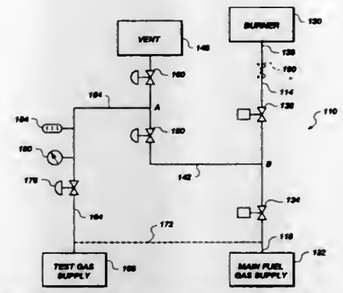
e. a mass of the solid porous material placed within the tube between said reservoir and said tube second opening.

5,621,164
LEAK TEST SYSTEM

H. Allan Woodbury, and James R. North, both of 535 S. 300 West, Salt Lake City, Utah 84101

Filed Jan. 27, 1995, Ser. No. 379,948
Int. Cl.[6] G01M *3/08*
U.S. Cl. 73—40.5 R **22 Claims**

1. A leak test system for a double block and bleed valve arrangement having first and second safety shutoff valves disposed along a gas supply line, and a vented bleed line extending from the gas supply line between the first and second safety shutoff valves with a vent valve disposed along the bleed line, the leak test system comprising:



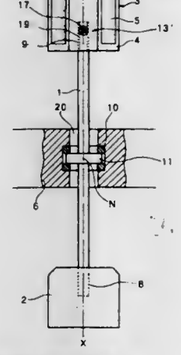
a second vent valve disposed along the bleed line downstream from the vent valve; and

pressure monitoring means in communication with the bleed line for monitoring pressure in the bleed line between the first and second vent valves.

5,621,165
VISCOSITY DETECTOR HAVING A NODE ALIGNMENT MECHANISM

Shinsuke Miura, Hachiohji; Norihiko Kumagai; Kenji Muraoka, both of Tokyo, and Takashi Yoshimura, Kawasaki, all of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,151
Claims priority, application Japan, Sep. 16, 1994, 6-248432
Int. Cl.[6] G01N *11/10*
U.S. Cl. 73—54.27 **5 Claims**



1. A viscosity detector comprising:

a vibration transmission shaft having a first end, a second end, and a central longitudinal axis;

a vibration member connected to said first end of said vibration transmission shaft;

a liquid detector connected to said second end of said vibration transmission shaft;

a bearing portion disposed at an intermediate position of said vibration transmission shaft between said vibration member and said liquid detector;

an inertia mass connected to said first end of said vibration transmission shaft along the central axis thereof; and

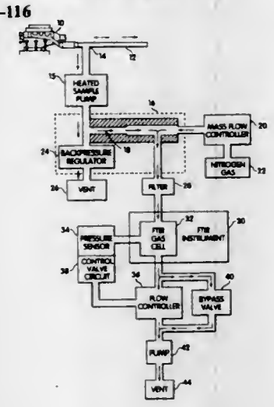
a node alignment mechanism for displacing at least a portion of said inertia mass in a direction toward or away from the central axis of said vibration transmission shaft.

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5,621,166
EXHAUST EMISSIONS ANALYSIS APPARATUS AND METHOD

James W. Butler, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1995, Ser. No. 417,523
Int. Cl.[6] G01M 15/00
U.S. Cl. 73—116 3 Claims



1. An apparatus for testing of exhaust gas emissions from an internal combustion engine and for determination of an operating condition of the engine, comprising:

sensor means for receiving light from the exhaust gas emissions at wavelengths corresponding to emission species to be detected, including at least H_2O, CO_2 and CO, and for generating an output signal corresponding to an amount of light received at each of said wavelengths;

signal processor means for receiving the output signals and determining an amount value for each of said emission species based at least in part on the corresponding output signal, and for determining the operating condition based at least in part on the output signals corresponding to H_2O, CO_2 and CO; and

emitter means for emitting light toward the exhaust gas emissions, having wavelengths absorbed by emission species to be detected, including at least H_2O, CO_2 and CO;

wherein the signal processor means comprises a microprocessor for determining a value corresponding to exhaust H/C ratio equal to:

$$\frac{H}{C}\ \text{ratio} = \frac{H_2O}{CO_2} + \frac{\dfrac{CO/CO_2}{3}}{1 + (CO/CO_2)}$$

where:

#H_2O is the amount value determined by the signal processor means for H_2O,

#CO_2 is the amount value determined by the signal processor means for CO_2, and

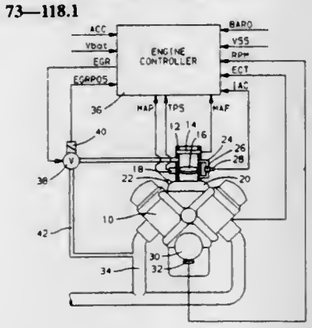
#CO is the amount value determined by the signal processor means for CO,

and for determining the operating condition at least in part by comparing the exhaust H/C ratio value to a preselected value range corresponding to normal engine operating conditions, and for manifesting whether the exhaust H/C ratio is within said preselected value range.

5,621,167
EXHAUST GAS RECIRCULATION SYSTEM DIAGNOSTIC

Jessa F. Fang-Cheng, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 30, 1995, Ser. No. 496,940
Int. Cl.[6] G01M 15/00
U.S. Cl. 73—118.1 12 Claims



1. A diagnostic method for diagnosing reduced performance of an EGR system for recirculating internal combustion engine exhaust gas from an exhaust gas conduit through a recirculation conduit to an engine intake air passage through positioning of an EGR valve disposed in the recirculation conduit, comprising the steps of:

sampling present values of a predetermined set of engine parameters;

determining when the sampled present values indicate that the engine is operating within a predetermined stable engine operating region;

upon determining that the engine is operating within the predetermined stable engine operating condition, activating a minimally intrusive phase one diagnostic process to drive the EGR valve open and to measure the resulting change in engine intake passage absolute air pressure to approximate the EGR system performance, the phase one diagnostic comprising the steps of:

(a) recirculating engine exhaust gas through the recirculation conduit to the intake air passage for a predetermined phase one test period;

(b) determining change in intake air passage pressure resulting from the recirculated engine exhaust gas;

(c) establishing a maximum determined change in intake air pressure resulting from the recirculated engine exhaust gas;

(d) comparing the established maximum determined change to a change threshold value;

(e) approximating the performance degradation if the established maximum determined change is less than the change threshold value;

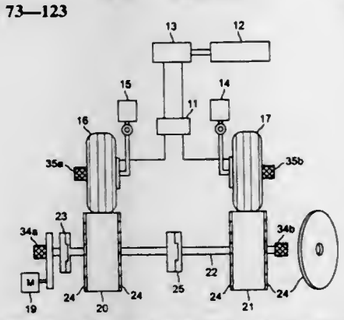
if the phase one diagnostic process approximates that the EGR system performance is degraded, deactivating the phase one diagnostic process and activating an intrusive phase two diagnostic process to drive the EGR valve open and to measure the resulting change in engine intake air passage absolute air pressure to confirm or refute the approximation that the performance is degraded; and

if the phase two diagnostic process confirms the approximation that the performance is degraded, then indicating a performance degradation in the EGR system.

5,621,168
SIMULATOR FOR TESTING AN ABS MODULATOR

Sang K. Kim, and Hong J. Lee, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 21, 1995, Ser. No. 493,304
Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14133
Int. Cl.[6] G01L 5/28
U.S. Cl. 73—123 8 Claims



1. A simulator for testing an anti-lock brake system modulator comprising:

rotatable first and second flywheels in contact with a pair of wheels by a predetermined pressure, the first and second flywheels being spaced a distance from each other;

a flywheel driving portion for transmitting a driving force to said first and second flywheels, and managing the driving force with respect to said first and second flywheels and/or the driving force with respect to said second flywheel;

wheel rotation-speed sensors for monitoring the rotational speed of said pair of wheels;

flywheel rotation-speed sensors for monitoring the rotational speed of said first and second flywheels;

wheel pressing means respectively installed to said pair of wheels for maintaining a contact pressure between said wheel and flywheel by a predetermined pressure to allow a frictional force between said wheel and flywheel to concur with a frictional force between a tire and a road surface;

braking means for generating a second predetermined pressure equivalent to a pressure induced by a driver's stepping on a brake pedal, generating a braking force corresponding to said pressure, transferring said braking force to said wheels, and mounting a modulator to be tested;

a pneumatic pressure generating circuit part for supplying the second predetermined pressure to said braking means and wheel pressing means; and

controlling means electrically connected to said flywheel driving portion, wheel rotation-speed sensors, flywheel rotation-speed sensors, and pneumatic pressure generating circuit part for simulating various road surface conditions in accordance with a command, controlling said flywheel driving portion to allow said pair of flywheels to have an identical rotational speed or different rotational speeds in response to an input signal from said flywheel rotation-speed sensors, supplying a control signal to said pneumatic pressure generating circuit part to provide an identical rotational speed or different rotational speeds to said wheel pressing means respectively connected to said pair of wheels, and outputting a control signal to said pneumatic pressure generating circuit part to operate said braking means,

wherein the pneumatic pressure generating circuit part comprises a pneumatic pressure generating portion, a braking pressure supply portion for supplying the second predetermined pneumatic pressure to the braking pressure generating means, and first and second pneumatic pressure supply portions for independently supplying the first predetermined pneumatic pressure to respective wheel pressing means,

wherein one of said first and second pneumatic pressure supply portions and braking pressure supply portion are respectively formed of a pneumatic regulator for regulating the pneumatic pressure from said pneumatic pressure generating portion in a predetermined level, a flux controller for controlling flux, and a solenoid value connected between the pneumatic regulator and flux controller for switching a path for receiving the pneumatic pressure, and

the other of said first and second pneumatic pressure supply portions is formed of a first solenoid valve connected to the pneumatic pressure generating portion for switching the path for receiving the pneumatic pressure, a second solenoid valve connected to the first solenoid valve for switching the pneumatic path of high level or low level, a high-level pneumatic regulator connected to the second solenoid valve for controlling the pneumatic pressure for supplying the pneumatic pressure of high level to the wheel pressing means connected to the other pneumatic supply portion a low-level pneumatic regulator connected to the second solenoid value for controlling the pneumatic pressure for supplying the pneumatic pressure of low level to the wheel pressing means connected to the other pneumatic supply portion, a shuttle valve for opening/closing the outputs from the high-level pneumatic regulator and low-level pneumatic regulator, an exhaust solenoid valve for discharging air when the supplied pneumatic pressure is changed from high level to low level, a timer, and a flux controller for controlling flux.

5,621,169
METHOD FOR DETERMINING HYDROCARBON/WATER CONTACT LEVEL FOR OIL AND GAS WELLS

Thomas G. Harris; Donald L. Luffel, and Joseph M. Hawkins, all of Houston, Tex., assignors to Restech, Inc., Houston, Tex.

Continuation of Ser. No. 592,608, Jan. 26, 1996, abandoned, which is a continuation of Ser. No. 182,450, Jan. 18, 1994, abandoned. This application Sep. 10, 1996, Ser. No. 710,085
Int. Cl.[6] E21B 47/04
U.S. Cl. 73—152.18 3 Claims

1. A method for determining the hydrocarbon/water contact level h in a permeable zone of a well comprising the steps of:

transforming signals characteristic of formations pierced by a well into signals as a derived function of depth x in the well, of porosity, $\phi(x)$, water saturation, $S_w(x)$, and air permeability, $k_a(x)$,

transforming said signals representative of porosity, water saturation, and air permeability into a signal representative of the hydrocarbon/water contact level h by regression which minimizes within a predetermined confidence limit the error in h, where porosity, air permeability, and water saturation are considered to have associated errors, where such transformation is through a predetermined relationship of $h=f(\phi(x), k_a(x), S_w(x))$,

with said predetermined relationship $h=f(\phi(x), k_a(x), S_w(x))$ characterized by the relationships,

$$P_d(x) = k_3/(k_a(x)^{k4})\,\phi(x), \text{ where}$$

$k_3 = 937.8$, and

$k_4 = 0.3406$

$$F_g(x) = \left[\ln\left(k_1\left(\frac{k_a(x)^{k2}}{\phi(x)}\right)\right)\right]^2/2.303$$

$k_1 = 5.21$, and

$k_2 = 0.1254$;

$$\log P_c(x) = -F_g(x)/\ln(1 - S_w(x) + \log P_d(x); \text{ and}$$

$$h = k_5 p_c(x), \text{ where}$$

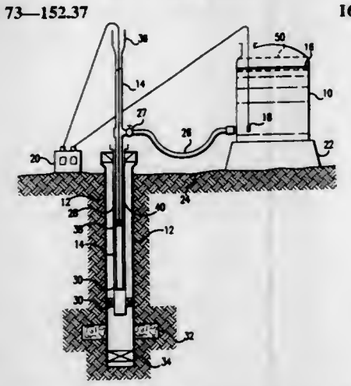
$$k_5 = \frac{1}{.433(P_w - P_h)}\left\lfloor \frac{\sigma_r \cos\theta_r}{\sigma_i \cos\theta_i} \right\rfloor$$

p_w=formation water density
p_h=formation hydrocarbon density

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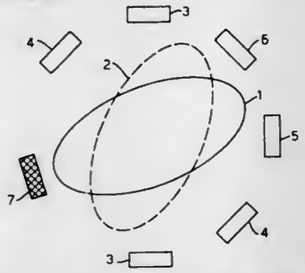
σ_r=interfacial tension between the fluids in said zone
σ_i=interfacial tension for mercury in a laboratory test,
θ_r=contact angle between formation water and reservoir rock, and
θ_i=contact angle between mercury and rock, in the laboratory.

5,621,170
METHOD FOR TESTING GAS WELLS IN LOW PRESSURED GAS FORMATIONS
Jerrald L. Saulsberry, McCalla, Ala., assignor to Gas Research Institute, Chicago, Ill.
Continuation of Ser. No. 140,636, Oct. 20, 1993, abandoned.
This application May 1, 1995, Ser. No. 431,543
Int. Cl.[6] E21B *47/00*
U.S. Cl. 73—152.37 **16 Claims**



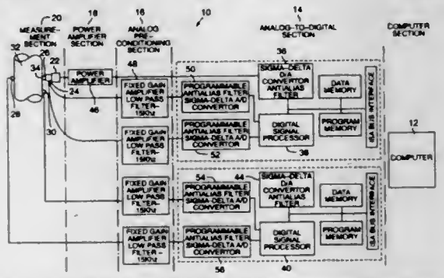
14. An apparatus for performing injection tests on low-pressured reservoirs, comprising:
a vessel for containing water;
a first tubing having an upper end and a lower end;
a wellbore having a wellbore interior, said first tubing located within said wellbore interior, at least one packer positioned within said wellbore interior and vertically stabilizing said first tubing;
a second tubing having a diameter smaller than said first tubing, said second tubing inserted within said first tubing and secured with respect to said first tubing, said second tubing exposed to atmospheric pressure;
shut-in equipment positioned downhole within said wellbore interior for sealably isolating said wellbore interior from another formation, said shut-in equipment being attached to said lower end of said first tubing or said second tubing;
flow delivery means for transporting said water from said vessel to said tubing;
said flow delivery means controlling an amount of said water;
first measurement means for measuring a flow rate of said water;
said first measurement means communicating flow rate data to recording means for recording said flow rate data;
second measurement means for measuring a wellbore interior pressure within said wellbore interior at a location below a water level within said vessel and for communicating wellbore interior pressure data to said recording means for recording said wellbore interior pressure data; wherein
said first measurement means comprise a first pressure gauge exposed to said water inside said vessel and said second measurement means comprise a second pressure gauge exposed to said water inside said wellbore interior.

5,621,171
METHOD FOR ACTIVELY BALANCING A VIBRATION STRUCTURE GYROSCOPE SENSING ELEMENT STRUCTURE
Christopher Fell, Plymouth, Great Britain, assignor to British Aerospace Public Limited Company, Hampshire, England
Filed Apr. 5, 1996, Ser. No. 628,451
Claims priority, application United Kingdom, Apr. 7, 1995, 9507253
Int. Cl.[6] G01P *9/04*; G01C *19/56*
U.S. Cl. 73—504.13 **3 Claims**



1. A method for actively balancing a Vibrating Structure Gyroscope sensing element structure of ring-like or substantially cylindrical form made of ferromagnetic material, in which a variable strength magnetic field is applied across a predetermined section of the circumference of the sensing element structure differentially to shift the resonant frequency of one or the other of the primary and secondary vibration modes thereof by an amount sufficient to bring the two mode resonant frequencies into balance.

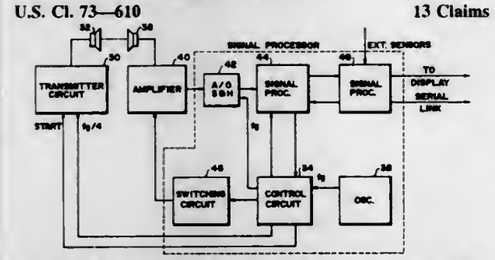
5,621,172
METHOD AND APPARATUS FOR TESTING MATERIAL STRENGTHS
James B. Wilson, and Milo L. Clauson, both of Corvallis, Oreg., assignors to State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.
Filed Apr. 3, 1995, Ser. No. 415,500
Int. Cl.[6] G01N *29/20*
U.S. Cl. 73—579 **31 Claims**



1. An apparatus for evaluating material strengths, comprising:
a frequency sweeping waveform generator that generates a sinusoidal waveform and sweeps frequencies between a low frequency and a high frequency while evaluating material strengths, wherein the low frequency is from about 10 Hz to about 150 Hz, and the high frequency is from about 6,000 Hz to about 24,000 Hz;
a driver that receives signals from the generator and which is coupled to an elongated material at a drive point for transmitting the frequency sweeping waveform to the material;
a force sensor that is coupled to the material at or adjacent to the drive point for measuring force transmitted into the material as the waveform sweeps between the low and the high frequencies;

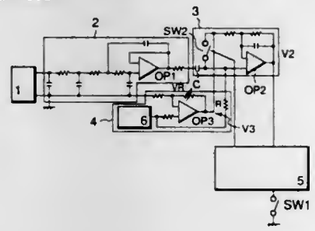
a first accelerometer that is coupled to the material at or adjacent to the drive point for measuring response of the material to the transmitted waveform as the waveform sweeps between the low and the high frequencies; and
a microprocessor that receives signals from the force sensor and accelerometer and evaluates material strength based on the signals from the force sensor and accelerometer as the waveform sweeps between the low and the high frequencies.

5,621,173
METHOD AND APPARATUS FOR NON-CONTACT DETERMINATION OF THE WEIGHT PER UNIT AREA OF THIN MATERIALS
Helmut Knorr, Diessenor Strasse 1, D-86919 Utting, Germany
PCT No. PCT/DE93/01041, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/10533, PCT Pub. Date May 11, 1994
PCT Filed Oct. 28, 1993, Ser. No. 428,126
Claims priority, application Germany, Oct. 28, 1992, 42 36 436.1
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—610 **13 Claims**



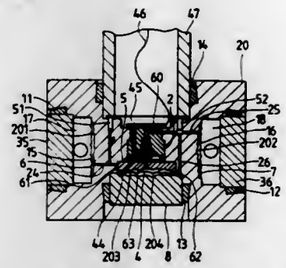
1. A method of non-contact determination of at least one of the weight per unit area and thickness of thin material wherein a first receiver, arranged on one side of the material, receives ultrasonic waves generated by a transmitter arranged on the other side and produces a first output signal in response thereto; said method comprising the steps of transmitting ultrasound pulses spaced in time by pause intervals that are longer than the period of time sound takes to travel from the transmitter to the receiver; processing said first output signal only when said signal has an amplitude exceeding a prescribed level; and processing a portion of said first output signal in response to the receipt of each respective ultrasound pulse, said portion having a duration which is less than the time that sound takes to travel from the transmitter to the receiver.

5,621,174
VIBRATION DETECTION DEVICE
Tatsuo Amanuma, Ageo; Sueyuki Ohishi, Tokyo, and Masato Matsuzawa, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jan. 24, 1995, Ser. No. 377,804
Claims priority, application Japan, Apr. 28, 1994, 6-092630
Int. Cl.[6] G01N *29/00*; H04N *5/232*; G03B *5/00*; G01H *17/00*
U.S. Cl. 73—661 **6 Claims**



I. A vibration detection device comprising:
a detecting device to detect a vibration and to output a detection signal on the basis of the detection result;
an amplifying device to amplify the detection signal detected by said detecting device;
an initializing device to initialize said amplifying device when said detection signal has a value indicating "0" as the detection result; and
an adjusting device to adjust an output from said amplifying device, such that a first output from said amplifying device and a second output from said amplifying device have substantially the same value, said first amplifying device output being obtained when said amplifying device is initialized, and said second amplifying device output being obtained when said amplifying device is not initialized and said detecting device produces no signal.

5,621,175
DIFFERENTIAL PRESSURE TRANSMITTER HAVING SYMMETRICAL CONSTRUCTION
Akira Nagasu; Yoshimi Yamamoto, both of Naka-machi, and Tomoyuki Tobita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 134,225, Oct. 8, 1993, abandoned.
This application Feb. 14, 1996, Ser. No. 601,494
Claims priority, application Japan, Oct. 22, 1992, 4-284169
Int. Cl.[6] G01L *7/08*; G01F *1/38*
U.S. Cl. 73—706 **10 Claims**



1. A differential pressure transmitter for detecting a difference between a pressure of a first detection fluid in a first pressure-receiving chamber and a pressure of a second detection fluid in a second pressure-receiving chamber, comprising
a first diaphragm for sealing the first detection fluid in the first pressure-receiving chamber,
a second diaphragm for sealing the second detection fluid in the second pressure-receiving chamber which is installed substantially parallel to the first diaphragm,
a first isolation chamber communicating with the first pressure-receiving chamber,
a second isolation chamber communicating with the second pressure-receiving chamber,
a third diaphragm installed between the first and the second isolation chambers so as to seal them separately and disposed at a different angle from those of the first and second diaphragms, between the first and second diaphragms,
a differential pressure detection sensor installed on and communicated to the first and the second isolation chambers; and
a pressure receiving member formed of a single member and being provided with plural threads connected to pressure transmitting paths from a process, and seal diaphragm setting holes in which the first diaphragm, the second diaphragm and the third diaphragm are respectively installed, said threads respectively connected to the first diaphragm and the second diaphragm through respective transmitting paths that are formed in the pressure receiving member.

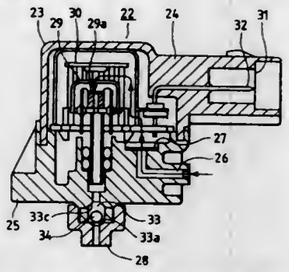
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5,621,176

PRESSURE SENSOR WHICH PREVENTS LEAKAGE OF FUEL

Susumu Nagano, and Tateki Mitani, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 508,189, Jul. 27, 1995, abandoned. This application Aug. 5, 1996, Ser. No. 692,152
Claims priority, application Japan, Mar. 30, 1995, 7-100534
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—714 **19 Claims**



1. A pressure sensor into which the internal pressure of a fuel tank is introduced, comprising:

a nipple portion for introducing a fuel tank pressure;

an air introducing hole for introducing air into an atmospheric pressure portion;

a pressure buffer chamber disposed in said nipple portion; and

a check valve provided in the buffer chamber,

wherein said check valve is suspended in said buffer chamber in order to allow a fuel to pass through said nipple portion to said atmospheric pressure portion when said fuel tank is upright during a normal operation,

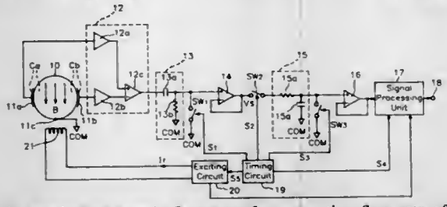
wherein said check valve blocks said fuel from passing from said nipple portion to said atmospheric pressure portion when said fuel tank is turned sideways or is turned over, in order to prevent a leakage of said fuel during an overturning of a vehicle carrying said fuel tank.

5,621,177

ELECTROMAGNETIC FLOWMETER

Takashi Torimaru, Tokyo, Japan, assignor to Yokogawa Electric Corporation, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,877
Claims priority, application Japan, Mar. 2, 1995, 7-042972
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.16 **26 Claims**



1. An electromagnetic flowmeter for converting flow rate of a fluid to be measured to an electric signal and for outputting a flow rate signal corresponding to said flow rate through detecting electrodes, said electromagnetic flowmeter comprising:

exciting means for intermittently causing an exciting current to flow thereby to apply a magnetic field to said fluid, an exciting period of said exciting current being shorter than a non-exciting period thereof;

AC coupling means for obtaining an AC signal through an AC coupling of inter-electrode signals outputted from said detecting electrodes;

first sample and hold means for sampling and holding said AC signal with a sampling signal having a sampling width including portions before and after said excitation period, and for outputting the resulting sampled and held signal as a first hold signal;

switching means for switching the output of said first sample and hold means to a reference potential before and after said period of sample and hold; and

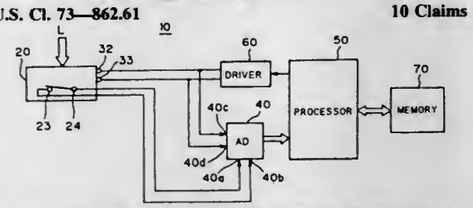
signal processing means for processing said hold signal and for outputting the resulting signal as said flow rate signal.

5,621,178

PIEZOELECTRIC SENSOR SYSTEM

Engerbert Van Pelt, and Wouter Taen, both of Minato-ku, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1995, Ser. No. 531,685
Claims priority, application Japan, Oct. 3, 1994, 6-264675
Int. Cl.[6] G01L *1/00*
U.S. Cl. 73—862.61 **10 Claims**



1. A piezoelectric sensor system for measuring a magnitude of a force exerted on an object comprising:

a piezoelectric actuator relay having a piezoelectric element displaceable in response to an actuation voltage and contacts which open or close in accordance with the displacement of said element, said actuator relay being adapted to receive said force to be measured against said displacement;

a driver circuit for supplying said piezoelectric element with a varying voltage as said actuation voltage; and

a measuring circuit responsive to an opening or a closure of said contacts for measuring a magnitude of said force based on a value of said actuation voltage at the instant of said opening or closure of said contacts.

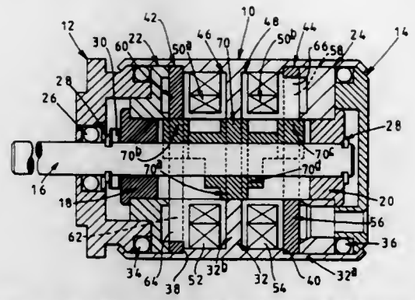
5,621,179

ROTARY TRANSDUCER

Alfred J. Alexander, Kent, England, assignor to Penny & Giles Blackwood Limited, England

PCT No. PCT/GB93/02510, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/14027, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 8, 1993, Ser. No. 448,440
Claims priority, application United Kingdom, Dec. 12, 1992, 9225971
Int. Cl.[6] G01B *7/30*
U.S. Cl. 73—862.331 **10 Claims**

10. A rotary transducer comprising a first electrical coil, leads for electrically connecting said first electrical coil to an AC power supply, an electrical output, and an inductive coupling which inductively couples said electrical output with the first electrical coil and which includes a rotor rotatable about an axis relative to said first electrical coil so that, in use, the electrical output varies in dependence upon the angular position of said rotor about said axis, wherein the first electrical coil comprises first and second coil portions which are mutually displaced axially of the rotor, and wherein said inductive coupling includes (a) first and second pole pieces associated respectively with said first and second coil portions and (b) first and second formations on said rotor, said first and second formations being (i) disposed radially inwardly of the respective first and second pole pieces relative to said axis, (ii) mutually axially displaced along the rotor and (iii) respectively



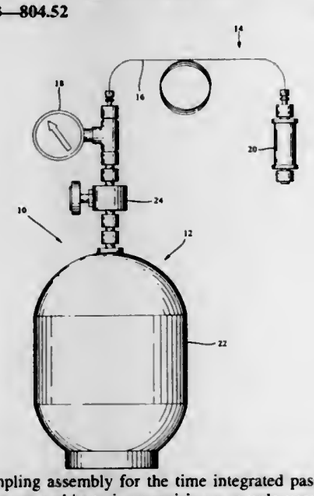
inductively associated with the first and second coil portions of the first electrical coil via said first and second pole pieces, a common stator pole piece disposed between and inductively associated with said first and second coil portions, said rotor having an intermediate formation disposed between the first and second formations, said intermediate formation having a discontinuous outer peripheral surface which lies adjacent a discontinuous inner peripheral surface of said common stator pole piece.

5,621,180

CAPILLARY SAMPLING FLOW CONTROLLER

Philippe Simon, Montréal, and Jean-Pierre Farant, Verdun, both of Canada, assignors to Martinex R & D Inc., Montreal, Canada

Filed May 7, 1996, Ser. No. 646,073
Claims priority, application United Kingdom, May 11, 1995, 9509577
Int. Cl.[6] G01N *1/24*
U.S. Cl. 73—804.52 **17 Claims**



1. A sampling assembly for the time integrated passive collection of a gas or ambient air comprising a sample vessel having a negative atmosphere, said vessel having a gas inlet and being operatively connected to a sampling flow controller comprising an elongated capillary tube having an inlet port and an outlet port with a gas flow passage therebetween, said outlet port communicating with the vessel, said capillary tube having a length and an internal diameter in accordance with the relationship

$$L = \frac{K_6 R^4 t}{\frac{V_f}{(e^{\frac{V_f}{K_5}} - 1)}}$$

wherein

L is the length of the capillary in meters,

R is the internal radius of the capillary in meters,

V_f is the final sampled volume in cubic meters,

t is the time in seconds, and

K_5 and K_6 are constants for the system in which

$$K_5 = \frac{P_{atm} V_s \bar{V}}{\mathbb{R} T}$$

and

$$K_6 = \frac{\pi \mathbb{R} T}{8 \mu V_s \bar{V}}$$

wherein

P_{atm} is atmospheric pressure (Pa)

$\bar{V}$ is the molar volume (m^3/mole)

$\mathbb{R}$ is the gas constant (N.m/mol.k)

T is the temperature (° K.), and

V_s is the volume of the vessel in cubic meters

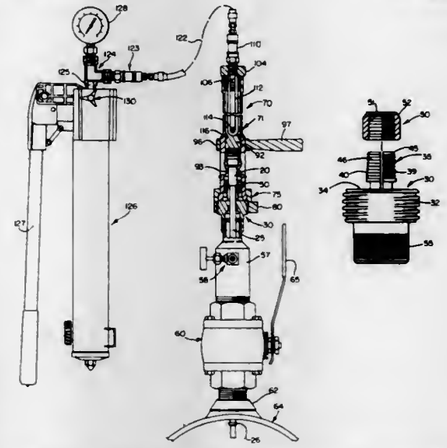
so as to provide flow control of gas or ambient air at said gas inlet of the vessel.

5,621,181

PROBE ASSEMBLY SYSTEM, INSERTION AND RETRIEVAL TOOL THEREFOR, AND METHODS

David K. Waterman, Santa Fe Springs, Calif., assignor to Erico International Corporation, Solon, Ohio

Filed Jul. 18, 1995, Ser. No. 503,883
Int. Cl.[6] G01N *17/00*
U.S. Cl. 73—866.5 **18 Claims**



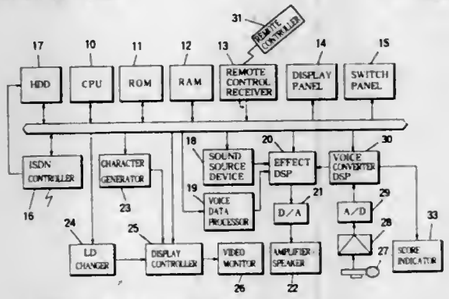
15. In combination, a pressure vessel, a probe assembly for said pressure vessel, an access valve secured to said vessel, and a stuffing box fitting secured to said access valve, said stuffing box fitting including an outwardly extending integrally formed collet, and a probe gripped by said collet projecting through said stuffing box fitting, through said access valve, and into said pressure vessel.

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5,621,182
KARAOKE APPARATUS CONVERTING SINGING VOICE INTO MODEL VOICE

Shuichi Matsumoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 20, 1996, Ser. No. 618,979
Claims priority, application Japan, Mar. 23, 1995, 7-064192
Int. Cl.[6] G09B *5/00;15/04*
U.S. Cl. 84—610 **6 Claims**



1. A karaoke apparatus comprising:

a memory device that stores song data containing at least accompaniment information representative of a karaoke accompaniment of a desired song and vocal information representative of a model singing voice of the song performed by a model singer;

a producing device that processes the stored accompaniment information to produce the karaoke accompaniment;

an input device that collects an actual singing voice performed in parallel to the karaoke accompaniment by a karaoke player;

a reading device that reads out the vocal information from the memory device in parallel to the karaoke accompaniment;

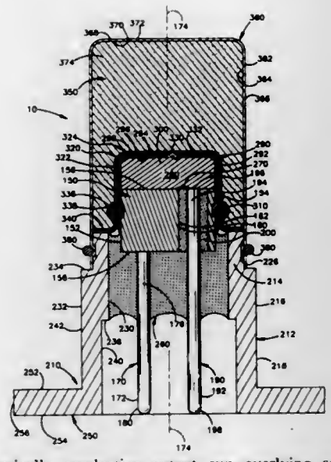
a modifying device that modifies at least a volume and a pitch of the model singing voice represented by the read vocal information according to an actual volume and an actual pitch of the collected actual singing voice; and

an output device that sounds the modified model singing voice in place of the collected actual singing voice and in parallel to the karaoke accompaniment.

5,621,183
INITIATOR FOR AN AIR BAG INFLATOR

Todd R. Bailey, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jan. 12, 1995, Ser. No. 371,762
Int. Cl.[6] F42C *19/02;19/12*
U.S. Cl. 102—202.7 **26 Claims**



1. An electrically actuatable initiator comprising:

a retainer;

at least one terminal for electrical connection with vehicle circuitry;

means for supporting said terminal in spaced relation to said retainer and for providing electrical insulation between said terminal and said retainer;

a bridgewire associated with said terminal for, when electrically actuated by current from said terminal, generating thermal energy;

an ignition charge ignitable by said thermal energy;

a metal ignition cup enclosing and supporting said ignition charge, said metal ignition cup being spaced apart from said retainer;

means for electrically insulating said metal ignition cup, comprising a plastic insulation cup overlying said metal ignition cup;

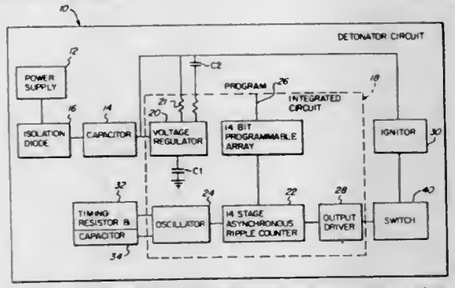
an electrically conductive output charge overlying said insulation cup; and

an electrically conductive output cup overlying said output charge, said insulation cup blocking flow of electric current from said output charge or said output cup to said ignition cup.

5,621,184
PROGRAMMABLE ELECTRONIC TIMER CIRCUIT

James C. Gwynn, III, Lititz, Pa., assignor to The Ensign-Bickford Company, Simsbury, Conn.

Filed Apr. 10, 1995, Ser. No. 420,991
Int. Cl.[6] F42C *21/00;* **F42D** *1/00*
U.S. Cl. 102—215 **9 Claims**



1. A programmable timer circuit which is designed to receive an electric initiation signal and to produce a timer output signal at a predetermined time interval from receipt of the electric initiation signal, the timer circuit comprising:

(a) an electrically powered counter comprising a plurality of sequential counter stages including a first counter stage and a last counter stage for issuing a timer output signal, each counter stage being configured to receive a counter stage input signal having one of an active and an inactive logic state and to issue a counter stage output signal having one of an active and an inactive logic state, the logic state of a counter stage output signal being responsive to a change in the logic state of the counter stage input signal;

(b) an electrically powered oscillator for providing a counter stage input signal to the first counter stage;

(c) an electrically powered programming circuit comprising (i) a toggle logic gate between each counter stage and the next sequential counter stage for receiving from the preceding counter stage the counter stage output signal and for receiving a program stage signal having one of an active and an inactive logic state, the toggle logic gate issuing to the succeeding counter stage a counter stage input signal having a logic state determined by the logic states of the program stage signal and the counter stage output signal, and (ii) a program stage associated with each toggle logic gate, each program stage being configured to issue to the associated toggle logic gate the program stage signal;

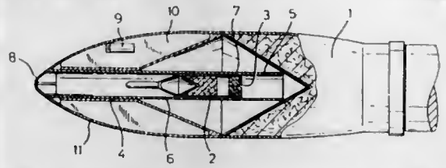
(d) electronic initializing means for placing the timer circuit in a logic state determined by the programming circuit prior to incrementing the counter; and

(e) power supply means for providing operating power to at least the counter, the oscillator, the programming circuit and the initializing means.

5,621,185
WARHEAD

Hans Spengler, Hochstr. 15, 8890 Aichach, and Georg Schrödl, Sigmundstr. 13, 8899 Oberarnbach, both of Germany

Filed Oct. 1, 1987, Ser. No. 118,299
Claims priority, application Germany, Oct. 2, 1986, 36 33 535.5
Int. Cl.[6] F42B *12/18*
U.S. Cl. 102—476 **5 Claims**

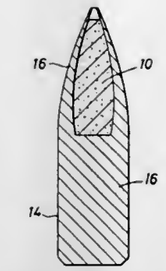


1. Warhead having a flight direction comprising a casing having a central axis extending in the flight direction, said casing being a first end leading in the flight direction and an opposite second end, a preliminary shaped charge located within said casing, a coaxial main shaped charge located in said casing spaced along the central axis between said preliminary shaped charge and the second end of said casing, means for increasing the axial spacing between said preliminary shaped charge and said main shaped charge prior to triggering detonation of said preliminary shaped charge, said spacing increasing means comprising an axially extending tube located within said casing and extending generally in parallel relative to the central axis, said tube having a first end closer to the first end of said casing and a second end closer to second end of said casing, a propelling charge for said preliminary shaped charge located within said tube between said preliminary shaped charge and the second end of said tube, said propelling charge is ignited by an igniting device for accelerating the preliminary shaped charge forward and out of the tube and for moving the tube out of the first end of said casing, said casing having an axially extending ogive portion extending from the first end of said casing toward the second end thereof, means within said ogive portion for supporting said tube, at least one shearing pin located within said tube for securing said preliminary shaped charge in spaced relation from the first end of said tube, said tube being displaceable from a moved-in rest position within said casing to a moved-out working position extending axially out of the first end of said casing, means on one of said tube and said means for supporting said tube for securing said tube in said means for supporting said tube in the moved-out position, and a sensor for said preliminary shaped charge located in said ogive part.

5,621,186
BULLET

Herman L. Carter, Houston, Tex., assignor to Trophy Bonded Bullets, Inc., Houston, Tex.

Filed Sep. 20, 1995, Ser. No. 531,118
Int. Cl.[6] F42B *12/34*
U.S. Cl. 102—507 **10 Claims**



1. A soft nose, bonded lead core bullet for rifles comprising a jacket of copper based material having a solid base portion, and an upper nose portion having a cylindrical wall extending from the base portion that decreases in width away from the base portion and curves inwardly to form a cavity, said wall having an inner surface, an outer surface and an upper end, and a body of lead in the cavity that is bonded to the inner surface of the wall of the cavity, said jacket increasing in hardness and strength from the upper end of the cylindrical wall to the base portion of the bullet, said cylindrical wall having an outer lip having a uniform thickness between 0.013 and 0.020 inches and the ratio of the lip thickness to the bottom cavity wall thickness being between 0.18–0.20.

5,621,187
METHOD FOR LOADING A MUZZLE-LOADING FIREARM

Robert Kearns, 7154 W. State #200, Boise, Id. 83703

Continuation of Ser. No. 235,357, Apr. 29, 1994, Pat. No. 5,458,064. This application Sep. 11, 1995, Ser. No. 526,263
Int. Cl.[6] F42B *14/06*
U.S. Cl. 102—520 **2 Claims**

1. A method for loading a muzzle-loading firearm, said firearm having a barrel with a bore of a certain diameter, and a powder charge in said barrel, comprising:

a. placing a projectile in said barrel, said projectile consisting of a one-piece bullet of obturating material and circular cross-section, said bullet having a tapered front portion, a cylindrical middle body portion, and a flat rear end, the bullet cylindrical middle body portion having a certain maximum diameter which is less than the diameter of said bore in said barrel, and said flat rear end having a flat rear surface with a forwardly extending substantially cylindrical hole co-axial with said bullet; and a one-piece gas check member of resilient plastic material and of circular cross-section, said gas check member having a flat front end, a gas check cylindrical middle body portion and a recessed rear end, the flat front end having only a forwardly extending substantially cylindrical pin co-axial with said gas check member, said substantially cylindrical pin having a diameter slightly greater than the inside dimension of said forwardly extending substantially cylindrical hole of said bullet, the substantially cylindrical pin of said gas check member being frictionally engageable and disengageable within the hole in said bullet for releasably attaching said gas check member to said bullet so that the gas check member is readily detachable from said one-piece bullet upon firing of the firearm, the gas check cylindrical body

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portion having a certain maximum diameter which is greater than the diameter of said bore in said barrel, and said gas check cylindrical body portion having a certain body portion length which is less than a length of said bullet cylindrical body portion; and

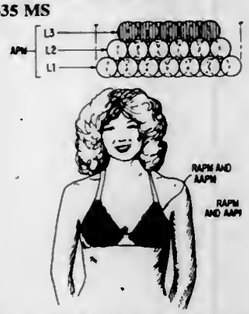
b. pushing said projectile into said barrel until the rear end of said gas check member is seated directly over the powder charge and said gas check member is in firm contact with the surface of the bore, so that there is no interference between the bullet and the bore by the gas check member.

5,621,188

AIR PERMEABLE ELECTROMAGNETIC SHIELDING MEDIUM

Sang C. Lee, and Bak H. Lee, both of 352 Stanwich Rd., Greenwich, Conn. 06830

Filed May 6, 1994, Ser. No. 239,331
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 MS **5 Claims**



1. A shielding medium for protecting an object from exposure to electromagnetic fields, the shielding medium comprising:

a first layer composed of a plurality of geometrically shaped objects;

wherein the plurality of geometrically shaped objects in said first layer are packed in an array such that each geometrically shaped object is in contact with its neighboring geometrically shaped objects adjacent thereto; and

wherein said first layer is coupled to the protected object so as to shield the protected object from exposure to the electromagnetic fields;

and further comprising:

a second layer, superimposed over said first layer, composed of a plurality of geometrically shaped objects; and

a third layer, superimposed over said second layer, composed of a plurality of geometrically shaped objects;

wherein the plurality of geometrically shaped objects in said first layer have a spherical shape, and wherein said first, second and third layers are together coupled to the protected object so as to shield the protected object from exposure to the electromagnetic fields; and

wherein said spherically shaped objects in said second layer are made from Mu-metal.

5,621,189

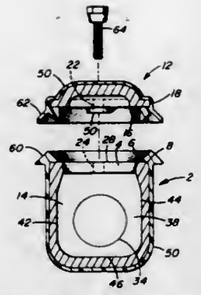
COATED CONDUIT OUTLET FITTING

John J. Dodds, Penn Township, Westmoreland County, Pa., assignor to Robroy Industries, Inc., Verona, Pa.

Filed Oct. 28, 1994, Ser. No. 330,718
Int. Cl.[6] H02G *3/14*
U.S. Cl. 174—50 **19 Claims**

1. A coated conduit outlet fitting comprising:

a hollow body having an open top, a body flange extending along an upper peripheral edge of said body and around said open top, and at least one conduit opening extending through said body and into an interior thereof;



a cover conforming substantially to said open top of said body and configured to be attached to said body and close the interior said body, with said cover having a cover flange extending along an outer peripheral edge of said cover and configured to abut said body flange;

a protective coating adhered to an exterior surface of each of said cover and said body, with said protective coating on said body formed into an upwardly oriented body seal which extends at least partially over and is adhered to said body flange, with said protective coating on said cover formed into a downwardly oriented cover seal which extends at least partially over and is adhered to said cover flange, with one of said body seal and said cover seal shaped as a male seal and the other of said body seal and said cover seal shaped as a female seal, with said male seal and said female seal complementary to each other and mating in configuration, and with said cover seal engaging said body seal when said cover is positioned on said body and covers the open top thereof; and

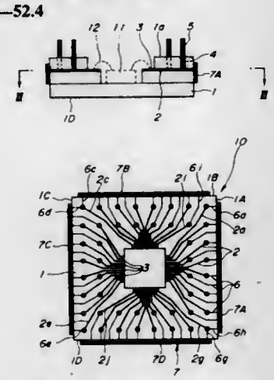
fastening means for fastening said cover to said body with said cover seal and said body seal in engagement with each other.

5,621,190

CERAMIC PACKAGE MAIN BODY

Kozo Yamasaki, and Naomiki Kato, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 23, 1994, Ser. No. 347,070
Claims priority, application Japan, Dec. 24, 1993, 5-347664
Int. Cl.[6] H01L *23/02*
U.S. Cl. 174—52.4 **13 Claims**



1. A ceramic package main body comprising:

a ceramic substrate;

a circuit wiring provided to said ceramic substrate and including first and second independent circuit wires;

first and second removable conductive layers formed on said ceramic substrate;

a first connection wire connecting between said first independent circuit wire and said first removable conductive layer; and

a second connection wire connecting between said second independent circuit wire and said second removable conductive layer;

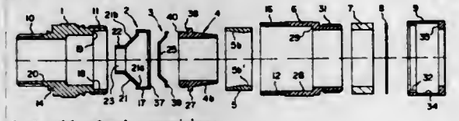
said first and second removable conductive layers being electrically insulated from each other for use in inspection of said circuit wiring and being removed for operational use of said circuit wiring.

5,621,191

CABLE GLAND

Trevor W. Norris, Ashton-under-Lyne, and Lee Shortman, Oldham, both of England, assignors to Hawke Cable Glands Limited, Walsall, England

Filed Mar. 22, 1994, Ser. No. 215,645
Claims priority, application United Kingdom, Mar. 27, 1993, 9306437
Int. Cl.[6] H02G *3/18*
U.S. Cl. 174—65 SS **21 Claims**



1. A cable gland comprising:

a hollow first gland part;

a hollow second gland part,

said first and second gland parts being axially located relative to each other when the gland is assembled with a first end portion of said second gland part received in a receiving end of said first gland part,

said first end portion having an axially disposed outer surface and a radially disposed end surface; and

sealing means connected to said first end portion of said second gland part for sealing around a cable extending through said first and second gland parts. said sealing means including

a seal and a seal support,

said seal having

an axially disposed outer sleeve mounted on said outer surface of said first end portion of said second gland part, and

a diaphragm extending inwardly from said outer sleeve with said diaphragm converging away from said end surface of said first end portion of said second gland part for engagement with the cable;

wherein said seal support is arranged in axially located relationship to said end surface of said first end portion of said second gland part and converges away from said end surface of said first end portion of said second gland part to support said diaphragm of said seal for maintaining engagement of said diaphragm with the cable when said diaphragm is subjected to a higher pressure on that side remote from said end surface of said first end portion of said second gland part.

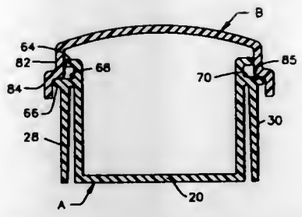
5,621,192

HOUSING FOR ELECTRICAL OUTLETS

Mark Bordwell, Memphis, and Michael Pratt, Cordova, both of Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Jun. 21, 1993, Ser. No. 80,468
Int. Cl.[6] H02G *3/14*
U.S. Cl. 174—67 **18 Claims**

1. In a protective housing for electrical devices, a box having a backwall, a peripheral wall and a front opening, a first peripheral bead extending outwardly from said peripheral wall adjacent said front opening, a second peripheral bead extending outwardly from said peripheral wall at a location spaced toward said backwall from said first peripheral bead, and said peripheral wall being inwardly offset between said first and second peripheral beads, said housing including a cover movable between an open position for providing access to the interior of said box through said front opening therein



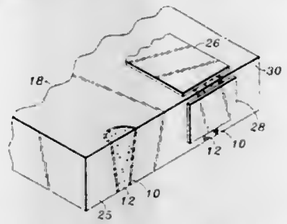
and a closed position for closing said box front opening, said cover comprising a cover peripheral wall including a first cover peripheral wall portion closely overlying said first peripheral bead on said box and an outwardly offset second cover peripheral wall portion closely overlying said second peripheral bead on said box.

5,621,193

CERAMIC EDGE CONNECT PROCESS

Harlan R. Isaak, Costa Mesa, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed May 23, 1995, Ser. No. 447,831
Int. Cl.[6] H05K *1/11*
U.S. Cl. 174—262 **6 Claims**



1. A method for electrically connecting a surface conductor on a non-conductive planar substrate to an edge conductor on an intersecting side of the substrate, the method comprising the steps of:

a) forming a through-hole in a substrate;

b) metallizing the through-hole to form a conductive via

c) cutting away a portion of the substrate to form an intersecting side which passes through the via;

d) electrically connecting the surface conductor on the substrate through the via to the edge conductor on the intersecting side of the substrate; and

e) forming an insulating sealing plug that completely fills the via, and wherein the intersecting side passes through the via and the sealing plug.

5,621,194

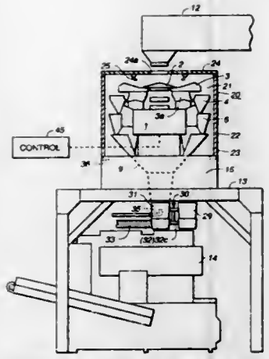
COMBINATIONAL WEIGHING MAHINE WITH WASHING DEVICE

Nobuo Koyama, and Masaaki Iwamoto, both of Osaka, Japan, assignors to Ishida Co., Ltd., Kyoto, Japan

Filed Mar. 4, 1994, Ser. No. 205,984
Claims priority, application Japan, Mar. 8, 1993, 5-075299
Int. Cl.[6] G01G *13/00;19/00;* **B08B** *3/04*
U.S. Cl. 177—25.18 **18 Claims**

1. In combination with a combinational weighing machine comprising a plurality of weigh hoppers for weighing articles therein, a feeder for supplying articles to said weigh hoppers and a chute for collecting articles dropped from said weigh hoppers. a washing device comprising:

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means for covering all four sides and top of said combinational weighing machine to thereby form a washing chamber;

liquid-emitting nozzles inside said washing chamber;

an article receiver for receiving from said chute articles collected thereby; and

a liquid receiver for receiving discharged liquid from said chute, said article and liquid receivers being supported so as to be horizontally movable.

5,621,195

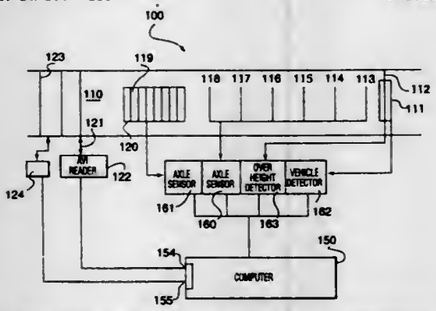
SENSOR ARRAY SYSTEM FOR DETERMINING AXLE SPACING

Brian Taylor, and Terry Bergan, both of Saskatoon, Canada, assignors to International Road Dynamics Inc., Canada

Continuation of Ser. No. 55,249, May 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,452

Int. Cl.[6] G01G *19/02;* **G01B** *7/02*

U.S. Cl. 177—133 **9 Claims**



1. A system for mounting on a roadway for determining the number of axle units on a vehicle travelling along the roadway and the distance between an axle unit and an immediately adjacent axle unit, said system comprising:

(I) a vehicle detector;

(II) an overheight detector;

(III) a sensor array system, said sensor array system comprising

(i) a first group of axle sensors comprising at least one pair of spaced-apart axle sensors, the distance between adjacent said spaced-apart axle sensors in said first group of axle sensors being distance "a";

and (ii) a second group of axle sensors which includes at least three axle sensors which are more closely spaced apart by a distance "d" which is less than said distance "a" between adjacent said axle sensors of said first group of axle sensors;

wherein (a) the span between a first axle sensor and a last axle sensor of said second group of axle sensors is distance "b";

and (b) the span between a first axle sensor in said first group of axle sensors and a last axle sensor in said second group of axle sensors is distance "c"; so that:

said distance "c" must be greater than, or equal to, the largest unknown axle spacing to be measured on the vehicle;

the distance "b" must be greater than, or equal to, distance "a";

and the spacing "d" must be such that any axle of the vehicle must trigger at least one axle sensor;

and (IV) a signal processor which receives and processes signals which are generated by said first group of axle sensors and by said second group of axle sensors, thereby to determine axle unit spacing which previously was unknown and the number of axle units of the vehicles, which also was previously was unknown.

5,621,196

ROTARY OPERATION SWITCH AND MULTIDIRECTION INPUT APPARATUS

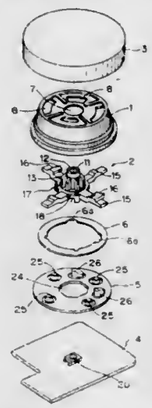
Akio Nishijima, and Takashi Asagawa, both of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 515,079

Claims priority, application Japan, Aug. 26, 1994, 6-202159

Int. Cl.[6] H01H *25/04*

U.S. Cl. 200—6 A **4 Claims**



1. A rotary operation switch comprising: a driving body held in a housing in such a way that said driving unit can be rotated; a switch device embedded in said housing; and an insulating substrate used for mounting said switching device, whereby said switching device is actuated by rotating said driving body, a fixed contact point for said switching device being provided on said insulating substrate, a movable contact point tor said switching device being provided on a lower surface of an elastic substrate mounted above said insulating substrate, a protrusion being provided on an upper surface of said elastic substrate, protruding into a rotation area of said driving body, and said movable contact point being placed at an eccentric position relative to a center of said protrusion.

5,621,197

DEVICE FOR INTERRUPTING THE FLOW OF CURRENT IN THE POSITIVE OR IMPREGNATED VEHICLE BATTERY CABLE

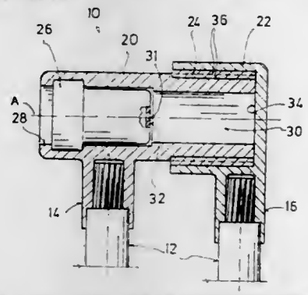
Richard Bender, Lauf; Christian Herget, Peissenberg; Lothar Maier, Tüssling; Alfred Krappel, Ismaning; Robert Albiez, Reichertshofen, and Maximilian Gröbmair, Dietramszell, all of Germany, assignors to TEMIC Bayern-Chemie Airbag GmbH, Aschau, and Bayerische Motoren Werke Aktiengesellschaft, Munich, both of Germany

Filed May 17, 1995, Ser. No. 443,223

Claims priority, application Germany, Jun. 24, 1994, 44 22 249.1

Int. Cl.[6] B60R *16/04;* **H01H** *73/34;35/14;85/00*

U.S. Cl. 200—61.08 **24 Claims**



1. Device for disconnecting the flow of current in the positive or impregnated battery cable of a motor vehicle, said device comprising an electrically conductive plug-in connection that allows current to flow through the positive or impregnated battery cable when connected and that interrupts current flow when disconnected, said plug-in connection including a tubular electrically conductive housing containing a gas generator which when electrically ignited produces a propellant gas and an electrically conductive plug connector, said housing extending axially into said plug connector and being connected together and contacting each other on contact surfaces that are parallel to a longitudinal axis of the plug-in connection and can be disconnected by a linear relative movement along the longitudinal axis, and wherein said housing has a free inner chamber that can be pressurized by the propellant gas which chamber is bounded at one front end by an exposed surface of the connector which is perpendicular to the longitudinal axis and is bounded at another front end on the opposite side by a surface of the gas generator which has a gas outlet aperture leading into the inner chamber, whereby when the gas generator is ignited the generated propellant gas causes the linear relative movement along the longitudinal axis between the housing and the plug-in connector to cause disconnection.

5,621,198

SAFETY DEVICE FOR A MOBILE ELECTRIC UNIT AND ELECTRIC BARBECUE FITTED WITH THIS DEVICE

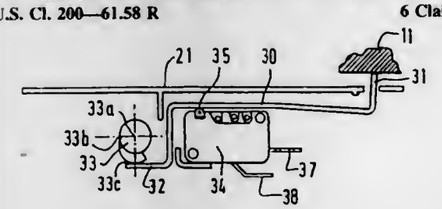
Alain Betend-Bon, Annecy, France, assignor to SEB S.A., Selongey, France

Filed May 1, 1995, Ser. No. 431,850

Claims priority, application France, May 6, 1994, 94 05618

Int. Cl.[6] F24C *7/08;* **H01H** *3/16;13/18;* **H05B** *3/02*

U.S. Cl. 200—61.58 R **6 Claims**



1. An electric barbecue comprising a base, an electric heating element movable relative to said base and a safety device for controlling said electric heating element, wherein said safety device comprises means for controlling operation of said electric heating element between an on position and an off position, means for sensing the position of said electric heating element relatively near or relatively far away from said base, and a single switch controlled by both said control means and said sensing means, said single switch having a connection position in which said electric heating element is connected to electric power supply means and a disconnection position in which said electric heating element is disconnected from said electric power supply means, said switch being located in said connection position when said control means is in the on position and when said sensing means detect the position of said electric heating element relatively near said base, and wherein the safety device is housed in a casing and comprises pivoting lever means controlling said single switch between said connection and disconnection positions, the sensing means comprising one end of said lever means projecting from the casing, said one end being displaced by the base when the electric heating element is in said position relatively near said base.

5,621,199

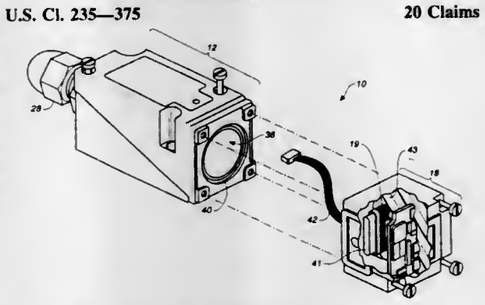
RFID READER

Umberto Calari, Bologna, Italy, and Mark C. Lampkin, Gross Pointe Farms, Mich., assignors to Datalogic, Inc., Scotts Valley, Calif.

Filed Apr. 3, 1995, Ser. No. 415,853

Int. Cl.[6] G06F *17/00*

U.S. Cl. 235—375 **20 Claims**



1. A stationary rf reader unit comprising:

an rf reader including an rf antenna,

a stationary compact reader body portion, said compact reader body portion containing read/write electronics and an interface controller therein, wherein said stationary compact reader body portion is adapted to be mounted on standard identification reader wall mounts, and

a rotatably adjustable head mounted to said stationary compact reader body portion such that an rf reader unit is comprised of a single integrated structure, said rotatably adjustable head containing said rf antenna therein and adapted to direct said rf antenna towards a plurality of different directions without moving said stationary compact reader body portion, wherein said rotatably adjustable head is further adapted to being fixed in a selected position such that said rf antenna remains focused in a desired direction.

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5,621,200

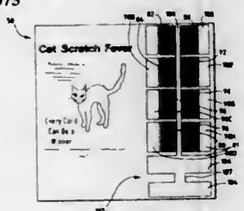
ELECTRONIC VERIFICATION MACHINE FOR VALIDATING A MEDIUM HAVING CONDUCTIVE MATERIAL PRINTED THEREON

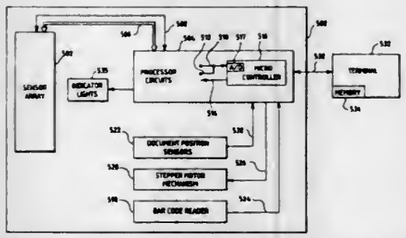
Kenneth E. Irwin, Jr., Alpharetta, Ga.; Gary R. Streeter, Andover, Mass., and Steven J. Daigle, Sunset, La., assignors to Panda Eng., Inc., Alpharetta, Ga.

Continuation-in-part of Ser. No. 263,890, Jun. 22, 1994, Pat. No. 5,471,039. This application Jun. 7, 1995, Ser. No. 486,588

Int. Cl.[6] G06F *17/60*

U.S. Cl. 235—375 **114 Claims**





1. An electronic verification machine, for use with a document having conductive material printed thereon, comprising;

an array of sensor plates;

signal application means for applying an excitation signal to the document wherein said excitation signal is an AC signal;

document interface means for receiving the document and aligning the document with respect to said sensor plates and said signal application means; and

detection means operatively connected to said sensor plates for detecting the presence of at least a portion of the conductive material in response to the application of said excitation signal wherein said detecting means detects an electrical signature representing a value of resistance of at least a portion of the conductive material on the document.

5,621,201

AUTOMATED PURCHASING CONTROL SYSTEM

Stephen Langhans, San Francisco; Laurence M. Goodman, Foster City, and Sigman L. Shapiro, Alamo, all of Calif., assignors to Visa International, Foster City, Calif.

Continuation of Ser. No. 241,106, May 11, 1994, Pat. No. 5,500,513. This application Feb. 5, 1996, Ser. No. 597,050

Int. Cl.[6] G06K *5/00*

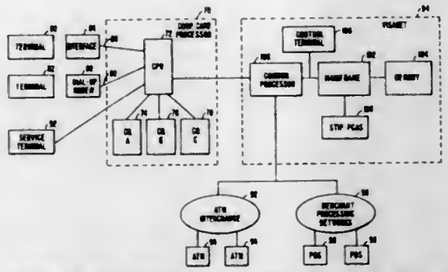
U.S. Cl. 235—380 **14 Claims**

8. A system for authorizing transactions for distributing currency or purchasing goods and services, comprising:

a plurality of cards, each card having a card number, each card number including an account number;

a central computer having a database with at least a first field for said account number, each account number being organized according to an authorization hierarchial position, said central computer having a plurality of distinct authorization tests, said authorization tests varying according to the hierarchial position of an individual account number;

means, in said central computer, for determining, from a received card number, a location of said database;



means, in said central computer, for determining, from the account number in said received card number, the hierarchial authorization tests applicable to said received account number; and

means, in said central computer, for applying said hierarchial tests to a received debit amount.

5,621,202

ENCODED SYMBOL READER WHICH DETERMINES THE UNIFORMITY OF BRIGHTNESS OF THE BACKGROUND IMAGE

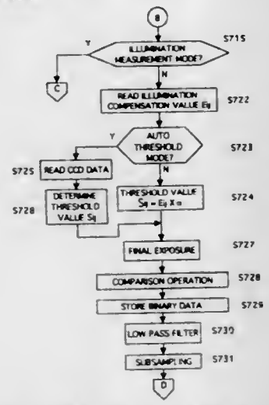
Harumi Aoki, Tokyo, Japan, assignor to Ashi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 404,997

Claims priority, application Japan, Mar. 16, 1994, 6-071576

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—454 **25 Claims**



1. An encoded symbol reader for reading a two-dimensional encoded symbol, said encoded symbol reader comprising:

means for reading an image of said encoded symbol and for reading a background image, the background image comprising an image representative of a background area on which said encoded symbol is encoded, said reading means outputting an electrical signal corresponding to each said read image;

means for processing said output electrical signal; and

means for storing information related to a processing of said output signal,

wherein said processing means determines a uniformity of brightness of the background image, said processing means comprising means for capturing the background image, examining said captured background image and detecting whether a uniformity of a brightness of the captured background image is within a predetermined range, and if said captured background image uniformity of brightness is within said predetermined range, determining data related to the uniformity of brightness of the background image read by said reading means.

5,621,203

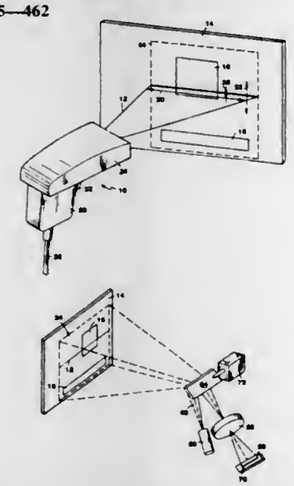
METHOD AND APPARATUS FOR READING TWO-DIMENSIONAL BAR CODE SYMBOLS WITH AN ELONGATED LASER LINE

Jerome Swartz, Old Field; Yajun Li, Oakdale; Paul Dvorkis, Stony Brook, and Glenn Spitz, Northport, all of N.Y., assignors to Symbol Technologies, Holtsville, N.Y.

Continuation-in-part of Ser. No. 153,637, Nov. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 951,562, Sep. 25, 1992, Pat. No. 5,369,264, and a continuation-in-part of Ser. No. 66,966, May 25, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,913

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **6 Claims**



1. A method for reading a symbol representing information having areas of different light reflectivity, comprising the steps of:

providing a beam of laser radiation, the beam having an elongated cross-sectional shape with an elongated dimension and a narrower dimension;

simultaneously illuminating a plurality of the areas of different light reflectivity of the symbol with said beam;

imaging light reflecting from the illuminated region to produce a signal representative of spatial intensity variations of the imaged light along a path; and

sweeping said beam over the symbol in a direction transverse to the elongated dimension so that substantially the entire two-dimensional area of the symbol is illuminated over time, until the information represented by the symbol is read

wherein the symbol is a two-dimensional symbol, said symbol comprising regions of different light reflectivity formed from one or more shapes that are aligned in rows parallel with at least one axis, wherein said steps of illuminating comprises aligning said beam so that the elongated dimension of said illuminated region is substantially parallel to said at least one axis

wherein the shapes are aligned in rows parallel with three different axes that intersect each other at a point to form acute angles of 60° therebetween, wherein the step of illuminating comprises aligning said beam so that the elongated dimension of said illuminated region is substantially parallel to one of said three different axes.

5,621,204

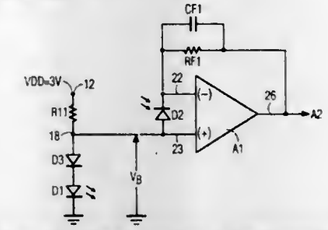
LOW POWER BAR CODE READER

Daming Yu, Cresskill, N.J., assignor to Optlcon Inc, Orangeburg, N.Y.

Filed May 30, 1995, Ser. No. 453,914

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **12 Claims**



1. In a bar code reader including a light emitting source for illuminating a bar code and a photosensing element for detecting light reflected from the bar code, and including an operational amplifier (OP-AMP) having an inverting input terminal, a non-inverting input terminal and an output terminal, with the photosensing element being coupled between the input terminals of the OP-AMP, wherein a current is supplied to said light emitting source for causing it to emit light and wherein a bias voltage is generated and applied to an input terminal of said OP-AMP to bias it at a predetermined level to increase its dynamic range, the improvement comprising:

a single series path comprising a current limiting means connected in series with said light emitting source between first and second power terminals for supplying the current powering said light emitting source and including means for producing a relatively fixed bias voltage along the series path supplying current to the light emitting source and for applying the relatively fixed bias voltage via negligible impedance means to said non-inverting input terminal of said OP-AMP.

5,621,205

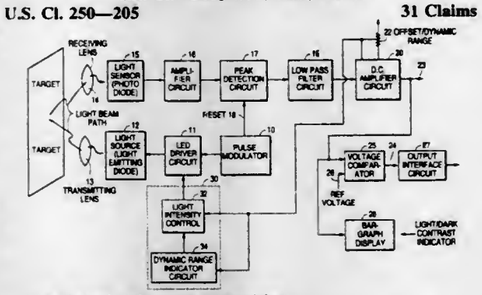
PHOTOELECTRIC SENSOR HAVING AN ENHANCED DYNAMIC RANGE CONTROL CIRCUIT

Robert A. Warner, Oldsmar, and Grant L. Smith, Lutz, both of Fla., assignors to Tri-Tronics Company, Inc., Tampa, Fla.

Continuation of Ser. No. 337,619, Nov. 10, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 631,882

Int. Cl.[6] G01J *1/32*; H01J *40/14*

U.S. Cl. 250—205 **31 Claims**



1. A photoelectric sensor comprising:

a pulse modulator and light source for transmitting light at a sensing target;

a light sensor for receiving reflected or transmitted light;

a demodulator circuit for demodulating a light signal sensed by the light sensor;

a DC amplifier for amplifying said light signal and outputting an analog DC signal which is proportional to the received light, said DC amplifier having an offset adjustment control;

a display for supplying a visual indication of the intensity of the light received by said light sensor; and

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a control circuit coupled to the offset adjustment control of the DC amplifier for automatically preventing the photoelectric sensor from operating in dark state saturation by controlling the intensity of the light transmitted by the light source in an analog, non-linear manner,

wherein the control circuit comprises a light emitting diode for supplying a visual indication of whether the photoelectric sensor is operating within its dynamic operating range.

5,621,206

METHOD OF PRODUCING A PHOTOELECTRIC CONVERTING DEVICE

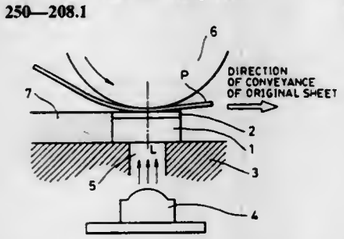
Masashi Kitani, Yokohama; Toyoki Matsushima, Atsugi; Tetsuya Shimada, Zama; Makoto Ogura, Isehara; Masayoshi Murata, Atsugi; Katsumi Komiyama, Isehara, and Tomokazu Dainobu, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 284,989, Aug. 4, 1994, abandoned, which is a division of Ser. No. 1,637, Jan. 7, 1993, Pat. No. 5,352,883, which is a division of Ser. No. 616,921, Nov. 21, 1990, Pat. No. 5,196,691. This application Jun. 6, 1995, Ser. No. 468,911

Claims priority, application Japan, Nov. 21, 1989, 1-302669; Nov. 21, 1990, 1-302670; Nov. 21, 1990, 1-302671

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **9 Claims**



1. A method of producing an optical device, comprising the steps of:

arranging an optical member and an elastic member having a first molding surface and a second molding surface to form a space defined by the first molding surface, the second molding surface and the optical member, the elastic member being arranged to touch the optical member;

injecting a resin member through an injection port, provided in the elastic member through at least one of the first or second molding surfaces, into the formed space and hardening the resin member; and

after the resin member has hardened, taking away the elastic member.

5,621,207

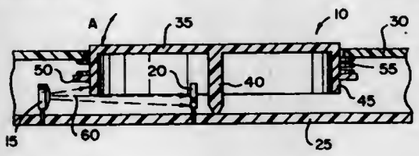
OPTICAL JOYSTICK USING A PLURALITY OF MULTIPLEXED PHOTOEMITTERS AND A CORRESPONDING PHOTODETECTOR

Kerry D. O'Mara, Florence, N.J., assignor to Hasbro, Inc., Pawtucket, R.I.

Filed Aug. 29, 1994, Ser. No. 297,642

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—221 **17 Claims**



1. An electro-optical input device comprising:

a base;

an actuation disk pivotally disposed on said base to support tilting of said actuation disk with respect to said base, said actuation disk having top and bottom sides;

at least one photoemitter disposed on said base;

at least one photo detector disposed on said base; and

a flange depending from said bottom side of said actuation disk, said flange projecting a footprint on said base, said flange being positioned on said bottom side of said actuation disk such that said footprint falls between said photoemitter and said photodetector.

5,621,208

PARTICLE, PARTICULARLY SUBMICRON PARTICLE SPECTROMETER

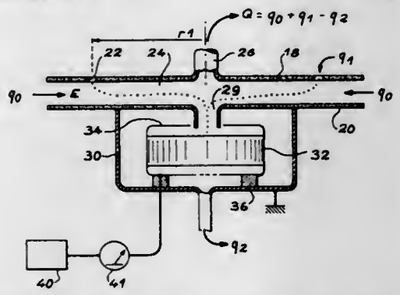
Michel Pourprix, Nontihéry, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 12, 1995, Ser. No. 439,768

Claims priority, application France, May 24, 1994, 94 06274

Int. Cl.[6] H01J *49/40*

U.S. Cl. 250—287 **17 Claims**



1. Electrical mobility spectrometer for aerosol particles contained in an atmosphere to be examined, comprising a first and a second, spaced, parallel, coaxial conductive disks between which is established an electric field by raising said first and second coaxial conductive disks to different potentials, the space between the first and second conductive disks communicating with the atmosphere to be examined through an annular slot having a first radius made in the first coaxial conductive disk, a central intake being provided in order to bring about circulation in said space, from the periphery of the disks, of a stable centripetal, laminar filtered air flow, and the second coaxial conductive disk is provided with an opening so as to permit the selection of aerosol particles having a given electrical mobility, and further comprising means able to vary the selected electrical mobility and an aerosol detector, the aerosol detector being placed immediately under the opening of the second disk.

5,621,209

ATTOMOLE DETECTOR

Kenneth H. Purser, Lexington, Mass., assignor to High Voltage Engineering Europa B.V., Netherlands

Filed Apr. 10, 1995, Ser. No. 420,192

Int. Cl.[6] H01J *49/00;* **B01D** *59/44*

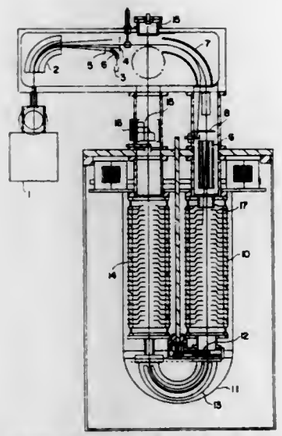
U.S. Cl. 250—296 **13 Claims**

1. An apparatus for measuring the amount of C-14 in a sample comprising the following components:

a source which ionizes the sample to form a negative ion beam of known energy;

a first apertured member having a first aperture;

a mass analyzer which deflects said negative ion beam and directs it onto said first apertured member so that only mass-14 particles having the above known energy pass through said first aperture;



a first high voltage electrostatic acceleration tube which accelerates said selected mass-14 negative ions to an energy E of the order of 800 keV along a first acceleration axis;

a foil stripper through which said accelerated mass-14 negative ions are directed and which removes three electrons from a fraction of said negative ions to form doubly-charged positive ions;

a second apertured member having a second aperture;

a deflector which deflects said doubly-charged positive ions through approximately 180° using an electrostatic deflecting field that directs the deflected beam onto said second apertured member so that only said particles in the doubly charged positive ion state and having an energy E pass through said second aperture;

a second high-voltage electrostatic acceleration tube adapted to accelerate said doubly charged positive ions passing through said second aperture to a final energy of about 3E along the second accelerator axis; and

a detector which identifies individually said doubly charged positive ions as they leave said second acceleration tube.

5,621,210

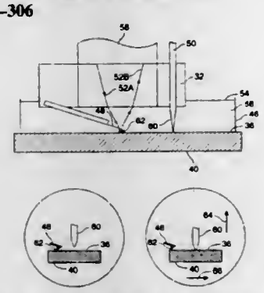
MICROSCOPE FOR FORCE AND TUNNELING MICROSCOPY IN LIQUIDS

Stuart M. Lindsay, Tempe, Ariz., assignor to Molecular Imaging Corporation, Tempe, Ark.

Continuation-in-part of Ser. No. 388,068, Feb. 10, 1995. This application Jun. 7, 1995, Ser. No. 485,497

Int. Cl.[6] H01J *37/20*

U.S. Cl. 250—306 **5 Claims**



1. A scanning probe microscope for examining the properties of a sample surface, said microscope comprising:

a body block;

an x-y scanner attached to said body block;

a sample stage;

means for adjustably suspending said sample stage from said body block;

means for translating said sample stage relative to said scanner;

at least one STM probe attached to said scanner;

at least one AFM probe attached to said scanner; and

means for scanning a selected area of a sample firstly with one of said STM probe or said AFM probe and secondly with the other of said STM probe or said AFM probe.

5,621,211

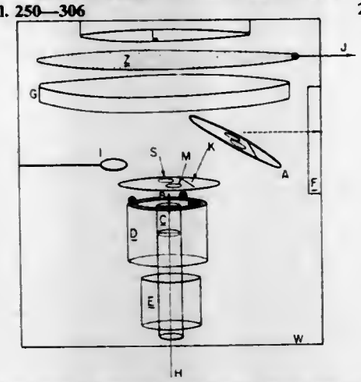
SCANNING TUNNELING ATOM-PROBE MICROSCOPE

John C. H. Spence, 2010 S. La Rosa Dr., Tempe, Ariz. 85282

Continuation of Ser. No. 299,513, Sep. 1, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 578,376

Int. Cl.[6] H01J *37/30;49/00;* **B01D** *59/44*

U.S. Cl. 250—306 **2 Claims**



1. A scanning tunneling atom-probe microscope positioned within a vacuum chamber for chemically identifying atoms whose atomic numbers are unknown at predetermined sites on a surface of a sample material, comprising:

a scanning tunneling microscope positioned within the vacuum chamber for producing an STM image of said surface, for enabling selection of one or more atoms of interest seen in said image, said scanning tunneling microscope having a tip onto which the selected one or more atoms are transferred from the surface of the sample material;

means for controllably positioning the sample material proximate the scanning tunneling microscope;

a time-of-flight spectrometer positioned within the vacuum chamber for measuring a time-of-flight of said one or more selected atoms of interest ejected from the tip of said scanning tunneling microscope to an ion detector to enable computation of the atomic number of said one or more selected atoms of interest; and

heating means removably positioned within the vacuum chamber for controllably heating the tip of said scanning tunneling microscope to thereby eject therefrom the one or more selected atoms of interest.

5,621,212

TELESCOPE DOME ROTATION SYSTEM

John L. Menke, 22500 Old Hundred Rd., Barnesville, Md. 20838

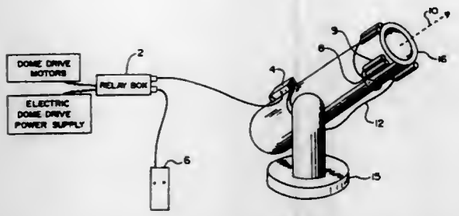
Filed Feb. 20, 1996, Ser. No. 603,236

Int. Cl.[6] G01J *5/10;* **G05B** *11/00*

U.S. Cl. 250—349 **11 Claims**

1. An automated operating system for a celestial dome and telescope system comprising: a telescope having a viewing axis along which a view of the heavens may be obtained, said telescope having a housing of a tubular nature that runs parallel to said viewing axis, a dome having an aperture and a dome control

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DOME TRAK
FOR EQUATORIAL MOUNTS

system having a means for rotating said dome in order to maintain said aperture in alignment with said viewing axis so that said heavens may be viewed, said dome control system having at least one sensor unit comprising a transmitting means in connection with said telescope for propagating electromagnetic radiation in close association with said viewing axis, and a means for detecting the presence of reflected electromagnetic radiation, said at least one sensor unit having a means to send a detection signal in response to detecting the presence of said reflected electromagnetic radiation and a means for sending a clear signal in the event said reflected electromagnetic radiation is not detected, a controller for receiving said detection and clear signals, said controller in connection with said dome control system, said controller having a means to send control signals to said dome control system in order to move said dome until said controller receives a clear signal.

5,621,213

SYSTEM AND METHOD FOR MONITORING A STACK GAS

Yoav Barshad, Brookline, Mass., assignor to Novitron International Inc., Newton, Mass.

Filed Jul. 7, 1995, Ser. No. 499,806
Int. Cl.[6] G01J *3/32;3/42*
U.S. Cl. 250—373 **24 Claims**

1. A stack gas monitor system for real-time spectrophotometric determination in a spectrophotometric portion of said system of a concentration of a first gas having a characteristic absorption spectrum and which is selectably introducible as a measured amount into a stack gas stream of a plurality of stack gases flowing as a sample gas stream through a gas flow portion of said system with at least a second gas of said stack gas stream having an absorption spectrum extending within an ultraviolet spectral range of wavelengths of radiation and having absorbance values therein which are higher than absorbance values of said first gas when introduced into said stack gas stream to form a composite gas stream, said system comprising:

means for calibrating the system with a plurality of measured amounts of said first gas flowing through said gas flow portion and providing in response thereto for at least one wavelength within said characteristic absorption spectrum spectrophotometric calibration data in said spectrophotometric portion for storage in a calibration data file of a data processing member associated with said spectrophotometric portion of said system, thereby providing a first gas concentration calibration;

means for terminating the calibration with said first gas;

means for establishing a stack gas stream blank in said system with a sample of a predetermined amount of said plurality of stack gases flowing through said gas flow portion and providing in response thereto spectrophotometric stack gas blank data in said spectrophotometric portion for storage in a stack gas blank data file of said data processing member;

means for introducing a measured amount of said first gas into said stack gas stream, thereby forming said composite gas stream;

means for verifying the flow of a sample of a predetermined amount of said composite gas stream through said gas flow portion;

means for measuring spectrophotometric composite gas data in said spectrophotometric portion in response to said verified flow of said composite gas stream sample;

means for calculating the absorbance values of said first gas having said characteristic absorption spectrum in said composite gas within said ultraviolet spectral range of wavelengths;

means for determining the concentration of said first gas in said composite gas; and

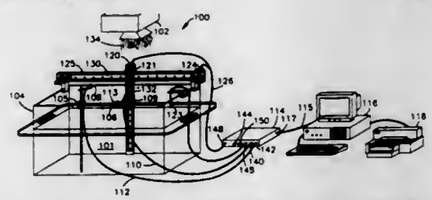
means for monitoring said concentration of said first gas in said stack gas stream of said plurality of stack gases.

5,621,214

RADIATION BEAM SCANNER

Jack C. Sofield, Seymour, Tenn., assignor to Sofield Science Services, Inc., Seymour, Tenn.

Filed Oct. 10, 1995, Ser. No. 541,374
Int. Cl.[6] G01T *1/29;1/185*
U.S. Cl. 250—375 **30 Claims**



1. A radiation detection system for determining the distribution and intensity of radiation produced by a radiation source, the system comprising:

a medium for receiving radiation from the radiation source;

a radiation signal detector disposed within said medium for sensing the radiation in a range of sensing positions within said medium;

a signal detector circuit connected to said radiation signal detector for producing a signal detector output in the form of an electrical current representing the intensity of radiation sensed by said signal detector at said sensing positions;

a peak signal detector circuit for receiving and processing the signal detector output, detecting the peak amplitude values of the signal detector output and producing a peak signal detector signal corresponding to said peak amplitude values and said sensing positions;

a radiation reference detector for sensing the radiation;

a reference detector circuit connected to said radiation reference detector for producing a reference detector output in the form of an electrical current representing the intensity of radiation sensed by said reference detector;

a peak reference detector circuit for receiving and processing the reference detector output, detecting the peak amplitude values of the reference detector output and producing a peak reference detector signal corresponding to said peak amplitude values of said reference detector signal;

means for eliminating effects of radiation source anomalies by determining ratios of the peak signal detector signal to the peak reference detector signal, said ratios representing the intensity of radiation peaks in said medium; and

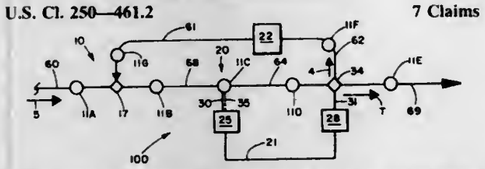
a computer for receiving said ratios and correlating each said ratio to a sensing position, whereby the intensity and distribution of said radiation are determined.

5,621,215

METHOD AND SYSTEM FOR FECAL DETECTION

Amy Waldroup, and John Kirby, both of Fayetteville, Ark., assignors to The Board of Trustees of The University of Arkansas, Little Rock, Ark.

Filed Jun. 7, 1995, Ser. No. 483,120
Int. Cl.[6] G01N *21/64;33/12*
U.S. Cl. 250—461.2 **7 Claims**



1. A method for detecting the presence of fecal or ingesta matter contaminants on a poultry or meat item, the method comprising:

(a) directing an ultraviolet light having a wavelength in the range of about 350 nm to about 385 nm at the poultry or meat item;

(b) gathering light fluorescing from the poultry or meat item;

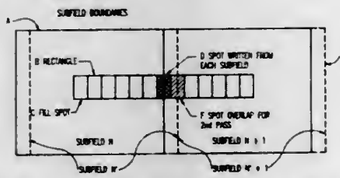
(c) producing a signal indicative of the presence of contaminants if the gathered light has fluorescence greater than a target threshold.

5,621,216

HARDWARE/SOFTWARE IMPLEMENTATION FOR MULTIPASS E-BEAM MASK WRITING

Eileen V. Clarke; William A. Enichen, and John G. Hartley, all of Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1996, Ser. No. 638,410
Int. Cl.[6] H01J *37/304*
U.S. Cl. 250—492.22 **7 Claims**



1. A multipass E-beam mask writing system with increased pattern fidelity comprising:

a data storage device storing pattern drive code, the same pattern drive code being used for each pass of a multipass exposure to write a mask;

a shape processor accessing the pattern drive code stored in said data storage device and outputting a rectangle position, rectangle dimensions, subfield boundary, and a rectangle exposure control data to an output buffer;

a shape divider receiving said rectangle position, said rectangle dimensions and said subfield boundary data from said output buffer and moving a boundary location of adjacent subfields between exposure passes resulting in better subfield stitch; and

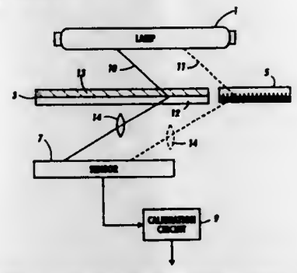
a shape generator receiving said rectangle exposure control data from said output buffer and shifting a boundary location of spots within said rectangles between said exposure passes resulting in a smoother edge of an exposed pattern.

5,621,217

APPARATUS AND METHOD FOR CALIBRATING A DIGITAL SCANNER

Ned J. Seachman, Penfield, and Joseph P. Tallie, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1995, Ser. No. 535,394
Int. Cl.[6] H04N *1/047*
U.S. Cl. 250—559.1 **2 Claims**



2. A calibration strip for a digital scanner, comprising:

a first portion having reference information printed thereon; and

a second portion having machine readable characteristic values corresponding to the calibration strip reference information encoded thereon;

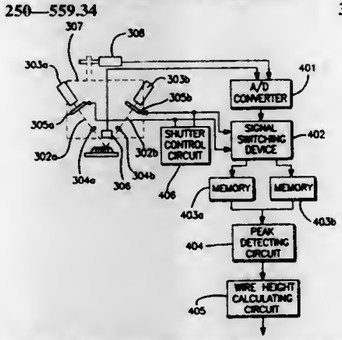
said second portion being offset in a fast-scan direction from said first portion.

5,621,218

METHOD AND APPARATUS INSPECTING BONDING-WIRE STATUS USING A PLURALITY OF LIGHT SOURCES

Yoshiharu Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,743
Claims priority, application Japan, Jun. 3, 1994, 6-122575
Int. Cl.[6] G01B *11/24;* **H01L** *21/66*
U.S. Cl. 250—559.34 **32 Claims**



1. A wire appearance inspecting apparatus comprising:

a first light source for emitting a first beam;

a second light source for emitting a second beam intersecting with said first beam at a preselected reference position;

light condensing means for condensing said first and second beams to said reference position;

a photodetector for detecting reflection light of said first and second beams;

a scanning mechanism for relatively transporting a unit on which said first and second light sources, said light condensing means and said photodetector are provided with respect to a wire to be inspected; and

wire height calculating means for calculating a height of said wire from said reference position based on an interval between a relative position of said unit for said wire when

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said photodetector detects the reflection light of the first beam from said wire, and another relative position of said unit for said wire when said photodetector detects the reflection light of said second beam from said wire.

5,621,219

DEVICE FOR SCANNING THE GEOMETRICAL PATTERN OF A MARK OF AN OBJECT

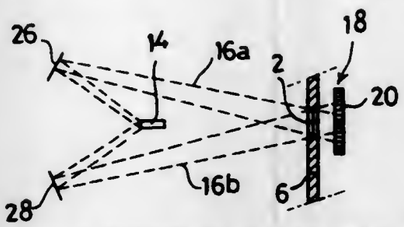
Rudolf L. van Renesse, Den Haag; Teunis Tel, Groningen, and Bart Snijders, Schiebroek, all of Netherlands, assignors to Unicate B.V., KE Groningen, Netherlands

Filed May 11, 1995, Ser. No. 439,251

Claims priority, application Netherlands, May 11, 1994, 9400782

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.44 **18 Claims**



1. A device for determining from two or more different directions the geometrical pattern of a mark being randomly shaped in three dimensions and being embedded in a transparent material and securely fixed to an object, comprising; a matrix of radiation detectors:

at least one radiation source which is designed for emitting radiation to the matrix of radiation detectors;

means for placing the object with the mark in the path of the radiation so that a silhouette of the mark is projected onto the matrix of radiation detectors by the or each radiation source.

5,621,220

APPARATUS FOR EVALUATING MEASURING VALUES

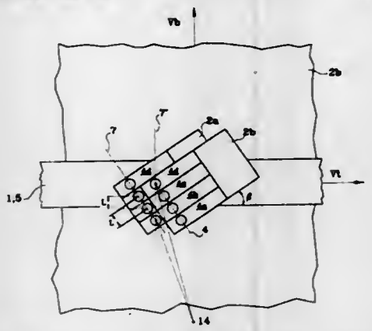
Rudolf Muehlenbein, Grafschaft; Kartheinz Schaust, Fachbach, and Holger Tuitje, Neuwied, all of Germany, assignors to Honeywell AG, Offenbach, Germany

Filed Apr. 12, 1995, Ser. No. 420,953

Claims priority, application European Pat. Off., Apr. 14, 1994, 94105756

Int. Cl.[6] G01N *21/84*

U.S. Cl. 250—559.48 **6 Claims**



1. An apparatus for evaluating measuring values from a laminar material, wherein the laminar material is moving in a single plane in a predetermined direction, comprising:

a) a measuring platform, which is being moved in the direction traverse to a direction of movement of the laminar material, and further wherein the measuring platform is rotatable about an axis which is normal to a plane of the laminar material, an angle of rotation (β) being determined by a traversing velocity (v_t) of the measuring platform and a velocity (v_p) of the predetermined direction of the laminar material; and

h) a plurality of separated sensors and radiation emitters mounted on said measuring platform, the sensors and radiation emitters being mounted such that, in conjunction with the angle of rotation, the measuring values acquired from the plurality of sensors is from a same measuring spot of the laminar material.

5,621,221

TONER END DETECTION DEVICE AND METHOD

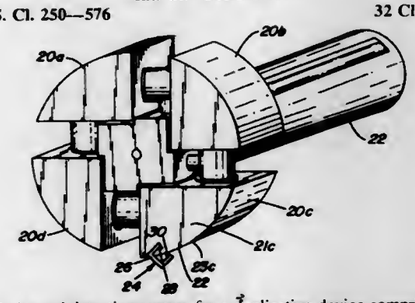
Tadashi Shinohara, Tokyo; Kouichi Noguchi, Machida; Eiichi Sasaki, Sagamihara, and Kouichi Irie, Gotenba, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,950

Claims priority, application Japan, Dec. 22, 1993, 5-324036; Feb. 15, 1994, 6-018205

Int. Cl.[6] G03G *21/00*

U.S. Cl. 250—576 **32 Claims**



1. An end detection system for a duplicating device comprising:

a toner cartridge mounted to a rotary developing device, said toner cartridge having a first wall, a second wall and a common edge formed by said first wall and said second wall, at least a portion of said first wall and said second wall adjacent said bottom edge being substantially light transmissive;

a light source located adjacent to said common edge for emitting a predetermined amount of light into said toner cartridge at a predetermined oblique angle with respect to said first wall and towards said second wall; and

a light sensor located adjacent adjacent to said common edge for detecting light exiting from said toner cartridge, said light being detected on only when said toner cartridge is in a substantially empty condition, said light sensor generating an output indicative thereof.

5,621,222

SUPERLATTICE SEMICONDUCTOR DEVICE

Mikihiro Kimura, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

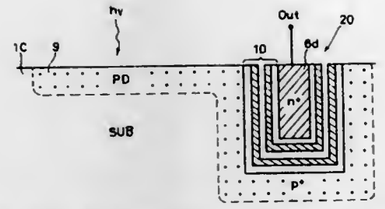
Continuation of Ser. No. 157,498, Feb. 17, 1988, abandoned. This application Apr. 10, 1989, Ser. No. 336,622

Claims priority, application Japan, Jul. 22, 1987, 62-184160

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—21 **1 Claim**

1. A photoresponsive superlattice semiconductor structure, having a first semiconductor region of first conductivity type responsive to light for producing minority carriers therein, a plurality of thin layers alternating between a first semiconductor composition and a second semiconductor composition to produce a plurality of stepped variations in the energy band thereof occupied by said



minority carriers, and a second semiconductor region of a second conductivity type opposite to said first conductivity type, said plurality of thin layers disposed between said first semiconductor region and said second semiconductor region,

said semiconductor structure being formed in a semiconductor body having a major surface and a stepped surface portion spaced from said major surface in a direction normal thereto and a side surface portion connecting said major surface and said stepped surface portion,

wherein said first semiconductor region extends along said major surface, said side surface portion, and said stepped surface portion,

and wherein said plurality of thin layers extends along said side surface portion and said stepped surface portion, without covering at least a part of said first semiconductor region extending along said major surface.

5,621,223

SUPERCONDUCTING DEVICE HAVING A REDUCED THICKNESS OF OXIDE SUPERCONDUCTING LAYER AND METHOD FOR MANUFACTURING THE SAME

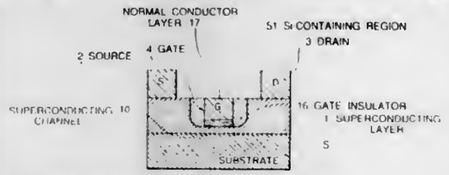
Takao Nakamura; Hiroshi Inada, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 150,790, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 756,220, Sep. 9, 1991, abandoned. This application Aug. 16, 1995, Ser. No. 515,701

Claims priority, application Japan, Sep. 10, 1990, 2-239423; Sep. 27, 1990, 2-257853

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—37 **13 Claims**



1. A superconducting FET device comprising:

a substrate having a principal surface,

first and second oxide superconduct regions, each of the first and second regions having a relatively thick thickness, being directly on the principal surface of the substrate, and being separated from each other on the principle surface, p1 a source electrode located on one of the first and second oxide superconductor regions and a drain electrode located on the other thereof,

a third oxide superconducting region having an extremely thin thickness relative to the thicknesses of the first and second oxide superconducting regions, and third region being directly on the principal surface of the substrate, between the first and second oxide superconducting regions,

a barrier layer of non-superconductor material located directly on the third oxide superconducting region,

a diffusion source layer located on the barrier layer, the diffusion source being non-superconducting and containing a diffusible material capable of preventing superconductivity in the oxide superconducting regions when present therein, the diffusion source layer providing a gate electrode for said FET device and

an isolation region that contacts the diffusion source layer,

the barrier layer, the diffusion source layer, and the isolation region being substantially completely embedded between the first and second oxide superconducting regions,

the first, second, and third oxide superconducting regions, and the isolation region being formed of the same oxide superconductor material,

the isolation region also containing the same oxide superconductor material and the diffusible material, which has been diffused thereto from the diffusion source layer, such that when the first and second oxide superconducting regions are brought into a superconducting condition, the isolation region does not show superconductivity, and therefore, a superconducting current can flow between the first and second oxide superconducting regions through only the third oxide superconducting region, and superconducting current flow between the first and second oxide superconducting regions is controlled by an externally applied voltage which influences the third oxide superconducting region, and

the barrier layer provides a gate insulator for the FET device and provides a barrier for the third oxide superconducting region to prevent diffusion of the diffusible material therein, the barrier layer including a material that is stable with respect to the oxide superconducting material of the first, second, and third oxide superconducting regions.

5,621,224

SEMICONDUCTOR DEVICE INCLUDING A SILICON FILM HAVING AN IRREGULAR SURFACE

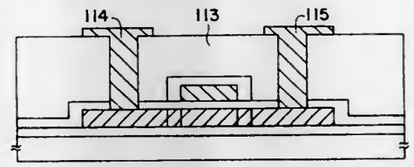
Shunpei Yamazaki, Tokyo, and Satoshi Teramoto, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1995, Ser. No. 539,180

Claims priority, application Japan, Oct. 7, 1994, 6-270366

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—66 **13 Claims**



1. A semiconductor device using a silicon film having crystallinity,

wherein an average film thickness of said silicon film is 150 to 800 Å;

a surface of said silicon film has irregularities, and a level difference between a highest portion of said irregularities and a lowest portion thereof is 100 to 700 Å, and

a tip of said highest portion has a roundness having a radius of curvature greater than 10 Å.

5,621,225

LIGHT EMITTING DIODE DISPLAY PACKAGE

Chan-Long Shieh, Paradise Valley, Ariz.; Hsing-Chung Lee, Calabasas, Calif., and Paige M. Holm, Phoenix, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jan. 18, 1996, Ser. No. 599,434

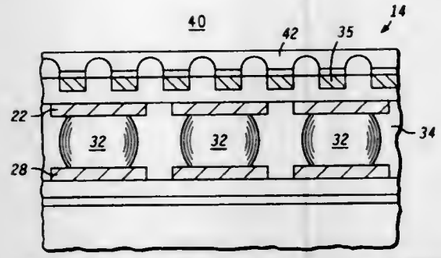
Int. Cl.[6] H01L *27/15;23/48*

U.S. Cl. 257—81 **17 Claims**

1. A light emitting diode display package comprising:

a light emitting diode device having a defined display area, comprised of a two-dimensional array of light emitting diodes

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formed of a plurality of indium-gallium-aluminum-phosphide (InGaAlP) layers on an initially present substrate, the initially present substrate selectively removed, thereby exposing an epilayer defined by an outermost layer of the plurality of indium-gallium-aluminum-phosphide (InGaAlP) layers;

a plurality of bond pads, formed in electrical cooperation with the array of light emitting diodes;

a driver device formed on a silicon substrate and having a plurality of drive components monolithically integrated therein;

a plurality of bond pads, formed in electrical cooperation with the driver device; and

a means for electrically connecting the bond pads, in electrical cooperation with the array of light emitting diodes, positioned on an uppermost surface of the display area of the light emitting diode device, to the bond pads formed in electrical cooperation with the driver device and routed to an uppermost surface of the driver device.

5,621,226

METAL-INSULATOR SEMICONDUCTOR GATE CONTROLLED THYRISTOR

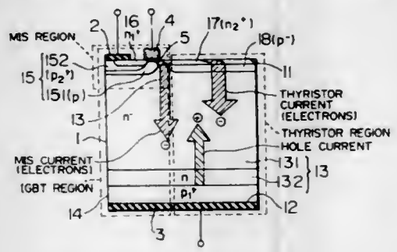
Hideo Kobayashi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,744

Claims priority, application Japan, Apr. 27, 1993, 5-100712; Dec. 3, 1993, 5-304119

Int. Cl.[6] H01L *29/74;31/141*

U.S. Cl. 257—140 **14 Claims**



1. A complex semiconductor device, wherein:

an Insulated Gate Bipolar Transistor region and a thyristor region are arranged to be adjacent to each other in a semiconductor substrate; and

a pair of first and second main electrodes are disposed on both principal surfaces of the semiconductor substrate,

the Insulated Gate Bipolar Transistor region being directly connected to the pair of main electrodes,

a first end region of the thyristor region on the anode side being directly connected to the first main electrode on the anode side; and

a second end region of the thyristor region on the cathode side being connected to the second main electrode on the cathode side via an Metal Insulator Semiconductor Field Effect Transistor region existing in the Insulated Gate Bipolar Transistor region.

5,621,227

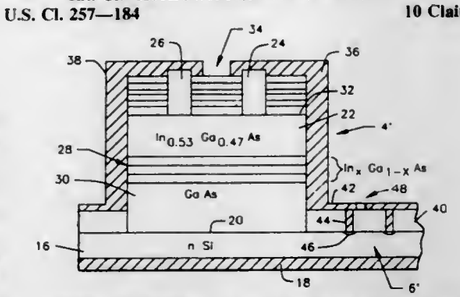
METHOD AND APPARATUS FOR MONOLITHIC OPTOELECTRONIC INTEGRATED CIRCUIT USING SELECTIVE EPITAXY

Abhay M. Joshi, Plainsboro, N.J., assignor to Discovery Semiconductors, Inc., Cranbury, N.J.

Filed Jul. 18, 1995, Ser. No. 503,726

Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*

U.S. Cl. 257—184 **10 Claims**



1. A monolithic integrated circuit including an InGaAs photodetector diode and silicon readout circuitry comprising:

a substrate of silicon(Si) having planar top and bottom surfaces;

a PN junction forming a photodetector including a plurality of selectively grown epitaxial layers generally parallel to said top surface of said substrate, a plurality of said layers being InGaAs, said layers having an area less than (500×500) μm^2 for mininizing leakage current, and one of said layers being a topmost layer of InGaAs of opposite conductivity than underlying layers;

circuit elements for a readout circuit wholly formed in said substrate near said PN junction of said photodetector;

a layer of SiO_2 on the top surface of said substrate surrounding the area occupied by said PN junction of said photodetector;

metallization on said layer of SiO_2 for providing electrical connections between said topmost InGaAs layer and said circuit elements; and

metallization on the bottom surface of said substrate for providing a common electrical connection.

5,621,228

HETEROJUNCTION FIELD EFFECT TRANSISTOR WITH NON-ALLOY OHMIC CONTACT ELECTRODES

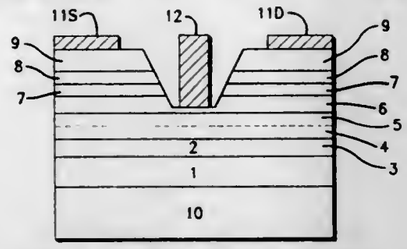
Yuji Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,530

Claims priority, application Japan, Aug. 16, 1994, 6-192356

Int. Cl.[6] H01L *31/0328;31/0336*

U.S. Cl. 257—192 **7 Claims**



1. A heterojunction field effect transistor comprising:

a multi-layered hetero-structure in which an undoped InAlAs buffer layer, an undoped InGaAs two-dimensional electron gas channel layer, an InAlAs electron supply layer containing at least one n-type layer, an undoped InAlAs Schottky layer, and a cap layer are sequentially formed on a semi-insulating InP substrate;

a source electrode and a drain electrode in contact with said cap layer; and

a gate electrode formed between said source and drain electrodes and in contact with said undoped InAlAs Schottky layer;

said cap layer having a laminated structure comprising a first cap layer of InAlAs comprising at least one n-type layer, a second cap layer comprising undoped InGaAs, and a third cap layer comprising n-type InGaAs.

5,621,229

SEMICONDUCTOR DEVICE AND CONTROL METHOD

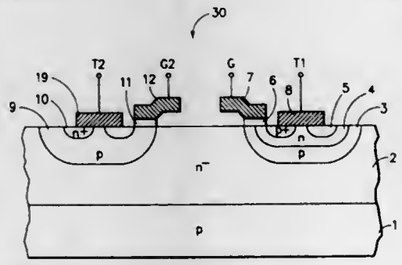
Qin Huang, Blacksburg, Va., assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 4, 1995, Ser. No. 434,243

Claims priority, application United Kingdom, May 5, 1994, 9408896

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—212 **17 Claims**



1. A semiconductor device comprising:

a high resistivity semiconductor layer of a first conductivity type;

a minority carrier injection-control structure for injecting minority carriers into said high resistivity semiconductor layer;

a first electrode;

said minority injection-control structure being formed on a first surface of said high resistivity semiconductor layer;

means for connecting said minority injection-control structure to said first electrode;

a semiconductor structure formed on a second surface of said high resistivity semiconductor layer;

a second electrode;

means for connecting said semiconductor structure to said second electrode; and

said minority carrier injection-control structure further comprising

an outer well region of a second conductivity type;

an inner well region of said first conductivity type formed within said outer well region;

a first gate electrode formed in common on surfaces of said inner and said outer well regions, said first gate electrode covering at least a whole lateral span of said surfaces of said inner and said outer well regions and being connected thereto by an insulation film;

a high concentration region of said second conductivity type formed within said inner well region; and

said first electrode in a contacting relationship with said inner well region and said high concentration region.

5,621,230

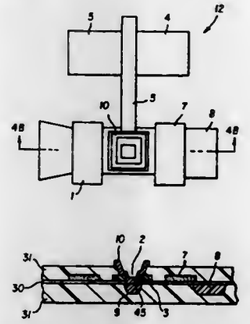
LOW CAPACITANCE FLOATING DIFFUSION STRUCTURE FOR A SOLID STATE IMAGE SENSOR

Robert M. Guidash, Rush, and Antonio S. Ciccarelli, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 491,791, Jun. 19, 1995, abandoned, which is a continuation of Ser. No. 298,893, Aug. 31, 1994, abandoned, which is a division of Ser. No. 188.500, Jan. 26, 1994, Pat. No. 5,387,536. This application Jun. 27, 1996, Ser. No. 675,328

Int. Cl.[6] H01L *27/148*

U.S. Cl. 257—222 **7 Claims**



1. In a solid state image sensor having an output amplifier, said output amplifier having a gate electrode made from a first conductor material provided on a substrate of a given conductivity type, a floating diffusion structure comprising:

(a) a floating diffusion region in said substrate, said floating diffusion region being of a conductivity type opposite to said given conductivity and being self-aligned with the inner edges of an opening realized in said gate electrode; and

(b) means for creating an ohmic contact between said floating diffusion region and said gate electrode, said means for creating an ohmic contact comprising a second material formed within said opening of said electrode.

5,621,231

SOLID-STATE IMAGER

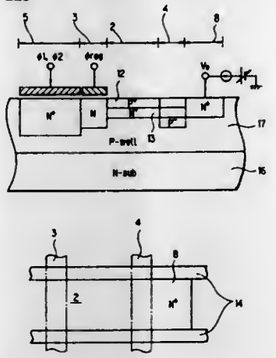
Seiichi Kawamoto, and Tadakuni Narabu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 493,861, Jun. 23, 1995, abandoned, which is a continuation of Ser. No. 113,911, Aug. 31, 1993, abandoned. This application Jul. 19, 1996, Ser. No. 683,865

Claims priority, application Japan, Sep. 7, 1992, 4-265398

Int. Cl.[6] H01L *27/148;29/768*

U.S. Cl. 257—223 **12 Claims**



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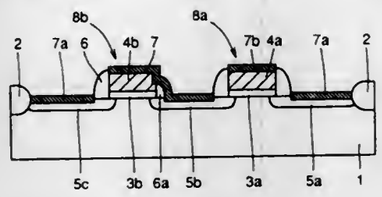
1. A solid-state imager comprising:
a semiconductor body of first conductivity type;
a first region having second conductivity type impurities, said first region formed on said semiconductor body and serving as a charge storage layer;
a second region having first conductivity type impurities, said second region substantially overlying said first region, wherein a concentration of said first conductivity type impurities in said second region is higher than that of said semiconductor body;
a third region having second conductivity type impurities, said third region formed adjacent to said first region and serving as an overflow drain;
a fourth region adjacent said third region having a first conductivity type impurities formed in a portion of said first region overlaid by said second region thereby to create a potential barrier and serving as an overflow barrier.

5,621,232

SEMICONDUCTOR DEVICE INCLUDING A LOCAL INTERCONNECTION BETWEEN AN INTERCONNECTION LAYER AND AN ADJOINING IMPURITY REGION

Takio Ohno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 225,168, Apr. 8, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,223
Claims priority, application Japan, Oct. 5, 1993, 5-249518
Int. Cl.[6] H01L *29/76;29/94;31/062;27/11*
U.S. Cl. 257—288 **8 Claims**



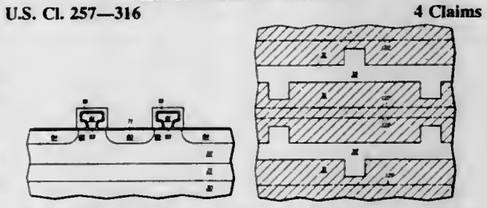
1. A semiconductor device, comprising:
a silicon substrate of a first conductivity type having a main surface;
an interconnection layer made of material containing silicon and formed on a first region in said main surface of said silicon substrate with an insulating film interposed therebetween;
a first impurity region of a second conductivity type formed at a second region, which is adjacent to said first region, in said main surface of said silicon substrate;
a first side wall insulating film formed on a portion of a side wall of said interconnection layer except for a first side wall portion positioned at an upper end portion of said side wall of said interconnection layer placed aside said first impurity region; and
a silicide layer formed extending from a top surface of said interconnection layer to a surface of said first impurity region via a position on said first side wall portion, said silicide layer further comprising:
first, second and third silicide portions formed on said in top surface of said interconnection layer, a surface of each of said first side wall portion not covered with said first side wall insulating film and said first side wall insulating film, said second silicide portion in direct contact with said first side wall insulating film, and said surface of said first impurity region, respectively, said first, second and third silicide portions being joined together.

5,621,233

ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY CELL

Umesh Sharma, and Michael P. Woo, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 311,162, Sep. 16, 1994, Pat. No. 5,498,560. This application Jun. 5, 1995, Ser. No. 462,410
Int. Cl.[6] H01L *29/788;29/76*
U.S. Cl. 257—316 **4 Claims**



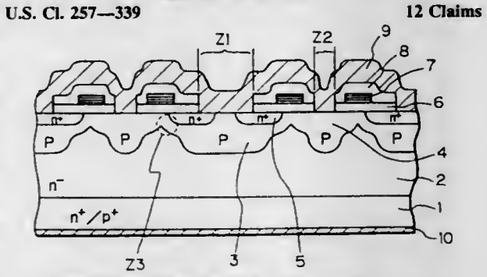
1. A semiconductor device including an array of electrically programmable read-only memory cells comprising:
a semiconductor substrate having a first conductivity type;
a first well region having a second conductivity type that is opposite the first conductivity type, wherein the first well region lies within the substrate;
a second well region having the first conductivity type, wherein the second well region lies within the first well region;
a third well region having the first conductivity type, wherein the third well region lies within the first well region and is spaced apart from the second well region;
a first plurality of floating gates overlying the first well region, wherein:
the first plurality of floating gates includes a second plurality of floating gates and a third plurality of floating gates;
the second plurality of floating gates overlie the second well region; and
the third plurality of floating gates overlie the third well region;
an intergate dielectric layer lying adjacent to the first plurality of floating gates; and
a first word line and a second word line lying adjacent to the intergate dielectric layer and overlying the first well region.

5,621,234

VERTICAL SEMICONDUCTOR DEVICE WITH BREAKDOWN VOLTAGE IMPROVEMENT REGION

Naohito Kato, Kariya, Japan, assignor to Niipondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 957,183, Oct. 7, 1992, abandoned. This application May 3, 1994, Ser. No. 237,413
Claims priority, application Japan, Oct. 7, 1991, 3-259346
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—339 **12 Claims**



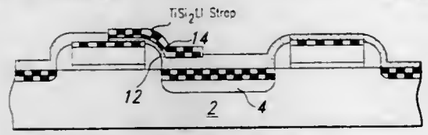
1. A vertical semiconductor device comprising:
a semiconductor substrate having a drift region of a first conductivity type disposed on a first main plane side thereof;
a plurality of base layers of a second conductivity type disposed in said drift region, each base layer constituting a unit cell;
a plurality of extraction regions having a same conductivity and impurity concentration as said plurality of base layers disposed in said drift region, said extraction regions being connected to said base layers such that said extraction regions and said base layers define a continuous region;
a gate electrode disposed over portions of said drift region;
a plurality of source layers of said first conductivity type, wherein one of said plurality of source layers is disposed in each of said plurality of base layers such that, in each unit cell, a portion of said base layer located between said source layer and said drift region defines a channel region;
a source electrode electrically connected to said source layer and to said base layer at a first point in each unit cell, said source electrode also directly contacting said extraction region at a contact zone thereof such that a branch current path exists in each unit cell from said channel region to said source electrode through said contact zone in an associated extraction region; and
a drain electrode disposed on a second side of said semiconductor substrate.

5,621,235

$TiSi_2$/TIN CLAD INTERCONNECT TECHNOLOGY

Shin-Puu Jeng, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 369,562, Jan. 6, 1995, which is a continuation of Ser. No. 186,828, Jan. 24, 1994, which is a continuation of Ser. No. 3,209, Jan. 12, 1993. This application Jun. 7, 1995, Ser. No. 478,569
Int. Cl.[6] H01L *29/76;23/48;29/12*
U.S. Cl. 257—384 **4 Claims**



1. A local interconnect structure comprising:
a local interconnect strap;
a barrier region adjacent said strap;
a first conductive region adjacent a first portion of said barrier layer region; and
a second conductive region adjacent a second portion of said barrier layer region, said barrier layer region and said local interconnect strap extending from said first conductive region to said second conductive region.

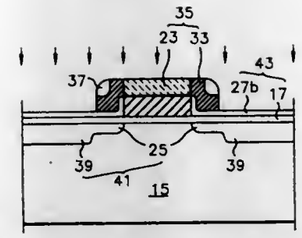
5,621,236

GATE-TO-DRAIN OVERLAPPED MOS TRANSISTOR FABRICATION PROCESS AND STRUCTURE THEREBY

Young-Seok Choi, Pucheon; Kwang-Dong Yu, Incheon, and Tae-Young Won, Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 726,189, Jul. 5, 1991, Pat. No. 5,256,586. This application Sep. 3, 1993, Ser. No. 119,671
Claims priority, application Rep. of Korea, May 23, 1991, 1991-8363
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—389 **31 Claims**

1. A gate-to-drain overlapped MOS transistor, comprising:
a substrate of a first conductivity type;
first and second diffusion regions of a second conductivity type, each of said first and second diffusion regions having first and second doped regions doped with different concentrations of impurities, disposed within said substrate, separated and spaced-apart from each other by a channel region formed within said substrate;
a first gate insulation layer formed on the surface of said substrate;
a first conductive layer with a first pattern comprising an upper portion exhibiting a first conductive material contiguously formed on a lower portion exhibiting a second conductive material different from said first conductive material, said lower portion being formed on said first gate insulation layer over said channel region;
a second gate insulation layer formed directly on a sidewall of said lower portion of said first conductive layer, and extended outwardly from said lower portion of said first conductive layer to cover said first gate insulation layer above said first and second diffusion regions; and
a second conductive layer formed directly on a side wall of said upper portion of said first conductive layer, and extended outwardly from said upper portion of said first conductive layer to cover a portion of said second gate insulation layer above said first and second diffusion regions, said second conductive layer being isolated, separated and spaced-apart from said lower portion of said first conductive layer by said second gate insulation layer, and from the surface of said substrate by said first and second gate insulation layers having a combined thickness substantially equal to twice a thickness of said first gate insulation layer.

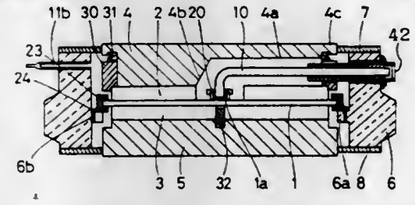


5,621,237

SEMICONDUCTOR DEVICE

Yuzuru Konishi; Kyotaro Hirasawa, and Kazunori Taguchi, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,637
Claims priority, application Japan, Apr. 12, 1994, 6-073128
Int. Cl.[6] H01L *23/48;31/0203;23/02;23/28*
U.S. Cl. 257—433 **5 Claims**



1. A pressure contact type semiconductor device, comprising a semiconductor substrate and an insulation tube surrounding the semiconductor substrate, said insulation tube having a projection formed on an inner wall thereof and projecting inwardly, said semiconductor substrate being fixed to said projection.

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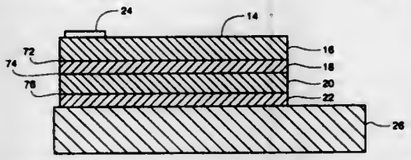
NARROW BAND SEMICONDUCTOR DETECTOR

Mark A. Dodd, Dayton; Larry F. Reitz, Springfield, and John E. Scheihing, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 201,683, Feb. 25, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,131

Int. Cl.[6] H01L *31/075*

U.S. Cl. 257—440 **34 Claims**



1. Apparatus for locating an edge of material having an edge and two sides, which comprises:

(a) an array of detectors, each detector comprising at least four layers of semiconductors, layer one being an incident absorption semiconductor having a wavelength cutoff absorption of λ1, layers two and four being doped semiconductor material, layer three being an absorption semiconductor having a wavelength cutoff absorption of λ2, where λ2 is longer than λ1;

(b) a wavelength source emitting a wavelength band to be detected by said detector, where the wavelength band to be detected ranges between λ1 and λ2, and spaced-apart from said array so that said material edge can be passed between said array and said wavelength source, an indicia being evoked within said array when said wavelength band to be detected is effectively incident on certain detectors within said array; and

(c) a processor which derives a signal from said indicia representing the location of the edge of said material.

5,621,239

SOI DEVICE HAVING A BURIED LAYER OF REDUCED RESISTIVITY

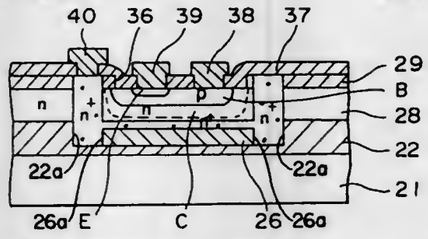
Hiroshi Horie; Atsushi Fukuroda, and Yoshihiro Arimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 150,253, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 787,911, Nov. 5, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,439

Claims priority, application Japan, Nov. 5, 1990, 2-299256; Jun. 3, 1991, 3-130198

Int. Cl.[6] H01L *29/00;27/01*

U.S. Cl. 257—499 **31 Claims**



12. A semiconductor device, comprising:

a support substrate, having an upper surface and a lower surface;

a semiconductor layer, having an upper surface and a lower surface;

an insulating layer of a thickness of a first dimension, formed on the upper surface of the support substrate and extending to the lower surface of the semiconductor layer and interconnecting the semiconductor layer with the support substrate and thereby supporting the semiconductor layer on the support substrate such that the lower surface of the semiconductor layer and the upper surface of the support substrate are in parallel relationship and spaced apart by the first thickness dimension of the insulating layer, the insulating layer further having a centrally located, depressed area therein, the depressed area being defined by a surrounding sidewall of the insulating layer and having an exposed upper surface spaced from the lower surface of the semiconductor layer by a space of a second dimension;

a low-resistivity layer formed on the exposed upper surface of the depressed area of the insulating layer, the low-resistivity layer being of a first composition and having a thickness substantially smaller than the first thickness dimension of the insulating layer and smaller than the space of the second dimension and thereby having an exposed upper surface spaced from the lower surface of the semiconductor layer by a space of a third dimension, said low-resistivity layer being defined by a lateral boundary which surrounds said low-resistivity layer, extending from the exposed upper surface thereof to the upper surface of the depressed area of the insulating layer on which it is formed, and which is spaced inwardly from the sidewall of the depressed area in the insulating layer and accordingly defines a surrounding space therebetween;

the semiconductor layer having an opening therein defining a passageway extending through the semiconductor layer to the space between the lateral boundary of the low-resistivity layer and the sidewall of the depressed area in the insulating layer;

a conductive material filling the opening and the spaces of the second and third dimensions and the surrounding space between the lateral boundary and the sidewall and intimately contacting, and thereby being electrically connected to, the low-resistivity layer, said conductive material being of a second composition different from the first composition of said low-resistivity layer; and

an active device formed on the upper surface of the semiconductor layer and having a region electrically connected to the conductive material and thereby electrically connected to the low-resistivity layer.

5,621,240

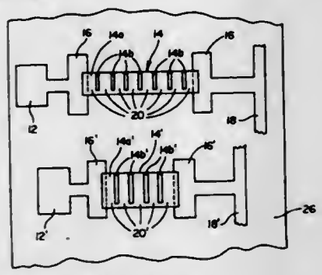
SEGMENTED THICK FILM RESISTORS

Marion E. Ellis, Kokomo, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Sep. 5, 1995, Ser. No. 523,580

Int. Cl.[6] H01L *27/04*

U.S. Cl. 257—536 **5 Claims**



1. A thick film resistor comprising:

a resistive portion characterized by a length and a width, the resistive portion being formed of an electrically resistive material; and

at least one conductive portion disposed in the resistive portion and extending across only a portion of the width of the resistive portion so as to delineate resistor segments in the resistive portion along the length of the resistive portion.

5,621,241

ENHANCEMENT IN THROUGHPUT AND PLANARITY DURING CMP USING A DIELECTRIC STACK CONTAINING HDP-SiO_2 FILMS

Manoj K. Jain, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 291,636, Aug. 17, 1994, Pat. No. 5,494,854. This application Jun. 7, 1995, Ser. No. 476,411

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—632 **5 Claims**



1. A semiconductor device having both high and low aspect ratio conductors on a common conducting level, said device comprising:

(a) a layer of patterned conductors formed on a substrate and comprising a plurality of high aspect ratio conductors and a plurality of low aspect ratio conductors, said layer having a first thickness;

(b) an HDP oxide layer overlying said patterned conductors and said substrate, said HDP oxide layer having a second thickness measured over said low aspect ratio conductors and a third thickness measured over said high aspect ratio conductors, said second thickness having a ratio to said third thickness of at least 1.5:1; and

(c) an oxide polish layer overlying said HDP oxide layer, said polish layer having a substantially planar top surface, said layer of patterned conductors, HDP oxide layer, and oxide polish layer having a combined thickness of at least 150% of said first thickness.

5,621,242

SEMICONDUCTOR PACKAGE HAVING SUPPORT FILM FORMED ON INNER LEADS

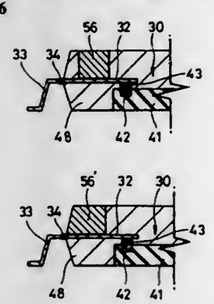
Seung-Kon Mok, Seoul; Seung-Ho Ahn, and Gu-Sung Kim, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 438,728, May 10, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 658,404

Claims priority, application Rep. of Korea, May 16, 1994, 1994-10598

Int. Cl.[6] H01L *23/50;23/28;23/48;23/02*

U.S. Cl. 257—666 **21 Claims**



1. A semiconductor package comprising:

a semiconductor chip having a plurality of electrode pads;

a tape carrier comprising,

a plurality of inner leads, wherein at least one of the plurality of inner leads is directly bonded to one of the plurality of electrode pads,

a support film of first thickness formed on an upper surface of the inner leads, and having an upper surface, outer lateral surface, and an inner lateral surface proximate the semiconductor chip, and,

a plurality of outer leads electrically and respectively connected to the inner leads; and,

molding compound encapsulating, the plurality of inner leads, at least top and side surfaces of the semiconductor chip, and at least the inner lateral surface of the support film, and being formed to a thickness substantially equal to the first thickness.

5,621,243

SEMICONDUCTOR DEVICE HAVING THERMAL STRESS RESISTANCE STRUCTURE

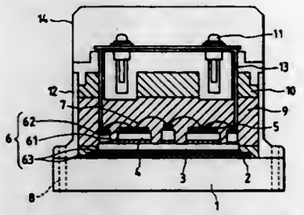
Noboru Baba, Hitachiloota; Hisanori Okamura, Tokai-mura; Masahiko Sakamoto, Hitachi; Hirosi Akiyama, Hitachi; Ryuichi Saito, Hitachi; Yoshihiko Koike, Hitachi; Makoto Kitano, Tsuchiura; Sigeki Sekine, Hitachi; Hideya Kokubun, Takahagi, and Nobuya Koike, Maebashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Haramachi Electronics Co., Ltd., Ibaraki, both of Japan

Filed Dec. 23, 1994, Ser. No. 363,245

Claims priority, application Japan, Dec. 28, 1993, 5-334908; Jan. 28, 1994, 6-008503

Int. Cl.[6] H01L *23/34;* **H05K** *7/20*

U.S. Cl. 257—712 **32 Claims**



10. A semiconductor device produced by mounting on a metallic support plate an insulation substrate provided with a Cu foil electrode on both surfaces thereof, and a plurality of semiconductor elements, wherein said metallic support plate comprises a material of which a softening temperature at which a hot hardness thereof becomes ½ of a hardness at the room temperature exceeds a bonding temperature required for bonding said metallic support plate, and of which a thermal conductivity at the room temperature is 320 J/sec.m.K or more, or of which an electric conductivity at the room temperature is 50% or more in terms of IACS.

5,621,244

FIN ASSEMBLY FOR AN INTEGRATED CIRCUIT

Shih-jen Lin, No. 360, Tanan Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 243,464, May 16, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,942

Int. Cl.[6] H01L *23/34*

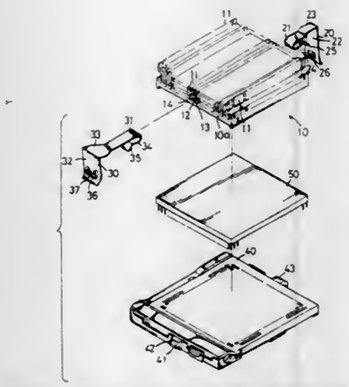
U.S. Cl. 257—713 **5 Claims**

1. A fin assembly for dissipating heat generated by an integrated circuit chip mounted on a socket having a pair of positioning ears disposed at two opposite sides thereof, the fin assembly comprising:

a fin including a bottom surface for contacting an upper surface of an integrated circuit and an upper surface from which a plurality of ridges extend upward along a length direction thereof, each two adjacent said ridges defining a channel therebetween, in at least one channel, at least one of two associated adjacent said ridges having one extension extending toward the other ridge thereby defining a compartment, the compartment having two opposite ends; and

at least one pair of substantially L-shaped fastening members, each of which comprising a first limb and a second limb, for detachably fastening the fin onto the integrated circuit chip, said first limb having a springing section formed adjacent to a joint of the first and second limbs and a flexible biasing section projecting from a free end thereof and extending toward said second limb, said biasing section of respective first limb being inserted into said compartment from the two

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opposite ends respectively and said biasing section having a height slightly greater than a height of said compartment, said second limb having an engaging slot formed therein adjacent to a free end thereof for cooperating with one of the positioning ears to thereby detachably lock the fin to the socket to ensure reliable surface contact between the integrated circuit and said fin.

5,621,245

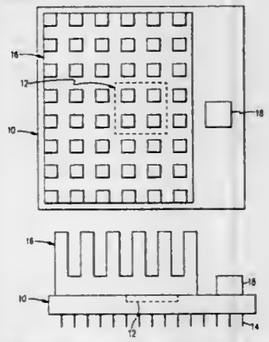
APPARATUS FOR OPTIMIZING OPERATING PARAMETERS OF AN INTEGRATED CIRCUIT PACKAGE HAVING A VOLTAGE REGULATOR MOUNTED THEREON

Willy Agatstein, El Dorado Hills, Calif.; Mostafa Aghazadeh, Chandler; Chia-pin Chiu, Phoenix, both of Ariz.; Amar Ghori, El Dorado Hills; James R. Neal, Cameron Park, both of Calif., and Gregory Turturio, Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 172,603, Dec. 21, 1993, abandoned. This application Oct. 31, 1996, Ser. No. 741,526

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—723 **20 Claims**



1. An integrated circuit chip package comprising:
an integrated circuit chip;
said chip having an operating voltage input;
first means for electrically connecting said chip to a portion of said package;
second means for transforming a first voltage into a regulated voltage out;
said second means being located between said portion and one edge of said package;
third means for connecting said regulated voltage output to said operating voltage input of said chip; and,
fourth means for connecting said regulated voltage output to a pin of said package.

5,621,246

SUBSTRATE FOR MOUNTING INTEGRATED CIRCUIT SEMICONDUCTOR CHIPS

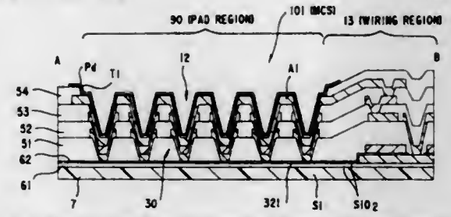
Takushi Motoyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1994, Ser. No. 217,110

Claims priority, application Japan, Jul. 9, 1993, 5-169461

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—736 **11 Claims**



1. A multichip substrate for mounting integrated circuit semiconductor chips, said multichip substrate comprising:
a base substrate
a first insulation layer fabricated on said base substrate;
multi-insulation layers accumulated on said first insulation layer;
multi-wiring layers made of an electrically conductive substance, accumulated on said first insulation layer, interposing said multi-insulation layers into said multi-wiring layers for keeping said multi-wiring layers apart;
a bonding pad for external electrical connection of multi chip substrate made of an electrically conductive substance, lying above said multi-insulation layers and said multi-wiring layers and electrically connected with said multi-wiring layers through said multi-insulation layers; and
standing structures made by accumulating first substance layers so as to stand between said bonding pad and said first insulation layer in at least a bonding region of said bonding pad and under said bonding pad, passing through said multi-insulation layers, so as to stick to said first insulation layer, said bonding region being a region in which wire bonding is carried out.

5,621,247

MEMORY DEVICE WITH TUNGSTEN AND ALUMINUM INTERCONNECTS

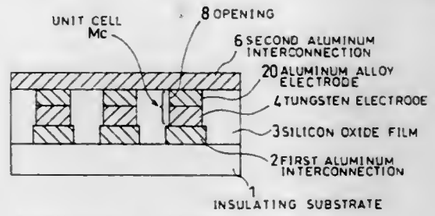
Shuji Hirao; Hideko Okada, and Kousaku Yano, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1996, Ser. No. 602,285

Claims priority, application Japan, Feb. 20, 1995, 7-031248

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—763 **15 Claims**



1. A memory device comprising:
a first conductive member;
a second conductive member provided to be opposed to said first conductive member; and
a resistance varying member interposed between said first conductive member and said second conductive member, said resistance varying member having a resistance varying characteristic such that its resistance varies due to a movement of atoms which occurs when a current equal to or higher than a specified value is allowed to flow therethrough and a function of retaining a high-resistance state and a low-resistance state as data, wherein
said data can be written in said resistance varying member by allowing a first current equal to or higher than said specified value to flow through said resistance varying member and said data can be read from said resistance varying member by allowing a second current lower than said specified value to flow through said resistance varying member.

5,621,248

NATURAL ENERGY POWERED MOTOR STARTER UTILIZING A CAPACITOR CIRCUIT CHARGED BY A SOLAR PANEL

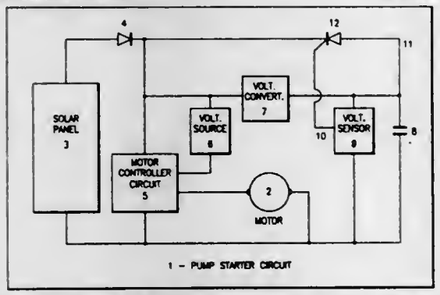
Ian L. De Villiers, Transvaal, South Africa, assignor to Divwatt (Proprietary) Limited, Randburg, South Africa

Filed Dec. 9, 1994, Ser. No. 352,275

Claims priority, application South Africa, Dec. 10, 1993, 93/9265

Int. Cl.[6] F02N *11/08*

U.S. Cl. 290—30 R **19 Claims**



1. A starter for a natural energy powered motor comprising:
a capacitor connectable to be charged with electrical energy from a natural energy source;
voltage conversion means for stepping up the charging voltage to the electricity storage means; and
a voltage sensor connected to the capacitor to sense a predetermined maximum charging level and to thereupon trigger a silicon controlled rectifier to discharge from the capacitor sufficient electrical energy to start a motor to be driven by electricity from the natural energy source in use.

5,621,249

STARTER FOR AN ENGINE HAVING A PINION MOVING MEMBER

Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo, and Masami Niimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

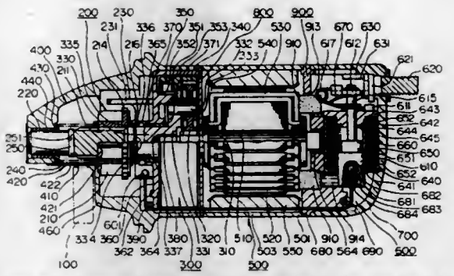
Filed Jan. 25, 1995, Ser. No. 378,004

Claims priority, application Japan, Sep. 19, 1994, 6-222322

Int. Cl.[6] F02N *11/00;* **H02P** *9/04*

U.S. Cl. 290—38 R **16 Claims**

1. A starter comprising:
a starter motor including a cylindrical yoke, field magnetic poles fixed to an inside surface of the yoke and an armature rotatably supported inside the poles;
an output shaft disposed at one axial side of the armature to be driven by the starter motor;
a pinion provided on the output shaft and engageable with a ring gear of an engine;
a magnet switch disposed at another axial side of the armature and having a fixed contact and a plunger which has a movable contact, the magnet switch energizing the starter motor when the movable contact contacts the fixed contact by a movement of the plunger;



pinion movement means to move the pinion to the ring gear; and
a cord-shaped member connecting the plunger of the magnet switch and the pinion movement means and extending axially between the armature and the yoke;
wherein the pinion is moved to the ring gear when the cord-shaped member is pulled tight by the movement of plunger.

5,621,250

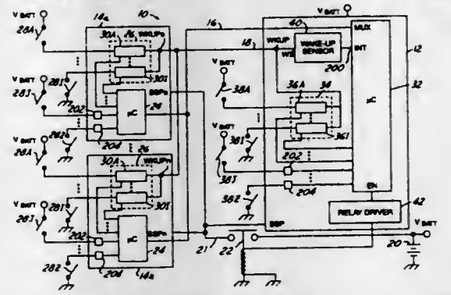
WAKE-UP INTERFACE AND METHOD FOR AWAKENING AN AUTOMOTIVE ELECTRONICS MODULE

Hyung Kim, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1995, Ser. No. 509,474

Int. Cl.[6] B60L *1/00*

U.S. Cl. 307—10.1 **9 Claims**



1. A wake-up interface for awakening an automotive electronics module from an inactive state comprising;
a plurality of input switches;
wake-up input switch interface means for generating a first current transient when one of said input switches is closed;
wake-up sense means including a first latch for detecting said first current transient and a second latch responsive to said first latch for providing a wake-up command signal; and
power control means responsive to said wake-up command for enabling module power.

5,621,251

DOOR LOCKING AND CONSTRAINING APPARATUS AND METHOD OPTIONALLY INCLUDING STARTER DISCONNECT

Takehiko Yamazaki, Kawasaki, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Apr. 18, 1994, Ser. No. 228,622

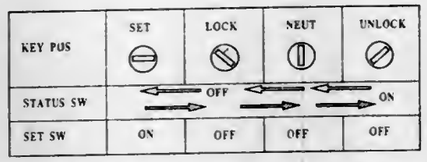
Claims priority, application Japan, Apr. 21, 1993, 5-094521

Int. Cl.[6] B60R *25/04;* **E05B** *65/36*

U.S. Cl. 307—10.2 **14 Claims**

1. An antitheft apparatus for an automotive vehicle, comprising:
locking means for locking vehicle doors;
constraining means for constraining said locking means once actuated to a lock status so as not to be unlocked;

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commanding means for outputting a constraint command for constraining said locking means once actuated to the lock status so as not to be unlocked; and

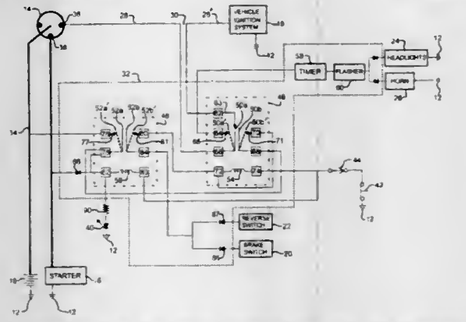
drive control means responsive to the constraint command outputted by said commanding means, for first locking the doors by said locking means and then constraining said locking means to the lock status by said constraining means.

5,621,252

APPARATUS FOR PREVENTING UNAUTHORIZED USE OF MACHINERY

Steven H. Bucknam, 1269 Kingsway Dr., Chesapeake, Va. 23320

Filed May 9, 1994, Ser. No. 239,558
Int. Cl.[6] B60R *25/10;25/04*
U.S. Cl. 307—10.2 **11 Claims**



1. Apparatus for preventing unauthorized use of a machine having an internal combustion engine (such as a motor vehicle) with an electrical ignition system, said apparatus comprising:

an ignition control means coupling, in a main ignition path, said electrical ignition system to an electrical power supply for controlling flow of electrical current from the electrical power supply to said electrical ignition system and thereby determining if said internal combustion engine can run, said ignition control means including:

an interruption means coupled in said main ignition path between said electrical power supply and said electrical ignition system for having a rest position for providing an ignition flow of electrical current from said power supply to said electrical ignition system to thereby allow said engine to run and for having an interrupting position in which it interrupts said ignition flow of electrical current to said electrical ignition system, in response to a machine operator performing an activity for further operating said machine whereby said engine is thereby turned off and said operator is, therefore, prevented from further operating said machine with said engine running;

an arming means connected to said power supply and said interruption means for:

normally being in a disarmed position in which the interruption means is not moved out of the rest position in response to said engine operator performing said activity but moving to an armed positioned for arming said interruption means in response to said engine being started, whereby, in said armed position, said interruption means moves out of said rest position, and thereby interrupts said ignition flow of electrical current to said electrical ignition system and turns off said engine, in response to said engine operator performing said activity; and

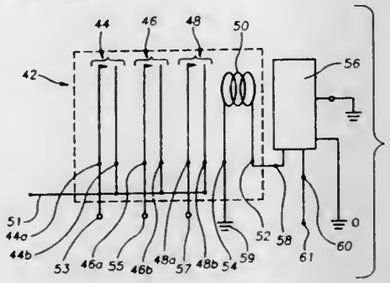
disarming said interruption means in response to a manual manipulation of said arming means whereby said interruption means is not moved from said rest position, to thereby interrupt said ignition flow of electrical current to said electrical ignition system and turn off said engine, in response to said engine operator performing said activity.

5,621,253

AUTOMOBILE SAFETY DEVICE

Alice M. Melnytschuk, 37565 N. Alpine La., Lake Villa, Ill. 60046

Filed Feb. 2, 1996, Ser. No. 597,550
Int. Cl.[6] B60L *1/14;* **B60Q** *1/04*
U.S. Cl. 307—10.8 **2 Claims**



1. An automobile safety device comprising:

a housing forming an internal circuit chamber and having a first outer surface, said outer surface including a section of adhesive foam secured thereover, said adhesive foam having a peel away cover member disposed thereover in a manner to allow removal of said peel away cover member and securement of said housing to a substantially flat surface with said adhesive foam;

a relay switch, disposed within said circuit chamber of said housing, having a first, second and third pair of normally open electrical contacts actuated by a first coil having a coil input connection and a coil output connection, each said pair of electrical contacts having a supply side connection and a device side connection;

a time delay circuit having an active output wired to said coil input connection that provides an electrical current to said first coil for a predetermined period of time exceeding detection of an absence of an activation signal at an activation input thereof;

a wiring harness including an electrical connector having:

a left headlight connection member,

a right headlight connection member,

a defogger connection member,

a twelve volt supply connection member,

a wiper motor supply connection member, and

a ground connection member,

each said connection member being wired, respectively, to a first end of a left headlight insulated conductor wire, a first end of a right headlight insulated conductor wire, a first end of a defogger insulated conductor wire, a first end of a twelve volt supply insulated conductor wire, a first end of a wiper motor supply insulated conductor wire, and a first end of a ground insulated conductor wire;

a second end of said left headlight insulated conductor wire is wired to said device side connection of said first pair of electrical contacts, a second end of said right headlight insulated conductor wire is wired to said device side connection of said second pair of electrical connects, a second end of said defogger insulated conductor wire is wired to said device side

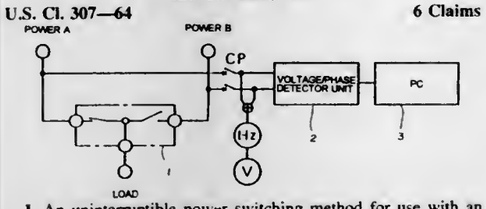
connection of said third pair of electrical contacts, a second end of said twelve volt supply insulated conductor wire is wired to said supply side connection of said first, second and third pairs of electrical contacts, a second end of said wiper motor supply insulated conductor wire is wired to said activation input of said time delay circuit, and a second end of said ground insulated conductor wire is wired to said coil output connection.

5,621,254

UNINTERRUPTIBLE POWER SWITCHING METHOD AND APPARATUS

Kaizo Takeda; Kano Otani, and Hisayuki Nagase, all of Aichiken, Japan, assignors to Kabushiki Kaisha Aichi Denki Seisakusho, Nagoya, Japan

Filed Sep. 27, 1995, Ser. No. 534,657
Int. Cl.[6] H02J *7/00*
U.S. Cl. 307—64 **6 Claims**



1. An uninterruptible power switching method for use with an overlap-type change-over switch which performs switching between two different power supplies without interruption after concurrent connection for a predetermined period of time, said method comprising the steps of:

monitoring voltages of said power supplies to issue voltage normal signals when said voltages are within preset ranges, respectively,

detecting a difference voltage between said voltages using a low voltage detector which operates to issue an output signal when said difference voltage remains lower than a preset value for longer than a preset period, and

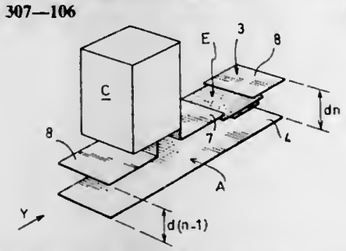
issuing a switching command to said change-over switch when said voltage normal signals and said output signal are both issued.

5,621,255

MARX GENERATOR

Jean-Francois Leon, Le Bourg; Bernard Etlicher, Les Molieres; Philippe Auvray, Lardy, and Henri Lamain, Clamart, all of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Armees, France

Filed Mar. 15, 1994, Ser. No. 212,849
Claims priority, application France, Mar. 18, 1993, 93 03116
Int. Cl.[6] H02M *7/32*
U.S. Cl. 307—106 **5 Claims**



1. A Marx generator comprising:

a continuous metal strip having a first end and a second end;

a subdivided metal strip having a first end and a second end, the continuous strip substantially parallel to the subdivided strip, the first end of the continuous strip being electrically connected to the first end of the subdivided strip;

a respective output terminal formed at each of the second end of the continuous strip and the second end of the subdivided strip;

a plurality of capacitors connected in series along the subdivided strip;

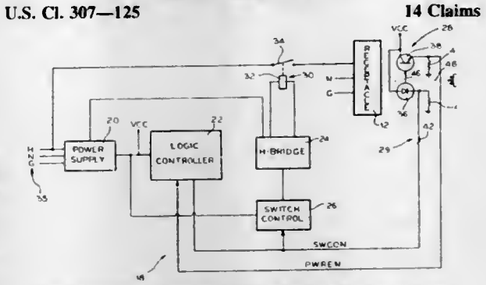
a plurality of spark gaps positioned along the subdivided strip between each of the capacitors in series and one spark gap positioned between a last one of the capacitors and the output terminal formed at the second end of the subdivided strip, said subdivided strip subdivided by transverse slots into successive two plane sections.

5,621,256

HYSTERESIS IN A CIRCUIT FOR SENSING PRESENCE OF A PLUG

Burke J. Crane, Lombard, Ill.; Garth S. Jones, and Kevin L. Nelson, both of Virginia Beach, Va., assignors to Molex Incorporated, Lisle, Ill.

Filed Apr. 20, 1993, Ser. No. 49,885
Int. Cl.[6] H01H *47/00*
U.S. Cl. 307—125 **14 Claims**



1. An automatically switched power receptacle comprising:

a outlet receptacle adapted to receive a plug;

a relay connected between said outlet receptacle and a source of power to selectively power said receptacle;

a plug presence sensor in proximity to said receptacle for sensing presence of a plug in said receptacle; and

an automatic control circuit connected between said relay and said plug presence sensor for selectively energizing said relay to power said receptacle incident to said sensor sensing presence of a plug, said control circuit including a hysteresis circuit to prevent cycling of said relay.

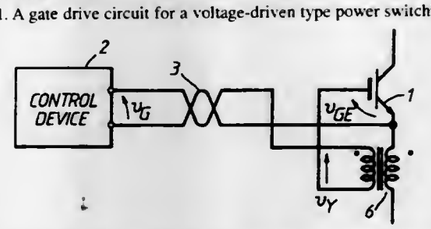
5,621,257

GATE DRIVE CIRCUIT FOR VOLTAGE-DRIVEN TYPE POWER SWITCHING DEVICE

Kazuto Kawakami, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1995, Ser. No. 473,766
Claims priority, application Japan, Jun. 6, 1994, 6-123355
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—125 **9 Claims**

1. A gate drive circuit for a voltage-driven type power switching device having at least one of a collector circuit and an emitter circuit, comprising:



control means for generating a gate voltage for said voltage-driven type power switching device; and

correction means connected to said control means for receiving said gate voltage and connected to at least one of said collector circuit and said emitter circuit for producing a correction voltage that is applied to said gate voltage in order to compensate for an induced voltage which is inductively applied to said gate voltage and is caused by a magnetic flux from a main circuit current flowing in said voltage-driven type power switching device, wherein said gate voltage, said correction voltage, and said induced voltage form a corrected gate voltage, said corrected gate voltage being applied to a gate of said voltage-driven type power switching device.

5,621,258

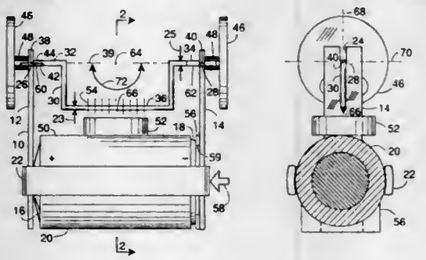
TOY MOTOR WITH PARTIAL COIL ROTOR

William W. Stevenson, 8895 Jane Rd. North, Lake Elmo, Minn. 55042

Filed Sep. 29, 1995, Ser. No. 535,980

Int. Cl.[6] H02K *23/00*

U.S. Cl. 310—1 **20 Claims**



1. A toy motor comprising:

a first rotor support having a first journal bearing whose center is at a first journal point;

a second rotor support having a second journal bearing whose center is at a second journal point, said first journal point, and said second journal point defining a rotational axis;

a partial coil rotor having a first journal, a second journal, and a conductor therebetween, said partial coil rotor being rotatable about said rotational axis upon said first journal being rotatably supported by said first journal bearing and said second journal being rotatably supported by said second journal bearing, said partial coil rotor having an extreme peripheral point defined as a point on said conductor that is between said first rotor support and said second rotor support and furthest away from said rotational axis, said first journal point, said second journal point, and said extreme peripheral point defining a plane, a center point collinear with said first journal point and said second journal point and located midway therebetween, a line of view perpendicular to said plane and intersecting said center point, said conductor extending less than 360 degrees around said line of view;

a magnet having a magnetic field extending across said conductor; and

a commutator alternately making and breaking continuity with said partial coil rotor as said partial coil rotor rotates about said rotational axis.

5,621,259

LINEAR MOTOR

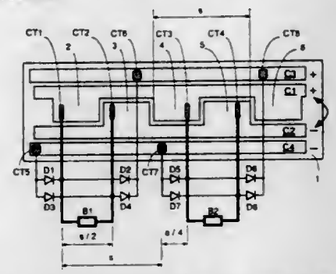
Bernard F. A. Multon, Fresnes; Jean H. L. Lucidarme, Sainte Genevieve, and Laurent P. A. Prévond, Villemomble, all of France, assignors to Somfy, France

Filed May 12, 1995, Ser. No. 440,062

Claims priority, application France, May 20, 1994, 94 06186

Int. Cl.[6] H02K *41/00;* **B60L** *13/00*

U.S. Cl. 310—12 **1 Claim**



1. A linear motor comprising, on the one hand, a stator rail (1) exhibiting a succession of active or passive stator poles and at least two conducting tracks (C1, C2) connected respectively to the positive and negative poles of a DC current source and interpenetrating one another and, on the other hand, moving gear equipped with at least two coils (B1, B2; B31, B32, B33) powered by means of sliding contacts (CT1 to CT4; CT31, CT32, CT33) moving along the conducting tracks so as to commutate in the coils the current necessary for the movement of the moving gear along the rail, wherein the rail includes two auxiliary conducting tracks (C3, C4) connected respectively to the positive and negative poles of the DC current source and the moving gear is equipped with at least one pair of auxiliary sliding contacts (CT5, CT6, CT7, CT8; CT9, CT10) respectively in permanent contact with each of the auxiliary conducting tracks, each of these auxiliary sliding contacts being electrically connected to each of the main sliding contacts through a pair of diodes (D1 to D8; D9 to D14), such that each main sliding contact is connected on the one hand to the anode of a diode whose cathode is connected to the positive auxiliary conducting track (C3) and, on the other hand, to the cathode of a diode whose anode is connected to the negative auxiliary conducting track (C4).

5,621,260

CORELESS MOTOR

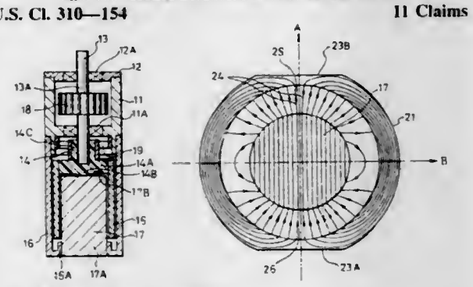
Kodo Fukuoka, Hino-gun; Kouji Kuyama, Yonago; Miyuki Furuya, Yonago; Hironobu Nishida, Yonago; Hiroto Inoue, Hirakata, and Yukihiro Okada, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 1, 1993, Ser. No. 131,534

Claims priority, application Japan, Oct. 7, 1992, 4-268507; Jan. 18, 1993, 5-005561; May 18, 1993, 5-115720

Int. Cl.[6] H02K *21/26;5/04;7/08;* **H01R** *39/32*

U.S. Cl. 310—154 **11 Claims**



1. A coreless motor comprising:

a cylindrical frame of magnetic material having an inner wall, a circular hole, and at least one flattened part formed on an outer wall thereof;

a columnar magnet inserted in said frame such that said magnet is held by said frame with a gap between the inner wall of said frame and an outer wall of said columnar magnet and a direction of the magnetic poles of said columnar magnet is perpendicular to a plane of said at least one flattened part of said frame,

a shaft held rotatably on said frame in coaxial relation to an axis of said columnar magnet and in series with said columnar magnet, and

a circular cylindrical coil mounted coaxially on said shaft and positioned in said gap.

5,621,261

MOTOR AND/OR GENERATOR OPERATING ON THE RELUCTANCE PRINCIPLE

Udo Winter, Kürnach, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

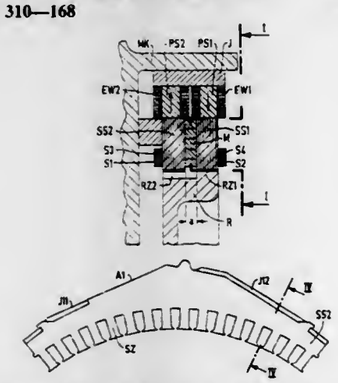
PCT No. PCT/DE93/00930, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/09553, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 4, 1993, Ser. No. 397,093

Claims priority, application Germany, Oct. 15, 1992, 9213945.0 U

Int. Cl.[6] H02K *17/42*

U.S. Cl. 310—168 **20 Claims**



1. A motor operating on the reluctance principle, comprising:

a) a rotor having a circumference;

b) a stator having a plurality of sector stators, which are distributed over the circumference of the rotor and are magnetically isolated from one another, wherein each sector stator includes:

(i) two sector stator elements being disposed axially one behind the other with an axial separation (a), having a plurality of teeth, and having a plurality of common power windings; and

(ii) a plurality of slots formed between the plurality of stator teeth, in which slots the common power windings are disposed;

c) a plurality of radially projecting pole limbs, wherein each sector stator element opens into the plurality of radially projecting pole limbs;

d) a plurality of excitation winding parts, each one of which loops around one of the plurality of radially projecting pole limbs, which pole limbs can be excited in a direction of opposite polarity by the excitation winding part which loops around them;

e) a magnetic return path yoke, wherein the plurality of pole limbs are coupled radially on their exterior by the magnetic return path yoke; and

f) an axially magnetized permanent magnet arrangement being magnetized in an opposite direction to a stray field produced by the excitation winding parts, being disposed in the axial separating space between the sector stator elements, and having a plurality of radial yoke overhangs, one for each of the sector stator elements, to suppress any stray flux between radial edge regions of adjacent sector stator elements.

5,621,262

CARBON BRUSH HOLDER

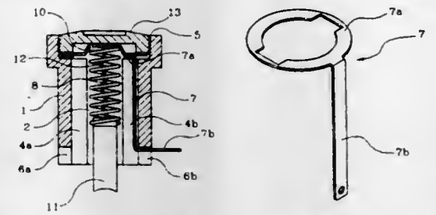
Soon Y. Han, #524-805 Jukong Apartment, 27, Chamshil-Dong, Songpa-Gu, Seoul, Rep. of Korea

Filed Apr. 30, 1996, Ser. No. 640,157

Claims priority, application Rep. of Korea, May 2, 1995, 95-9266 U

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—239 **8 Claims**



1. A carbon brush holder for a commutator motor comprising a receiving part for a carbon brush with a brush terminal and a lead terminal with a hanger portion and a tab, a holder body formed from an insulation material, the receiving part being formed to pass through the holder body in the longitudinal direction of the holder body, having a head portion at one end, and directly receiving the carbon brush without a brass insert, a fitting portion having threads formed at the head portion, the diameter of the fitting portion being greater than that of the cross-shaped receiving part, a cap being inserted within the fitting portion, and a mounting step formed by the difference in diameters of the receiving part and the fitting portion;

wherein two opposed lead slots extended in the longitudinal direction of the receiving part are formed in an internal surface of the receiving part, the tab of the lead terminal being inserted into one lead slot with-the hanger portion of the lead terminal being seated on the mounting step while the other slot acting as a cooling duct;

wherein two opposed brush slots extended in the longitudinal direction of the receiving part are also formed in the internal surface of the receiving part, each brush slot being placed at an intermediate position between said lead slots forming a cross-shaped section, the carbon brush being inserted between the brush slots with the brush terminal being laid on the mounting step; and

wherein cooling means is formed by an opening extended from one end to middle portion of each lead slot, the cooling means allowing the tab to be bent outwardly and release heat.

5,621,263

PIEZOELECTRIC RESONANCE COMPONENT

Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 3, 1994, Ser. No. 285,233

Claims priority, application Japan, Aug. 9, 1993, 5-197270; Oct. 21, 1993, 5-263769

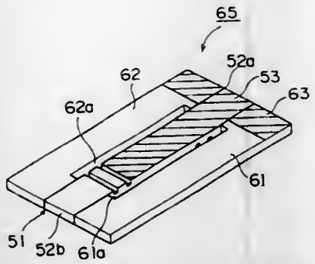
Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—333 **7 Claims**

1. A piezo-resonator comprising:

a piezoelectric body including a pair of opposite surfaces and being polarized in a first direction, a first groove located in one of said pair of opposite surfaces of said piezoelectric body and a second groove located in the other of said pair of opposite surfaces of said piezoelectric body;

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first and second resonance electrodes each located on a respective one of said pair of opposite surfaces of said piezoelectric body so as to be spaced apart by said piezoelectric body for applying a voltage in a direction substantially perpendicular to said first direction, said first and second resonance electrodes being located so as to define a resonance portion in which portions said first and second resonance electrodes overlap a common region of said piezoelectric body; wherein

said resonance portion is located between said first and second grooves.

5,621,264

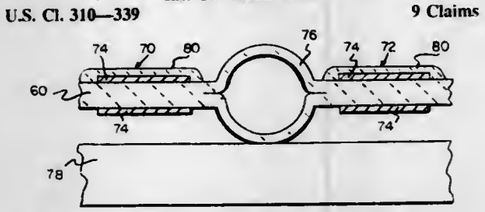
WATER CRAFT USING PIEZOELECTRIC MATERIALS

Michael Y. Epstein, Somerset County, and George W. Taylor, Mercer County, both of N.J., assignors to Ocean Power Technologies, Inc., West Trenton, N.J.

Filed Aug. 7, 1995, Ser. No. 511,761

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—339 **9 Claims**



1. A generator for generating electrical energy in response to being disposed within a moving fluid, the generator comprising a flexible, electroded sheet of piezoelectric material, said sheet having oppositely disposed major surfaces, and spaced apart protrusions on one of said surfaces for inducing turbulence in the fluid passing said one surface.

5,621,265

ALTERNATOR SUPPLY AND CONTROL UNIT

Roger Abadia, Neuilly-Plaisance, France, assignor to Valeo Equipements Electriques Moteur, Creteil, France

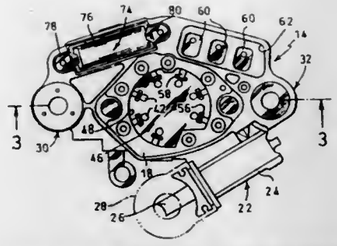
Filed Feb. 24, 1995, Ser. No. 394,253

Claims priority, application France, Feb. 28, 1994, 94 02243

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—68 D **7 Claims**

1. A supply and control unit for an alternator of a motor vehicle, of the type comprising a support plate made of insulating material to be fixed to a fixed part of the alternator and a brush holder, and of the type in which the support plate supports on a first face an integrated circuit for regulating the voltage provided by the alternator, the electric connection pins of which extend through the material of the support plate in order to open into a housing formed in the second face of the support plate, and of the type having an electric connecting circuit which includes connection lugs in contact with the connection pins of the integrated circuit, wherein the connection pins of the integrated circuit are disposed in a circle.



further including a generally plate-shaped cover made of insulating material designed to cover the second face of the support plate, and

wherein the face of the cover, disposed opposite the second face of the support plate has a series of partitions made of insulating material, produced in one piece by molding with the cover, which extend in protruding manner inside the housing formed in the second face of the support plate, between the connection pins of the integrated circuit.

5,621,266

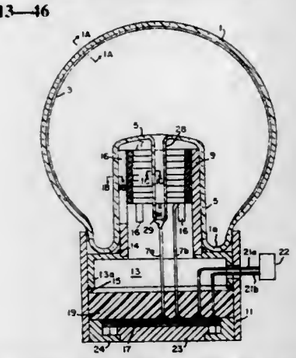
ELECTRODELESS FLUORESCENT LAMP

Oleg Popov, Needham; Jakob Maya, Brookline, and Edward K. Shapiro, Lexington, all of Mass., assignors to Matsushita Electric Works Research and Development Laboraty Inc., Woburn, Mass.

Filed Oct. 3, 1995, Ser. No. 538,239

Int. Cl.[6] H01J *61/52;65/04*

U.S. Cl. 313—46 **20 Claims**



1. An electrodeless fluorescent RF lamp and fixture comprising:

a bulbous lamp envelope and a reentrant cavity disposed in said envelope, a rare gas and vaporizable metal fill in said envelope and a phosphor coating on the interior thereof for generation of visible light;

a lamp base disposed outside said envelope and said fixture being attached to said lamp base;

an induction coil and radio frequency excitation generating means associated with said coil for the generation of a plasma to produce radiation to excite said phosphor coating, said coil and said means being situated outside said envelope and fitted within said cavity;

means disposed in said cavity to remove heat generated by said plasma from said cavity and said coil, said means further suppressing capacitive coupling between said coil and said plasma whereby to reduce ion bombardment of the phosphor coating on the inner surface of said cavity thereby improving the light depreciation rate and contributing to a long life lamp.

5,621,267

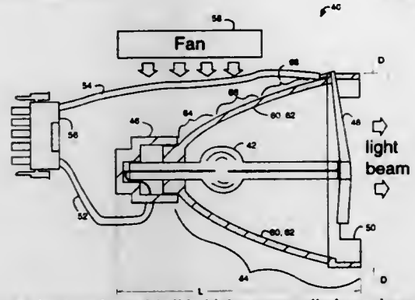
HIGH-POWER METAL HALIDE REFLECTOR LAMP

Richard O. Shaffner, San Jose, and John F. Richter, Redwood City, both of Calif., assignors to ILC Technology, Inc., Sunnyvale, Calif.

Filed Mar. 22, 1995, Ser. No. 408,637

Int. Cl.[6] H01J *5/16*

U.S. Cl. 313—113 **8 Claims**



1. An improved metal halide high-pressure discharge lamp system with an inert-gas-filled arc bulb positioned within a reflector to focus outward a beam of light during operation, said reflector comprising:

a single cast piece of 100% ceramic alumina Al_2O_3 that forms a substrate of said reflector;

a glaze on an inside concave surface of said substrate ad with a glassy surface providing for specular reflection of light from said arc bulb; and

an electrically non-conductive dielectric coating on an inside concave surface of the glaze for reflecting non-infrared radiation from said bulb into said beam of light and for passing infrared radiation from said arc bulb into the glaze and the cast ceramic alumina substrate for absorption;

wherein, the glaze and cast ceramic alumina substrate absorb most of the infrared radiation that is passed through by the dielectric coating from said arc bulb and is converted to heat that may be controlled and removed by a forced air flow.

5,621,268

ELECTROMAGNETIC WAVE SHIELDING DEVICE FOR DEFLECTION YOKE

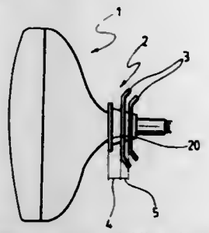
Sung-pyo Hong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 16, 1995, Ser. No. 442,400

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15700

Int. Cl.[6] H01J *1/52*

U.S. Cl. 313—313 **44 Claims**



1. An electromagnetic wave shielding device for blocking an electromagnetic wave leaked from a deflection yoke provided on a neck of a cathode ray tube, said shielding device comprising:

a shielding plate having a predetermined magnetic permeability and which is disposed coaxially with said deflection yoke, wherein the magnetic properties of said shielding plate are substantially the same throughout said shielding plate.

5,621,269

CATHODE ASSEMBLY OF A MAGNETRON

Young K. Jang, Kumi, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

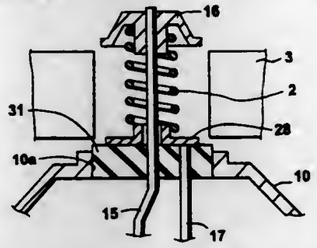
Continuation of Ser. No. 987,173, Dec. 8, 1992, abandoned.

This application Jan. 25, 1995, Ser. No. 378,092

Claims priority, application Rep. of Korea, Dec. 12, 1991, 22804/1991

Int. Cl.[6] H01J *1/15;* **H01B** *17/26*

U.S. Cl. 313—326 **5 Claims**



1. A cathode assembly of a magnetron for generating microwaves, comprising:

a lower end shield having a center through hole for passing a center lead, wherein a flange is provided at a lower portion of the lower end shield;

a filament in contact with a top portion of the lower end shield; and

an insulator supporting said lower end shield with said flange bonded to an upper surface of said insulator, the insulator including

a ring-shaped metallized portion at the upper surface of the insulator for serving to bond the lower end shield to the upper surface of the insulator and join a side lead to the lower end shield,

a first support hole formed in a center portion of the insulator for receiving a center lead, and a second support hole formed through the ring-shaped metallized portion for receiving the side lead.

5,621,270

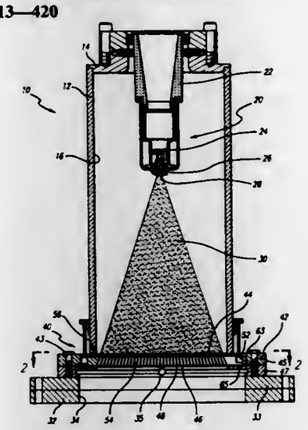
ELECTRON WINDOW FOR TOXIC REMEDIATION DEVICE WITH A SUPPORT GRID HAVING DIVERGING ANGLE HOLES

Curtis G. Allen, Hayward, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Mar. 22, 1995, Ser. No. 408,474

Int. Cl.[6] H01J *33/04*

U.S. Cl. 313—420 **20 Claims**



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1. An electron beam source for use in remediation of hazardous volatile organic compounds, comprising:

means for emitting a diverging electron beam;

a support grid spaced from said emitting means and having a plurality of holes disposed at diverging angles in a bolt circle pattern, individual electrons of said diverging electron beam passing through respective ones of said plurality of holes; and

a barrier provided on a downstream side of said support grid, said individual electrons passing through said barrier.

5,621,271

DISPLAY DEVICE OF THE FLAT-PANEL TYPE COMPRISING AN ELECTRON TRANSPORT DUCT AND A SEGMENTED FILAMENT

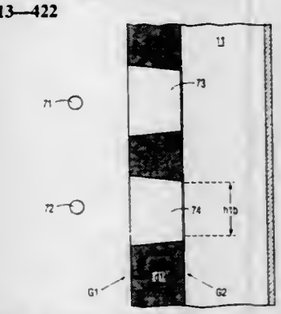
Petrus H. F. Trompenaars; Edward C. Cosman; Edwin A. Montie; Theunis S. Baller; Nicolaas Lambert, and Siebe T. De Zwart, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 210,962, Mar. 21, 1994, Pat. No. 5,442,253, and Ser. No. 53,980, Apr. 26, 1993, Pat. No. 5,347,199, which is a continuation of Ser. No. 954,949, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 637,039, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,677, May 24, 1990, abandoned, said Ser. No. 210,962is a continuation of Ser. No. 830,951, Feb. 6, 1992, Pat. No. 5,313,136, which is a continuation of Ser. No. 528,677, May 24, 1990, abandoned. This application May 27, 1994, Ser. No. 250,731

Claims priority, application European Pat. Off., Jun. 2, 1993, 93201566; Dec. 20, 1993, 93203586

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—422 **49 Claims**



1. A display device having a vacuum envelope, said display device comprising an electroluminescent screen and a row of transport ducts for transporting electrons, means for generating electrons and injecting electrons into the transport ducts, means for applying potential differences across the transport ducts to transport electrons through said transport ducts by means of secondary emission, means for extracting electrons from the transport ducts aid means for directing electrons towards the electroluminescent screen, characterized in that the means for generating electrons comprise juxtaposed line cathodes.

5,621,272

FIELD EMISSION DEVICE WITH OVER-ETCHED GATE DIELECTRIC

Jules D. Levine, Dallas, and Kenneth G. Vickers, Whitesboro, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 30, 1995, Ser. No. 453,593

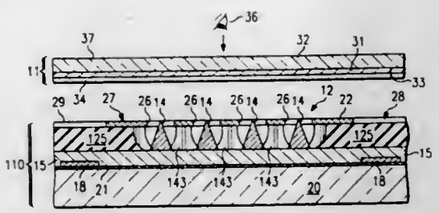
Int. Cl.[6] H01J *1/02;29/70;1/62;1/46*

U.S. Cl. 313—422 **12 Claims**

1. An electron emitter plate comprising:

a substrate;

a cathode electrode formed on said substrate;



an extraction electrode formed on said substrate; and

an insulating spacer formed on said substrate between said extraction and cathode electrodes;

one of said cathode and extraction electrodes including a conductive mesh structure defining a plurality of mesh spacings;

said extraction electrode having a plurality of arrays of apertures, each aperture array being located within a respective mesh spacing;

said insulating spacer having a plurality of arrays of subcavities, the subcavities of each array being open to neighboring subcavities of the same array and together defining a main cavity, said main cavity of each array being located within a respective mesh spacing; and

said cathode electrode having a plurality of arrays of microtips, each microtip array being located within a respective mesh spacing, and each microtip being located within a respective aperture and subcavity.

5,621,273

CATHODE RAY TUBE AND METHOD OF MANUFACTURING A CATHODE RAY TUBE

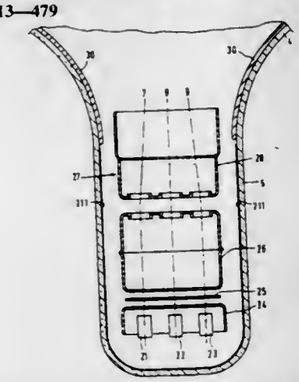
Gerardus A. H. M. Vrijssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 977,426, Feb. 23, 1993, abandoned. This application May 19, 1995, Ser. No. 445,255

Claims priority, application Netherlands, Jul. 15, 1991, 9101241

Int. Cl.[6] H01J *29/88*

U.S. Cl. 313—479 **33 Claims**



11. A cathode ray tube comprising an electron gun, an electrically insulating surface in said cathode ray tube, and an electrically insulating film of an organic material covering said electrically insulating surface, said electrically insulating film being a thermal decomposition product of a layer of said organic material.

5,621,274

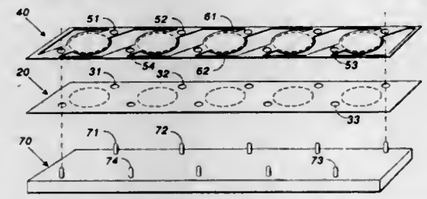
LAMINATED EL DISPLAY

Ralph M. McGuigan, Phoenix, Ariz., assignor to Durel Corporation, Chandler, Ariz.

Filed Feb. 27, 1996, Ser. No. 607,714

Int. Cl.[6] H01J *1/62;63/04;* **G09G** *3/10*

U.S. Cl. 313—512 **6 Claims**



1. An EL panel having a plurality of lamps on precise centers, said panel comprising:

a first rail and a second rail;

a plurality of lamps located on said centers between said rails, wherein each lamp is connected to said first rail by a first arm and is connected to said second rail by a second arm; and

a plurality of holes for locating said panel in a fixture.

5,621,275

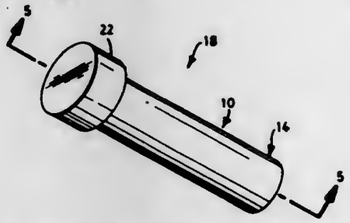
ARC TUBE FOR ELECTRODELESS LAMP

George C. Wei, Weston, Mass.; Jerry Kramer, Yorktown Heights, N.Y.; John Walsh, Milford, and Walter P. Lapatovich, Marlborough, both of Mass., assignors to OSRAM SYLVANIA Inc., Danvers, Mass.

Filed Aug. 1, 1995, Ser. No. 509,851

Int. Cl.[6] H01J *17/16;61/30*

U.S. Cl. 313—636 **5 Claims**



1. An arc tube for an electrodeless metal halide discharge lamp comprising: an arc chamber fabricated from a material selected from the group consisting of magnesia-doped polycrystalline alumina, silicon dioxide doped polycrystalline alumina and monocrystalline alumina, said arc chamber being tubular and having at least one end and having a given outside diameter; and at least one end cap closing said at least one end of said arc chamber, said end cap being formed from magnesia-doped polycrystalline alumina and comprising a substantially cup-shaped member having an inside diameter which is sealed to said outside diameter of said arc chamber by a shrink-fit.

5,621,276

CATHODE RAY TUBE

Jimmie D. Songer, Burleson, Tex., assignor to Magma, Inc., Fort Worth, Tex.

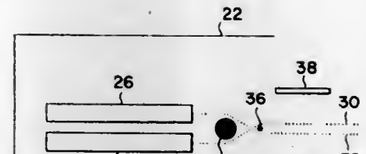
Continuation-in-part of Ser. No. 877,821, May 1, 1992, abandoned. This application May 1, 1995, Ser. No. 433,867

Int. Cl.[6] H01J *29/46;29/56*

U.S. Cl. 315—14 **23 Claims**

1. A cathode ray tube, comprising:

a phosphor screen displaying visual images;



at least two electron guns for generating electron beams, with each gun generating multiple electron beams suitable for generating color images on said phosphor screen; and

control means for directing the multiple electron beams against said phosphor screen for displaying images corresponding to information contained in the beams, with the multiple electron beams separated in a selected direction for generating multiple lines of image information on said phosphor screen, and with said control means including means for converging the multiple electron beams substantially parallel prior to directing the multiple electron beams against said phosphor screen.

5,621,277

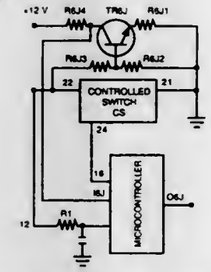
AUTOMATIC LIGHT CONTROL AND BATTERY PROTECTION ON A VEHICLE

Tom L. Ricca, 1413 Wyandotte Rd., Columbus, Ohio 43212

Filed Nov. 7, 1994, Ser. No. 335,133

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—86 **20 Claims**



1. An attachment for automatic light control and battery protection on a vehicle that has as existing equipment the following:

(a) a battery with one polarity connected to said vehicle metal chassis defined as ground potential and the other polarity defined as high potential;

(b) basic lights comprising a set of head lights electrically connected preferably in parallel and a set of park lights electrically connected preferably in parallel;

(c) an enabling system, also called the ignition system, for the user of said vehicle to enable or disable the mechanical powering means of said vehicle which, when enabled, would move said whole vehicle a predetermined way when a predetermined electromechanical action is met;

(d) a path energizing said set of head lights when closed, a path energizing said set of park lights when closed, and a path energizing said ignition system when closed, each of said paths being connected in series with said battery;

(e) a light switch having a plurality of electrical terminals thereon and a plurality of positions operating in conventional manners; and

(f) an ignition switch having a plurality of electrical terminals thereon, and a plurality of modes including a STOP mode that would interrupt the enabling electrical connections of said ignition system;

said attachment for automatic light control and battery protection on a vehicle comprising, in combination:

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(a) a control block including a suitable number of electrical pins, having each practically infinite internal electrical resistance assigned by preprogramming as sensing input means to gamer at predetermined intervals of time the logical states of devices electrically connected thereto; a suitable number of electrical pins assigned by preprogramming as controlled output means to actuate, when energized, other devices electrically connected thereto; and logical processing means including memory means preprogrammed to decide when to energize and when to de-energize said controlled output means according to the combinations and sequences of the logical states of devices electrically connected to said sensing input means;

(b) controlled switch means having a predetermined number of pairs of contact terminals and electrically connected to and actuatable by said controlled output means for changing the electrical resistance through each of all said pairs of contact terminals of said controlled switch means from a practically infinite value to a practically zero value, and vice versa;

(c) powering means using preferably said battery to energize said control block and eventually to energize said controlled switch means on actuation from said control block;

(d) a light switch transducer means for providing on demand from said control block, the logical state of at least one of said plurality of positions of said light switch, said light switch transducer means including electrical transducer means providing two logical states out of the energizing and de-energizing of each particular one of a predetermined number of closed paths electrically interruptible by a particular one of said plurality of positions of said light switch, said electrical transducer means being made by

electrically connecting a predetermined one of the two electrical terminals of a sensing resistor of predetermined electrical resistance to a predetermined one of the two electrical contact terminals of the particular pair of contact terminals of said controlled switch means which is electrically connected in series with said particular one of a predetermined number of closed paths electrically interruptible by a particular one of said plurality of positions of said light switch;

electrically connecting the remaining one of said two electrical terminals of said sensing resistor, not to the remaining one of said two electrical contact terminals of said particular pair of contact terminals of said controlled switch means, but to a point having a potential which is made, at least temporarily on demand from said control block, logically equivalent to the potential for said remaining one of said two electrical contact terminals of said particular pair of contact terminals of said controlled switch means when the resistance through said controlled switch means is made into a practically infinite value;

and then sensing with all electrical connection to said sensing input means of said control block the change in voltage with respect to said ground potential, at said predetermined one of said two electrical terminals of said sensing resistor; said change in voltage being caused by the closing and interrupting of said particular one of said plurality of positions of said light switch and said change in voltage being sensed only when the resistance through said particular pair of contact terminals of said controlled switch means is made into a practically infinite value;

(e) an ignition switch transducer means for providing the logical state, presence or absence of the STOP mode of said ignition switch;

(f) electrical wire insert means, each interrupting and creating each of pairs of insulated electrical terminals in series in each of a predetermined number of closed paths of said basic lights anywhere on each of said closed paths of said basic lights;

(g) electrical wire interrupting means connected to a predetermined number of said pairs of insulated electrical terminals of said insert means as well as to a predetermined number of said pairs of contact terminals of said controlled switch means to allow each pair of contact terminals of said controlled switch means to be inserted in series with each of said predetermined number of energizing closed paths of said basic lights at convenient locations said convenient locations being predetermined for said vehicle, and not restricted electrically to a single definite location with respect to said battery, said light switch, and said basic lights; and

(h) electrical wire signaling means connected to said transducer means of said light and ignition switches, as well as to said sensing input means to provide to said logical processing means the combinations and sequences of the logical states of said light and ignition switches, said transducer means of said light and ignition switches being predetermined to be the most convenient on said vehicle.

5,621,278

IGNITION APPARATUS

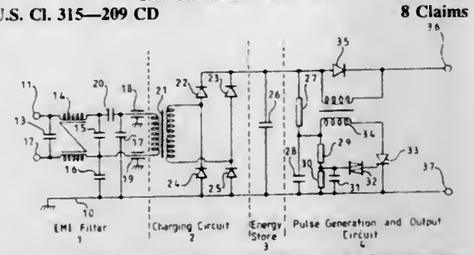
Martin J. Chambers, Shenstone, England, assignor to Lucas Industries Public Limited Company, England

Filed Jun. 13, 1994, Ser. No. 258,859

Claims priority, application United Kingdom, Jun. 11, 1993, 9312108

Int. Cl.[6] F02P *3/06;3/08*

U.S. Cl. 315—209 CD **8 Claims**



1. An ignition apparatus, not including any spark gap means, comprising a first energy store, a first charging circuit for charging said first energy store to a first potential difference, a second energy store, a second charging circuit for charging said second energy store to a second potential difference which is less than the first potential difference, a pulse transformer having primary and secondary windings, a discharge device for discharging said second energy store into said primary winding, and output terminals, said secondary winding being connected in series with said first energy store between said output terminals.

5,621,279

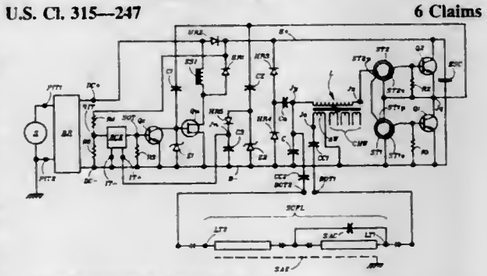
POWER-FACTOR-CORRECTED ELECTRONIC BALLAST CIRCUIT

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 912,587, Jul. 13, 1992, Pat. No. 5,434,481, which is a continuation of Ser. No. 646,221, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,267, Jun. 29, 1990, abandoned. This application Jun. 28, 1995, Ser. No. 496,182

Int. Cl.[6] H05B *41/24*

U.S. Cl. 315—247 **6 Claims**



1. An arrangement comprising:

source means operative to provide an AC power line voltage at a pair of power line terminals;

gas discharge lamp means having a pair of lamp terminals; and

ballast means having a pair of input terminals connected with the power line terminals and a pair of output terminals disconnectably connected with the lamp terminals; the ballast means at times drawing a line current from the power line terminals; the line current, when indeed being drawn, having a waveshape that is approximately equal to that of the power line voltage; the line current being drawn: (i) in a substantially continuous manner in situations where the lamp terminals are indeed connected with the output terminals and the lamp means is indeed being powered; and (ii) in an intermittent manner in situations where the lamp terminals are not connected with the ballast terminals.

5,621,280

ILLUMINATION UNIT, AND ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP AND COIL SUITABLE FOR USE THEREIN

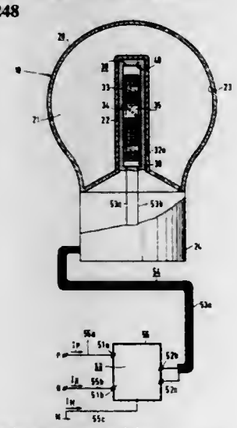
Petrus H. Antonis, Eindhoven, Netherlands; Jacob Schlejen, Morgantown, W. Va., and Leonardus U. E. Konings, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 138,948, Oct. 18, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 532,029

Claims priority, application European Pat. Off., Oct. 21, 1992, 92203223

Int. Cl.[6] H05B *41/16*

U.S. Cl. 315—248 **17 Claims**



1. An illumination unit, comprising:

an electrodeless low-pressure discharge lamp comprising a discharge vessel sealed in a gastight manner and containing an ionizable filling, a core of soft magnetic material extending longitudinally between respective ends of said core and a coil comprising turns of a primary winding and of a secondary winding, respectively around said core of soft magnetic material, said primary winding having a first end and a second end spaced from said first end along said core, and said secondary winding having a first end adjacent the second end of said primary winding and a second free end adjacent the first end of the primary winding; and

a high frequency supply device comprising input terminals, an output terminal electrically neutral with respect to ground and connected to the first ends of the primary and of the secondary windings, and a further output terminal connected to the second end of the primary winding, a high-frequency magnetic field being generated by the primary winding in a nominal operating condition, which field maintains an electric discharge in the discharge vessel and induces a potential gradient in the secondary winding in a direction from the first end, which is electrically neutral with respect to ground, to the second, free end, which gradient is oppositely directed to the potential gradient from the first to the second end in the primary winding, and at least one of the windings at its second end comprises a turn which extends beyond the respective adjacent end of the core for facilitating lamp ignition.

5,621,281

DISCHARGE LAMP LIGHTING DEVICE

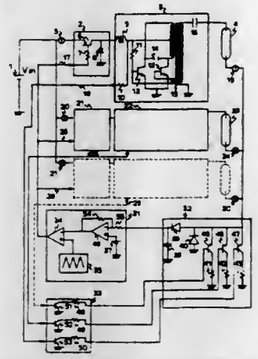
Kenji Kawabata, Tokyo; Ryuichi Ikeda; Motohiro Sugino, both of Kanagawa-ken; Takashi Okada, Tokyo, and Johji Mamiya, Kanagawa-ken, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y., and Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,817

Claims priority, application Japan, Aug. 3, 1994, 6-182064

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—311 **9 Claims**



1. A discharge lamp lighting device comprising:

a lighting circuit which is connected to a direct current power supply and flows current to one discharge tube or a plurality of discharge tubes so as to maintain a lit state of the discharge tube or tubes;

one impedance device which is connected to the discharge tube or tubes so that all or a portion of current flowing through the discharge tube or tubes flows in the impedance device;

a voltage control circuit which controls voltage supplied to said lighting circuit so that voltage applied to the impedance device is maintained constant; and

a switching circuit for varying the impedance of the impedance device in accordance with the number of lighting circuits.

5,621,282

PROGRAMMABLE DISTRIBUTIVELY CONTROLLED LIGHTING SYSTEM

Walter Haskell, 12502 Raven South Dr., Houston, Tex. 77429

Filed Apr. 10, 1995, Ser. No. 420,281

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—324 **3 Claims**

3. A lighting control system comprising

a microprocessor controlled user interface, and

a plurality of serially connected lighting control modules;

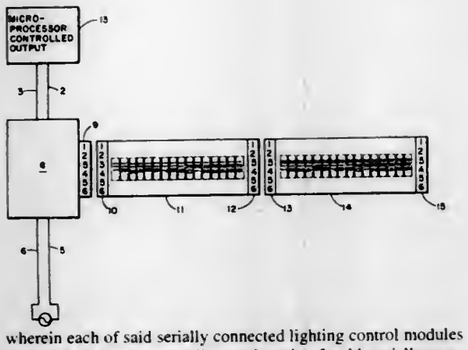
wherein the output of said user interface is an asynchronous serial data signal;

wherein the output of each said plurality of serially connected lighting control modules is an asynchronous serial data signal;

wherein said output of said user interface is connected to the input of the first of said plurality of serially connected lighting control modules;

wherein the input to the second and all subsequent of said serially connected lighting control modules is the output of a preceding serially connected lighting control module;

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wherein each of said serially connected lighting control modules provides a microcontroller, and each of said serially connected lighting control modules provides one or more light sources;

wherein said asynchronous serial data signal is communicated to said microcontrollers, and

wherein the on-off state of each of said light sources is determined by said microcontrollers acting upon said asynchronous serial data signal.

5,621,283

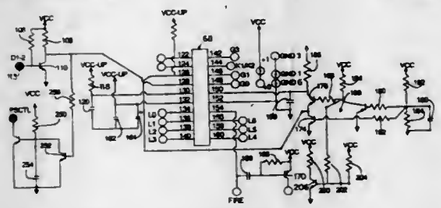
MICROPROCESSOR BASED TOUCH DIMMER SYSTEM TO CONTROL THE BRIGHTNESS OF ONE OR MORE ELECTRIC LAMPS USING SINGLE OR MULTI-KEY DEVICES

Douglas R. Watson, 105 Middle Ridge, Sanford, Conn. 06903; Lev Bogorad, 540 Main St., Roosevelt Island, N.Y. 10044; Albert Lombardi, 1 Ziegler Rd., LaGrangeville, N.Y. 12540; Benjamin Neiger, 270-27T Grand Central Pkwy., Floral Park, N.Y. 11004; Lester Rivera, 70-02 68th St., Glendale, N.Y. 11554; Joseph G. Justiniano, 267 10th St., Bethpage, N.Y. 11714, and Zvi Aluma, 27 Wendall St., Plainview, N.Y. 11803

Continuation of Ser. No. 286,613, Aug. 5, 1994, Pat. No. 5,485,058. This application Jan. 11, 1996, Ser. No. 586,508

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—362 **20 Claims**



1. A touch dimmer system comprising:

latching switch means comprising an input terminal, an output terminal, and a control terminal, said control being adapted to have applied to it a switching signal for causing said switch means to permit current from an AC line voltage source to flow through said latching switch means during a sub-cycle of said AC line voltage, said current operating to brighten one or more lamps connected in series with said output terminal;

zero crossing circuit means for generating a zero crossing signal in response to zero crossing points of said AC line voltage source;

a microprocessor comprising a self-contained clock oscillator connected to said zero crossing circuit means to receive said signal therefrom, said microprocessor producing a triggering signal output based on its own operating clock oscillator frequency;

key switch circuit means connected to said microprocessor and said zero crossing signal;

output circuit means connected to said microprocessor to receive said triggering output signal therefrom and to thereupon generate said switching signal which is applied to said control terminal of said switching means;

power supply circuit means connected to said AC line voltage source and to said zero crossing circuit means, said power supply circuit means functioning to prevent current flow through said latching switching means until voltage from said AC line voltage source reaches a certain level or when a predetermined time has elapsed since the most recent of said zero crossing points of said AC line voltage source;

one or more respective dimmer key switches for setting various lamp brightness levels and for turning said one or more lamps on or off;

said key switch circuit means connected to said key switches and to said microprocessor fur indicating the state of said respective dimmer key switches to said microprocessor; and

said microprocessor including memory means for storing information representative of preset brightness levels for said one or more lamps.

5,621,284

ELECTRONIC FLUORESCENT DISPLAY SYSTEM

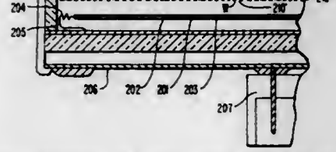
Ge Shichao, Hangzhou, China; Victor Lam, Saratoga, Calif.; Huang Xi, Hangzhou, China; Jin Weicheng, Hangzhou, China, and Ruan Shiping, Hangzhou, China, assignors to Pixtech, Inc., Santa Clara, Calif., and Hangzhou University

Continuation of Ser. No. 953,504, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 657,867, Feb. 25, 1991, Pat. No. 5,170,100. This application Mar. 10, 1995, Ser. No. 402,313

Claims priority, application China, Mar. 6, 1990, 90101232.7

Int. Cl.[6] G09G *1/04;* **H01J** *29/70*

U.S. Cl. 315—366 **22 Claims**



1. A cathodoluminescent visual display apparatus having a plurality of pixel dots, comprising:

an anode;

a luminescent layer that emits light in response to electrons, and that is on or adjacent to the anode, said luminescent layer including luminescent dots that emit light in response to impact of electrons;

a cathode;

at least a first, a second and a third set of substantially parallel grid wire electrodes between the anode and cathode, the electrodes in two of the first, second and third sets being substantially parallel to one another, said electrodes in said two sets being transverse to and overlapping those in the remaining one of the first, second and third sets at points, wherein the overlapping points define the pixel dots, so that each luminescent dot overlaps and corresponds to at least one pixel dot, said anode and cathode being in two planes that are spaced apart, wherein said first, second and third sets of grid electrodes are in a first, second and third plane different from one another, said three planes being located between the planes of the anode and cathode, said second plane located between the first and third planes, said first plane located between said second plane and the plane of the cathode; and

means for causing the cathode to emit electrons;

a second device applying electrical potentials to the anode, cathode and the three sets of grid electrodes, causing the electrons emitted by the cathode to travel to the anode at selected pixel dots and their corresponding luminescent dots for displaying images but not to luminescent dots that do not overlap the selected pixels, wherein the second device applies to the anode an electrical potential that is positive relative to that applied to the cathode, electrical potentials suitable for scanning or for carrying brightness information to all of the three sets of grid electrodes.

5,621,285

DOUBLE IMMERSION PROJECTION CRT GUN

Richard M. Gorski, Arlington Heights, and Kenneth A. Guzowski, Hoffman Estates, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 1, 1995, Ser. No. 432,320

Int. Cl.[6] H01J *29/58*

U.S. Cl. 315—382.1 **36 Claims**



1. An electron gun for a cathode ray tube comprising:

A. a beam forming region constructed and arranged to emit electrons and form them into a beam;

B. a main lens region constructed and arranged to receive the beam from the beam forming region and having:

1) a decelerating lens gap comprising:

a) a substantially tubular first electrode element, and

b) a substantially tubular second electrode element surrounding at least a portion of the first electrode element;

2) an accelerating lens gap, comprising:

a) a substantially tubular third electrode element, and

b) a substantially tubular fourth electrode element surrounding at least a portion of the third electrode element; and

3) the decelerating lens gap being located between the beam forming region and the accelerating lens gap.

5,621,286

COLOR CATHODE RAY TUBE HAVING IMPROVED FOCUS

Tsutomu Toujou; Shinichi Kato, and Shoujl Shirai, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1995, Ser. No. 444,744

Claims priority, application Japan, May 23, 1994, 6-108480

Int. Cl.[6] G01S *3/16;3/28*

U.S. Cl. 315—382.1 **9 Claims**

1. A color cathode ray tube having an electron gun comprising first electrode means for generating an electron beam and directing said electron beam arranged toward a phosphor screen and second electrode means for constituting a main lens for focusing said electron beam onto said phosphor screen, wherein said second electrode means comprises a first accelerating electrode, a focus electrode, and a second accelerating electrode toward said phosphor screen, and a length of said focus electrode is equal to or longer than two times a diameter of said main lens, and a highest voltage is applied on said first accelerating electrode and said second accelerating electrode, and a voltage lower than said highest voltage is applied on said focus electrode, and a length of said first accelerating electrode is within a range from about 0.4 to 2 times a diameter of an electron beam passage aperture formed in a surface of said first accelerating electrode which is opposite to said first electrode means.

5,621,287

FLEXIBLE AUXILIARY DEFLECTION COIL

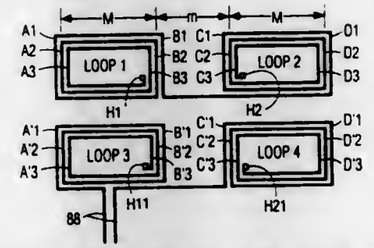
Alain Dossot, Chevigny-Saint-Sauveur, and Jean-Philippe Descombes, Premieres, both of France, assignors to Thomson Tubes & Displays S.A., France

Continuation of Ser. No. 224,597, Apr. 7, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,253

Claims priority, application European Pat. Off., Apr. 21, 1993, 93401031

Int. Cl.[6] G09G *1/04;* **H04N** *5/21*

U.S. Cl. 315—399 **6 Claims**



1. A color cathode ray tube display with scanning beam velocity modulation, comprising:

a color cathode ray tube and guns generating a plurality of electron beams along a z axis;

a deflection yoke mounted on a neck of said cathode ray tube and generating a main deflection field, said plurality of electron beams being deflected by said field with a certain level of differential deflection;

a flexible support having first and second sides;

first and second conductor coil patterns respectively disposed adjacent opposite sides of said flexible support, each of said patterns forming two generally rectangular loops about respective conductor free window areas;

side conductors of said generally rectangular loops of said first and second conductor coil patterns oriented generally parallel to said z axis in a constrained grouping within a narrow chordal angle, said side conductors subtending a predetermined angle symmetrically positioned about said Y axis on said neck when said flexible support is conformed to said neck;

a conductive connection through said flexible support for coupling scanning velocity modulating current between said conductor coil patterns in a series arrangement; and,

said constrained grouping of said side conductors and said series arrangement of said first and second conductive coil patterns generating an auxiliary deflecting field producing substantially more deflection sensitivity than either one of said conductive coil patterns individually without substantially increasing said certain level of said differential deflection.

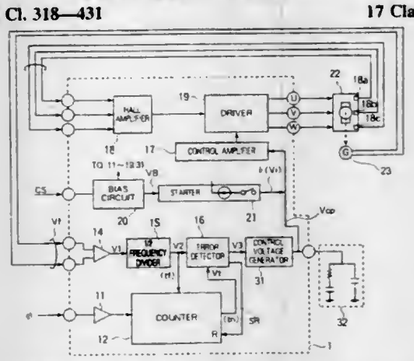
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5,621,288

MOTOR SPEED REGULATING CIRCUIT WITH STARTER AND STORAGE MEDIUM DRIVE USING THE SAME

Kunio Seki, Tokyo; Toshiyuki Tsunoda, Maebashi, and Yuichi Ohkubo, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 340,372
Claims priority, application Japan, Nov. 18, 1993, 5-289361
Int. Cl.[6] H02P 1/18; G11B 19/20
U.S. Cl. 318—431 17 Claims



1. A motor speed regulating circuit, comprising:

a speed signal generator for generating a speed signal having a frequency proportional to the speed of the motor, synchronously with the rotation of the motor;

a signal processing circuit for converting said speed signal into a digital speed pulse signal alternately taking high and low level binary values;

a single counter for counting a predetermined standard time synchronously with the high or low level of said speed pulse signal;

an error detector for detecting a time difference between the period of said speed pulse signal and said predetermined standard time counted by said counter and outputting an error pulse signal having a pulse width corresponding to said time difference;

a control voltage generator for generating a speed control voltage to be applied to the motor in accordance with the pulse width of said error pulse signal and feedback-controlling the speed of the motor in accordance with said standard time; and

a starter for starting the motor after the motor is stopped, thereby putting the motor in a rotation state from a stopped state.

13. A storage medium device, comprising:

a motor for rotating a disk of storage medium;

read/write means for performing at least data read and data write relative to the rotated disk;

a speed signal generator for generating a speed signal having a frequency proportional to the speed of the motor, synchronously with the rotation of the motor;

a signal processing circuit for converting said speed signal into a digital speed pulse signal alternately taking high and low level binary values;

a signal counter for counting a predetermined standard time synchronously with the high or low level of said speed pulse signal;

an error detector for detecting a time difference between the period of said speed pulse signal and said predetermined standard time counted by said counter and outputting an error pulse signal having a pulse width corresponding to said time difference;

a control voltage generator for generating a speed control voltage to be applied to the motor in accordance with the pulse width of said error pulse signal and feedback-controlling the speed of the motor in accordance with said standard time; and

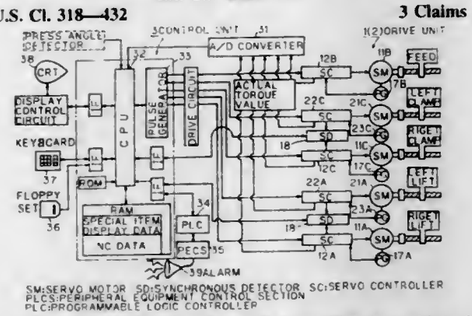
a starter for starting the motor after the motor is stopped, thereby putting the motor in a rotation state from a stopped state.

5,621,289

SYSTEM FOR DETECTING MALFUNCTION BY MONITORING TORQUE OF A TRANSFER DEVICE

Yoshihiro Doyama, Osaka, Japan, assignor to Kurimoto, Ltd., Osaka, Japan

Filed Dec. 29, 1994, Ser. No. 366,093
Claims priority, application Japan, Mar. 31, 1994, 6-87721
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—432 3 Claims



1. A malfunction detecting system for controlling the position of a three-dimensionally moving beam of a transfer press by monitoring the torque of the transfer device, the three-dimensionally moving beam of the transfer press being moved by a servo control device independent of the drive mechanism of the transfer press, comprising: means for establishing a torque value of a specific transfer pattern actually measured under normal operation as a reference torque value of said transfer pattern; means for calculating a torque allowance by defining upper and lower limit torque values obtained by adding or subtracting a preliminarily set deviation value to or from said reference torque value; means for storing the torque allowance in a control unit; and means for comparing an actual torque value with said torque allowance whenever said specific transfer pattern is put into actual operation, so that any malfunction is detected instantaneously upon deviation out of said torque allowance.

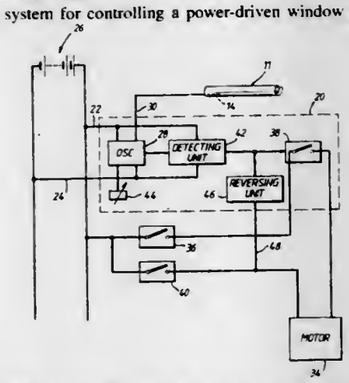
5,621,290

MOVABLE-WINDOW SAFETY DEVICE

Norbert Heller, Grefrath; Klaus Hanndorf, Krefeld, and Alfons Stockschlager, Viersen, all of Germany, assignors to Draftex Industries Limited, Edinburgh, Scotland

Continuation of Ser. No. 324,777, Oct. 17, 1994. This application Jul. 19, 1996, Ser. No. 690,230
Claims priority, application United Kingdom, Oct. 18, 1993, 9321484; Oct. 27, 1993, 9322165; Dec. 9, 1993, 9325242; Dec. 24, 1993, 9326467; Jan. 11, 1994, 9400407
Int. Cl.[6] G01R 27/26
U.S. Cl. 318—466 25 Claims

1. A system for controlling a power-driven window glass slid-



ably movable between closed and opened positions in a window

opening defined in a motor vehicle by an electrically conductive window frame, comprising:

a sealing or guiding strip attachable to the window frame for sealing or guiding the window glass as it moves between the opened and closed positions, the sealing or guiding strip being made of plastics or rubber material and incorporating only a single electrode electrically insulatingly embedded within the plastics or rubber material,

electrical circuit means for producing an electrical output,

connecting means connecting the single electrode to the electrical circuit means such that the presence of a part of the human body at or not more than a predetermined distance from the single electrode produces a change in the electrical output,

detecting means responsive to the change in the electrical output to produce an output signal, and

output means responsive to the output signal for interrupting sliding movement of the window glass in the window opening,

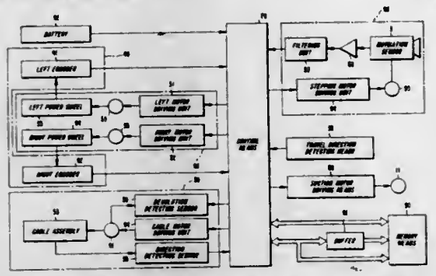
the electrical circuit means producing the electrical output as an electrically oscillating output.

5,621,291

DRIVE CONTROL METHOD OF ROBOTIC VACUUM CLEANER

Jae-Bong Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 31, 1995, Ser. No. 415,208
Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6852
Int. Cl.[6] B62D 51/04; G05B 15/00
U.S. Cl. 318—568.16 1 Claim



1. A method of controlling the travel of a self-propelled robotic vacuum cleaner relative to a wall, the cleaner including independently driven right and left drive wheels, a navigation sensing first unit for emitting first ultrasonic waves in a forward direction and receiving reflected first ultrasonic waves, and an ultrasonic sensing second unit for emitting second ultrasonic waves in a lateral direction and receiving reflected second ultrasonic waves, the method comprising the steps of:

A) advancing the cleaner in a travel path alongside a wall by driving the drive wheels, while emitting first and second ultrasonic waves from the first and second sensing units, respectively;

B) oscillating the navigation sensing unit to the right and left through an angle while emitting the first ultrasonic waves and determining from the first ultrasonic waves reflected off an obstacle whether an obstacle lies in the travel path, and a distance between the cleaner and any detected obstacle;

C) determining from the first and second ultrasonic waves reflected off the wall, when no obstacle is sensed in step B, a travel angle formed by the travel path relative to the wall, and a distance from the cleaner to the wall;

D) controlling the first and second drive wheels to maintain the travel path substantially parallel to the wall by changing the relative speeds between the right and left drive wheels to bring the travel angle to zero when the travel angle is determined to be different from zero in step C;

E) controlling the drive wheels to maintain the travel path substantially parallel to the wall at a selected distance from the wall by:

E1) increasing a speed of one of the right and left drive wheels located farther from the wall than the other of the right and left drive wheels to move the cleaner closer to the wall when the distance between the cleaner and wall determined in step C is greater than a reference distance, and

E2) increasing a speed of the other of the right and left drive wheels to move the cleaner farther from the wall when the distance between the cleaner and wall determined in step C is less than the reference distance; and

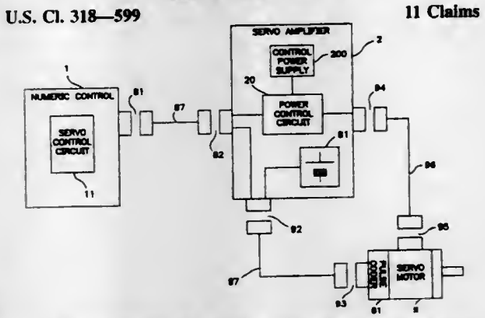
F) changing the travel path from the substantially parallel relationship with the wall in response to detecting, in step B, an obstacle within a predetermined distance from the cleaner, to avoid collision with the obstacle.

5,621,292

SERVO AMPLIFIER AND SERVO SYSTEM WHICH REDUCE CABLE INTERFACE

Masuo Kokura, Hino, and Kenichi Ito, Yamanashi, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/01244, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO94/07188, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 2, 1993, Ser. No. 232,193
Claims priority, application Japan, Sep. 18, 1992, 4-249313
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—599 11 Claims



1. A servo amplifier for driving a servo motor through a power transmitting cable by receiving a PWM command signal from a servo control circuit through a control cable, and a feedback signal from a pulse coder through a feedback cable, comprising:

a first interface connected to the control cable for communicating the PWM command signal with the servo control circuit;

a second interface connected to the power transmitting cable for communicating an amplified PWM command signal with the servo motor;

a third interface connected to the feedback cable and to the first interface for communicating a detected position of the pulse coder to the servo control circuit through the first interface and the control cable;

three PWM signal lines for transmitting the PWM command signal from the first interface to a plurality of corresponding high-side PWM control devices; and

three inverters connected to said three PWM signal lines for inverting and transmitting said PWM command signal to a plurality of corresponding low-side PWM control devices;

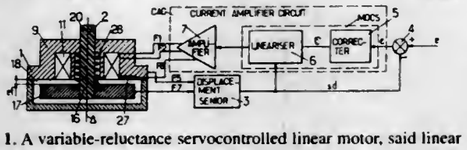
wherein the high-side PWM control devices and the low-side PWM control devices communicate the amplified PWM command signal to the servo motor through the second interface.

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5,621,293
VARIABLE-RELUCTANCE SERVOCONTROLLED LINEAR MOTOR

André Gennesseaux, Paris, France, assignor to Hutchinson, Paris, France

Filed Nov. 25, 1992, Ser. No. 981,484
Claims priority, application France, Nov. 26, 1991, 91 14576
Int. Cl.[6] G05B *11/00*
U.S. Cl. 318—687 **15 Claims**



1. A variable-reluctance servocontrolled linear motor, said linear motor comprising:

at least one electromagnet exerting, during operation, a force of attraction, said electromagnet producing magnetic field lines and comprising a shell forming a magnetic circuit and a winding disposed around a linear displacement path,

at least one movable magnetic portion movable in a direction of displacement and guided mechanically so as to have only one degree of freedom with respect to said shell of the electromagnet, the direction of the displacement being substantially tangential to that of the magnetic field lines produced by the electromagnet, and an air gap being defined between said shell and said movable magnetic portion,

means for detecting the displacement of the said movable magnetic portion and for producing a displacement signal sd representative of the displacement of said movable magnetic portion, said detector means comprising a measurement sensor for detecting a length of the air gap between the shell and the movable magnetic portion,

subtracter means for receiving, at a first, positive input thereof, a displacement control signal e for the movable magnetic portion, and, at a second, negative input thereof, said displacement signal and for producing a displacement error signal ϵ for the movable magnetic portion with respect to the displacement control signal,

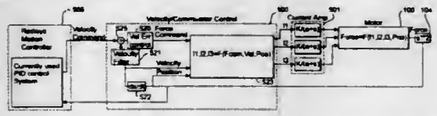
a current amplifier circuit for receiving the said error signal ϵ and for producing a corresponding supply current for said winding, and

restoring means for said movable magnetic portion for exerting on said movable magnetic portion, a restoring force opposed to the force exerted by the electromagnet.

5,621,294
APPARATUS AND METHOD FOR FORCE COMPENSATION IN A VARIABLE RELUCTANCE MOTOR

Steven C. Bessette, Maine, and Andrew Zalesski, Apalachin, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 21, 1995, Ser. No. 561,315
Int. Cl.[6] H02P *8/00*
U.S. Cl. 318—701 **10 Claims**



1. A method of force compensation in a variable reluctance motor, comprising the steps of:

obtaining instantaneous motor position data for said variable reluctance motor;

using a truncated value of said instantaneous motor position data and desired force command to identify a selected stored data point from a plurality of stored data points, said stored data points each representing a phase current value, and said selected stored data point having position and force values numerically closest to said instantaneous motor position data and said desired force command respectively;

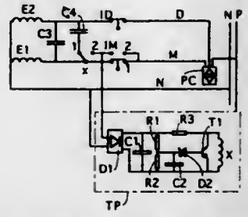
interpolating a high resolution phase current value based on said selected stored data; and

applying a current having said desired phase current value to said variable reluctance motor.

5,621,295
DEVICE FOR DRIVING USING AN ELECTRIC MOTOR COMPRISING MEANS FOR MEASURING THE DISPLACEMENT OF THE DRIVEN BODY

Christian Vanderschaeghe, Cluses, and Serge Bruno, Scionzier, both of France, assignors to SOMFY, France

Filed Feb. 8, 1995, Ser. No. 385,272
Claims priority, application France, Mar. 2, 1994, 94 02397
Int. Cl.[6] H02P *3/26*; A47H *5/00*
U.S. Cl. 318—753 **7 Claims**



1. A device for driving a body (1; 14) by means of an electric motor comprising mechanical means (5) for measuring the displacement of said body which are kinematically linked to said body and are equipped with switches (ID, IM) actuated by said mechanical measurement means at certain points on the trajectory of said body, which device comprises means for initializing a particular power-supply phase for the motor switched in by actuation of at least one of said switches (ID, IM), said initialization means has means for powering the motor with reduced voltage (RB, x'2, C'4), the device further comprising means (RB) for detecting that the rotor of the motor is blocked, said means for powering and said means (RB) for detecting that the rotor of the motor is blocked, cutting off the power supply of the motor when such a blockage is detected, and

the motor is a single-phase asynchronous motor with a phase-shifting capacitor, wherein the means for detecting that the rotor is blocked consist of a relay (X') powered, via a rectifier circuit, by a voltage taken from the terminals of the phase-shifting capacitor (C'3) of the motor.

2. A device for driving a body (1; 14) by means of an electric motor, comprising mechanical means (5) for measuring the displacement of said body which are kinematically linked to said body and are equipped with switches (1D, IM) actuated by said mechanical measurement means at certain points of the trajectory of said body, which device comprises means for initializing a particular power-supply phase for the motor switched in by actuation of at least one of said switches (ID, IM), and wherein

said body is driven up and down and the mechanical displacement measuring means are equipped with a switch corresponding to a top stopping point and with a switch corresponding to a bottom stopping point, and further comprise a brake (F) operating through lack of current, wherein said switches consist of reversers (IM, ID), and wherein the initialization means comprise means for supplying power to the motor at reduced torque for a timed period, said supplying means being activated by the top stopping point reverser (IM) and means for instantaneously cutting off the power supply of the motor and for the timed cutting-off of the power supply of the brake which are activated by the bottom stopping point reverser (1D).

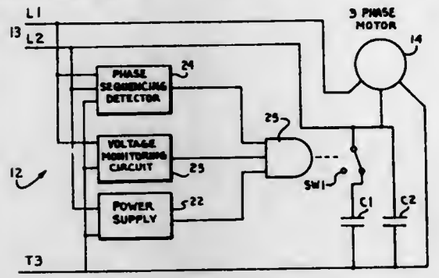
5. A device for driving a body between a bottom point and a top limit stop, by means of an electric motor, comprising mechanical

means (5) for measuring the displacement of said body, said mechanical means are kinematically linked to said body and are equipped with switches (ID, IM) actuated by said mechanical means at certain points on the trajectory of said body, wherein one of said switches is a reverser (IM) actuated before, on its way up, comes against the top limit stop, the device comprising a timer circuit (TP) which is powered by said reverser (IM), said device further has means for initializing a particular power-supply phase for the motor switched in by actuation of at least one of said switches (ID, IM) and said initialization means has means for powering the motor at reduced torque for a timed duration (TP, x, C4, FIG. 4; TP', x, C3, FIG. 5).

5,621,296
THREE PHASE MOTOR CONVERSION AND MONITORING CIRCUIT

Gary A. Werner, 201 N. Commercial, Harrisonville, Mo. 64078, and Thomas F. Lehman, 208 SW. Rogers Dr., Lee's Summit, Mo. 64081

Filed Aug. 7, 1995, Ser. No. 512,023
Int. Cl.[6] H02P *5/28*
U.S. Cl. 318—768 **23 Claims**



1. A three phase motor conversion and monitoring circuit for converting a three phase motor to operate from a single phase power source, two inputs of said motor being connected to individual power line leads L1 and L2 and a third motor input being connected to a floating reference lead T3, said circuit comprising:

a. a start capacitor;

b. a normally closed switch selectively connecting said start capacitor across two inputs of said motor;

c. monitoring means for monitoring phase voltages across said motor inputs and a phase voltage sequencing of voltages across the motor inputs to detect phase voltages and phase sequencing which collectively indicate normal motor operating conditions and correct motor direction, said monitoring means causing said normally closed switch to open when it detects said normal motor operating conditions and correct motor direction.

5,621,297
PROCESS AND APPARATUS FOR CHARGING A BATTERY

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Continuation of Ser. No. 826,002, Jan. 27, 1992, Pat. No. 5,304,914. This application Jan. 28, 1994, Ser. No. 188,444
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—3 **23 Claims**

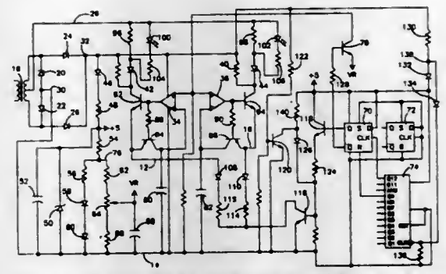
1. A process for charging a zinc-manganese dioxide primary cell, comprising the steps of:

(a) connecting a discharged zinc-manganese dioxide primary cell to a battery charger, wherein said battery charger is comprised of means for comparing the voltage of said cell at the termination of a discharge period of time with a specified reference voltage, means for periodically discharging said cell, and means for periodically producing direct current charging pulses with an average value which does not exceed an initial capacity of said cell to accept charge;

(b) periodically withdrawing discharging pulses of direct current from said cell during said discharge period of time;

(c) delivering said direct current charging pulses to said cell whenever said voltage of said cell at the end of said discharge period of time is less than said specified reference voltage; and

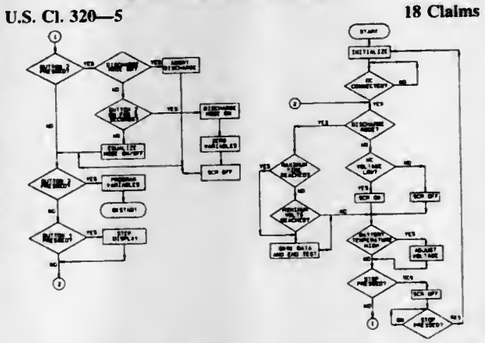
(d) preventing the delivery of said direct current charging pulses to said cell whenever said voltage of said cell at the end of said discharge period of time is greater than said specified reference voltage.



5,621,298
POWER SUPPLY WITH AUTOMATIC CHARGE MEASURING CAPABILITY

Bruce G. Harvey, St. Charles, Mo., assignor to Motor Appliance Corporation, St. Louis, Mo.

Filed Oct. 6, 1994, Ser. No. 319,281
Int. Cl.[6] H01M *10/44*; H02J *7/04*
U.S. Cl. 320—5 **18 Claims**



1. A battery charger for connection between an input power source and a battery, comprising:

an equipment set providing a known load; and

means for automatically measuring a charge in said battery as said batter and said equipment set remain connected to said input power source, said charge measuring means including means for electrically isolating said equipment set and said battery from said input power source to thereby partially discharge the battery through the equipment set, and means for thereafter automatically electrically reconnecting the equipment set and battery to said input power source to thereby recharge the battery, said recharging occurring before said battery is discharged below a level required to drive the equipment set.

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5,621,299

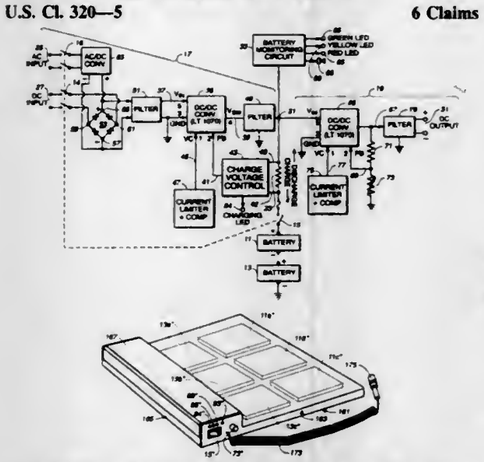
RECHARGEABLE BATTERY POWER SUPPLY WITH LOAD VOLTAGE SENSING, SELECTABLE OUTPUT VOLTAGE AND A WRIST REST

David A. Krall, 340 Schroeder Ave., Sunnyvale, Calif. 94086, assignor to David A. Krall, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 188,471, Jan. 27, 1994, abandoned. This application Nov. 14, 1994, Ser. No. 339,128

Int. Cl.[6] **H01M** *10/44;* **H02J** *7/04*

U.S. Cl. 320—5 **6 Claims**



1. A method of adjusting a variable voltage at an output connection of a power supply to match a voltage of an internal rechargeable battery within a piece of electronic equipment that is connected to an external power input connection of said equipment, comprising the steps of:

electrically disconnecting the power supply from the power supply output connection,

connecting the equipment power input connection to the power supply output connection while the power supply remains unconnected to the power supply output connection,

automatically measuring the voltage of the internal equipment battery,

adjusting the voltage output of the power supply to match that of the internal equipment battery, and

connecting the voltage adjusted power supply to said output connection.

5,621,300

CHARGING CONTROL METHOD AND APPARATUS FOR POWER GENERATION SYSTEM

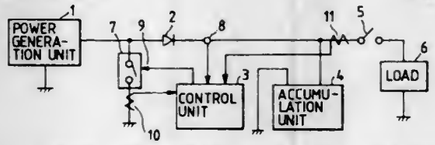
Hiroshi Sato; Kimitoshi Fukae, both of Nara, and Nobuyoshi Takehara, Kyoto, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 429,227

Claims priority, application Japan, Apr. 28, 1994, 6-092755

Int. Cl.[6] **H02J** *7/00;* **H01M** *10/44;10/46*

U.S. Cl. 320—5 **7 Claims**



1. A charging control apparatus provided with a power generation means, an accumulation means and a load, wherein the accumulation means and the load are connected in parallel with the power generation means, comprising:

first switch means for opening and closing a path between the power generation means and the accumulation means;

second switch means for opening and closing a path between the power generation means and the load;

first detection means for detecting an output from the power generation means;

second detection means for detecting an output from the accumulation means;

third detection means for detecting open and closed states between the power generation means and the load;

wherein the first switch means is set in a closed state based on an output signal from the second detecting means so that the accumulation means is charged until a time of a predetermined state determined as an overcharge, and is then set in an open state upon reaching the predetermined charging state, and the first switch means is controlled in the closed state, based on the detections by the first and third detection means when the output from the first detection means is detected and the third detection means detects a closed state of the second switch means.

4. A charging control method for connecting an accumulation means and a load in series with a power generation means to charge the accumulation means with an output from the power generation means, comprising the steps of:

arranging a first switch means for opening and closing a path between the power generation means and the power accumulation means, and a second switch means for opening and closing a path between the power generation means and the load; and

arranging a first detection means for detecting an output from the power generation means, and second detection means for detecting an output from the accumulation means, and third detection means for detecting open and closed states between the power generation means and the load,

wherein the accumulation means is charged until a predetermined charging state determined as an overcharge by closing the first switch means based on an output signal from the second detection means, and, upon reaching the predetermined charging state, the first switch means opens to stop the charging, and the charging is restarted by the close of the first switch means based on detections by the first and third detection means when the output from the first detection means is detected and the third detection means detects the closed state of the second switch means.

5,621,301

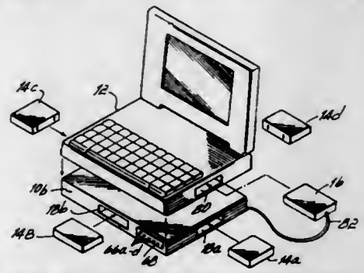
CONNECTING MULTIPLE BATTERIES TO BATTERY POWERED DEVICES

Paul M. Allen, Cincinnati, and John R. Kuhn, West Chester, both of Ohio, assignors to Technoggin, Inc., Cincinnati, Ohio

Division of Ser. No. 353,827, Dec. 12, 1994, Pat. No. 5,477,123. This application Sep. 27, 1995, Ser. No. 534,505

Int. Cl.[6] **H01M** *10/44;10/46*

U.S. Cl. 320—2 **20 Claims**



1. A circuit for connection between multiple batteries and a battery using device, comprising

at least first and second battery connectors for connection to said multiple batteries, said battery connectors including connections carrying electrical power,

a device connector for connection to a battery socket of said battery using device, said device connector including connections carrying electrical power,

a controllable switch circuit coupled between said battery connectors and said device connector, said switch circuit being enabled in response to a first control signal to provide an electrical connection between respective power connections of said device connector and respective power connections of said first battery connector, and enabled in response to a second control signal to provide an electrical connection between respective power connections of said device connector and respective power connections of said second battery connector,

a power flow sensor sensing power flow between one of said battery connectors and said device connector, determining when said power flow decreases below a threshold, and generating a low power signal,

a selector circuit producing said control signals, said selector circuit responding to said low power signal while producing said first control signal, by terminating said first control signal and initiating said second control signal, to thereby connect said second battery connector to said device connector when low power flow is detected between said first battery connector and said device connector.

5,621,302

BATTERY CHARGER MONITORING BATTERY VOLTAGE AND/OR TEMPERATURE AT RELEVANT SAMPLING INTERVAL

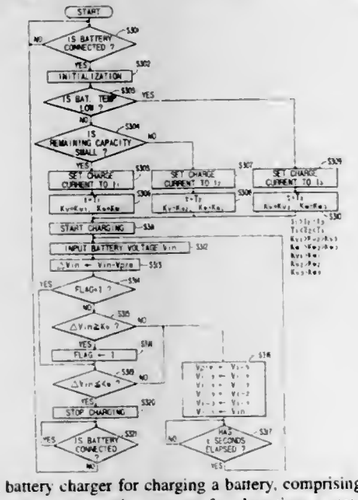
Shigeru Shinohara, Hitachinaka, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,267

Claims priority, application Japan, Jun. 3, 1994, 6-122433; Mar. 3, 1995, 7-043969

Int. Cl.[6] **H02J** *7/00*

U.S. Cl. 320—22 **20 Claims**



8. A battery charger for charging a battery, comprising:

battery status detecting means for detecting a status of the battery;

charge current selecting means for selecting, according to the status of the battery as detected by said battery status detecting means, a charge current to be supplied to the battery from a plurality of different charge currents;

battery voltage detecting means for detecting a voltage across the battery and for outputting a detected voltage of the battery;

sampling means for sampling the detected voltage of the battery;

sampling interval determining means for determining, based on the charge current selected by said charge current selecting means, a sampling interval to be posed between successive samplings implemented by said sampling means; and

full charge detecting means for detecting that the battery has reached a fully charged condition based on detected voltages of the battery as sampled by said sampling means;

wherein said full charge detecting means comprises:

computing means for computing a difference between two detected voltages of the battery sampled at two sampling points by said sampling means and for sequentially outputting and updating a computed result representative of the difference between the two detected voltages of the battery;

first comparison means for comparing the computed result with a first predetermined value;

second comparison means, operable only when said first comparison means indicates that the computed result is greater than the first predetermined value, for comparing the computed result with a second predetermined value; and

charge terminating means for terminating charge of the battery when said second comparison means indicates that the computed result falls below the second predetermined value.

5,621,303

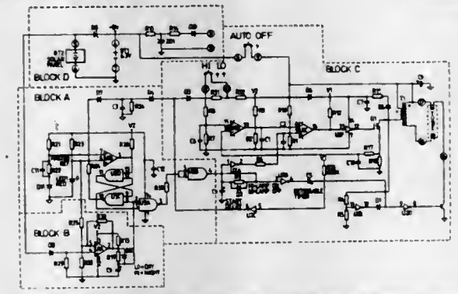
DRIVE CIRCUIT FOR A LAMP

Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong

Filed Jun. 1, 1995, Ser. No. 456,700

Int. Cl.[6] **H02J** *7/00;* **H01J** *7/44*

U.S. Cl. 320—30 **2 Claims**



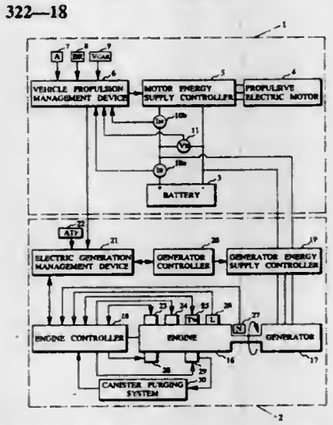
1. A lamp drive circuit for connection between a battery power supply having solar cells and a battery and terminals of a fluorescent lamp comprising: an oscillator and a step-up transformer arranged to supply high frequency power across said terminals; a switch connected to control a warm up power supply to a filament of said lamp; a battery condition protection circuit to inhibit total discharging of said battery; a low voltage detecting circuit which normally isolates said battery to prevent further discharge if said battery voltage is low; and circuit means for canceling application of said low voltage detecting circuit during certain operations of said fluorescent lamp, said canceling means having a means for inhibiting said canceling means whenever the voltage of said battery falls below a predetermined lower value.

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5,621,304
ELECTRIC GENERATION CONTROL SYSTEM FOR HYBRID VEHICLE

Takeo Kiuchi, and Ken Okada, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 512,941
Claims priority, application Japan, Aug. 22, 1994, 6-197070
Int. Cl.[6] H02P 9/00
U.S. Cl. 322—18 9 Claims



1. An electric generation control system for use on a hybrid vehicle having a vehicle propelling apparatus including a battery and a propulsive electric motor energizable by the battery, and an electric energy generating apparatus including an engine and a generator actuatable by the engine, the generator being operable in a generator mode in which the generator is actuated by the engine to generate electric energy to be supplied to the battery and/or the propulsive electric motor while the vehicle propelling apparatus is in operation, said electric generation control system comprising:

target generated output setting means for establishing a target generated output for the generator depending on an operating condition of the hybrid vehicle;

intake air control valve control means for controlling the opening of an intake air control valve of the engine to enable the engine to produce a power output corresponding to said target generated output;

generator control means for varying the electric energy generated by the generator to equalize the generated electric energy to said target generated output; and

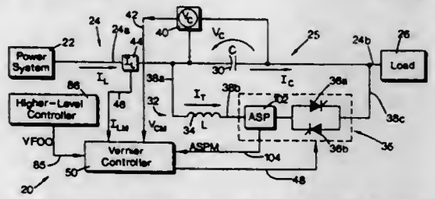
delay time estimating means for estimating a delay time until the engine produces the power output corresponding to said target generated output after the opening of the intake air control valve starts being varied by said intake air control valve control means depending on a change in said target generated output, according to a preset correlation between delay times and rotational speeds of the engine based on a present rotational speed of the engine;

said generator control means comprising means for controlling the electric energy generated by the generator based on said target generated output upon elapse of said delay time after the opening of the intake air control valve starts being varied by said intake air control valve control means.

5,621,305
OVERLOAD MANAGEMENT SYSTEM

Kara Clark, Schenectady; Elnar V. Larsen, Charlton; Carl A. Wegner, Clifton Park; Richard J. Piwko, Rexford, all of N.Y., and J. Kenneth Hooker, Vinton, Va., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 48,132, Apr. 13, 1993, which is a continuation-in-part of Ser. No. 806,768, Dec. 13, 1991, Pat. No. 5,202,583. This application Jun. 23, 1993, Ser. No. 82,408
Int. Cl.[6] G05F 1/00
U.S. Cl. 323—210 18 Claims



1. An apparatus for managing overload operation of an electrical device in a short-term overload region, said apparatus comprising:

a sensor to obtain an input signal representative of an operational state of said electrical device;

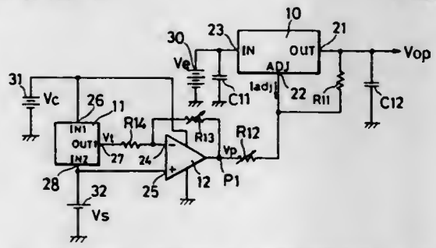
a controller to process said input signal and generate a control signal, said controller characterizing said input signal as operating in an overload region above a maximum continuous limit or in a recovery region below a maximum continuous limit, said control signal providing a short-term limit reduction command when said input signal is in said overload region and a short-term limit increase command when said input signal is in said recovery region; and

a switch responsive to said control signal to govern the current received by said electrical device so as to operate said electrical device in a short-term overload region above said maximum continuous limit without incurring significant loss of life in said electrical device.

5,621,306
TEMPERATURE COMPENSATION VOLTAGE-GENERATING CIRCUIT

Masahiro Ise, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 18, 1994, Ser. No. 323,681
Claims priority, application Japan, Nov. 18, 1993, 5-289592
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—313 9 Claims



1. A temperature compensation voltage-generating circuit for supplying an operating voltage to a load such that an optimum operating voltage varies linearly with change in temperature, the circuit comprising:

a temperature sensor whose output changes linearly in response to the temperature;

a voltage regulator with a control terminal, which outputs an output voltage in response to an electrical signal level fed to the control terminal;

an amplification network which receives the output from the temperature sensor and which amplifies at a gain set so as to vary the output voltage of the voltage regulator with a predetermined gradient, the amplification network comprising:

an operational amplifier whose negative terminal receives the output of the temperature sensor,

a first resistance element which is interposed between the negative terminal and an output terminal of the temperature sensor, and

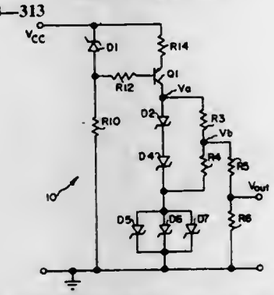
a second resistance element which is connected between the negative terminal and an output terminal of the operational amplifier; and

a level setting network for adjusting an output level from the amplification network and feeding the adjusted output level to the control terminal of the voltage regulator.

5,621,307
FAST RECOVERY TEMPERATURE COMPENSATED REFERENCE SOURCE

Kristin M. Beggs, Oviedo, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 21, 1995, Ser. No. 505,671
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—313 24 Claims



1. A fast recovery temperature compensated reference circuit comprising:

a current source for supplying a constant supply of current;

a first diode network coupled in one series connection to the output of the current source, said first diode network comprising a first number of diodes and having a first temperature coefficient;

a second diode network coupled in another series connection to the first diode network, said second diode network comprising a second number of diodes and having a second temperature coefficient opposite to the first temperature coefficient; and

a trim resistor divider network coupled at one end to the series connection of the first diode network to the current source and at its other end to the series connection of the first diode network to the second diode network.

5,621,308
ELECTRICAL APPARATUS AND METHOD FOR PROVIDING A REFERENCE SIGNAL

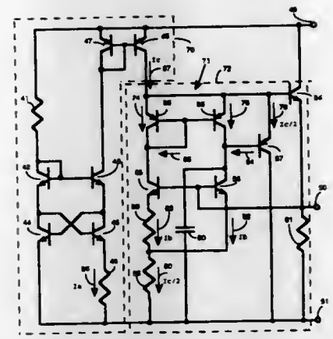
Petr Kadanka, B. Nemcove, Rosnov p. R., 75661, Czechoslovakia, and Robert L. Vyne, 5623 S. Holbrook Ln., Tempe, Ariz. 85283

Filed Feb. 29, 1996, Ser. No. 609,252
Int. Cl.[6] G05F 3/16;3/20
U.S. Cl. 323—315 13 Claims

1. An electrical apparatus, comprising:

a regulator portion with a first branch having a first transistor and a second branch having a second transistor, the regulator portion providing a substantially constant current of predetermined magnitude Ic;

a band-gap reference portion receiving Ic and comprising a first branch including a first transistor of a first type serially

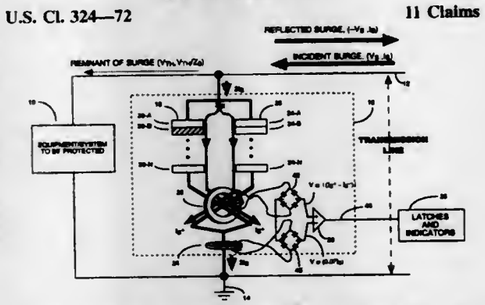


coupled to a second transistor of a second type, a second branch including a third transistor of the first type serially coupled to a fourth transistor of the second type, the band-gap reference portion being coupled to only one active node of the regulator portion, the first and second branches forming a current mirror carrying a total current of about Ic/2, and further comprising a third branch in parallel with the first and second branches and carrying a current of substantially Ic/2.

5,621,309
METHOD FOR DETECTING A FAILED ZNO DISK IN A SURGE ARRESTER NETWORK

James M. Feldman, Newtown, Mass., assignor to Electric Power Research Institute, Palo Alto,, Calif.

Filed Feb. 21, 1996, Ser. No. 604,177
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—72 11 Claims



1. In a varistor network comprising M≧2 parallel-coupled stacks of varistors, each stack containing a plurality of disks, a method of detecting a defective disk in one of the M stacks, the method comprising the following steps:

(a) measuring a difference in stack surge current flowing through each pair of stacks comprising said M stacks;

(b) measuring total current (I) through said M stacks;

(c) comparing stack surge current differences measured in step (a) for each pair of stacks with total current I divided by M to detect whether stack surge current flowing through any one of said M stacks exceeds a fixed fraction of total surge current flowing through said varistor network;

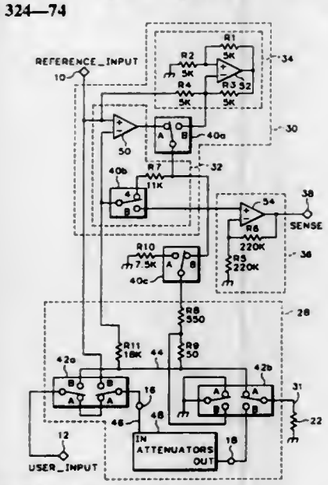
wherein a said stack detected in step (c) as conducting such excessive stack surge current is identified as containing at least one defective disk.

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5,621,310
HIGH FREQUENCY CALIBRATION CIRCUIT

Kevin E. Cosgrove, Aloha, and Richard J. Huard, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 275,577, Jul. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 488,395
Int. Cl.[6] G01R 11/32
U.S. Cl. 324—74 8 Claims

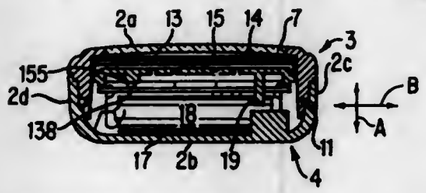


1. A calibration circuit comprising:
a unattenuated signal path;
a reference input amplifier having a reference voltage input, a sense input, and an output, with the output having an output resistance that is controllable between at least two values;
a sense resistor providing coupling between the unattenuated signal path and the sense input of the reference input amplifier, the sense resistor being directly and permanently connected to the unattenuated signal path; and
a reference coupling resistance providing coupling between the output of the reference input amplifier and the unattenuated signal path, the reference coupling resistance being directly and permanently connected to the unattenuated signal path.

5,621,311
DIGITAL MULTIMETER HAVING AN IMPROVED ENCLOSURE

Manabu Kamiya, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 6, 1995, Ser. No. 384,007
Claims priority, application Japan, Apr. 1, 1994, 6-065216
Int. Cl.[6] G01R 1/04; G01D 11/24; H05K 5/00
U.S. Cl. 324—156 11 Claims

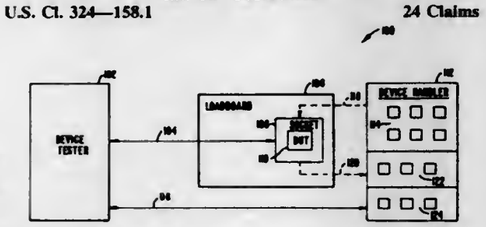


1. A digital multimeter comprising:
an enclosure comprising an upper enclosure selectively fastened to a lower enclosure, the upper and lower enclosures each having a surface and a connection face extending from the surface, the connection face having one end connected to the surface and another end defining a free end;
circuit elements and component elements installed inside the enclosure for performing digital multimeter functions;
an elastic sealing material disposed between the connection faces of the upper enclosure and the lower enclosure at a location intermediate the one end and the free end of each connection face, such that the upper and lower enclosures are sealed at an interface between the connection faces, whereby the connection face of each of the upper enclosure and the lower enclosure are configured to subject the elastic sealing material to pressing and crushing forces in a direction at a slant angle relative to a direction of a thickness of the enclosure so that the upper and lower enclosures are selectively fastened to each other at a portion of the interface between their connection faces less than the entire interface between their connection faces.

5,621,312
METHOD AND APPARATUS FOR CHECKING THE INTEGRITY OF A DEVICE TESTER-HANDLER SETUP

Alan Achor, Cupertino; Eric F. H. Chun, San Jose, both of Calif., and Ernest Allen, Hillsboro, Oreg., assignors to Altera Corporation, San Jose, Calif.

Filed Jul. 5, 1995, Ser. No. 498,190
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—158.1 24 Claims



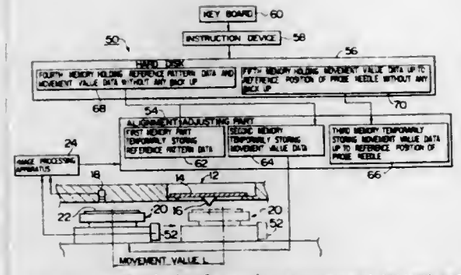
1. A configuration for verifying a semiconductor device tester-handler setup comprising:
a device tester including signal generation circuitry and measurement circuitry for performing electrical or functional tests on a device under test;
a loadboard coupled to said device tester for holding said device under test;
a device handler coupled to said loadboard for holding a plurality of semiconductor devices, said device handler loading said device under test onto said loadboard; and
a direct electrical connection between said signal generation circuitry and said measurement circuitry of said device tester.

5,621,313
WAFER PROBING SYSTEM AND METHOD THAT STORES REFERENCE PATTERN AND MOVEMENT VALUE DATA FOR DIFFERENT KINDS OF WAFERS

Kiyoaki Tsuta, Mitaka, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 118,197, Sep. 9, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,934
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—158.1 11 Claims

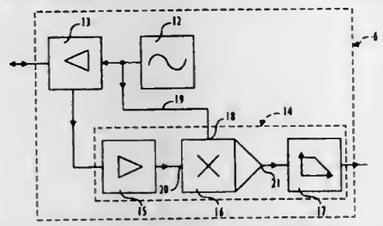
6. A wafer probing system comprising:
a movable table for moving at least one wafer;
an image sensing device for sensing a wafer circuit pattern of the at least one wafer when the table moves the wafer below the image sensing device and for transmitting the wafer circuit pattern to other parts of the system;
an alignment adjusting device for receiving the wafer circuit pattern and for aligning the at least one wafer for probing, said alignment adjustment device comprising a first temporary memory device for storing data used to determine correlated reference positions for the at least one wafer, a second temporary memory device for storing a movement amount used to align the at least one electrode pad of the at least one wafer with a probe, and a third temporary memory device for storing movement data used in aligning the at least one wafer, wherein said alignment adjustment device compares a first movement amount of said movable table moving to a reference position of said probe with a second movement amount stored in said third temporary memory device and, if said first and second compared movement amounts are equal, said table is moved by said movement amount stored in said second temporary memory device and, if said first and second compared movement amounts are not equal, said table is moved by a movement amount that is found by compensating said movement amount in said second temporary memory device by a difference between said first movement amount of said movable table moving to said reference position of said probe and said second movement amount stored in said third temporary memory device; and
a probe for probing the wafer.



5,621,314
METHOD AND DEVICE FOR DETERMINING THE SPEED OF VEHICLES VIA DERIVING A TRIPPING CURVE

Hans-Peter Beck, Weischbillig; Heinz Thiel, Trier-Ehrang, and Guido Luban, Newel-Butzweiler, all of Germany, assignors to Weiss Electronic Elektronische Regel - und Steuergerate GmbH, Trier, Germany

Filed Aug. 3, 1995, Ser. No. 510,799
Claims priority, application Germany, Aug. 4, 1994, 44 27 549.8
Int. Cl.[6] G01F 3/66; G08G 1/01
U.S. Cl. 324—179 12 Claims

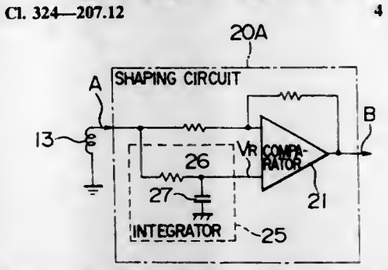


1. A method for determining the speed of vehicles comprising the steps of using induction coils as sensors which are spaced apart a selected distance, determining the time needed for driving past both induction coils, measuring over time the respective coil impedances for a predetermined frequency and deriving the time reference values therefrom, wherein the step of measuring the respective coil impedances for a predetermined frequency comprises deriving a tripping curve where the respective coil impedances are proportional to the measured voltages and including the step of determining the respective center of curvature of each corresponding tripping curve, a time value being associated with the respective center of curvature to determine the time required to drive over both induction coils.

5,621,315
ANGULAR POSITION DETECTING APPARATUS WITH NOISE DISCRIMINATION

Masayuki Ikeuchi, and Izuru Shinjo, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,293
Claims priority, application Japan, Oct. 1, 1990, 2-260462
Int. Cl.[6] G01B 7/00; G01R 33/025
U.S. Cl. 324—207.12 4 Claims



2. An apparatus for detecting an angular position of a crankshaft of an internal combustion engine, comprising;
a disk rotatable in synchronism with rotation of the crankshaft;
a row of magnetic elements disposed on said disk along a periphery thereof at circumferentially equal intervals;
an electromagnetic pick-up device disposed orthogonally to a plane of rotation of said disk in opposition to said row of magnetic elements;
a shaping circuit including a comparator for shaping an output signal of said electromagnetic pick-up device into a rectangular waveform signal; and
an engine control unit for discriminatively identifying the angular position of said crankshaft on the basis of said rectangular waveform signal;
wherein said shaping circuit is formed integrally with said electromagnetic pick-up device and includes rectifying/smoothing means for rectifying and smoothing said output signal of said magnetic pick-up device to thereby produce a level signal, and high-pass filter means having a cut-off frequency which is variable in dependence on said level signal, said output signal of said electromagnetic pick-up device being input to said comparator after having been passed through said high-pass filter means.

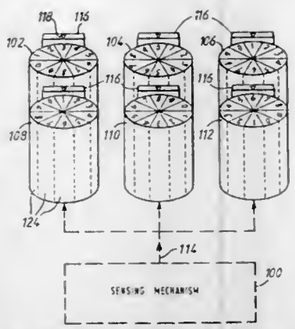
5,621,316
APPARATUS FOR MEASURING THE POSITIONS OF PLURAL MOVABLE MEMBERS EACH ASSOCIATED WITH A RESPECTIVE MAGNETORESTRICTIVE ELEMENT

Andrew N. Dames, Cambridge, and Peter J. Hyde, Newmarket, both of United Kingdom, assignors to Scientific Generics Limited, Cambridge, England

PCT No. PCT/GB92/00012, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/12401, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 3, 1992, Ser. No. 75,583
Claims priority, application United Kingdom, Jan. 4, 1991, 9100172; Feb. 5, 1991, 9102475; May 8, 1991, 9109897; Aug. 9, 1991, 9117310; Sep. 2, 1991, 9118722; Oct. 14, 1991, 9121779
Int. Cl.[6] G01B 7/14; G01D 5/48; G01F 15/06
U.S. Cl. 324—207.13 14 Claims

1. Measuring apparatus for generating a multidigit representation of a value of a variable, said apparatus comprising:
a plurality of movable members, each corresponding to a respective one of said digits and movable to different positions in response to variation in the value of said variable so that the positions of said members are indicative of the values of said digits;

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a plurality of magnetic field generators associated respectively with said respective movable members, each said generator generating an alternating magnetic field having a parameter which varies as a function of the position of the respective movable member, said alternating fields being at different frequencies from each other such as to be distinguishable from each other;

an exciting signal generator coupled in common to said magnetic field generators for applying thereto exciting signals at said different respective frequencies; and

an output signal generator coupled in common to said magnetic field generators for producing a plurality of output signals, each corresponding to a respective one of said generated alternating magnetic fields and each having a value dependent upon the value of said varying parameter of the corresponding alternating magnetic field.

5,621,317

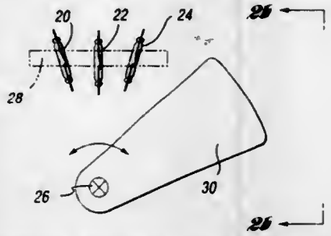
POSITION SENSOR WITH A MAGNETIC PROXIMITY SWITCH MECHANISM

Kenneth P. Wozniak, Chelsea, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 12, 1994, Ser. No. 353,596

Int. Cl.[6] H01H *36/00;* **B60K** *20/00;* **F16H** *63/40;* **G01B** *7/30*

U.S. Cl. 324—207.13 **3 Claims**



1. A transmission range selector position sensor for an automatic transmission having a driver operated ratio range selector lever, a rotary shaft connected to said selector lever;

said range selector position sensor comprising encapsulated proximity switches having moveable metallic reeds and arranged in a single arcuate track pattern;

a magnet adjacent said switches, said magnet having a magnetic flux field that envelops said reeds;

a magnetic shield connected to and rotatable with said rotary shaft and disposed in a plane of movement between said magnet and said switches, said magnetic shield having a leading edge and a trailing edge as it moves in an arcuate motion path, the arcuate distance between said leading and trailing edges being at least as great as the arcuate dimension of said track pattern whereby said leading edge selectively covers said switches as said magnetic shield moves arcuately in one direction thereby causing selective opening of said switch and whereby said trailing edge selectively uncovers said switches as said magnetic shield continues to move in said one direction thereby causing selective closing of said switches;

means for moving said rotary shaft from one angular position to another including said driver operated ratio range selector lever to selectively interrupt said flux field for said switches thereby actuating said switches to effect an open switch state and a closed switch state; and

a switch circuit for developing a discrete voltage signal for each of said switches that depends upon the position of said range selector lever with respect to said switches, said switch circuit including a voltage source and a resistor between said voltage source and each of said switches, one side of each of said resistors being connected to said voltage source and the other side of each of said resistors being connected to a separate one of said switches, whereby the number of discrete voltage signals is equal to twice the number of said switches, and electronic processor means for converting each discrete voltage signal to a digital value indicative of switch states, said electronic processor means including separate voltage inputs connected to the other side of each of said resistors.

5,621,318

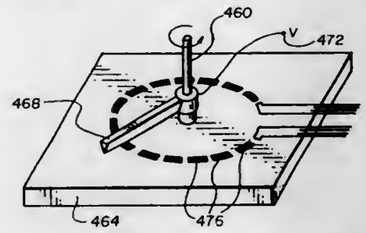
MECHANICAL/ELECTRICAL DISPLACEMENT TRANSDUCER

Stephen C. Jacobsen; Michael G. Mladejovsky, and John E. Wood, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 183,280, Jan. 18, 1994, Pat. No. 5,457,368, which is a division of Ser. No. 28,767, Mar. 9, 1993, Pat. No. 5,302,886, which is a continuation of Ser. No. 417,181, Oct. 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 473,717

Int. Cl.[6] G01B *7/14;* **H03M** *1/22*

U.S. Cl. 324—207.22 **5 Claims**



5. Rotary displacement measuring apparatus comprising

an axle whose rotary displacement is to be measured, said axle mounted to rotate about its long axis,

means mounted on the axle to extend laterally therefrom and rotate as the axle is rotated, and for producing an electrical field emanating downwardly therefrom, wherein said electrical field producing means comprises an elongate arm extending laterally from the axle and formed with an elongate edge directed downwardly to produce an electrical field also directed downwardly, and

a plurality of sensors arranged generally in a circle under the path of movement of the electrical field producing means for producing signals whose magnitudes vary with variation in proximity of the electrical field to the sensors, and wherein said sensors are arranged generally in a series in said circle.

5,621,319

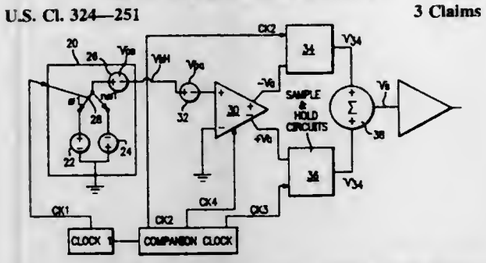
CHOPPED HALL SENSOR WITH SYNCHRONOUSLY CHOPPED SAMPLE-AND-HOLD CIRCUIT

Alberto Bilotti, Florida, and Gerardo Monreal, Capital, both of Argentina, assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Dec. 8, 1995, Ser. No. 569,814

Int. Cl.[6] G01R *33/07;* **H03K** *5/1254*

U.S. Cl. 324—251 **3 Claims**



1. A chopped Hall sensor of the kind including a Hall element having two pairs of diagonally opposed Hall contacts, said contacts being spaced-apart and located near the periphery of said Hall element, a pair of DC supply conductors to which a DC source for exciting said Hall-element may be connected, one clock signal generator for generating at a first clock output a binary clock signal ck1 having binary phases ϕ1 and nϕ1, and a Hall-element switching-circuit means connected to said first clock output and having a pair of Hall switching-circuit output conductors for during phase ϕ1 connecting one of said diagonally-opposed contact pairs to said pair of DC supply conductors while simultaneously connecting the other of said diagonally opposed contact pairs to said pair of Hall switching-circuit output conductors, and for during phase nϕ1 connecting said other of said diagonally-opposed contact pairs to said pair of DC supply conductors While simultaneously connecting said one pair of diagonally opposed Hall contacts to said pair of Hall switching-circuit output conductors, wherein the improvement comprises:

a) a companion clock signal generator connected to said one clock signal generator having a second clock output for generating at said second clock output a binary clock signal ck2 having a binary phase ϕ2 occurring during a middle portion of each ϕ1 phase of said ck1 signal, and having a third clock output for generating a binary clock at said third clock output a signal ck3 having a binary phase ϕ3 occurring during a middle portion of each nϕ1 phase of said ck1 signal;

b) a linear analog double-differential Hall-voltage amplifier having a differential input connected to said pair of Hall switching-circuit output conductors;

c) a chopped sample-and-hold circuit comprised of first and second elemental sample-and-hold circuits, each of said first and second elemental sample and hold circuits having an input connected respectively to the one and another polarities of the differential output of said Hall-voltage amplifier, each of said first and second elemental sample and hold circuits having a sampling-enabling switch means connected respectively to said second and third clock outputs for respectively sampling the elemental sample and hold circuit input signals only during phases ϕ2 and ϕ3 and holding the sample signals at the respective outputs of said first and second elemental sample and hold circuits during phases nϕ2 and nϕ3 respectively; and

d) a summer circuit having a first input connected to the output of said first elemental sample and hold circuit and having a second input connected to the output of said second elemental sample and hold circuit, the output of said summer circuit serving as the output of said Hall sensor.

5,621,320

MAGNETORESISTANCE TYPE SENSOR DEVICE FOR DETECTING CHANGE OF MAGNETIC FIELD

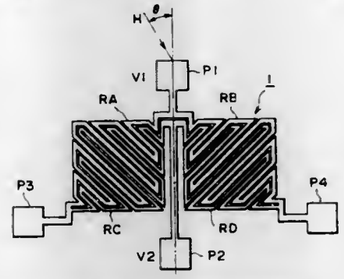
Masahiro Yokotani; Fumito Uemura, and Wataru Fukui, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 534,937

Claims priority, application Japan, Mar. 3, 1995, 7-044427

Int. Cl.[6] G01R *33/09;* **H01L** *43/02*

U.S. Cl. 324—252 **8 Claims**



1. A magnetoresistance sensor device, comprising:

first, second, third and fourth magnetoresistance elements whose resistances change in dependence on an angle of an applied magnetic field and which are interconnected so as to constitute a Wheatstone bridge circuit; and

differential amplifier circuit means having inputs for receiving a first potential from a first junction formed between said first and second magnetoresistance elements and a second potential from a second junction formed between said third and fourth magnetoresistance elements which are disposed in opposition to said first and second magnetoresistance elements, respectively, to thereby generate a differential amplitude voltage signal indicative of a difference between said first and second potentials, which difference depends on the angle of said applied magnetic field,

said magnetoresistance elements configured such that change of the resistance of said first and second magnetoresistance elements brought about by a change in the angle of said applied magnetic field differs in magnitude from change of the resistance of said third and fourth magnetoresistance elements brought about by said change in the angle of said applied magnetic field, and that said change of the resistance of said first magnetoresistance element is equal to that of said second magnetoresistance element, while said change of resistance of said third magnetoresistance element is equal to that of said fourth magnetoresistance element.

5,621,321

MAGNETIC RESONANCE SCAN CALIBRATION METHOD FOR ULTRA-FAST IMAGE ACQUISITION

Haiying Liu, Euclid; Rao P. Gullapalli; Mark J. Loncar, both of Richmond Heights, and Gordon D. DeMeester, Wickliffe, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Nov. 6, 1995, Ser. No. 553,849

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **21 Claims**

1. In a magnetic resonance imaging system which includes a magnet for generating a temporally constant magnetic field through an examination region, a radio frequency pulse controller and digital transmitter for inducing dipoles in the examination region to resonance such that radio frequency resonance signals are generated, gradient magnetic field coils and a gradient magnetic field controller for generating at least phase and read magnetic field gradient pulses in orthogonal directions across the examination region and for repeatedly reversing the read gradient, a receiver for receiving and demodulating the radio frequency magnetic reso-

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nance signals after each reversal of the read gradient to produce a series of data lines, and an image memory for storing a reconstructed image representation, the improvement comprising:

a regridding processor for adjusting each data line for uniformity in a read direction of k-space;

a first array processor for performing a one-dimensional Fourier transform in the read direction on each regridded data line;

a high order phase correction vector multiplier for multiplying each Fourier transformed data line by a phase correction vector, the high order being at least second order; and,

a second array processor for Fourier transforming the phase corrected data lines in a phase encode direction into the image memory.

5,621,322

VHF/RF VOLUME ANTENNA FOR MAGNETIC RESONANCE IMAGING INCLUDING VHF APPLICATOR AND RF COIL ARRANGED TO PROVIDE PERPENDICULAR FIELDS

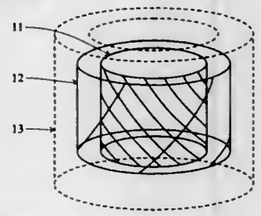
Gösta J. Ehnholm, Helsinki, Finland, assignor to Picker Nordstar Inc., Helsinki, Finland

Filed Mar. 9, 1995, Ser. No. 401,178

Claims priority, application United Kingdom, Mar. 9, 1994, 9404602

Int. Cl.[6] G01R *33/44;33/62*

U.S. Cl. 324—318 **20 Claims**



1. An OMRI volume transducer, comprising:

a VHF applicator adapted for use at a frequency associated with an ESR signal; and

an RF coil disposed inside the applicator and adapted for use at a frequency associated with an MR signal, wherein the applicator and coil are arranged such that an electric field provided by the applicator in use is substantially perpendicular to the coil.

5,621,323

SURFACE COIL ELEMENTS

Sanford Larsen, Provo, Utah, assignor to Magnetic Research, Inc., Mapleton, Utah

Continuation of Ser. No. 800,496, Nov. 29, 1991, abandoned. This application Jun. 13, 1995, Ser. No. 489,792

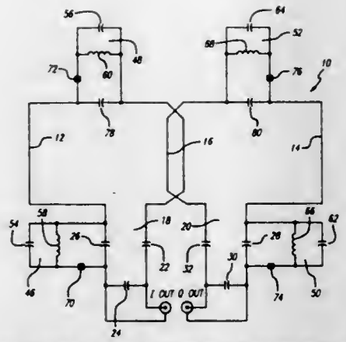
Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—318 **19 Claims**

1. A surface coil, for imaging a local region of interest, for use with a volume coil adapted to transmit radio frequency pulses in a magnetic resonance imaging system, which surface coil is adapted to be open circuited for passively decoupling the surface coil from the volume coil when the volume coil is transmitting radio frequency pulses, which passive decoupling is generated by current induced in the surface coil by the volume coil radio frequency pulses, further adapted to increase the current handling capacity of the surface coil during volume coil radio frequency pulse transmission for passive decoupling, comprising:

(a) means for imaging the local region of interest;

(b) means for passively decoupling the imaging means, connected to the imaging means, for open circuiting the imaging means to passively decouple the surface coil from the volume coil when the volume coil is transmitting radio frequency



pulses, which passive decoupling is generated by current induced in the surface coil by the volume coil radio frequency pulses, which decoupling means have a capacity for handling the current, and comprise a plurality of diode arrays connected in parallel, each comprising back to back diodes connected in parallel; and

(c) means for increasing the current handling capacity of the decoupling means during volume coil radio frequency pulse transmission for passive decoupling, connected to the decoupling means, comprising a plurality of current stabilizing impedances.

5,621,324

MAGNETIC FIELD GENERATOR FOR MRI

Kimiharu Ota; Masaaki Aoki, both of Amagasaki; Hiroyuki Takeuchi, Kashiwa; Yasuhiro Marukawa, Kawanishi; Hirotaka Takeshima, Ryugasaki, and Chikako Nakamura, Matudo, all of Japan, assignors to Sumitomo Special Metals Company Limited, Osaka, Japan

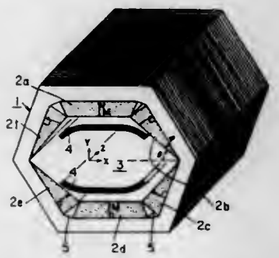
PCT No. PCT/JP93/00320, § 371 Date Jan. 18, 1994, § 102(e) Date Jan. 18, 1994, PCT Pub. No. WO93/18707, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 17, 1993, Ser. No. 146,191

Claims priority, application Japan, Mar. 18, 1992, 4-93687; Apr. 10, 1992, 4-117932; May 15, 1992, 4-148812; Oct. 29, 1992, 4-316535; Feb. 25, 1993, 5-63397; Feb. 25, 1993, 5-63398

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—319 **25 Claims**



1. A magnetic field generating apparatus for MRI, comprising:

a plurality of permanent magnet assemblies disposed continuously around the angular inner circumference of a hexagonal tubular yoke to provide a uniform magnetic field at a center portion of the hollow space formed inside said plurality of permanent magnet assemblies;

a pair of oppositely disposed permanent magnet assemblies forming a main magnetic field and having a trapezoidal or square cross-section;

other pairs of oppositely disposed permanent magnet assemblies having a triangular or substantially trapezoidal cross-section;

each of said pairs of oppositely disposed permanent magnet assemblies having a side surface in contact with a part of the inner peripheral surface of the yoke and forming a plurality of permanent magnet blocks which are magnetized perpendicularly to the side surface in contact with the yoke so that said permanent magnet assemblies are magnetized perpendicularly to the side surface thereof which is in contact with the yoke.

5,621,325

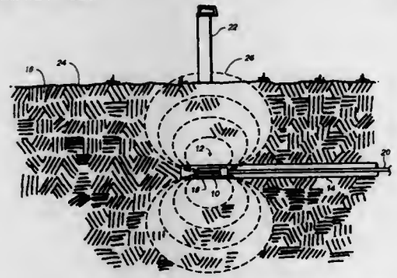
AVOIDING GHOSTING ARTIFACTS DURING SURFACE LOCATION OF SUBSURFACE TRANSMITTERS

Gregory W. Draper; Frank S. Nickel; Michael F. Gard, and Jian J. Jin, all of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.

Filed May 16, 1995, Ser. No. 442,487

Int. Cl.[6] G01V *3/11;* **G01R** *19/145*

U.S. Cl. 324—326 **17 Claims**



1. A method for locating the position of a movable subsurface beacon transmitting an electromagnetic dipole signal producing a true surface signal vertically positioned above the beacon and ghost surface signals laterally displaced from the vertical position, comprising the steps of:

orienting a first antenna of an above surface device substantially horizontal relative to the ground surface;

orienting a second antenna of the surface device substantially vertical to the ground surface;

calculating a ratio using signal strengths of a signal received from the subsurface beacon by the first antenna and by the second antenna

comparing the ratio to a predetermined number and identifying the received signal as a true signal if the ratio exceeds the predetermined number, and identifying the received signal as a ghost signal if the ratio is less than the predetermined number; and

using the true surface signal to provide the true position of the beacon along the path of movement thereof.

5,621,326

FAULT DIAGNOSIS DEVICE FOR PASSENGER PROTECTION APPARATUS

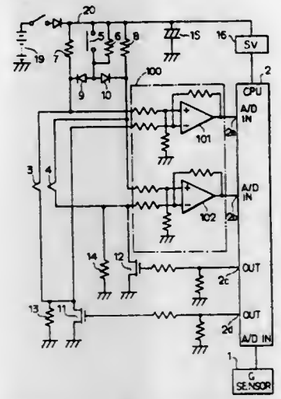
Makoto Watanabe, Nissin, and Yukiyasu Ueno, Nishio, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 2, 1995, Ser. No. 460,523

Claims priority, application Japan, Jun. 3, 1994, 6-145489

Int. Cl.[6] B60R *21/32*

U.S. Cl. 324—502 **6 Claims**



1. A fault diagnosis device for a passenger protection apparatus which diagnoses a presence or absence of a failure of an activating element for activating said passenger protection apparatus in correspondence to acceleration of a vehicle, comprising:

a plurality of activating elements formed by resistors and connected in parallel with respect to a power source;

an acceleration switch which is disposed between said plurality of activating elements and said power source, which closes its contact in response to an occurrence of acceleration equivalent to vehicle collision;

a current limiting resistor connected in parallel with said acceleration switch;

a plurality of switching devices connected in series with respect to said respective activating elements to cause monitor current to be conducted individually to said respective activating elements through said current limiting resistor and to cause activating current, which causes said activating elements to activate said passenger protection apparatus, to be conducted to said respective activating elements through said acceleration switch when acceleration equivalent to vehicle collision has occurred;

a conductance controlling device which closes said plurality of switching devices with differing timings to generate the monitor current; and

determination means for determining the presence or absence of the fault in said plurality of activating elements by respectively detecting voltage values generated at the activating elements and comparing the detected voltage values with a predetermined standard value when the monitor current is conducted to the respective activating elements by said conductance controlling device.

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5,621,327

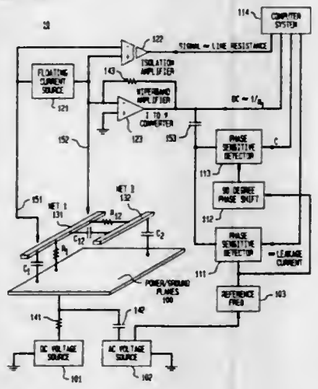
SYSTEM AND METHOD FOR TESTING AND FAULT ISOLATION OF HIGH DENSITY PASSIVE BOARDS AND SUBSTRATES

Shinwu Chiang, Yorktown Heights; Huntington W. Curtis, Chelsea, both of N.Y.; Arthur E. Falls, Brookfield, Conn.; Arnold Halperin, Peekskill; John P. Karidis, Ossining, both of N.Y.; John D. Mackay, Scarborough, Me.; Danny C.-Y. Wong, Ringwood, N.J.; Ka-Chiu Woo, Hopewell Junction, and Li-Cheng Zai, Tarrytown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 843,672, Feb. 28, 1992, Pat. No. 5,402,072. This application Mar. 24, 1995, Ser. No. 409,743

Int. Cl.[6] G01R 27/26

U.S. Cl. 324—537 4 Claims



1. Apparatus which simultaneously determines network continuity, network short circuit conditions and network capacitance in a circuit board used for mounting and interconnecting a plurality of electronic components, said circuit board including a first network and at least one common plane which is one of a power plane and a ground plane, said apparatus comprising:

a floating current source for applying a signal between two locations on said first network;

a voltage detector amplifier, coupled to said first network, for receiving said signal, and for providing a further signal indicative of the continuity of said first network between said two locations;

AC voltage source means for applying an AC signal between said common plane and a source of reference potential;

means for measuring a first current signal resulting from said AC signal between said first network and said source of reference potential and for providing:

a) a first output signal having a magnitude indicative of a resistive leak between said common plane and said first network based upon a first mathematical function of the magnitude of said first output signal; and

b) a second output signal having a magnitude indicative of capacitance between said first network and said common plane based upon a second mathematical function of the magnitude of said first output signal;

wherein at least two of said further signal, said first output signal and said second output signal become available substantially simultaneously.

5,621,328

CONNECTOR HAVING A SPACER DETECTION STRUCTURE

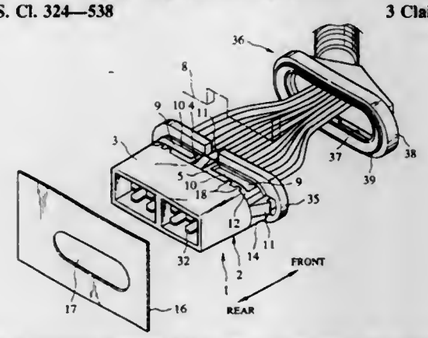
Makoto Yamanashi, Shizoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,927

Claims priority, application Japan, Jul. 11, 1994, 6-158449

Int. Cl.[6] G01R 31/04; H01R 13/73

U.S. Cl. 324—538 3 Claims



1. A connector having a spacer detection structure, said connector comprising:

a connector housing having a curved surface and an opening formed on one side of the connector housing;

a plurality of connector terminals housed in the connector housing; and

a terminal fixing spacer inserted into the opening of the connector housing, the terminal fixing spacer being engageable with the connector terminals and having a curved base wall portion positioned substantially flush with the curved surface of the connector housing;

wherein the curved base wall portion of the terminal fixing spacer includes at least one recessed portion having a flat bottom surface configured to be brought into contact with a detection plate of a connector fixing jig for inspecting whether the terminal fixing spacer is full inserted into the connector housing.

5,621,329

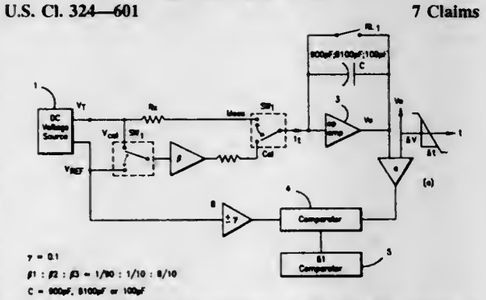
AUTOMATIC SELF-CALIBRATION SYSTEM FOR DIGITAL TERAOHMMETER

Sai-Hoi Tsao; Chun-Chun Chen, and Yu-Chuang Lin, all of Chutung, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 13, 1995, Ser. No. 421,444

Int. Cl.[6] G01R 27/02

U.S. Cl. 324—601 7 Claims



1. A high resistance measurement device with self-calibration function, comprising:

a DC voltage source to supply testing voltage;

a resistance measurement site to be electrically connected to a high resistance to be measured; and

an integrating circuit, positioned at the downstream side of said resistance measurement site, comprising: a capacitor, an operational amplifier, a level comparator, a counter to count the integrating time of said integrating circuit at a first level changing to a second level and a calculating means to calculate the resistance of said high resistance to be measured according to the integrating time counted by said counter;

characterized in that said high resistance measurement device further comprises a reference resistor connected to said resistance measurement site by a switch so that the reference resistor can be connected to the integration circuit in place of a high resistance to be measured in order to select the connection of said DC power supply to said resistance measurement site or to said reference resistor, and a capacitance measurement means to measure the capacitance of said capacitor according to a given resistance of said reference resistor.

5,621,330

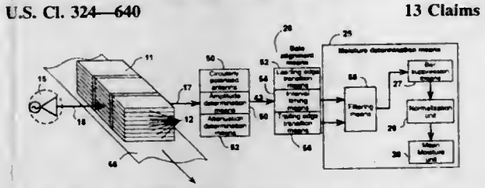
DEVICE AND METHOD FOR DETERMINING THE MOISTURE CONTENT OF A BALE OF MATERIAL WITH MULTIPLE LAYERS

Alexander Greenwald, Nazareth-Illit; Danny S. Moshe, Kiryat Ono, and Boris Tsentsiper, Jerusalem, all of Israel, assignors to Malcam Ltd., Nazareth Illit, Israel

Filed Jul. 18, 1995, Ser. No. 503,838

Int. Cl.[6] G01N 22/04

U.S. Cl. 324—640 13 Claims



1. A device for measuring the moisture content of a multi-layer bale of material, comprising:

(a) a source of microwave radiation for producing a microwave radiation source beam;

(b) at least one microwave antenna for receiving an exit beam and for producing an antenna signal, said exit beam being said source beam after a transition from said source to said antenna, said at least one microwave antenna being located substantially opposite said source of microwave radiation;

(c) a conveyor means for conveying the bale between said source of microwave radiation and said at least one microwave antenna, such that when said source beam passes through a portion of the bale, said exit beam is received by said antenna, and such that said source beam is enabled to pass through a plurality of portions of the bale;

(d) a bale alignment means, for examining said antenna signal and determining the alignment of the bale relative to said antenna and said source of microwave radiation, said bale alignment means including:

(i) a leading edge transition means, for detecting when a leading edge of the bale passes said source of microwave radiation and producing a leading edge transition signal after said leading edge has passed said source of microwave radiation;

(ii) an interval timing means, for producing an alignment signal after receiving said leading edge transition signal, said alignment signal being said antenna signal produced during a time interval when the bale is correctly aligned between said source of microwave radiation and said antenna; and

(iii) a trailing edge transition means, for detecting when a trailing edge of the bale passes said source of microwave radiation and producing a trailing edge transition signal after said trailing edge has passed said source of microwave radiation; and

(e) a moisture determination means for determining the moisture content of the bale from said alignment signal and for determining an ambient moisture content after receiving said trailing edge transition signal, said moisture determination means including:

(i) a filtering means for producing a corrected signal by removing said ambient moisture content from said alignment signal; and

(ii) a mean moisture unit for computing the moisture content of the bale from said corrected signal.

5,621,331

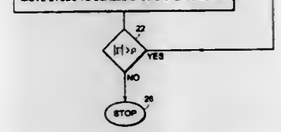
AUTOMATIC IMPEDANCE MATCHING APPARATUS AND METHOD

Donald K. Smith, Belmont, Mass.; Brian D. McVey, Santa Fe, N.M., and Richard A. Rameriz, Norwood, Mass., assignors to Applied Science and Technology, Inc., Woburn, Mass.

Filed Jul. 10, 1995, Ser. No. 500,411

Int. Cl.[6] G01R 27/04

U.S. Cl. 324—645 14 Claims



1. A method of impedance matching a source to a load using a multi-stub tuner positioned between the source and the load comprising:

a) determine a reflection coefficient associated with the load;

b) determining scattering parameters of the multi-stub tuner;

c) determining scattering parameters of the multi-stub tuner that theoretically match the source impedance to the load impedance;

d) determining stub displacements from current stub positions of the multi-stub tuner to positions corresponding to the scattering parameters of the multi-stub tuner that theoretically match the source impedance to the load impedance provided that the load impedance remains constant as the stub positions are varied;

e) determining scaled stub displacements by combining the stub displacements with a scaling factor;

f) moving the stubs a distance corresponding to the scaled stub displacements; and

g) repeating steps a–f until the magnitude of the reflection coefficient is less than a predetermined value.

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5,621,332

DEVICE AND METHOD FOR IDENTIFYING AND QUANTIFYING LAYERED SUBSTANCES

Stuart Inkpen, Dogberry Hill Road, St. Phillips, Newfoundland, Canada; John Hall, 186 Old Topsail Road, St. John's, Newfoundland, Canada; Chris Nolan, 130 Gower Street, St. John's, Newfoundland, Canada, and Chris Marshall, 50 Prescott Street, St. John's, Newfoundland, Canada

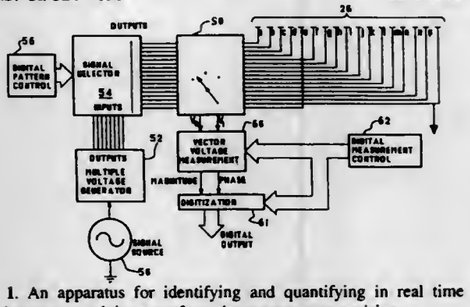
PCT No. PCT/CA93/00416, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO94/08233, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 7, 1993, Ser. No. 411,650

Claims priority, application Canada, Oct. 7, 1992, 2,080,067

Int. Cl.[6] G01R *27/02*

U.S. Cl. 324—650 11 Claims



1. An apparatus for identifying and quantifying in real time substances overlying a surface, the apparatus comprising:

a plurality of electrodes (**26**) underlying a surface,

an electrode control means (**14**), connected to the plurality of electrodes (**26**), for applying a voltage pattern to the electrodes to define an electric field at the surface of a type which induces a plurality of currents in the electrodes which currents vary according to a substance overlying the surface,

an amplitude and phase measurement means (**16**) connected to the plurality of electrodes (**26**) and to the electrode control means (**14**) for sensing a plurality of currents responsive to the electric field and converting the sensed currents to a measurement set, and

computer means (**20**) having a memory and a processor, and

display means responsive to an output signal for displaying the identity and quantity of substances overlying the surface, wherein the improvement is characterized by the memory having stored therein a map means of probable substances which could be overlying the surface, said map means being a partition of a vector space of predetermined characteristics of said probable substances into regions corresponding to an identity and quantity of said substances, said processor for correlating the measurement set with the partition of vector space in the map means thereby identifying and quantifying the substances overlying the surface and for generating an output signal corresponding to the identity and quantity of substances overlying the surface.

5,621,333

CONTACT DEVICE FOR MAKING CONNECTION TO AN ELECTRONIC CIRCUIT DEVICE

Tom Long, Portland; Mohamed Sabri, Beaverton, and J. Lynn Saunders, Hillsboro, all of Oreg., assignors to Microconnect, Inc., Hillsboro, Oreg.

Filed May 19, 1995, Ser. No. 446,020

Int. Cl.[6] G01R *1/073*

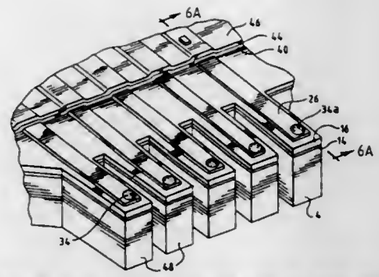
U.S. Cl. 324—762 38 Claims

1. A probe apparatus for use in testing an electronic device having connection points formed thereon, said probe apparatus comprising:

a support member having a generally planar datum surface,

a generally planar elastic probe member having a proximal end and a distal end, wherein the probe member comprises a substrate having fingers projecting from the distal end of the probe member, wherein the fingers have conductors formed thereon for connection with the connection points of the electronic device,

at least one attachment member attaching the probe member at its proximal end to the support member with the probe member in contact with the datum surface, wherein the probe member has a mechanical ground positioned away from the fingers towards the proximal end, wherein deflection resulting from contact between the probe member and the electronic device is shared between the fingers and a portion of the substrate not including the fingers.



5,621,334

METHOD AND APPARATUS FOR EVALUATING IMPURITIES IN A LIQUID CRYSTAL DEVICE

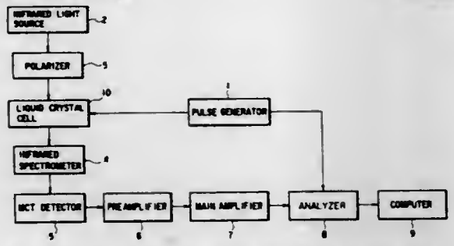
Taeko I. Urano, Kawasaki; Shigeru Machida, Tokyo; Kenji Sano, Tokyo, and Hiroshi Yoshida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1995, Ser. No. 535,337

Claims priority, application Japan, Sep. 30, 1994, 6-236703; Mar. 24, 1995, 7-065747

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—770 24 Claims



9. A liquid crystal device evaluation apparatus comprising:

means for applying an AC pulsed electric field whose polarity is reversed with time to a liquid crystal device having a liquid crystal layer between a pair of electrodes;

a light source for irradiating said liquid crystal layer with light;

a spectrometer for extracting light in a specific wavelength range from the light irradiated from said light source;

a photodetector for converting said light in the specific wavelength range, which has been irradiated from said light source and passed through said liquid crystal layer, into an electric signal;

means for analyzing the electric signal obtained by said photodetector as a function of time, and extracting a signal obtained by integrating the analyzed signals; and

signal analyzing means for calculating a slope of a field response curve representing a change in the obtained integrated signal with time.

5,621,335

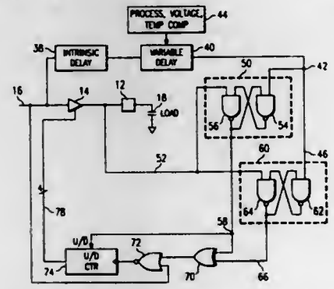
DIGITALLY CONTROLLED OUTPUT BUFFER TO INCREMENTALLY MATCH LINE IMPEDANCE AND MAINTAIN SLEW RATE INDEPENDENT OF CAPACITIVE OUTPUT LOADING

Bernhard H. Andresen, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1995, Ser. No. 415,269

Int. Cl.[6] H03K *19/0948;19/0185*

U.S. Cl. 326—30 16 Claims



1. An output buffer having an output that is compensated for the impedance associated therewith, comprising:

a variable drive level buffer having an input and an output, said output for driving a load at a variable drive level set by the value of a drive control signal that is input on a drive control input to said variable drive level buffer,

a gated comparator for determining said output being at a predetermined level after a specified delay interval, wherein said gated comparator comprises:

a fixed delay between said input and a delay node to provide a delayed transition on said delay node that is delayed from said input transition on said input; and

a first window comparator for comparing said delayed transition with said output voltage level and generating a first signal when said delayed transition occurs before said output voltage level reaches a first threshold voltage, a second signal when said first delayed transition occurs after said output voltage level has risen above said first threshold voltage and is less than a second threshold and a third signal when said delayed transition occurs after said output voltage level has risen above said second threshold voltage; and

a control system for generating said drive control signal at a value to vary the drive level of said variable drive level buffer to reach the desired output level at the end of the delay interval, said control system operable to generate said drive control signal at a value to increase the drive level to the load in response to generation of said first signal by said window comparator operable to generate said control signal at a different value to decrease said drive level to the load in response to said third signal being generated by said window comparator.

5,621,336

NEURON CIRCUIT

Tadashi Shibata, 19-1393, Aza-Koshizi, Nagamachi, Taihaku-ku, Sendai-shi, Miyagi-ken 980, Japan, and Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, Japan

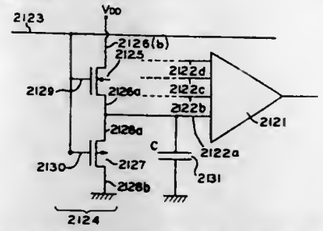
Continuation-in-part of Ser. No. 60,362, May 11, 1993, which is a continuation of Ser. No. 777,352, Jan. 6, 1992, Pat. No. 5,258,657, and Ser. No. 87,742, Oct. 13, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 488,405

Claims priority, application Japan, Jun. 2, 1989, 1-141463; Jan. 12, 1991, 3-13780

Int. Cl.[6] H03K *19/23*

U.S. Cl. 326—36 17 Claims



1. A semiconductor-device comprising: a neuron element comprising a first semiconductor region on a substrate, a first source region and a first drain region of opposite conductivity type to that of said first semiconductor region formed in said first semiconductor region, a first floating gate electrode formed over the region separating said first source region and said first drain region over a first insulating film, a plurality of first input gate electrodes capacitively coupled with said first floating gate electrode through a second insulating film; and a first MOS type transistor, wherein the source electrode of said first MOS type transistor is connected to one of said first input gate electrodes and one of the gate electrode and the drain electrode of said first MOS type transistor is connected to a first interconnect which transfers a two-level voltage signal.

5,621,337

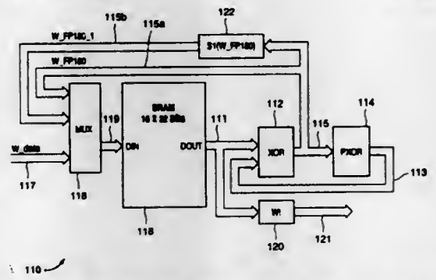
ITERATIVE LOGIC CIRCUIT

Matthew H. Childs, Arlington, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 30, 1995, Ser. No. 521,348

Int. Cl.[6] H03K *19/00;19/173*

U.S. Cl. 326—46 34 Claims



8. An apparatus including a parallel/serial logic circuit for performing a parallel logic function by iteratively executing a serial logic operation upon a plurality of data signals, said parallel/serial logic circuit comprising:

an input circuit for receiving a plurality of parallel data signals including a processed logic signal and in accordance therewith providing a plurality of input data signals; and

a logic circuit, coupled to said input circuit, for performing a parallel logic function by iteratively executing a serial logic

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operation upon said plurality of input data signals and in accordance therewith providing said processed logic signal.

5,621,338

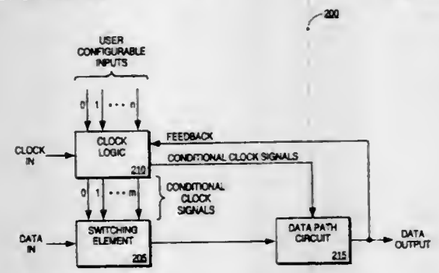
HIGH SPEED CONFIGURATION INDEPENDENT PROGRAMMABLE MACROCELL

Liu-Shih Liu, Fremont; Syed B. Raza, Sunnyvale; Hagop Nazarian, San Jose, all of Calif.; George M. Ansel, Starkville, Miss.; Stephen M. Douglass, Saratoga, Calif., and Jeffery S. Hunt, Ackerman, Miss., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Continuation of Ser. No. 360,469, Dec. 20, 1994, Pat. No. 5,502,403. This application Jan. 11, 1996, Ser. No. 584,105

Int. Cl.[6] **H03K** *19/173;19/0948*

U.S. Cl. 326—46 **19 Claims**



1. A circuit comprising:

a plurality of user configurable inputs for configuring said circuit;

clock logic coupled to said user configurable inputs and coupled to receive a clock input, said clock logic for generating conditional clock signals to implement a logic function for said circuit based on said clock input and said user configurable inputs;

a switching element including at least one pass gate coupled to said clock logic to receive some of said conditional clock signals and coupled to receive an input signal for said circuit, said switching element for generating a logic output, in accordance with said conditional clock signals, to implement said logic function by controlling propagation of said input signal through said pass gate; and

a data path circuit coupled to receive said logic output and some of said conditional clock signals for providing additional functionality, wherein propagation delay through said switching element to said data path circuit is independent of said user configurable inputs.

5,621,339

METHOD AND APPARATUS FOR REMOVING TRAPPED OXIDE CHARGE FROM A DIFFERENTIAL INPUT STAGE

Donald A. Kerth, and Eric J. Swanson, both of Austin, Tex., assignors to Crystal Semiconductor, Austin, Tex.

Filed Sep. 14, 1993, Ser. No. 121,244

Int. Cl.[6] **H03K** *5/22*

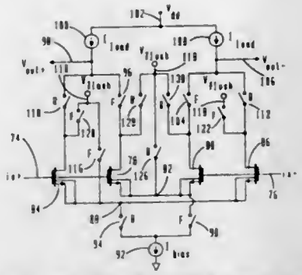
U.S. Cl. 327—65 **23 Claims**

1. A method for operating a differential pair of transistors in an active device, comprising:

configuring a first pair of transistors in a source coupled configuration, the gates of each of the transistors in the first pair connected to a respective one of two inputs;

configuring a second pair of transistors in a source coupled configuration, the gates of each of the transistors in the second pair connected to a respective one of the two inputs;

activating the first pair of transistors when an input voltage is impressed across the two inputs that is operable to stress the first pair of transistors;



deactivating the first pair of transistors after a predetermined duration of time and activating the second pair of transistors when the stress due to the input voltage is reduced; and

after deactivating the first pair of transistors, connecting the sources and the bodies of the transistors in the first pair of transistors to a flush voltage that will flush trapped oxide charges therein during a flush operation.

5,621,340

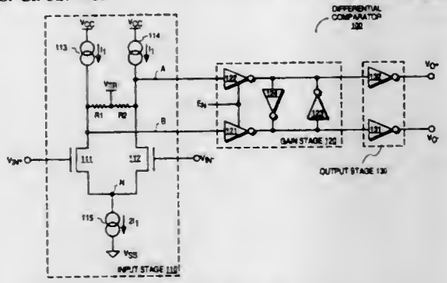
DIFFERENTIAL COMPARATOR FOR AMPLIFYING SMALL SWING SIGNALS TO A FULL SWING OUTPUT

Thomas H. Lee, Cupertino, and Kevin S. Donnelly, San Francisco, both of Calif., assignors to Rambus Inc., Mountain View, Calif.

Filed Aug. 2, 1995, Ser. No. 510,141

Int. Cl.[6] **H03K** *17/10;17/04;* **H03F** *3/45*

U.S. Cl. 327—65 **15 Claims**



1. A differential comparator comprising:

a current switch having a pair of inputs coupled to receive a pair of small swing complementary input signals and a pair of complementary outputs that output first complementary output signals having a voltage swing centered about a predetermined voltage in response to the complementary input signals; and

first and second inverters coupled to receive the first complementary output signals, wherein each inverter has a trip point voltage equal to the predetermined voltage, the first and second inverters outputting second complementary output signals in response to the first complementary output signals, wherein the second complementary output signals are full swing complementary output signals.

5,621,341

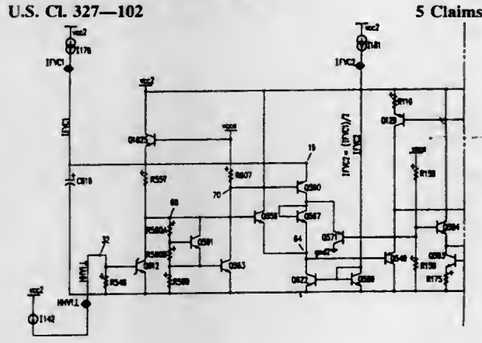
TEMPERATURE-COMPENSATED, PRECISION FREQUENCY-TO-VOLTAGE CONVERTOR

Victor P. Schrader, Palo Alto, and Steve Hobrecht, Los Altos, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 526,463, Sep. 11, 1995, Pat. No. 5,514,988, which is a continuation of Ser. No. 306,657, Sep. 15, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 599,992

Int. Cl.[6] **H02M** *7/537*

U.S. Cl. 327—102 **5 Claims**



1. A temperature-compensated, precision frequency-to-voltage converter circuit that, for each cycle of an input signal to the converter circuit, provides a voltage output pulse of constant duration at an output, the circuit comprising:

a first current source that provides a first output current;

a timing capacitor having a first plate connected to receive the first output current and a second plate connected to a negative power supply;

a voltage source that provides a reference voltage;

a first pnp transistor having its emitter couple to receive the first output current and its base coupled to receive the reference voltage;

a second current source that provides a second output current;

a second pnp transistor having its emitter coupled to an output control circuitry, its collector connected to the negative power supply and its base coupled to the collector of the first pnp transistor;

a first npn transistor having its collector connected to a positive power supply and its emitter connected between the collector of the first pnp transistor and the base of the second pnp transistor;

a second npn transistor having its collector coupled to receive the reference voltage and its emitter connected to the negative power supply;

base drive circuitry that responds to a pulsed, current mode input signal by providing a first temperature-compensated base drive signal to the base of the first npn transistor and a second temperature-compensated base drive signal to the base of the second npn transistor; and

wherein the output control circuitry that responds to a control voltage signal provided at the emitter of the second pnp transistor by providing a temperature-controlled voltage output pulse having a controlled pulse height at said output.

5,621,342

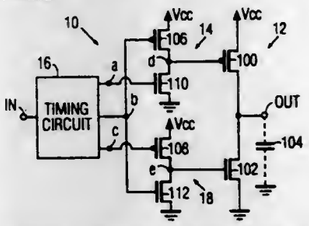
LOW-POWER CMOS DRIVER CIRCUIT CAPABLE OF OPERATING AT HIGH FREQUENCIES

Stephen L. Wong, Scarsdale; Vinit Jayaraj, Ossining, and Rafael Aquino, Beacon, all of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Oct. 27, 1995, Ser. No. 550,129

Int. Cl.[6] **H03K** *3/00*

U.S. Cl. 327—108 **6 Claims**



1. A CMOS driver circuit having an input terminal and an output terminal, and comprising:

an output driver circuit having first and second MOS transistors of a first and a second type, respectively, and having their main current paths coupled in series between a power supply terminal and a common terminal, a common connection between the main current paths of said first and second MOS transistors comprising the output terminal of said CMOS driver circuit;

a first predriver circuit having third and fourth MOS transistors of said first and second types, respectively, and having their main current paths coupled in series between said power supply terminal and said common terminal, a common connection between the main current paths of said third and fourth MOS transistors being coupled to a control electrode of said first MOS transistor;

a second predriver circuit having fifth and sixth MOS transistors of said first and second types, respectively, and having their main current paths coupled in series between said power supply terminal and said common terminal, a common connection between the main current paths of said fifth and sixth MOS transistors being coupled to a control electrode of said second MOS transistor; and

a timing circuit having an input terminal which comprises the input terminal of said CMOS driver circuit, and first, second and third output terminals for providing different first, second and third timing signals to a control electrode of said fourth, third and sixth, and fifth MOS transistors, respectively.

5,621,343

DEMODULATOR CIRCUIT WHICH DEMODULATES PULSE WIDTH MODULATED SIGNALS USED IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Tadaaki Yamauchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,209

Claims priority, application Japan, Dec. 26, 1994, 6-322874

Int. Cl.[6] **G11C** *27/02;* **H03K** *9/08*

U.S. Cl. 327—172 **3 Claims**

1. A demodulator circuit which demodulates pulse-width modulated signals used for data transfer within a semiconductor integrated circuit, said demodulator circuit comprising:

sampling signal generator means for generating a plurality of sampling signals after respective different predetermined times have elapsed since receipt of a leading edge of a pulse signal;

a plurality of sampling means provided in corresponding relation to said plurality of sampling signals and which receive said pulse signal and said sampling signals associated therewith, said plurality of sampling means being rendered operable after receipt of the leading edge of said pulse signal and

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outputting a detection signal indicating whether or not a trailing edge of said pulse signal is received prior to receipt of said sampling signals; and

an encoder for generating data depending on which sampling means, of said plurality of sampling means, judges that the trailing edge of said pulse signal is received prior to receipt of said sampling signals.

5,621,344

CIRCUIT ARRANGEMENT FOR COUPLING A FIRST ELECTRIC SIGNAL INTO A SECOND ELECTRIC SIGNAL

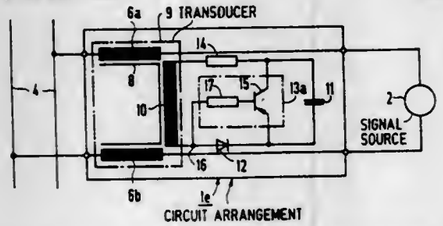
Hermann Zierhut, München, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

Filed Dec. 3, 1991, Ser. No. 802,089

Claims priority, application European Pat. Off., May 12, 1990, 90123324

Int. Cl.[6] H03K *3/00;* **G05F** *1/10;* **H04M** *11/04*

U.S. Cl. 327—181 **3 Claims**



1. A circuit arrangement for coupling a first electric signal to a second electric signal said second electric signal being an alternating signal, comprising a device compensating for pulse tilt effects of the circuit arrangement on the signal pattern of said second signal,

wherein said compensating device includes a capacitive element and an inductive element, said inductive element coupling said first and second electric signals, whereby the inductive element comprises a first winding coupling said first and second signals and a second winding coupling said inductive element to said capacitive element, wherein said capacitive element includes a capacitor and a diode connected in series such that the second winding together with said diode and said capacitor form a charging series circuit, and further comprising a discharge circuit connected in parallel with said capacitor.

5,621,345

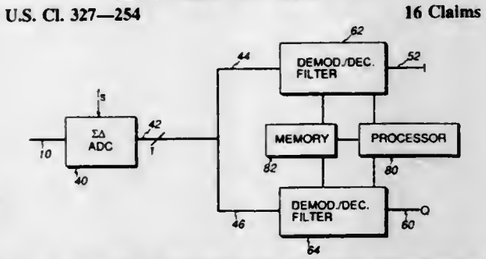
IN-PHASE AND QUADRATURE SAMPLING CIRCUIT

Wai L. Lee, Wilmington, Mass.; Norman D. Grant, Windham, N.H., and Paul F. Ferguson, Jr., Dracut, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 7, 1995, Ser. No. 418,546

Int. Cl.[6] H03C *3/00;* **H03H** *11/16*

U.S. Cl. 327—254 **16 Claims**



1. A circuit that provides samples of in-phase and quadrature components of an input waveform comprising:

an oversampling ADC that receives the input waveform and converts the input waveform to digital samples having an input frequency at an oversampling rate;

a first digital decimation filter, coupled to the ADC, that receives the digital samples from the ADC and provides the in-phase component samples having a center frequency different from the input frequency; and

a second digital decimation filter, coupled to the ADC, that receives the digital samples from the ADC and provides the quadrature component samples having a center frequency different from the input frequency.

5,621,346

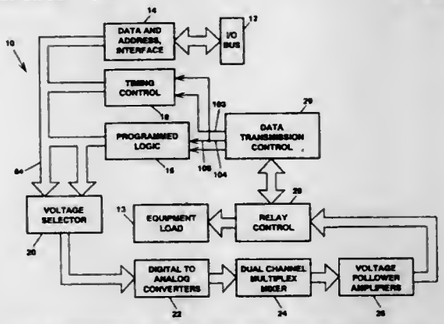
PROGRAMMABLE DATA MESSAGE GENERATION SYSTEM

Pablo M. Lopez, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1995, Ser. No. 543,901

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—355 **8 Claims**



1. In a computer controlled message generation system having signal multiplexer means interfaced with a load for operation thereof in response to input data signals, the improvement residing in: signal converter means connected to data inputs of the signal multiplexer means for supply of the input data signals thereto at programmed voltage levels; timing means connected to the signal multiplexer means for controlling generation of an output signal therefrom by mixing of said input data signals; and programmed data transmission means operatively connecting the signal multiplexer means to the load for supplying driving signals thereto as a function of the output signal above a predetermined voltage level and within a predetermined frequency range.

5,621,347

ELECTRONIC CIRCUIT HAVING ELECTRICALLY ISOLATED DIGITAL AND ANALOG CIRCUITRY

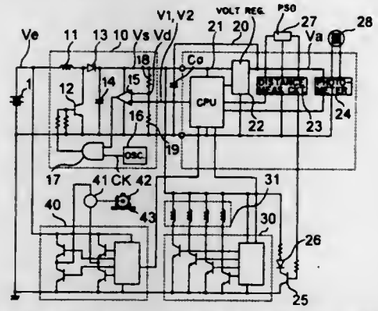
Hiroyuki Saito; Yoichi Seki, and Akira Ito, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed Aug. 10, 1994, Ser. No. 288,485

Claims priority, application Japan, Aug. 11, 1993, 5-044001 U; Mar. 16, 1994, 6-045843

Int. Cl.[6] G05F *1/10;3/02*

U.S. Cl. 327—540 **27 Claims**



1. An electronic circuit comprising: a voltage providing means for providing a first output voltage; digital circuit means powered by the first output voltage for processing a digital signal; a voltage regulator powered by the first output voltage for providing a second output voltage; and analog circuit means powered by the second output voltage for processing an analog signal; wherein the digital circuit means, the voltage regulator and the analog circuit means are formed in a single integrated circuit.

5,621,348

OUTPUT DRIVER CIRCUIT FOR SUPPRESSING NOISE GENERATION AND INTEGRATED CIRCUIT DEVICE FOR BURN-IN TEST

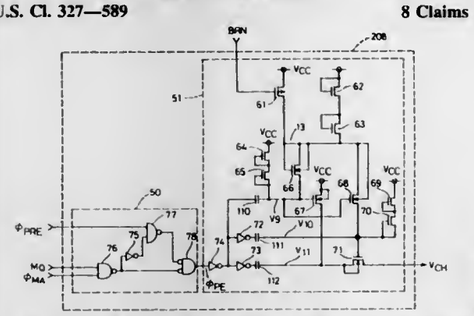
Kiyohiro Furutani, and Hideyuki Ozaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 145,710, Nov. 4, 1993. This application May 23, 1995, Ser. No. 447,587

Claims priority, application Japan, Nov. 4, 1992, 4-294993

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—589 **8 Claims**



1. An output driver circuit including a plurality of data output terminals for providing in parallel a plurality of output data via said plurality of terminals, comprising:

means for detecting a potential level of an externally applied power supply potential, said detecting means outputting a signal of a first level when the potential level is a first potential of a normal operation and outputting a signal of a second level when the potential level is a second potential of a burn-in mode;

a plurality of higher voltage applying means, each coupled to said detecting means to receive the signal and each having a precharge circuit, coupled to the externally applied power supply potential, to precharge a node to a predetermined potential such that a high voltage exceeding the potential level of the externally applied power supply potential is outputted by each of said plurality of higher voltage applying means; and

a plurality of transistors, each connected to a corresponding one of said plurality of higher voltage means to receive the high voltage and a corresponding one of said plurality of data output terminals, wherein

a potential difference between the predetermined potential and the second potential of the burn-in mode is greater than a potential difference between the predetermined potential and the first potential of the normal operation.

5,621,349

DEVICE FOR CONTROLLING AN OUTPUT LEVEL OF AN FM DETECTING CIRCUIT USING PHASE LOCKED LOOP

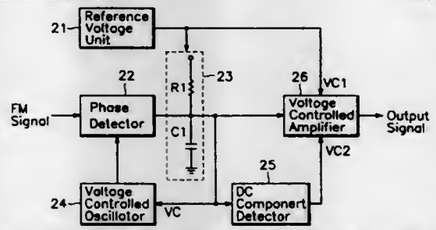
Yang-gyun Kim, Seoul, and Jeong-in Lee, Kyonggi-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd, Suwon, Rep. of Korea

Filed Apr. 16, 1996, Ser. No. 633,186

Claims priority, application Rep. of Korea, Jul. 3, 1995, 95-19293

Int. Cl.[6] H03D *3/00;* **H03L** *7/08*

U.S. Cl. 329—325 **7 Claims**



6. An FM detecting circuit using a phase-locked loop, said circuit comprising:

a phase detector for comparing a phase of an input FM signal to a reference signal and generating an error signal;

a low-pass filter for filtering said error signal and producing an output signal;

an oscillator having an input which receives output signal and generates said reference signal based upon said output signal;

a variable controlled amplifier for receiving and amplifying said output signal to obtain a gain compensated output signal, said variable controlled amplifier controlling a gain applied to said output signal as a function of a level of a DC component of the output of said low-pass filter.

5,621,350

CIRCUIT FOR AMPLIFYING A WEAK DIRCET VOLTAGE SIGNAL

Winfried Schulz, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00261, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO94/21033, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 9, 1994, Ser. No. 522,271

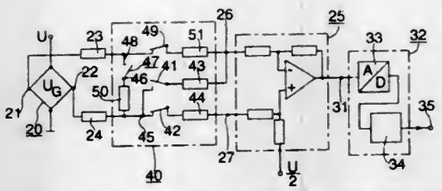
Claims priority, application Germany, Mar. 9, 1995, 43 08 229.7

Int. Cl.[6] H03F *1/02*

U.S. Cl. 330—9 **2 Claims**

1. A circuit for amplifying a weak direct voltage signal from a voltage bridge, the circuit comprising:

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a direct voltage amplifier having a plurality of input terminals; and

a switching member coupled to said input terminals of said direct voltage amplifier;

wherein said switching member includes

a periodical short-circuiter coupled to one of said input terminals,

a permanently closed switching element coupled to said periodical short-circuiter in series between two input terminals of said direct voltage amplifier,

a first additional switching element, and

a second additional switching element,

wherein a common connection point of said short-circuiter and said permanently closed switching element is coupled to a contact of said first additional switching element and is also coupled to a connection point of an output diagonal of the voltage bridge, and

wherein another contact of said first additional switching element is coupled to another connection point of the output diagonal of the bridge and is also coupled, via said second additional switching element, to said one of said input terminals

whereby the direct voltage amplifier may receive, depending on the status of said periodical short circuiter, either a reference signal or the output of the voltage bridge.

5,621,351

MODULATION AMPLIFIER FOR RADIO TRANSMITTERS

Narindra N. Puri, Monmouth Jct., N.J.; Patrick Gehri, Riniken, Switzerland; Bohumil Kyrian, Unterbozberg, Switzerland; Peter Niklaus, Wettingen, Switzerland; Juraj Tomljenovic, Tegerfelden, Switzerland, and Nenad Tomljenovic, Nussbaumen, Switzerland, assignors to Thomcast AG, Turgi, Switzerland

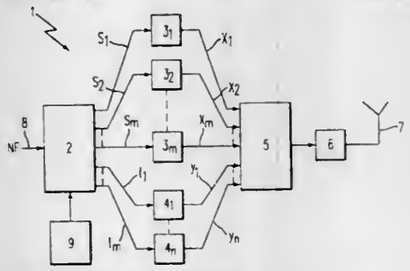
PCT No. PCT/CH94/00045, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/21035, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 3, 1994, Ser. No. 331,481

Claims priority, application Germany, Mar. 4, 1993, 43 06 690.9

Int. Cl.^{6} H03F *3/38*

U.S. Cl. 330—10 **11 Claims**



1. Modulation amplifier comprising

a) a signal converter, which converts a low frequency signal, applied to a low frequency input, into a first group of m($m \geq 1$) control signals ($s_{1..m}$);

b) a high frequency oscillator, which emits a high frequency signal of frequency f_0 and phase Φ_0;

c) m high frequency stages ($3_{1..m}$), which can be driven independently and which are driven by the control signals ($s_{1..m}$) and emit in the turned on state high frequency signals of frequency f_0, phase Φ_0 and identical amplitude to their outputs ($x_{1..m}$);

d) a summator, which adds the outputs ($x_{1..m}$) of the high frequency stages ($3_{1..m}$), and sends the composite signal on to a low pass filter, to whose output a load can be attached, whereby

e) the signal converter drives so many high frequency stages ($3_{1..m}$) that the output signal of the summator represents a power-amplified, high frequency oscillation, whose amplitude changes by steps in accordance with the low frequency signal; and

f) means for approximating the difference of the amplified amplitude of the low frequency signal and step-shaped output signal of the summator; wherein

g) the means for approximating the difference of the amplified amplitude of the low frequency signal and step-shaped output signal of the summator include a second group of n, $n \geq 2$, independently driven high frequency stages ($4_{1..n}$), which

h) are driven by a second group of n high frequency control signals ($t_{1..n}$), which originate from the signal converter and exhibit the same frequency f_0, but different phase $\Phi_{1..n}$, and

i) said high frequency stages ($4_{1..n}$) send to their outputs ($y_{1..n}$) high frequency signals of frequency f_0, identical amplitude, but different phase $\Phi_{1..n}$, whereby

j) the signal converter determines in such a manner the number of selected high frequency stages ($4_{1..n}$) and their phases ($\Phi_{1..n}$) that the sum of the output signals ($y_{1..n}$) of the second group of high frequency stages ($4_{1..n}$) represents a high frequency oscillation, whose amplitude corresponds to the difference of the amplified low frequency signal and the step-shaped representation of the low frequency signal by means of the high frequency stages ($3_{1..m}$).

5,621,352

SELF-CONFIGURABLE, DUAL BRIDGE, POWER AMPLIFIER

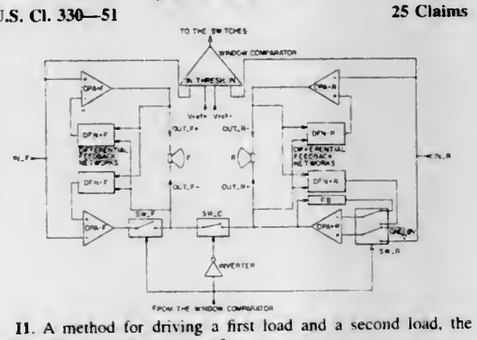
Edoardo Botti, Vigevano, and Guido Brasca, Varese, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 286,706, Aug. 5, 1994, Pat. No. 5,444,417, which is a continuation of Ser. No. 192,858, Feb. 7, 1994, Pat. No. 5,365,188. This application Aug. 21, 1995, Ser. No. 517,239

Claims priority, application European Pat. Off., Feb. 24, 1993, 93830070

Int. Cl.^{6} H03F *3/68*

U.S. Cl. 330—51 **25 Claims**



11. A method for driving a first load and a second load, the method comprising the steps of:

(a) receiving a first signal and a second signal;

(b) comparing each of the first signal and the second signal to a predetermined signal range and configuring the first and second loads and an amplifying circuit in a first configuration when each of the first signal and the second signal is within the predetermined signal range, and a second configuration when at least one of the first signal and the second signal is outside the predetermined signal range; and

(c) driving the loads according to the first signal and the second signal.

5,621,353

OPERATIONAL AMPLIFIER SWITCHABLE TO DIFFERENT CONFIGURATIONS

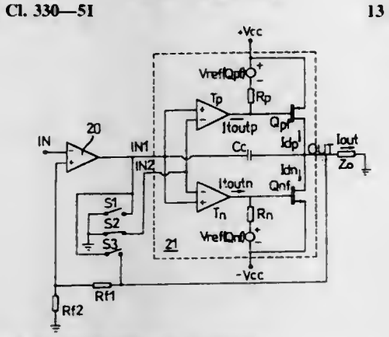
Edoardo Botti, Vigevano, and Tiziana Mandrini, Casorate Primo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza (MI), Italy

Filed Oct. 31, 1995, Ser. No. 550,850

Claims priority, application European Pat. Off., Oct. 31, 1994, 94830516.4

Int. Cl.^{6} H03F *1/14*

U.S. Cl. 330—51 **13 Claims**



1. An operational amplifier comprising:

an input stage having first and second input terminals and an output terminal;

an output stage having a first input terminal coupled to the output terminal of said input stage, a second input terminal, and an output terminal;

a feedback circuit coupled between the output terminal of said output stage and the second input terminal of said input stage; and

a controllable interconnection circuit coupled to the first and second input terminals of said output stage and the output terminal of said output stage and to a reference voltage source, said controllable interconnection circuit having first, second and third modes, and the operational amplifier having a first configuration when said controllable interconnection circuit is in the first mode, the operational amplifier having a second configuration when said controllable interconnection circuit is in the second mode, and the operational amplifier having a third configuration when said controllable interconnection circuit is in the third mode.

5,621,354

APPARATUS AND METHOD FOR PERFORMING ERROR CORRECTED AMPLIFICATION IN A RADIO FREQUENCY SYSTEM

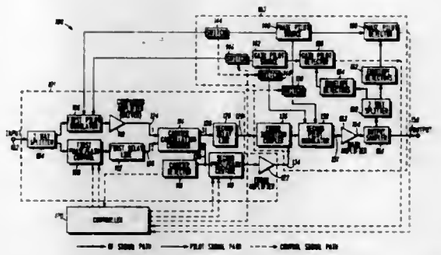
James E. Mitzlaff, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1995, Ser. No. 544,221

Int. Cl.^{6} H03F *3/66*

U.S. Cl. 330—52 **20 Claims**

1. An amplifier circuit for use in a radio frequency system comprising:



a first pilot modulation stage creating a first amplified signal having an error component and an error signal indicative of the error component, said first pilot modulation stage comprising:

a signal splitter receiving an input signal and generating a, first and second input signal;

a Pilot modulator coupled to said signal splitter and receiving the first input signal;

a phase and gain control circuit coupled to said signal splitter and receiving the second input signal;

an amplifier responsive to the pilot modulator; and

a coupler responsive to said amplifier and responsive to said phase and gain control circuit, said coupler generating said first amplified signal; and

a second pilot modulation stage receiving the first amplified signal and the error signal and generating an error reduced amplified signal.

5,621,355

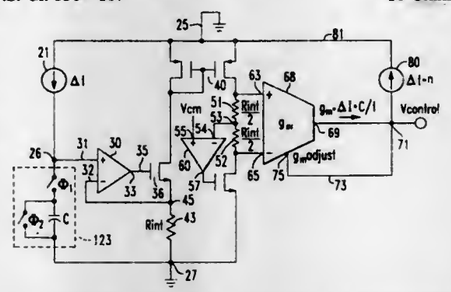
SAMPLED DATA-BIASING OF CONTINUOUS TIME INTEGRATED CIRCUIT

Brian E. Williams, Melbourne, Fla., and Timothy J. Johnson, Mundelein, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 29, 1995, Ser. No. 537,051

Int. Cl.^{6} H03F *1/34*

U.S. Cl. 330—107 **16 Claims**



1. A continuous time circuit comprising a transconductance stage and a load element coupled thereto, said transconductance stage producing an output current that is proportional to a voltage applied to an input terminal thereof, said output current being applied to an output terminal of said transconductance stage to which said load element is coupled and from which an output voltage is derived, such that said continuous time circuit has a transfer function that is defined by a prescribed relationship between transconductance and said load element, and wherein said transconductance stage includes a component through which the transconductance of said transconductance stage becomes a function of a prescribed property of said load element capacitance, that is effective to make said transfer function independent of said prescribed property.

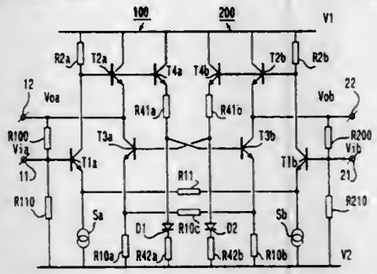
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5,621,356

AMPLIFIER HAVING A REDUCED DISTORTION RATE

Pascal Philippe, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,252
Claims priority, application France, Dec. 7, 1994, 94 14730
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—252 8 Claims



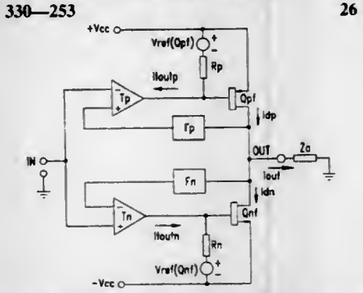
1. An amplifier comprising a first output transistor and a second output transistor having the same polarity and arranged in push-pull configuration, and an input transistor having a collector coupled to a base of the first output transistor, characterized in that the amplifier also comprises a third output transistor and a fourth output transistor which are also arranged in push-pull configuration, and a supplementary input transistor having an emitter coupled to an emitter of said input transistor, and a collector coupled to a base of the second output transistor and to a base of the third output transistor, a base of the fourth output transistor being coupled to the collector of said input transistor.

5,621,357

CLASS AB OUTPUT AMPLIFIER STAGE

Edoardo Botti, Pavia, and Giorgio Chiozzi, Palestro, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed May 23, 1995, Ser. No. 448,259
Claims priority, application European Pat. Off., May 23, 1994, 94830239
Int. Cl.[6] H23F *3/45*; H03F *3/30*
U.S. Cl. 330—253 26 Claims



11. A circuit having a circuit input terminal and for driving a load coupled to a circuit output terminal, comprising:

an output stage including first and second field effect transistors each having a drive terminal, which is coupled to said circuit output terminal, and a control terminal;

a first transconductance amplifier having a first amplifier input terminal coupled to said circuit input terminal and an amplifier output terminal coupled to said control terminal of said first transistor;

a second transconductance amplifier having a first amplifier input terminal coupled to said circuit input terminal and an amplifier output terminal coupled to said control terminal of said second transistor; and

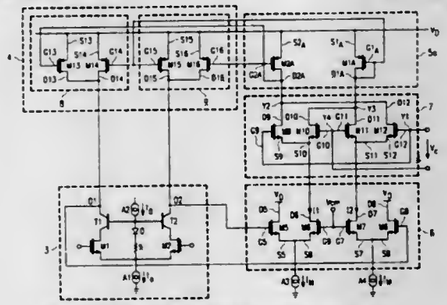
a bias circuit including first and second bias resistors respectively coupled to said control terminals of said first and second transistors and operable to maintain a predetermined current flow through said transistors and a substantially zero current flow through said load during a quiescent interval.

5,621,358

TRANSCONDUCTOR STAGE WITH CONTROLLED GAIN

Valerio Pisati, Bosnasco; Roberto Alini, Stradella; Rinaldo Castello, Arcore, and Gianfranco Val, Pavia, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 454,924
Claims priority, application European Pat. Off., Jul. 29, 1994, 94830390
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 32 Claims



1. A controlled gain transconductor comprising:

a transconductance stage having at least two input terminals and at least two output terminals;

an active load connected to the output terminals of said stage, said active load comprising at least one pair of transistors each having first and second terminals and a control terminal, the first and second terminals of said transistor pair being connected together, and the control terminals being connected to the control circuit; and

a control circuit for the active load connected between said output terminals and the active load;

wherein the transistors in said at least one pair are of the p-channel MOS type; and

wherein the drain terminals of said MOS transistors are connected to a corresponding output terminal of the transconductance stage.

5,621,359

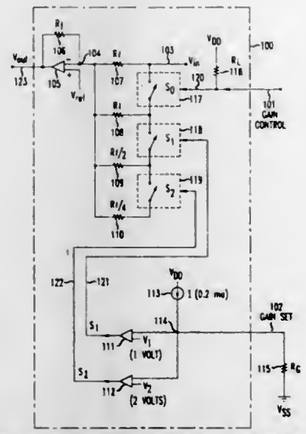
GAIN SELECTION TECHNIQUE

Benjamin H. Evert, Bethlehem, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 27, 1995, Ser. No. 507,894
Int. Cl.[6] H03G *3/20*
U.S. Cl. 330—284 8 Claims

1. An integrated circuit comprising an amplifier having a gain that may be selected from a plurality of discrete values,

characterized in that said integrated circuit provides a control terminal for connection to one of two or more voltage sources in order to select a discrete gain value, and a gain set terminal for connection to a gain setting impedance device;



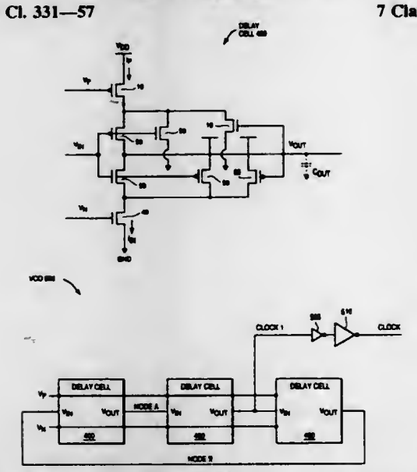
wherein said integrated circuit includes a gain setting circuit comprising at least a first comparator having a first input coupled to said gain set terminal and a second input coupled to receive a first reference voltage for determining which range of two or more impedance ranges includes the impedance of said impedance device, and for providing a discrete gain value associated with said range for selection by said control terminal.

5,621,360

VOLTAGE SUPPLY ISOLATION BUFFER

Samson X. Huang, Cupertino, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 2, 1995, Ser. No. 510,180
Int. Cl.[6] H03B *5/00*
U.S. Cl. 331—57 7 Claims



1. An inverting circuit comprising

a first circuit having a first input, an output, a first intermediate supply node, and a second intermediate supply node, the first circuit for outputting an inverted input signal;

a first transistor having a control gate coupled to a second input, a drain coupled to a first supply potential, and a source coupled to the first intermediate supply node, the second input for controlling a transition delay of the output;

a second transistor having a control gate coupled to a third input, a source coupled to a second supply potential, and a drain coupled to the second intermediate supply node, the third input for controlling the transition delay of the output;

a second circuit coupled between the first input, the output, the first intermediate supply node, and the second supply potential; wherein the second circuit biases the first transistor in a saturation region; and

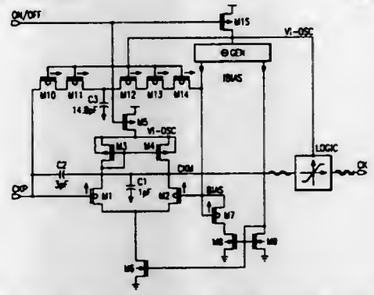
a third circuit coupled between the first input, the output, the second intermediate supply node, and the first supply potential; wherein the third circuit biases the second transistor in the saturation region.

5,621,361

ONE-PIN INTEGRATED CRYSTAL OSCILLATOR

Francesco Adduci, Milan, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 454,922
Claims priority, application European Pat. Off., Jul. 1, 1994, 94830329
Int. Cl.[6] H03B *5/36*
U.S. Cl. 331—75 28 Claims



1. An integrated one-pin crystal oscillator circuit comprising:

a CMOS input gain stage consisting of a differential amplifier provided with a feedback network, said feedback network comprising:

a first capacitance directly connected, without added resistance, between an output of said differential amplifier and the input thereof to which a crystal is connected; and

a second capacitance directly connected, without added resistance, between the output of said differential amplifier and a common ground node of the circuit.

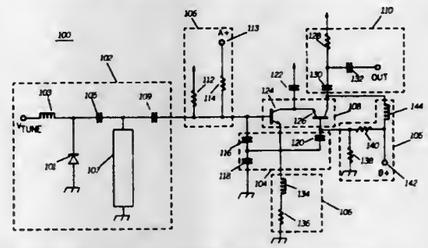
5,621,362

CASCODE OSCILLATOR HAVING OPTIMUM PHASE NOISE AND BANDWIDTH PERFORMANCE

John K. McKinney, Plantation; Peter J. Yeh, Coral Springs, and Branko Avanic, Miami, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1996, Ser. No. 597,081
Int. Cl.[6] H03B *5/12*
U.S. Cl. 331—117 R 14 Claims

7. A method of minimizing sideband noise of an oscillator



having a power, a Q, and a sideband noise, comprising:

providing a tank circuit;

providing an active stage having first and second active devices;

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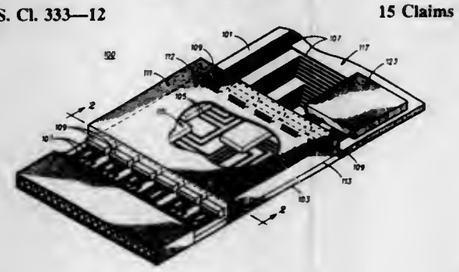
coupling a first energy from the tank circuit to the first active device;
coupling a second energy from the tank circuit to the second active device;
biasing the first active device in a linear region; and
biasing the second active device to minimize the sideband noise of the oscillator while improving its power and without degrading its Q.

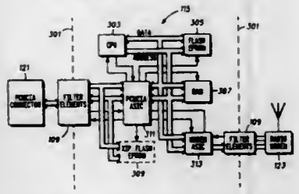
5,621,363

MODEM HAVING AN ELECTROMAGNETIC SHIELD FOR A CONTROLLER

Allen L. Ogden, Richmond; Joseph F. D. Beaudoin, Surrey, and Tateshi Yamada, Richmond, all of Canada, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 317,085
Int. Cl.[6] H05K *9/00*
U.S. Cl. 333—12 **15 Claims**





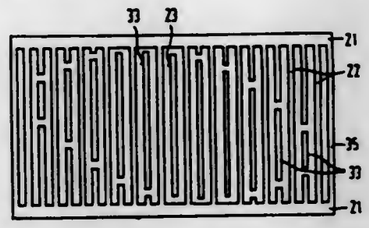
9. A modem having electromagnetically shielded circuitry, comprising:
a carrier having a shielding surface and an interconnect surface;
a controller mounted on said interconnect surface;
at least one signal path on said interconnect surface coupled to said controller, said signal path comprising a filter element mounted on said interconnect surface, said filter element also being coupled to said shielding surface; and
an enclosure having electromagnetic shielding properties mounted on said interconnect surface along a perimeter edge so as to enclose said controller, said perimeter edge of said enclosure arranged so as to sandwich said plurality of filtering elements between a first portion of said perimeter edge and said interconnect surface and to couple said enclosure to said shielding surface via conductive vias, said enclosure comprising projections extending to said interconnect surface between adjacent filtering elements and said vias extending through said carrier at positions corresponding to said projections.

5,621,364

WEIGHTED REFLECTOR FOR SURFACE ACOUSTIC WAVES

Werner Ruile; Jürgen Machui; Roland Dill, all of München, and Brian Lewis, Brackley, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00335, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1994, PCT Pub. No. WO93/22831, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 15, 1993, Ser. No. 325,410
Claims priority, application Germany, Apr. 27, 1992, 41 13 800.0
Int. Cl.[6] H03H *9/145*
U.S. Cl. 333—195 **4 Claims**



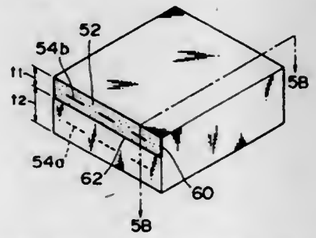
1. A weighted surface-wave reflector, comprising:
metallization strips which are arranged parallel to one another;
at least one busbar,
said metallization strips including:
first metallization strips which are connected to one another via said at least one busbar and
open metallization strips which are free of said at least one busbar, said open metallization strips vary in length in accordance with a predetermined weighting function, and
said first metallization strips being in free spaces between said open metallization strips.

5,621,365

LAMINATED DIELECTRIC RESONATOR AND FILTER

Kazuhisa Yamazaki; Nobuaki Nakamura; Yasue Nishino; Kazuaki Endo, all of Shizuoka; Yasuo Suzuki, Toyohashi, and Mitsuru Kojima, Shizuoka, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01913, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO95/23438, PCT Pub. Date Aug. 31, 1995
PCT Filed Nov. 11, 1994, Ser. No. 525,769
Claims priority, application Japan, Feb. 18, 1994, 6-43344; Mar. 29, 1994, 6-82352
Int. Cl.[6] H01P *1/203;7/08*
U.S. Cl. 333—204 **12 Claims**



4. A laminated dielectric filter comprising:
a block-shaped dielectric material made up of a plurality of sheets laminated;
a plurality of in-resonator conductors formed in said block-shaped dielectric material in spaced apart relationship in a pattern-width direction;

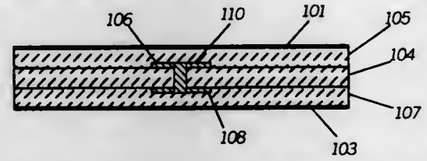
each of said in-resonator conductors including a short-circuit-side internal conductor pattern and an open-end-side internal conductor pattern which are opposed to each other in spaced apart relationship in a pattern-thickness direction, as well as a via connection part which connects one end of said short-circuit-side internal conductor pattern to one end of said open-end-side internal conductor pattern;
an external grounding conductor formed on an external surface of said dielectric material in such a manner as to be connected to the other end of said short-circuit-side internal conductor pattern but not to the other end of said open-end-side internal conductor pattern; and
an internal grounding conductor provided between said internal conductor patterns formed in said dielectric material, said internal grounding conductor being connected to said external grounding conductor but not to said via connection part, thereby forming a folded microstrip line type resonator structure,
wherein the distance between said internal grounding conductor and said external grounding conductor between which said open-end-side internal conductor pattern is disposed is shorter than the distance between said internal grounding conductor and said external grounding conductor between which said short-circuit-side internal conductor pattern is disposed.

5,621,366

HIGH-Q MULTI-LAYER CERAMIC RF TRANSMISSION LINE RESONATOR

Wang-Chang A. Gu, Coral Springs, Fla., and Richard S. Kommrusch, Albuquerque, N.M., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 290,576, Aug. 15, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 620,630
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—204 **9 Claims**



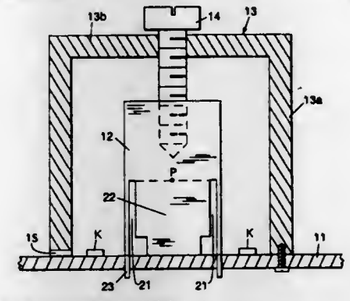
1. A high Q multi-layer ceramic radio frequency (RF) transmission line for carrying electromagnetic energy at an operating frequency comprising:
a first strip conductor attached to a first ceramic substrate for carrying RF energy;
a second strip conductor attached to a second ceramic substrate for carrying RF energy;
a third ceramic substrate positioned between the first strip conductor and the second strip conductor;
a plurality of vias interconnecting the first strip conductor and the second strip conductor at at least ¼ wavelength intervals of the operating frequency through the third ceramic substrate; and
at least one ground plane positioned about both an outer surface of the first ceramic substrate and an outer surface of the second ceramic substrate for shielding the first strip conductor and the second strip conductor from electromagnetic energy.

5,621,367

COAXIAL RESONATOR COMPRISING SLITS FORMED IN THE INNER CONDUCTOR

Ossi Pöllänen, Veikkola, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI94/00192, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/27337, PCT Pub. Date Nov. 24, 1994
PCT Filed May 13, 1994, Ser. No. 545,840
Claims priority, application Finland, May 13, 1993, 932179
Int. Cl.[6] H01P *7/04*
U.S. Cl. 333—224 **4 Claims**



1. Coaxial resonator comprising
an inner conductor (**12**) with walls defining therebetween a free space (**24**), and
a housing portion (**13**) surrounding the inner conductor (**12**) and forming an outer conductor of the resonator, characterized in that the inner conductor (**12**) is made of sheet material in which slits (**21**; **33**) extending in the direction of the inner conductor are made so that they form between them a tongue-like connecting part (**22**; **34**) having its free end connected to a printed circuit board (**11**).

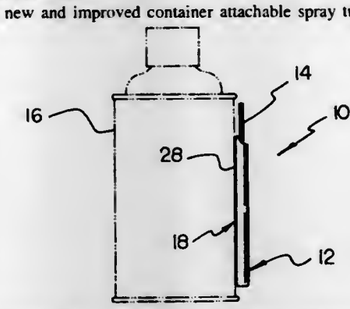
5,621,368

CONTAINER ATTACHABLE SPRAY TUBE HOLDER

Ken E. Galloway, 6228 Winters St., Fort Wayne, Ind. 46816

Filed Sep. 21, 1995, Ser. No. 531,419
Int. Cl.[6] H01F *7/20*
U.S. Cl. 335—285 **1 Claim**

1. A new and improved container attachable spray tube holder



for securing a spray tube relative to an aerosol container comprising in combination:
a metallic aerosol container having an aerosol dispensing valve;
a tube receiver means having an elongated container having a planar inner panel, a semi-cylindrical outer panel and an end panel extending substantially orthogonally between the semi-cylindrical outer panel and the planar inner panel, the planar inner panel having a substantially spaced and parallel longitudinal edges, the semi-cylindrical outer panel having a first longitudinal edge coupled to a first one of the longitudinal edges of the planar inner panel, with a second longitudinal edge of the semi-cylindrical outer panel being coupled to a

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second one of the longitudinal edges of the planar inner panel to define a receiving space between the semi-cylindrical outer panel and the planar inner panel;

a mounting means secured to the tube receiver means for magnetically coupling the elongated container of the tube receiver means to a side of the metallic container, the mounting means comprising a magnetic strip secured to the planner inner panel of the elongated container and magnetically adhering the elongated container to the metallic container in a longitudinally oriented configuration, the magnetic strip being extended along substantially all of the longitudinal length of the planar inner panel of the elongated container; and

a spray tube having a longitudinal length, the longitudinal length of the spray tube being sized for allowing the spray tube to be positioned within the elongated container of the tube receiver means, secured to the metallic container by the mounting means, for storage prior to use, the spray tube having a portion of the length within the elongated container and an upper portion thereof projecting beyond the elongated container to permit ease of grasping of the tube for removal from within the elongated container for attaching to the dispensing valve of the metallic container.

5,621,369

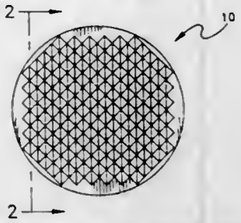
FLEXIBLE MAGNET

Harris L. Gardner, Cranston, R.I., and William H. Gardner, heir, c/o 3428 Weymouth Ct., Marietta, Ga. 30062

Filed Sep. 18, 1995, Ser. No. 529,613

Int. Cl.[6] H01F *7/02*

U.S. Cl. 335—302 **3 Claims**



1. A substantially flat body of magnetic particles of ferrite material embedded therein, said particles being magnetized to form N poles on one surface and S poles on the opposite surface, one surface having a plurality of valleys and hills in a pattern consisting of a grid of polygon depressions.

5,621,370

MOUNTING ARRANGEMENT FOR THERMOSTAT IN A CLOTHES DRYER

Robert St. Louis, 8980 Rochette, St. Leonard, Quebec, Canada

Filed Mar. 14, 1995, Ser. No. 403,403

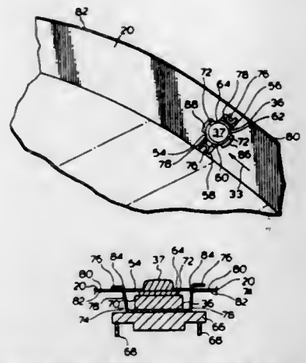
Int. Cl.[6] H01H *37/04*

U.S. Cl. 337—380 **17 Claims**

1. A thermostat mounting arrangement in an apparatus having a surface supporting portion with first and second opposing sides, the thermostat being mounted to engage the first and second opposing sides of the surface supporting portion to sense temperature conditions in the apparatus, the mounting arrangement comprising:

an aperture passing through the surface supporting portion, the aperture having an enlarged central opening with projection members extending into the central opening and at least two slots extending radially outward from the central opening of the aperture; and,

the thermostat including a temperature sensitive surface portion adapted for positioning within the central opening of the aperture and at least two resilient wings each having an arm portion extending generally toward and through a corresponding slot of the aperture, each wing arm portion terminating in



a bent end portion adapted to engage the first side of the surface portion adjacent the slot of the aperture when said each wing portion passes through said corresponding slot, and the thermostat being adapted to engage the second side of the projection members extending into the central opening of the aperture.

5,621,371

ARRANGEMENT FOR TWO-DIMENSIONAL OPTICAL SCANNING WITH SPRINGS OF DIFFERENT MODULI OF ELASTICITY

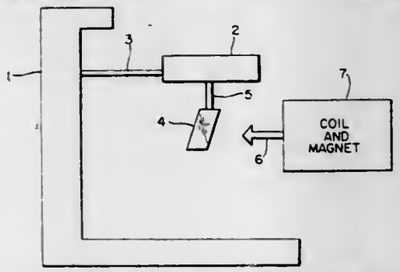
Paul Dvorkis, Stony Brook; Howard Shepard, Great Neck; Simon Bard, Stony Brook, and Edward Barkan, Miller Place, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation-in-part of Ser. No. 108,521, Jul. 19, 1993, abandoned, which is a division of Ser. No. 868,401, Apr. 14, 1992, Pat. No. 5,280,165, which is a division of Ser. No. 520,464, May 8, 1990, Pat. No. 5,168,149, which is a continuation-in-part of Ser. No. 428,770, Oct. 30, 1989, Pat. No. 5,099,110.

This application Jan. 25, 1995, Ser. No. 378,209

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **16 Claims**



1. A scanning arrangement for use in a scanner for reading indicia having parts of differing light reflectivity, the arrangement comprising:

a) an oscillatable scanner element:

b) a mounting bracket, the scanner element being mounted for oscillation to the mounting bracket by a first spring having a relatively high modulus of elasticity, the scanner element having a relatively low inertia when oscillating at a relatively fast rate of oscillation along a first direction by elastic movement of the first spring; and

c) a stationry frame, the mounting bracket being mounted for oscillation to the frame by a second spring having a relatively low modulus of elasticity; and the scanner element, mounting bracket and first spring taken together having a relatively high inertia when oscillating at a relatively slow rate of oscillation

along a second direction generally orthogonal to said first direction by elastic movement of the second spring.

5,621,372

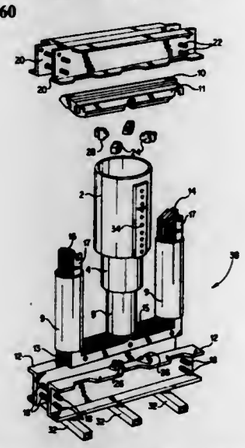
SINGLE PHASE DRY-TYPE TRANSFORMER

Dilip R. Purohit, Charlotte, N.C., assignor to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 32,954, Mar. 17, 1993, Pat. No. 5,396,210. This application Sep. 20, 1994, Ser. No. 309,380

Int. Cl.[6] H01F *27/08*

U.S. Cl. 336—60 **15 Claims**



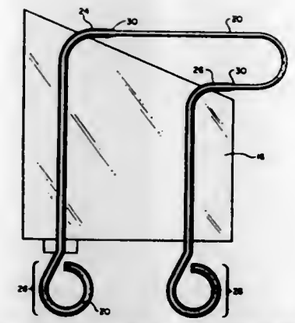
1. A single phase dry-type transformer comprising;

a. an iron core having a plurality of legs;

b. at least one cylindrical solid cast resin high voltage coil functioning as a primary winding and including termination means for connecting to a high voltage AC source;

c. a cylindrical resin encapsulated low voltage coil for each of said high voltage coils, said low voltage coil functioning as a secondary winding and including termination means for outputting a lower AC voltage, said low voltage coil encircled around one of said plurality of legs of said core; and

d. wherein for each of said low voltage coils, one of said high voltage coils is placed over and around said low voltage coil.



inner end portions of the tubes being crimped onto the enclosed wire effecting mechanical clamping and electrical connection therebetween.

5,621,374

AMPLIFYING CIRCUIT FOR SIMULATING A UNITY GAIN BUFFER AMPLIFIER

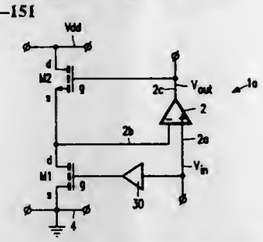
Gerard F. Harkin, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1995, Ser. No. 573,168

Claims priority, application United Kingdom, Dec. 20, 1994, 9425714

Int. Cl.[6] H03F *1/56;3/45*

U.S. Cl. 337—151 **20 Claims**



1. An amplifying circuit comprising: an amplifier having positive and negative inputs and an output and means providing a high input impedance path for feeding from the negative input to the output of the amplifier a first voltage equal to a second voltage at the positive input of the amplifier multiplied by the reciprocal of the open loop gain of the amplifier.

5,621,373

NON-EXPLOSIVE INITIATOR WITH LINK WIRE ASSEMBLY

Larry L. McCormick, Camarillo, Calif., assignor to G & H Technology, Inc., Camarillo, Calif.

Filed Aug. 14, 1995, Ser. No. 514,804

Int. Cl.[6] H01H *37/00;85/00;* **B23Q** *1/68;* **F16D** *9/00*

U.S. Cl. 337—1 **15 Claims**

1. Link wire assembly for use in a motion initiator, comprising:

a length of wire;

first and second hollow tubes slidingly received onto respective opposite end portions of the wire, said tubes being of such dimensions that a portion of the wire between facing tube ends is free of said tubes;

outer end portions of the tubes being formed arcuately with the wire therein providing a mechanically clamping and electrical connection; and

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5,621,375

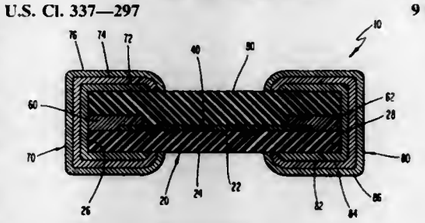
SUBMINIATURE SURFACE MOUNTED CIRCUIT PROTECTOR

Leon Gurevich, Grover, Mo., assignor to Cooper Industries, Houston, Tex.

Division of Ser. No. 166,882, Dec. 15, 1993, Pat. No. 5,432,378. This application Mar. 7, 1995, Ser. No. 399,556

Int. Cl.[6] H01H *85/04*

U.S. Cl. 337—297 **9 Claims**



1. A circuit protector, comprising:

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an electrically insulating substrate having a top surface, a bottom surface and opposing end portions having end edges and opposing lateral edges;

a layer of electrically conducting material on the top surface, the layer having a central part and end parts, the end parts being disposed at the opposing end portions of the substrate, each end part extending to one end edge and both opposing lateral edges of the substrate, the central part forming a fuse element having a predetermined fuse characteristic;

a cover of electrically insulating material overlaying the top surface, the cover suffusing the substrate and layer of electrically conducting material; and,

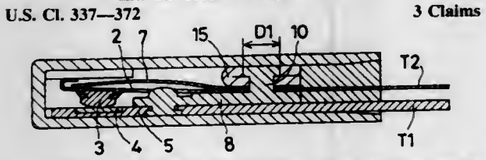
electrically conducting terminations at the opposing end portions in electrical contact with the end parts at the end edge and the lateral edges of the substrate, the terminations extending over a portion of the bottom surface and the cover at least partially enclosing the end parts.

5,621,376

THERMOSTAT WITH A FOLDED FIXING MEMBER

Hideaki Takeda, Misato, Japan, assignor to Uchiya Thermostat Co., Misato, Japan

Filed Dec. 1, 1995, Ser. No. 565,670
Claims priority, application Japan, Dec. 9, 1994, 6-305810
Int. Cl.[6] H01H *37/04;37/52;11/00*
U.S. Cl. 337—372 **3 Claims**



1. A thermostat including two terminals to be connected with an external circuit, a fixed plate connected with one of said terminals and on which a static contact point is mounted, a resilient plate connected with the other of said two terminals directly or indirectly and on which a movable contact point is mounted correspondingly to the static contact point, a bimetal plate engaging with the resilient plate at its one end, a conjunction member having protrusions and a fixing member; whereby said fixed plate is embedded in the conjunction member; the resilient plate, the bimetal plate and the fixing member have holes; the protrusions of the conjunction penetrates through the holes of the resilient plate, bimetal plate and the fixing plate; the tops of the protrusions are melted to fix the fixing member, the bimetal plate and the resilient plate to the conjunction member; when the temperature of the bimetal plate exceeds a predetermined temperature, the curvature or the bimetal plate turns over and the resilient plate so deforms that the movable contact point separates from the stable contact point; characterized in that, the fixing member is made by folding a metal plate having two couple of holes with different diameter, so that each couple of holes align one over another; and the fixing member is so oriented that the smaller diameter hole sides faces to the bimetal plate.

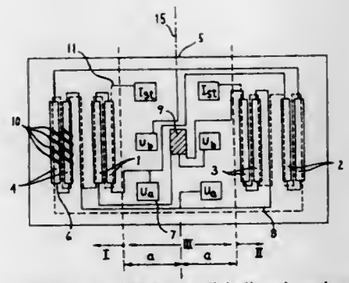
5,621,377

SENSOR ASSEMBLY FOR MEASURING CURRENT AS A FUNCTION OF MAGNETIC FIELD GRADIENT

Fritz Dettmann, Sinn-Edingen, and Uwe Loreit, Wetzlar-Nauborn, both of Germany, assignors to Lust Electronic-Systeme GmbH, Lahnau-Walgirmes, Germany

Continuation of Ser. No. 178,575, Jan. 7, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,823
Claims priority, application Germany, Jan. 13, 1993, 43 00 605.1
Int. Cl.[6] H01L *43/00*
U.S. Cl. 338—32 R **28 Claims**

1. A sensor assembly for measuring current flow, said assembly including:



first and second spaced apart, parallel aligned conductive members for providing a conductive path for the current to be measured, said conductive members being symmetrically located around a sensor axis so as to have longitudinal axes parallel with said sensor axis and being connected together by an interconnect conductor so that the current will flow through said first conductive member in one direction and in said second conductive member in a second direction opposite said first direction;

first, second, third and fourth magnetoresistive resistors disposed over said first and second conductive members, each said resistor comprising at least one elongated structure with a longitudinal axis that is sensitive to magnetic fields that extend perpendicularly to said longitudinal axis, said first and fourth resistors being located side-by-side adjacent each other over said first conductive member, said second and third resistors being located side-by-side adjacent each other over said second conductive member, said first resistor being series connected between said second and third resistors, said second resistor being series connected between said first and fourth resistors, said fourth resistor being series connected between said second and third resistors, and said third resistor being series connected between said fourth and first resistors and all of said resistors being commonly aligned so that when said resistors are exposed to a common magnetic field, said resistors undergo a common change in resistance and said resistors being further arranged so that said first and third resistors are symmetrically located around said sensor axis and said second and fourth resistors are symmetrically located relative said sensor axis and said resistors are positioned so that said longitudinal axis thereof are parallel to said sensor axes;

a first pair of terminal elements, one of said first pair of terminal elements being connected between said first and third resistors and the other of said first pair terminal elements being connected between said second and fourth resistors; and

a second pair of terminal elements, one of said second pair of terminal elements being connected between said first and second resistors and the other of said second pair terminal elements being connected between said third and fourth resistors.

5,621,378

HEATSINK-MOUNTABLE POWER RESISTOR HAVING IMPROVED HEAT-TRANSFER INTERFACE WITH THE HEATSINK

Richard E. Caddock, Jr., Winchester, and Richard E. Caddock, Roseburg, both of Oreg., assignors to Caddock Electronics, Inc., Riverside, Calif.

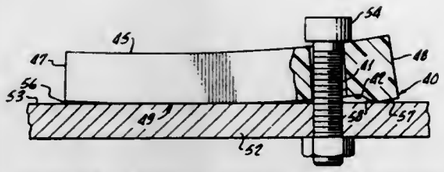
Filed Apr. 20, 1995, Ser. No. 425,913
Int. Cl.[6] H01C *1/08*
U.S. Cl. 338—51 **19 Claims**

1. A power resistor, which comprises:

(a) a resistive element,

(b) a generally rectangular body molded around said resistive element,

said body being molded of synthetic resin molding material, said body having a top surface and a bottom surface,



the relationship between said resistive element and said body being such that said resistive element is located relatively near said bottom surface, and is spaced relatively far from said top surface,

said bottom surface being downwardly somewhat convex due to forces inherent in said molding material and in said location of said resistive element in said body, thereby creating a downward convexity, said convexity being longitudinal to said body,

(c) a bolt hole extending through said body,

said bolt hole being transverse to said bottom surface,

said bolt hole being nearer to one end of said body than to the other end of said body, and

(d) protuberant means fixedly provided on said bottom surface of said body on the side of said bolt hole that is remote from said other end of said body,

at least the great majority of said resistive element being between said bolt hole and said other end of said body,

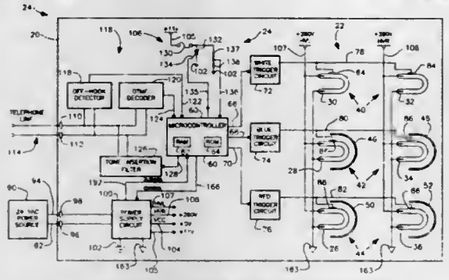
said protuberant means being so shaped, sized and located that when a bolt is passed through said bolt hole and tightened relative to an underlying heatsink having a flat upper surface, said protuberant means causes the region of said bottom surface that is nearest said resistive element to be substantially closer to said flat upper surface of said heatsink than it would be if said protuberant means were not present.

5,621,379

TONE DIALING ACTIVATED EMERGENCY LOCATOR SIGNAL LIGHT SYSTEM

Sean Collins, 478 Windswept Dr., Asheville, N.C. 28801

Filed Mar. 16, 1995, Ser. No. 406,013
Int. Cl.[6] G08B *5/00;* **H04M** *11/04*
U.S. Cl. 340—332 **21 Claims**



1. An emergency locator signal light system comprising:

a signal light device; and

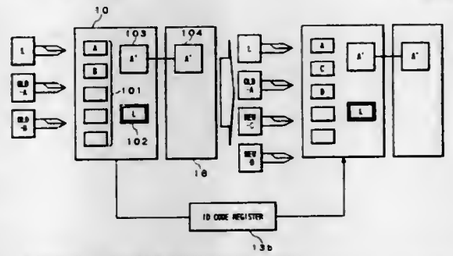
electronic circuitry responsive to dialing signals on a telephone line and having at least a monitor mode and a command mode, said electronic circuitry when in the monitor mode being responsive to the dialing of a predetermined telephone number to initiate the command mode, and said electronic circuitry when in the command mode being responsive to a predetermined tone dialing signal sequence to activate said signal light device.

5,621,380

VEHICLE ANTI-THEFT DEVICE

Eiji Mutoh; Suguru Asakura, and Akira Nagai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,374
Claims priority, application Japan, Sep. 28, 1994, 6-257375; Apr. 19, 1995, 7-116559
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **6 Claims**



1. A vehicle anti-theft device comprising:

a first memory means for storing one or more first ID codes each enabling the start-up of an engine;

a second memory means for storing a second ID code that is different from the first ID codes for activating a renewal mode in which the first ID codes may be rewritten;

a registration discrimination means for comparing an inputted ID code with the first and second ID codes registered in said respective memory means thereby to determine whether or not the inputted ID code has been registered;

an enabling means for generating an enable signal when an inputted ID code is determined to be the same as any one of the first ID codes;

an engine control means responsive to the enable signal for controlling the engine so that the engine is started; and

a renewal mode activation means for activating the renewal mode when the inputted ID code is determined to be the second ID code, wherein in the renewal mode when a particular first ID code registered and at least one of other ID codes are consecutively inputted in this order, the particular first ID code and the at least one of other ID codes are registered in the first memory means as new first ID codes.

5,621,381

VEHICLE ANTI-THEFT ENGINE CONTROL DEVICE

Takashi Kawachi; Kenji Iwasaki; Masanori Matsuura; Satoru Ohtsuka; Shinichi Kubota, and Eiji Mutoh, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,375
Claims priority, application Japan, Jan. 27, 1995, 7-030253
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **2 Claims**

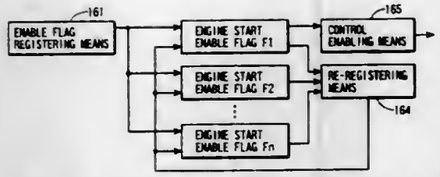
1. A vehicle anti-theft engine control unit comprising:

a theft detector for comparing an ID code received from outside a vehicles with a reference ID code stored in the vehicle in advance and for generating a validation signal when the two ID codes have a predetermined relationship; and

an engine control means for executing engine start control in response to said validation signal;

said engine control means comprising;

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a plurality of enable/disable information storing means for storing information related to the enable and disable of the engine control,

enable information registering means for registering enable information in said respective enable/disable information storing means in response to the validation signal received from said theft detector,

re-registering means for registering, when the enable information has been registered in at least one of the respective enable/disable information storing means, the enable information in every other enable/disable information storing means which does not store the enable information, and

control enabling means for enabling the engine control in accordance with the enable information stored in any of the enable/disable information storing means.

5,621,382

DISPLAY APPARATUS FOR A BICYCLE

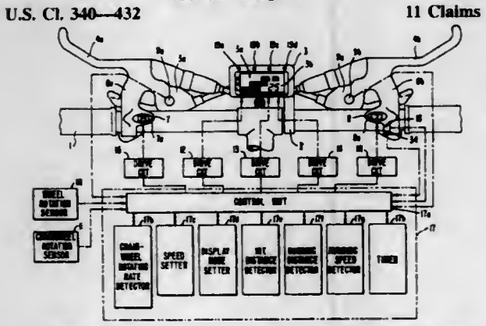
Seiji Yamamoto, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Jun. 16, 1994, Ser. No. 260,858

Claims priority, application Japan, Jun. 16, 1993, 5-032339U

Int. Cl.[6] B62J *3/00*

U.S. Cl. 340—432 **11 Claims**



1. A display apparatus for a bicycle comprising display means including:

a plurality of rear speed stage display sections for displaying a speed stage of a rear derailleur, each of said rear speed stage display sections being formed of a set of plurality of display elements;

a plurality of front speed stage display sections for displaying a speed stage of a front derailleur, each of said front speed stage display sections including one of said set of said display elements; and

indicating means for operating only one of said display elements in only one of said set, thereby to indicate the speed stages of said front derailleur and said rear derailleur for all speed stages of said front derailleur and said rear derailleur; and

wherein said each of said front speed stage display sections is formed as a display array by one of said set of said display elements, a plurality of said display arrays being, staggered relative to one another; and

wherein said display arrays are arranged such that, where part of first display elements in one of said display arrays are substantially and vertically aligned to part of second display elements in another one of said display arrays, said part of said first display elements and said part of said second display elements display substantially the same wheel driving gear ratios.

5,621,383

RING NETWORK SYSTEM CAPABLE OF DETECTING AN ALARM IN EACH NODE

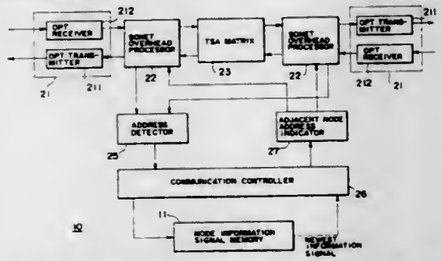
Shunji Yoshiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 261,185, Jun. 13, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,194

Claims priority, application Japan, Jun. 11, 1993, 5-140556

Int. Cl.[6] G08B *29/00*; **H04J** *3/00*

U.S. Cl. 340—506 **20 Claims**



1. A ring network system comprising a plurality of nodes which are connected to one another through a ring connection, said ring network using a communication overhead to pass overhead information between nodes wherein said communication overhead is in addition to a main communication signal, each one of said nodes comprising:

node information signal producing means for producing a node information signal representative of a state of said each one of said nodes;

a node information signal memory for memorizing the node information signals of all of said nodes;

receiving means connected to said ring connection for successively receiving the node information signals of the other nodes through an adjacent one of the nodes by extracting a packet from said communication overhead; and

control means for controlling said node information signals by extracting said node information signals from said packet for provision to said memory;

wherein all of said nodes are caused to memorize said node information signals of all of the nodes into respective node information signal memories.

5,621,384

INFRARED COMMUNICATING DEVICE

James W. Crimmins, Ridgefield, and James L. Saulnier, Brookfield, both of Conn., assignors to K and M Electronics, Inc., West Springfield, Mass.

Continuation of Ser. No. 97,213, Jul. 26, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,417

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—539 **24 Claims**

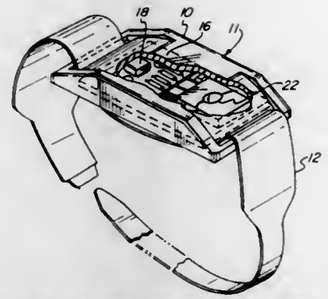
1. A monitoring device comprising:

a badge comprising a sealed housing having an infrared transparent portion, the badge housing being sized and shaped so as to be worn on a user's wrist;

a battery inside the badge housing;

infrared receiving means, inside the badge housing and electrically powered by the battery, for receiving a first infrared, coded signal and communicating the first infrared, coded signal to a processing means;

processing means, inside the badge housing and electrically powered by the battery and responsive to the first infrared, coded signal, for producing and repeatedly applying a first electrical coded signal to an infrared transmitting means;



infrared transmitting means, inside the badge housing and electrically powered by the battery and responsive to the first electrical, coded signal, for generating and repeatedly transmitting a second infrared, coded signal, the transmitting means mounted within the badge housing to transmit the second infrared, coded signal through the infrared transparent portion; and

a programmer having a programmer housing and transmitting means inside the programmer housing for transmitting the first, infrared coded signal to the badge, the programmer comprising means, in the programmer housing, for determining the estimated lifetime of the battery inside the badge housing, the determining means comprising:

means, in the programmer housing and operatively connected to the programmer transmitting means, for transmitting a test signal to the badge;

wherein the processing means, in the badge housing, generates a responsive signal indicative of the estimated lifetime of the battery;

means in the programmer housing for detecting the responsive signal; and

means operatively connected to the programmer for displaying the battery lifetime from the responsive signal.

5,621,385

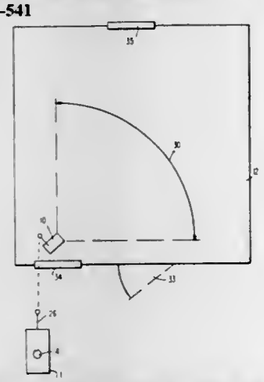
INTRUSION ALARM AND DETECTION SYSTEM

William P. Carney, 4 High Ridge La., Oyster Bay, N.Y. 11771

Continuation-in-part of Ser. No. 239,468, May 9, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 506,420

Int. Cl.[6] G08B *13/00*

U.S. Cl. 340—541 **8 Claims**



1. An improved intrusion detection system of the type in which an intrusion is detected by a monitor having an RF receiver, a power supply, an intrusion detector, a logic circuit, a memory circuit, and a responder, and in which said monitor is disposed to surveil a predetermined space, and in which said monitor has an armed state and a disarmed state and a user employs a hand held RF remote controller to arm and disarm said monitor, wherein the improvement comprises:

said remote controller having a button switch for generating a code signal under the control of said user;

said monitor being armed by said code signal of a predetermined duration from said remote controller;

said state of said monitor being tested by said code signal from said remote controller of a duration less than said predetermined duration; and

said monitor being alternatively disarmed by either of said code signal from said remote controller when said responder is responding and the sensing of a power interruption by the logic circuit.

5,621,386

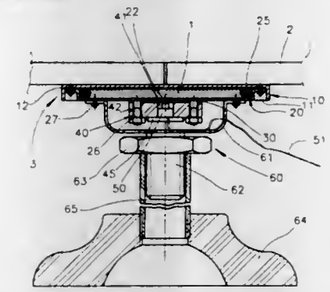
ELEVATED FLOOR ALARM SYSTEM

Chien-Teh Huang, No. 105, Sec. 4, Shan-Ho Road, Shan-Chung City, Talpei Hslen, Talwan

Filed Mar. 5, 1996, Ser. No. 611,262

Int. Cl.[6] G08B *13/20*

U.S. Cl. 340—544 **6 Claims**



1. An elevated floor alarm system, comprising:

a floor, which is elevated over the ground at the location of the alarm;

a plurality of pressure sensing devices, installed between said floor and the ground, further comprising:

liquid as a detecting medium;

a cover, which is in contact with the lower side of said floor;

a vessel, mounted below said cover, having a basin in its middle below said cover, forming a cavity with said cover, to be filled with said liquid; and a hole in the lower part of said basin of said vessel, allowing said liquid to flow into said hole;

a seal, inserted between said cover and said vessel along the circumference of said basin to impermeably seal said basin, the thickness of said seal being larger than the depth of the basin, such that said cover and said vessel are not in contact with each other to leave a gap for said cover to move down;

an elastic membrane, which is mounted tightly on said vessel at the place of the opening of said hole, and which, when said cover is exposed to an external weight and moves down, is deformed by the pressure of said liquid via said hole, and when the external weight is relieved and said cover returns to its original position, also returns to its original state;

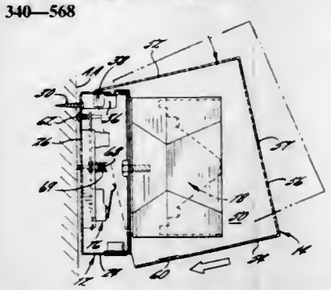
a sensor, which is installed below the lower side of said elastic membrane to sense the deformation of said membrane under the pressure of said liquid; and

a stand between said pressure sensing device and the ground, providing support for said pressure sensing device;

whereat, when an external weight exerts pressure on said floor, said cover, having undergone pressure, in turn presses on said liquid and further on said membrane, thus stirring said sensor and leading to precise detection with subsequent information to responsible personnel for further dealing.

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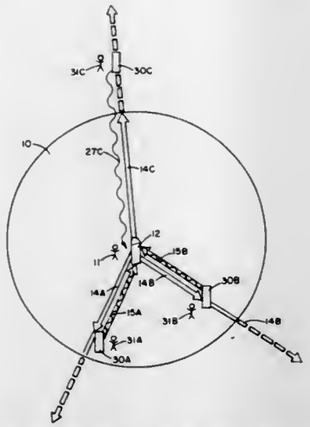
5,621,387
BOX
Kirk B. Phillips, Wilkesboro; Patrick K. Strong, Icard; J. Michael McRee, Newton, and David C. Steele, Taylorsville, all of N.C., assignors to Elk Products, Inc., Hildebran, N.C.
Filed Aug. 8, 1995, Ser. No. 512,664
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568 **13 Claims**



1. A box for housing components and for preventing unwanted access thereto, said box comprising:
a mounting panel adapted to be secured to a mounting surface;
a cover cooperating with said mounting panel to form an enclosure;
a cover fastener engaging said mounting panel and said cover for securing said cover to said mounting panel;
an alarm device mounted within said enclosure; and
a trigger mechanism operably connected to said alarm device for activating said alarm device in response to tampering, said trigger mechanism including a trigger member mounted for movement within said enclosure and a switch carried by said trigger member and operatively connected to said alarm device for activating said alarm device responsive to attempted removal of said cover fastener and also responsive to attempted detachment of said mounting panel from a mounting surface.

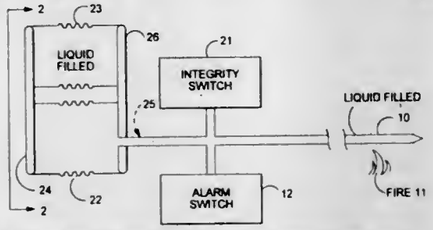
5,621,388
SYSTEM FOR MONITORING AND LOCATING A PERSON WITHIN A PRESELECTED DISTANCE FROM A BASE-STATION
Glenn M. Sherburne, 441 Crescent Dr., Albert Lea, Minn. 56007, and Robert A. Brasse, R.D. 3 Town Line Rd., Malone, N.Y. 12953
Continuation of Ser. No. 75,071, Jun. 10, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,702
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **20 Claims**

20. A monitoring and locating system comprising:
a base-station and a plurality of remote transceivers, said base-station provided with means for generating a plurality of distinct interrogation signals for receipt by said plurality of remote transceivers at a preselected interrogation distance from said base-station each of said plurality of distinct interrogation signals communicates with a respective one of said plurality of remote transceivers;
said base-station provided with means for detecting and distinguishing between the receipt of a plurality of homing signals;
said base-station provided with means for detecting the receipt or interruption of each of said plurality of distinct return signals generated by said plurality of remote transceivers and for alerting a user of said base-station of the interruption of each of said plurality of distinct return signals;
said base-station provided with means for locating a source of said plurality of homing signals generated by said plurality of said remote transceivers;
said plurality of remote transceivers each operable to detect one of said plurality of distinct interrogation signals within said preselected distance from said base-station;



each one of said plurality of remote transceivers provided with means for generating a distinct return signal in response to receipt of a respective one of said distinct interrogation signals;
each one of said plurality of remote transceivers provided with means for detecting the receipt or interruption of said interrogation signals and for alerting a user of one of said plurality of remote transceivers upon said detected interruption at said user's remote transceiver that said user's remote transceiver has moved beyond said preselected interrogation distance; and
each one of said plurality of remote transceivers provided with means for generating a homing signal in response to moving beyond said preselected distance from said base-station.

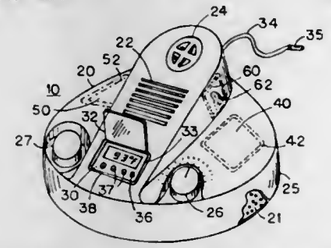
5,621,389
APPARATUS FOR DETECTING A FIRE HAVING A LIQUID FILLED SENSOR TUBE AND COMPENSATION FOR CHANGES IN AMBIENT TEMPERATURE
Robert A. Fellows, San Ramon, Calif., assignor to Whittaker Corp., Concord, Calif.
Filed Jun. 5, 1995, Ser. No. 463,973
Int. Cl.[6] G08B *17/00*
U.S. Cl. 340—584 **3 Claims**



1. Apparatus for detecting a fire or hot gases comprising:
a closed elongated sensor tube exposed to a detection zone and completely filled with liquid having a predetermined coefficient of expansion and having a vapor pressure which increases in response to an overheat condition which indicates a presence of a fire or hot gases near the sensor tube;
vapor pressure detection means connected to said sensor tube and the liquid therein and responsive to said increased vapor pressure including a mechanical to electrical transducer means for sensing said vapor pressure, said transducer having a predetermined actuation pressure;
means for compensating for ambient temperature changes which cause expansion or contraction of said liquid in said liquid filled sensor tube, such compensating means including means

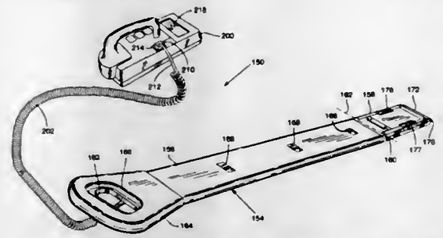
for distinguishing between normal expansion of said liquid due to increase in ambient temperature and the vapor pressure of said liquid due to sensing a fire, such means in the latter condition allowing for positive actuation of said transducer but in the former condition accommodating the normal increase of volume of said liquid without said actuation; said compensating means including a first enclosed bellows type container which is attached to and in liquid communication with said liquid filled sensor tube and is also filled with said liquid and a second sealed bellows type container which is mechanically coupled in parallel to said first bellows container so as to bias its expansion and contraction and filled again with the same type of fluid as said liquid, such second bellows container having the same characteristic expansion rate as said liquid but with said second bellows container exposed to ambient temperature away from said detection zone, to prevent said first bellows from overexpanding due to said vapor pressure.

5,621,390
TEMPERATURE ACTUATED SIGNALING AND ENTERTAINMENT APPARATUS
Albert D. Neal, 17272 Blue Fox Cir., Huntington Beach, Calif. 92647
Filed Sep. 22, 1995, Ser. No. 532,054
Int. Cl.[6] G08B *17/00*
U.S. Cl. 340—584 **16 Claims**



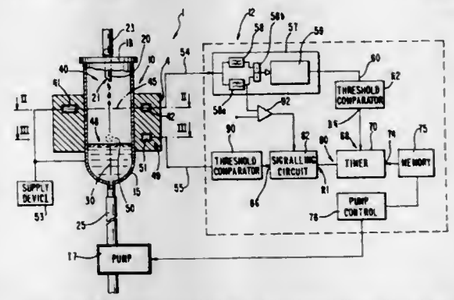
1. A temperature actuated signaling and entertainment apparatus for a heated environment, wherein the apparatus comprises:
a housing;
a signaling and entertainment means encased within the housing and having an on/off switch controlling the playing of the signaling and entertainment means;
a programmable temperature actuated control having a temperature sensing means contacting the heated environment, a temperature indicating means on the housing, a connector between the programmable temperature actuated control and the on/off switch, and a means for programming the temperature actuated control to activate the on/off switch between the preset temperature limits for the heated environment, so that the programmable temperature actuated control actuates the on/off switch to turn the signaling and entertainment means on when the temperature in the heated environment is within the preset temperature limits and turn the signaling and entertainment means off when the temperature in the heated environment is outside the preset temperature limits;
wherein the housing has an exterior shell sealed against the admission of water and the heated environment is a heated water environment;
wherein the housing further comprises a lighter than water means making the housing floatable in the heated environment;
wherein the programmable temperature actuated control and temperature indicating means are encased within a compartment in the housing, the compartment sealed against the admission of water; and
wherein the signaling and entertainment means comprises an AM/FM radio and speaker enclosed within the housing and having volume and tuning controls secured on the exterior of the housing.

5,621,391
WOOD MOISTURE CONTENT MEASURING PROBE
Jeffrey J. Elseth, Grants Pass, Oreg., assignor to Wagner Electronic Products Co., Inc., Rogue River, Oreg.
Filed Feb. 15, 1995, Ser. No. 389,923
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—604 **18 Claims**



1. An apparatus for measuring the moisture content of stacked wood comprising:
an elongated probe having a first end portion, a second end portion, and a bendable portion between the first and second end portions, and supporting an electromagnetic wave responsive moisture sensor adjacent the first end portion;
a meter adapted to be electrically coupled to the probe sensor for displaying signals representing the moisture content of wood in proximity to the probe sensor; and
the probe bending at the bendable portion while the first and second end portions remain straight when the second end portion is presented at an angle to the wood so as to urge the probe sensor toward the wood in proximity to the probe sensor.

5,621,392
FLOW DETECTOR
Francesco Paolini, Cosenza; Marco Paraluppi, Medolla, and Luca Vinci, Poggio Rusco Mantova, all of Italy, assignors to Hospal Ltd., Basel, Switzerland
Continuation of Ser. No. 81,330, Mar. 30, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 546,733
Claims priority, application Italy, Nov. 5, 1991, TO91A0834
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—608 **13 Claims**



1. A liquid flow detection system for monitoring continuous and discontinuous liquid flow in a fluid circuit including a container flow-connected to a variable velocity pump, the system comprising:

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a holding device for maintaining the container so that an elongated axis of the container generally lies in a vertical plane;
a light emitter oriented to transmit light along an optical path through the container and intersecting the elongated axis of the container;
a light detector located in the optical path opposite the light emitter, the detector for generating a signal representative of light received from the light emitter;
processing means for receiving the light detector signal and for generating a control signal representative of a variability over time of the light detector signal;
means for generating a flow absence signal when the control signal drops below a predetermined level;
means for receiving a pump velocity signal corresponding to the variable velocity of the pump;
means for correlating the flow absence signal with the pump velocity signal; and
means for signaling when the flow absence signal is present continuously in a comparison time interval (T) corresponding to the pump velocity signal.

5,621,393

FILL-LEVEL TEST AND MEASURING DEVICE

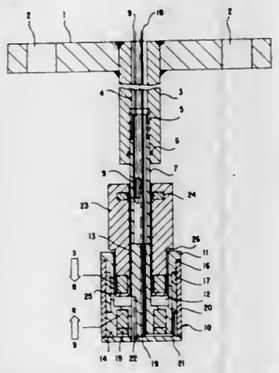
Manfred Urich, Usingen, Germany, assignor to Unimess Messtechnische Geräte GmbH, Ober-Mörlen, Germany

Filed Aug. 21, 1995, Ser. No. 517,714

Claims priority, application Germany, Aug. 22, 1994, 9413499 U

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—616 **5 Claims**



1. Filling-level measuring device, in particular an overfilling safety means for a liquid container, comprising a non-magnetic slide tube containing a switch driven in contactless manner by magnetic force and mounted to a plate or threaded connection sealing a container aperture, further comprising a float displaceable resting on the slide tube and comprising a permanent magnet to actuate the switch and displaceable regardless of filling level, by an electromagnetic actuator, into a switch position effecting switching of the switch,

characterized in that the float (**23**) comprises a second permanent magnet (**25**) a distance from the permanent magnet (**24**) associated to the switch (**8**), said permanent magnet (**25**) resting by its own magnetic field on the magnetic field of an oppositely polarized permanent magnet (**15**) affixed to the slide tube (**7**), and in that a magnetic coil (**17**) is affixed to the slide tube (**7**) which, when energized, generates a magnetic field reinforcing the effect of the oppositely polarized magnetic field and of such field intensity that the float (**23**) is lifted into the switching position without being supported by buoyancy.

5,621,394

SMOKE ALARM MONITORING AND TESTING SYSTEM AND METHOD

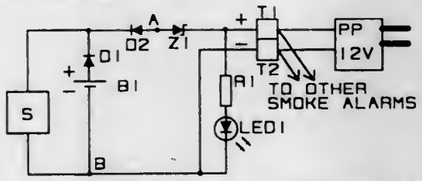
Gilbert A. Garrick, and Marie J. Garrick, both of 8 Penton Place, Gilmore, ACT, Australia

Filed Apr. 12, 1996, Ser. No. 631,022

Claims priority, application Australia, Aug. 15, 1994, PM 7447

Int. Cl.[6] G08B *17/10*

U.S. Cl. 340—628 **27 Claims**



1. A method of monitoring and testing the integrity of a smoke detection and alarm system in which the smoke alarms are powered by a primary power supply, each smoke alarm having a stand-by battery power supply and being operable in a self-test mode, an alarm mode and a quiescent mode, the current drain in self-test and alarm modes exceeding the quiescent current drain, said method including:

switching the voltage supplied to the smoke alarms such that when the smoke alarms are in quiescent mode, the current drain is via the primary power supply, if available, and not via the stand-by battery power supply.

5,621,395

NETWORKING APPARATUS WHICH DETECTS A STOPPAGE OF DATA TRANSFER IN A PROCESSING APPARATUS ON A DATA ORIGINATION SIDE AND THEN CANCELS THE CORRESPONDING PATH IN THE SWITCHING UNIT

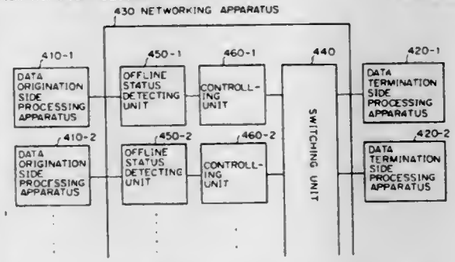
Akihito Kiyaji, Sapporo; Hiroshi Komatsuda, Kawasaki; Masayuki Katori, Kawasaki, and Kenichi Ishizaka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 976,426, Nov. 13, 1992, abandoned. This application May 22, 1995, Ser. No. 445,731

Claims priority, application Japan, Nov. 15, 1991, 3-300264

Int. Cl.[6] G05B *23/02*

U.S. Cl. 340—825.06 **6 Claims**



1. A networking apparatus, connected to a plurality of processing apparatus on a data origination side and on a data termination side, including a switching unit for setting a path for transferring data from one of said processing apparatus on said data origination side to one of said processing apparatus on said data termination side in response to an identification signal attached to said data, comprising:

status detecting means for detecting a suspension of said data transfer due to a crash of said one processing apparatus on said data origination side by using a communication status indication signal; and

controlling means for generating an end-of-data signal in response to said status detecting means detecting said data transfer suspension, and for releasing said path connected to said crashed one processing apparatus on said data origination side by supplying said end-of-data signal to said switching unit through a data output line of said crashed one processing apparatus on said data origination side, to deal with a networking processing apparatus communication failure in said network apparatus.

5,621,396

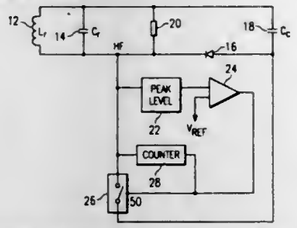
METHOD AND APPARATUS WITH ADAPTIVE TRANSPONDER PLUCKING

Thomas J. Flaxl, Train, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1994, Ser. No. 269,471

Int. Cl.[6] H03L *3/00*

U.S. Cl. 340—825.54 **17 Claims**



7. A system with adaptive plucking, comprising:

a resonant circuit operable to generate an oscillating signal;
a peak level detector operable to detect a peak level of said oscillating signal;
a comparator coupled to said peak level detector and operable to compare said peak level with a reference voltage;
a counter operable to count cycles of said oscillating signal; and
a switch coupled to said resonant circuit, said comparator, and said counter, said switch operable to couple power to said resonant circuit under control of said comparator and said counter.

5,621,397

ELECTRICAL FAULT DETECTING DEVICE

Alan J. Mutch, 45 Elvington Road, Hightown, Merseyside, England, and Raymond Sheldon, 15 Seymour Drive, Lydiate, Merseyside, England

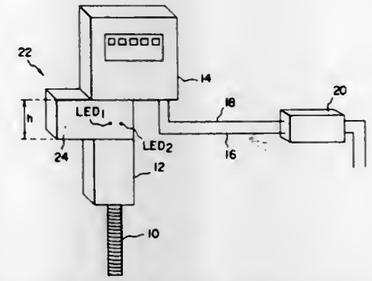
Continuation of Ser. No. 70,977, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 447,072, Dec. 7, 1989, Pat. No. 5,227,668. This application May 8, 1995, Ser. No. 437,231

Claims priority, application United Kingdom, Dec. 7, 1988, 8828553

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—870.02 **29 Claims**

1. Apparatus for continuously detecting illegal tampering with an electricity meter which is adapted to record the amount of electricity supplied to said meter through cables, the apparatus comprising:



a first signal generating means, situated externally of and upstream of said meter and adapted to generate a first signal which is representative of the current flowing through one of said cables at a location outside said meter, in the vicinity of the first signal generating means;
a second signal generating means, situated within said metering device, and adapted to generate a second signal which is representative of the amount of electricity to be recorded by said meter; and
a monitoring means adapted to monitor the first and second signals and to produce a third actuation signal when one of the first and second signals differs from its correct value as a result of tampering.

5,621,398

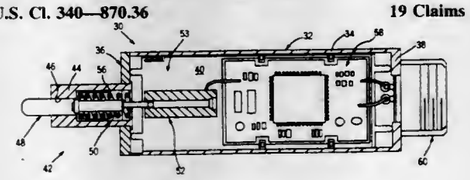
PROGRAMMABLE SWITCH

James F. L. Blair, St. Charles, and Frank C. Alterio, Arlington Heights, both of Ill., assignors to Saint Switch, Inc., St. Charles, Ill.

Filed Aug. 7, 1995, Ser. No. 512,090

Int. Cl.[6] G08C *19/06*

U.S. Cl. 340—870.36 **19 Claims**



1. A programmable switch comprising:

a housing;
a sensor associated with the housing, the sensor including means for sensing a measurable physical property of a sensed element proximate the housing and developing an electrical signal varying relative thereto to represent the sensed physical property;
a logic circuit disposed in the housing and receiving the electrical signal, the logic circuit including storage means for storing a reference value and logic means for comparing the reference

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value to the sensed physical property to determine status of the sensed physical property;

input means operatively associated with the logic circuit for selectively changing the stored reference value to reprogram the switch; and

output switch means operatively associated with the logic circuit to externally indicate status of the sensed property.

5,621,399

CIRCUIT FOR A TRANSDUCER

Martin Gruler, Aixhelm, Germany, assignor to Mannesmann Kienzle GmbH, VS-Villingen, Germany

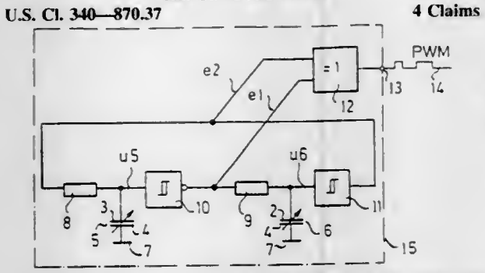
PCT No. PCT/EP93/00342, § 371 Date Aug. 24, 1994, § 102(e) Date Aug. 24, 1994, PCT Pub. No. WO93/17302, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 12, 1993, Ser. No. 290,977

Claims priority, application Germany, Feb. 27, 1992, 42 05 989.5

Int. Cl.[6] G08C *19/10*

U.S. Cl. 340—870.37 **4 Claims**



1. Circuit arrangement for an analytical function generator with a capacitive differential transducer for editing the signals measured by the differential transducer into a transmittable signal at the output of the circuit arrangement which comprises:

two coupled RC-oscillators, wherein a first of said two oscillators is arranged in the feedback of the second of said two oscillators and the capacitance of said two oscillators is formed by one of the two partial capacitances of the differential transducer,

two bistable trigger circuits connecting said two oscillators with one another, wherein one of said two trigger circuits causes a level inversion; and

a gate for the linkage of the partial signals appearing at the output of said two trigger circuits so that a logic twin pulse signal corresponding to the measured magnitude or variable is generated at the output of said gate.

5,621,400

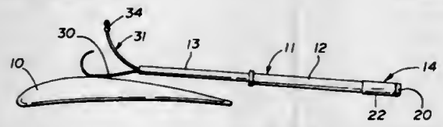
ICE DETECTION METHOD AND APPARATUS FOR AN AIRCRAFT

Ronald W. Corbi, 368 Edgewood Dr., Columbiana, Ohio 44408

Filed Sep. 7, 1995, Ser. No. 524,637

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—962 **6 Claims**



1. A method to detect ice on aircraft surfaces comprising the steps of:

a. providing an apparatus comprising: a pair of spaced conductor probes each having a conductor terminal, and a light source; said probes and said light source connected to a power source so that an electric circuit is formed across the spaced conductor probe terminals which act as a switch means when bridged by a conductive medium; wherein said probe terminals and said light source are protruding from a tubular housing for use as a handle during use;

b. contacting said probe terminals with an aircraft surface;

c. generating a signal in said electric circuit based on the absolute electrical conductivity across said probe terminals through the contacted aircraft surface;

d. activating said light source in case of absolute conductivity of said contacted aircraft surface as an indication of no ice being formed on said contacted aircraft surface, and deactivating said light source in case of absence of said absolute conductivity of said contacted aircraft surface as an indication of ice detected on said contacted aircraft surface.

5,621,401

CIRCUIT FOR SENSING INPUT CONDITIONING OF KEYBOARD

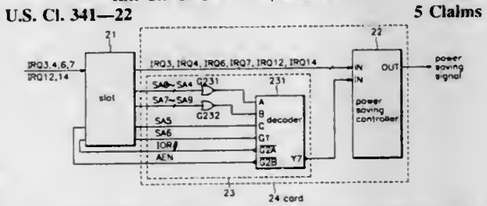
Phil-jung Jeon, Suwon, and Bong-lak Choi, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Inc., Suwon, Rep. of Korea

Filed Jul. 24, 1995, Ser. No. 506,037

Claims priority, application Rep. of Korea, Jul. 23, 1994, 94-17835

Int. Cl.[6] H03K *17/94;* **H03M** *11/00*

U.S. Cl. 341—22 **5 Claims**



1. A circuit for sensing input conditions of a keyboard for a computer having a power-saving function, keyboard data from said keyboard being communicated within said computer via regulated signal lines, said circuit comprising:

a slot coupled to said regulated signal lines;

a circuit card adapted to communicate with said regulated signal lines through said slot, said circuit card including:

a keyboard monitoring circuit which senses said keyboard input conditions and generates a keyboard active signal in accordance with said keyboard data communicated via said regulated signal lines; and

a power saving controller which invokes said power-saving function of said computer in accordance with said keyboard active signal from said keyboard monitoring circuit.

5,621,402

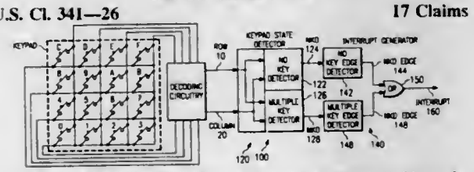
KEYPAD SCANNER

Michael E. Spak, Kyle, and Dale E. Gulick, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 21, 1993, Ser. No. 95,923

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—26 **17 Claims**



1. A keypad scanner for a keypad having a plurality of keys for providing user input to a user input receivable device, each one of said plurality of keys having a pressed and unpressed position, said keypad scanner comprising:

a no key down signal generating means for detecting when none of said plurality of keys are in a pressed down position, and for generating a no key down signal in response thereto;

a multiple key down signal generating means for detecting when more than one of said plurality of keys are in a pressed down position, and for generating a multiple key down signal in response thereto;

an interrupt signal generator means, coupled to said no key down signal generating means, said multiple key down signal generating means, and said user input receivable device, for detecting said no key down signal and said multiple key down signal, and for generating an interrupt signal responsive to either said no key down signal or Said multiple key down signal to said user input receivable device; and

wherein said interrupt signal generator means comprises means for detecting an edge of said no key down signal.

5,621,403

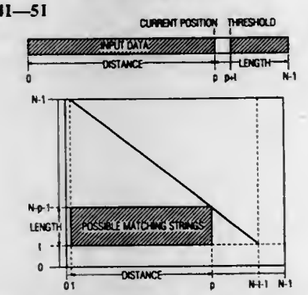
DATA COMPRESSION SYSTEM WITH EXPANDING WINDOW

Yuriy Reznik, Kiev, Ukraine, assignor to Programmed Logic Corporation, Somerset, N.J.

Filed Jun. 20, 1995, Ser. No. 492,733

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—51 **7 Claims**



1. A method for compressing data including N characters in an input block where p is the current position of a character in said block, d is the distance of a matching string in a window of input data, t is a threshold, and l is the length of a given string, said method comprising the steps of:

a. determining the distance d of a character string in said block from a substantially identical string in said window of input data;

b. performing a transformation that combines d, l, and p of said character string into a single value X; and,

c. repeating steps (a) and (b) above until input data is exhausted, thereby producing a plurality of values X_i to form a string of compressed data wherein the frequency distribution of the X_i values are such that they can be more efficiently encoded by statistical encoding as opposed to encoding d_i and l_i values separately.

5,621,404

DIGITAL-TO-DIGITAL SAMPLE RATE CONVERTER

Rainer Heiss, Roedermark, and Markus Schu, Buettelborn, both of Germany, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

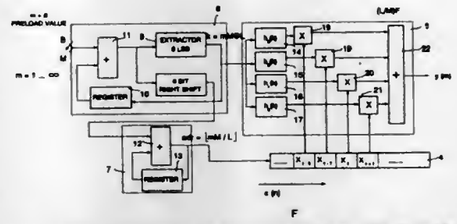
Filed Dec. 23, 1994, Ser. No. 362,912

Claims priority, application European Pat. Off., Jul. 25, 1994, 94111557

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—61 **23 Claims**

1. A digital-to-digital sample rate converter for converting digital input signals (x(n)) having a first sample rate (F) into digital



output signals (y(m)) having a second sample rate (F·L/M with L and M being integer values), the digital-to-digital sample rate converter comprising:

a digital lowpass filter having a piecewise continuous linear hull curve for processing digital input signal (x(n)) in accordance with a set of filter coefficients (h(k)),

wherein the piecewise continuous linear hull curve of the digital lowpass filter is an approximation of a (sin x)/x curve with

x=Π·F*·t

F* :=sample rate

t :=time

wherein the piecewise continuous linear hull curve consists of two intersection straight lines for each segment of the hull curve with x between Π·i<x<Π·(i+1) and index i having integer values.

5,621,405

VARIABLE-LENGTH DECODING APPARATUS USING RELATIVE ADDRESS

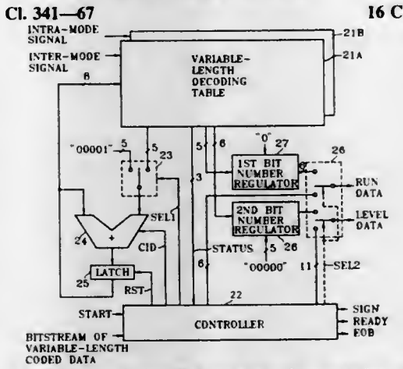
Ju-ha Park, Suwon, and Jechang Jeong, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 13, 1995, Ser. No. 543,038

Claims priority, application Rep. of Korea, Oct. 17, 1994, 94-26541

Int. Cl.[6] H03M *7/40;1/40*

U.S. Cl. 341—67 **16 Claims**



1. A variable-length decoding apparatus for outputting symbol data corresponding to received variable-length-coded data, the variable-length decoding apparatus comprising:

memory means including a plurality of storage regions and for outputting information stored in one of said storage regions designated by an absolute address data, wherein each said storage corresponds to an absolute address and stores relative address data, a status signal representing whether or not a symbol is determined, and symbol data;

absolute address generation means for generating said absolute address data in response to a control signal and a relative address data supplied from one of said storage regions of said memory means; and

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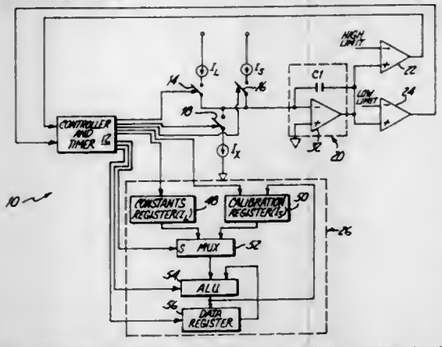
control means for generating said control signal in response to a bit of the received variable-length coded data and a status signal supplied from said memory means.

5,621,406

SYSTEM FOR CALIBRATING ANALOG-TO-DIGITAL CONVERTER

Charles E. Goetzinger, Bloomington, and David E. Tetzlaff, Minnetonka, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 29, 1994, Ser. No. 315,102
Int. Cl.[6] H03M *1/10*
U.S. Cl. 341—120 **33 Claims**



1. A method of calibrating an analog-to-digital converter having a charge accumulator and first and second reference charge transfer circuits providing first and second reference charge, respectively, the method comprising:

accumulating a first quantity of charge in the accumulator during a first accumulation time period;

removing accumulated charge from the first quantity of charge in the accumulator by applying the first and second reference charge transfer circuits to the accumulator in first and second time periods, respectively, until the accumulated charge in the accumulator reaches a threshold level;

accumulating a second quantity of charge in the accumulator during a second accumulation time period;

removing accumulated charge from the second quantity of charge in the accumulator by applying the first and second reference charge transfer circuits in third and fourth time periods, respectively, until the accumulated charge reaches the threshold level;

computing relative magnitudes of the first and second reference charge provided by the first and second reference charge transfer circuits based on the relative magnitudes of the first and second quantities of charge and the applications of the first and second reference charge transfer circuits during the first, second, third and fourth time periods; and

performing subsequent analog-to-digital conversions based on the relative magnitudes of the first and second reference charge computed.

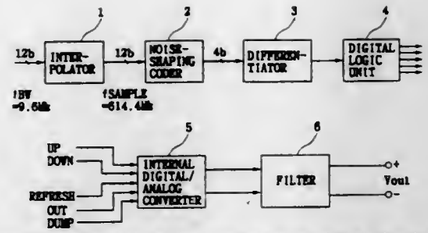
5,621,407

DIGITAL/ANALOG CONVERTER

Deog-Kyoon Jeong, and Daejeong Kim, both of Seoul, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Jan. 10, 1995, Ser. No. 370,904
Claims priority, application Rep. of Korea, Dec. 3, 1994, 32710-1994
Int. Cl.[6] H03M *3/02*
U.S. Cl. 341—143 **19 Claims**

1. A ΔΣ digital/analog converter comprising:



interpolation means for sampling an input digital signal at a desired ratio;

noise-shaping coding means for quantizing an output signal from said interpolation means into coded bits and modulating a quantization error generated in the quantization;

differentiating means for detecting an intersignal variation of the output signal from said noise-shaping coding means, said intersignal variation indicating a difference between previous and present digital signal values;

digital logic means for generating control signals according to the intersignal variation detected by said differentiating means;

internal digital/analog conversion means for performing charging and discharging operations in response to the control signals from said digital logic means to output an analog signal corresponding to the input digital signal; and

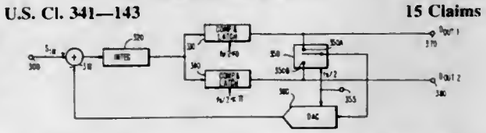
filtering means for filtering an output signal from said internal digital/analog conversion means to remove a mixed noise therefrom.

5,621,408

DELTA SIGMA ANALOG-TO-DIGITAL CONVERTER WITH TEMPORALLY INTERLEAVED ARCHITECTURE

Brian V. Cake, Sea Girt, N.J.; Jean-Francois Goumaz, Geneva, Switzerland, and Walter O. LeCroy, Nyack, N.Y., assignors to LeCroy Corporation, Chestnut Ridge, N.Y.

Filed Feb. 24, 1995, Ser. No. 394,427
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **15 Claims**



1. An analog to digital converter for converting an analog input signal to at least two digital output signals, comprising:

subtracting means for subtracting a feedback signal from said analog input signal to produce a difference signal;

integrating means for integrating said difference signal to produce an integrated signal;

quantizing means for quantizing said integrated signal to produce said at least two digital output signals in response to respective control signals each having a predetermined frequency and being offset in phase from each other; and

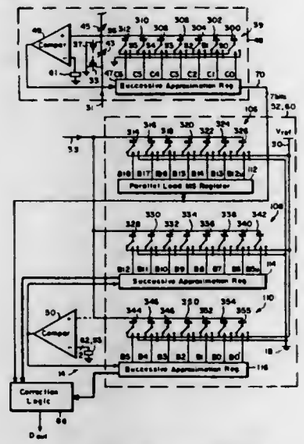
means for converting said at least two digital output signals into said feedback signal, wherein said feedback signal has a first frequency, and said predetermined frequency is said first frequency divided by the number of said digital output signals.

5,621,409

ANALOG-TO-DIGITAL CONVERSION WITH MULTIPLE CHARGE BALANCE CONVERSIONS

Martin G. Cotter, Co. Clare, and Patrick J. Garavan, Limerick, both of Ireland, assignors to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 15, 1995, Ser. No. 390,951
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—156 **51 Claims**



1. An analog-to-digital converter, comprising:

an analog input node,

a first charge redistribution analog-to-digital converter circuit having

an analog input operatively connected to the analog input node and

a parallel digital conversion result output, the parallel digital conversion result output including a plurality of output lines ranging from most significant to least significant, and

a second charge redistribution analog-to-digital converter circuit having

an analog input operatively connected to the analog input node,

a parallel digital input, the parallel digital input including a plurality of input lines ranging from most significant to least significant, the most significant input lines of the parallel digital input of the second converter circuit being operatively connected to the most significant output lines of the parallel digital output of the first converter circuit, and

a digital output.

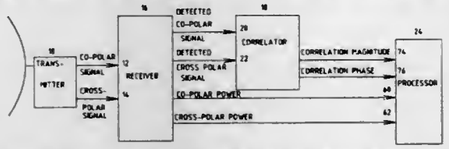
5,621,410

REMOTE PREDICTION OF LIGHTNING HAZARDS

Grant R. Gray; Paul R. Krehbiel, both of Socorro; Stephen E. Mc Crary, Datil; Marx Brook, Socorro; Tiehan Chen, Albuquerque, and William Rison, Socorro, all of N.M., assignors to New Mexico Tech Research Foundation, Socorro, N.M.

Filed Nov. 5, 1992, Ser. No. 972,114
Int. Cl.[6] G01S *13/95*
U.S. Cl. 342—26 **38 Claims**

19. A method of characterizing the buildup and discharge cycle



of electric fields and anticipating an electric event in the atmosphere comprising the steps of:

a) transmitting a polarized radiation signal into the atmosphere in a confined beam;

b) receiving a scattered return signal comprising co-polar and cross-polar components from the transmitted signal due to particles in the atmosphere;

c) processing both the co-polar and cross-polar return signals in real time to obtain a correlation magnitude and phase of the return signals and the powers of the return signals; and

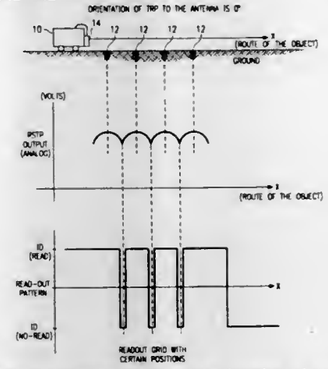
d) using correlation magnitude and phase power or functions of the correlation magnitude and phase and powers of the return signals in order to determine a likelihood of the electric event.

5,621,411

POSITIONING WITH RF-ID TRANSPONDERS

Andreas Hagl, Dachau; Horst Mollik, Offenberg, and Kostantin Aslanidis, Dachau, all of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 130,966, Oct. 4, 1993, abandoned. This application Jun. 20, 1996, Ser. No. 667,297
Int. Cl.[6] G01S *13/75;13/84*
U.S. Cl. 342—42 **4 Claims**



1. A method of determining the exact location of a transponder with respect to a reader, having an antenna and an IC, comprising the steps of:

providing a test pin on said IC with an analog fieldstrength signal representative of the distance between a transponder and a reader antenna, wherein said IC also comprises control and identification information; and

calculating the distance between a transponder and a reader antenna from said analog fieldstrength signal.

5,621,412

MULTI-STAGE TRANSPONDER WAKE-UP, METHOD AND STRUCTURE

Claude A. Sharpe, McKinney; Dwaine S. Hurta, and Mark A. Hamlett, both of Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 233,839, Apr. 26, 1994, Pat. No. 5,471,212. This application Jun. 7, 1995, Ser. No. 479,056
Int. Cl.[6] G01S *13/76*
U.S. Cl. 342—51 **24 Claims**

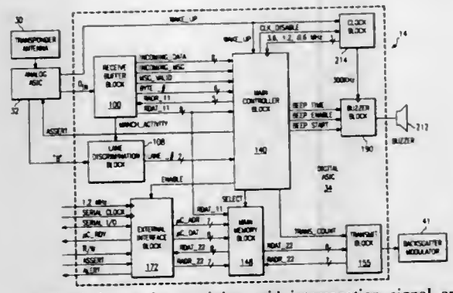
1. A remote identification system comprising an interrogator and a transponder for identifying and locating a vehicle comprising:

an interrogator having a transmitter for transmitting a wake-up signal, an interrogation signal and a continuous wave RF signal and a receiver for receiving a transponder response signal;

a transponder comprising

a wake-up circuit for receiving said wake-up signal and in response to said wake-up signal, applying a clock signal to a modulating circuit in said transponder;

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a discriminator for receiving said interrogation signal and determining which lane said transponder is located;

said modulating circuit for modulating said received continuous wave RF signal with transponder reply data upon receipt of said clock signal.

5,621,413

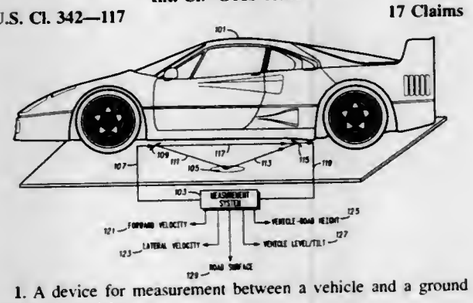
VEHICLE-GROUND SURFACE MEASUREMENT SYSTEM

Robert B. Lempkowski, Elk Grove; Sanjar Ghaem, Palatine, and W. J. Kitchen, North Barrington, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 29, 1995, Ser. No. 496,512

Int. Cl.[6] G01S *13/60*

U.S. Cl. 342—117 **17 Claims**



1. A device for measurement between a vehicle and a ground surface comprising:

a transmitter-antenna for emitting energy toward the ground surface in a first polarization and a second polarization;

a receiving antenna oriented facing toward the ground surface for receiving energy reflected from the ground surface along a reflected path in both the first and second polarizations, the receiving antenna providing phase and amplitude signals corresponding to energy received along the reflected path for each of the first and second polarizations; and

a decoder for providing separate indications of forward and sideward velocity of the vehicle relative to the ground surface dependent on the provided phase and amplitude signals for each of the first and second polarizations.

5,621,414

LOCATION CONFIRMING SYSTEM

Yoshikatsu Nakagawa, Yamato, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

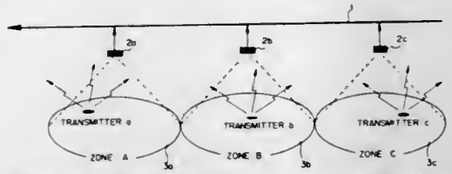
Filed Jun. 8, 1994, Ser. No. 257,678

Claims priority, application Japan, Jun. 8, 1993, 5-163966; Dec. 9, 1993, 5-308909

Int. Cl.[6] G01S *1/00*

U.S. Cl. 342—350 **25 Claims**

1. A location confirming system having movable objects existing in a limited area and carrying respective transmitters emitting respective signals, comprising:



means for monitoring and receiving the respective signals at a plurality of receiving stations arranged respectively in zones using only a unidirectional signal path from said transmitters to said receiving stations, and

means for determining one of said zones in which one of said transmitters is present by comparing magnitudes of electric power of said signals with each other at said respective receiving stations.

5,621,415

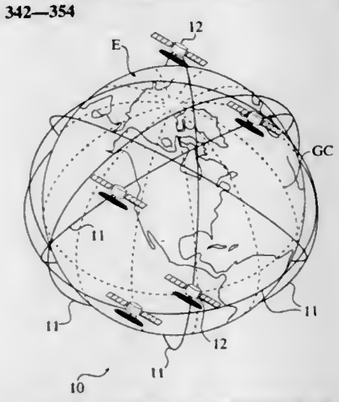
LINEAR CELL SATELLITE SYSTEM

Edward F. Tuck, West Covina, Calif., assignor to Teledesic Corporation, Kirkland, Wash.

Filed Nov. 15, 1994, Ser. No. 340,004

Int. Cl.[6] H04B *7/185;* **H01Q** *3/00*

U.S. Cl. 342—354 **8 Claims**



1. A method for controlling the transmission of a beam of radiated energy (**15***a*, **15***b*, **15***c*) to a terminal (P, M, F, G) from a position above the Earth (E) comprising the steps of:

operating a satellite (**12**) in an Earth orbit (**11**);

said satellite (**12**) having a track (T') with respect to a point on the Earth's surface while flying in a direction (T) at an altitude above the Earth (E) which is not an Equatorial geosynchronous altitude;

said satellite (**12**) having a radiation interface (**14**);

said radiation interface (**14**) being capable of transmitting said beam of radiated energy (**15***a*, **15***b*, **15***c*) to said terminal (P, M, F, G);

forming a footprint (**16***a*, **16***b*, **16***c*) using said radiation interface (**14**) which is capable of transmitting said beam of radiated energy (**15***a*, **15***b*, **15***c*) to said terminal (P, M, F, G);

partitioning said footprint (**16***a*, **16***b*, **16***c*) into at least one linear spanning cell (**18**);

said linear spanning cell (**18**) extending across entire said footprint (**16***a*, **16***b*, **16***c*);

said linear spanning cell (**18**) having a longitudinal axis (**20**);

aligning said longitudinal axis (**20**) of said linear spanning cell (**18**) continually, generally parallel to said track (T') of said satellite (**12**) on the Earth's surface; and

directing said beam of radiated energy (**15***a*, **15***b*, **15***c*) to said linear spanning cell (**18**) in said footprint (**16***a*, **16***b*, **16***c*) by rotating the direction of said beam of radiation energy (**15***a*, **15***b*, **15***c*) by an amount generally equal to a correction angle $\phi(L)$.

5,621,416

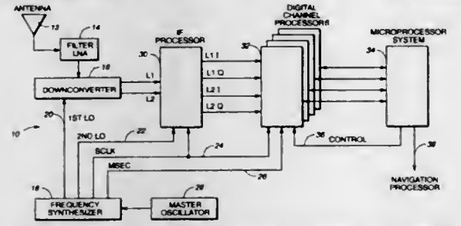
OPTIMIZED PROCESSING OF SIGNALS FOR ENHANCED CROSS-CORRELATION IN A SATELLITE POSITIONING SYSTEM RECEIVER

Gary R. Lennen, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 382,889, Feb. 2, 1995. This application Jun. 16, 1995, Ser. No. 491,415

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **20 Claims**



1. A system for optimum correlation processing of L1 and L2 signals received from a SPS satellite by a SPS RECEIVER, said system comprising:

a RECEIVING MEANS for receiving a known C/A code modulated on L1 carrier frequency, for receiving an unknown Y code modulated on L1 carrier frequency signal, and for receiving an unknown Y code modulated on L2 carrier frequency signal from at least one satellite; wherein said received L1 , and L2 signals contain propagation noise; and wherein said Y code comprises a known P code and an unknown W code; and

at least one DIGITAL CHANNEL PROCESSING MEANS for:

(1) locally generating replica of said C/A code modulated on L1 carrier frequency signal;

(2) locally generating replica of said P code modulated on L1 carrier frequency signal, wherein said locally generated replica of L1 signal do not contain propagation noise;

(3) extracting of an estimate of said Y code from said L1 signal, and from said L2 signal, wherein said estimate signals contain propagation noise;

(4) correlating a locally generated replica of C/A code with the received L1 code for obtaining an estimate of L1 group delay (L1 pseudo-range) and L1 carrier phase:

(5) removing said P code from said locally extracted estimate of said L1 Y code to obtain a locally extracted estimate of said L1 W code;

(6) removing said P code from said locally extracted estimate of said L2 Y code to obtain a locally extracted estimate of said L2 W code; and

(7) correlating said locally extracted estimate of said L1 W code with said locally extracted estimate of said L2 W code to obtain relative offset in group delay between L1 and L2 signals and for obtaining an independent estimate of L2 carrier phase; and

wherein said RECEIVING MEANS further comprises:

a dual frequency patch ANTENNA MEANS for receiving said L1 and L2 satellite signals:

a FILTER/LNA MEANS conductively connected to said ANTENNA MEANS for performing filtering and low noise amplification of said L1 and L2 signals, wherein said FILTER/LNA determines the noise/signal ratio of the received signals L1 and L2;

a DOWNCONVERTER MEANS conductively connected to said FILTER/LNA MEANS for mixing and converting said L1 and L2 signals; and

an IF PROCESSOR MEANS conductively connected to said DOWNCONVERTER MEANS for transforming, said converted L1 and L2 signals into digitally sampled quadrature versions of L1 and L2 signals (IL1 , QL1 , IL2 , QL2);

a MASTER OSCILLATOR MEANS; and

a FREQUENCY SYNTHESIZER MEANS conductively connected to said MASTER OSCILLATOR MEANS, to said IF PROCESSOR MEANS, to said DOWNCONVERTER MEANS, and to at least one said DIGITAL, CHANNEL PROCESSING MEANS, wherein said FREQUENCY SYNTHESIZER MEANS generates several timing signals; and

wherein said IF PROCESSOR MEANS further comprises:

a first POWER SPLITTER MEANS connected to said DOWNCONVERTER MEANS and to said FREQUENCY SYNTHESIZER MEANS for power splitting said L1 signal into two signals;

a second POWER SPLITTER MEANS connected to said DOWNCONVERTER MEANS and to said FREQUENCY SYNTHESIZER MEANS for power splitting said L2 signal into two signals;

a first MULTIPLIER MEANS for multiplying said L1 signal with an inphase (I) version of said second LO2 signal to produce an IL1 signal;

a second MULTIPLIER MEANS for multiplying said L1 signal with a quadrature (Q) version of said second LO2 signal to produce a QL1 signal;

a third MULTIPLIER MEANS for multiplying said L2 signal with an inphase (I) version of said 2-nd LO2 signal to produce an IL2 signal

a fourth MULTIPLIER MEANS for multiplying said L2 signal with a quadrature (Q) version of said 2-nd LO2 signal to produce a QL2 signal;

a first AMPLIFIER MEANS connected to said first MULTIPLIER MEANS for amplifying said IL1 signal;

a second AMPLIFIER MEANS connected to said second MULTIPLIER MEANS for amplifying said QL1 signal;

a third AMPLIFIER MEANS connected to said third MULTIPLIER MEANS for amplifying said IL2 signal;

a fourth AMPLIFIER MEANS connected to said fourth MULTIPLIER MEANS for amplifying said QL2 signal;

a first one-bit analog-to-digital (A/D) CONVERTER MEANS connected to said first AMPLIFIER MEANS for performing 1-bit quantization operation on said IL1 signal;

a second one-bit analog-to-digital (A/D) CONVERTER MEANS connected to said second AMPLIFIER MEANS for performing 1-bit quantization operation on said QL1 signal;

a third one-bit analog-to-digital (A/D) CONVERTER MEANS connected to said third AMPLIFIER MEANS for performing 1-bit quantization operation on said IL2 signal;

a fourth one-bit analog-to-digital (A/D) CONVERTER MEANS connected to said fourth AMPLIFIER MEANS for performing 1-bit quantization operation on said QL2 signal;

a first FLIP-FLOP MEANS (FF1) connected to said first one-bit A/D CONVERTER for sampling said IL1 signal, wherein said sampling operation is performed by clocking said IL1 signal through said FF1at sampling clock (SCLK) rate;

a second FLIP-FLOP MEANS (FF2) connected to said second one-bit A/D CONVERTER for sampling said QL1 signal, wherein said sampling operation is performed by clocking said QL1 signal through said FF2at sampling clock (SCLK) rate;

a third FLIP-FLOP MEANS (FF3) connected to said third one-bit A/D CONVERTER for sampling said IL2 signal, wherein said sampling operation is performed by clocking said IL2 signal through said FF3 at sampling clock SCLK) rate; and

a fourth FLIP-FLOP MEANS (FF4) connected to said fourth one-bit A/D CONVERTER for sampling said QL2 signal, wherein said sampling operation is performed by clocking said QL2 signal through said FF4 at sampling clock (SCLK) rate; and

wherein each said DIGITAL CHANNEL PROCESSING MEANS further comprises:

an L1 TRACKER MEANS for tracking L1 C/A code when Y code is ON and for tracking L1 P code when Y code is OFF;

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an L2 TRACKER MEANS connected to said L1 TRACKER MEANS for tracking an enhanced cross correlated W code when Y code is ON and for tracking L2 P code when Y code is OFF; and

a MICROPROCESSOR MEANS system connected to said L1 TRACKER MEANS and to said L2 TRACKER MEANS;

wherein said L1 TRACKER MEANS is fed by digitized inphase IL1 and quadrature QL1 of L1 signal outputted by said IF PROCESSOR MEANS; and

wherein said L2 TRACKER MEANS is fed by digitized inphase I L2 and quadrature QL2 of L2 signal outputted by said IF PROCESSOR MEANS; and

wherein each said L1 and L2 TRACKER MEANS are synchronously clocked by said SCLK signal and synchronously referenced by said MSEC signal to local reference time; said SCLK and MSEC signals being outputted by said FREQUENCY SYNTHESIZER MEANS; and

wherein said L2 TRACKER MEANS when Y code is ON is fed from said L1 TRACKER MEANS by generated by said L1 TRACKER MEANS three signals: L1 P code, filtered estimate of L1 W code, and C/A code epoch (EP code); and

wherein said MICROPROCESSOR MEANS system is fed by output signals from said L1 TRACKER MEANS and said L2 TRACKER MEANS; and

wherein said L1 TRACKER MEANS and said L2 TRACKER MEANS are fed by control signal from said MICROPROCESSOR MEANS; and

wherein said L1 TRACKER MEANS further comprises:

a CODE GENERATOR MEANS for providing a locally generated replica of C/A code and P code;

a MULTIPLEXER MEANS 1 connected to said CODE GENERATOR MEANS for selecting a locally generated code C/A when Y code is ON and for selecting a locally generated P code when Y code is OFF, said MULTIPLEXER MEANS 1 being controlled by said MICROPROCESSOR MEANS system;

a carrier numerically controlled oscillator (CARRIER NCO MEANS 1) connected to said MULTIPLEXER MEANS 1;

a CARRIER MIXER MEANS 1 connected to said CARRIER NCO MEANS 1 for multiplying outputted by said IF PROCESSOR MEANS digitized inphase IL1 and Q L1 signals having carrier frequency with outputted by said CARRIER NCO MEANS 1 inphase and quadrature components of digital carrier; wherein said CARRIER MIXER MEANS 1 outputs inphase IL1 and quadrature Q L1 signals having zero carrier frequency;

a CODE MIXER MEANS 1 connected to said CARRIER MIXER MEANS 1, connected to said CODE GENERATOR MEANS and connected to said CARRIER NCO MEANS 1 for code correlating said CARRIER MIXER MEANS 1 output signals with said locally generated replica of C/A code; wherein when said L1 TRACKER MEANS's carrier tracking loop is closed via said CARRIER NCO MEANS 1 the input to said CODE MIXER MEANS 1 represents the satellite signal L1 C/A code; and wherein said CODE MIXER MEANS 1 performs said code correlation at 3 time points (early, punctual and late) on the autocorrelation function graph creating an early, a punctual and a late sample of the autocorrelation function;

a block CORRELATORS MEANS 1 connected to said CODE MIXER MEANS 1 for integrating said early, punctual and late samples of said autocorrelation function; wherein said CORRELATORS MEANS 1 output signal is fed to said MICROPROCESSOR MEANS system at a rate of L1 C/A code epoch, and wherein said MICROPROCESSOR MEANS uses said CORRELATORS MEANS 1 output signal to develop feedback signals for the carrier tracking loop and for the code tracking loop;

a code numerically controlled oscillator (CODE NCO MEANS) connected to said block CORRELATORS MEANS 1 and connected to said CODE GENERATOR MEANS for providing a clocking signal at C/A code rate and for providing a clocking signal at P code rate, said C/A code clocking rate and said P code clocking rate driving said CODE GENERATOR MEANS; said CODE NCO MEANS also providing a mechanism for aligning said locally generated replica of C/A code with said incoming satellite C/A code;

a CODE MIXER MEANS 2 connected to said CARRIER MIXER MEANS 1 and connected to said CODE GENERATOR MEANS, said CARRIER MIXER MEANS 1 outputting an estimate of L1 Y code as an input to said CODE MIXER MEANS 2, said CODE GENERATOR MEANS outputting said local replica of known L1 P code as input to said CODE MIXER MEANS 2, wherein said CODE MIXER MEANS 2 removes known L1 P code from said estimate of L1 Y code and outputs an estimate of L1 W code;

a DIGITAL DELAY MEANS 1 connected to said CODE MIXER MEANS 2 for delaying under said MICROPROCESSOR MEANS system control said L1 W code estimate;

a DIGITAL FILTER MEANS 1 connected to said DIGITAL DELAY MEANS 1 for reducing the bandwidth of said L1 W code estimate; wherein said delayed and filtered L1 W code estimate is sent for processing to said L2 TRACKER MEANS;

a DIGITAL DELAY MEANS 2 connected to said CODE GENERATOR MEANS for delaying said P code output from said CODE GENERATOR MEANS, wherein said delayed P code is sent to said L2 TRACKER MEANS; and

a RESOLVER MEANS connected to said CARRIER NCO MEANS 1 for toggling the digital delay between the two delays in the DIGITAL DELAY 1 and in the DIGITAL DELAY 2, wherein the resulting delay is the average of the relative time spent on each said delay;

and wherein said L1 C/A code epoch (EP) is sent to said L2 TRACKER MEANS; and

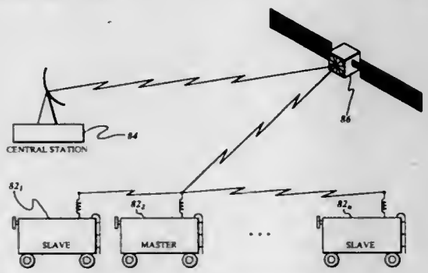
wherein said DIGITAL FILTER MEANS 1 further comprises a finite impulse response (FIR) DIGITAL FILTER 1; and wherein said FIR DIGITAL FILTER 1 performs the enhanced cross correlation operation by matching the observed W-code spectrum and by optimizing the signal-to-noise (STN) ratio of the cross-correlation process.

5,621,417

METHOD AND MECHANISM FOR REDUCTION OF WITHIN-TRAIN REPORTED DATA

Amer A. Hassan, Cary, N.C., and John E. Hershey, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1995, Ser. No. 484,754
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—457 **7 Claims**



1. A method of tracking assets comprising the steps of:

affixing a tracking unit to each asset to be tracked;

establishing a mobile local area network of tracked assets between a plurality of tracking units in close proximity, each of said tracking units constituting a node of the mobile local area network;

establishing a master tracking unit among tracking units in the mobile local area network, all other tracking units in the mobile local area network being slave tracking units; and

approximately locating each one of the slave tracking units in the mobile local area network with respect to the master tracking unit by

transmitting a tone signal from the master tracking unit to each one of the slave units,

tracking a returned tone signal from each one of the slave units respectively, and

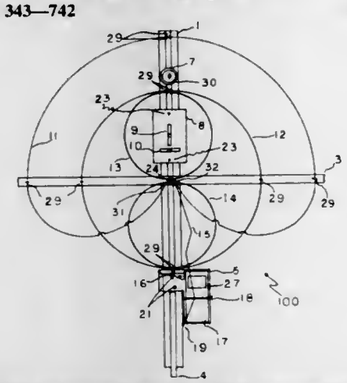
measuring a distance between the master tracking unit and each one of the slave units, respectively, as a phase difference in transmitted and returned tone signals, respectively.

5,621,418

FM-VERY HIGH FREQUENCY METAL DETECTOR

Daniel P. Maloney, Rt. 1 Box 313G, 1163 120 St., Roberts, Wis. 54023

Filed May 25, 1995, Ser. No. 450,413
Int. Cl.[6] H01Q *1/16*
U.S. Cl. 343—742 **2 Claims**



1. A FM underground metal detection antenna system using propagated radio waves, capable of detecting metal several hundred feet into the ground, comprising:

a wood main frame;

attached 28" W×25" L modified circular antenna loops;

a full circle nondirectional antenna and a full curve antenna;

said modified loops being separated by ⅜ inch of space between them, and said full circle nondirectional antenna fitting tightly on the outer parts of said modified loops;

said full curve antenna fitting above and on top of said modified loops and on top of said full circle antenna at crossover points;

said modified loops and said full curve antenna being connected to a first end of a sensitive FM receiver antenna via a first copper strand wire; and

said full circle nondirectional antenna being connected to a second end of said sensitive FM receiver antenna via a second copper strand wire.

5,621,419

CIRCULAR SLOT ANTENNA

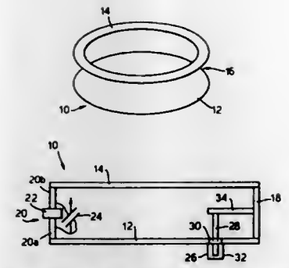
Thomas R. Meek, Felixstowe, and Ian J. Dilworth, Capel St. Mary, both of England, assignors to Schlumberger Industries Limited, London, England

Filed May 23, 1995, Ser. No. 447,510
Claims priority, application United Kingdom, May 26, 1994, 9410557
Int. Cl.[6] H01Q *13/10*
U.S. Cl. 343—770 **16 Claims**

1. A circular slot antenna for a radio transmitter, the antenna comprising:

a pair of planar, generally circular, conductive members which are substantially coaxial with the parallel to each other and spaced apart to define a slot therebetween and which comprise a first disc-shaped substantially flat conductive member, conductive over substantially its entire surface area and serving as a ground plane of the antenna, and a first annular conductive member, with its outside diameter less than or equal to that of said one conductive member; the antenna further comprising;

input means comprising an elongated conductive pillar which extends between and electrically interconnects the conductive members, a first input at a selected point along the length of said pillar, and a second input on the disc-shaped conductive member serving as ground plane of the antenna.

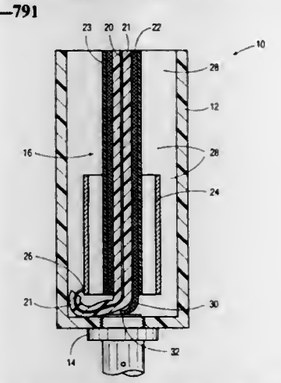


5,621,420

DUPLEX MONOPOLE ANTENNA

John F. Benson, Glendora, Calif., assignor to Comant Industries, Inc., Santa Fe Springs, Calif.

Filed Apr. 7, 1995, Ser. No. 418,533
Int. Cl.[6] H01Q *9/04*
U.S. Cl. 343—791 **15 Claims**



1. A duplex monopole antenna having a predetermined center frequency of a predetermined frequency band comprising,

a first elongated radiating member having a lower portion and an upper portion,

a coaxial cable connector having its center conductor electrically connected to one of said upper and lower portions for applying electrical energy thereto,

a second elongated radiating member surrounding said lower portion, and

coupling means for coupling to said second member a portion of the electrical energy applied to said first member,

said first member comprising a coaxial cable and said coaxial cable connector center conductor being electrically connected to said lower portion of said first member, and

said coaxial cable comprising a shield and a conductor member being connected between the substantial bottom of said shield and the center conductor of said connector.

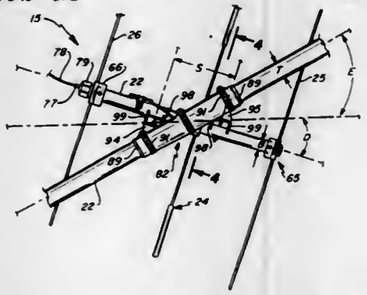
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5,621,421

ANTENNA AND MOUNTING DEVICE AND SYSTEM

Arvin L. Kolz, and C. Edward Knittle, both of Lakewood, Colo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 3, 1994, Ser. No. 316,900
Int. Cl.[6] H01Q *1/12*
U.S. Cl. 343—892 **21 Claims**



1. A mounting device for mounting an antenna to an aircraft for handling radio signals during flight, said device comprising:

first clamping means including an aircraft clamping bracket for gripping an external portion of a strut of an aircraft,

arm means extending out from said first clamping means and having opposite ends, said first clamping means at one of said ends, said arm means including a pair of spaced rigid arms that are twisted along a longitudinal axis in opposite directions through preselected angles to be oriented relative to said first clamping means at a selected fixed angle relative to an axis normal to said first clamping means for positioning said antenna relative to said strut at a selected separation distance from the aircraft and at a preselected limed angle of elevation to the horizontal, and

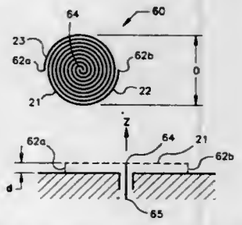
second clamping means at the other end of said arm means opposite said first clamping means for gripping said antenna.

5,621,422

SPIRAL-MODE MICROSTRIP (SMM) ANTENNAS AND ASSOCIATED METHODS FOR EXCITING, EXTRACTING AND MULTIPLEXING THE VARIOUS SPIRAL MODES

Johnson J. H. Wang, Marietta, Ga., assignor to Wang-Tripp Corporation, Marietta, Ga.

Filed Aug. 22, 1994, Ser. No. 293,668
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 **26 Claims**



1. A spiral-mode microstrip antenna having a desired radiation pattern at specific angles about the antenna, comprising:

a ground plane element;

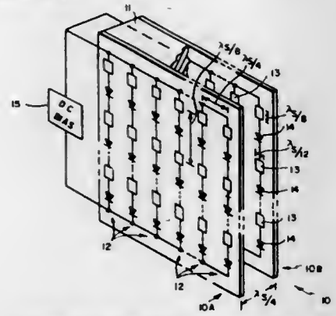
a spiral-mode antenna element having a plurality of arms extending outwardly in a plane from a central portion, said arms having respective feed points, said antenna element being generally parallel to and spaced from said ground plane element by a distance, said antenna element being capable of supporting one or more spiral mode excitation patterns; and means for affecting the shape of said spiral mode patterns with a desired peak gain at specific angles with respect to said ground plane element, said means comprising a shorting mechanism connecting an arm to said ground plane element at a desirable location along the length of said arm and distinguishable from a feed point associated with said arm.

5,621,423

ELECTROMAGNETIC ENERGY SHIELD

Jean-Claude Sureau, Boston, Mass., assignor to Radant Systems, Inc., Stow, Mass.

Filed Aug. 29, 1983, Ser. No. 527,029
Int. Cl.[6] H01Q *15/02;15/24*
U.S. Cl. 343—909 **12 Claims**



1. A structure for selectively transmitting electromagnetic energy, said structure comprising:

at least a pair of shutter members mounted in said structure, each of said members including

a plurality of parallel paths, each path comprising a plurality of separate two-dimensional, planar conductive elements;

diode means interconnecting adjacent elements in each said path;

means for biasing said diode means in a non-conductive direction during a first operating mode so that said shutter members have substantially capacitive characteristics over a selected frequency range so as to permit the substantial transmission through said members of electromagnetic energy incident thereon within said selected frequency range and to prevent transmission outside said selected frequency range and for biasing said diode means in a conductive direction during a second operating mode so that said shutter members have substantially inductive characteristics so as to substantially prevent the transmission of electromagnetic energy through said members within and outside said frequency range.

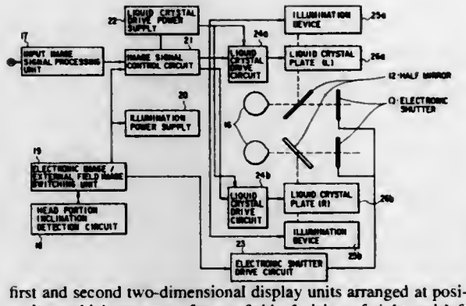
5,621,424

HEAD MOUNT DISPLAY APPARATUS ALLOWING EASY SWITCHING OPERATION FROM ELECTRONIC IMAGE TO EXTERNAL FIELD IMAGE

Naoto Shimada; Toshiro Okamura; Seiichiro Tabata; Satoshi Imai; Osamu Konuma; Koh Mohri, and Yuki Tokuhashi, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 100,970, Aug. 3, 1993, abandoned.
This application Feb. 16, 1995, Ser. No. 390,821
Claims priority, application Japan, Aug. 24, 1992, 4-224012; Oct. 6, 1992, 4-267503
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—8 **17 Claims**

1. A display apparatus, which can be mounted on a head portion of a person using the display apparatus, the display apparatus comprising:



first and second two-dimensional display units arranged at positions which are away from a field of vision of right and left eyeballs of a user, for displaying images corresponding to the right and left eyeballs of the user respectively;

first and second image enlargement and projection optical systems for optically enlarging the images displayed on said first and second two-dimensional display units;

a shutter unit, arranged in front of the eyeball of the user;

an inclination detector for detecting at least a forward inclination of motions of the head portion of the user;

control means for controlling said shutter unit in accordance with an output signal from said inclination detector, and for switching said shutter unit between a light transmission state when the user inclines the head portion forward, and a light-shielding state when the user does not incline the head portion forward;

first and second semi-transparent reflection units, arranged between said shutter unit and said right and left eyeballs, for overlapping in a certain region the first and second images enlarged by said image enlargement and projection optical systems and an external image transmitted through said shutter unit and for projecting said first and second images and said external images onto retinas of said right and left eyeballs; and

a housing, which encloses and holds all of said first and second two-dimensional display units, said first and second enlargement and projection optical systems, said shutter unit, said first and second semi-transparent reflection units and said inclination detector, and wherein said housing mountable on the head portion of the user and wherein said housing is arranged to prevent light other than light transmitted through said shutter means from being incident on the eyeballs of the user.

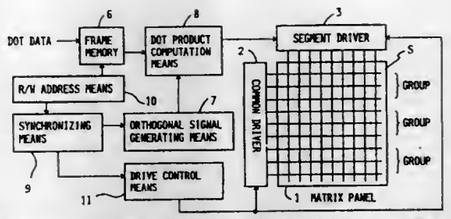
5,621,425

LIQUID CRYSTAL DISPLAY DEVICE

Masafumi Hoshino; Shigeru Senbonmatsu; Hirotomo Oniwa, and Shuhei Yamamoto, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Dec. 21, 1993, Ser. No. 172,633
Claims priority, application Japan, Dec. 24, 1992, 4-344246; Mar. 23, 1993, 5-064425; Mar. 24, 1993, 5-065760; Mar. 24, 1993, 5-065761; Jun. 28, 1993, 5-157449; Jun. 28, 1993, 5-157450; Jun. 28, 1993, 5-157451
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—94 **8 Claims**

1. A liquid crystal display device comprising: a matrix panel comprising a plurality of rows of scanning electrodes, a plurality of columns of signal electrodes, and a liquid crystal layer interposed therebetween; a common driver for driving the rows of the scanning electrodes; a segment driver for driving the columns of the signal electrodes; orthonormal signal generating means for producing a set of orthonormal signals in orthonormal relation with one another and sequentially providing the orthonormal signals in a predetermined combination pattern to the common driver so as to selectively simultaneously drive a predetermined number of the scanning electrodes to effect group sequential scanning according to the combination pattern; a frame memory for storing input dot data corresponding to an image to be displayed during each frame; dot product computation means for computing a dot product of a set of input dot data sequentially retrieved from the frame memory and the set of orthonormal signals transferred from the orthonormal signal generating means, and for applying a computed dot product to the segment driver to drive the columns of the signal electrodes; and synchronizing means for synchronizing a retrieval timing of the dot data from the frame memory with a transfer timing of the orthonormal signals from the orthonormal signal generating means to thereby repeat the group sequential scanning plural times within each cycle; wherein the orthonormal signal generating means includes means for horizontally shifting a phase of the set of orthonormal signals in response to the group sequential scanning to form the combination pattern and for performing one of vertically shifting and interchanging the orthonormal signals each cycle of the group sequential scannings to for the combination pattern.

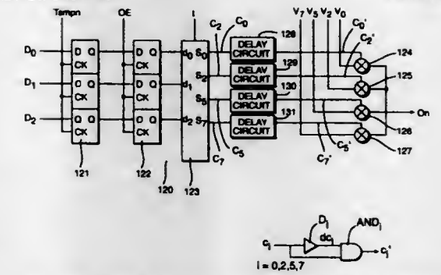


5,621,426

DISPLAY APPARATUS AND DRIVING CIRCUIT FOR DRIVING THE SAME

Hisao Okada, Nara-ken; Tadatsugu Nishitani, Amagasaki, and Toshihiro Yanagi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 210,451, Mar. 21, 1994, abandoned.
This application May 19, 1995, Ser. No. 446,064
Claims priority, application Japan, Mar. 24, 1993, 5-065383
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—95 **12 Claims**



1. A driving circuit for driving a display apparatus in accordance with digital video data received by the driving circuit, comprising:

an input means for receiving a plurality of voltage signals;

control signal generating means for generating a plurality of control signals in accordance with the digital video data;

voltage signal output means for receiving the plurality of control signals and selectively outputting at least one of the plurality of voltage signals to charge a pixel in said display apparatus, wherein the at least one voltage signal is applied in response to at least one of the plurality of control signals; and

signal delay means for delaying by a predetermined delay period the transmission of at least one and less than all of the plurality of control signals to the voltage signal output means when a predetermined change occurs to the control signals.

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5,621,427

METHOD OF DRIVING OPTICAL MODULATION DEVICE

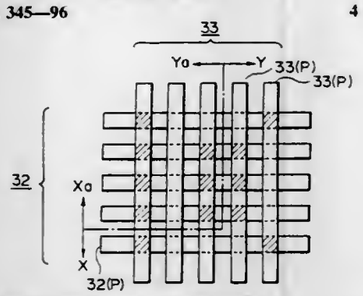
Junichiro Kanbe; Kazuharu Katagiri, both of Yokohama, and Syuzo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 139,162, Dec. 21, 1987, Pat. No. 5,448,383, which is a continuation of Ser. No. 7,408, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 598,800, Apr. 10, 1984, Pat. No. 4,655,561. This application Jun. 5, 1995, Ser. No. 463,780

Claims priority, application Japan, Apr. 19, 1983, 58-068569; Apr. 19, 1983, 58-068660; Jul. 30, 1983, 58-138707; Jul. 30, 1983, 58-138710; Aug. 4, 1983, 58-142954

Int. Cl.[6] G09G *3/34*

U.S. Cl. 345—96 **4 Claims**



1. A liquid crystal apparatus, comprising:

a liquid crystal device comprising a group of scanning electrodes and a group of signal electrodes intersecting each other to form an electrode matrix, and a chiral smectic liquid crystal disposed so as to form a picture element at each intersection of the scanning electrodes and the signal electrodes, and

drive means for:

(a) applying a scanning selection signal and a scanning non-selection signal to the scanning electrodes, said scanning selection signal comprising a voltage of one polarity and a voltage of the other polarity, respectively with reference to a voltage level of said scanning non-selection signal,

(b) in a period of applying said voltage of one or the other polarity, applying data signals to the signal electrodes for causing one or another orientation state of said chiral smectic liquid crystal,

(c) periodically applying the scanning selection signal to the scanning electrodes, to form a display picture, and

(d) during a period of periodically scanning the scanning electrodes with said scanning selection signal, at a time when a demand for partially rewriting the display picture in a region, designating scanning electrodes corresponding to the region for rewriting, applying a scanning selection signal to the designated scanning electrodes, and applying data signals carrying data for the rewriting to the signal electrodes in synchronism with the scanning selection signal.

5,621,428

AUTOMATIC ALIGNMENT OF VIDEO WINDOW ON A MULTIMEDIA SCREEN

Sherman T. King, San Francisco; Tommy C. Lee, Danville, and Scott A. Kimura, San Jose, all of Calif., assignors to AuraVision Corporation, Fremont, Calif.

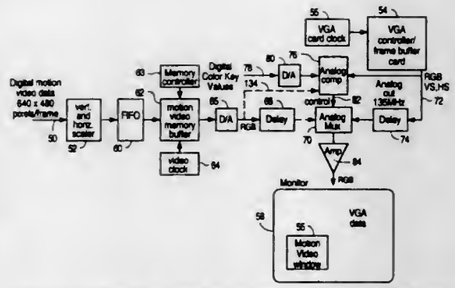
Filed Dec. 12, 1994, Ser. No. 354,188

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—118 **4 Claims**

1. A method for automatically aligning video data with a video window on a display screen, said method comprising the steps of:

storing a selected color key in a graphics memory circuit, said color key identifying a video window in which a motion video image is intended to be displayed on a display device;



storing a selected chroma key in storage locations of a motion video memory circuit;

simultaneously controlling said graphics memory circuit to output graphics signals and said motion video memory circuit to output video signals, said graphics signals including said color key, said video signals including said chroma key;

comparing said graphics signals with said selected color key and outputting a color key detection signal when it is determined that said graphics signals contain said color key;

comparing said video signals with said selected chroma key and outputting a chroma key detection signal when it is determined that said video signals contain said chroma key;

detecting a vertical offset and a horizontal offset between said color key detection signal and said chroma key detection signal, wherein said vertical offset corresponds to a number of lines of pixels in said display device and said horizontal offset corresponds to a number of pixels in a single line of pixels in said display device;

adjusting a timing of said motion video memory circuit so that said color key detection signal and said chroma key detection signal occur substantially simultaneously;

retaining a resulting timing offset for said motion video memory circuit for subsequent operation of said motion video memory circuit; and

replacing said chroma key stored in said storage locations in said motion video memory circuit with video data to be displayed in said video window.

5,621,429

VIDEO DATA DISPLAY CONTROLLING METHOD AND VIDEO DATA DISPLAY PROCESSING SYSTEM

Kimiya Yamaashi, Hitachi; Masayuki Tani, Katsuta; Koichiro Tanikoshi, Hitachi; Masayasu Futakawa, Hitachi; Masato Horita, Hitachi; Harumi Uchigasaki, Katsuta; Atsuhiko Nishikawa, Mito, and Atsuhiko Hirota, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 213,203

Claims priority, application Japan, Mar. 16, 1993, 5-055526

Int. Cl.[6] G06T *1/00*

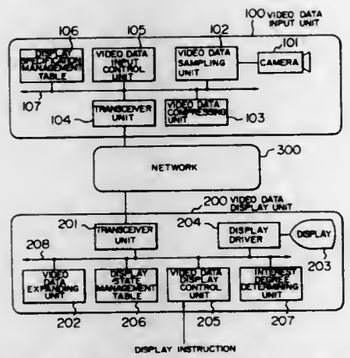
U.S. Cl. 345—119 **7 Claims**

1. A video data display controlling method comprising the steps of:

(a) designating a partial image area of an image displayed on a display screen;

(b) in response to a designation of said partial image area, differentiating the display quality of said image between said designated partial image area and another partial image area on the display screen, said differentiating including differentiating a resolution of said image; and

(c) changing the display state of said image in accordance with the results of said designating step and said differentiating step and wherein said differentiating step includes setting a



window display priority order in accordance with resolutions of images at said designated partial image area and image areas.

5,621,430

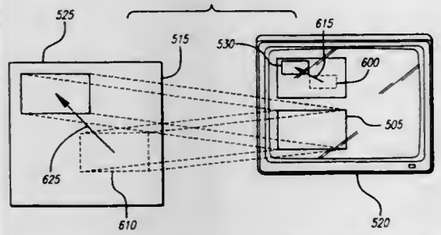
METHOD AND APPARATUS FOR NAVIGATING MULTIPLE INDEPENDENT WINDOWED IMAGES

Daniel S. Bricklin, Newton Highlands, Mass., assignor to Software Garden, Inc., Newton Highlands, Mass.

Filed Aug. 29, 1994, Ser. No. 298,215

Int. Cl.[6] G09G *5/14*

U.S. Cl. 345—119 **37 Claims**



1. A system for displaying images on a display means comprising:

a first window displaying a portion of a first image on said display means;

a first indicator displayed at a first position with respect to said first window, said first indicator being movable in two dimensions with respect to said first window;

a first indicator control means for moving said first indicator from said first position with respect to said first window to a second position with respect to said first window;

a second window displaying a portion of a second image on said display means, said second image comprising an image that is independent of said first image, said portion of said second image comprising less than a whole of said second image, said portion of said second image begin determined by movement of said first indicator from said first position to said second position with respect to said first window such that a first portion of said second image is displayed in said second window when said first indicator is located at said first position with respect to said first window, a second portion of said second image is displayed in said second window when said first indicator is located at said second position with respect to said first window, and intermediate portions of said second image are displayed sequentially in said second window after said first portion is displayed in said second window and before said second portion is displayed in said second window;

a second indicator displayed at a position with respect to said second window;

a second indicator control means for controlling said position of said second indicator with respect to said second window;

a third window displaying a portion of a third image on said display means, said portion of said third image comprising less than a whole of said third image, said portion of said third image being determined by said position of said second indicator with respect to said second window.

5,621,431

ANIMATION SYSTEM HAVING VARIABLE VIDEO DISPLAY RATE

Dennis D. Harper, Campbell, and Frank Kuan, San Jose, both of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Filed Apr. 29, 1994, Ser. No. 235,094

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—122 **24 Claims**



1. An animation display system comprising:

a video cell storage device;

a plurality of video cells stored in the video cell storage device, said video cells defining an animation sequence;

a display device having an update period, said display device connected to the video cell storage device so as to display one or more of the plurality of video cells for periods of time defined by the display device update period; and,

a display controller connected to the storage device and to the display device so as to control the amount of time individual ones of the video cells are displayed on said display device such that the animation sequence is displayed in a predetermined time period and wherein, if the pre-determined time period is less than the time required to display each cell of the sequence for one update period, then said display controller processes at least one selected cell at a rate faster than the update rate of the display device so that the selected cell is not displayed, such that the total number of update periods for the cells in the animation sequence that are displayed produces a sequence display period that is substantially equal to the predetermined time period.

VOL 1197 ISS 3 APR 15 1997 UMI

5,621,432

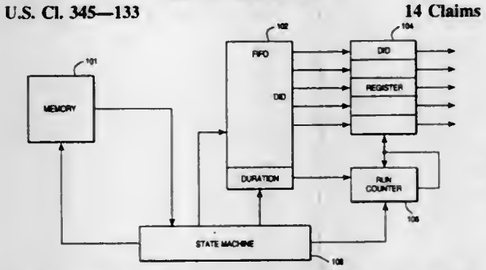
METHOD AND APPARATUS FOR GENERATING DISPLAY IDENTIFICATION INFORMATION

Marc Hannah, Mountain View, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 305,095, Sep. 13, 1994, abandoned, which is a division of Ser. No. 842,930, Feb. 27, 1992, Pat. No. 5,371,518. This application Mar. 18, 1996, Ser. No. 618,036

Int. Cl.[6] G09G 5/36

U.S. Cl. 345—133 14 Claims



1. In a raster-scanned display system, an apparatus for generating display ID information for said display system, said apparatus comprising:

a first memory which stores display ID information, said display ID information including records comprising display ID (DID) values and corresponding starting coordinate values;

a controller which is coupled to the first memory and which retrieves a plurality of said records, and generates sequences of DID values and corresponding duration values from the DID values and coordinate values of the retrieved records;

a second memory comprising a FIFO memory which is coupled to said controller for storing a plurality of said sequences of DID values and corresponding duration values generated by said controller;

a third memory comprising a register coupled to said FIFO memory for storing one of said plurality of said sequences of DID values representing display ID information for a sequence of pixels in a raster-scanned line; and

a fourth memory which is coupled to said controller and which stores said duration value corresponding to said one of said plurality of sequences of DID values stored in said third memory.

5,621,433

LOW-COST MULTICHANNEL OSCILLISCOPE FOR TEACHING AND DEMONSTRATION PURPOSES

Fritz Acksteiner, Judenberg 2, 86150 Augsburg, Germany

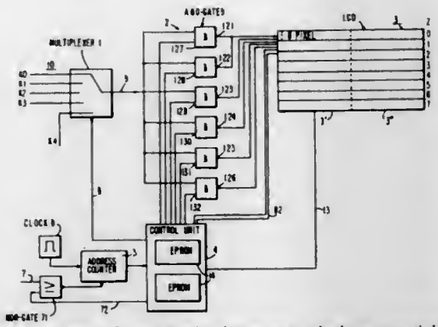
Continuation-in-part of Ser. No. 155,455, Nov. 19, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,427

Claims priority, application Germany, Nov. 19, 1992, 42 39 027.3

Int. Cl.[6] G09G 5/36

U.S. Cl. 345—134 9 Claims

1. A multichannel oscilloscope comprising a dot matrix display device including a display screen having a plurality of positions for display of characters consisting of pixels and an integrated controller means and character generating means for forming a display image on the display screen made up of a plurality of said characters in response to input data signals containing character determining information and input instruction signals containing character position determining information, a multiplexer device having means for receiving data signals in any of a plurality of input channels and having means for selecting one of said input data signals for transmission to said integrated controller means of said dot matrix display device and additional controller means for controlling the transmission of the data from the multiplexer device to the dot matrix display device and for generating said input instruction signals for selecting said positions at which said characters are to be displayed, wherein the additional controller



means consists of two read-only-memory devices containing means for generating said input instruction signals and means for controlling said multiplexer.

5,621,434

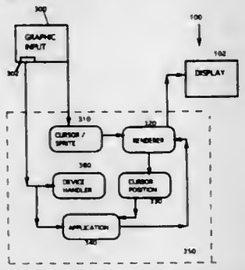
CURSOR MANIPULATION SYSTEM AND METHOD

Donald M. Marsh, Mountain View, Calif., assignor to Object Technology Licensing Corp., Cupertino, Calif.

Filed Aug. 11, 1993, Ser. No. 104,748

Int. Cl.[6] G09G 5/04

U.S. Cl. 345—145 10 Claims



1. A method for controlling display of a graphic cursor in a computer system having a computer, including an attached display and an attached storage containing an object-oriented operating system with a cursor control framework having information defining a cursor, said cursor's location, and said cursor's appearance on said display, said method comprising the steps of:

(a) creating a first object in said cursor control framework of said object-oriented operating system, said first object containing data defining said cursor's location and appearance on said display;

(b) creating a second object in said cursor control framework of said object-oriented operating system, said second object containing logic responsive to said appearance and location data contained in said first object for generating image data for displaying said cursor on said display; and

(c) creating a third object in said cursor control framework, said third object containing address data indicating a location of said cursor and logic responsive to a generation of image data by said second object for adjusting said address data to indicate a last displayed location of said cursor.

5,621,435

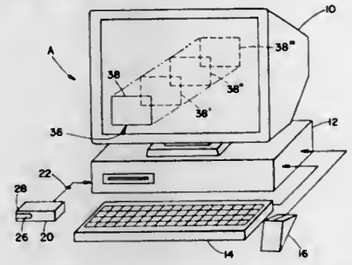
COMPUTER USER INTERFACE FOR NON-DOMINANT HAND ASSISTED CONTROL

Robert T. Krivacic, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1995, Ser. No. 379,390

Int. Cl.[6] G09G 5/08

U.S. Cl. 345—145 14 Claims



1. A computer terminal user interface control comprising:

a first force sensitive transducer having a first force sensitive axis;

a second force sensitive transducer having a second force sensitive axis;

securing means for securing the first and second force sensitive transducers such that the first force sensitive axis and the second force sensitive axis are disposed at an angle relative to one another; and

a data processor including,

means adapted for generating a cursor at a default position on an associated video display terminal,

means for positioning the cursor at a planar deviation from the default position in accordance with force applied to at least one of the force sensitive transducers, and

means for selectively returning the cursor to the default position after force is removed from the force sensitive transducers.

5,621,436

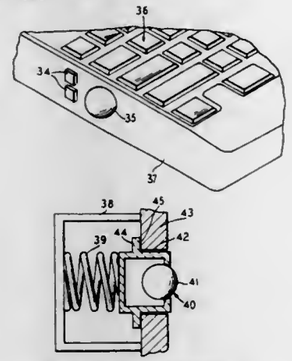
KEYBOARD WITH INTEGRATED MOUSE FOR DATA ENTRY AND CONTROL

Erik Solhjell, Oslo, Norway, assignor to Tandberg Data Storage AS, Oslo, Norway

Filed Jun. 20, 1991, Ser. No. 717,936

Int. Cl.[6] G09G 5/08

U.S. Cl. 345—163 3 Claims



1. A keyboard mouse system, comprising:

a keyboard having a keyboard surface with a plurality of keys therein and having a substantially vertical side wall at both opposite vertical sides of the keyboard;

a mouse assembly having a mouse roller ball and an associated control key adjacent thereto integrally mounted in an aperture of each of the vertical side walls such that the ball protrudes outwardly from an outer surface of the respective side wall and with a remainder of the ball being inwardly of an outer surface of the side wall; and

the roller ball being retained in a ball retaining member which projects through an aperture in each of the side walls, a spring means being provided for biasing the ball retaining member outwardly, and stop means for maintaining the ball retaining member and a major portion of the retained ball inwardly of the outer surface of the respective side wall.

5,621,437

DATA INPUT/OUTPUT CONTROL UNIT FOR TOUCH PANEL INTERFACE DEVICE

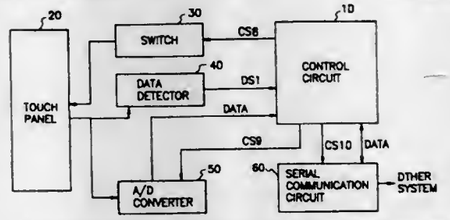
Hae D. Jeong, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Jul. 5, 1995, Ser. No. 498,465

Claims priority, application Rep. of Korea, Oct. 7, 1994, 25731/1994; Nov. 30, 1994, 31924/1994

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—173 14 Claims



1. A data input/output control unit for a touch panel interface device, comprising:

a touch panel for sensing coordinates of a point touched by a user's pen and generating an analog signal in accordance with the sensed result;

data detection means for detecting input data to said touch panel;

system control means for controlling a system operation in response to an output signal from said data detection means;

switching means for turning on/off supply power to said touch panel in response to a first control signal from said system control means;

analog/digital conversion means for converting the analog signal from said touch panel into digital data in response to a second control signal from said system control means and outputting said digital data to said system control means; and

serial communication means for performing a serial communication with other systems in response to a third control signal from said system control means;

wherein said system control means includes:

suspend mode setting means for generating a suspend signal in response to the output signal from said data detection means to change a present mode to a suspend mode;

command signal generation means for generating a command signal in response to a status signal and the suspend signal from said suspend mode setting means to control the system operation;

control logic means for analyzing the command signal from said command signal generation means in response to a status end signal from said command signal generation means and outputting fourth to seventh control signals as a result of the analysis through an internal control bus line, said control logic means inputting first to fourth response signals through said internal control bus line and outputting the status signal to said command signal generation means in response thereto;

switching control means for outputting the first control signal to said switching means in response to the fourth control signal from said control logic means, said switching control

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means outputting the first response signal to said control logic means through said internal control bus line upon completion of operation of the switching means responsive to the first control signal;

analog/digital conversion control means for outputting the second control signal to said analog/digital conversion means in response to the fifth control signal from said control logic means and inputting the digital data from said analog/digital conversion means, said analog/digital conversion control means outputting the second response signal to said control logic means through said internal control bus line upon completion of operation of the switching means responsive to the first control signal;

data processing means for processing output data from said analog/digital conversion control means in response to the sixth control signal from said control logic means and outputting the third response signal to said control logic means through said internal control bus line upon completion of operation of the data processing means responsive to the sixth control signal, and

serial communication control means for applying output data from said data processing means and the third control signal to said serial communication means in response to the seventh control signal from said control logic means, said serial communication control means outputting the fourth response signal to said control logic means through said internal control bus line upon completion of operation of the serial communication means responsive to the seventh control signal.

5,621,438

POINTING INFORMATION PROCESSING APPARATUS WITH POINTING FUNCTION

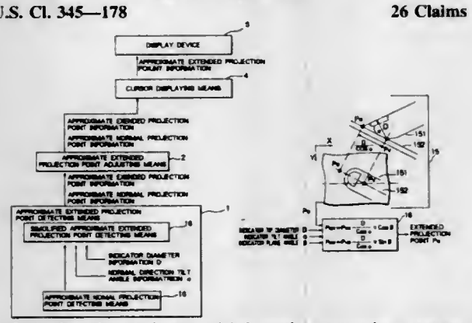
Toshio Kamimura, Fujisawa; Michihiro Mese, Chigasaki; Shigeto Oeda, Kamakura; Kazuhide Nishiyama, Yokohama, and Yasumasa Matsuda, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,004

Claims priority, application Japan, Oct. 12, 1992, 4-272659; Nov. 9, 1992, 4-298832; Nov. 20, 1992, 4-311655; Apr. 16, 1993, 5-089748; Apr. 16, 1993, 5-089749; Jun. 1, 1993, 5-130715

Int. Cl.[6] **G09G** *5/00*

U.S. Cl. 345—178 **26 Claims**



1. An input/output integrated information processing apparatus including a display device and a substantially transparent input tablet having an input surface placed on a display surface of said display device for outputting a pointing coordinate which is a coordinate on said input surface pointed to by a user utilizing a finger or an indicator, comprising:

indication direction extended point determining means for determining an indication direction extended point coordinate, which is an intersection of an extended projection of the finger or the indicator intended by the user and the display surface of said display device, from the pointing coordinate output by said input tablet and a predetermined value by utilizing information including the set diameter of a tip of the user's finger or the indicator, the set tilt angle of the user's finger or the indicator in a direction normal to said input surface, and said pointing coordinate; and

display processing means for displaying a point, by utilizing a cursor, on the display surface of said display device, corresponding to the determined indication direction extended point coordinate so as to distinguishably display the determined indication direction extended point coordinate on said display device.

5,621,439

VOLTAGE COMPENSATION CIRCUIT AND DISPLAY APPARATUS

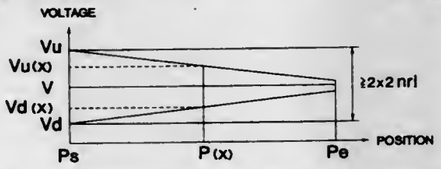
Hisao Okada, Nara-ken; Yuji Yamamoto, Kobe, and Shigeyuki Uehira, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1994, Ser. No. 268,113

Claims priority, application Japan, Jul. 6, 1993, 5-167186; Jul. 4, 1994, 6-152487

Int. Cl.[6] **G09G** *5/00*

U.S. Cl. 345—211 **16 Claims**



1. A voltage compensation circuit for supplying a desired voltage to a portion to which the desired voltage is to be supplied, by compensating for voltage drops caused by line resistances of voltage supply lines, the voltage compensation circuit comprising:

a first voltage supply line having a first end;

a second voltage supply line having a second end;

wherein a first voltage which is higher than the desired voltage by a predetermined value is applied to the first end, and a second voltage which is lower than the desired voltage by the predetermined value is applied to the second end and;

a first junction connecting the portion to which the desired voltage is to be supplied to the first voltage supply line; and

a second junction connecting the portion to which the desired voltage is to be supplied to the second voltage supply line, wherein an amount of voltage drop in the first voltage from the first end to the first junction is substantially equal to an amount of voltage rise in the second voltage from the second end to the second junction, thereby compensating for voltage drops caused by line resistances of said first and second voltage supply lines.

5,621,440

BIDIRECTIONAL RECORDING DEVICE AND METHOD FOR PRODUCING CONSISTENT IMAGES

Kazuyoshi Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

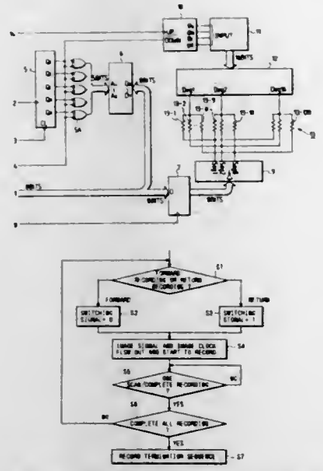
Continuation of Ser. No. 759,815, Aug. 30, 1991, abandoned, which is a continuation of Ser. No. 679,832, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 514,715, Apr. 26, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 22,618

Claims priority, application Japan, Apr. 28, 1989, 1-111183; May 1, 1989, 1-109072; May 17, 1989, 1-121455; Apr. 10, 1990, 2-093157

Int. Cl.[6] **B41J** *2/05;2/15*

U.S. Cl. 347—12 **48 Claims**

1. A recording device which performs recording on a recording medium, comprising:



a recording head having a plurality of recording elements arranged in an array having a slant within a given one row relative to a direction vertical to a relative moving direction with respect to said recording medium so as to compensate for a difference in a driving time due to a time divided driving;

driving means for driving said recording elements;

moving means for moving said recording head reciprocally for both a going way recording and a returning way recording during a driving interval and over a distance such that said recording head serves to perform both a going way recording and a returning way recording;

memorizing means for memorizing an image data;

reading and supplying means for reading and supplying the image data memorized by said memorizing means; and

control means for controlling recording by said recording head by dividing the plurality of recording elements constituting said array of recording elements into a plurality of blocks, which said blocks are defined by said control means such that each said block is formed by a plurality of continuous said recording elements disposed along a length of arrangement, and said control means controlling said recording head in the going way recording by causing said driving means to drive in a going way order by time division each of said blocks, memorizing the image data memorized by said memorizing means, and said control means controlling said recording head in the returning way recording by effecting reading and supplying by said reading and supplying means of said image data memorized by said memorizing means in said respective blocks to cause said driving means to drive said recording elements in an order opposite to the order in the going way recording,

wherein said slant of said array depends on the distance over which said recording head moves relatively during the driving interval in which said blocks are driven in a time divided manner and the length of arrangement of said plurality of said continuous recording elements of each said block, and a degree of slant of one said block is within the size of a single said recording element as measured in a relative moving direction of said recording head with respect to the recording medium.

5,621,441

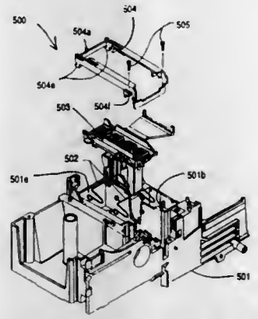
SERVICE STATION FOR INKJET PRINTER HAVING REDUCED NOISE, INCREASED EASE OF ASSEMBLY AND VARIABLE WIPING CAPABILITY

Heinz H. Waschhauser, Escondido, Calif., and William S. Osborne, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 949,197, Sep. 21, 1992. This application Apr. 30, 1993, Ser. No. 56,327

Int. Cl.[6] **B41J** *2/165*

U.S. Cl. 347—33 **24 Claims**



1. Structure for use with an inkjet printer, the printer including a chassis and a print carriage movably supported on the chassis, the printer also including a carriage controller for moving the print carriage with respect to the chassis, a print cartridge including a printhead through which ink is ejected being mounted in the print carriage, comprising:

a sled body, a wiper mount and a cam surface being formed on the sled body;

sled body mounting means for movably mounting the sled body, the sled body mounting means being mounted on the chassis;

a wiper structure including a wiper, the wiper being mounted on the wiper mount, a wiping edge of the wiper distal from a surface of the sled body; and

a cam holder mounted on the chassis adjacent to the sled body, a cam follower extension being formed on the cam holder, wherein:

motion of the print carriage, in conjunction with contact between the cam surface and cam follower extension, positions the sled body so that the wiping edge contacts the printhead.

5,621,442

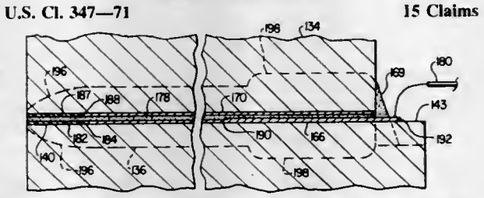
ENHANCED UU TYPE INK JET PRINTHEADS

Donald J. Hayes, Plano; John R. Pies, and David B. Wallace, both of Dallas, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 65,920, May 20, 1993, Pat. No. 5,406,319, which is a continuation-in-part of Ser. No. 748,220, Aug. 16, 1991, Pat. No. 5,235,352, and a continuation-in-part of Ser. No. 859,671, Mar. 30, 1992, Pat. No. 5,400,064. This application Oct. 19, 1994, Ser. No. 325,790

Int. Cl.[6] **B41J** *2/045*

U.S. Cl. 347—71 **15 Claims**



1. An enhanced UU type drop-on-demand ink jet printhead, comprising:

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a lower body portion formed from an active piezoelectric material, said lower body portion having a back end surface, a front end surface, an upper side surface and a plurality of generally parallel spaced lower body projections, each of said lower body projections having a top side surface and first and second side surfaces, each of said lower body projections projecting vertically from said upper side surface and extending longitudinally along said lower body portion between said front and back end surfaces, said upper side surface being upwardly tapered from a first interior surface line to said front end surface, said first interior surface line being generally parallel with said front end surface; and

an upper body part formed from an active piezoelectric material, said upper body part having a back end surface, a front end surface, a lower side surface and a plurality of generally parallel spaced upper body projections, each of said upper body projections having a bottom side surface and first and second side surfaces, each of said upper body projections projecting vertically from said lower side surface and extending longitudinally along said lower body portion;

said top side surface of each of said lower body projections and said bottom side surface of a corresponding one of said upper body projections conductively mounted together, said upper side surface of said lower body portion, said first and second side surfaces of said plurality of lower body projections, said first and second side surfaces of said plurality of upper body projections and said lower side surface of said upper body part defining a plurality of generally parallel, longitudinally extending channels having a volume reducing taper extending from said first interior surface line to said front end surface from which ink may be ejected therefrom.

5,621,443

INK-JET DEVICE AND METHOD OF OPERATION THEREOF

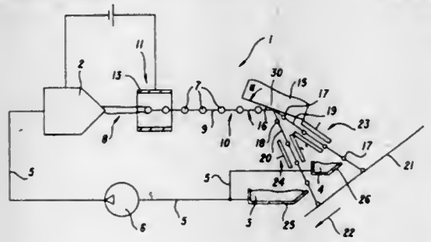
Rainer Buschulte, Bad Schönborn, and Helmut Kipphan, Schwetzingen, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Sep. 23, 1994, Ser. No. 311,202

Claims priority, application Germany, Sep. 23, 1993, 43 32 264.6

Int. Cl.[6] B41J *2/02*

U.S. Cl. 347—73 **28 Claims**



1. Ink-jet device for producing an image on a recording medium, comprising a droplet-producing device for ejecting droplets along a trajectory, and a droplet-controlling device for controlling the trajectory of the droplets, said droplet-controlling device being formed as a deflection surface, said deflection surface being disposed so that respective droplets impacting thereon are split into at least two subdroplets.

5,621,444

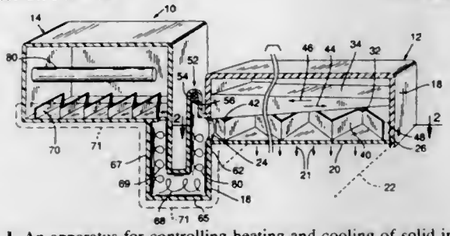
CONTROLLED HEATING OF SOLID INK IN INK-JET PRINTING

Robert R. Beeson, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 7, 1994, Ser. No. 350,928

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—88 **21 Claims**



1. An apparatus for controlling heating and cooling of solid ink within an ink-jet printing system, comprising:

a reservoir for storing meltable ink, the reservoir including an inlet through which liquid ink may flow to fill the reservoir;

a heater assembly for applying heat to melt the ink within the reservoir so that the ink progressively melts in a first direction from near to away from the inlet; and

a gas trap connected to the reservoir near the inlet to receive gasses released from the ink.

5,621,445

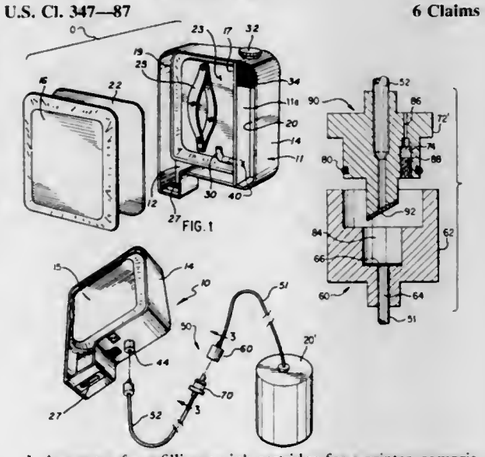
APPARATUS FOR REFILLING INK CARTRIDGES

Jon Fong; David S. Hunt, both of San Diego, and Michael L. Borer, Oceanside, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 171,321, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 750,360, Aug. 27, 1991, Pat. No. 5,280,300. This application Oct. 13, 1994, Ser. No. 322,848

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **6 Claims**



1. Apparatus for refilling an ink cartridge for a printer, comprising:

a) an ink cartridge having a rigid housing, a collapsible ink bag within said housing, a spring also within the housing for urging the collapsible ink bag apart and thereby maintaining a sub-atmospheric pressure within the bag and means, in fluid communication with the ink bag, for ejecting droplets of ink on command from the cartridge;

b) a reservoir for holding replenishment ink;

c) a fluid bridge mechanically and fluidically connectable between the reservoir and the ink bag so that replenishment ink may be transferred from the reservoir to the ink bag; and

d) a gas purge valve within the fluid bridge for removing gases from the bridge that may obstruct the transfer of replenishment ink from the reservoir to the ink bag.

5,621,446

METHOD OF FILLING AN INK CONTAINER

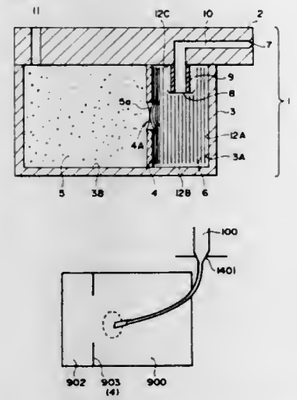
Shigeaki Tanaka, Kawasaki; Masami Ikeda, Tokyo; Naohito Asai, Yokohama; Nobuyuki Kuwabara, Tokyo; Makiko Kimura, Sagamihara; Teruo Arashima, and Masaaki Izumida, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 801,360, Dec. 2, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 368,056

Claims priority, application Japan, Nov. 30, 1990, 2-329748; Nov. 30, 1990, 2-329749; Nov. 30, 1990, 2-329751; Nov. 30, 1990, 2-329752; Nov. 30, 1990, 2-329753; Nov. 30, 1990, 2-329754

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—85 **2 Claims**



1. A method of filling an ink jet recording head with ink, the method comprising the steps of:

providing a recording head main body including an ink ejection outlet, an energy generating element for generating energy for ejecting the ink through the ejection outlet, and a container for containing the ink having an ink supply side with a supply port for supplying the ink to the ejection outlet and an air vent side with an air vent for communicating the container and the atmosphere;

providing a first ink retainer at the ink supply side, the first ink retainer including a bundle of fibers;

providing a second ink retainer at the air vent side, the first ink retainer and the second ink retainer having an area of contact therebetween and the second ink retainer including a porous material; and

injecting ink into the second ink retainer in a vicinity of the area of contact between the first ink retainer and the second ink retainer.

5,621,447

JET RECORDING METHOD

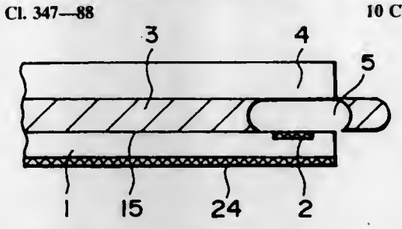
Yoshihisa Takizawa, Kawasaki; Katsuhiro Shirota, Inagi, and Hisao Yaegashi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 964,837, Oct. 22, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,994

Claims priority, application Japan, Oct. 25, 1991, 3-279857; Oct. 25, 1991, 3-279870

Int. Cl.[6] B41J *2/205*

U.S. Cl. 347—88 **10 Claims**



1. A jet recording method, comprising:

a preliminary step of placing a normally solid recording material in a heat-melted state in a path defined by a nozzle leading to an ejection outlet, and

a recording step of imparting to the melted recording material a thermal energy corresponding to a recording signal to generate a bubble, thus ejecting a droplet of the recording material out of the ejection outlet by an action of the bubble to deposit the droplet on a recording medium;

wherein in the recording step, the bubble is caused to communicate with ambience, and the droplet is ejected in a diameter d, μm, and at an average speed v, m/sec satisfying: $10 \leqq d \leqq 60$ and $7 \leqq v \leqq 20$.

5,621,448

INK JET RECORDING METHOD

Leo Oelbrandt, Kruibeke, and Luc Leenders, Herentals, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed May 18, 1995, Ser. No. 444,294

Claims priority, application European Pat. Off., Jul. 7, 1994, 94201953

Int. Cl.[6] B41J *2/205;* **B41M** *5/20*

U.S. Cl. 347—96 **12 Claims**

1. A recording method comprising the consecutive steps of:

(1) image-wise projecting droplets of liquid, called ink, containing halide ions, onto a receiving material containing at least one substantially light-insensitive silver salt, said ink and/or receiving material containing at least one reducing agent for said silver salt,

(2) uniformly photo-exposing said receiving material to form silver nuclei from silver halide obtained in step (1), and

(3) heating said receiving material during and/or after said photo-exposure thereby forming a silver image in correspondence with the area wherein said ink has been deposited on said receiving material.

VOL 1197 ISS 3 AP 15 1997 UMI

5,621,449

INK JET RECORDING METHOD OPERATING WITH A CHEMICALLY REACTIVE INK

Luc Leenders, Herentals; Carlo Uyttendaele, Berchem, and Herman Uytterhoeven, Bonheiden, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 26, 1993, Ser. No. 141,020

Claims priority, application European Pat. Off., Sep. 8, 1993, 93202599

Int. Cl.[6] G01D *15/16*

U.S. Cl. 347—101 11 Claims

1. A recording method comprising the steps of:

1) providing a receiving material containing at least one substantially light-insensitive organic silver salt, and

2) image-wise applying liquid in the form of droplets onto said receiving material to form a visually detectable image, said liquid containing a reducing agent for said silver salt.

5,621,450

CONTAINER FOR RECEIVING INK JET CARTRIDGE FOR AN INK JET RECORDING APPARATUS

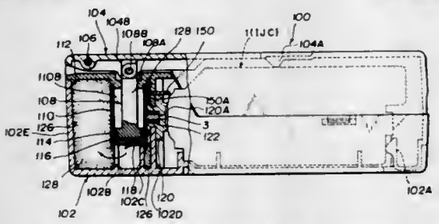
Tsutomu Kawai; Akira Miyakawa; Hideki Yamaguchi, all of Yokohama, and Hitoshi Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,703, Sep. 7, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 565,012

Claims priority, application Japan, Sep. 8, 1992, 4-239407; Dec. 25, 1992, 4-345050

Int. Cl.[6] B41J *2/17*

U.S. Cl. 347—108 8 Claims



1. A container for storably receiving an ink jet cartridge including a recording head section for discharging ink from a plurality of ink discharging orifices and an ink storing section having ink to be fed to said recording head section, said ink storing section being integrated with said ink recording head section, said container comprising:

a) a case main body comprising:

i) holding means for firmly holding said ink jet cartridge at a predetermined position in said container,

ii) capping means for sealably covering said ink discharging orifices therewith while said ink jet cartridge is storably received at the predetermined position in said container,

iii) pumping means for sucking ink through said ink discharging orifices while said orifices are sealably covered with said capping means and discharging the sucked ink and,

iv) storing means for storing at least the ink discharged by said pumping means,

b) a case cover for rotatably opening and closing relative to said case main body,

c) connecting means for operatively connecting said pumping means to said case cover,

d) wiping means for wiping an ink discharging surface having said ink discharging orifices formed thereon, said wiping means being disposed in a path of release of said ink jet cartridge from a firm held state at the predetermined position,

wherein said ink storing means comprises a waste ink chamber defined in said container and an ink absorber is received in said waste ink chamber, said wiping means comprising a wiping blade made of a porous elastic material disposed above said capping means, and said wiping blade contacting said ink absorber.

5,621,451

IMAGE FORMING APPARATUS

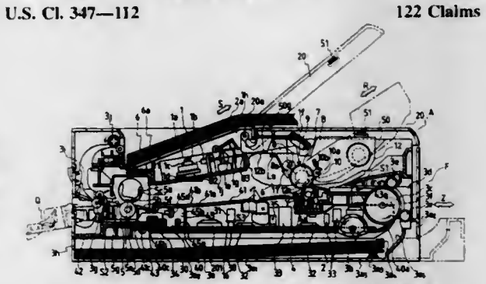
Yoshinori Sugiura, Kawasaki; Noriyoshi Ishikawa; Takeshi Setoriyama, both of Yokohama; Chitose Tenpaku, Kawasaki; Tatsuo Hamada, Tokyo; Yoshiro Tsuchiya, Yokohama; Takeshi Kubota, Tama; Ken Murooka, Tokyo; Takeshi Niimura, Musashino; Nobukazu Adachi, Yokohama; Akira Kuroda, Yokohama; Takeshi Sugita, Yokohama; Akira Yuza, Yokohama, and Jun Azuma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/00054, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO94/15792, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 18, 1993, Ser. No. 988,913

Int. Cl.[6] G03G *15/00*

U.S. Cl. 347—112 122 Claims



1. An image forming apparatus for forming an image on a recording medium, said apparatus comprising:

a mounting mechanism for removably mounting a process cartridge, the process cartridge including an electrophotographic photosensitive member, a charging roller to charge said photosensitive member, a developing member to develop a latent image formed on said photosensitive member and a cleaning member to remove residual toner from said photosensitive member;

a transfer device for transferring a toner image, formed on said electrophotographic photosensitive member, onto the recording medium;

a fixing device for fixing the toner image, transferred onto the recording medium by said transfer device, on the recording medium;

a laser beam emitter, arranged between said process cartridge mounted onto said mounting mechanism and said fixing device to be located within a height of said process cartridge mounted onto said mounting mechanism in a vertical direction, for emitting a laser beam in accordance with image information;

a feed cassette for storing the recording medium, said feed cassette arranged below said process cartridge, said laser beam emitter, and said fixing device to extend therealong;

a recording medium receiver for receiving a recording medium on which an image has been formed; and

a conveying mechanism for guiding a recording medium fed from said feed cassette to a position between said electrophotographic photosensitive member and said transfer device by reversing a path travelled by the recording medium, and guiding the recording medium, on which a toner image has been transferred from said electrophotographic photosensitive member and which has passed through said fixing device, to the recording medium receiver by reversing the path of the recording medium again,

wherein the recording medium receiver is arranged on an upper surface of an apparatus main body so as to be inclined obliquely upward in the same direction as a direction in which said laser beam emitter emits the laser beam

wherein said recording medium receiver receives a recording medium discharged from an apparatus main body while a leading end of the recording medium is laid substantially horizontally and a trailing end of the recording medium is inclined,

wherein said mounting mechanism, said laser beam emitter, and said fixing device are arranged so as to not overlap each other in a vertical direction, and

wherein said laser beam emitter is arranged between said process cartridge and said fixing device for fixing an image on the recording medium so as not to overlap said process cartridge and said fixing device in a vertical direction.

5,621,452

HEAT-SENSITIVE STENCIL-PRODUCTION DEVICE CAPABLE OF PRINT CHECKING FUNCTION WITH PRINTED DOT IMAGE

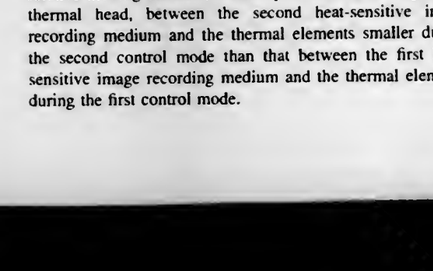
Takashi Okumura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 5, 1994, Ser. No. 270,243

Claims priority, application Japan, Jul. 16, 1993, 5-176513

Int. Cl.[6] B41J *2/32;2/35*

U.S. Cl. 347—171 23 Claims



1. An image forming device for forming a dot image on a heat-sensitive image recording medium, the device including heating means for thermally forming the dot image on the heat-sensitive image recording medium, the heating means comprising a thermal head comprising a plurality of thermal elements, transport means for providing relative movement between the heating means and the heat-sensitive image recording medium in a transport direction, and an inserting section for inserting the heat-sensitive image recording medium into the heating means, the improvement comprising:

the heat-sensitive image recording medium including a first heat-sensitive image recording medium which forms a first dot image and a second heat-sensitive image recording medium which forms a second dot image;

distinction means for distinguishing the first heat-sensitive image recording medium from the second heat-sensitive image recording medium upon insertion of one of the first and second heat-sensitive image recording mediums at the inserting section; and

control means connected to the distinction means for automatically switching at least one of the heating means and the transport means between a first control mode and a second control mode in response to a distinction result from the distinction means, the first dot image being formed under the first control mode, and the second dot image being formed under the second control mode, so that at least one of size and density of dots generated in the first dot image is smaller and lower than those generated in the second dot image, wherein the control means further comprises means for setting a relative moving distance, with respect to each heating of the thermal head, between the second heat-sensitive image recording medium and the thermal elements smaller during the second control mode than that between the first heat-sensitive image recording medium and the thermal elements during the first control mode.

5,621,453

INCREASING IMAGE FORMING METHOD AND APPARATUS THEREFOR IN LED PRINTER

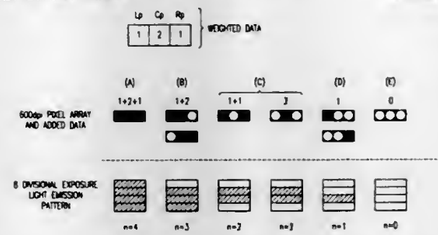
Yasunori Fujita, and Hirohito Kondo, both of Tokyo, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jul. 26, 1994, Ser. No. 281,710

Claims priority, application Japan, Jul. 30, 1993, 5-206964; Nov. 30, 1993, 5-325960

Int. Cl.[6] B41J *2/47;* H04N *1/21;1/23*

U.S. Cl. 347—240 6 Claims



1. A method of forming a virtual 2N dpi image according to bit map information of image data having a density of 2N dpi, the method comprising the steps of:

providing an LED printer for producing a plurality of main scanning lines and having a plurality of LED elements arranged at a pitch of N dpi in a main scanning direction for forming an image on a photosensitive medium by controlling on and off operations of the LED elements,

generating, for each of the main scanning lines, a plurality of divisional exposure lines for turning on the LED elements 2 m times in an auxiliary scanning direction,

weighting data of a center bit and at least one bit adjacent to the center bit in the main scanning direction of the 2N dpi image data to generate arithmetic operation values, the weighting step comprising at least one of the steps of multiplying and ANDing the data of the center bit and the at least one bit adjacent to the center bit with at least one constant value,

summing the arithmetic operation values to obtain sum data, and

controlling a number of on operations of the LED elements on the divisional exposure lines in response to the sum data,

whereby a virtual image having a density of 2N dpi is formed on the photosensitive medium in the main scanning direction.

5,621,454

METHOD AND SYSTEM FOR RECOGNITION OF BROADCAST SEGMENTS

Michael D. Ellis; Stephen M. Dunn; Michael W. Fellinger; Fancy B. Younglove, all of Boulder; David M. James, Fort Collins; David L. Clifton, Boulder, and Richard S. Land, Lafayette, all of Colo., assignors to The Arbitron Company, Columbia, Md.

Division of Ser. No. 876,578, Apr. 30, 1992, Pat. No. 5,436,653. This application Jun. 7, 1995, Ser. No. 481,815

Int. Cl.[6] H04N *17/00;17/04*

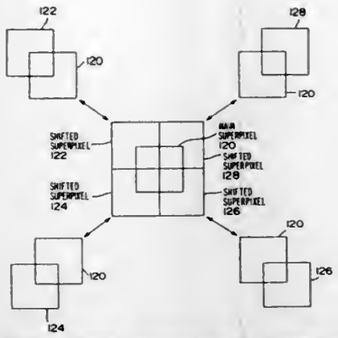
U.S. Cl. 348—2 3 Claims

1. A method of producing a signature characterizing an interval of a video signal representing a picture for use in broadcast segment recognition, wherein the signature is produced based on portions of the video signal representing corresponding regions of the picture, and for producing a corresponding mask word including a plurality of bit values each representing a reliability of a corresponding value of the signature, comprising the steps of:

forming a first signature having a plurality of values each based on respective ones of said portions of the video signal;

forming a second signature having a plurality of values each based on respective ones of a plurality of shifted portions of

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the video signal each corresponding to a respective one of said portions and having a location displaced from a location of said respective one of said portions by a predetermined amount, such that each value of said first signature corresponds to a value of the second signature;

comparing respective values of said first and second signatures;

establishing said bit values of said mask word based on the comparison of a respective value of said first signature with the corresponding value of the second signature.

5,621,455

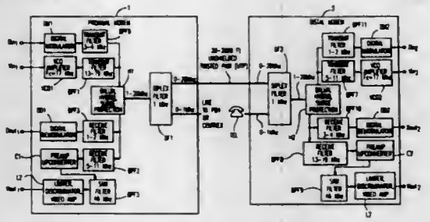
VIDEO MODEM FOR TRANSMITTING VIDEO DATA OVER ORDINARY TELEPHONE WIRES

Steven Rogers, Leesburg, and John Gerig, Reston, both of Va., assignors to Objective Communications, Inc., Reston, Va.

Filed Dec. 1, 1994, Ser. No. 352,112

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—6 **55 Claims**



1. A method for transmitting video information over a single pair of unshielded twisted pair (UTP) wires, comprising the steps of:

(1) frequency modulating a first carrier signal in accordance with a first composite video signal having a luminance component and a color subcarrier and producing thereby a first FM signal comprising a first upper sideband and a first lower sideband each including said color subcarrier of said first composite video signal;

(2) filtering said first FM signal with a first band pass filter to suppress said first upper sideband and to pass said first lower sideband, and producing thereby a first filtered signal having a frequency bandwidth of approximately 6 MHz; and

(3) from a first physical location, injecting said first filtered signal into said single pair of UTP wires.

5,621,456

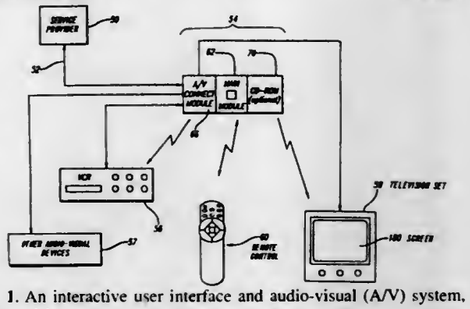
METHODS AND APPARATUS FOR AUDIO-VISUAL INTERFACE FOR THE DISPLAY OF MULTIPLE PROGRAM CATEGORIES

Fabrice Florin, Mill Valley; Michael Buettner, Burlingame; Glenn Corey, San Rafael; Janey Fritsche, Mill Valley; Peter Maresca, Palo Alto; Peter Miller, Los Altos Hills; Bill Purdy, San Anselmo; Stuart Sharpe, and Nick West, both of San Francisco, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 22, 1993, Ser. No. 82,056

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **11 Claims**



1. An interactive user interface and audio-visual (A/V) system, comprising:

a transceiver coupled to an A/V display for receiving A/V signals, said transceiver including interface generation means for displaying an interface on said A/V display;

control means in communication with said transceiver for permitting a user viewing said A/V display to display A/V programs on said A/V display;

wherein said interface generation means further includes an A/V listing interface for causing said A/V display to selectively display a program listing, said program listing including information related to A/V programs viewable on said A/V display;

wherein said A/V listing interface displays a picture in a picture (PIP) window in which the audio-visual program viewed by said user prior to said activation of said A/V listing means is displayed.

5,621,457

SIGHTING DIRECTION DETECTING DEVICE FOR VEHICLE

Takuo Ishiwaka, Zushi, and Hirosi Saitou, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Sep. 8, 1995, Ser. No. 524,950

Claims priority, application Japan, Sep. 26, 1994, 6-229626

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—78 **6 Claims**

1. A sighting direction detecting device comprising:

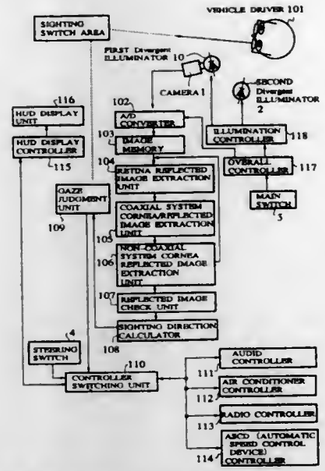
a TV camera which is disposed to face a human being and picks up an image of light invisible to human;

first illuminating means which is disposed in a coaxial system with said TV camera and illuminates a human's eye-ball portion with light which is invisible to human beings;

second illuminating means which is disposed at a different place from said first illuminating means and illuminates the human's eye-ball portion with light which is invisible to human beings;

first calculating means for calculating an equation of a line passing the pupil center position of the eye-ball, an equation of a line passing the reflected-light position of said first illuminating means and an equation of a line passing the reflected-light position of said second illuminating means on the basis of the image which is picked up by said camera;

second calculating means for calculating the center position of a cornea ball on the basis of the equation of the line passing the



reflected-light position of said first illuminating means and the equation of the line passing the reflected-light position of said second illuminating means which are calculated by said first calculating means; and

third calculating means for calculating the sighting direction of the human being on the basis of the equation of the line passing the pupil center position detected by said first calculating means and the center position of the cornea ball which is calculated by said second calculating means, wherein the image obtained by said TV camera comprises a first image obtained under illumination of said first illuminating means and said second illuminating means and a second image obtained under illumination of illuminating means which does not contain said first illuminating means.

5,621,458

AUDIO AND VIDEO DOCKING AND CONTROL SYSTEM

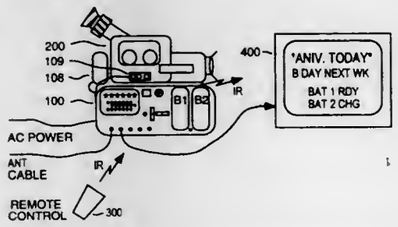
Timothy C. Mann, Morristown, and John H. Stevens, Martinsville, both of Ind., assignors to Thomson Consumer Electronics Inc., Indianapolis, Ind.

Filed Oct. 21, 1994, Ser. No. 326,881

Claims priority, application United Kingdom, Nov. 23, 1993, 9324051

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—232 **14 Claims**



1. A docking apparatus for an electronic entertainment device, said apparatus comprising:

a video display;

memory blocks for storing calendar data, calendar dated event data, display message data and a control algorithm;

a microprocessor for executing said algorithm and accessing said memory blocks, and responsive to an occurrence of said calendar dated event, generating a display message signal; and,

a video signal formatter for generating a first video display signal responsive to said display message signal and including a controllable selector for selectively coupling one of said first video display signal and a second video signal from an entertainment device, when docked, to said video display.

5,621,459

IMAGE SENSING APPARATUS WHICH CAN DETECT OPTICAL CHARACTERISTICS OF AN IMAGE TO CONTROL TITLE INSERTION

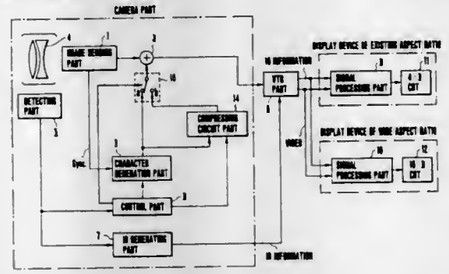
Osamu Ueda, and Koji Takahashi, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 565,667, Dec. 1, 1995, abandoned, which is a division of Ser. No. 203,695, Feb. 28, 1994, Pat. No. 5,502,486, which is a continuation of Ser. No. 869,466, Apr. 15, 1992, abandoned. This application Jul. 2, 1996, Ser. No. 668,504

Claims priority, application Japan, Apr. 25, 1991, 3-095553; Oct. 23, 1991, 3-275516

Int. Cl.[6] H04N *5/278*

U.S. Cl. 348—239 **34 Claims**



1. An image sensing apparatus comprising:

a) an optical system capable of varying an aspect ratio of a photographed image;

b) detecting means for detecting a conversion ratio of said optical system;

c) image sensing means for converting an optical image photographed by said optical system into an electrical signal;

d) combining means for combining character information with image information outputted from said image sensing means; and

e) compressing means for compressing the character information in accordance with an output from said detecting means.

5,621,460

OPTICAL DIFFERENTIATION BETWEEN PLANTS AND BACKGROUND UTILIZING A SINGLE CCD CAMERA

John D. Hatlestad, Burnsville, and Gerald F. Sauter, Eagan, both of Minn., assignors to Lockheed Martin Corporation, Bethesda, Md.

Continuation of Ser. No. 321,568, Oct. 11, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 496,615

Int. Cl.[6] H04N *9/097*

U.S. Cl. 348—265 **9 Claims**

1. An optical image sensor means for receiving a sensed light image comprising:

a plurality of planar sensing means located in a first plane, each of said sensing means being capable of providing an output signal that is representative of an optical frequency passband beam that impinges thereon,

a plurality of optical filter means located in a second plane adjacent said first plane, and each of said optical filter means is located to receive one of a plurality of split optical image beams and to provide an optical frequency passband beam to only one of said sensing means.

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an optical beam-splitting means positioned to receive an optical image beam and to split said optical image beam into said plurality of split optical image beams that are each substantially identical in frequency composition and are each directed along independent paths such that each of said plurality of split optical image beams impinges upon a respective one of said optical filter means,

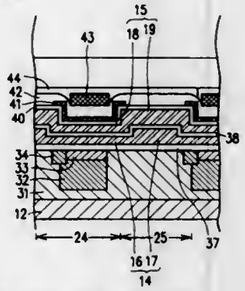
wherein all of said optical filter means are positioned adjacent said optical beam-splitting means without any intervening air space between said filter means, and said optical beam-splitting means, and said optical beam-splitting means comprises a block of optically transparent material and a plurality of non-dichroic mirrors that are attached to said block without any intervening air space so that said split optical image beams are received and passed through said block to their respective optical filter means without any intervening air space.

5,621,461

SOLID STATE IMAGE DEVICE WITH GATE ELECTRODES HAVING LOW RESISTANCE AND A METHOD OF PRODUCING THE SAME

Hiroshi Higashide, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 288,937, Aug. 10, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 523,031
Claims priority, application Japan, Oct. 5, 1993, 5-249509
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—302 **7 Claims**



1. A solid state image device comprising:

a plurality of photoelectric converting elements arranged in a matrix pattern along a first and a second direction in a semiconductor substrate;

a plurality of electric charge transfer regions for receiving electric charges from the photoelectric converting elements and for transferring the electric charges toward the first direction, the electric charge transfer regions being provided adjacent the plurality of photoelectric converting elements in the semiconductor substrate and extending along the first direction;

a plurality of gate electrodes for applying a voltage to the electric charge transfer regions to transfer the electric charge from the photoelectric converting elements to the electric charge transfer regions, and to transfer the electric charges toward the first direction, each of the gate electrodes having:

a plurality of transfer electrode portions provided over the electric charge transfer regions;

a plurality of clip electrode portions electrically connecting the plurality of the transfer electrode portions to each other along the second direction, the plurality of the clip electrode portions having a greater thickness than that of the plurality of the transfer electrode portions such that a thickness ratio of the clip electrode portions and the transfer electrode portions is substantially two-to-one; and

light shielding means, provided over only the electric charge transfer regions, for shielding the electric charge transfer regions from incident light,

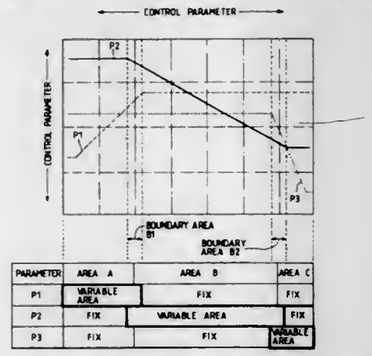
wherein a distance, between the semiconductor substrate and a top surface of the clip electrode portions, is equal to or smaller than a distance between the semiconductor substrate and a top surface of the light shielding means.

5,621,462

IMAGE PICKUP DEVICE CAPABLE OF CONTROLLING MADE PICKUP OPERATION

Koji Takahashi; Kenji Kyuma; Kyoji Tamura, all of Yokohama, and Yuji Tsuda, Musashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 931,820, Aug. 18, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 311,207
Int. Cl.[6] H04N *5/238*
U.S. Cl. 348—363 **18 Claims**



1. An image pickup device capable of controlling an image pickup operation with plural control parameters, comprising:

a) means for dividing the control range of each of said plural control parameters into plural ranges in which the corresponding control parameters is varied or fixed, plural-ranges of said plural control parameters being divided in different manners respectively so that a position of a boundary of said plural ranges is different with respect to the each individual control parameters; and

b) control means for controlling said image pickup operation, based on the control parameters in the divided ranges corresponding to each other.

5,621,463

EASILY EXPANDABLE TRANSPORT STREAM ENCODER

Paul W. Lyons, New Egypt; Victor V. D'Alessandro, Berkleley Heights, both of N.J.; Alfonse A. Acampora, New York, N.Y., and Nicola J. Fedele, Kingston, N.J., assignors to Thomson multimedia S.A., Courbevoie, France

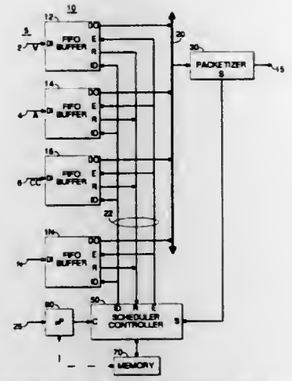
Filed May 16, 1995, Ser. No. 442,430
Int. Cl.[6] H04N *7/52*
U.S. Cl. 348—387 **14 Claims**

1. A transport stream encoder, comprising:

a plurality of buffers coupled to respective sources of component signals, each having a data output terminal for producing component signal data;

a packetizer, having a data input terminal for receiving component signal data, for producing a packet stream; and

a data bus, coupled in common to the respective data output terminals of the plurality of buffers and the data input terminal



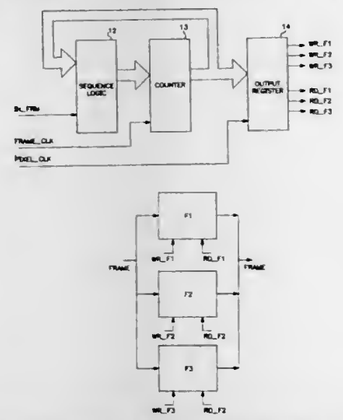
of the packetizer, for conveying output data from said buffers to said packetizer.

5,621,464

METHOD OF REORDERING A DECODED VIDEO PICTURE SEQUENCE

Eng H. Teo, Jalan Lembah Thomson, and Chee S. Khor, Singapore, both of Singapore, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 2, 1995, Ser. No. 382,663
Claims priority, application Japan, Feb. 3, 1994, 6-011763
Int. Cl.[6] H04N *7/26*
U.S. Cl. 348—390 **6 Claims**



1. A method of reordering a decoded video picture sequence into a sequence of correct display order, the method comprising the steps:

determining whether an incoming picture type of an incoming decoded picture is an intra-coded frame type, a predictively-coded frame type or a bi-directionally-predictive coded frame type,

determining which one of three frame buffers in a memory buffer is to be used for storing the incoming decoded picture in response to the incoming picture type and determining an availability of each one of the three frame buffers, where each one of the three frame buffers can store a fully decoded video picture having any one of the intra-coded frame type, the predictively-coded frame type, and the bi-directionally-predictive coded frame type,

identifying the incoming picture type of the incoming decoded picture stored in each one of the three frame buffers, and

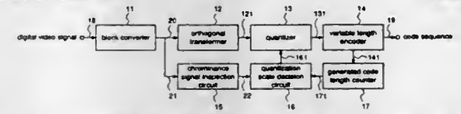
determining the incoming picture type to be displayed and which one of the three frame buffers contains the incoming decoded picture which has the incoming picture type to be displayed.

5,621,465

COLOR IMAGE ENCODER

Satoshi Kondo, Kyoto-fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1996, Ser. No. 630,777
Claims priority, application Japan, Apr. 11, 1995, 7-085288
Int. Cl.[6] H04N *7/26*
U.S. Cl. 348—395 **7 Claims**



1. A color image encoder for coding a digital color video signal comprising a Y signal as a luminance signal and R-Y and B-Y signals as chrominance signals, the color image encoder comprising:

a block converter for dividing the digital color video signal into blocks for the Y signal, the R-Y signal, and the B-Y signal;

an orthogonal transformer for orthogonally transforming the digital color video signal divided into the blocks, for each block, to produce orthogonal transform coefficients;

a quantizer for quantizing the orthogonal transform coefficients;

a variable length encoder for coding the quantized orthogonal transform coefficients to produce a code sequence;

a generator code length counter for accumulatively counting the length of the code sequence which is successively coded by the quantizer, in a collection of blocks for which the generated code length counted by the variable length encoder is to be made constant;

a chrominance signal inspection circuit for calculating an absolute value of a difference between an average of pixel values in each block of at least one of the two chrominance signals and a value in an achromatic level of the chrominance signal, detecting a maximum value from the absolute values in a unit of a collection of pixels for which a quantization scale used in the quantizer is to be changed, and comparing the maximum value with a prescribed threshold value; and

a quantization scale decision circuit for providing a real quantization scale used in the quantizer on the basis of the length of the code sequence counted by the generator code length counter when the chrominance signal inspection circuit judges that the maximum value is smaller than the threshold value, and providing a real quantization scale used in the quantizer so that it becomes smaller than an interim quantization scale which is obtained on the basis of the length of the code sequence counted by the generator code length counter when the chrominance signal inspection circuit judges that the maximum value is larger than the threshold value.

5,621,466

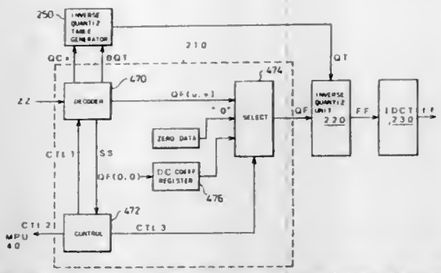
METHOD AND APPARATUS FOR COMPRESSING AND DECOMPRESSING IMAGE DATA USING TWO DIMENSIONAL ORTHOGONAL TRANSFORM WITH IMPROVED COMPRESSION RATE

Toshiki Miyane, and Uichi Sekimoto, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 466,511, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 127,533, Sep. 28, 1993, abandoned. This application Jan. 30, 1996, Ser. No. 594,375
Claims priority, application Japan, Sep. 28, 1992, 4-258398; Mar. 25, 1993, 5-066831
Int. Cl.[6] H04N *7/30;7/32*
U.S. Cl. 348—405 **13 Claims**

1. A method of decompressing compressed image data including code data generated by successively executing orthugonal trans-

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form, quantization, and entropy encoding on image data, said method comprising the steps of:

a) providing said compressed image data including said code data for a plurality of pixel blocks in an image, a first coefficient code representing a first quantization-level factor for a first pixel block of a predetermined size, and a second coefficient code representing a second quantization-level factor for a second pixel block of said predetermined size;

providing a direct-current code table defining a coefficient code for a direct current component of quantized transform coefficients, and an alternating-current code table defining a coefficient code for alternating current components of said quantized transform coefficients;

b) executing entropy-decoding on said code data with said direct-current code table and said alternating current code table to generate quantized transform coefficients for said plurality of pixel blocks, and executing said entropy-decoding on said first and second coefficient codes with said direct-current code table to generate said first and second quantization-level factors, respectively, each of said first and second coefficient codes being defined by said direct-current code table;

c) multiplying predetermined basic quantization levels of a basic quantization table by said first and second quantization-level factors to generate first and second quantization tables, respectively, said first quantization table being used for said pixel block and successive pixel blocks after said first pixel block, and said second quantization table being used for said second block and successive pixel blocks after said second pixel block;

d) inversely quantizing said quantized transform coefficients for said first and second pixel blocks with said first and second quantization tables, respectively, to thereby obtain inversely-quantized transform coefficients; and

e) executing an inverse orthogonal transform on said inversely-quantized transform coefficient to obtain decompressed image data.

5,621,467

TEMPORAL-SPATIAL ERROR CONCEALMENT APPARATUS AND METHOD FOR VIDEO SIGNAL PROCESSORS

Max Chien, Plainsboro; HuiFang Sun, Cranbury, and Wilson Kwok, Plainsboro, all of N.J., assignors to Thomson multimedia S.A., Courbevoie, France

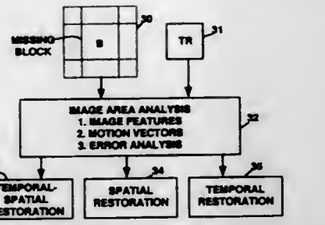
Filed Feb. 16, 1995, Ser. No. 389,524
Int. Cl.[6] H04N *7/68*

U.S. Cl. 348—409 **19 Claims**

14. Apparatus for generating a substitute block of video data for a block of missing of corrupt video data in a video decompression system, comprising:

a source of blocks of said video data, and a source of error tokens respective ones of which indicate blocks of missing or corrupt block of pixel data;

an interpolator, responsive to said error tokens, for generating a spatially interpolated block of data from video data spatially adjacent said block of missing or corrupt pixel data, and for



generating a temporally predicted block of pixel data corresponding to said block of missing or corrupt pixel data;

a processor responsive to video data spatially adjacent said block of missing or corrupt data for determining:

a) dominant image gradients in video data spatially adjacent said block of missing or corrupt data;

b) transform coefficients representing frequency spectra of said spatially interpolated block of data;

c) transform coefficients representing frequency spectra of said temporally predicted block of pixel data; and

said processor also forming a selected block of transform coefficients corresponding to said substitute block by selecting respective coefficients from said transform coefficients representing frequency spectra of said spatially interpolated block of data, and said transform coefficients representing frequency spectra of said temporally predicted block of pixel data according to a predetermined criteria; and inverse transforming the selected block of transform coefficients.

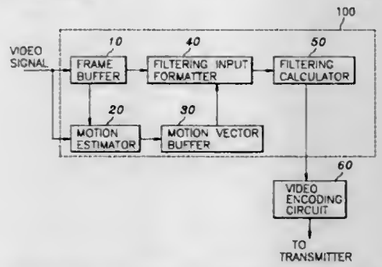
5,621,468

MOTION ADAPTIVE SPATIO-TEMPORAL FILTERING OF VIDEO SIGNALS

Jong-Hoon Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 7, 1994, Ser. No. 320,702
Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—416 **4 Claims**



1. An apparatus for providing a filtered data for each of pixels of a video signal by filtering the video signal with a predetermined temporal cutoff frequency to achieve a temporal band limitation thereof, wherein said video signal comprises a multiplicity of filtering input frames which include a target frame to perform a filtering operation thereon and a predetermined number of preceding frames and subsequent frames of said target frame, each of the filtering input frames having a multiple number of pixels, comprising:

means for estimating a plurality of motion vectors each of which represents the movement for each of the pixels included in the video signal;

means for determining a filtering input function for a target pixel included in the target frame, wherein the filtering input function includes a multiplicity of groups of filtering input data; each group of the filtering input data is determined on a trajectory of a pixel at the target pixel position in each of the multiplicity of filtering input frames based on a motion vector of the pixel at the target pixel position;

means for performing a convolution of the filtering input function with a filter impulse response determined according to a spatio-temporal cutoff frequency f_c which is represented as:

$$f_c = \frac{f_t^c}{L}$$

wherein f_t^c is the temporal cutoff frequency; and L is a predetermined positive integer related to the velocity of a moving object in the video signal, thereby obtaining filtered data for the target pixel in the target frame.

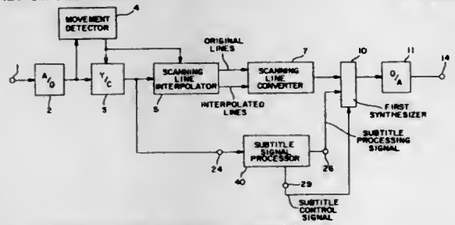
5,621,469

SCAN CONVERTING APPARATUS FOR TRANSFERRING SUBTITLES ON A SCREEN

Hiroki Monta, Ibaraki, and Ryuji Matsuura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 105,034, Aug. 11, 1993, Pat. No. 5,471,249. This application May 4, 1995, Ser. No. 433,685
Claims priority, application Japan, Aug. 11, 1992, 4-213875
Int. Cl.[6] H04N *5/278*

U.S. Cl. 348—445 **4 Claims**



1. A scan converting apparatus comprising:

a video signal input terminal,

an A/D converter connected to said video signal input terminal and which converts a video signal which is an input analogue signal including original scanning lines to a digital signal,

a movement detector connected to the output of said A/D converter and which detects moving parts in the video signal,

a brightness/chrominance signal separator connected to the output of said A/D converter and the output of said movement detector and which separates a brightness signal from the video signal,

a scanning line interpolator connected to a brightness signal output of said brightness/chrominance signal separator and an output of said movement detector and which creates an interpolated scanning line between one original scanning line and another original scanning line of said plurality of original scanning lines,

a scanning line converter connected to an original scanning line output of said scanning line interpolator and an interpolated scanning line output of said scanning line interpolator and for creating converted scanning lines between said one original scanning line and said interpolated scanning line, wherein each of said converted scanning lines has a weighted brightness relative to said one original scanning line and said interpolated scanning line, said original scanning lines, interpolated scanning lines, and converted scanning lines provided as interlaced video output signal,

a subtitle signal processor connected to said brightness signal output of said brightness/chrominance signal separator and which extracts a subtitle signal from said video signal and which generates a subtitle signal output and a subtitle control signal output,

a first synthesizer connected to said subtitle signal output of said subtitle signal processor, said subtitle control signal output of said subtitle signal processor, and said video output signal of said scanning line converter and synthesizes said subtitle signal output from said subtitle signal processor and said video output signal from said scanning line converter according to said subtitle control signal output from said subtitle signal processor to generate a further digital signal,

a D/A converter connected to an output of said first synthesizer and converts said further digital signal to a further analogue signal, and

a video signal output terminal which receives an output signal from said D/A converter.

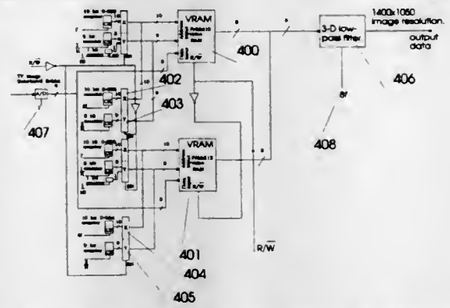
5,621,470

INTERPIXEL AND INTERFRAME INTERPOLATION OF TELEVISION PICTURES WITH CONVERSION FROM INTERLACED TO PROGRESSIVE SCANNING

Maher A. Sid-Ahmed, 12703 Riverside Dr., E., Tecumseh, Ontario, Canada

Continuation-in-part of Ser. No. 992,798, Dec. 8, 1992, abandoned. This application Jul. 7, 1995, Ser. No. 499,631
Int. Cl.[6] H04N *7/01;7/00*

U.S. Cl. 348—448 **15 Claims**



1. A system for expanding the number of pixels and frames of a television video signal to provide an improved definition image in a progressive scan format, comprising:

means for receiving pixels associated with an incoming frame of a digitized television image having a plurality of horizontal lines;

means for digitally interpolating the pixels along each horizontal line, between horizontal lines and between consecutive frames, including:

two read/write memory arrays in communication with a common output data bus, the arrays being configured to receive data representative of interlaced fields, each memory array alternating between read mode and write modes with each incoming new frame,

means for writing two consecutive fields of each frame into either of the two memory arrays, and

means for alternately addressing the two memory arrays to allow multiple reading of each pixel along each horizontal line, multiple reading of each horizontal line, and multiple reading of each frame,

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means for converting the digitally interpolated pixels into a progressive, raster-scanned format; and

means for displaying the converted pixels.

5,621,471

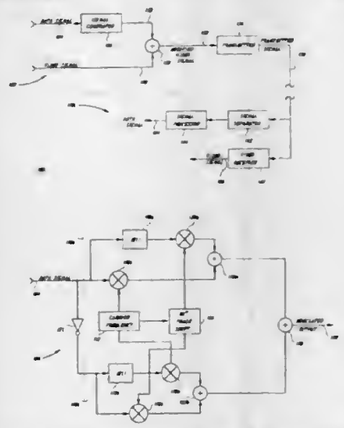
SYSTEM AND METHOD FOR INSERTING AND RECOVERING AN ADD-ON DATA SIGNAL FOR TRANSMISSION WITH A VIDEO SIGNAL

William E. Kim, King County; Nathan P. Myhrvold, Bellevue, and Gideon A. Yuval, Mercer Island, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed May 3, 1994, Ser. No. 237,265

Int. Cl.[6] H04N *7/081*

U.S. Cl. 348—473 **33 Claims**



1. A system for inserting a data signal into an existing video signal, comprising:

a signal generator operatively receiving the data signal and generating a modulated signal at a predetermined carrier frequency having upper and lower sidebands, said upper and lower sidebands of said modulated signal having a phase relationship such that said upper and lower sidebands of said modulated signal are substantially 180° apart with respect to each other;

an adder adding said modulated signal and the existing video signal to produce a modified video signal;

a transmitter transmitting said modified video signal;

a television receiver having a television video demodulator receiving said modified video signal and demodulating said modified video signal to recover the existing video signal and to substantially cancel said modulated signal;

a signal processor receiving said modified video signal and generating a recovered signal having upper and lower sidebands, each containing said modulated signal and the existing video signal, said recovered signal having a phase relationsnip of substantially 0° between said modulated signal in said upper sideband of said recover signal and said modulated signal in said lower sideband of said recovered signal, said recovered signal also containing the existing video signal having a phase relationship of substantially 180° between the existing video signal of said upper sideband of said recovered signal and the existing video signal in said lower sideband of said recovered signal; and

a demodulator demodulating said recovered signal to recover the data signal and to substantially cancel the existing video signal, whereby the data signal is inserted into the existing video signal, transmitted with the existing video signal, and after receipt separated from the existing video signal.

5,621,472

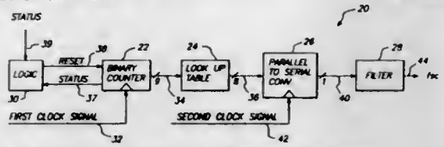
SYSTEM FOR INEXPENSIVE PHASE COHERENT SUBCARRIER GENERATION

Henry N. Kannapell, Gainesville, Ga., and Lawrence F. Heyl, Mountain View, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 1, 1994, Ser. No. 222,739

Int. Cl.[6] H04N *9/45;9/455*

U.S. Cl. 348—505 **16 Claims**



1. A system for generating a subcarrier, comprising:

a binary counter having an output which generates a first parallel digital output signal;

said binary counter coupled to a first clock signal having a first frequency, said first parallel digital output signal increasing with each cycle of said first clock signal;

a lookup table, coupled to said first parallel digital output signal, for generating a second parallel digital output signal representative of said subcarrier;

a parallel-to-serial converter, coupled to said second parallel output signal, for converting said second parallel digital output signal to a serial digital output signal;

a filter, having an input and an output;

said input of said filter coupled to said serial digital output signal; and

said subcarrier generated at said output of said filter.

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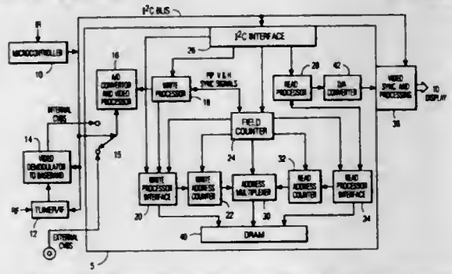
METHOD AND DEVICE FOR PROVIDING VIDEO INSTANT REPLAY IN A PICTURE-IN-PICTURE

Rae L. Hill, Jefferson City, Tenn., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 488,543

Int. Cl.[6] H04N *5/45*

U.S. Cl. 348—559 **21 Claims**



1. A method of providing video instant replay of a sequence of fields in a picture-in-picture (PIP) display of a television receiver, comprising the steps of:

acquiring each field of a string of consecutive video fields;

displaying each field of the string of consecutive video fields on the television receiver;

decimating in time said each field of said string of consecutive video fields;

selecting a plurality of non-consecutive fields of said string of consecutive video fields to be stored in a memory for future re-display;

storing the plurality of non-consecutive decimated fields in said memory;

retrieving the stored fields from the memory in sequence; and

re-displaying in the PIP the sequence of fields previously displayed on the television and retrieved from the memory.

5,621,474

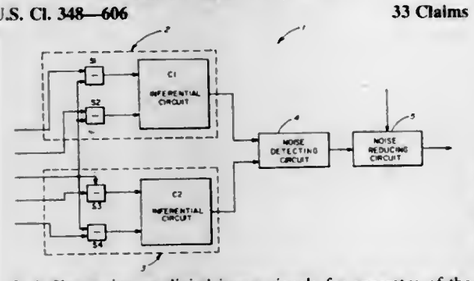
FILTER WORKING ON IMAGE DIGITAL SIGNALS FOR VIDEO APPLIANCES

Massimo Mancuso, Monza; Rinaldo Poluzzi, Milan, and Gianguido Rizzotto, Civate, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Nov. 28, 1994, Ser. No. 345,512

Int. Cl.[6] H04N *5/21;5/213*

U.S. Cl. 348—606 **33 Claims**



1. A filter acting on digital image signals for apparatus of the video type, the filter comprising: a first processing circuit and a second processing circuit adapted to indicate a possible image edge, each of said processing circuits having an inferential circuit operating on fuzzy logic, each of said inferential circuits having first and second input terminals and an output terminal, each of said processing circuits further having first and second comparison elements, each of said comparison elements having first and second input terminals and an output terminal, said input terminals of each of said comparison elements being intended for receiving discrete digital signals of an image, said discrete digital signals including a pixel under processing and a plurality of neighboring pixels, said first input terminal of each of said comparison elements to receive the pixel under processing and each of said second input terminal of each of said comparison elements to receive one neighboring pixel of the plurality of neighboring pixels, respectively; and the output terminals of the first and second comparison elements in the first processing circuit being respectively connected to the first and second input terminals of the inferential circuit included in said first processing circuit, and the output terminals of the first and second comparison elements in the second processing circuit being respectively connected to the first and second input terminals of the inferential circuit included in said second processing circuit.

5,621,475

CIRCUIT FOR JUDGING THE EXISTENCE OF TELEVISION IMAGE SIGNALS

Toshiaki Irie, Daito, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

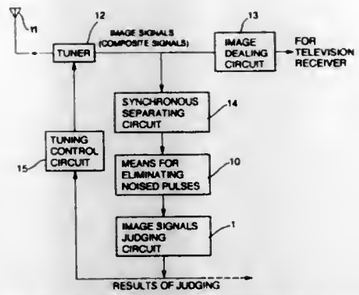
Filed Nov. 8, 1994, Ser. No. 336,313

Claims priority, application Japan, Nov. 9, 1993, 5-304805

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—607 **3 Claims**

1. A circuit for establishing the existence of a television image signal in a composite video signal which includes horizontal synchronous signals and superimposed noise signals within predetermined time periods following the horizontal synchronous signals, each horizontal synchronous signal having a leading edge, the circuit comprising: separating means for separating the horizontal synchronous signals and the noise signals from the composite signal; noise elimination means for receiving said synchronous signals and the noise signals from said separating means and for eliminating the noise signals by masking the noise signals during each of the predetermined periods following each of the horizontal synchronous signals, said noise eliminating means outputting noise-free horizontal synchronous signals; and image determining means for receiving the noise-free horizontal synchronous signals and determining the existence of a television image signal by counting the number of the noise-free horizontal synchronous signals and providing an output signal representing the existence of the television image signal when a predetermined count is established, said noise elimination means including a mask timer which produces a masking pulse having a time period substantially equal to each of said predetermined time periods, said mask timer being formed as a memory timer in a memory for a microcomputer and triggered by a leading edge of each of the horizontal synchronous signals and outputting said mask pulse having a predetermined level from a time that said memory timer is triggered to a time that said time period elapses.



5,621,476

REDUCING THE EFFECTS OF NOISE IN LEVEL NUMBER TRANSFORMATION

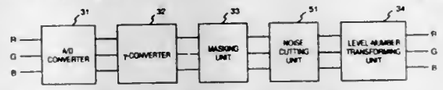
Takeshi Makita, Yokohama; Susumu Sugiura, Atsugi, and Osamu Yamada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 243,929, May 17, 1994, Pat. No. 5,463,478. This application Jun. 5, 1995, Ser. No. 464,367

Claims priority, application Japan, May 24, 1993, 5-121211

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—620 **4 Claims**



1. An image processing apparatus comprising:

a memory medium for storing at least one frame of pixel data constituting moving-picture data and containing noise components;

detecting means for detecting an amount of change between newly entered pixel data and pixel data, of an identical position, stored in said memory medium;

removing means for removing noise components contained in the newly entered pixel data by replacing the newly entered pixel data with the pixel data stored in said memory medium when the amount of change detected by said detecting means is less than a predetermined value;

transforming means for transforming a number of gray levels of the pixel data of which noise components have been removed by said removing means; and

accumulating means for accumulating an error, which is produced when the pixel data is subjected to a level-number transformation, as error data for distributing the error to a plurality of items of pixel data not yet processed,

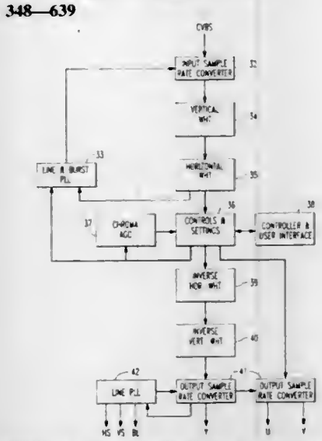
said removing means comprising selecting means for selecting pixel data stored in said memory medium when the amount of change detected by said detecting means is less than the predetermined value, and for selecting the newly entered pixel data when the amount of change detected by said detecting means is greater than or equal to the predetermined value, and directly provides data selected by said selecting means to said transforming means without processing the selected data.

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5,621,477
DIGITAL DECODER AND METHOD FOR DECODING COMPOSITE VIDEO SIGNALS

Walter Demmer, Dormitzer Strasse 3, 90411 Nuremberg, Germany

Filed Jun. 8, 1995, Ser. No. 496,868
Claims priority, application Germany, Jul. 1, 1994, 44 23 226.8
Int. Cl.[6] H04N *7/12;7/36*
U.S. Cl. 348—639 **17 Claims**



1. A method for digitally decoding a composite video signal (CVBS), comprising a brightness signal (luminance component Y) and two color difference signals (chrominance components U, V), which modulate a color subcarrier according to the quadrature amplitude modulation principle, comprising the steps of:;

transforming a plurality (N) of sample values of the video signal by means of a Walsh-Hadamard transformation (WHT) from the pixel domain into a WHT domain resulting in a WHT matrix,

deriving the color difference signals (U, V) as specific WHT coefficients of the WHT matrix obtained,

subtracting the WHT coefficients that determines the color difference signals (U, V) from the WHT matrix,

transforming the WHT matrix back into the pixel domain by means of an inverse Walsh-Hadamard transformation (IWHT), and

deriving the brightness signal (Y) from the IWHT result.

5,621,478
MULTISTANDARD DECODER FOR VIDEO SIGNALS AND VIDEO SIGNAL DECODING METHOD

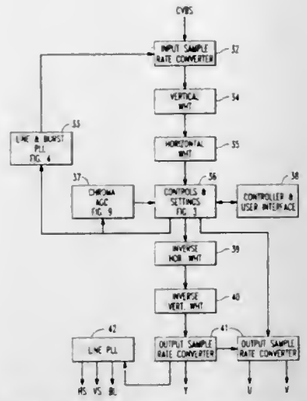
Walter Demmer, Nuremberg, Germany, assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1995, Ser. No. 497,008
Claims priority, application Germany, Jul. 1, 1994, 44 23 214.4
Int. Cl.[6] H04N *9/66*
U.S. Cl. 348—639 **14 Claims**

1. A digital decoder for video signals having a luminance signal component, chrominance signal component, color subcarrier signal, color subcarrier frequency, burst pulse and line sync pulse, comprising:

a sample rate converter, for converting sample values of a video signal digitized at a first predetermined clock frequency into video signal sample values at a second virtual sampling frequency;

a phase-locked loop for controlling the sample rate converter and which has a sync detector in order to determine the line sync pulse and set the virtual sampling frequency to an integer multiple of the line frequency of the video signal, and which



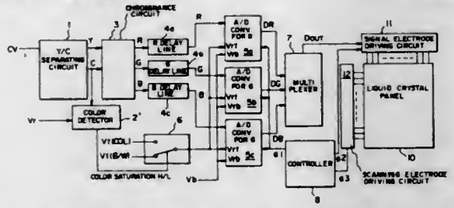
has a burst detector in order to set or lock-in the virtual sampling frequency synchronously with the phase of the color subcarrier signal of the video signal; and

a decoding-demodulating device for the recovery of the luminance and chrominance signal components from the video signal sample values at the virtual sampling frequency.

5,621,479
METHOD OF DRIVING A LIQUID CRYSTAL DISPLAY DEVICE

Takashi Akiyama, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/00534, § 371 Date Nov. 17, 1995, § 102(e) Date Nov. 17, 1995, PCT Pub. No. WO95/26109, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 23, 1995, Ser. No. 545,574
Claims priority, application Japan, Mar. 23, 1994, 6-051661
Int. Cl.[6] H04N *9/68;9/30*
U.S. Cl. 348—648 **4 Claims**



1. A method of driving a liquid crystal display device for converting a composite video signal into RGB analog video signals by a chrominance circuit, and controlling a transmittance of each pixel corresponding to each color of red, green and blue on a liquid crystal panel based on voltage levels of said RGB analog video signals so as to perform color display, the method comprising the steps of:

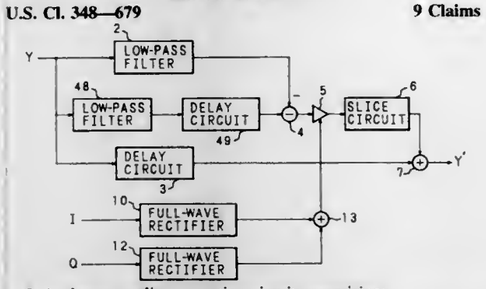
detecting a color saturation of a picture based on said composite video signal; and

controlling the transmittance of each pixel based on a transmittance characteristic of each pixel relative to said RGB analog video signals, wherein said RGB analog video signals are reduced in voltage levels at which the transmittance of each pixel of red, green and blue on said liquid crystal panel reaches a maximum value as the detected color saturation is increased above a predetermined threshold level.

5,621,480
IMAGE QUALITY CORRECTION CIRCUIT AND METHOD BASED ON COLOR DENSITY

Masaaki Hanai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 226,510
Claims priority, application Japan, Apr. 19, 1993, 5-091427; Dec. 24, 1993, 5-327770; Apr. 11, 1994, 6-072319
Int. Cl.[6] H04N *5/52*
U.S. Cl. 348—679 **9 Claims**



1. An image quality correction circuit comprising:

color density detecting means for detecting color density from a luminance signal and a chrominance signal;

high-frequency component filtering means for filtering out a high-frequency component of the luminance signal;

a variable gain amplifier for amplifying the filtered luminance signal by performing control in such a manner that the gain of the variable gain amplifier is increased when the detected color density is high and is reduced when the detected color density is low;

a slice circuit for slicing a positive portion of the outputted amplitude of said variable gain amplifier at a prescribed value to output a negative portion thereof as an image quality correction signal; and

means for combining the image quality correction signal outputted from said slice circuit with the luminance signal and thereby outputting a corrected luminance signal.

5,621,481
MOTION VECTOR DETECTING APPARATUS FOR DETERMINING INTERFRAME, PREDICTIVE ERROR AS A FUNCTION OF INTERFIELD PREDICTIVE ERRORS

Kazunori Yasuda, and Jun Yonemitsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP94/00594, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/24821, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 8, 1994, Ser. No. 343,518
Claims priority, application Japan, Apr. 8, 1993, 5-082105
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—699 **8 Claims**

5. A motion vector detecting method of detecting a motion vector between a current picture consisting of a first field and a second field and a reference picture consisting of a first field and a second field, the method comprising the steps of:

determining interfield predictive evaluation values of first predictive errors with respect to respective plural candidate motion vectors between the first field of the current picture and the first field of the reference picture;

determining interfield predictive evaluation values of second predictive errors with respect to respective plural candidate motion vectors between the second field of the current picture and the second field of the reference picture;

determining interfield predictive evaluation values of third predictive errors with respect to respective plural candidate motion vectors between the first field of the current picture and the second field of the reference picture;

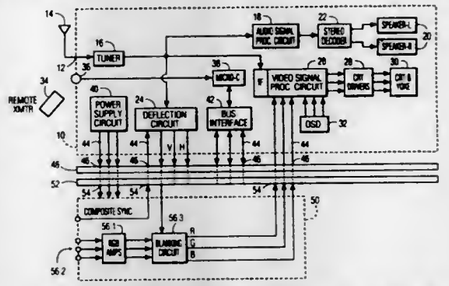
determining interfield predictive evaluation values of fourth predictive errors with respect to respective plural candidate motion vectors between the second field of the current picture and the first field of the reference picture; and

determining an interframe motion vector between the current picture and the reference picture as a function of said interfield predictive evaluation values of the first, second, third and fourth predictive errors.

5,621,482
INTERFACE SYSTEM FOR A TELEVISION RECEIVER

Timothy J. Gardner; Spyros Bournias, and Larry Johnson, all of Knoxville, Tenn., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 362,037, Dec. 22, 1994. This application Nov. 13, 1995, Ser. No. 556,692
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—725 **5 Claims**



1. An interface system for a television receiver, said television receiver comprising a tuner for receiving and selectively tuning to a television signal, a deflection circuit coupled to said tuner for generating deflection signals from synchronization signals contained in said television signal, an audio signal processing circuit coupled to said tuner for processing an audio signal contained in said television signal, a video signal processing circuit coupled to said tuner for processing a video signal contained in said television signal, a display coupled to said deflection circuit and said video signal processing circuit for displaying said video signal in dependence on said deflection signals, and a power supply circuit for supplying operating power to each of the above circuits, wherein said interface system comprises:

standard bus means having M leads separately connected to said audio signal processing circuit, said deflection circuit, said video signal processing circuit and said power supply circuit, where M is an integer greater than one;

connector means having M contacts connected, respectively, to said M leads in said standard bus means; and

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circuit board means accessible by a user of said television receiver, said circuit board means having plug means connectable to said connector means, said plug means having N contacts corresponding, respectively, to at least some of the M contacts in said connector means, where N is an integer less than or equal to M, and circuit means connected to said N contacts in said plug means, said circuit means, when connected through said plug means, said connector means and said standard bus means to at least one of the audio signal processing circuit, the video signal processing circuit, the deflection circuit and the power supply circuit in the television receiver, modifies the operation of said television receiver thereby providing additional features for the user, wherein said television receiver further comprises a remote control receiver for receiving remote control signals from a remote control transmitter, and a microcomputer for controlling said television receiver at least partly in response to signals from said remote control receiver, and said standard bus includes leads connected to said microcomputer, said microcomputer being connected to said circuit board by said connector means and said plug means so that said circuit means on said circuit board means are controlled by said microcomputer, wherein said interface system provides separate red, green and blue inputs for said television receiver, characterized in that the circuit means on said circuit board means includes red, green and blue signal amplifiers for amplifying red, green and blue signals applied to inputs on said circuit board means; and a blanking circuit having inputs connected, respectively, to outputs said red, green and blue amplifiers, said blanking circuit having red, green and blue outputs coupled to three contacts of said N contacts of said plug means, for connecting to corresponding three contacts of said M contacts of said interface connector means, said corresponding three contacts of said M contacts of said interface connector means being connected to said video signal processing circuit.

5,621,483

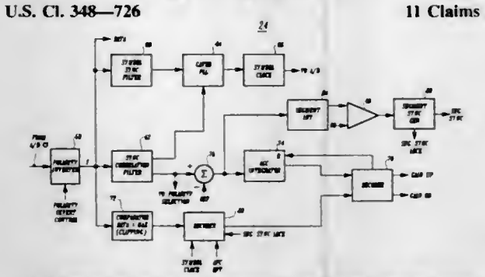
POLARITY SELECTION CIRCUIT FOR BI-PHASE STABLE FPLL

Gopalan Krishnamurthy, Wheeling; Timothy G. Laud, Mundelein, and Ronald B. Lee, Northbrook, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation of Ser. No. 174,867, Dec. 29, 1993. This application Jul. 10, 1995, Ser. No. 500,272

Int. Cl.[6] H04N *5/455*

U.S. Cl. 348—726 **11 Claims**



1. A method of operating a receiver including a bi-phase stable synchronous demodulator for demodulating a received data signal, said data signal being formatted in successive data segments, with each data segment including sync information, comprising:

deriving data segment sync information from said demodulated received data signal; and

phase inverting the demodulated received data signal if the derived data segment sync information corresponding to a plurality of successive data segments indicates that the demodulated received data signal is of improper polarity.

5,621,484

USER-PROGRAMMABLE CONTROL DEVICE FOR A TELEVISION APPARATUS

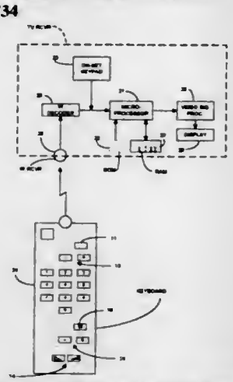
Michel Cotty, Mezieres/Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 442,554, May 16, 1995. This application May 29, 1996, Ser. No. 657,476

Claims priority, application France, May 18, 1994, 94 06073

Int. Cl.[6] H04N *5/44;5/445*

U.S. Cl. 348—734 **7 Claims**



1. A control device for an audio or video apparatus, comprising normal acquisition means with which a plurality of different types of settings can be chosen by specific control sequences, each resulting in the setting of a given variable to be set in association with means for carrying out said setting, and comprising a first memory for storing a plurality of type codes, each of said plurality of type codes being defined, respectively, for each variable to be set so as to identify which variable to be set is concerned, a second memory having a memory location for temporarily storing one of said plurality of type codes, and writing means for writing a type code, from said first memory, of a respective variable to be set, into said memory location of said second memory, characterized in that the control device further comprises means for automatically activating said writing means whenever a given variable is set at the end of one of said specific control sequences, whereby the type code of the variable which has thus been set is written in the memory location of said second memory, and easy acquisition means with which the variable whose type code is stored in said memory location of said second memory can be set, in association with said means for carrying out said setting.

5,621,485

APPARATUS AND METHOD FOR SYNCHRONIZING A HORIZONTAL DEFLECTION SIGNAL WITH A HORIZONTAL SYNC SIGNAL

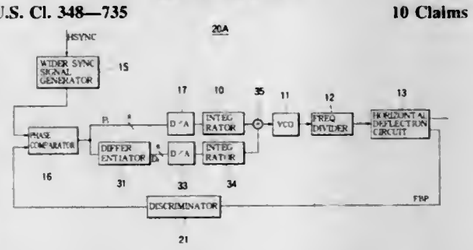
Chojiro Terao, Amagasaki, and Ko Nishino, Nagaokakyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,553

Claims priority, application Japan, Jul. 14, 1994, 6-162297

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—735 **10 Claims**



1. An automatic frequency control circuit for synchronizing a horizontal deflection current of a television receiver with a horizontal sync signal comprising:

a voltage-controlled oscillator for producing clock pulses having an oscillating frequency;

a frequency divider for frequency-dividing the oscillating frequency of the clock pulses output from said voltage-controlled oscillator;

a horizontal deflection circuit for producing the horizontal deflection current in synchronism with a flyback pulse in accordance with the output of said frequency divider;

means responsive to the flyback pulse for producing a bi-level signal according to whether the flyback pulse is or is not above a threshold value;

a wider sync signal generator responsive to the horizontal sync signal for producing a wider sync signal in synchronism with the horizontal sync signal and having a pulse width wider than the horizontal sync signal and equal to an odd multiple of an operating clock period;

a phase comparator responsive to the wider sync signal and the bi-level signal, and producing phase error data by detecting a difference in a number of clock pulses between a first period from a leading edge of the wider sync signal to an edge of the bi-level signal, and a second period from the edge of the bi-level signal to a trailing edge of the wider sync signal; and

means, responsive to the output of said phase comparator, for producing a control voltage for controlling the oscillating frequency of said voltage-controlled oscillator.

5,621,486

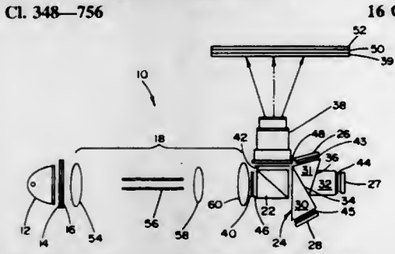
EFFICIENT OPTICAL SYSTEM FOR A HIGH RESOLUTION PROJECTION DISPLAY EMPLOYING REFLECTION LIGHT VALVES

Fuad Doany, Katonah; Derek B. Dove, Mount Kisco, both of N.Y.; Rama Singh, Bethel, Conn.; Alan Rosenbluth, Yorktown Heights, N.Y.; George Chiu, Cross River, N.Y.; Thomas Cipolla, Katonah, N.Y., and Janusz Wilczynski, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1995, Ser. No. 493,736

Int. Cl.[6] H04N *9/31;5/74*

U.S. Cl. 348—756 **16 Claims**



1. An apparatus for projecting an image comprising:

a color splitting prism assembly having a plurality of output-input faces;

a reflective spatial light modulator at each of said output-input faces, each of said spatial light modulators having a reflective surface defining a geometrical shape;

a light tunnel positioned within a first light path between a light source and said color splitting prism assembly, said light tunnel having a cross-sectional shape corresponding to said geometrical shape;

a color filter positioned between each of said reflective surfaces and said output-input faces;

a polarizing beam splitter positioned within said first light path;

a projection lens positioned in a second light path between said polarizing beam splitter and a screen;

means for suppressing stray light reflected from said screen back into said projection lens; and

means for suppressing ambient light from illuminating said screen.

5,621,487

PICTURE DISPLAY APPARATUS HAVING MULTIPLE DIFFUSING FILTER SURFACES

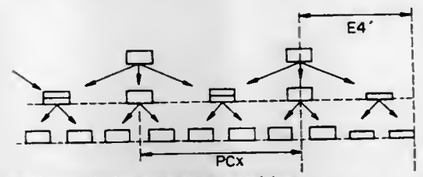
Yoshiki Shirochi, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,676

Claims priority, application Japan, Oct. 19, 1992, 4-306003

Int. Cl.[6] G02F *1/1335;* **G02B** *27/46;* **H04N** *9/083*

U.S. Cl. 349—112 **26 Claims**



1. A picture display apparatus comprising:

a display device having pixels disposed in a mosaic pattern; and

an optical filter comprised of a transparent plate having two surfaces parallel to each other, each of said two surfaces causing diffraction or refraction for diffusing an image of each of said pixels to generate a plurality of diffused pixel images wherein said optical filter is placed between said display device and a viewer with said two surfaces overlapping each other;

said two surfaces of said optical filter working as a first and a second optical filter wherein said first optical filter diffuses said image of each pixel into three pixel images respectively along X and Y axes and said second optical filter further diffuses each pixel image from said first optical filter into two pixel images respectively along X and Y axes so that the total number of diffused pixel images is thirty six.

5,621,488

APPARATUS FOR IMAGING AND DIAGNOSING A CORNEA

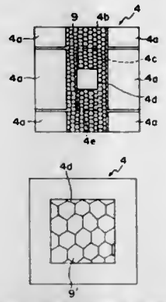
Yoshihiko Hanamura; Kouji Nishio, and Yasufumi Fukuma, all of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan

Continuation of Ser. No. 173,074, Dec. 27, 1993, abandoned. This application Dec. 7, 1995, Ser. No. 569,832

Claims priority, application Japan, Dec. 28, 1992, 4-348623

Int. Cl.[6] A61B *3/14;3/10*

U.S. Cl. 351—206 **12 Claims**



1. An apparatus for ascertaining the number of cells of an endothelium of a cornea of a subject's eye, comprising:

means for storing an image of cells of an endothelium of a photographed cornea;

a display for displaying said stored image;

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means for partitioning said image displayed on said display by a square, the square representing a unit area; and

means for enlarging the square as well as the partitioned image within the enlarged square and displaying the enlarged image on said display;

wherein the number of cells in the square is the same before and after enlargement of the image.

5,621,489

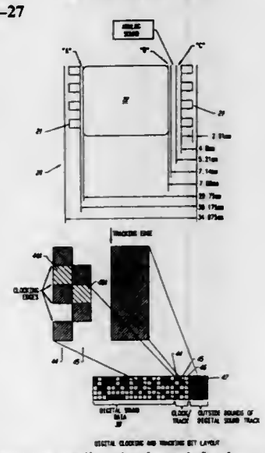
MEDIUM HAVING PHOTOGRAPHICALLY RECORDED DIGITAL AUDIO BITS

Michael Kohut, Ojai; Dana Wood, Los Angeles; Paul Wood, Glendale; Jeff Taylor, Chatsworth; Leroy Reese, Burbank; Aram Tanielian, Rancho Palos Verdes; Jaye M. Waas, Manhattan Beach; Mark Waring, Torrance, and George Carlsen, Cardiff, all of Calif., assignors to Sony Corporation, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Continuation of Ser. No. 296,238, Aug. 25, 1994, abandoned, which is a division of Ser. No. 185,183, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 896,229, Jun. 10, 1992, Pat. No. 5,327,182. This applicatioo Feb. 22, 1996, Ser. No. 605,685

Int. Cl.[6] G03B *31/02*

U.S. Cl. 352—27 **5 Claims**



1. A photosensitive medium having a left edge, a right edge, and a longitudinal axis parallel to the left edge and the right edge, wherein said photosensitive medium is a motion picture film through which a first column of sprocket holes and a second column of sprocket holes extend, the motion picture film having a picture area between the first column of sprocket holes and a second column of sprocket holes, and wherein image frames are recorded in the picture area, wherein the photosensitive medium includes:

a digital soundtrack region in which rows and columns of digital audio bits have been photographically recorded, wherein the digital soundtrack region and the columns of the digital soundtrack region are oriented parallel to the longitudinal axis, wherein each of said digital audio bits consists of one of an unexposed area and an exposed area;

a continuous unexposed region extending along the longitudinal axis outside an outermost one of the columns of the digital soundtrack region;

a continuous exposed region extending along the longitudinal axis between said outermost one of the columns of the digital soundtrack region and said continuous unexposed region, whereby there is a smooth tracking edge between the continuous unexposed region and the continuous exposed region;

a second digital soundtrack region in which rows and columns of digital audio bits have been photographically recorded and a third digital soundtrack region in which rows and columns of digital audio bits have been photographically recorded, wherein the columns of both the second digital soundtrack region and the third digital soundtrack region are oriented parallel to the longitudinal axis, and wherein the digital soundtrack region extends parallel to the longitudinal axis between the picture area and the first column of sprocket holes, the second digital soundtrack region extends parallel to the longitudinal axis between the picture area and the second column of sprocket holes, and the third digital soundtrack region extends parallel to the first axis between the second digital soundtrack region and the second column of sprocket holes.

5,621,490

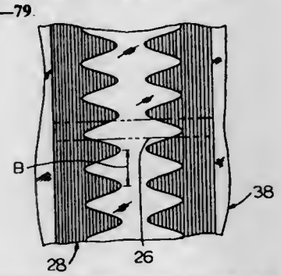
SOUND SYSTEM FOR COMPACT DISTRIBUTION PRINT

Clay Davis, Redondo Beach, Calif., assignor to The Todd-AO Corporation, Hollywood, Calif.

Filed Aug. 26, 1996, Ser. No. 697,606

Int. Cl.[6] G03B *31/00;41/00*

U.S. Cl. 352—79 **6 Claims**



1. A method for projecting a motion picture image contained on film of a compact distribution print format, and for creating sound represented by the varying width of a soundtrack of the film, comprising:

advancing the film in steps of about 0.47 inch each, every ½₄th to ⅓₀th of a second, through a film gate to move the film at a predetermined slow average speed, and moving the film at a constant speed equal to said slow average speed, past a sound head;

focusing light of a predetermined band of wavelengths at said sound head, onto a slit-shaped area of the soundtrack portion of said film, to form a slit-shaped image on the film, and allowing light passing through the soundtrack to fall onto a light cell which creates an electrical signal of an amplitude dependent upon the amount of light falling thereon;

selecting said photocell so its response is substantially flat at said predetermined band of wavelengths;

amplifying the output of said photocell so the amplification is progressively greater at progressively higher frequencies, with the gain at 12.5 kHz being at least about 8 dB greater than at 1 kHz.

5,621,491

VIBRATION DETECTION APPARATUS

Sueyuki Ohishi, Tokyo, and Nobuhiko Terui, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,794

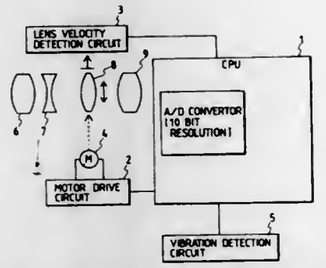
Claims priority, application Japan, Mar. 10, 1994, 6-040023

Int. Cl.[6] G03B *39/00;17/00;7/08*

U.S. Cl. 396—52 **18 Claims**

1. A vibration detection apparatus for a target detection object, comprising:

a vibration detector to detect a vibration of the target detection object and to output a signal corresponding to the vibration; and



a one-chip microcomputer to control the target detection object to compensate for the vibration and incorporating an A/D converter having a resolution of at least 10 bits, said A/D converter performing A/D conversion of the signal from said vibration detector.

5,621,492

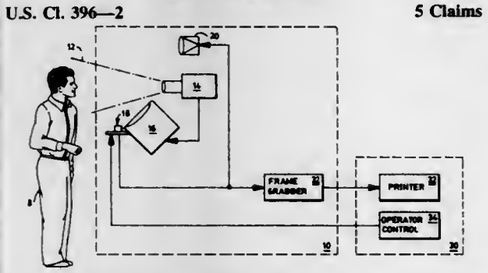
DISTRIBUTED PHOTOGRAPHIC SYSTEM FOR TAKING SELF PORTRAITS

Iain M. Beveridge, Glasgow, Scotland; Henny F. Waanders, Elbergen, and Machiel A. ten Brinke, Enschede, both of Netherlands, assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 25, 1995, Ser. No. 379,984

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—2 **5 Claims**



1. A photographic system for taking self-portraits in a commercial setting having an operator for vending items in the commercial setting and for receiving payment therefor at a vending station, said photographic system comprising

image acquisition means for capturing image bearing light reflected from a user and electronically displaying a continuous sequence of images represented by the image bearing light, said image acquisition means being user controlled to allow the user to choose a single image from the continuous sequence of images; and

image rendering means in electrical communication with the image acquisition means for printing said single image to create a printed image, the image rendering means being located remotely from the image acquisition means and controlled by the operator to govern print processing and delivery to the user and being disposed proximal to the vending station such that the operator can receive payment for the printed image.

5,621,493

PHOTOGRAPHIC CAMERA WITH SHIFTING CARTRIDGE HOLDER

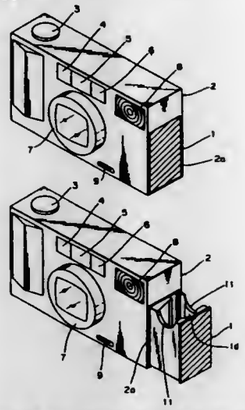
Shigeru Wada, Kishiwada; Michihiro Iwata, Sakai; Manabu Inoue, Kobe, and Sadafusa Tsuji, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 88,408, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 734,171, Jul. 22, 1991, abandoned. This application Sep. 20, 1994, Ser. No. 309,548

Claims priority, application Japan, Jul. 23, 1990, 2-196935; Aug. 13, 1990, 2-214709

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—538 **21 Claims**



1. An apparatus for use with a film cartridge which accommodates a film, comprising:

a body;

a cartridge chamber capable of holding a film cartridge to be used in said apparatus and having an opening for enabling a film cartridge to be inserted therein and removed therefrom, and movable relative to said body, in a direction perpendicular to a film feeding shaft of a film cartridge accomodated in said cartridge chamber, between a first position in which said opening is exposed and said film cartridge can be removed from said apparatus and a second position in which said film cartridge can be used in said apparatus, wherein movement of said cartridge chamber to said second position causes said opening to be covered by said body; and

means for shifting said cartridge chamber between said first and second positions.

5,621,494

CAMERA HAVING LIGHT-SOURCE DETERMINING FUNCTION

Jiro Kazumi, Kanagawa-ken; Toru Nagata, Tokyo, and Kenji Yokoyama, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,885

Claims priority, application Japan, Oct. 25, 1993, 5-287279; Oct. 25, 1993, 5-287281; Feb. 14, 1994, 6-037529

Int. Cl.[6] G03B *13/36;15/05;15/00;17/24*

U.S. Cl. 396—56 **9 Claims**

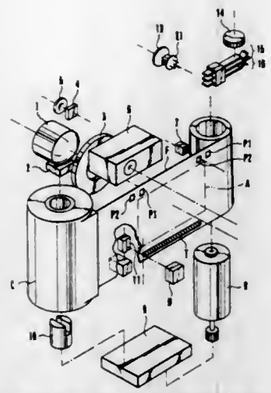
1. A camera comprising:

(a) a light measuring circuit which measures a light measuring value for exposure control;

(b) a light receiving circuit different from the light measuring circuit;

(c) a first processing circuit for processing an output of said light receiving circuit for implementing a predetermined function of said camera; and

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(d) a second processing circuit for determining a kind of light source of light received by said light receiving circuit on the basis of the output of said light receiving circuit.

5,621,495

REPRESENTATION OF DEPTH OF FIELD IN CAMERA

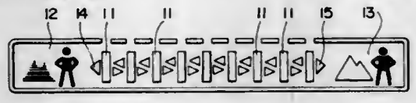
Masato Yamamoto, Saitama-ken; Toshimasa Yamanaka, Tokyo; Masahiro Nakajima, Tokyo, and Yutaka Ohsawa, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 159,106, Nov. 30, 1993, Pat. No. 5,510,875, which is a continuation of Ser. No. 984,496, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 656,597, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 324,043, Mar. 16, 1989, Pat. No. 5,019,852. This application Dec. 15, 1995, Ser. No. 573,489

Claims priority, application Japan, Mar. 16, 1988, 63-63814

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—89 **30 Claims**



1. A device for representing a depth of field in a camera, said device comprising:

calculating means for calculating a field depth factor Df, said field depth factor Df being obtained by processing a value substantially equal to a calculated depth of field and modifying said value in accordance with at least one of an object distance, a lens hyper-focal length, a diameter of a permissible circle of confusion, a lens aperture value and a lens focal length; and

display means for displaying a depth of field on a basis of a magnitude of the obtained field depth factor Df.

5,621,496

PHOTOPRINTING PROCESS AND DEVICE

Tohru Yoshikawa, and Yoshiyuki Yamaji, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

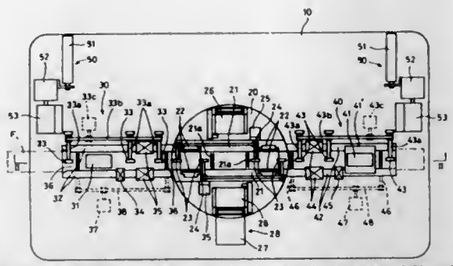
Filed Apr. 7, 1995, Ser. No. 418,778

Claims priority, application Japan, Apr. 8, 1994, 6-070681

Int. Cl.[6] G03B *27/00;27/62*

U.S. Cl. 355—18 **2 Claims**

1. A method of printing films wherein one of the following two methods is carried out selectively according to the kind of films to be processed: the first method comprising the steps of reading image data of a film in a scanner unit provided along a feed path of



strips of films or rolls of films, adjusting the feed speed of films in a feed speed adjusting unit, and printing the image of said film onto a photosensitive material in a printing/exposure means, whereby reading of image data is carried out concurrently with the printing of films; and a second method comprising the steps of feeding a film housed in a cartridge from a circular feed path to one side of said feed path between said scanner unit and said printing/exposure means, feeding the film out of the cartridge, reading image data in said scanner unit, rewinding the film into the cartridge, feeding the cartridge along said circular feed path to the other side of said feed path, feeding the film out of the cartridge, printing the film in said printing/exposure means, and rewinding the film into the cartridge, whereby reading of image data is carried out concurrently with the printing of films.

5,621,497

PATTERN FORMING METHOD AND PROJECTION EXPOSURE TOOL THEREFOR

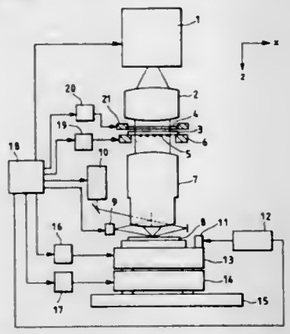
Tsuneo Terasawa, Ome; Shinji Okazaki, Urawa, and Minoru Toriumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 415,937

Claims priority, application Japan, Apr. 6, 1994, 6-068312

Int. Cl.[6] H01L *21/30*

U.S. Cl. 355—53 **25 Claims**



1. A pattern forming method comprising the steps of:

emitting an exposure light on a reticle having a mask pattern to be transferred for forming an image of said mask pattern;

modulating said image of said mask pattern; and

demodulating said modulated image of said mask pattern by a first grating stripe pattern formed within a photosensitive film made of a material capable of reversibly inducing photochemical reaction, thereby forming said image corresponding to said mask pattern on a resist film formed under said photosensitive film.

5,621,498

PROJECTION EXPOSURE APPARATUS

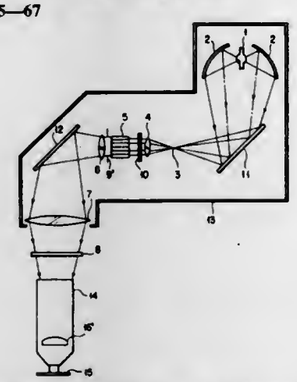
Soichi Inoue, Yokohama; Tadahito Fujisawa, Tokyo; Shin-ichi Ito; Takashi Sato, both of Yokohama; Shuichi Tamamushi, Kawasaki, and Keiji Horioka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 961,540, Oct. 15, 1992, abandoned. This application Mar. 28, 1995, Ser. No. 411,844

Claims priority, application Japan, Oct. 15, 1991, 3-295199; Jan. 20, 1992, 4-007674; Jan. 20, 1992, 4-007675; Jan. 20, 1992, 4-007676; Jan. 20, 1992, 4-007764; Jan. 20, 1992, 4-007834; Jan. 20, 1992, 4-007835; Mar. 27, 1992, 4-070617; Jul. 14, 1992, 4-186673

Int. Cl.[6] G03C *5/00*

U.S. Cl. 355—67 **5 Claims**



1. A production projection exposure apparatus for optically projecting a mask pattern onto a wafer, comprising:

means for illuminating the mask pattern with partially coherent light which is projected onto a wafer through a projection optical system; and

optical path length changing means, arranged at a pupil plane of said projection optical system, for changing an optical path length along a radial direction with respect to an optical axis of said projection optical system.

5,621,499

SCANNING EXPOSURE APPARATUS

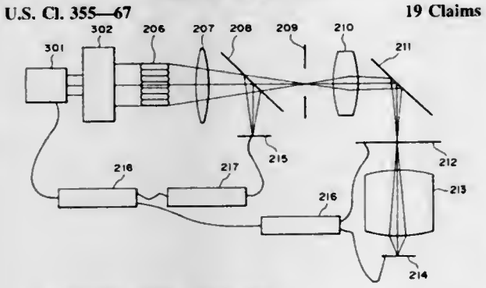
Takahisa Shiozawa, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,914

Claims priority, application Japan, Jun. 22, 1994, 6-140174

Int. Cl.[6] G03B *27/54*

U.S. Cl. 355—67 **19 Claims**



1. A scanning system, comprising:

illuminating means for illuminating an object with coherent illumination light; and

scanning means for relatively and scanningly moving the object relative to the illumination light, along a scan direction, wherein said illuminating means is arranged so that a direction of interference fringe to be produced on the object by the illumination light is inclined with respect to the scan direction.

5,621,500

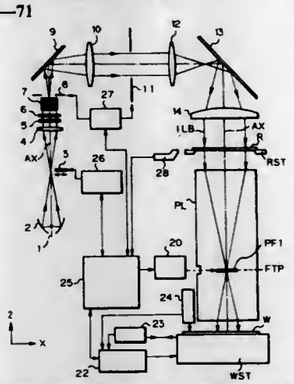
METHOD AND APPARATUS FOR PROJECTION EXPOSURE

Naomasa Shiraishi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,238

Int. Cl.[6] G03B *27/72*

U.S. Cl. 355—71 **14 Claims**



1. A projection exposure method wherein a mask formed with a pattern for transfer is illuminated with illuminating light for exposure, and an image of said mask pattern is projected onto a photosensitive substrate through a projection optical system, said method comprising the steps of:

using a phase plate which is disposed on a Fourier transform plane of said projection optical system or on a plane near said Fourier transform plane, said phase plate including a circular region of radius r2 which is centered at an optical axis of said projection optical system and which allows said illuminating light to pass therethrough;

dividing said circular region into a central circular region of radius r1 (r1<r2) which is centered at the optical axis of said projection optical system, and a peripheral annular region which lies between a circle of radius r1 and a circle of radius r2, which are centered at said optical axis;

setting not only a ratio t (=t1/t2) of an amplitude transmittance t1 of illuminating light passing through said central circular region to an amplitude transmittance t2 of illuminating light passing through said peripheral annular region, at a value which is not larger than zero, but also a ratio r1/r2 of said radius r1 to said radius r2, at a value which is determined according to said amplitude transmittance ratio t;

when the pattern image of said mask is to be transferred onto said substrate by successively carrying out three divided exposure operations such that a position of said substrate relative to a position of an image-forming plane of said projection optical system is successively changed in the optical axis direction of said projection optical system by a distance d at a time, setting said distance d at a value which is determined according to a numerical aperture NA of said projection optical system and a wavelength λ of said illuminating light;

setting two amounts of exposure for two of said three divided exposure operations which are carried out at two opposite extremity positions of an exposure range in said optical axis direction such that said two amounts of exposure become substantially equal to each other; and

setting one amount of exposure for one of said three divided exposure operations which is carried out at an intermediate position in said optical axis direction, at a value which is determined according to said distance d.

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5,621,501

OPENING-CLOSING MECHANISM FOR AN AUTOMATIC ORIGINAL FEEDING APPARATUS

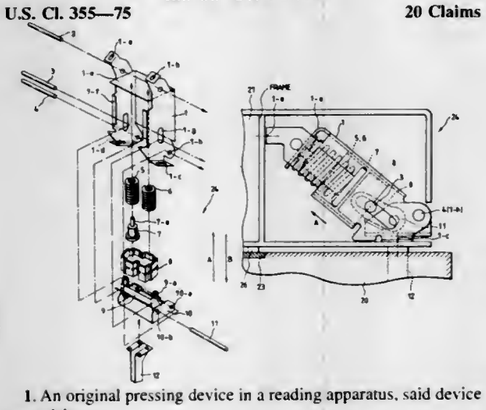
Kazuhiro Matsuo, Tokyo; Noriyoshi Ueda; Masakazu Hiroi, both of Yokohama; Tomohito Nakagawa, Matsudo, and Wataru Kawata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 326,969

Claims priority, application Japan, Oct. 25, 1993, 5-266351; Oct. 29, 1993, 5-272109

Int. Cl.[6] G03B *27/62*

U.S. Cl. 355—75 **20 Claims**



1. An original pressing device in a reading apparatus, said device comprising:

hinge means;

pressing means supported pivotably by said hinge means and pivoting between a closing position where an original on a platen glass is pressed and an opening position where the original is released:

a coil spring compressed with a closing operation of said pressing means and released from the compression with an opening operation of said pressing means; and

a fluid damper arranged within a hollow position of said coil spring and providing a resistance force when said pressing means performs closing operation.

5,621,502

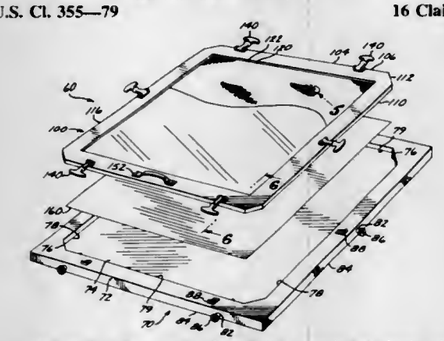
MOSAIC FABRICATION FIXTURE AND METHOD OF MAKING MOSAICS

William R. Bronaugh, Garden Grove, and Hans J. Dehli, Dana Point, both of Calif., assignors to Admotion Corporation, Irvine, Calif.

Filed Apr. 25, 1995, Ser. No. 428,701

Int. Cl.[6] G03B *27/02;27/52*

U.S. Cl. 355—79 **16 Claims**



1. A mosaic transparency fixture for exposing a single photo sensitive film sheet to produce a transparency formed by a plurality of independent images, each having spaced apart groups of a selected number of predetermined sized pixels interlaced with and spaced from one another along a predetermined polygonal path corresponding with the size of said pixels, said fixture including:

a base formed with a polygonal outer frame raised above a central recess having a planar film support for receipt of a sheet of photographic film;

a platen configured with a peripheral shape to be complementally received in said recess for floating movement within the confines of said outer frame and including a central window; and

a light blocking exposure mask mounted on said platen over said window and formed with a pattern corresponding with the location and size of said selected number of predetermined sized pixels, said mask including a transparent aperture in each group of said patterns corresponding with the correspondingly located pixel of each said group, said aperture being formed with sides measuring substantially 0.041 inches.

5,621,503

IMAGE FORMING APPARATUS AND METHOD WITH ANTI-FORGERY FUNCTION

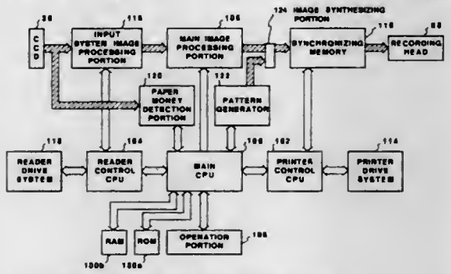
Yoshio Komaki, Yokohama, and Yutaka Udagawa, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,072, Mar. 26, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 209,373

Claims priority, application Japan, Mar. 29, 1991, 3-066903; Sep. 25, 1991, 3-245387; Sep. 30, 1991, 3-252217

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—366 **12 Claims**



1. An image forming apparatus comprising:

generating means for generating binary image data representing an image;

image forming means for forming a visible image on a medium based on the binary image data; and

adding means for adding information for specifying a particular image forming apparatus, with which the visible image is formed, onto the visible image,

wherein the information is added so that (i) the information is recognizable from the visible image to identify the particular image forming apparatus, and (ii) tonality of the visible image is not substantially influenced by the addition of the information.

5,621,504

TONER TRANSFERRING DEVICE

Kazuhiro Wakamatsu; Akira Sasaki, and Nobuaki Fukasawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,565

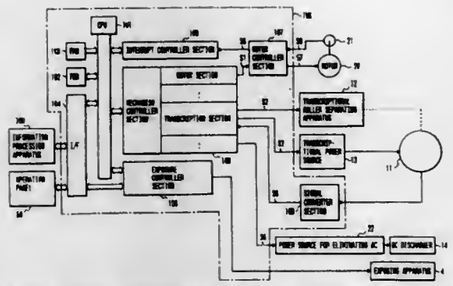
Claims priority, application Japan, Dec. 21, 1993, 5-321556

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—1 **7 Claims**

1. An apparatus for electrophotography comprising:

a toner image carrier;



a toner image preparer forming a toner image on the rotating toner image carrier;

a recording medium carrier carrying a recording medium whereon the toner image formed on the toner image carrier is to be transferred;

a transferring roller transferring the toner image on the toner image carrier to the recording medium

a discharger neutralizing charged electricity at the recording medium; and

a fixing device fixing the toner image on the recording medium. having:

a transferring condition measuring device measuring electric characteristics of said transferring roller; and

a discharging voltage controller controlling said discharger;

wherein said transferring condition measuring device measures the transferring condition when said discharger is stopped; and

said discharging voltage controller controls said discharger based on an output from said transferring condition measuring device.

5,621,505

DEVELOPING APPARATUS HAVING ROTATABLE DEVELOPER SUPPLY MEMBER FOR DEVELOPER CARRYING MEMBER

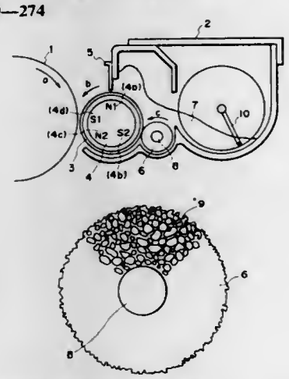
Yoshiaki Kobayashi, Souka; Keishi Osawa, Yokohama, and Yoshito Mizoguchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,796, Jul. 26, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 624,200

Claims priority, application Japan, Jul. 27, 1993, 5-204562; Jul. 29, 1993, 5-207225

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—274 **27 Claims**



1. A developing apparatus, comprising:

a developer carrying member for carrying a magnetic developer;

a regulating member for regulating the layer thickness of the developer on said developer carrying member;

a first magnetic pole, in said developer carrying member, for forming a magnetic field in a regulating position of said regulating member;

a second magnetic pole disposed adjacent to said first magnetic pole upstream thereof with respect to a movement direction of said developer carrying member; and

an elastic rotatable member, having a surface layer of foamed material, for supplying a magnetic developer to said developer carrying member,

wherein said elastic rotatable member is press-contacted to said developer carrying member between said first magnetic pole and said second magnetic pole at a position closer to said second magnetic pole than said first magnetic pole.

5,621,506

ELECTROSTATIC RECORDING APPARATUS PROVIDING AN ELECTRIC FIELD ADJACENT A DEVELOPER ROLLER

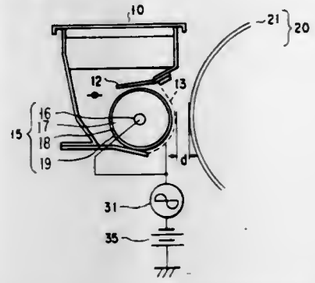
Yasuo Hosaka; Hitoshi Nagato, both of Tokyo, and Hideyuki Nakao, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 11, 1994, Ser. No. 208,719

Claims priority, application Japan, Mar. 12, 1993, 5-052041; Jun. 30, 1993, 5-161298; Sep. 20, 1993, 5-233830; Dec. 28, 1993, 5-351167

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—284 **24 Claims**



1. An electrostatic recording apparatus for forming a latent image of a recording picture on a recording medium, comprising:

charging means for uniformly charging said recording medium;

electrostatic latent image forming means for forming the latent image onto said uniformly charged recording medium;

development means for developing the electrostatic latent image formed on said recording medium and forming the recording picture, said development means including a development roller;

electric field generating means arranged near said development means for generating an electric field orthogonal to a rotating direction of said development roller; and

a peeling means for peeling a remaining development agent from said development roller.

5,621,507

ELECTROSTATIC LATENT IMAGE-DEVELOPING DEVICE AND TONER CARTRIDGE USED THEREFOR

Toshinori Nishimura; Yasuyuki Ishiguro; Akihiro Watanabe, and Masahiro Higashitani, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1994, Ser. No. 336,063

Claims priority, application Japan, Nov. 30, 1993, 5-298825; Jan. 14, 1994, 6-002559; Jan. 14, 1994, 6-014944

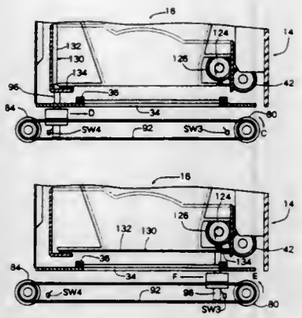
Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—111 **11 Claims**

11. A toner cartridge comprising:

a container having a toner discharge opening,

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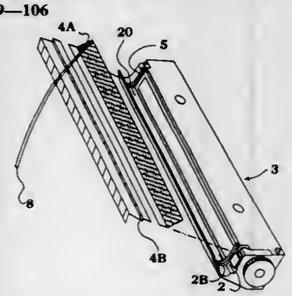
a toner contained in said container,
a sealing tape which is stuck to a peripheral edge of said toner discharge opening in a manner that it can be peeled from said toner discharge opening, and
a shutter member that is disposed on one edge side of said toner discharge opening and is so constituted as to move to the other edge side across said toner discharge opening,
said shutter member including a flexible shutter sheet and a rigid engaging member attached to a front edge of said shutter sheet.

5,621,508

REPLACEMENT SEAL FOR TONER HOPPER

Robert A. McNamara, 117 Electric Ave., Rochester, N.Y. 14617

Filed Jul. 26, 1995, Ser. No. 506,740
Int. Cl.[6] G03G *21/18;15/08*
U.S. Cl. 399—106 **6 Claims**



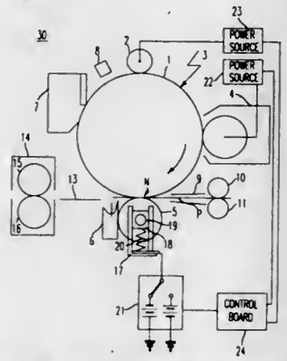
1. An apparatus for anchoring the bottom of a seal assembly adapted to confine toner to the hopper of a cartridge comprised of a toner hopper transfer aperture flange, wherein:
(a) said apparatus comprises a leg attached to and extending from the bottom of said seal assembly, wherein adhesive is attached to at least a portion of said leg;
(b) an adhesive release of paper, plastic, or other material that has a fold or attached stop fashioned to fit exactly under said adhesive of said leg so that said seal assembly can be slid into place against said toner hopper transfer aperture flange and pressure bonded to it and said release can be pulled out from under said leg while the assembly bottom is held against said flange, and said leg can then be bonded to a cartridge body member by pressure.

5,621,509

APPARATUS AND METHOD FOR CLEANING A TRANSFER DEVICE OF AN IMAGE FORMING APPARATUS

Kenji Karashima, and Hisashi Fuzisaki, both of Kawasaki, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 13, 1996, Ser. No. 601,164
Claims priority, application Japan, Mar. 31, 1995, 7-076634; Jan. 12, 1996, 8-003620
Int. Cl.[6] G03G *15/16;21/00*
U.S. Cl. 399—46 **20 Claims**



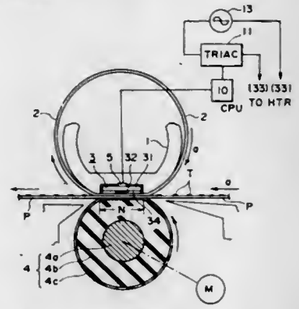
20. A method of cleaning a transferring device of an image forming apparatus, comprising the steps of:
applying a first bias voltage having a first polarity to said transferring device for more than five rotations of said transferring device in order to transfer material having said first polarity from said transferring device to an image carrier which contacts said transferring device; and
applying a second bias having a second polarity which is opposite to the first polarity in order to transfer material having said second polarity from said transferring device to said image carrier.

5,621,510

IMAGE HEATING APPARATUS WITH DRIVING ROLLER HAVING LOW THERMAL EXPANSION COEFFICIENT OUTER LAYER

Kouichi Okuda; Tatsunori Ishiyama, both of Yokohama; Akira Hayakawa, Tokyo; Takashi Shibuya, Kawasaki, and Hiroyuki Oba, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,031
Claims priority, application Japan, Dec. 28, 1993, 5-354637
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—338 **24 Claims**



14. An image heating apparatus, comprising:
a first rotatable member; and

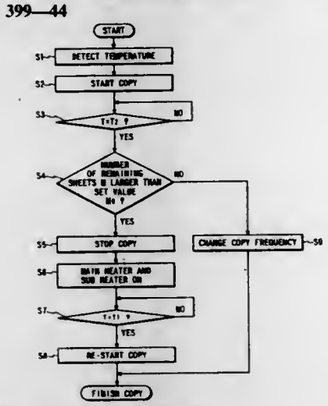
a second rotatable member contacted to said first rotatable member to drive said first rotatable member;
wherein said first rotatable member and said second rotatable member form a nip which is effective to feed a recording material carrying an image while heating the image; and
wherein said second rotatable member has an elastic layer and a low thermal expansion layer outside said elastic layer.

5,621,511

FIXING APPARATUS WITH SHEET INTERVAL ADJUSTMENT AND FIXING INTERRUPTIONS

Yuji Nakayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 424,963
Claims priority, application Japan, Apr. 21, 1994, 6-107626; May 18, 1994, 6-127150
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—44 **11 Claims**



1. A fixing apparatus, comprising:
a heating member for heating an image on a sheet;
temperature detecting means for detecting temperature of said heating member;
power supply control means for controlling a power supply to said heating member so that a detection temperature detected by said temperature detection means is maintained to a set temperature; and
selection means for selecting one of an extension of a sheet feed interval and a temporary interruption of a fixing operation, when the detection temperature detected by said temperature detection means is reduced to a predetermined fixing mode change temperature during a fixing.

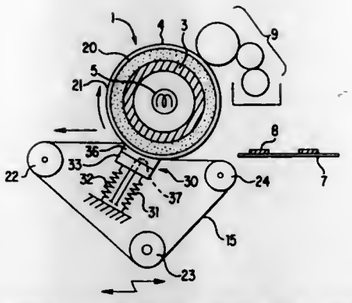
5,621,512

IMAGE FIXING DEVICE HAVING AN ENDLESS BELT AND NON-ROTATING PRESSURE-APPLYING MEMBER

Yasuhiro Uehara; Yasuhiro Kusumoto, and Yoshio Kanesawa, all of Nakai-machi, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,374
Claims priority, application Japan, Mar. 24, 1995, 7-065629
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—328 **20 Claims**

1. An image fixing device comprising:
a heat fusing roller including heating means inside thereof and an elastic material layer on a peripheral surface of said heat fusing roller;
said heat fusing roller being rotatably mounted;
an endless belt movably in contact with said heat fusing roller; and



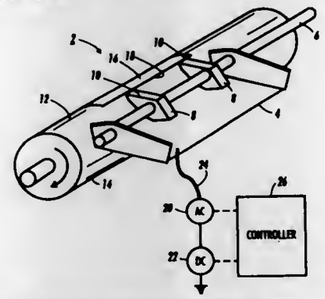
a non-rotating, pressure-applying member that contacts and applies a force to said endless belt to form a belt nip portion between said endless belt and said heat fusing roller.

5,621,513

ELECTRICALLY BIASED SHEET STRIPPING APPARATUS

Ian Pitts, Bassingbourne; John W. D. Cooper, Hitchin, and Derek J. Milton, Welwyn Garden City, all of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1995, Ser. No. 572,942
Claims priority, application United Kingdom, Dec. 23, 1994, 9426174
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—398 **9 Claims**



1. A sheet stripping apparatus for stripping copy sheets from a surface of an imaging member, comprising:
a support element,
an electrically conductive stripping element mounted on the support element and having a stripping leading end, and
electrical biasing means for applying an electrical bias having an AC component between said stripping element and the imaging member, wherein the electrical biasing means includes means for applying an electrical bias of −1 kV DC for up to about 500 ms, followed by 1 kV AC superposed on +1 kV DC for up to about 100 ms.

5,621,514

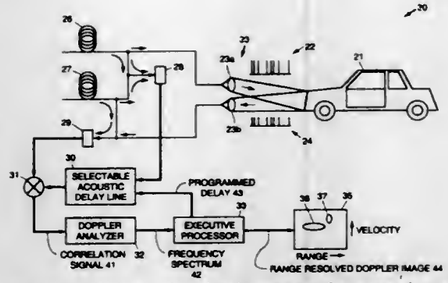
RANDOM PULSE BURST RANGE-RESOLVED DOPPLER LASER RADAR

Joseph N. Paranto; Dean H. S. Liskow, both of Albuquerque, N.M., and Monica L. Minden, Calabasas, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 5, 1995, Ser. No. 369,023
Int. Cl.[6] G01C *3/08;* **G01P** *3/36;* **B60T** *7/16*
U.S. Cl. 356—5.09 **9 Claims**

1. A range resolved Doppler ladar system comprising:
a laser local oscillator for providing local oscillator signals;

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an optical random pulse signal generator for generating and transmitting randomly spaced waveforms;

a heterodyne output pulse monitor coupled to the local oscillator and signal generator for sampling the transmitted waveforms;

a heterodyne receiver detector coupled to the local oscillator and reflected waveforms received from a target;

a selectable delay line coupled to the heterodyne output pulse monitor for providing a selectable signal delay;

a mixer coupled to the heterodyne receiver detector and to the selectable delay line for mixing signals received therefrom and for providing correlation output signals therefrom;

a Doppler analyzer coupled to the mixer output for processing the correlation signals to provide a frequency spectrum;

a display; and

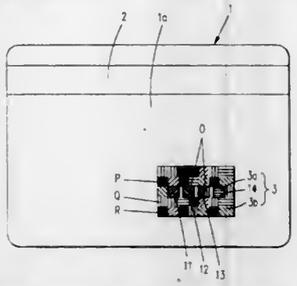
an executive processor coupled to the Doppler analyzer and to the display for processing the frequency spectra received therefrom to form a range-resolved Doppler image, and for displaying the range-resolved Doppler image on the display.

5,621,515

IDENTIFICATION SYSTEM USING REGIONS OF PREDETERMINED PROPERTIES INTERSPERSED AMONG REGIONS OF OTHER PROPERTIES

Hidekazu Hoshino, and Kazuhiro Kitada, both of Kanagawa-ken, Japan, assignors to NHK Spring Co., Ltd., Kanagawa-ken, Japan

Filed Dec. 29, 1994, Ser. No. 366,181
Claims priority, application Japan, Jan. 25, 1994, 6-023843
Int. Cl.[6] G06K *9/74;7/10;* **G03H** *1/00;* **B42D** *15/00*
U.S. Cl. 356—71 **5 Claims**



1. An article identification system comprising a plurality of identification regions affixed on an article, a light emitting device for impinging an illuminating light beam onto at least some of said identification regions, a light receiving device for detecting light diffracted by said identification regions, and a determination unit for determining authenticity of said article according to a pattern of diffracted light detected by said light receiving device,

wherein said light receiving device comprises a plurality of sectors around the light emitting device;

wherein said identification regions further comprise a combination of effective and ineffective regions which are substantially indistinguishable from each other by naked eyes;

wherein at least two of said effective identification regions have diffractive properties different from each other, and said ineffective identification regions have at least one diffractive property different from those of said effective identification regions;

wherein said pattern of diffracted light is formed by encoded data wherein said encoded data is in said effective identification region; and

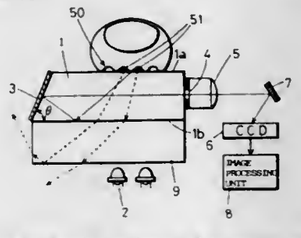
wherein the authenticity is determined by said determination unit based on where said diffracted light leaving said encoded data impinges on predetermined sectors in said plurality of sectors of said light receiving element.

5,621,516

OPTICAL DEVICE FOR FORMING AN IMAGE OF AN UNEVEN SURFACE

Takashi Shinzaki, and Satoshi Iwata, both of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 12, 1995, Ser. No. 371,808
Claims priority, application Japan, Feb. 4, 1994, 6-012425
Int. Cl.[6] G06K *9/74*
U.S. Cl. 356—71 **20 Claims**



8. A device for forming an image of an uneven surface of an object, the device comprising:

a plane-parallel plate having a pair of parallel plane surfaces and which is made of a first material transparent to illuminating light, said plane-parallel plate having a refractive index larger than that of water and designed so that the uneven surface of the object is placed in close contact with a first one of said pair of plane surfaces;

a trap transparent member made of a second material transparent to the illuminating light and having a refractive index intermediate between those of water and said plane-parallel plate, said trap transparent member being in close contact with a second one of said pair of plane surfaces of said plane-parallel plate;

a light source to generate the illuminating light to illuminate the uneven surface of the object through said plane-parallel plate; and

means for forming the image of the uneven surface of the object by taking in only light that is scattered back into said plane-parallel plate by the uneven surface of the object and totally reflected at a boundary surface of said plane-parallel plate with said trap transparent member.

5,621,517

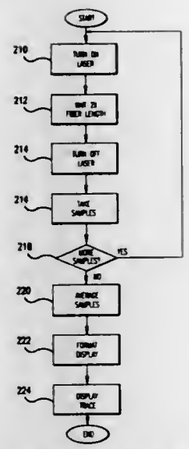
METHOD AND APPARATUS FOR TESTING FIBER OPTIC TELEPHONE LINES

Scott D. Jezwinski, Buffalo Grove, and Douglas L. Jones, Champaign, both of Ill., assignors to Teradyne, Inc., Boston, Mass.

Filed May 2, 1995, Ser. No. 434,873
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—73.1 **27 Claims**

1. A fiber test unit for testing a fiber having a length, comprising:

a) a laser having a control input and a light output;



b) a splitter having an input coupled to the light output of the laser, a first output coupled to a fiber under test, and a second output for directing light reflected from the fiber;

c) a light detector having a light input and an electronic output, with the light input connected to the second output of the splitter;

d) a user interface coupled to the electronic output of the light detector; and

e) control means for:

i) turning on the laser for a period of time greater than the time recquired for light to travel twice the length of the fiber, and

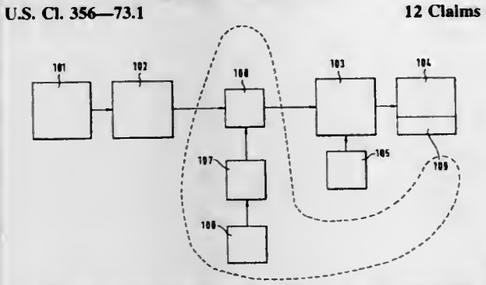
ii) turning off the laser and displaying a signal representing the electronic output of the light detector.

5,621,518

OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) WITH IMPROVED DYNAMIC RANGE AND LINEARITY

Josef Beller, Hildrizhausen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 10, 1995, Ser. No. 540,903
Claims priority, application European Pat. Off., Nov. 26, 1994, 94118620
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—73.1 **12 Claims**



1. An optical time-domain-reflectometer (OTDR), comprising:

a pulse generator for launching optical pulses into an optical component under test, said pulses exhibiting pulse widths in a range of nanoseconds to microseconds and being launched at repetition rates in a range of about 0.1 to 50 kHz,

a receiver, such as an avalanche photodiode detector, with a specific bandwidth, for receiving a backscatter signal of said optical component under test and for generating a first electrical signal representative of said backscatter signal and a first noise signal,

an amplifier for amplifying said first electrical signal and said first noise signal,

noise source means for generating a second noise signal and combining said first electrical signal and first noise signal, after amplification thereof by said amplifier, with said second noise signal, and outputting combined signals,

an analog-digital-converter (ADC) with a sampling frequency f_S for converting the combined signals to first digital data, and

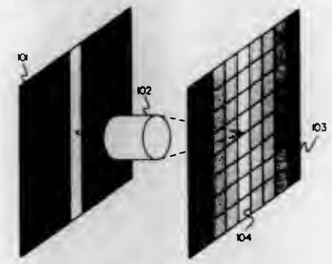
means for averaging said first digital data and for removing digital data corresponding to said second noise signal.

5,621,519

IMAGING SYSTEM TRANSFER FUNCTION CONTROL METHOD AND APPARATUS

Keith L. Frost, Seattle; Seho Oh, Mukilteo; Jon W. Hayenga, Kent, and Kim J. Hansen, Renton, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.

Filed Jul. 31, 1995, Ser. No. 509,182
Int. Cl.[6] G01M *11/00*
U.S. Cl. 356—124.5 **32 Claims**



1. A method to measure a system transfer function of an imaging system having an input and an image sampler with a discrete image output wherein the discrete image output can be represented by a frequency representation with aliased components and unaliased components, the method comprising the steps of:

(a) providing an image primitive to the input, the image primitive comprising a substantially uniaxial pattern having a predetermined frequency representation, the image primitive being oriented at a predetermined angle relative to the image sampler wherein the predetermined angle is chosen to separate the aliased components from the unaliased components;

(b) obtaining a discrete image of the image primitive with the imaging system;

(c) computing a two-dimensional frequency representation of the discrete image;

(d) selecting a region of the two-dimensional frequency representation; and

(e) comparing the region to the predetermined frequency representation to compute the system transfer function.

5,621,520

TRANSPARENCY INSPECTION METHOD FOR BLURRINESS IN VEHICLE WINDSCREENS WITH ELASTOMERIC LINERS

Joseph B. Hoffman, Nampa, Id., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

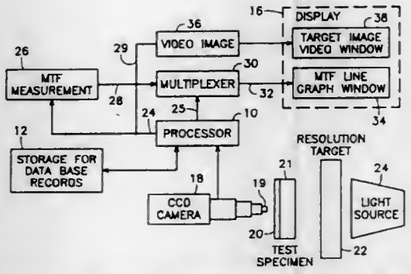
Filed May 13, 1996, Ser. No. 644,442
Int. Cl.[6] G01M *11/00*
U.S. Cl. 356—124.5 **23 Claims**

1. A method of determining optical quality of blurriness in a windscreen transparency having a protective liner made of a particular material comprising steps of:

measuring a modulation transfer function (MTF) through a clear transparency having a protective liner made of said particular material, resulting in first measurements;

storing said first measurements as a first data series;

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measuring a modulation transfer function (MTF) through a degraded sample transparency having a protective liner made of said particular material, resulting in second measurements;

storing said second measurements as a second data series;

combining said first and second data series to create a standard range template;

storing said standard range template in a data base record;

measuring a modulation transfer function (MTF) through a specimen transparency having a protective liner made of said particular material resulting in test measurements;

storing said test measurements in a test record as a test data series;

plotting said first and second data series as target modulation versus target line frequency resulting in standard range template line plots of an acceptable range of optical quality of blurriness for a transparency having a protective liner made of said particular material;

plotting said test data series as target modulation versus target line frequency resulting in a specimen line plot; and

combining said specimen line plot and said standard range template line plots in a single graph.

5,621,521

CHECKING APPARATUS FOR ARRAY ELECTRODE SUBSTRATE

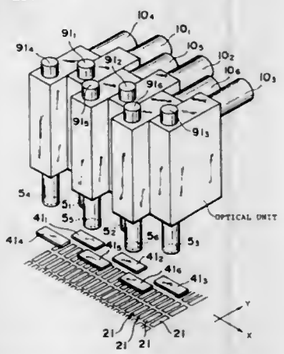
Hironori Takahashi, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Aug. 10, 1995, Ser. No. 513,560

Claims priority, application Japan, Sep. 7, 1994, 6-213804

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—237 **9 Claims**



1. An apparatus for checking an article having a plurality of electrodes arranged in a matrix, comprising;

(a) a light source for outputting a plurality of light beams;

(b) a deflector for repetitively deflecting each of said plurality of light beams output from said light source along a row direction to output each light beam therefrom;

(c) a probe assembly having:

a first electro-optic probe array having a plurality of electro-optic probes arranged in said row direction, wherein a length of each of the electro-optic probes in said first electro-optic probe array in said row direction is longer than a length of a line traversing in said row direction at least two adjacent electrodes out of said plurality of electrodes, and

a second electro-optic probe array having a plurality of electro-optic probes arranged in said row direction, wherein a length of each of the electro-optic probes in said second electro-optic probe array in said row direction is longer than a length of a line traversing in said row direction at least two adjacent electrodes out of said plurality of electrodes and wherein said plurality of electro-optic probes in said first probe array and said plurality of electro-optic probes in said second probe array are in the staggered relation,

wherein each of the electro-optic probes in said first and second electro-optic probe arrays changes a refractive index thereof depending upon an electric field around each electrode of said plurality of electrodes, each light beam of said plurality of light beams output from said deflector is guided into each of the electro-optic probes, so that each light beam is repetitively scanned in said row direction in each electro-optic probe, and each light beam is reflected by each electro-optic probe;

(d) a photodetector for detecting the each light beam reflected by the each electro-optic probe;

(e) a stage on which said article is mounted and which is arranged to be movable in the row direction relative to said probe assembly; and

(f) a drive unit for continuously moving said stage relatively to said probe assembly.

5,621,522

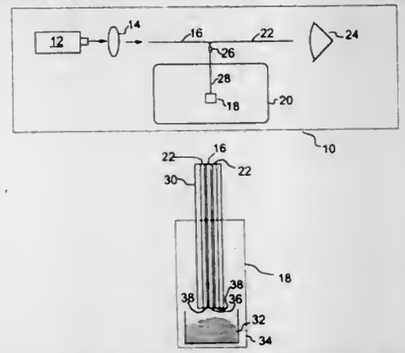
FIBER OPTIC PROBE FOR DETERMINATION OF TRACE LEVELS OF ORGANIC POLLUTANTS USING RAMAN SPECTROSCOPY

Kenneth J. Ewing, Bowie, Md.; Thomas Bilodeau; Gregory Nau, both of Alexandria, Va., and Ishwar Aggarwal, Fairfax Station, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1995, Ser. No. 417,164

Int. Cl.[6] G01J *3/44*; G01N *21/65*

U.S. Cl. 356—301 **21 Claims**



1. An apparatus for detecting an organic compound which generates a raman signal, comprising:

a non-SERS substrate capable of reversible adsorption of said organic compound;

a source of raman excitation radiation, positioned for directing said raman excitation radiation onto said non-SERS substrate, for generating a raman signal; and

a raman signal detector, positioned for detecting said raman signal.

5,621,523

METHOD AND APPARATUS FOR MEASURING PARTICLES IN A FLUID

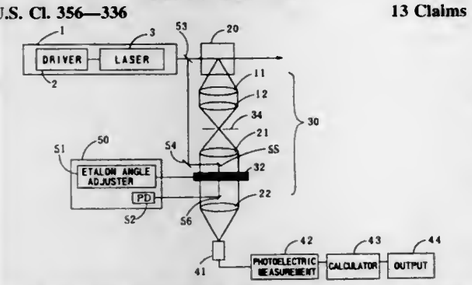
Koji Oobayashi, Hiroshima; Satohiko Takanashi, and Muneharu Ishikawa, both of Tsukuba, all of Japan, assignors to Kowa Company Ltd., Japan

Continuation of Ser. No. 112,621, Aug. 26, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,283

Claims priority, application Japan, Aug. 27, 1992, 4-227683; Jun. 30, 1993, 5-161315

Int. Cl.[6] G01N *15/02*

U.S. Cl. 356—336 **13 Claims**



1. An apparatus for measuring particles in a fluid by irradiating the particle-containing fluid with a light from a light source and analyzing the light scattered by the particles to measure at least one of the diameter and quantity of the particles in the particle-containing fluid, comprising: interferometer means for receiving light scattered from the particle-containing fluid and for separating therefrom Rayleigh scattered light components scattered by the particles in the fluid from Brillouin scattered light components scattered by the fluid and corresponding to background light, the interferometer means including means for extracting the Rayleigh scattered light components and for eliminating the Brillouin scattered light components; calculating means for calculating at least one of the diameter and quantity of particles in the particle-containing fluid based on the intensity of only the extracted Rayleigh scattered light components; and adjustment and control means connected to the interferometer means for controlling the amount of light that is transmitted by the interferometer means.

5,621,524

METHOD FOR TESTING INK-JET RECORDING HEADS

Masao Mitani, Hitachinaka, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

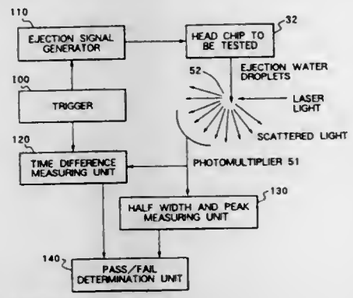
Continuation-in-part of Ser. No. 502,179, Jul. 13, 1995. This application Apr. 10, 1996, Ser. No. 630,598

Claims priority, application Japan, Jul. 14, 1994, 6-162151; Aug. 26, 1994, 6-201985; Dec. 9, 1994, 6-306076; Apr. 11, 1995, 7-085212; Jun. 1, 1995, 7-135185

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—338 **6 Claims**

1. A print head testing method comprising the steps of:



filling a head with pure water;

starting ejection of water droplets of the pure water by application of a start signal;

irradiating ejected water droplets with condensed light;

detecting condensed light scattered by the ejected water droplets;

correlating time at which the scattered light was detected with time of the start signal; and

determining whether the head is good or not based on the correlation of the time at which the scattered light was detected and the time of the start signal.

5,621,525

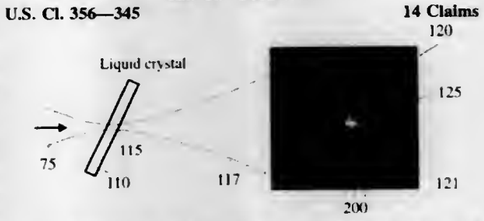
APPARATUS AND METHOD FOR MEASURING THE POWER DENSITY OF A LASER BEAM WITH A LIQUID CRYSTAL

Thomas Vogeler; Theo Tschudi, both of Darmstadt, Germany; Nelson Tabirian, Orlando, and Boris Zel'dovich, Winter Park, both of Fla., assignors to University of Central Florida, Orlando, Fla.

Filed Feb. 6, 1995, Ser. No. 384,661

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **14 Claims**



1. An apparatus for measuring the energy output parameters of a laser comprising:

means for producing a laser beam;

a liquid crystal means for receiving the produced laser beam and for passing the laser beam therethrough;

a detector means connected to the liquid crystal for outputting parameter characteristics of the laser beam dependent upon the change the optical axis caused by the liquid crystal, wherein the parameter characteristics include at least one of intensity of the laser beam and power wattage per square meter.

5,621,526

INTERFEROMETER TO ELIMINATE THE INFLUENCE OF CLOUDS

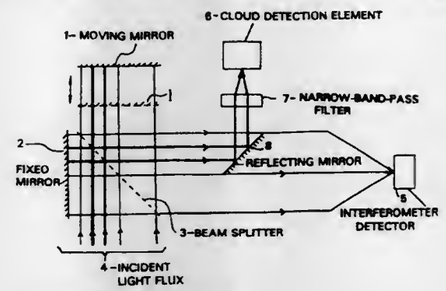
Akihiko Kuze, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 30, 1995, Ser. No. 452,989

Claims priority, application Japan, May 30, 1994, 6-116446

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **3 Claims**



1. An interferometer comprising:

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an interference section having a moving mirror, a fixed mirror, a beam splitter for splitting an incident light to lead said incident light to said moving mirror and said fixed mirror and for combining reflected lights from said moving mirror and said fixed mirror to deliver an interference light, and a sensor for sensing said interference light; and

a cloud sensor section receiving a part of said interference light for observing a cloud located between said interferometer and an earth surface by detecting a predetermined spectrum of oxygen molecules.

5,621,527

APPARATUS FOR MEASURING RELATIVE DISPLACEMENT BETWEEN THE APPARATUS AND A SCALE WHICH A GRATING IS FORMED

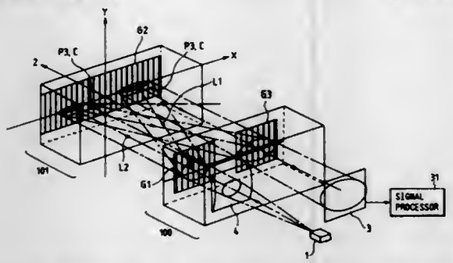
Yasushi Kaneda, Tokyo, and Koh Ishizuka, Ohmiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1994, Ser. No. 311,854

Claims priority, application Japan, Sep. 29, 1993, 5-265764

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **20 Claims**



1. An apparatus for measuring relative displacement information between said apparatus and scale means on which a diffraction grating is formed, comprising:

light source means;

separating means for separating a light beam from said light source means into a plurality of light beams;

wave combining means for wave-combining diffracted lights of said plurality of light beams separated by said separating means which are diffracted by said diffraction grating;

light receiving means for receiving interfering lights by the plurality of light beams wave-combined by said wave combining means, the relative displacement information between said apparatus and said scale means being measured by the light reception of said light receiving means; and

optical means for (i) collimating said plurality of light beams or forming a spherical wave having so large a radius of curvature that it is substantially a plane wave of said plurality of light beams in a direction of light beam separation of said separating means, and (ii) condensing said plurality of light beams in an optical path which is from said separating means to said wave combining means, in a direction perpendicular to said direction of light beam separation.

5,621,528

METHOD AND DICHROGRAPH FOR MEASUREMENT OF CIRCULAR DICHROISM, OPTICAL ROTATION AND ABSORPTION SPECTRA

Jiri Rokos, Prague, Czech Rep., assignor to Rokos & Co., Ltd., Prerov, Czechoslovakia

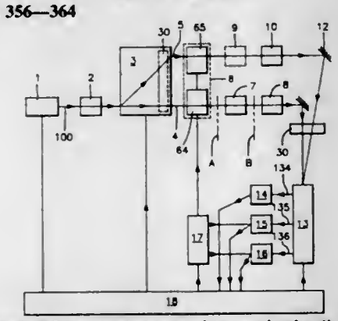
PCT No. PCT/CZ94/00026, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO95/14919, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 25, 1994, Ser. No. 495,468

Claims priority, application Czech Rep., Nov. 26, 1993, 2566-93

Int. Cl.[6] G01J *4/00*

U.S. Cl. 356—364 **7 Claims**



1. A method for measuring transmittance, circular dichroism and optical rotation of an optical active substance, for a predetermined wavelength, comprising the steps of:

calibrating a measurement system which produces a measurement ray, by performing harmonic analysis of a polarization state of said measurement ray to determine unit values;

performing ellipticity modulation on the measurement ray to create an ellipticity modulated ray;

directing the ellipticity modulated ray through said optical active substance and into an analyzer;

transforming changes in amplitude of said ellipticity modulated ray into changes in electrical signals at said analyzer;

assorting a null harmonic component, a first harmonic component, and a second harmonic component to respectively correspond to transmittance, circular dichroism and optical rotation of the optical active substance, wherein a frequency of said first harmonic component corresponds to a modulation frequency; and

comparing amplitudes of said null, first and second harmonic components to said unit values.

5,621,529

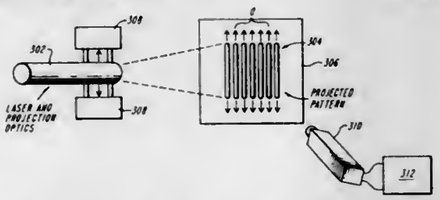
APPARATUS AND METHOD FOR PROJECTING LASER PATTERN WITH REDUCED SPECKLE NOISE

Steven J. Gordon, Weston, and Faycal E. K. Benayad-Cherif, Cambridge, both of Mass., assignors to Intelligent Automation Systems, Inc., Cambridge, Mass.

Filed Apr. 5, 1995, Ser. No. 418,142

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **33 Claims**



1. An illuminating apparatus for use with a visual sensory apparatus, for projecting a light pattern onto a surface to be viewed by said sensory apparatus, said surface having a characteristic roughness, said illuminating apparatus comprising:

a. a light source;

b. means for constraining light emitted from said source to produce on said surface, a light pattern having a light interface, said interface having an extended dimension; and

c. means for causing said light pattern to move relative to said surface, parallel to said extended dimension of said light interface.

5,621,530

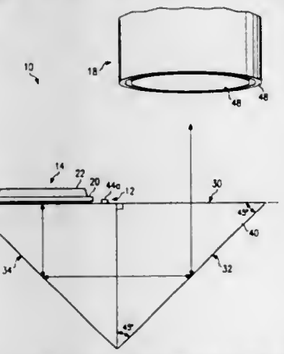
APPARATUS AND METHOD FOR VERIFYING THE COPLANARITY OF A BALL GRID ARRAY

Walter E. Marrable, Jr., Gunter, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 26, 1995, Ser. No. 429,377

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—394 **13 Claims**



1. A method for verifying the coplanarity of a ball grid array having a plurality of solder balls on the underside of a semiconductor device package, comprising the steps of:

positioning the semiconductor device with the ball grid array down on a flat transparent surface;

positioning a light source and an image capturer generally above the semiconductor device;

directing light from said light source through the flat transparent surface to the ball grid array;

directing the image of the ball grid array through the flat transparent surface to said image capturer;

focusing said image capturer on each of said plurality of solder balls and generating a focus data for each solder ball; and

determining the coplanarity of the ball grid array from said focus data.

5,621,531

SELF-ALIGNING SEWER PIPE LASER

Richard J. Van Andel, Grand Rapids; Gary L. Utter, Middleville, and Gregory J. Nagel, Grand Rapids, all of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed Apr. 3, 1995, Ser. No. 415,663

Int. Cl.[6] G01B *11/00*

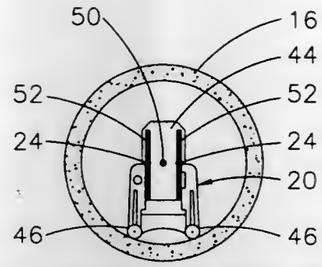
U.S. Cl. 356—399 **6 Claims**

1. A pipe-aligning apparatus for aligning individual sections of pipe in a pipeline comprising:

a target assembly having a body, a base configured to position said body in a pipe, a visual bull's-eye target defined on said body, and a pair of retroreflective strips at a given location with respect to said visual bull's-eye target; and

a laser unit having a source for generating a collimated beam of light, a scanning device for scanning said collimated beam of light laterally within a particular angular range and for monitoring an angular position of said collimated beam of light, a receiver configured to receive light reflected from said retroreflective strips, and a control;

wherein said control is responsive to said angular position of said collimated beam of light when said receiver receives light reflected from said retroreflective strips in order to determine an angular position of said collimated beam of light which coincides with said visual bull's-eye target and to fixedly position said collimated beam of light substantially on said visual bull's-eye target.



5,621,532

LASER SCANNING MICROSCOPE UTILIZING DETECTION OF A FAR-FIELD DIFFRACTION PATTERN WITH 2-DIMENSIONAL DETECTION

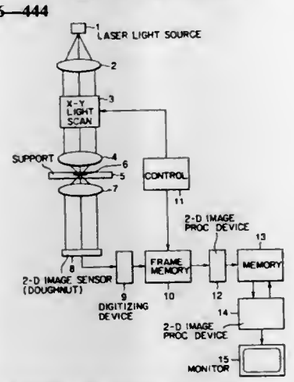
Hiroshi Ooki, and Tomoya Noda, both of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,414

Claims priority, application Japan, Dec. 8, 1994, 6-304795

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—444 **14 Claims**



1. A laser scanning microscope, comprising:

a laser light source;

an illuminating optical system for condensing a light beam from said laser light source to form a light spot on a specimen;

scanning means for causing relative movement of said light spot with respect to said specimen by moving a support stage for said specimen;

a two-dimensional image sensor for measuring light from said specimen;

an optical system with positive refractive power for guiding the light beam from said specimen to a light-receiving face of said two-dimensional image sensor;

said two-dimensional image sensor being provided at a position displaced from a conjugate point of said light spot by such an amount that the light beam forms a far-field diffraction pattern of said specimen on said light-receiving face of said two-dimensional image sensor;

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a memory for storing digital signals representing output signals from plural pixels of said two-dimensional image sensor upon scanning of said specimen with said light spot; and

a display device for displaying an image of said specimen, based on output signals from said two-dimensional image sensor or signals stored in said memory.

5,621,533

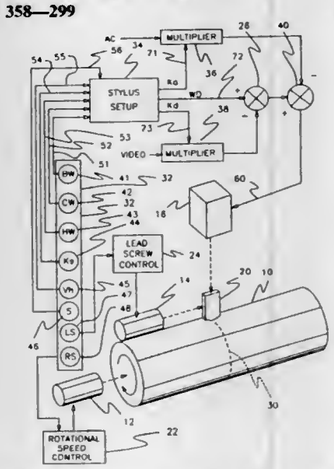
METHOD FOR AUTOMATICALLY CONTROLLING AN ENGRAVER IN RESPONSE TO A PLURALITY OF ENGRAVING SETUP PARAMETERS WHICH MAY BE INPUT IN REAL UNITS

Paul L. Holowko, Spring Valley; John W. Fraser, Dayton; Eric J. Serenius, Springboro, and Curtis Woods, Centerville, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Continuation of Ser. No. 22,127, Feb. 25, 1993, Pat. No. 5,424,845. This application Jun. 7, 1995, Ser. No. 476,657

Int. Cl.[6] B41C *1/04*

U.S. Cl. 358—299 **27 Claims**



1. A method for engraving comprising the steps of:

loading a plurality of engraving setup parameters into a computer coupled to an engraver;

automatically generating at least one engraving signal in response to said plurality of said engraving setup parameters; and;

engraving a pattern using said engraving signal.

5,621,534

Patent Not Issued For This Number

5,621,535

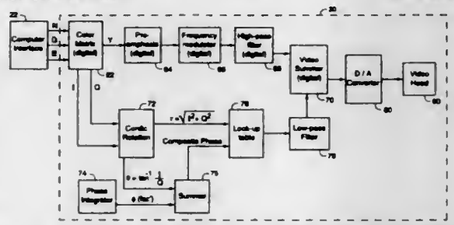
DIRECT DIGITAL SYNTHESIS OF VIDEO SIGNAL RECORDING WAVEFORMS FROM BASEBAND DIGITAL SIGNALS PROVIDED BY A COMPUTER INTERFACE FOR COMPATIBLE RECORDING ONTO ANALOG VIDEO TAPE

Lawrence F. Heyl, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 115,402, Sep. 1, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 403,534

Int. Cl.[6] H04N *9/79*

U.S. Cl. 386—26 **23 Claims**



1. A system for converting and recording digitized baseband component television signals onto analog video tape by directly synthesizing a video signal recording waveform, comprising:

an interface for receiving the digitized baseband component television signals from a computer;

a digital signal processor connected to said interface;

said digital signal processor generating a digitized video signal recording waveform from the digitized baseband component television signals for recording onto the video tape;

a digital-to-analog converter for converting said digitized video signal recording waveform into an analog video signal recording waveform compatible with a predetermined VCR standard, and capable of being recorded onto said analog video tape; and

means for applying said analog video signal recording waveform to said analog video tape, said means for applying not including any modulators, demodulators, encoders or decoders; and

wherein said digital signal processor and said computer interface do not include in their signal path an analog to digital converter, encoder circuitry for generating a composite television signal, nor a decoder for separating luminance and chrominance components of a single composite television signal.

5,621,536

APPARATUS THAT AUTOMATICALLY SETS KEY FRAME INFORMATION

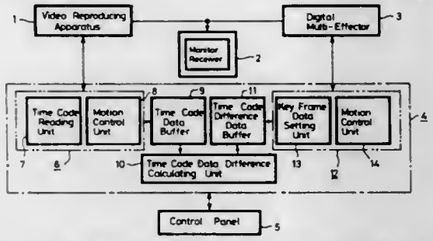
Sojiro Kizu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 980,588, Nov. 23, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 259,119

Claims priority, application Japan, Nov. 25, 1991, 3-309102

Int. Cl.[6] H04N *9/79*; **G11B** *27/02*

U.S. Cl. 386—52 **8 Claims**



1. An editing apparatus for editing a video signal, said apparatus comprising:

reproducing means for reproducing said video signal and address data recorded on each of a plurality of recording media;

first controlling means for controlling a reproducing operation of said reproducing means;

selecting means for selecting an in-point address and an out-point address for each of said recording media upon actuation by a user of the apparatus;

reading means responsive to said reproducing means and said selecting means for reading first and second address data obtained from said reproducing means corresponding to said in-point address and said out-point address, respectively, for each of said recording media;

first buffer means responsive to said reading means for storing said first and second address data for each of said recording media;

a subtracter separate from and responsive to said first buffer means or producing a difference between said first and second address data for each of said recording media;

second buffer means separate from and responsive to said subtracter for storing said difference obtained from said subtracter for each of said recording media;

setting means responsive to said second buffer means for automatically setting key frame information on the basis of said difference for each of said recording media;

processing means for processing said video signal provided from said reproducing means to achieve a visual effect; and

second controlling means for controlling an editing operation of said processing means in response to said information of each of said key frames by automatically (a) effecting que-up of each of said recording media, (b) starting and stopping each of said recording media, and (c) reproducing from each of said recording media between said respective in-point and out-point addresses;

said second controlling means being operative so that, when reproducing of said video signal of a given one of said recording media is completed, reproducing of said video signal of a succeeding one of said recording media commences immediately.

5,621,537

COLOR SIGNAL PROCESSING CIRCUIT IN COLOR VTR

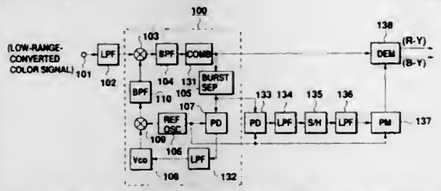
Shigenori Shibue, and Yoshiaki Mimura, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 32,556, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 606,865, Oct. 31, 1990, abandoned. This application Aug. 8, 1994, Ser. No. 287,594

Claims priority, application Japan, Nov. 2, 1989, 1-286918; Nov. 14, 1989, 1-296831; Feb. 23, 1990, 2-43630; Apr. 16, 1990, 2-100967

Int. Cl.[6] H04N *9/89*

U.S. Cl. 386—17 **31 Claims**



22. A color signal processing circuit for correcting a phase of a color signal, comprising:

reference signal generating means for generating a phase reference signal;

first phase compensating means for converting an input color signal into an output color signal, and for reducing time-dependent phase shift in said output color signal based on a comparison between a phase of said output color signal and a phase of said phase reference signal, said first phase compensating means outputting said output color signal with residual phase difference components;

phase error detecting means for detecting an amount of said residual phase difference components; and

second phase compensating means, connected to said first phase compensating means, for phase compensating said output color signal output by said first phase compensating means based on output from said phase error detecting means to eliminate said residual phase difference components in said color signal.

5,621,538

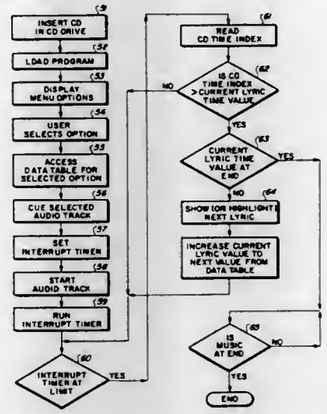
METHOD FOR SYNCHRONIZING COMPUTERIZED AUDIO OUTPUT WITH VISUAL OUTPUT

Richard A. Gnant, Scottsdale, and Darrell Smith, Phoenix, both of Ariz., assignors to Sirius Publishing, Inc., Phoenix, Ariz.

Continuation of Ser. No. 1,731, Jan. 7, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 556,635

Int. Cl.[6] H04N *5/76*; *5/91*

U.S. Cl. 386—65 **19 Claims**



1. Method for controlling synchronization of video and audio signals on a computer, comprising the steps of:

a. inputting an audio time index value from a input/output device into the computer;

b. initiating a computer interrupt timing sequence in response to said input audio time index value, said computer interrupt timing sequence having a regular periodicity at a first timing rate;

c. reading a video time index value, having a second timing rate different from the first timing rate, the video time index value being read at least once during each regular period of the computer interrupt timing sequence, the video time index value being read from a data file into at least one memory register of the computer;

d. playing the audio signals from the input/output device such that the audio signals are audible to the human ear;

e. comparing the audio time index value to the video time index value during each regular period of the computer interrupt timing sequence; and

f. displaying a video signal mapped at the video time index value in response to an audio time index value which is greater than or equal to the video time index value, such that said video signal is synchronized to said played audio signals.

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5,621,539

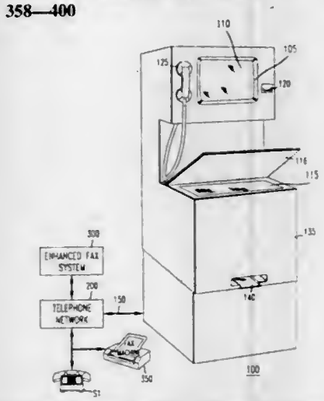
PUBLIC FAX SERVICES AND SYSTEM

David A. Brown, Indianapolis, Ind.; Nasrin Hoque, Old Bridge, N.J.; Hans K. Keipert, Indianapolis, Ind.; Fred Remite, Jr., Freehold Township, N.J.; Frank S. Simone, Somerville, N.J., and Bruce D. Wycherley, Wanamassa, N.J., assignors to AT&T, Middletown, N.J.

Continuation of Ser. No. 260,164, Jun. 15, 1994, abandoned, which is a continuation of Ser. No. 871,155, Apr. 20, 1992, abandoned. This application Jul. 31, 1996, Ser. No. 690,088

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—400 10 Claims



1. A facsimile machine having a plurality of operating modes including a receiving mode, said receiving mode comprising:

means, responsive to a user entering a request to use said receiving mode to receive a facsimile, for generating and outputting a unique security code to said user,

means for communicating said unique security code requested by said user to a sender of a facsimile at another facsimile machine, said sender including the unique security code in sending a facsimile to said facsimile machine, and

means, thereafter responsive to an incoming call connection from said other facsimile machine by said sender, for waiting a predetermined period of time for receipt of said unique security code via said connection, and for receiving a facsimile from said other facsimile machine via said connection only if said unique security code is received from said other facsimile machine during said predetermined period of time.

5,621,540

FACSIMILE APPARATUS AND PRINTING CONTROL METHOD THEREFOR

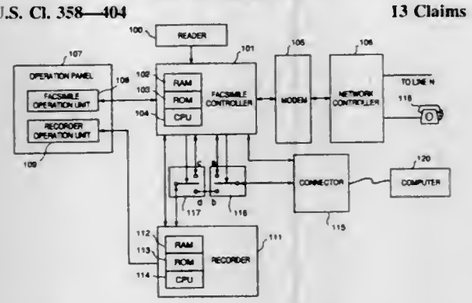
Hisao Terajima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1994, Ser. No. 301,433

Claims priority, application Japan, Sep. 10, 1993, 5-226202

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—404 13 Claims



1. A facsimile apparatus, comprising:

a printer unit for printing based on a received facsimile signal in a first mode and an image signal from an external device in a second mode;

control means, having at least a memory for storing data corresponding to the received facsimile signal, for controlling facsimile operation of the facsimile apparatus;

connection means for connecting the printer unit with the external device;

designation means for designating either said first mode or said second mode; and

judgment means for, if said designation means designates said second mode, judging whether or not said memory has at least a predetermined amount of empty area,

wherein, in said second mode when the image signal is received from the external device, if said judgment means judges that said memory has at least the predetermined amount of empty area, said control means controls said connection means to connect said printer unit to the external device and to said memory to use said memory as a buffer for storing data corresponding to the image signal from the external device, while if said judgment means judges that said memory does not have at least the predetermined amount of empty area, said control means controls said connection means to connect said printer unit to the external device so as to bypass use of said memory.

5,621,541

IMAGE PROCESSING APPARATUS FOR DISCRIMINATING THE INPUT DEVICE AND SELECTING RECORDING SHEETS BASED THEREON

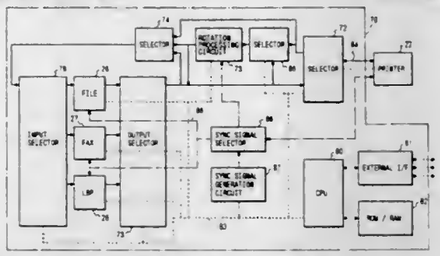
Masanori Sakai, Yokohama; Kunio Yoshihara, Sagamihara; Yoshinobu Aiba, Yokohama; Hiroshi Ohmura, Inagi; Hideto Kohtani, Yokohama; Eiji Sakaguchi, Kawasaki; Takehito Utsunomiya, Yokohama, and Makoto Kikugawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 450,100, May 25, 1995, abandoned, which is a continuation of Ser. No. 974,854, Nov. 10, 1992, abandoned. This application Dec. 6, 1995, Ser. No. 567,803

Claims priority, application Japan, Nov. 11, 1991, 3-322573

Int. Cl.[6] H04N *1/00;1/40;1/04*

U.S. Cl. 358—407 23 Claims



1. An image forming apparatus comprising:

first enclosing means for enclosing rectangular sheets in a first direction;

second enclosing means for enclosing rectangular recording sheets in a second direction which differs from said first direction by 90°;

input means for inputting first image data from a first device and for inputting second image data from a second device in said first direction, respectively;

rotating means for rotating the image data input from said input means in said second direction; and

image forming means for forming an image based on image data input from said input means onto the recording sheet enclosed in said first enclosing means or onto the recording sheet enclosed in said second enclosing means,

wherein said image forming means automatically changes the recording sheet for image formation from the recording sheet enclose in said first enclosing means to the recording sheet enclosed in said second enclosing means in accordance with the change of an image forming operation based on the first image data input from said first device to an image forming operation based on the second image data input from said second device, so that the image based on the second image data rotated by said rotating means is formed on the recording sheet enclosed in said second enclosing means.

5,621,542

IMAGE PROCESSING APPARATUS AND METHOD WITH WEIGHTING OF ERROR DATA GENERATED IN QUANTIZATION

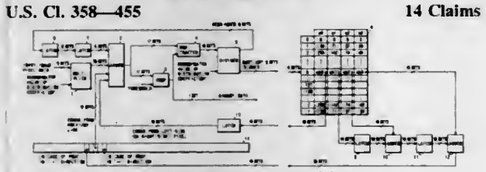
Takatoshi Ohta, and Koji Yamada, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1995, Ser. No. 373,843

Claims priority, application Japan, Jan. 20, 1994, 6-004647; Jul. 14, 1994, 6-162094

Int. Cl.[6] H04N *1/405*

U.S. Cl. 358—455 14 Claims



1. An image processing apparatus comprising:

input means for inputting image data;

processing means for quantizing the image data;

calculating means for obtaining error data generated in the quantizing process;

distributing means for weighting the error data obtained by the calculation of said calculating means and for distributing the weighted error data to a plurality of image data; and

setting means for setting a value of a round error which occurs by the weighting process to a value which lies within a range from 0 to less than 1,

wherein the round error is a value which is obtained by subtracting the weighted error data to be distributed to the plurality of image data, from the error data obtained by said calculating means.

5,621,543

SYSTEM FOR COMPRESSING A HALFTONE IMAGE AND METHOD THEREFOR

Ryuji Oomoto, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,193

Claims priority, application Japan, Jun. 27, 1994, 6-144990

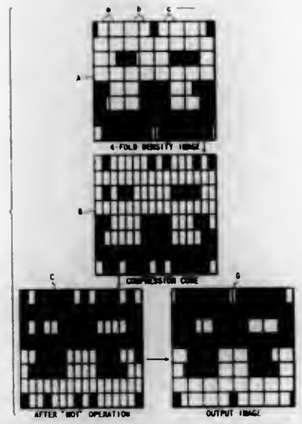
Int. Cl.[6] H04N *1/40;1/41*

U.S. Cl. 358—456 17 Claims

1. A system for compressing an N-fold density halftone image which is comprised of pixels, where N is a number of dot areas of each of the pixels, the system comprising:

a set of predefined compression codes, each of the compression codes corresponding to one of a set of only 4N predefined dot patterns of 2N dots, each of the 4N dot patterns having therein at most one of a change from black to white and a change from white to black, the 4N dot patterns defining permitted dot patterns for representing a given 2-pixel area of said halftone image, the given 2-pixel area including two horizontally adjacent ones of the pixels, each one of the 4N dot patterns having two pixel-corresponding portions each of the two pixel-corresponding portions corresponding to a respective one of a set of only 2N patterns of N dots, and each pertaining to a respective pixel of the given 2-pixel area; and

means for conducting compression coding on the halftone image by using the predefined compression codes;



wherein the predefined compression codes are defined so that for any given one of the predefined compression codes:

the given one of the predefined compression codes corresponds to a given one of the 4N dot patterns;

a result of inverting the given one of the predefined compression codes is another one of the predefined compression codes which corresponds to another one of the 4N dot patterns, and

the another one of the 4N dot patterns is an inverse of the given one of the 4N dot patterns.

5,621,544

IMAGE READING DEVICE AND IMAGE INFORMATION PROCESSING APPARATUS

Makoto Ogura, Isehara; Hiroo Ichihashi, Chigasaki; Katsumi Komiyama, Isehara; Yoshikazu Sano, Kawasaki; Osamu Hamamoto, Isehara, and Tetsuya Shimada, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

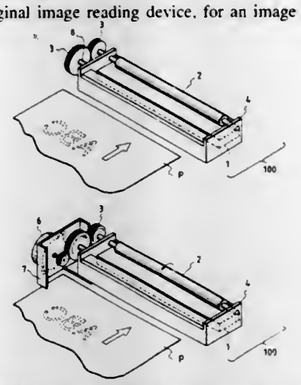
Division of Ser. No. 83,318, Jun. 29, 1993, Pat. No. 5,475,504, which is a continuation of Ser. No. 790,346, Nov. 12, 1991, abandoned. This application Apr. 20, 1995, Ser. No. 425,188

Claims priority, application Japan, Nov. 14, 1990, 2-309486; Jan. 31, 1991, 3-29206; Jan. 31, 1991, 3-29207; Jan. 31, 1991, 3-29208; Jan. 31, 1991, 3-29209; Jan. 31, 1991, 3-29210; Jan. 31, 1991, 3-29211; Jan. 31, 1991, 3-29212

Int. Cl.[6] H04N *1/04;1/191*

U.S. Cl. 358—494 25 Claims

1. An original image reading device, for an image information



processing apparatus which has a main body including means for generating a drive force to convey an original, said original reading device comprising:

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reading means for reading image information on a front surface of an original;

original conveying means adapted to be in contact with a back surface of the original and convey the original;

pressing means for pressing said original conveying means against said reading means;

drive force transmission means for transmitting the drive force from the main body of the information processing apparatus to said original conveying means; and

supporting means detachable from the main body of the information processing apparatus,

wherein said reading means, said original conveying means and said drive force transmission means are assembled on said supporting means, so that said device is, integrally with said reading means and said original conveying means, also detachable from the main body of the information processing apparatus.

5,621,545

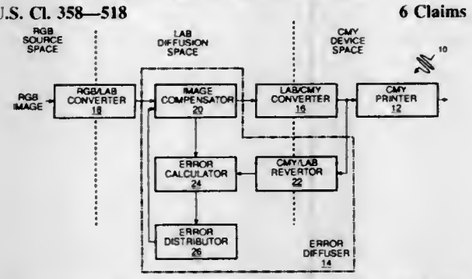
IMAGE PRODUCTION USING COLOR ERROR DIFFUSION

Ricardo J. Motta, 125 Eldora Dr., Mountain View, Calif. 94041, and Gary J. Dispoto, 461 Central Ave., Mountain View, Calif. 94043

Filed Dec. 8, 1993, Ser. No. 163,953

Int. Cl.[6] H04N *1/40;1/46;* **G03F** *3/08*

U.S. Cl. 358—518 **6 Claims**



1. A color production system for producing a color image from source image data, said system comprising:

a discrete-tone color image production device for producing said color image as a function of output image data, said output image data assigning to image pixels colors from a device state color space;

an error diffuser for implementing color error diffusion in a diffusion color space to provide adjusted image data from said source image data as a function of said output image data in said diffusion color space, said source image data assigning colors in said diffusion color space to said pixels, said adjusted image data assigning colors in said diffusion color space to said pixels, said diffusion color space having greater color resolution than said device state color space; and

a vector color space converter for converting said adjusted image data to said output image data, said color space converter performing a vector color space conversion on said adjusted image data to obtain said output image data, said color space converter being coupled to said error diffuser for receiving said adjusted image data therefrom, said color space converter being coupled to said color image production device for providing said output image data thereto.

5,621,546

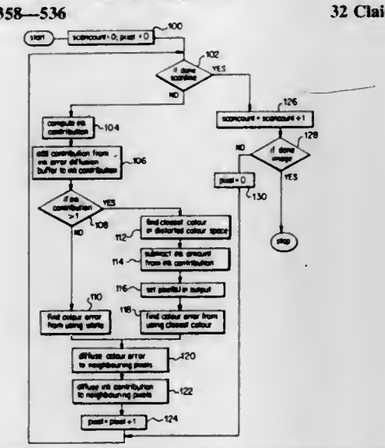
METHOD AND APPARATUS FOR VECTOR ERROR DIFFUSION WITH OUTPUT COLOR CONTROL

Robert V. Klassen; Reiner Eschbach, both of Webster, N.Y., and Krishna A. Bharat, Atlanta, Ga., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1993, Ser. No. 144,478

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—536 **32 Claims**



1. A method for determining a color of a pixel from an original image, comprising the steps of:

determining an ink contribution of the pixel based on input data derived from the original image and a diffused ink error contribution;

selecting the color of the pixel based on a distorted multi-dimensional color space, the determined ink contribution of the pixel, and a diffused color error;

updating the diffused ink error contribution and the diffused color error based on the selected color of the pixel; and

setting the selected color of the pixel in an output bitmap representing the original image.

5,621,547

ILLUMINATION DEVICE AND APPLICATION TO A DISPLAY DEVICE

Brigitte Loiseaux, Villebon Sur Yvette; Jean-Pierre Huignard; Christophe Nicolas, both of Paris, and Claude Puech, Ballainvilliers, all of France, assignors to Thomson-CSF, Puteaux, France

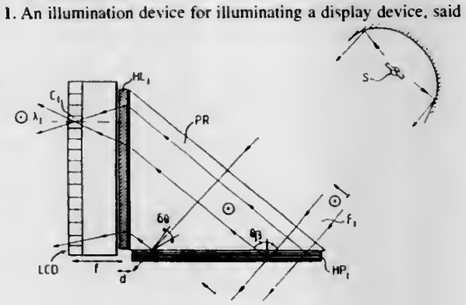
Continuation of Ser. No. 862,537, Jun. 23, 1992. This application Jun. 13, 1995, Ser. No. 489,731

Claims priority, application France, Nov. 23, 1990, 90 14620

Int. Cl.[6] G03H *1/00;* **G02B** *27/10;5/32*

U.S. Cl. 359—15 **1 Claim**

1. An illumination device for illuminating a display device, said



illumination device comprising:

a non-polarized light source for emitting non-polarized light;

holographic polarization beam splitting means for receiving non-polarized light emitted from said non-polarized light source and for outputting first polarized light beams having a first polarization and second polarized light beam having a second polarization, said second polarization being orthogonal to said first polarization; and

holographic focusing means for receiving one of said first polarized light beams and said second polarized light beams output from said holographic polarization beam splitting means and for focusing said one of said first polarized light beams and said second polarized light beams onto detector cells of a display device which is oriented in a plane parallel to a plane containing said holographic focusing means, said holographic focusing means having a matrix of microlenses, each microlens focusing a part of one of said first and second polarized light beams onto a detector cell.

5,621,548

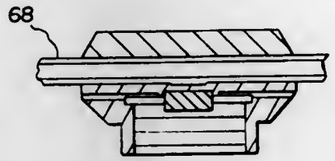
LASER SCANNER EMPLOYING A HOLELESS HOLOGON DISK AND FABRICATION METHOD THEREFOR

John R. Debesis, Penfield; Robert C. Bryant, Honeoye Falls; James S. Newkirk, LeRoy; Richard A. Colleluori, Rochester, and Timothy A. Peter, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,892

Int. Cl.[6] G02B *5/32*

U.S. Cl. 359—18 **6 Claims**



5. A multifacet laser scanner comprising:

a. a hologon disk assembly including an optical glass disk having uniformly spaced face surfaces with an annular region of discrete diffraction gratings on one face surface and an antireflection layer on the other surface;

b. a flange coupling member having a planar surfaced flange and a depending shaft;

c. a compliant epoxy adhesive layer coupling said flange to said antireflection layer with the rotational axis of said coupling centered vis a vis the center axis of said disk and generally normal to said disk face surfaces;

d. motor means including a drive shaft, having an axis of rotation;

e. an adhesive mass coupling said drive sleeve to said coupling with said coupling and said shaft axes aligned, and with said shaft axis precisely normal to said disk faces; and

f. a thermal control element having thermal expansion characteristics matching said flange, coupled to said disk face in opposition to said flange.

5,621,549

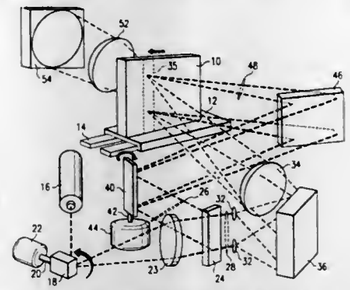
METHOD AND APPARATUS FOR POSITIONING A LIGHT BEAM ON A HOLOGRAPHIC MEDIA

Stephen R. Redfield, Austin, Tex., assignor to Tamarack Storage Devices, Inc., Santa Fe, N.M.

Continuation of Ser. No. 134,925, Oct. 7, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,462

Int. Cl.[6] G02B *11/26;11/28*

U.S. Cl. 359—24 **12 Claims**



1. A positioning system for positioning a laser beam within a select storage region in a holographic storage media, comprising:

a first motive device for holding the holographic storage media and moving the surface thereof along a single and linear direction in the plane of the surface of the holographic storage media;

a first reflective surface for reflecting the laser beam to provide a once redirected beam;

a second motive device for rotating said first reflective surface about an axis on the surface thereof, the laser beam impinging upon said axis; and

a collimating device for redirecting said once redirected beam toward the surface of the holographic storage media as a twice redirected beam such that all redirected positions of said twice redirected beam are substantially parallel to each other, the rotation of said first reflective surface causing said twice redirected beam to move along the surface of the holographic storage media in a path on the surface of the holographic storage media and at an angle to said single and linear direction through which said first motive device moves.

5,621,550

COLOR LIQUID CRYSTAL DISPLAY DEVICE HAVING THREE DICHROIC MIRRORS PER PIXEL

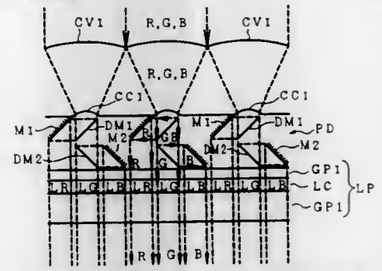
Kentaro Oku, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,618

Claims priority, application Japan, May 31, 1995, 7-133411

Int. Cl.[6] G02F *1/1335;* **G02B** *27/14*

U.S. Cl. 349—5 **12 Claims**



1. An optical element having a color processing section comprising pairs of convex and concave lenses provided for each of three pixels corresponding to three primary colors, and at least one of a color separator and a color mixer including a dichroic mirror for

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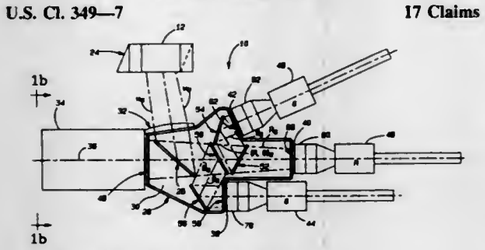
transmitting first and second primary colors out of the three primary colors but reflecting the third primary color, a mirror for reflecting the reflected third primary color, a dichroic mirror for transmitting the second and third primary colors out of three primary colors but reflecting the first primary color, and a mirror reflecting the reflected first primary color, the lenses and the at least one color separator or color mixer being arranged in a row.

5,621,551

IMMERSED DICHROIC SYSTEM FOR SINGLE PROJECTION LENS LIQUID CRYSTAL VIDEO PROJECTOR

Alan R. Henderson, Carlsbad, and Ralph Gagnon, Chico, both of Calif., assignors to Hughes-JVC Technology Corporation, Carlsbad, Calif.

Filed Apr. 30, 1993, Ser. No. 55,637
Int. Cl.[6] G02F 1/1335
U.S. Cl. 349—7 **17 Claims**



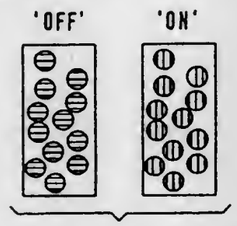
1. An optical projection system comprising:
a projection lens;
a source of linearly polarized light having a first orientation;
three reflective liquid crystal light valves (LCLVs)wherein two of said LCLVs are arranged in an approximately parallel relationship and one of the said LCLVs is oriented at an angle less than 45° with respect to said two of said LCLVs;
means for energizing the LCLVs;
polarizer analyzer disposed to receive and reflect polarized light from said source;
first dichroic filter disposed in the path of light reflected from said polarizer analyzer which reflects light of a first wavelength band and transmits light of second and third wavelength bands, the light of the first wavelength band being thereupon transmitted to a first LCLV;
second dichroic filter receiving light of the second and third wavelength bands from the first dichroic filter and reflecting light of a second wavelength band and transmitting light of a third wavelength band, the light of the second wavelength band and third wavelength bands being thereupon transmitted to the second and third LCLVs respectively, wherein the means for energizing the LCLVs causes selected areas of the LCLVs to rotate the polarization of the incoming light from the light source, and wherein upon its reflection off the LCLVs the light returns along its incoming path, the three bands of light being recombined as they pass through the first and second dichroic filters in a reverse direction, the combined light being transmitted by the polarizer analyzer in selected areas due to its rotated polarization toward said projection lens; and
an enclosure substantially filed with a transparent, liquid media enclosing at least the first and second dichroic filters and the polarizer analyzer, the enclosure being in contact with the LCLVs, wherein the light path between the polarizer analyzer, the dichroic filters, the LCLVs and the projection lens traverses the liquid media and does not traverse air.

5,621,552

ELECTROOPTICAL LIQUID CRYSTAL SYSTEM CONTAINING DUAL FREQUENCY LIQUID CRYSTAL MIXTURE

David Coates, Merley, and Patrick Nolan, Poole Dorset, both of Great Britain, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP92/01872, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/05436, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 17, 1992, Ser. No. 199,193
Claims priority, application European Pat. Off., Aug. 29, 1991, 91114515; Apr. 7, 1992, 92105978
Int. Cl.[6] H01L 29/04
U.S. Cl. 349—86 **21 Claims**



1. An electrooptical liquid crystal system comprising:
a dual frequency liquid crystal mixture having a cross-over frequency f_c and an optically transparent polymeric medium positioned between two electrode layers, said layers each being optionally attached to substrates;
wherein the ordinary refractive index of said liquid crystal mixture essentially agrees with the refractive index of said polymeric medium n_m, the quotient of the mass of said liquid crystal mixture and of the mass of the polymeric medium is 1.5 or more, or said ordinary refractive index of said liquid crystal mixture essentially agrees with the refractive index of said polymeric medium n_m and said quotient is 1.5 or more;
wherein said system has a reduced transmission in the on-state compared to the off-state;
wherein said system is obtained by polymerization of a composition containing said dual frequency liquid crystal mixture and a precursor of said polymeric medium; and
during curing of said composition, an electrical field exhibiting a frequency below said cross-over frequency f_c of said dual frequency liquid crystal mixture is applied to said composition whereby the molecules of said dual frequency liquid crystal mixture are aligned essentially in the direction of said electrical field.

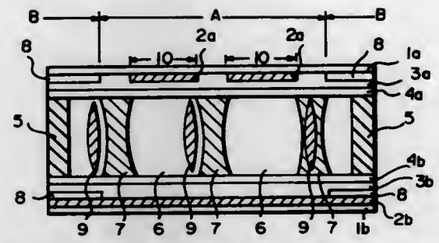
5,621,553

LIQUID CRYSTAL DISPLAY DEVICE WITH POLYMER WALL FORMATION RATE IN PERIPHERAL REGION OF DISPLAY SECTION AT LEAST 90%

Kenji Nishiguchi, Osaka; Koichi Fujimori, Nabari, and Tokihiko Shinomiya, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 12, 1995, Ser. No. 570,961
Claims priority, application Japan, Dec. 15, 1994, 6-312008
Int. Cl.[6] G02F 1/1339;1/13
U.S. Cl. 349—153 **18 Claims**

1. A liquid crystal display device comprising: a pair of substrates, at least one of which is transparent; and a liquid crystal layer including a plurality of polymer walls and liquid crystal regions surrounded by the plurality of polymer walls and being interposed between the pair of substrates,
wherein each substrate includes a display section having a plurality of electrodes for display at a side adjacent to the liquid crystal layer and a non-display section provided around the display section, and



wherein a polymer wall formation rate in the peripheral region of the display section is 90% or more.

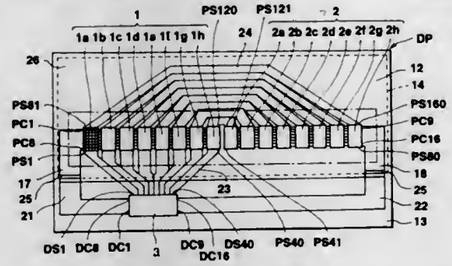
10. A method for producing a liquid crystal display device comprising the steps of:
attaching a pair of substrates, at least one of which is transparent, to each other, each substrate including a display section having a plurality of electrodes for display and a non-display section provided around the display section so that surfaces of the substrates on which the electrodes are respectively formed face each other;
sealing a mixture of a photopolymerizable composition and a liquid crystal material between the pair of substrates;
irradiating the mixture with light having different irradiation intensity between the display section and the non-display section and significantly varying irradiation intensity in the display section to photopolymerize the mixture so as to form polymer walls and liquid crystal regions.

5,621,554

LIQUID CRYSTAL DISPLAY DEVICE HAVING INTERCONNECTING LINES BETWEEN COLUMN ELECTRODES AND METHOD OF DRIVING THE DISPLAY DEVICE

Tomoyuki Kuniyori, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,408
Claims priority, application Japan, Dec. 31, 1993, 5-350767
Int. Cl.[6] G02F 1/1343
U.S. Cl. 349—139 **13 Claims**



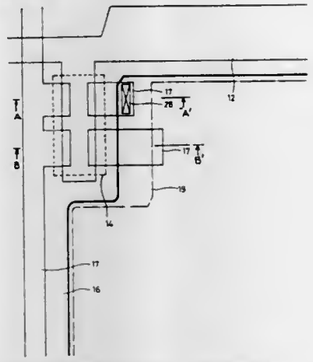
1. A liquid crystal display device comprising:
a first substrate having first and second sets of column electrodes mounted thereon, a driving circuit for applying control voltages, a plurality of column lines connecting said driving circuit to a first side of the first set of the column electrodes, said first side facing said driving circuit, a plurality of interconnecting lines connecting a second side of the first set of the column electrodes to the second set of the column electrodes, said second side facing away from said driving circuit, and a first sub-set and a second sub-set of row lines connected with said driving circuit;
a second substrate which faces said first substrate, defining a space together with said first substrate, said second substrate having first and second sets of row electrodes mounted thereon, to intersect the first and second sets of column electrodes, respectively, and having a third subset of row lines connected with the first set of the row electrodes and a fourth sub-set of row lines connected with the second set of the row electrodes;
a liquid crystal filled in said space between said first and second substrates;
a sealing member bonding said first and second substrates to each other and sealing said liquid crystal in said space between said first and second substrates, and having a first conductor for connecting the first sub-set of row lines to the third sub-set of row lines and a second conductor for connecting the second sub-set of row lines to the fourth sub-set of row lines;
a first display area defined by those portions of said liquid crystal which are located at intersections between the first set of the row electrodes and the first set of column electrodes; and
a second display area defined by those portions of said liquid crystal which are located at intersections between the second set of the row electrodes and the second set of column electrodes.

5,621,555

LIQUID CRYSTAL DISPLAY HAVING REDUNDANT PIXEL ELECTRODES AND THIN FILM TRANSISTORS AND A MANUFACTURING METHOD THEREOF

Jae D. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,892
Claims priority, application Rep. of Korea, Dec. 31, 1993, 32120/1993
Int. Cl.[6] G02F 1/1333;1/1343
U.S. Cl. 349—54 **12 Claims**



1. A liquid crystal display device, comprising:
a pair of transparent conductive films used as a pixel electrode and vertically formed; and
a first thin film transistor and a second thin film transistor electrically connected to respective one of said pair of transparent conductive films;
wherein said first thin film transistor is non-vertically electrically connected to its respective transparent conductive film and said second thin film transistor is vertically connected to its respective transparent conductive film through a contact hole.

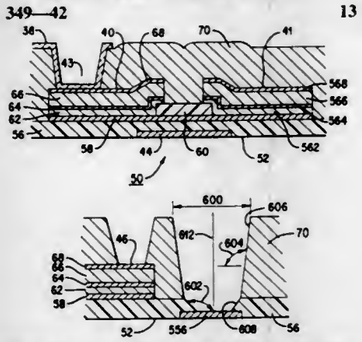
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5,621,556

METHOD OF MANUFACTURING ACTIVE MATRIX LCD USING FIVE MASKS

Ronald T. Fulks, Mountain View; William Yao, Los Altos, and Chuang C. Tsai, San Jose, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 235,009, Apr. 28, 1994. This application May 30, 1995, Ser. No. 453,732
Int. Cl.[6] G02F *1/136*; H01L *21/265*
U.S. Cl. 349—42 13 Claims



1. A method for manufacturing an active matrix liquid crystal device using five masks, comprising:

forming a plurality of gate electrodes over a substrate using a first mask;

forming a plurality of etch stoppers over the plurality of gate electrodes using a second mask, each etch stopper being formed over one gate electrode;

forming a plurality of drain electrodes and a plurality of source electrodes using a third mask, a portion of each of the drain electrodes being formed over a first portion of a corresponding one of the etch stoppers and a portion of each of the source electrodes being formed over a second portion of the corresponding one of the etch stoppers, wherein the source and the drain electrodes are separated over the corresponding one of the etch stoppers;

forming over the substrate a passivation layer having at least one first via hole using a fourth mask; and

forming a pixel electrode over the passivation layer using a fifth mask.

5,621,557

Patent Not Issued For This Number

5,621,558

LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE HAVING ALIGNMENT FILMS FOR PERPENDICULAR ALIGNMENT

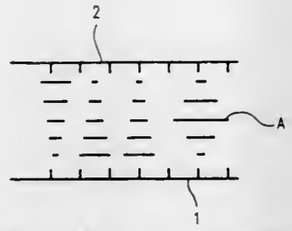
Shinji Shimada, Kashihara, and Kiyoshi Ogishima, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1995, Ser. No. 423,990
Claims priority, application Japan, Apr. 20, 1994, 6-081888; Oct. 21, 1994, 6-257149
Int. Cl.[6] G02F *1/1337*; *1/13*
U.S. Cl. 349—130 11 Claims

1. A liquid crystal electro-optic device comprising:

a pair of insulating substrates disposed to face each other;

a liquid crystal layer sandwiched between the pair of insulating substrates, a polarization plane of light incident thereon changing in accordance with a twist orientation of liquid crystal molecules in the liquid crystal layer;



a pair of alignment films respectively formed on the pair of insulating substrates to be in contact with the liquid crystal layer; and

a pair of polarizers disposed to sandwich the pair of the insulating substrates, the pair of polarizers being arranged so that polarizing axes thereof are substantially perpendicular to each other,

wherein orientations of liquid crystal molecules in the liquid crystal layer, which are in contact with the pair of alignment films, are aligned in a direction substantially perpendicular to the pair of insulating substrates,

wherein the liquid crystal layer has a twist pitch of approximately quadruple the thickness of the liquid crystal layer, and

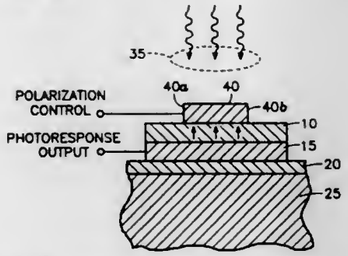
wherein the pair of alignment films are respectively rubbed, and the polarizing axes of the pair of polarizers are parallel to or perpendicular to a direction in which an adjacent one of the alignment films is rubbed.

5,621,559

FERROELECTRIC OPTICAL COMPUTING DEVICE WITH LOW OPTICAL POWER NON-DESTRUCTIVE READ-OUT

Sarita Thakoor, and Anilkumar P. Thakoor, both of Covina, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 18, 1994, Ser. No. 228,730
Int. Cl.[6] G11C *11/22*; H01G *7/06*
U.S. Cl. 359—107 3 Claims



1. An optical computing device responsive to an optical beam having a beam diameter, said optical computing device comprising:

a bottom electrode having a planar surface;

a ferroelectric crystalline thin film layer overlying said planar surface of said bottom electrode, said ferroelectric crystalline thin film layer having two stable polarization states and a principal crystalline axis and being responsive to an electric field having a component along said principal axis by transitioning between said polarization states, said principal axis being generally non-parallel to said planar surface of said bottom electrode; and

a top electrode facing a direction of arrival of said optical beam and having planar surface generally parallel to said bottom electrode overlying said ferroelectric crystalline thin film layer and having a width not exceeding said beam diameter of said optical beam, whereby a region of said ferroelectric crystalline thin film layer underlying a peripheral edge of said top electrode is illuminated by said optical beam;

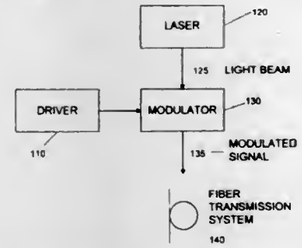
wherein said ferroelectric crystalline thin film layer comprises PZT crystals and said optical beam has a beam intensity on the order of 2 milliWatts per square micron.

5,621,560

METHOD AND SYSTEM FOR REDUCING CHIRP IN EXTERNAL MODULATION

Thomas H. Wood, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 479,037
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—161 21 Claims



1. An optical communication system for reducing chirp in a modulated light signal transmitting information over an optical medium comprising:

laser source means for producing a light beam; and

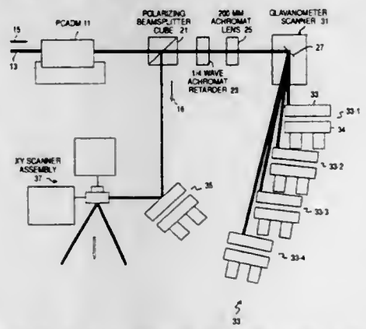
modulator means for modulating said light beam with an information signal during a modulation period to produce said modulated light signal, and for modulating light returning to the laser source means through the modulator means to maintain the returning light substantially constant during said modulation period.

5,621,561

LASER SCANNER INCORPORATING VARIABLE FOCUS MECHANISM FOR RAPIDLY CHANGING BEAM SPOT SIZE

Robert V. Belfatto, Melbourne Beach; Gregory O. Makhov, Orlando, and William R. Benner, Jr., Ormond Beach, all of Fla., assignors to NEOS Technologies, Inc., Melbourne, Fla.

Filed Nov. 14, 1994, Ser. No. 339,501
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—205 17 Claims



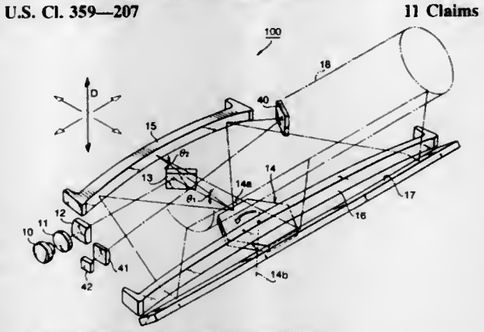
9. An apparatus for controlling the beam width of an optical beam comprising a focusing device having a prescribed focal length, and a beam displacement control device which is operative to cause relative displacement between said optical beam and a selected one of a plurality of reflector element positions, respective ones of said plurality of reflector positions being located at respectively different separation distances from said focusing device, so as to cause said optical beam to be reflected from a reflector element provided at said selected one of said plurality of reflector positions, whereby, in the course of traveling along an optical beam path, said optical beam being incident upon said focusing device and said reflector element so as to be directed thereby to a given spatial location along said path, so that said beam has a resultant beam width that is dependent upon the separation distance between said selected one of said plurality of reflector element positions and said focusing devices, and further including a plurality of reflector elements at respectively different separation distances and spatial orientations, and wherein said beam displacement control device comprises a scanning reflector device that is spaced apart along said path from said focusing element, and wherein said scanning reflector device is operative to scan said optical beam sueh that it is incident upon and is reflected by said selected one of said reflector elements, and wherein said reflector elements comprise retro-reflector elements, so that, as said scanning reflector device scans said optical beam to be incident upon and reflected by said selected one of said retro-reflector elements, said optical beam is returned to and reflected by said scanning reflector device to said focusing device.

5,621,562

OPTICAL SCANNING DEVICE

Yoshihiro Hama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,204
Claims priority, application Japan, Oct. 27, 1994, 6-287387
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—207 11 Claims



1. An optical scanning device comprising:

a laser source for emitting a laser flux;

a first flat mirror for redirecting said laser flux from said laser source;

a rotatable polygonal mirror, for scanning said laser flux redirected by said first flat mirror, said scanning laser flux being separated from said redirected laser flux in a sub-scanning direction by a first separation angle θ_1, said polygonal mirror being separated from said first flat mirror by a first predetermined distance;

a curved surface mirror for reflecting said laser flux scanned by said polygonal mirror, and for converging said laser flux scanned by said polygonal mirror in a main scanning direction, said reflected scanning laser flux being separated from said scanning laser flux in said sub-scanning direction by a second separation angle θ_2, said curved surface mirror being separated from said polygonal mirror by a second predetermined distance that is greater than said first predetermined distance; and

an anamorphic lens for converging said reflected scanning laser flux in said sub-scanning direction, said anamorphic lens

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being separated from said curved mirror by a third predetermined distance that is greater than said first predetermined distance,

whereby said laser flux is redirected by said first flat mirror between said polygonal mirror and said curved mirror.

5,621,563

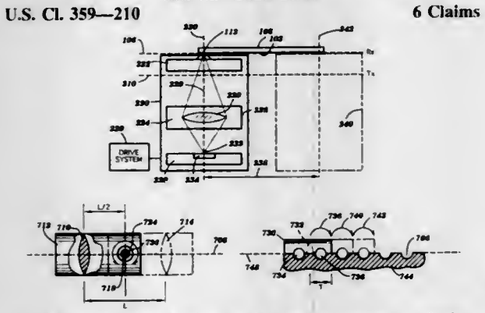
METHOD AND APPARATUS FOR POSITIONING A FOCUSING LENS

Mark G. Brook, Londonderry, N.H., and Mark E. Tellam, Charlestown, Mass., assignors to AGFA Division, Bayer Corporation, Wilmington, Mass.

Continuation of Ser. No. 496,713, Jun. 29, 1995, Pat. No. 5,532,846. This application Feb. 26, 1996, Ser. No. 605,484

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—210 **6 Claims**



1. A system for scanning an original document to obtain a digitized representation of said original document, said scanning system comprising:

(A) An object focal plane;

(B) Scanning means, movably disposed for linear motion along a scanning axis, for illuminating a scan line of an original document located in said object focal plane, and for obtaining a digitized representation of said scan line;

(C) Means for displacing said scanning means along said scanning axis to obtain digitized representations of successive scan lines of said original document, said digitized representations of said successive scan lines together comprising said digital representation of said original document; wherein said scanning means further comprises a lens assembly and means for rotatably positioning said lens assembly about an axis of rotation substantially perpendicular to an optic axis of said lens assembly, a rotation of said lens assembly displacing said lens assembly linearly along a path substantially parallel to said optic axis.

5,621,564

SEMICONDUCTOR OPTICAL MODULATOR

Shigeki Kageyama; Katsuhiko Goto, and Toru Takiguchi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 314,423

Claims priority, application Japan, Oct. 5, 1993, 5-248922

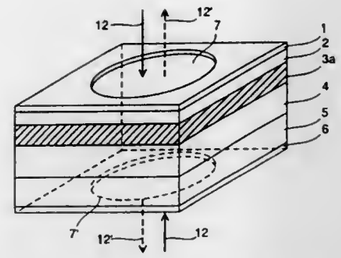
Int. Cl.[6] G02F *1/03*

U.S. Cl. 359—248 **13 Claims**

1. A semiconductor optical modulator comprising:

a semiconductor substrate having a lattice constant;

an active region including a laminated multi quantum well structure comprising first quantum well layers having a band gap energy and a positive lattice strain relative to said semiconductor substrate, second quantum well layers having a band gap energy and a negative lattice strain relative to said semiconductor substrate, and barrier layers having a band gap energy, a barrier layer being dispose between pairs of said first and second quantum well layers; and



upper and lower cladding layers having band gap energies at least as large as those of said first quantum well layers, said second quantum well layers, and said barrier layers, said upper and lower cladding layers being disposed on opposite sides of said active region, respectively, said lower cladding layer being disposed between said semiconductor substrate and said active region.

5,621,565

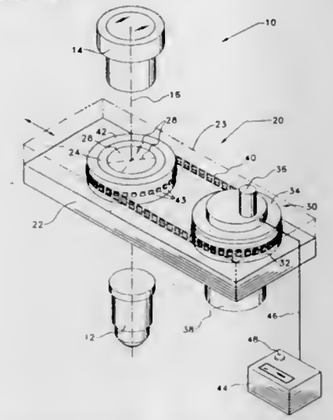
PROTRACTION DEVICE FOR A MEASURING MICROSCOPE

Reinhardt Lihl; Kurt Salzmann, and Gerhold Garkisch, all of Vienna, Austria, assignors to Leica AG, Vienna, Austria

Filed Oct. 4, 1995, Ser. No. 538,955

Int. Cl.[6] G01B *9/04*

U.S. Cl. 359—368 **18 Claims**



1. A protraction device for a measuring microscope comprising:

a slide module adapted to be received by said microscope;

a reticle supported on said slide module for rotation about a first axis, said slide module enabling said reticle to be selectively positioned at an intermediate image plane of said microscope orthogonal to an optical path of said microscope with said first axis in alignment with said optical path;

a disk supported on said slide module apart from said reticle and mechanically coupled to said reticle for corresponding rotation therewith said disk having angle codings thereon;

manual means for rotating said disk and said reticle through an angular displacement; and

angle encoder means for reading said angle codings and providing a signal representative of said angular displacement.

5,621,566

TELESCOPE AND A TELESCOPE HOLDER

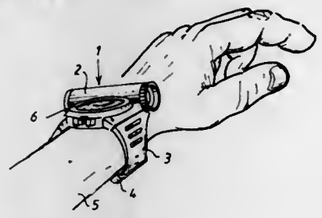
Günter Müller, Müncheu, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Continuation of Ser. No. 168,611, Dec. 16, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 497,762

Claims priority, application Germany, Dec. 23, 1992, 42 43 850.0

Int. Cl.[6] G02B *23/00;7/02*

U.S. Cl. 359—399 **12 Claims**



1. In combination,

a telescope, and

an arm-band having a telescope mounting body firmly attached to said arm-band,

said telescope mounting body providing support for said telescope,

said telescope having a holding body along its lower region,

said holding body having an upper surface connecting with said telescope that is firmly attached to said telescope over nearly the entire length of said telescope,

said holding body having a lower support surface over nearly the entire length of said telescope,

said telescope mounting body having an upper support surface that is of nearly the same size as said lower support surface of said holding body,

said lower support surface of said holding body lying non-rotatable and removable on said upper support surface of said telescope mounting body, and

said telescope being oriented with its greatest dimension tangential to said arm-band along the periphery of said arm-band,

so that said telescope is mounted close to and stably supported upon said arm-band.

5,621,567

BINOCULAR VIEWING DEVICE AND ITS ASSEMBLY PROCESS

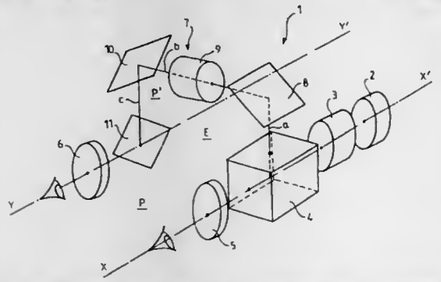
Jean-François Quint, Sarcelles; Michel Saint-Sevin, Gagny; Daniel Savoye, Dijon, and Denis Guettier, Charny, all of France, assignors to SFIM Optronique Pour La Defense Et Le Spatial, Vellzy-Villacoublay, France

Filed Apr. 4, 1995, Ser. No. 416,377

Claims priority, application France, Apr. 12, 1994, 94 04324

Int. Cl.[6] G02B *23/18;23/12;23/02*

U.S. Cl. 359—407 **11 Claims**



1. An asymmetrical binocular viewing device comprising, aligned in succession on a first optical axis: a single objective, a related luminance intensifier tube, a semi-reflecting optical image splitter and a first ocular and, arranged on a second optical axis, parallel to the first optical axis and describing with the first optical axis a horizontal plane, a second ocular, which is related to the optical image splitter by an optical image transmitting system,

wherein the optical image transmitting system comprises successively a first mirror, an lens system, a second mirror and a third mirror, said optical image transmitting system being arranged so that an optical path is defined, starting from the optical image splitter and comprising, successively, a first vertical axis section, a horizontal axis section and a second vertical axis section describing a U turned upside down, in the shape of a bridge located on a vertical plane and perpendicular to both parallel first and second optical axes, in order to define a free space between both first and second oculars.

5,621,568

DEVICE FOR ADJUSTING THE DIOPTER SETTING OF A FINDER ASSEMBLY

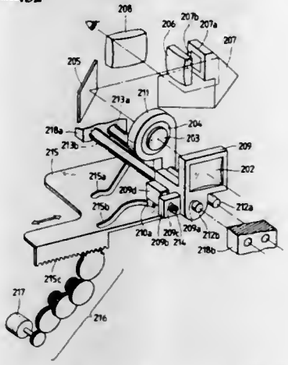
Sachio Hasushita; Tetsuya Abe; Shuji Yoneyama; Hirofumi Matsuo; Ryota Ogawa; Ichiro Taguchi, and Hidetaka Yokota, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1992, Ser. No. 882,958

Claims priority, application Japan, May 17, 1991, 3-066601 U; May 17, 1991, 3-210534; Jul. 9, 1991, 3-061006 U

Int. Cl.[6] G02B *23/00;15/14;7/02*

U.S. Cl. 359—432 **13 Claims**

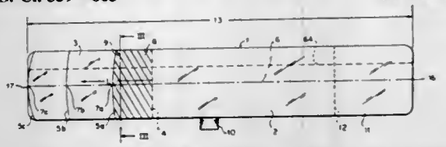


1. A diopter adjusting device for adjusting a diopter setting of a finder assembly, said finder assembly comprising an objective optical system, having a plurality of lens components and including at least one plastic lens, for forming an image of an object and an eyepiece optical system for viewing therethrough the image formed by the objective optical system, said device comprising:

an object image forming position adjusting means for adjusting a position at which said image is formed by said objective optical system by selectively moving at least one of said plurality of lens components, in order to compensate for a change in a focal length of said objective optical system caused by a change in power of said plastic lens due to changing ambient conditions, said position adjusting means comprising a guide means for guiding a lens frame, said lens frame holding said one of said lens components movably in an axial direction.

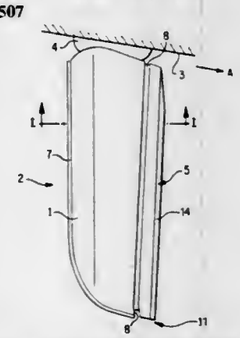
VOL 1197 ISS 3 AP 15 1997 UMI

5,621,569
REAR-VIEW MIRROR FOR VEHICLES
Hubert Schlenke, Hasenwinkel 13, D-5778 Meschede, Germany
PCT No. PCT/EP91/01764, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO92/11147, PCT Pub. Date Jul. 9, 1992
PCT Filed Sep. 17, 1991, Ser. No. 78,240
Claims priority, application Germany, Dec. 20, 1990, 40 40 839.6
Int. Cl.[6] G02B 5/08;5/10; B60R 1/04;1/08
U.S. Cl. 359—603 20 Claims



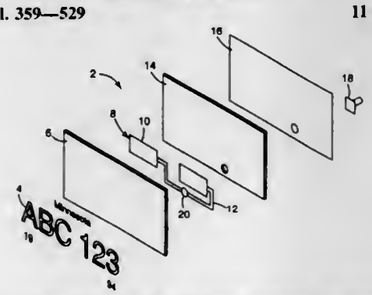
1. A rear-view mirror (1) for vehicles, comprising a plane-mirror section (2) and at least one convexly curved side section (3, 11) contiguous with the sides of the plane-mirror section and sloping steadily, and having a curvature of zero at the transition line (4, 12) into the plane-mirror section (2), the curvature of the side section continuously increasing progressively with increasing distance from the plane-mirror section (2), characterized in that the rear-view mirror (1) is an inside rear-view mirror, that the lines of intersection of orthogonal planes of the side-mirror section (3, 11) are circles whose curvature corresponds respectively to the curvature of a horizontal line of reference (6, 6A) on the side-mirror section in their point of intersection with the circles, that the curvature of the side-mirror section (3, 11) increases in the manner of a clothoid spiral in linear fashion with the arc length (L) on the horizontal line of reference (6, 6A) on the side-mirror section (3, 11), that the curvature of the clothoid spiral defining the curvature of the side-mirror section (3) on a driver's side has a clothoid parameter A between 100 mm and 200 mm, and that the horizontal line of reference (6, 6A) extends in the center or above the center of the mirror center, approximately at the height of an apparent horizontal line (6A) for a normal viewer.

5,621,570
MIRROR HOUSING FOR AN EXTERIOR REAR-VIEW MIRROR ON A VEHICLE
Albert Hack, Sindelfingen; Rainer Tiefenbacher, Leinfelden-Echterdingen; Roland Borgwardt, Stuttgart; Volker Nickel, Vöhringen; Robert Schwed, Magstadt; Jörg-Uwe Koske, Simmozheim, and Richard Merz, Starzach, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Dec. 12, 1995, Ser. No. 570,775
Claims priority, application Germany, Dec. 12, 1994, 44 44 126.6
Int. Cl.[6] B60R 1/06; G02B 7/182
U.S. Cl. 359—507 11 Claims



1. Mirror housing for an exterior rear-view mirror on a vehicle, adjacent to a side window and having a mirror face received in a sunken manner in an opening and directed towards a vehicle rear end, and having a water channel which extends around the mirror housing adjacent to the opening and is integrated into the mirror housing opposite housing surface, with side walls sunk in respect to said housing surface, and by means of which water which impinges in a forward direction driving mode is collected before it reaches the opening and is channelled in the direction of a lower housing edge, which projects beyond the mirror face, in a direction of a vehicle rear end,
wherein the mirror housing terminates between a lower opening border and the water channel in a strip which is oriented at an angle with respect to the housing surface in the direction of the vehicle rear end and downwards.

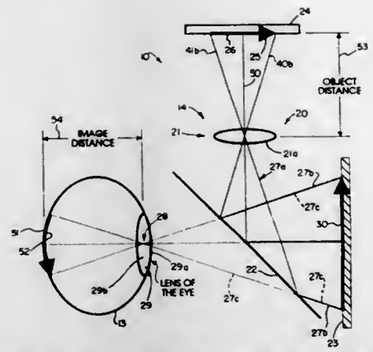
5,621,571
INTEGRATED RETROREFLECTIVE ELECTRONIC DISPLAY
Heinrich Bantli, Stillwater; Thomas I. Bradshaw, Afton; Stephen W. Mohn, St. Paul, and Edmund J. Ring, Circle Pines, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 14, 1994, Ser. No. 196,294
Int. Cl.[6] G02B 5/122
U.S. Cl. 359—529 11 Claims



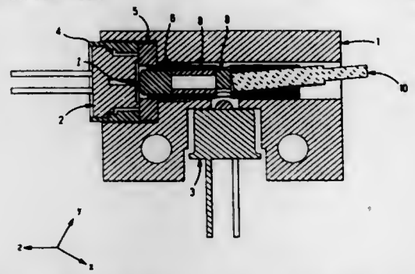
1. A retroreflective apparatus for both visual and electromagnetic data communication, said apparatus comprising:
retroreflective means for retroreflecting incident light, said retroreflecting means having visual information thereon;
antenna means for electromagnetic communication; and
coupling means for allowing coupling to said antenna means;
wherein said retroreflective apparatus is substantially rigid.

5,621,572
OPTICAL SYSTEM FOR A HEAD MOUNTED DISPLAY USING A RETRO-REFLECTOR AND METHOD OF DISPLAYING AN IMAGE
James L. Fergason, 92 Adam Way, Atherton, Calif. 94025
Filed Aug. 24, 1994, Ser. No. 295,383
Int. Cl.[6] G02B 27/14
U.S. Cl. 359—630 40 Claims

1. A head mounted display for presenting an image for viewing by a viewer, comprising
a mounting structure mountable on the head of a viewer,
a liquid crystal display image source carried by the mounting structure and providing an image output for viewing by one eye of a viewer,
focusing optics carried by the mounting structure in position to receive light from the image source to form a real image,
a retro-reflector having a characteristic of providing a conjugate optical path leading to said eye of a viewer,
a beamsplitter carried by the mounting structure in position to receive light from the focusing optics and image source and to direct the light toward said retro-reflector, and
said mounting structure including means for holding said beamsplitter and focusing optics with respect to the head of a viewer to orient said focusing optics and said beamsplitter with respect to said eye of the viewer such that said focusing optics and said beamsplitter are in substantially the same relation to each other as the pupil of said eye of a viewer stands in relation to said beamsplitter to permit said eye to view an image from said image source when light representing that image is reflected in said conjugate optical path.

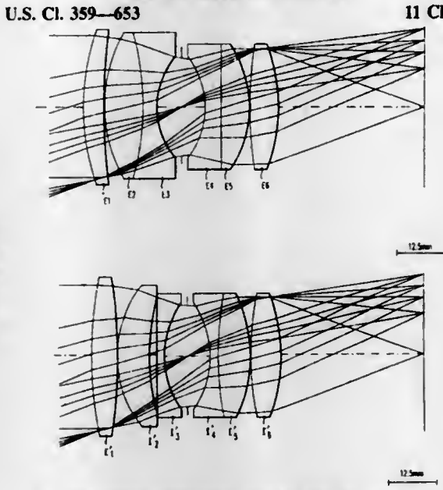


5,621,573
MICROOPTIC BIDIRECTIONAL MODULE
Warren H. Lewis, Newport, Pa., and Robert W. Roff, Westfield, N.J., assignors to The Whitaker Corporation, Wilmington, Del.
Filed May 18, 1995, Ser. No. 443,987
Int. Cl.[6] G02B 27/14;6/36;6/00
U.S. Cl. 359—634 7 Claims



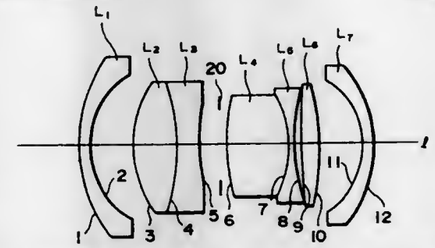
1. A bi-directional optical interconnect, comprising:
a subassembly having a first housing, said first housing having disposed therein in a first linear orientation a light source coupled optically to a lens element, said lens element coupled optically to a beam splitter and said beam splitter coupled optically to an optical fiber held in a ferrule, said optical fiber having a endface adjacent said beam splitter angled to reduce back reflections to the fiber and to the light source, and said ferrule canted at an angle relative to said endface; and
a main housing, said main housing having a first cavity for receiving a light detector, and a second cavity for receiving said subassembly, said first cavity oriented substantially colinearly with said linear orientation of said first housing, and said second cavity oriented substantially orthogonally to said first cavity.

5,621,574
OBJECTIVE LENS SYSTEM UTILIZING AXIAL GRADIENT INDEX (GRIN) LENS ELEMENTS
Leslie D. Foo, San Jose, Calif., assignor to Nikon Corporation, Japan
Filed Mar. 29, 1995, Ser. No. 412,642
Int. Cl.[6] G02B 3/00;9/36;9/60
U.S. Cl. 359—653 11 Claims



1. A lens system comprising, in order from an object side to an image side extending along an optical axis:
a first axial gradient index lens element of positive optical power and having an index of refraction gradient having an absolute value in a range of 1/10 to 3/4 of an index of refraction at its object side surface;
a plurality of lens elements; and
a second axial gradient index lens element of positive optical power and having an index of refraction gradient having an absolute value in a range of 1/10 to 3/4 of an index of refraction at its object side surface.

5,621,575
WIDE ANGLE LENS SYSTEM
Nobuaki Toyama, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan
Filed Mar. 6, 1996, Ser. No. 611,908
Claims priority, application Japan, Apr. 11, 1995, 7-085471
Int. Cl.[6] G02B 13/04
U.S. Cl. 359—753 2 Claims



1. A wide angle lens system comprising successively from an object side:
a negative meniscus first lens with a convex surface facing the object,
a first junction lens composed of a positive second lens with a convex surface facing the object and a negative third lens with a concave surface facing an image,

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a second junction lens composed of a biconvex fourth lens and a biconcave fifth lens,

a positive sixth lens with a convex surface facing the image, and

a negative meniscus seventh lens with a convex lens facing the image,

said lens system satisfying the following conditions (1) to (4):

(1) $-1.95<f_1/f<-1.05$

(2) $1.05<f_{23}/f<3.60$

(3) $1.10<f_{45}/f<2.16$

(4) $1.53<(r_{11}+r_{10})/(r_{11}-r_{10})<4.95$

wherein f is combined focal length of this wide angle lens system as a whole, f_1 is focal length of the first lens, f_{23} is combined focal length of the second and third lenses, f_{45} is combined focal length of the fourth and fifth lenses, r_{10} is radius of curvature of the surface of the sixth lens facing the image, and r_{11} is radius of curvature of the surface of the seventh lens facing the object.

5,621,576

OPTICAL HEAD FOR OPTICAL MEMORY DISK RECORDING DEVICE WITH ELASTIC SUPPORT IN A DIRECTION PARALLEL TO A RECORDING SURFACE

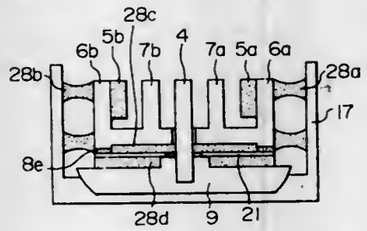
Yoshiaki Yamauchi; Shozo Saegusa, both of Ibaraki-ken; Atsushi Ichikawa, Tsukuba; Akio Yabe, Fujisawa; Akira Saito, Odawara, and Hiromitu Mori, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Video & Information Systems, Inc., Kanagawa-ken, both of Japan

Filed May 25, 1994, Ser. No. 249,231

Claims priority, application Japan, Jun. 29, 1993, 5-158545

Int. Cl.[6] G02B *7/02*; **G11B** *7/095*

U.S. Cl. 359—814 **15 Claims**



1. An optical head for a recording device in which data are recorded on a recording surface of an optical memory disk, comprising,

a head body which is substantially prevented from moving perpendicularly to the recording surface and is movable to be positioned roughly along the recording surface,

an object lens for focussing a light beam on the recording surface,

a carriage on which the object lens is mounted and which is movable to be positioned precisely along the recording surface,

a drive base member for generating a force substantially parallel to the recording surface between the drive base member and the carriage to position precisely the carriage along the recording surface, and

elastic means for connecting the drive base member to the head body to support the drive base member relative to the head body elastically in a direction substantially parallel to the recording surface.

5,621,577

EXTERNAL REAR-VIEW MIRROR FOR COMMERICAL VEHICLES

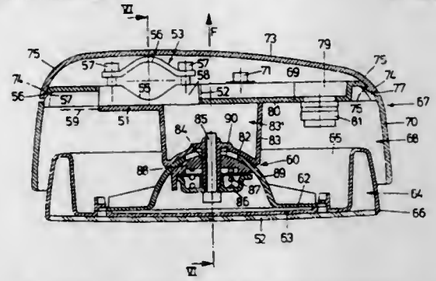
Heinrich Lang, Ergershiem, and Wolfgang Seiboth, Bad Windsheim, both of Germany, assignors to Mekra Rangau Plastics GmbH & Co. KG, Germany

Continuation-in-part of Ser. No. 956,782, Oct. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 675,670, Mar. 27, 1991, abandoned. This application Oct. 6, 1993, Ser. No. 132,720

Claims priority, application Germany, Mar. 29, 1990, 40 10 083.9; Oct. 2, 1992, 42 33 255.9; May 25, 1993, 43 17 314.4

Int. Cl.[6] G02B *7/182*; **B60R** *1/06*

U.S. Cl. 359—872 **10 Claims**



1. An external rear-view mirror for commercial vehicles comprising:

a holder (**54**) for securing the mirror to the commercial vehicle,

a separate support plate (**51**, **51'**) arranged in a housing (**67**), said support plate (**51**, **51'**) is directly secured to the holder (**54**) by means of a clamping device (**53**) and said housing (**67**) is held on said support plate (**51**, **51'**),

at least one mirror glass (**52**), which is pivotably disposed on the support plate (**51**, **51'**) and which is arranged on the housing (**67**), and

at least one positioning aggregate (**60**, **61**), which is arranged on the support plate (**51**,**51'**) and which is connected with the at least one mirror glass (**52**) for its pivoting wherein the clamping device (**53**) comprises a clamping thrust bearing (**55**) for the holder (**54**) and a clamping member (**56**), the clamping thrust bearing (**55**) for the holder (**54**) being formed in one piece with the support plate (**51**, **51'**) and the clamping member (**56**) being non-positively connectable with the clamping thrust bearing (**55**), and

wherein the clamping device (**53**) has two clamping thrust bearings (**55**) integrally formed with the support plate (**51**, **51'**), the clamping member (**56**) of which clamping thrust bearing (**55**) is non-positively connectable with the clamping thrust bearing (**55**).

5,621,578

METHOD OF TRANSMITTING DIGITAL VIDEO AND AUDIO SIGNALS BETWEEN BIT RATE REDUCTION ENCODED SIGNAL RECORDING AND REPRODUCING SYSTEMS

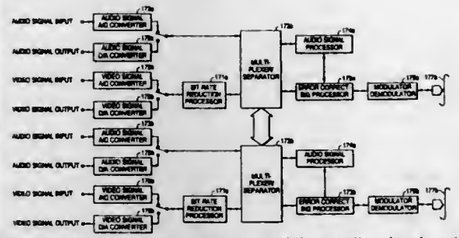
Chiyoko Matsumi, Suita; Takahiro Nakamura, Osaka; Susumu Yamaguchi, Moriguchi; Hideki Ohtaka, Neyagawa; Ryouichi Hoshiai, Osaka, and Masakazu Nishino, Kashiwara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 831,994, Feb. 6, 1992, Pat. No. 5,479,289. This application Aug. 16, 1995, Ser. No. 515,587

Int. Cl.[6] G11B *5/86*

U.S. Cl. 360—15 **6 Claims**

1. A method of transmitting digital signals between a first apparatus having a function of recording a bit rate reduction encoded digital video signal and a digital audio signal on a recording medium and a second apparatus having a function of reproducing from a recording medium a recorded bit rate reduction encoded digital video signal and a recorded digital audio signal, said method comprising the steps of:



reproducing a recorded bit rate reduction coded video signal and a recorded digital audio signal from a recording medium at said second apparatus to obtain a reproduced bit rate reduction coded digital video signal and a reproduced digital audio signal, respectively;

time-division multiplexing the reproduced digital audio signal with the reproduced bit rate reduction coded digital video signal at said second apparatus to obtain a multiplexed transmission signal;

transmitting said transmission signal from said second apparatus;

receiving at said first apparatus said transmission signal transmitted from said second apparatus;

separating the received transmission signal at said first apparatus into said reproduced bit rate reduction coded digital video signal and said reproduced digital audio signal;

recording at said first apparatus said reproduced bit rate reduction coded digital video signal and said reproduced digital audio signal which have been separated by the separating step on another recording medium;

decoding at said first apparatus said reproduced bit rate reduction coded digital video signal which has been separated by the separating step to obtain a decoded video signal; and

digital-to-analog converting said reproduced video signal to obtain an analog video signal which is outputted to be monitored.

5,621,579

METHOD FOR SELECTIVELY PLAYING BACK PROGRAMS RECORDED ON A VIDEO TAPE

Henry C. Yuen, Redondo Beach, Calif., assignor to Index Systems, Inc., Virgin Islands (Br.)

Continuation-in-part of Ser. No. 176,852, Dec. 30, 1993, which is a continuation-in-part of Ser. No. 66,666, May 27, 1993, which is a continuation-in-part of Ser. No. 14,541, Feb. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,125, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 883,607, May 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 817,723, Jan. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,844, Dec. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 747,127, Aug. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,485

Int. Cl.[6] H04N *5/78*

U.S. Cl. 386—121 **6 Claims**

1. A method of selecting for playback on a VCR a program recorded on a video tape comprising the steps of:

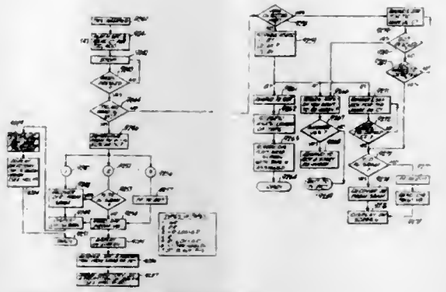
recording video programs on a video tape, each program being made up of a sequence of still frame images;

storing in memory a directory of the programs recorded on the video tape, the directory comprising for each recorded program a still frame image of the program, a title of the program, and an address of the start of the program on the tape;

inserting the video tape into a VCR;

retrieving from memory for display a list of the titles of the programs recorded on the inserted video tape;

displaying the retrieved list of titles in a first area of a screen;



marking one of the displayed titles;

retrieving from memory for display the still frame image for the program of the marked title;

displaying the retrieved still frame image in a second area of the screen; and

selecting for playback one of the displayed titles.

5,621,580

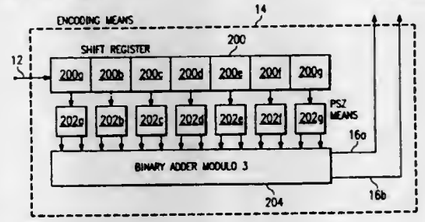
TERNARY CODE MAGNETIC RECORDING SYSTEM

Joao R. Cruz, R.R. #1, Box 117B-4, Norman, Okla. 73072, and Daniel J. Krueger, 604 Meadowlake, Noble, Okla. 73068

Filed Aug. 26, 1994, Ser. No. 296,512

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—48 **60 Claims**



1. A method for recording, on a magnetic medium, a stream of bits, which bits represent a first or second binary symbol, the method comprising:

storing an impulse response vector in a first portion of a memory;

inputting said bit stream to a second portion of said memory;

convolving said bit stream with said vector; dividing the results of said convolving by three, outputting thereby a stream of remainders comprising first, second, and third ternary symbols; and

for each particular remainder:

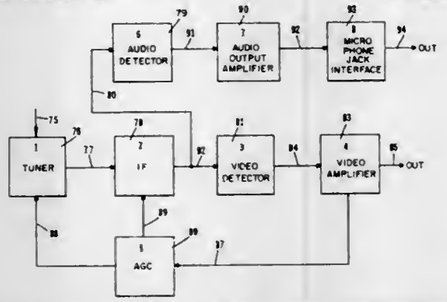
determining which ternary symbol said particular remainder is represented by;

upon a determination that said particular remainder is represented by said first or second ternary symbols, causing said medium to have, respectively, a first or second magnetically oriented state; and

upon a determination that said particular remainder is represented by said third symbol, causing said medium to have, substantially, a magnetically nonoriented state.

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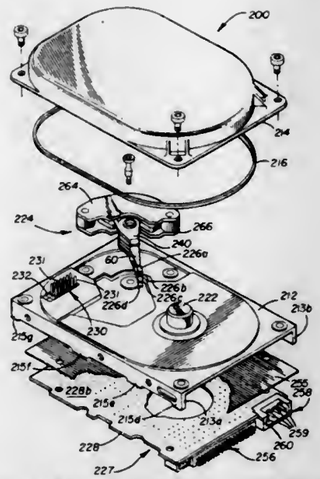
5,621,581
SYSTEM FOR TRANSCRIPTION AND PLAYBACK OF SONIC SIGNALS
Jan R. Coyle, 9380 S.W. 80th Apt. D, Tigard, Oreg. 97223
Continuation of Ser. No. 794,325, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 471,051, Jan. 18, 1990, which is a continuation of Ser. No. 368,137, Jun. 16, 1989, which is a continuation of Ser. No. 262,068, Oct. 24, 1988, which is a continuation of Ser. No. 928,930, Nov. 10, 1986, which is a continuation-in-part of Ser. No. 854,329, Apr. 21, 1986, abandoned. This application Jul. 10, 1992, Ser. No. 912,221
Int. Cl.[6] G11B *5/035*
U.S. Cl. 360—65 **30 Claims**



1. A system for playback of sonic signals other than sonic signals from a microphone, and for improving the quality of said sonic signals, comprising:
sonic signal playback means having microphone input circuitry means;
means for transforming said sonic signals prior to inputting said sonic signals to said microphone input circuitry means, said means for transforming including means for increasing, decreasing or maintaining the impedance to said sonic signals;
means for producing and passing said sonic signals to said means for transforming; and
means for passing said sonic signals from said means for transforming to said microphone input circuitry means,
whereby said sonic signals are improved in quality.

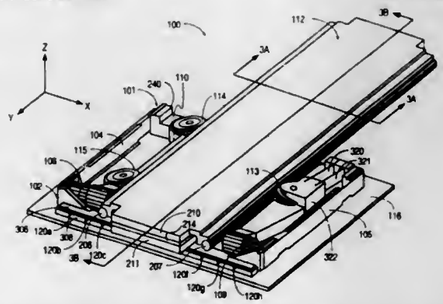
5,621,582
DISK DRIVE INCLUDING A BASEPLATE WELL FOR THE SPIN MOTOR
Frederick M. Stefansky, Longmont, Colo., assignor to Conner Peripherals, Inc., San Jose, Calif.
Continuation of Ser. No. 1,891, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 549,283, Jul. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 147,804, Jan. 25, 1988, Pat. No. 4,965,684. This application Nov. 17, 1993, Ser. No. 153,784
Int. Cl.[6] G11B *5/55*
U.S. Cl. 360—75 **1 Claim**

1. A disk drive responsive to a host computer, comprising:
a base, said base having a top, a bottom, a well, and first and second side rails extending from the bottom of said base;
first and second disks;
a motor, mounted in said well, for supporting and rotating said disks;
interactive means for reading information from and writing information on said disks;
actuator means, supported on the lop of said base and responsive to control signals, for selectively positioning said interactive means with respect to said disks;
a header provided in said base and having pins extending perpendicular to the bottom of said base, said pins being electrically interconnected with said interactive means;
control means, confined between said first and second side rails, for generating control signals, and for providing information



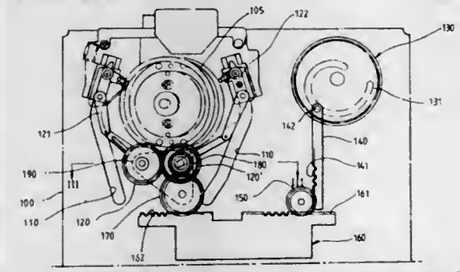
signals to and receiving information signals from said interactive means via said header, said control means comprising a connector for receiving said pins;
a cover sealably attached to said top of said base to provide a controlled environment between said cover and said base for said disks, said interactive means, and said actuator means;
said control means comprises a printed circuit board having circuitry provided thereon and an opening;
said printed circuit board having a first surface facing said base and a second surface;
said connector comprises a rear entry connector mounted on said second surface of said printed circuit board; and
said well protrudes through said opening in said printed circuit board.

5,621,583
METHOD AND DEVICE FOR READING AND WRITING MAGNETICALLY ENCODED DATA ON LINEAR TRACKS
A. Harold Parks, San Leandro; James R. W. Clymer, Cupertino; Douglas A. Reim, San Jose; William N. Aldrich, Redwood City; Ajeet Singh, Berkeley; Albert S. Hoagland, Saratoga, and Hi-Dong Chai, San Jose, all of Calif., assignors to Cartesian Data, Inc., Sunnyvale, Calif.
Division of Ser. No. 215,140, Mar. 18, 1994, Pat. No. 5,521,774. This application Feb. 23, 1996, Ser. No. 606,359
Int. Cl.[6] G11B *5/52*
U.S. Cl. 360—81 **10 Claims**



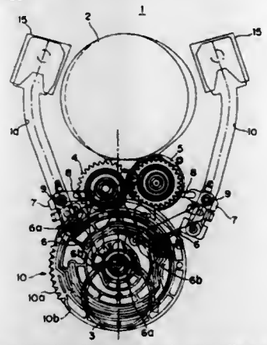
2. A method of positioning a servo head on a servo stripe of a medium, said medium having a memory storage area arranged in relation to an X-axis and a Y-axis, said Y-axis being perpendicular to said X-axis, said servo stripe comprising a plurality of substantially linear servo tracks, each of said plurality of substantially linear servo tracks being parallel to said X-axis, said method comprising the steps of
moving said servo head along said X-axis to read servo information on one of said servo tracks, said servo information representative of an actual position of the servo head along said Y-axis,
generating a first signal representative of the actual position of the servo head along said Y-axis,
generating a second signal representative of
a desired position of the servo head along said Y-axis, and
generating an output signal based on said first and second signals, wherein said output signal moves the servo head from the actual position along the Y-axis to the desired position along the Y-axis.

5,621,584
TAPE LOADING DEVICE FOR USE IN A VIDEO CASSETTE RECORDER
Hyun-Moo Lee, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 8, 1995, Ser. No. 386,511
Claims priority, application Rep. of Korea, Feb. 8, 1994, 94-2450
Int. Cl.[6] G11B *15/665*
U.S. Cl. 360—85 **2 Claims**



1. A tape loading device for use in a video cassette recorder for drawing a portion of a magnetic tape out of a tape cassette loaded thereinto and loading it around a head drum incorporated therein, the tape loading device comprising:
a main chassis having a pair of loading slots;
a cam gear having a loading groove, the cam gear being rotatably mounted on the main chassis;
an elongated member having a rack gear at one end, the other end thereof being fitted into the loading groove;
a transmittal gear meshed with the rack gear, the transmittal gear being rotatably mounted on the main chassis;
an intermediate gear rotatably mounted on the main chassis through an intermediate gear shaft;
a function plate having a pair of rack gear portions, one rack gear portion being meshed with the transmittal gear, the other, being selectively engaged with the intermediate gear; and
a loading means including a first and a second loading gears, a pair of loading gear shafts, a pair of articulated linkages, and a pair of pole bases, wherein the first and the second loading gears are rotatably mounted on the main chassis through the loading gear shafts, respectively, the first loading gear having a stepped gear portion, the stepped gear portion being engaged with the intermediate gear, the second loading gear being engaged with the first loading gear, and the articulated linkages are fixed to the loading gear shafts at one ends, respectively, and the pole bases are fixed to the other ends of the linkages and fitted into the loading slots of the main chassis, respectively, each of the pole bases moving along the corresponding loading slot.

5,621,585
REEL BRAKE DEVICE OPERATED BY A TAPE LOADING MECHANISM OF MAGNETIC RECORDING AND REPRODUCING APPARATUS
Seong-Sik Kang; Sung-Hoon Choi, both of Kyungki-Do; Myung-Cheol Baek, Seoul; Sung-Pyo Hong, Kyungki-Do; Ji Y. Lee; Lee H. Ryu, both of Seoul; Soo-Beom Lee, Kyungki-Do; Hee Y. Park, Kyungki-Do, and Yoon-Sig Lee, Kyungki-Do, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea
Continuation of Ser. No. 309,882, Sep. 20, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 576,854
Claims priority, application Rep. of Korea, Sep. 27, 1993, 19923/1993
Int. Cl.[6] G11B *5/027*
U.S. Cl. 360—85 **4 Claims**

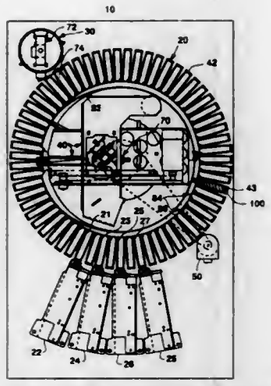


1. A reel brake device for a magnetic recording and reproducing apparatus comprising:
a pair of reels rotatably mounted on a base plate;
a pair of tape guide means each slidable along a loading guide slot in the base plate so as to come into contact with a position determining member provided at an end of said loading guide slot for limiting the movement of the tape guide means;
a pair of loading gears each respectively connected to one of said pair of tape guide means via a plurality of levers rotatably mounted on said base plate for driving said tape guide means;
a brake driving means formed on at least one of said pair of loading gears; and
a reel brake means, mounted on a side of said pair of reels, for braking at least one of said pair of reels wherein said reel brake means includes an actuating part contacted at one end thereof with said brake driving means and a contact portion at another end thereof for being contacted with at least one of said pair of reels, and wherein said actuating part of said reel brake means is driven by said brake driving means upon rotation of said at least one of said pair of loading gears for causing said reel brake means to brake and release said at least one of said pair of reels.

5,621,586
RETAINING SLOT FOR DATA CARTRIDGE LIBRARY SYSTEM
Bennett C. Hinnen; Hai T. Ho, both of Westminster; Eric A. Rinard; Gregory S. Rinard, both of Boulder; Brian A. Ruff, Denver; Nathan C. Thompson, Boulder, and Hossein Zia-Shakeri, Louisville, all of Colo., assignors to Western Automation Laboratories, Inc., Boulder, Colo.
Continuation of Ser. No. 374,160, Jan. 17, 1995, Pat. No. 5,555,143. This application Mar. 4, 1996, Ser. No. 610,482
Int. Cl.[6] G11B *15/68*
U.S. Cl. 360—92 **22 Claims**

1. A data cartridge library apparatus comprising:
storage array means for storing a plurality of data cartridges, wherein said storage array means includes a plurality of

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housings, each defining a slot, and each slot capable of accommodating a data cartridge and having a first opening through which a data cartridge can be moved;

player/recorder means for reading/writing data on a data cartridge; and

picker means for moving a data cartridge between said storage array means and said player/recorder means;

wherein a first housing of said plurality of housings includes a top wall, a bottom wall that is substantially parallel to said top wall, a first lateral wall that is substantially perpendicular to said top walls, and a second lateral wall that is substantially parallel to said first lateral wall;

wherein said top, bottom, first lateral and second lateral wall of said first housing define at least part of said first opening;

wherein said first housing includes an elastic member for retaining a data cartridge within the housing that is made from the same piece of material as at least one of said top wall, said bottom wall, said first lateral wall, and said second lateral wall.

5,621,587

TAPE DRIVE MECHANISM HAVING A MODE CAM OPERATED BY REVERSE ROTATION OF MOTOR

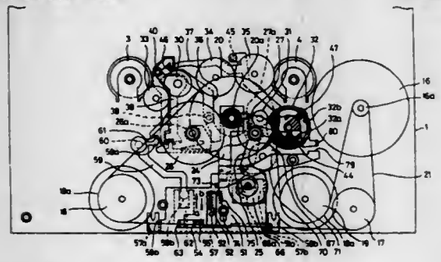
Kunio Shimizu, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 66,036, Jun. 2, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 409,881

Claims priority, application Japan, Oct. 4, 1991, 3-283718

Int. Cl.[6] G11B *5/008*

U.S. Cl. 360—96.3 **3 Claims**



1. A tape drive unit comprising,

a pair of capstans;

a pair of reel shafts for driving a magnetic tape;

a single motor for driving said reel shafts and said capstans, said motor being forwardly and reversely rotatable;

a magnetic bead provided so as to be movable between a first position at which it can record on and/or reproduce from said magnetic tape and a second position at which it does not abut on said magnetic tape;

a pair of pinch rollers each corresponding to one of said pair of capstans;

mode setting means driven only by the reverse rotation of said motor for forming the respective modes for setting a tape traveling direction and a tape traveling speed;

moving means driven only by the forward rotation of said motor for moving said magnetic head according to the mode set by said mode setting means to the first position;

switch means driven only by the forward rotation of said motor for selectively moving and abutting one of said pair of pinch rollers at one time on the corresponding capstan according to the mode set by said mode setting means; and

drive means driven only by the forward rotation of said motor for driving said reel shafts according to the mode set by said mode setting means, wherein after the mode is set only by the reverse rotation of said motor, the magnetic head movement, pinch roller switching and reel shaft driving are performed only by the forward rotation of said motor according to said established mode.

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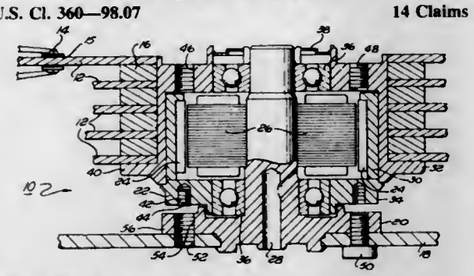
TWO-PLANE BALANCE FOR HARD DISK DRIVE MOTOR-BASE ASSEMBLIES

Kelly Williams, Brentwood, and Tho Pham, Milpitas, both of Calif., assignors to Samsung Electronics, Inc., Richfield Park, N.J.

Filed Jun. 7, 1996, Ser. No. 659,893

Int. Cl.[6] G11B *17/02;* **F16F** *15/22*

U.S. Cl. 360—98.07 **14 Claims**



6. A hard disk drive spin motor assembly, comprising:

a base plate;

a spindle that is attached to said base plate;

a coil that is coupled to said spindle;

a hub assembly that rotates relative to said coil and said spindle, said hub assembly having a top portion and a bottom portion;

a bottom weight screw that is attached to said bottom portion of said hub assembly, said base plate having at least one aperture aligned to provide access to said bottom weight screw; and,

a first disk that is attached to said hub assembly.

5,621,589

RECORDING AND/OR REPRODUCING APPARATUS

Koga Noriyuki, Chiba, and Hisashi Hanzawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP94/00378, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO94/20958, PCT Pub. Date Sep. 15, 1994

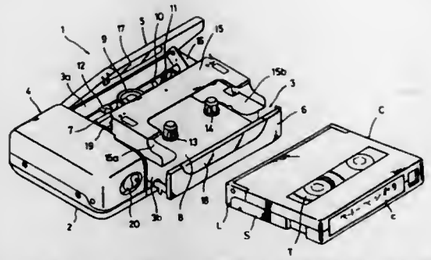
PCT Filed Mar. 9, 1994, Ser. No. 325,404

Claims priority, application Japan, Mar. 9, 1993, 5-075326; Mar. 9, 1993, 5-075327

Int. Cl.[6] G11B *15/665;15/675*

U.S. Cl. 360—96.5 **26 Claims**

1. A recording and/or reproducing apparatus for a tape housed in a tape cassette, comprising a main chassis with a rotary head cylinder mounted thereon, a subchassis coupled to said main chassis for sliding movement relative to the main chassis in directions toward and away from the rotary head cylinder, said subchassis having a pair of hub drive shafts and a plurality of guide rollers movable relative to said main chassis along with said subchassis, a lid mounted to said main chassis and being angularly movable with respect to said main chassis, a cam plate connected to said lid and slidable towards or away from the rotary head cylinder by angular movement of said lid with respect to said main chassis, said cam plate having an inclined first cam groove and a second cam groove contiguous to said inclined first cam groove and extending parallel to a direction in which said subchassis and said main chassis slide with respect to each other, a vertical cam groove formed in the main chassis, and a tape holder mounted to said main chassis and said cam plate via a shaft pin riding in said vertical cam groove, said inclined first cam groove, and said second cam groove, said tape holder being vertically moveable with respect to said subchassis when said cam plate is slidably moved with respect to said main chassis, said tape holder being moved to a lowered position whereat said plurality of guide rollers are positioned inboard of the tape when said subchassis is moved toward said rotary head cylinder, wherein the tape housed in the tape cassette loaded on said subchassis is pulled out of the tape cassette and wound around said rotary head cylinder by said guide rollers when said subchassis undergoes sliding movement relative to said main chassis.



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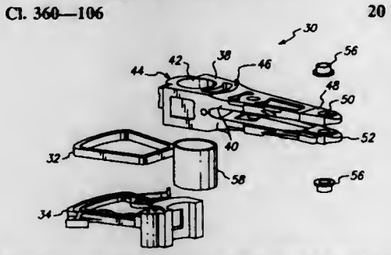
ACTUATOR APPARATUS WITH PLASTIC C-BLOCK

Lou Pace, San Carlos; Thomas A. Tacklind, San Martin, and Thomas R. Stone, San Francisco, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Mar. 25, 1996, Ser. No. 621,433

Int. Cl.[6] G11B *5/45;21/20*

U.S. Cl. 360—106 **20 Claims**



16. An improved, light weight actuator apparatus used in a disk drive device, the actuator apparatus mounted on a pivot for positioning read/write heads relative to a surface of a rotating data storage disk having a multiplicity of concentric tracks, the actuator apparatus comprising:

(a) an electrically energizable coil disposed relative to a magnetic field for positioning the read/write heads over the multiplicity of concentric tracks;

(b) a coil encapsulating member for supporting the coil in the magnetic field, the coil encapsulating member formed of an electrically non-conductive, low pressure, polymeric material to avoid electrical shorting and damage to the coil;

(c) a metallic hub for mounting on the pivot; and

(d) an integral C-block assembly formed of a strong, stiff, electrically conductive polymeric material, the C-block assembly including:

(i) a body portion having a block-like structure, the body portion including a first end operatively connected to the coil encapsulating member, the body portion having a cavity in which the hub is disposed for mounting the C-block assembly on the pivot such that when the coil is electrically energized by the magnetic field, a force is created to rotate the C-block about the pivot; and

(ii) a pair of arms extending from a second end of the body portion for supporting the read/write heads, the arms extending in parallel relative to each other and relative to the surface of the data storage disk, each arm having a head mounting surface for supporting the read/write head at a distal end of the arm, the head mounting surface comprising an oval aperture in which a suspension for the read/write head is ball staked, the aperture shaped so that tangential stresses at the distal end of the arm induced by the ball staking of the read/write head are reduced.

wherein the shape of the mounting surface aperture enables formation of the C-block assembly from a polymeric material thereby providing an actuator apparatus having reduced weight and lower inertia for improved dynamic performance and reliability.

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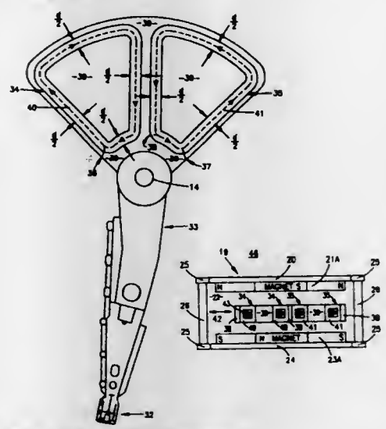
DUAL COIL VOICE COIL MOTOR

Alireza Rahimi, Los Altos, and Kamran Oveyssi, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 5, 1996, Ser. No. 628,453

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 **1 Claim**



1. A head-arm assembly comprising:

an arm having an angular sector;

a first and a second trapezoidal-like shaped coil bobbin affixed to the arm, the first and the second coil bobbin disposed side-by-side to one another so as to lie within the angular sector, the angular sector and the first and the second bobbin being co-planar to one another so as to form a narrow side profile, the first and the second coil bobbin each having a coil disposed therein formed by a wire, each said coil being wound in opposite directions to one another such that additive torques are produced; and

a magnetic structure employing three magnet polarity zones, said magnetic structure having two flux transition zones, said magnetic structure employing relatively thin pole pieces without saturation or leakage to permit use of a thicker magnet that provides a shorter access time to said arm.

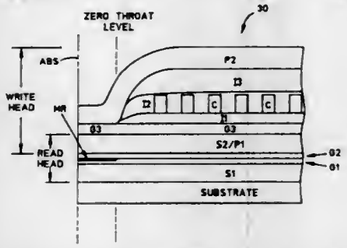
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5,621,592

MAGNETIC HEAD WITH MAGNETICALLY STABLE SHIELD LAYERS AND/OR WRITE POLES

Hardayal S. Gill, Portola Valley, and Tsann Lin, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 366,940, Dec. 30, 1994, Pat. No. 5,515,221. This application Jun. 7, 1995, Ser. No. 473,703
Int. Cl.[6] G11B 5/127;5/147
U.S. Cl. 360—113 49 Claims



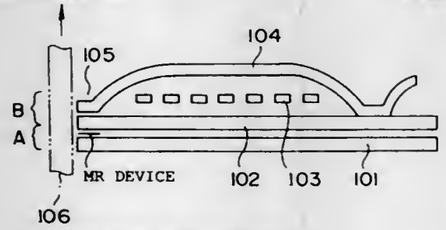
1. A combined head having an MR read head and a write head comprising:
the MR read head including:
an MR sensor, first and second gap layers and first and second shield layers;
the MR sensor being sandwiched between the first and second gap layers and the first and second gap layers being sandwiched between the first and second shield layers;
the write head including:
at least one coil layer, an insulation stack and first and second pole pieces;
the coil layer being embedded in the insulation stack and the insulation stack being sandwiched between the first and second pole pieces;
at least one of: (1) at least one of the shield layers and (2) at least one of the pole pieces being a lamination of at least first and second layers, the first layer being a soft magnetic material which has a uniaxial anisotropy field and the second layer being an antiferromagnetic material which has an exchange coupling field; and
the first and second layers being exchange coupled,
whereby the exchange coupling of the second layer increases the uniaxial anisotropy field of the second layer so that the second layer has increased magnetic stability upon the occurrence and relaxation of an applied field.

5,621,593

MAGNETORESISTIVE HEAD AND METHOD OF FABRICATING THE SAME

Masamitsu Kitajima, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 27, 1995, Ser. No. 495,200
Claims priority, application Japan, Sep. 8, 1994, 6-214844
Int. Cl.[6] G11B 5/33
U.S. Cl. 360—113 8 Claims



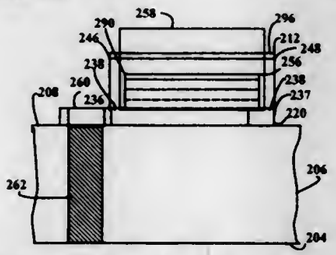
1. A magnetoresistive head comprising:
a substrate having a magnetic shield effect;
an insulating layer formed on said substrate;
a first nonmagnetic metal layer formed on said insulating layer;
a soft magnetic layer formed on said first nonmagnetic metal layer;
a second nonmagnetic metal layer formed on said soft magnetic layer;
a magnetoresistive layer formed on said second nonmagnetic metal layer;
an antiferromagnetic layer formed on said magnetoresistive layer, said antiferromagnetic layer being divided into a first portion and a second portion;
a first electrode formed on said first portion of said antiferromagnetic layer; and
a second electrode formed on said second portion of said antiferromagnetic layer.

5,621,594

ELECTROPLATED THIN FILM CONDUCTOR COIL ASSEMBLY

G. Robert Gray, Fremont, and Arun Malhotra, San Jose, both of Calif., assignors to AIWA Research and Development, Inc., Fremont, Calif.

Filed Feb. 17, 1995, Ser. No. 390,470
Int. Cl.[6] G11B 5/17
U.S. Cl. 360—123 16 Claims



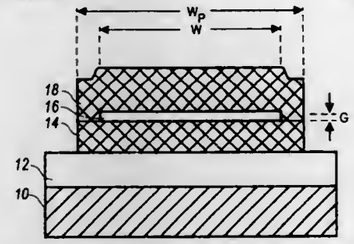
1. A thin film conductor coil assembly comprising:
a ceramic substrate having a substantially planar first surface and an opposing second surface;
a plurality of conductive material filled vias passing from the first surface to the second surface of the ceramic substrate to form a conducting pathway across the ceramic substrate;
a first patterned coil layer formed on the substantially planar surface of the ceramic substrate, the first patterned coil layer including a plurality of mutually detached first coil layer elements, elements of the first coil layer having a first end and a second end;
a first insulating layer formed between the first coil layer elements and overlying the first coil layer elements, the first insulating layer being patterned so that the first and second ends of the first coil layer elements are exposed;
a magnetic core formed overlying the first insulating layer and insulated from the first patterned coil layer;
a second insulating layer formed overlying the magnetic core, the second insulating layer being patterned so that the first and second ends of the first coil layer elements are exposed; and
a second patterned coil layer formed overlying the second insulating layer and insulated from the magnetic core by the second insulating layer, the second patterned coil layer including a plurality of mutually detached second coil layer elements, elements of the second coil layer having a first end coupled to the first end of a first element of the first coil layer elements and having a second end coupled to the second end of a second element of the first coil layer elements, the first and second elements of the first coil layer being different elements so that the first and second coil layer elements are coupled in an alternating sequence having a first end and a second end, the first and second ends of the alternating sequence being coupled to vias of the plurality of the conductive material filled vias.

5,621,595

PINCHED-GAP MAGNETIC RECORDING THIN FILM HEAD

Uri Cohen, 765 San Antonio Rd. #53, Palo Alto, Calif. 94303

Filed Oct. 20, 1992, Ser. No. 963,783
Int. Cl.[6] G11B 5/147
U.S. Cl. 360—126 29 Claims



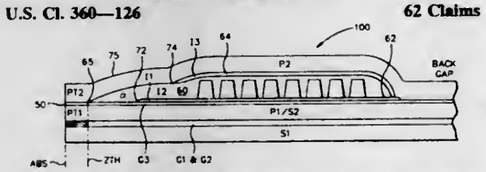
24. A pinched-gap inductive thin film head (TFH) magnetic transducer device comprising:
a substrate;
a bottom magnetic pole deposited over said substrate, said bottom magnetic pole comprising a back-portion and a pole-tip;
a non-magnetic gap layer deposited over said bottom magnetic pole; and
a top magnetic pole deposited over said gap layer, said top magnetic pole comprising a back-portion and a pole-tip, said back-portion of said top magnetic pole being connected to said back-portion of said bottom magnetic pole;
both of said pole-tips terminating at an air bearing surface of said device, one of said pole-tips having a pair of side-edge regions which are turned towards the other pole-tip in a region extending from said air bearing surface all or part of a distance to a zero throat height of said device, so as to substantially contact said other pole-tip and at least partially enclose a pinched-gap segment of said gap layer between said pole-tips and thereby inhibit magnetic flux lines from emanating laterally outward from said side-edge regions when a magnetic field is induced between said pole-tips.

5,621,596

LOW PROFILE THIN FILM WRITE HEAD

Hugo A. E. Santini, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 296,301, Aug. 25, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,062
Int. Cl.[6] G11B 5/147;5/127
U.S. Cl. 360—126 62 Claims



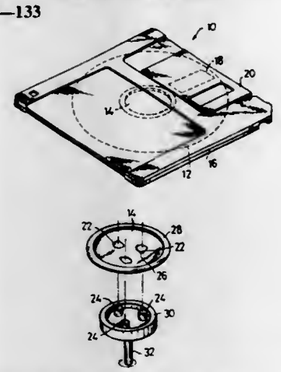
1. A thin film low profile write head which has a zero throat height between a back gap and a head surface for facing a magnetic medium, a flare point between the zero throat height and the back gap, a pole tip region located between the head surface and the flare point and a yoke region located between the flare point and the back gap, the write head comprising:
first and second pole pieces located in the pole tip region and the yoke region, the second pole piece having a second pole tip in the pole tip region;
a plurality of insulation layers overlying the first pole piece in the yoke region, each of the insulation layers having an apex where the insulation layer commences and each layer extending from the apex toward the back gap and said second pole piece being photopatterned by means of a photoresist layer which covers said insulation layers;
one of the insulation layers being a zero throat defining insulation layer which is located with its apex at and defining the zero throat height and having a profile between the zero throat height and the flare point;
another one of said insulation layers, which has a thickness, being the next closest insulation layer to the zero throat height with its apex at a predetermined distance from the zero throat height; and
said predetermined distance being sufficient so that the location of the apex of the zero throat height defining insulation layer and said profile of the zero throat height defining insulation layer are not altered by said thickness of said next closest insulation layer,
whereby light directed perpendicular to a major surface of said first pole piece into the photoresist layer will undergo substantially no reflection from the insulation layers into regions laterally adjacent said pole tip region so that the second pole tip is formed with smooth straight side walls by means of a photoresist pattern obtained by exposing the photoresist layer with said light and then developing said photoresist layer.

5,621,597

DISC CARTRIDGE

Masaru Ikebe, Saku; Haruo Shiba, Komoro; Shinichi Satoh, and Morimasa Sasaki, both of Saku, all of Japan, assignors to TDK Corporation, Tokyo-to, Japan

Continuation of Ser. No. 886,771, May 21, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 395,161
Claims priority, application Japan, May 22, 1991, 3-145184
Int. Cl.[6] G11B 23/03
U.S. Cl. 360—133 9 Claims

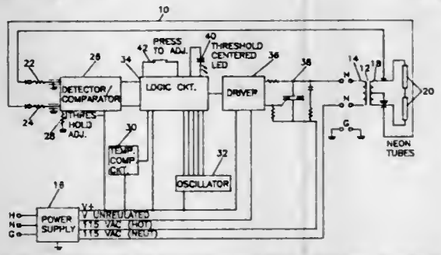


6. In a combination disc cartridge with a casing member and drive unit, the improvement comprising:
a rotatable drive member with at least three spaced drive shafts which are non-movably cantilevered from one end for simultaneously engaging said disc cartridge, said spaced drive shafts being concentrically spaced to extend from a solid surface;
an annular datum surface extending from said solid surface end and surrounding said three spaced drive shafts; and
a disc rotatably provided in said casing member with a central portion provided with a solid hub, said hub being formed with three or more drive shaft inserting holes positioned on a solid hub surface and spaced from each other at suitable intervals and positioned at locations arranged at predetermined distances from a center of rotation of said hub and each other, the

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center of rotation of said hub comprising a solid non-apertured surface, said drive shaft inserting holes each having a driven surface linearly formed which is contacted with each respective drive shaft, when simultaneously inserted into each of said drive shaft inserting holes, each of the driven surfaces being non-radially aligned with said center of rotation in such a manner to cause said disc to self-center itself about said center of rotation during rotation, each drive surface being positioned at the same angle relative to respective planes extending radially from the center of rotation.

5,621,598
LUMINOUS TUBE PROTECTION CIRCUIT
John W. Pitre, Jr., and Jere D. Whorton, both of Houston, Tex., assignors to Tekneon Corporation, Houston, Tex.
Continuation of Ser. No. 580,957, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 441,821, Nov. 27, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,894
Int. Cl.[6] H02H *7/04*
U.S. Cl. 361—35 **27 Claims**



1. A protection circuit for monitoring the power from a luminous tube transformer to a luminous tube in which the transformer includes a primary winding connected to a power supply and a secondary winding connected to a luminous tube, comprising:

sensor means connected to the secondary of the transformer for directly sensing the full cycle voltage waveform on the secondary winding of the transformer and providing an output,

a detector means receiving the output from said sensor means, said detector means including rectifying, smoothing and summing means for providing an output indication of the voltage across the secondary of said transformer, said output indication providing a fault detection signal within one cycle of the primary voltage,

a window comparator circuit connected to and receiving the detector output,

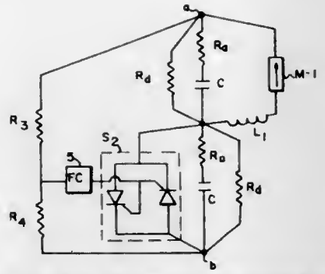
said window comparator circuit being provided with window limits based on voltage,

said window comparator circuit providing a fault signal when said detector output exceeds the window limits, and

a driver connected to said window comparator circuit and to the transformer primary for disconnecting the power supply to the primary when said driver receives a fault signal.

5,621,599
SWITCHED MOV DEVICE
Einar V. Larsen, Charlton; Murray A. Eitzmann, Baliston Lake, both of N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 13, 1994, Ser. No. 304,907
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—56 **2 Claims**

1. An overvoltage protection circuit comprising:

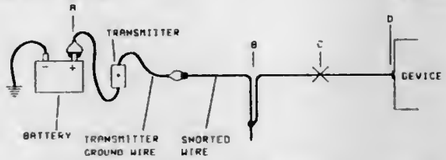


a metal oxide varistor in a first circuit portion and a pair of anti-parallel connected thyristors in a second circuit portion in series circuit;

a current grading circuit comprising a first resistor-capacitor network coupled in parallel with said first circuit portion and a second series resistor-capacitor network connected in parallel with said second circuit portion; and

a pair of resistors connected in series and further connected in parallel with said series circuit and a firing circuit connected to the gate of the thyristors and to the junction point of said pair of resistors.

5,621,600
INDUCTIVE SHORT FINDER
Akira Iijima, 20909 Norwalk Bl #24, Lakewood, Calif. 90715
Continuation-in-part of Ser. No. 45,941, Apr. 12, 1993, abandoned. This application Feb. 1, 1994, Ser. No. 189,892
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—93 **18 Claims**



1. A method for testing an electrical conductor to determine the precise location of a short comprising the steps of:

(a) applying a very low duty cycle, extremely low frequency, low voltage, electrical pulse to the conductor, the applying of the pulse signal to the conductor includes the step of generating the pulse signal with a 556 timer integrated circuit;

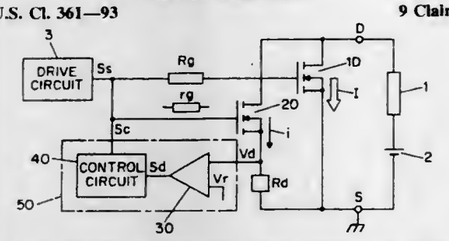
(b) inductively detecting the magnetic field generated by the electrical current flow of the pulse in the conductor, the inductive detecting of the magnetic field includes the step of coupling the detected magnetic field to the input of a voltage comparator to amplify the detected magnetic field;

(c) enabling an indicator of the detected magnetic field, discernible to a human operator, the generation of the humanly discernible indicator includes the step of coupling the voltage comparator output to the input of a 555 timer integrated circuit, the 555 timer output signal controlling the indicator;

(d) determining the point along the conductor where a change in the magnetic field is indicated; and

(e) noting the location of the short in the conductor from the determination made in step (d).

5,621,601
OVER-CURRENT PROTECTION APPARATUS FOR TRANSISTOR
Tatsuhiko Fujihira; Shin Kiuchi; Kazuhiko Yoshida; Yukio Yano; Kazunori Oyabe; Shoichi Furuhata, and Tetsuhiro Morimoto, all of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1994, Ser. No. 314,320
Claims priority, application Japan, Jan. 10, 1993, 5-245840; Mar. 14, 1994, 6-041654
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—93 **9 Claims**



1. An apparatus for protecting a main transistor from an over-current flowing therethrough, said main transistor having at least a first gate terminal means, said apparatus comprising:

a current detector transistor having at least a second gate terminal means, said current detector transistor connected in a parallel fashion to said main transistor, said first gate terminal means connected to said second gate terminal means through selected electrical means;

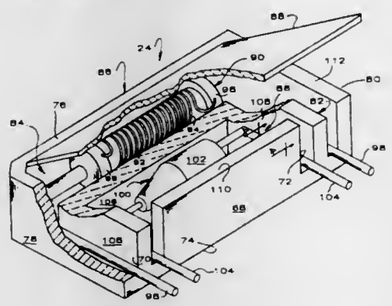
current detecting means for sensing an amount of a current flowing through said current detector transistor and for generating a detection signal indicative of said amount;

gate control means responsive to said detection signal for controlling gate potential of said main transistor and that of said current detector transistor when said amount exceeds a predetermined limit;

a main transistor gate circuit connecting said gate control means to said first gate terminal means, said main transistor gate circuit having a first time constant associated therewith; and

a detector transistor gate circuit connecting said gate control means to said second gate terminal means, said detector transistor gate circuit having a second time constant associated therewith, said electrical means being selected to shorten said second time constant relative to said first time constant.

5,621,602
SURGE PROTECTOR
Bernd D. Winkelmann, Boone, N.C., assignor to International Resistive Company, Inc., Boone, N.C.
Continuation of Ser. No. 283,615, Aug. 1, 1994, abandoned. This application Apr. 25, 1996, Ser. No. 637,827
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—104 **13 Claims**



1. A circuit protection device designed to protect a pair of electrical conductors by opening at such time as an overcurrent condition occurs in one of the conductors, the device comprising

a ceramic housing having an interior compartment and a partition wall dividing the compartment into a resistor chamber providing a pair of resistor lead openings and a fuse chamber providing a pair of fuse lead openings;

a resistor assembly in the resistor chamber having a resistance of less than about 10 ohms, a first lead extending through one of the resistor lead openings and a second lead through another of the resistor lead openings; and

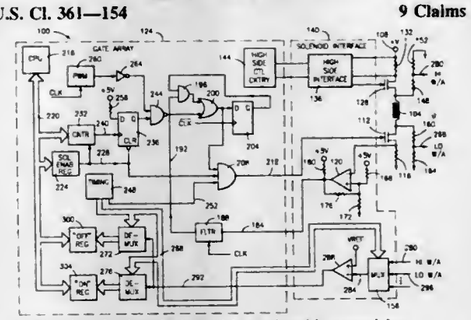
a fuse in the fuse chamber having a first lead extending through one of the fuse lead openings and a second lead extending through another of the fuse lead openings;

an adhesive attaching the resistor leads and the fuse leads to the housing;

the resistor and fuse chambers being free of a potting material;

the circuit protection device will continue to protect after accepting simulated lightening strikes which comprise applying: 1000 volts at 1⁹⁄₁₀₀₀ usec pulse for 25 hits each polarity, and 2500 volts at ²⁄₁₀ usec pulse for 10 hits each polarity.

5,621,603
PULSE WIDTH MODULATED SOLENOID DRIVER CONTROLLER
William B. Adamec, West Newton, Mass.; Ronald J. Columbus; James A. Gosse, both of Tolland, Conn.; David J. Johnston, Chelmsford, Mass.; Steven V. Leone, Jacksonville Beach, Fla., and Francesco Servidone, Newington, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jul. 26, 1995, Ser. No. 506,935
Int. Cl.[6] H01H *47/32*
U.S. Cl. 361—154 **9 Claims**



1. Circuitry for interfacing with a solenoid, comprising:

a. switching means for selectively enabling an electrical current to flow through the solenoid;

b. sensing means for sensing an amount of the electrical current flowing through the solenoid, and for providing a sensed current signal indicative thereof;

c. comparing means for comparing the sensed current signal with a reference current signal indicative of a predetermined amount of the electrical current flowing through the solenoid, and for providing a comparison signal indicative of a result of the comparing, wherein if the sensed current signal is greater than the reference current signal an over-current condition exists such that an excessive amount of the electrical current is flowing through the solenoid, and wherein if the sensed current signal is less than the reference current signal an over-current condition does not exist such that there is not an excessive amount of the electrical current flowing through the solenoid; and

d. signal processing means for enabling the switching means to enable the electrical current to flow through the solenoid for a first predetermined period of time during each of a plurality of repetitive time windows regardless of whether an over-current condition exists, a length of time of each of the repetitive time

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windows being greater than the first predetermined period of time such that a second predetermined period of time exists in each of the repetitive time windows, the second predetermined period of time being an amount of time not occupied by the first predetermined period of time, the signal processing means further comprising means, responsive to the comparison signal, for enabling the switching means to enable the electrical current to flow through the solenoid during the second predetermined period of time in one of the repetitive time windows if the over-current condition does not exist at any time during the repetitive time window that precedes the one of the repetitive time windows, and for disabling the switching means to disable the electrical current from flowing through the solenoid during the second predetermined period of time in one of the repetitive time windows if the over-current condition exists at any time during the repetitive time window that precedes the one of the repetitive time windows.

5,621,604

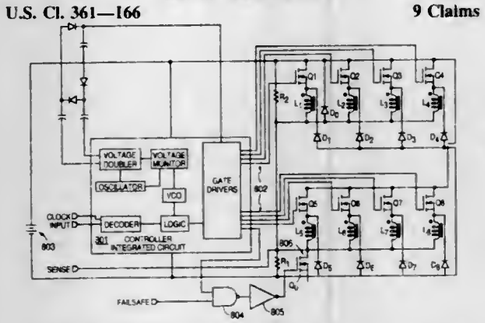
PWM MULTIPLEXED SOLENOID DRIVER

Peter J. Carlson, Saratoga, Calif., assignor to Siliconix, Inc., Santa Clara, Calif.

Continuation of Ser. No. 3,172, Jan. 12, 1993. This application Jun. 7, 1995, Ser. No. 480,469

Int. Cl.[6] H01H *47/32*

U.S. Cl. 361—166 **9 Claims**



2. A method for controlling a plurality of inductive devices, each having a first and second lead, comprising the steps of:

connecting first leads from each of a plurality of switches to a first lead of a power supply such that when a switch is turn on current can flow through the switch to a second lead of the switch but when the switch is turned off current is substantially blocked;

connecting the plurality of inductive devices to the plurality of switches such that plurality of switches and the plurality of inductive devices are in one-to-one correspondence and the second lead of each inductive device is connected to the second lead of the corresponding switch;

connecting first leads of a plurality of diodes to a second lead of the power supply;

connecting the plurality of diodes to the plurality of switches such that the plurality of diodes and the plurality of switches are in one-to-one correspondence and the second lead of each switch is connected to the second lead of the corresponding diode;

connecting all the first leads of the inductive devices to a first lead of a master switch;

connecting the second lead of the master switch to the second lead of the power supply;

connecting a first lead of a master diode to the first lead of the master switch;

connecting a second lead of the master diode to the first lead of the power supply;

simultaneously generating a first signal which keeps a first switch from the plurality of switches turned on, and a second signal which turns off a second switch from the plurality of switches; and

generating on a third lead of the master switch a signal which stops current through the master switch for a time such that current through a second inductive device corresponding to the second switch stops and current through a first inductive device corresponding to the first switch does not change enough to disrupt the operation of the first inductive device.

5,621,605

NEUTRALIZING APPARATUS FOR CHARGED BODY

Hitoshi Inaba, Atsugi, and Tadahiro Ohmi, 1-17-30, Komegakubo 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, both of Japan, assignors to Tadahiro Ohmi, Miyagi-ken, and Takasago Netsugaku Kogyo Kabushiki kaisha, Tokyo, both of Japan

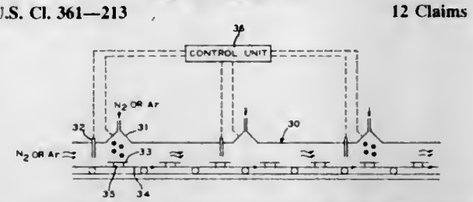
PCT No. PCT/JP91/01104, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO92/04819, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 20, 1991, Ser. No. 978,678

Claims priority, application Japan, Aug. 31, 1990, 2-230184; Mar. 13, 1991, 3-073908

Int. Cl.[6] H05F *3/06*

U.S. Cl. 361—213 **12 Claims**



1. A neutralizing apparatus for a charged body, said neutralizing apparatus comprising:

a housing for containing an electrically charged body;

a gas introducing means for introducing gas into said housing, said gas being non-reactive with respect to a said charged body;

a probe for detecting the amplitude of a charge on a said charged body;

a first neutralizing charge generating means for generating negatively charged ions or electrons in said housings;

a second neutralizing charge generating means for generating positively charged ions in said housing; and

a control means for controlling said first and second neutralizing charge generating means, said control means connected to said probe, whereby said first neutralizing charge generating means is activated when said body is positively charged and the said positive charge on said body exceeds a predetermined voltage, and said second neutralizing charge generating means is activated when said body is negatively charged and said negative charge on said body exceeds a predetermined voltage.

5,621,606

CAPACITOR UTILIZING HIGH DIELECTRIC CONSTANT MATERIAL

Cheol-seong Hwang, Seongnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,126

Claims priority, application Rep. of Korea, Dec. 29, 1994, 94-39000

Int. Cl.[6] H01G *4/06;4/232*

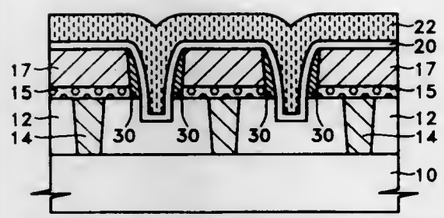
U.S. Cl. 361—321.4 **23 Claims**

1. In combination:

a substrate of semiconductive material having respective first and second opposed surfaces;

a first contact area on the second surface of said substrate of semiconductive material;

a first electrode having respective first and second opposed surfaces, the first surface of said first electrode being located



parallel to the second surface of said substrate of semiconductive material but spaced therefrom;

an electrically insulating layer having first and second opposed surfaces with a first contact hole extending therebetween, having its said first surface adjoining the second surface of said substrate of semiconductive material so said first contact hole spans at least a portion of said contact area, having its said second surface adjoining the first surface of said first electrode so said first contact hole is covered by said first electrode, and having a trench in its said second surface, which trench has first and second sides, said first side of said trench being aligned with an edge of said first electrode;

a first conductive plug extending through said first contact hole for making ohmic contact to said first contact area and to said first electrode;

a second electrode adjoining the second surface of said electrically insulating layer, said second electrode having an edge adjacent to the second side of said trench;

a dielectric film extending over said first electrode and the inside of the trench; and

a third electrode extending over said dielectric film to form a first capacitor with said first electrode, said first and third electrodes providing the plates of said first capacitor, a portion of said third electrode extending into said trench as a shield against stray capacitance between said first electrode and said second electrode.

5,621,607

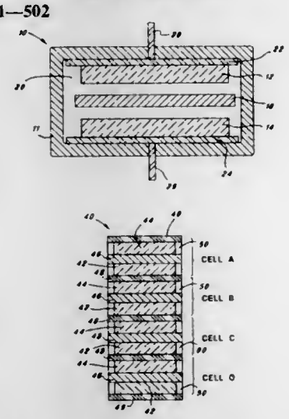
HIGH PERFORMANCE DOUBLE LAYER CAPACITORS INCLUDING ALUMINUM CARBON COMPOSITE ELECTRODES

C. Joseph Farahmandi, and John M. Dispennette, both of Auburn, Ala., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Oct. 7, 1994, Ser. No. 319,493

Int. Cl.[6] H01G *9/00*

U.S. Cl. 361—502 **54 Claims**



1. A double layer capacitor comprising:

a pair of aluminum impregnated carbon composite electrodes having surfaces facing one another;

a pair of current collectors, each current collector disposed on a non-facing surface of said respective composite electrode;

an ionically conductive separator disposed between said facing surfaces of said composite electrodes; and

an electrolyte solution saturating said composite electrodes and separator;

wherein the aluminum impregnant within each composite electrode forms a low resistance current path within said composite electrode and is separate and distinct from said current collectors.

5,621,608

SOLID ELECTROLYTIC CAPACITOR HAVING TWO SOLID ELECTROLYTE LAYERS AND METHOD OF MANUFACTURING THE SAME

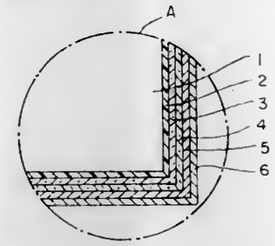
Satoshi Arai; Takashi Fukaumi; Toshihiko Nishiyama; Hiromichi Taniguchi, and Atsushi Kobayashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 24, 1995, Ser. No. 562,467

Claims priority, application Japan, Nov. 25, 1994, 6-315576

Int. Cl.[6] H01G *9/025*

U.S. Cl. 361—525 **12 Claims**



1. A solid electrolytic capacitor comprising:

an anode body consisting of a valve metal;

an oxide film formed on a surface of said anode body;

a first solid electrolytic layer consisting of a conductive polymer formed on said oxide film;

a second solid electrolytic layer consisting of a conductive polymer formed on said first solid electrolytic layer;

a fine powder dispersed within said second solid electrolytic layer, said fine powder being harder than said conductive polymer and of sufficiently small size not to cause a surface of said second solid electrolytic layer to be an uneven surface; and

a metallic layer formed on said second solid electrolytic layer.

5,621,609

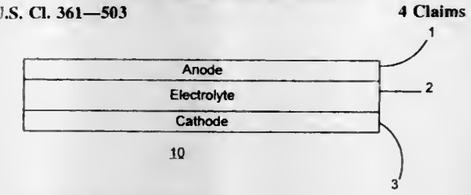
COMPOSITE ELECTRODE MATERIALS FOR HIGH ENERGY AND HIGH POWER DENSITY ENERGY STORAGE DEVICES

Jian-Ping Zheng, Eatontown, and T. Richard Jow, Chatham, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1994, Ser. No. 353,403

Int. Cl.[6] H01G *9/04;9/145;9/155*

U.S. Cl. 361—503 **4 Claims**

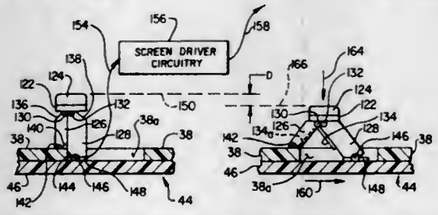


1. A capacitor comprising:

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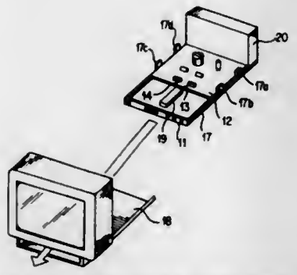
an anode comprised of a composite mixture of a hydrous metal oxide and a carbaneous material saturated with electrolyte;
(2) an electrolyte; and
(3) a cathode comprised of a composite mixture of a hydrous metal oxide and a carbonaeous material saturated with electrolyte.

5,621,610
COLLAPSIBLE COMPUTER KEYBOARD STRUCTURE WITH ASSOCIATED COLLAPSIBLE POINTING STICK
Paul M. Moore, Spring, and Charles Sellers, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 268,818, Jun. 30, 1994, Pat. No. 5,532,904. This application Jun. 4, 1996, Ser. No. 658,001
Int. Cl.[6] G06F *1/16*; H01H *21/06*
U.S. Cl. 361—680 **20 Claims**



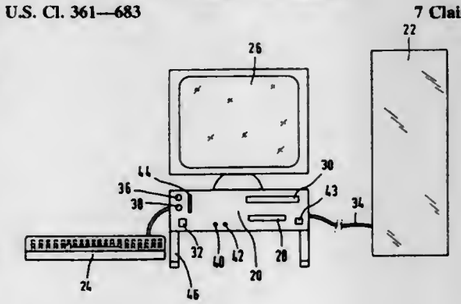
1. A keyboard structure for an electronic device having a screen upon which a movable cursor may be displayed, said keyboard structure comprising:
a keyboard support structure;
a mutually spaced series of keys each carried on said keyboard support structure for movement relative thereto, in a first direction between extended use and retracted storage/transport positions;
resilient means associated with said series of keys and operative to resiliently bias them toward said extended use positions thereof;
cursor positioning means operative to generate a signal useable to selectively vary the screen position of the cursor, said cursor positioning means including a manual force-receiving pointing stick device positioned and extending outwardly between a plurality of said keys, said pointing stick device being supported for shifting movement in said first direction between extended use and retracted storage/transport positions; and
shifting means operable to selectively and forcibly shift said pointing stick device between said extended use and retracted storage/transport positions thereof.

5,621,611
DISPLAY DEVICE AND METHOD FOR ASSEMBLING OR DISASSEMBLING THE SAME
Isao Kizuya, Hitachi, and Keiji Kitazawa, Hitachioota, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 30, 1994, Ser. No. 313,618
Claims priority, application Japan, Sep. 30, 1993, 5-244226
Int. Cl.[6] H05K *7/10*
U.S. Cl. 361—681 **2 Claims**



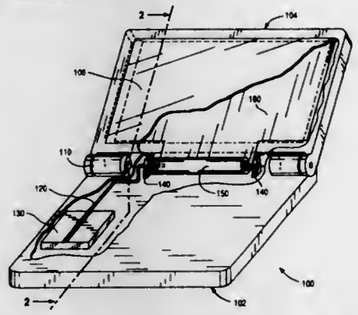
1. A display device, comprising:
a frame;
a chassis;
a front module having a front panel control input means of said display device;
a main module forming a power circuit;
a part of wiring installed for connection between said front module and said main module; and
a shield which is fitted on said frame to cover said part of wiring;
wherein said front module and said main module are integrally assembled on said frame;
wherein said frame is slidingly insertable on said chassis; and
wherein said frame includes a duct on which the shield is fitted, and wherein the shield contacts the chassis.

5,621,612
MICROCOMPUTER WITH A COMPUTER CASE, A CONTROL CASE, A MONITOR AND A KEYBOARD
Heinz-Willi Dahmen, Aachen, Germany, assignor to VOBIS Microcomputer AG, Würselen, Germany
PCT No. PCT/DE94/00658, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/29783, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 13, 1994, Ser. No. 382,033
Claims priority, application Germany, Jun. 13, 1993, 43 19 407.9
Int. Cl.[6] H05K *7/14*; G06F *1/16*
U.S. Cl. 361—683 **7 Claims**



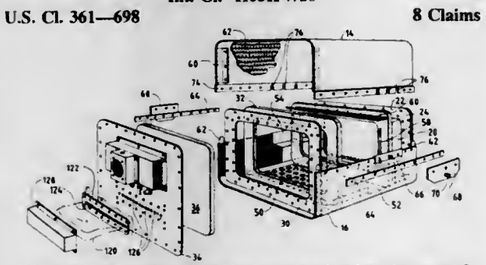
1. A microcomputer comprising:
a computer casing (**22**), a monitor (**26**) and a keyboard (**24**), which are interlinked and with a main power supply, an additional control unit (**20**) having at least one drive (**28, 30**) for interchangeable data carriers and a loudspeaker and in which the control unit incorporates a main power switch (**32**), a plug-in socket for a keyboard (**24**), a connector for a mouse and a connector (**36**) for a microphone, the control unit being much smaller in volume than the computer casing (**22**) and occupying an area of the size of a monitor base.

5,621,613
APPARATUS FOR DISSIPATING HEAT IN A HINGED COMPUTING DEVICE
Kevin Haley, San Jose, Calif.; Mostafa Aghazadeh, and Hong Xie, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 441,969, May 16, 1995, abandoned. This application Jul. 15, 1996, Ser. No. 683,022
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—687 **25 Claims**



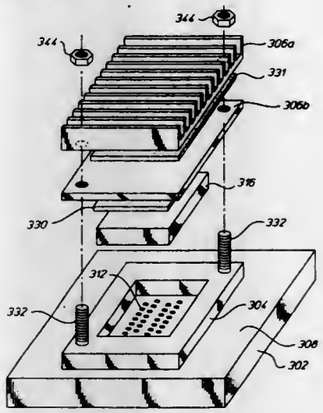
1. A heat transfer apparatus providing thermal coupling between an electronic component in a first member having a first edge and a second member rotatably attached to the first member allowing pivotal motion along an axis substantially parallel to the first edge, comprising:
a heat conductive mounting element affixed along the first edge of the first member and thermally coupled to the electronic component; and
a spiraled heat transfer element with an inner edge thermally coupled to the heat conductive mounting element and an outer edge affixed to the second member, the spiraled heat transfer element forming at least one full continuously radially expanding turn around the heat conductive mounting element.

5,621,614
APPARATUS FOR MOUNTING AND ENCLOSING AN APPLIANCE
Edward L. O'Neill, San Leandro, Calif., assignor to Lucasey Manufacturing Company, Oakland, Calif.
Filed Aug. 24, 1995, Ser. No. 519,055
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—698 **8 Claims**



1. An apparatus for maintaining an operational environment for an environmentally and temperature sensitive appliance, comprising:
a housing defining a closed interior volume of a size sufficient to accommodate said appliance;
a first heat sink located within said housing;
a second heat sink located outside said housing;
a reversible heat pump disposed between and in heat conductive engagement with each of said first and second heat sinks;
a temperature sensor located within said housing;
electronic circuitry configured to (i) receive a first signal from said temperature sensor when the temperature within said volume exceeds a first set point and actuate said heat pump in response to said first signal to transfer heat from said first heat sink to said second heat sink, and (ii) receive a second signal from said temperature sensor when the temperature within said volume falls below a second set point and actuate said heat pump in response to said second signal to transfer heat from said second heat sink to said first heat sink; and
a pressure sensitive diaphragm disposed in a wall of said housing and responsive to changes in the pressure within said housing to accommodate expansion or contraction of the gas volume within said housing to thereby minimize gas flow into or out of said housing.

5,621,615
LOW COST, HIGH THERMAL PERFORMANCE PACKAGE FOR FLIP CHIPS WITH LOW MECHANICAL STRESS ON CHIP
Peter F. Dawson, deceased, late of Portola Valley, Calif.; Jacques Leibovitz, San Jose, and Voddarahalli K. Nagesh, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 31, 1995, Ser. No. 415,114
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **5 Claims**



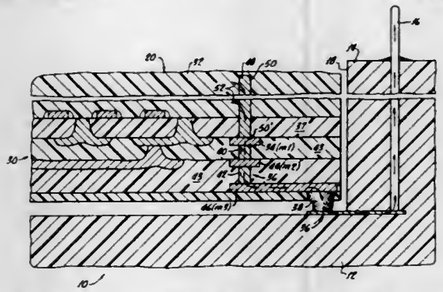
4. A package for an integrated circuit chip comprising:
a substrate having a first and second major surface;
a ring structure attached to the first major surface of the substrate;
a heat removal structure, an integrated circuit chip being thermally and mechanically coupled to the heat removal structure by a die attach layer having a predetermined thickness, the die attach layer being positioned between a second major surface of the integrated circuit and a first major surface of the heat removal structure, a second major surface of the integrated circuit chip being electrically interconnected to a connecting pattern on the first major surface of the substrate; and
a fastening means extending from the ring structure, the fastening means mechanically coupling the ring structure to the heat removal structure, wherein the fastening means is brazed to the surface of the ring structure.

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5,621,616
HIGH DENSITY CMOS INTEGRATED CIRCUIT WITH HEAT TRANSFER STRUCTURE FOR IMPROVED COOLING

Alexander H. Owens, Los Gatos, and Gobi Padmanabhan, Sunnyvale, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 29, 1995, Ser. No. 536,002
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **20 Claims**



1. An integrated circuit having an integrated circuit chip housed within a package, said package providing for electrical interface of said integrated circuit chip with external electrical circuitry and also providing environmental protection for said integrated circuit chip, said integrated circuit comprising:

said circuit chip having a semiconductor substrate;

an electrical circuit portion of said integrated circuit formed on said semiconductor substrate;

a frame-like portion of a metallization layer carried by said semiconductor substrate and circumscribing said electrical circuit portion: and

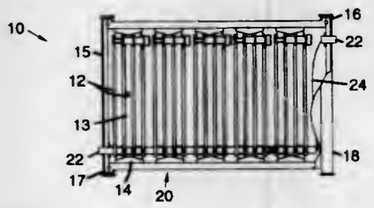
means forming a high-conductivity heat transfer pathway from said frame-like portion to said package;

wherein said substrate also carries an insulative layer of material overlying said semiconductor substrate, and said means forming said high-conductivity heat transfer pathway includes a via penetrating said insulative layer of material said via including electrically and thermally conductive material in contacting electrical and heat transfer relation with said metallization layer at one side of said insulative layer of material and being in contacting heat transfer relation with additional structure of said high-conductivity heat transfer pathway at an opposite side of said insulative layer.

5,621,617
CIRCUIT CARD MOUNTING SYSTEM HAVING A CYLINDRICAL HOUSING AND CIRCULAR CARD LOCKS

Steven R. Goss, and Owen H. Taggart, both of Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 475,253
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—721 **12 Claims**



1. Apparatus comprising:

a cylindrical housing comprising an internal wall having a single diameter;

first and second cylindrical heat sinks each comprising a sloped outer surface, wherein the heat sinks are disposed such that the sloped outer surfaces face each other;

first and second circuit cards secured to distal edges of respective heat sinks, wherein each circuit card comprises at least one internal interface connector that mates with an internal interface connector of an adjacent circuit card;

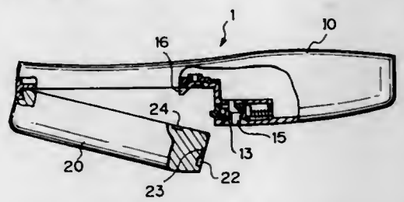
a cylindrical card lock comprising an outer surface that contacts the internal wall of the housing and comprising an inner surface that has a V-shaped cross section having oppositely sloped surfaces, whose respective sloped surfaces mate with the sloped outer surfaces of the respective heat sinks; and

means for drawing the heat sinks together to cause the sloped surfaces of the heat sinks to press against the respective mating sloped surfaces of the card lock and expand the card lock and secure the card lock, heat sinks, and circuit cards in the housing.

5,621,618
PORTABLE ELECTRONIC APPARATUS WITH BATTERY PACK SECURED BY FIRST AND SECOND SEQUENTIALLY ENGAGEABLE RECESSES

Takehiko Komiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1996, Ser. No. 662,365
Claims priority, application Japan, Jun. 12, 1995, 7-169245
Int. Cl.[6] H05K *7/14;* **H04B** *1/03;* **H01M** *2/10*
U.S. Cl. 361—732 **3 Claims**



1. A portable electronic apparatus having a casing and a battery pack removably mounted to a mounting portion included in said casing, said apparatus comprising:

a movable hook positioned in said mounting portion and resiliently movable into or out of said mounting portion when a release button mounted on said casing is operated;

a first recess formed in said battery pack and engageable with said movable hook when said battery pack is mounted to said mounting portion; and

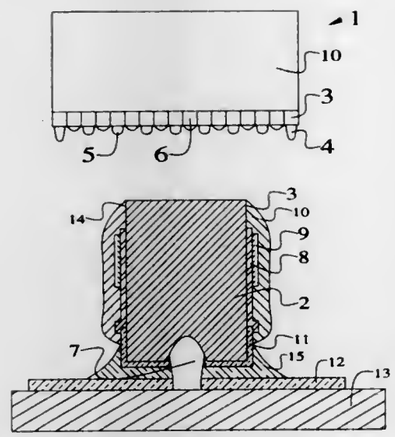
a second recess adjoining said first recess, but positioned closer to said mounting portion than said first recess, and engageable with said movable hook when said battery pack moves away from said mounting portion after said first recess has been released from said movable hook.

5,621,619
ALL CERAMIC SURFACE MOUNT SIP AND DIP NETWORKS HAVING SPACERS AND SOLDER BARRIERS

Lewis L. Seffernick, Decatur, and Neal F. Thomas, Elkhart, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 74,039, Jun. 1, 1993, abandoned, which is a continuation of Ser. No. 603,912, Oct. 25, 1990, abandoned. This application May 19, 1995, Ser. No. 445,237
Int. Cl.[6] H01R *9/00*
U.S. Cl. 361—773 **13 Claims**

1. A surface mount device for mounting on a printed circuit board, said surface mount device comprising:



a mechanically unyielding substrate;

mechanically unyielding terminations partially covering a surface of said substrate and extending inconsequentially from said surface;

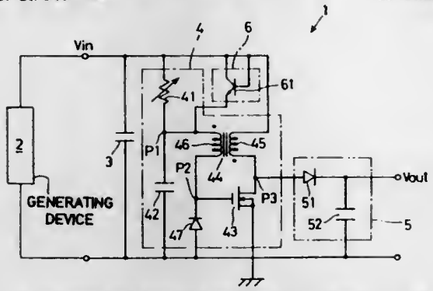
spacers integral to said surface mount device for holding said terminations a defined and reproducible distance from said printed circuit board; and

solder barriers formed from said substrate between adjacent terminations.

5,621,620
CONVERTER

Haruhiko Machida, Tokyo, and Shinichi Tasaki, Saitama, both of Japan, assignors to Kabushiki Kaisha Samy, Osaka, Japan

Filed Sep. 12, 1995, Ser. No. 526,963
Claims priority, application Japan, Dec. 9, 1994, 6-306601
Int. Cl.[6] H02M *3/337*
U.S. Cl. 363—16 **13 Claims**



1. A converter for raising a weak input DC voltage (V_{in}) of 0.3 volts or less by generating output pulses of an output voltage much higher than the weak input DC voltage (V_{in}) that is supplied through an input line, the converter comprising a blocking oscillator (**4**) composed of:

a primary field-effect transistor (**43**),

of the enhancement type capable of being activated by a gate-source voltage of 0.3 volts or less so as to generate an initial electromotive force;

an auxiliary field-effect transistor (**48**) also of the enhancement type, connected in parallel to the primary field-effect transistor (**43**) and capable of being activated in response to another gate-source voltage higher than 0.5 volts; and

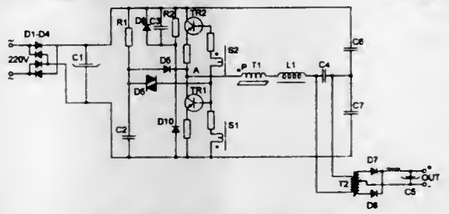
a transformer (**44**) having a primary winding (**45**) disposed in a drain current line that is connected to the input line and formed through both the field-effect transistors (**43,48**), and a secondary winding (**46**) disposed in and connected to a closed loop formed through gates and sources of said transistors (**43,48**),

whereby the weak input DC voltage (V_{in}) initially activates the primary transistor (**43**) to induce a raised voltage in the secondary winding (**46**), and subsequently the raised voltage drives the auxiliary transistor (**48**) to continuously produce a drain current of such an intensity as to maintain the raised voltage in said secondary winding (**46**), which in turn causes the primary winding (**45**) of the transformer (**44**) to continuously generate the output pulses.

5,621,621
POWER UNIT HAVING SELF-OSCILLATING SERIES RESONANCE CONVERTER

Magnus L. Lilliestrale, Stockholm, Sweden, assignor to Lindmark Electric AB, Stocksund, Sweden

PCT No. PCT/SE94/00043, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO94/17584, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 21, 1994, Ser. No. 495,502
Claims priority, application Sweden, Jan. 25, 1993, 9300189
Int. Cl.[6] H02M *3/335;3/24;5/42;7/44*
U.S. Cl. 363—17 **6 Claims**



1. A power unit which includes a self-oscillating series resonance converter and which is intended to supply a load, wherein the series resonance converter includes:

two transistors connected to one another, each of which is activated by a respective control transformer; and

an inductor and a capacitor which are connected in series;

each said transistor having an associated series-connected capacitive voltage divider or a further transistor connected in parallel with said inductor, capacitor and control transformer;

a load connected across the capacitor;

magnetic flux through the control transformer arranged to be influenced by a magnetic flux applied externally via an electromagnet to change the oscillation frequency of the transistors and therewith the voltage output of the power unit.

5,621,622
POWER CONVERTER OVERLOAD PROTECTION CIRCUIT

Edwin R. Isaack, Austin, Tex., assignor to Operating Technical Electronics, Inc., Grand Prairie, Tex.

Filed Apr. 12, 1995, Ser. No. 420,673
Int. Cl.[6] B23K *9/10*
U.S. Cl. 363—18 **19 Claims**

1. An overload protection circuit implemented in an alternating current-to-direct current converter circuit for converting an AC power signal to a DC low voltage signal comprising:

(a) a rectifier bridge configuration with an input terminal for accepting and rectifying the AC power signal;

(b) a step-down/isolator configuration having a core and at least four windings, said step-down/isolator configuration having a first terminal of the first winding electrically connected to an output terminal of said rectifier bridge;

(c) a chopping circuit electrically connected to a second terminal of the first winding of said step-down/isolator configuration

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for providing a high frequency AC signal to the step-down/isolator configuration for converting the high frequency signal to a low voltage AC signal through the fourth winding. said chopping circuit comprising:

(i) a first transistor with a first terminal electrically connected to the second terminal of the first winding of the step-down/isolator configuration and a second terminal of said first transistor electrically connected to a ground plane; and

(ii) a second transistor with a first terminal electrically connected to the first terminal of the third winding of said step-down/isolator configuration and a second terminal of said second transistor electrically connected to the ground plane; and

(d) an output configuration electrically connected across the terminals of the fourth winding of said step-down/isolator configuration to convert the low voltage AC signal to a filtered DC voltage output across a pair of output terminals, wherein the core of said step-down/isolator configuration, in response to a predetermined condition, is driven into a fold-back state until the predetermined condition lapses.

5,621,623

DC-DC CONVERTER USING FLYBACK VOLTAGE

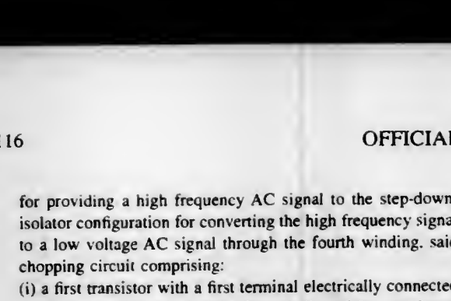
Hirohito Kuriyama; Keiichi Kaneko; Shigeki Kameyama; Rikurou Tanahashi, and Akira Yamamoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 202,558, Feb. 28, 1994, abandoned. This application Mar. 9, 1995, Ser. No. 401,000

Claims priority, application Japan, Jan. 28, 1994, 6-008810

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—20 **12 Claims**



1. A DC-DC converter having first and second DC power-supply voltage inputs comprising:

a transformer having a primary winding with first and second terminals and having a secondary winding, said first terminal of said primary winding being coupled to the first DC power-supply voltage input;

a switching device coupled between said second terminal of said primary winding and the second DC power-supply voltage input, said switching device having a control input for turning ON/OFF;

a control circuit for supplying a pulse train to said control input; and

a snubber circuit, coupled between said first and second terminals of said primary winding, for absorbing energy of fly-back voltage from said secondary winding to said primary winding when said switching device is turned OFF, said snubber circuit providing a voltage output generated by absorbed energy of said fly-back voltage, a voltage of said voltage output of said snubber circuit being stacked onto a voltage of said first DC power-supply voltage input for providing a power source voltage to said control circuit.

5,621,624

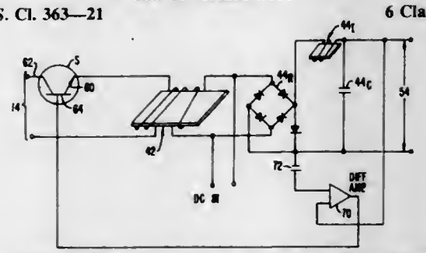
MINIATURIZED HIGH FREQUENCY DIRECT CURRENT POWER SUPPLY

Ronald F. Soohoo, 568 Reed Dr., Davis, Calif. 95616

Filed Aug. 30, 1994, Ser. No. 298,002

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **6 Claims**



1. A rectifier for receiving current having an oscillating component in a range of 50/60 Hertz and out putting direct current comprising in combination:

a direct current driven semiconductor switch connected to the current having an oscillating component in the range of 50/60 Hertz and operative to switch the current having an oscillating component to produce switched current having a frequency exceeding 100 kilohertz;

a high frequency transformer for producing from the switched current having a frequency exceeding 100 kilohertz a voltage suitable for rectification;

a high frequency rectifier for producing direct current from transformer;

a filter circuit for filtering the direct current from the high frequency rectifier to produce a direct current output from the rectifier; and,

a regulator connected to the semiconductor switch having direct current sufficient to drive the semiconductor switch.

5,621,625

SURGE PROTECTION CIRCUIT FOR A SWITCHING MODE POWER SUPPLY

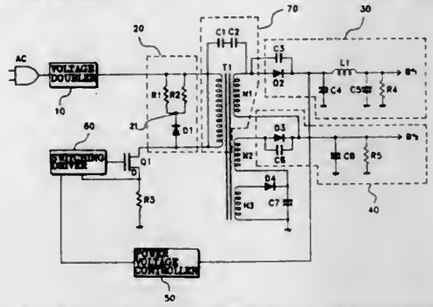
Jeong-Ho Bang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 25, 1995, Ser. No. 519,281

Claims priority, application Rep. of Korea, Aug. 25, 1994, 21007/1994

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **10 Claims**



1. A switching mode power supply having a voltage doubler for supplying a substantially constant voltage to a first coil of a power supply transformer and for controlling a driving operation of the power supply transformer during ON/OFF operations of a switching transistor driven by a switching drive signal having a duty cycle which is adjusted in response to a detected power voltage induced in a second coil of the power supply transformer, said switching mode power supply incorporating a surge protection circuit, said surge protection circuit comprising:

means connected between an input terminal and a control terminal of said first coil for protecting said switching transistor from a reverse surge induced by said power supply transformer during an OFF operation of said switching transistor; and

means coupled between said control terminal of said first coil and an output terminal of a second coil of said power supply transformer for snubbing bi-directional surges induced during said ON/OFF operations of said switching transistor.

5,621,626

METHOD AND DEVICE FOR CONTROL OF AN INSTALLATION FOR TRANSMISSION OF HIGH-VOLTAGE DIRECT CURRENT

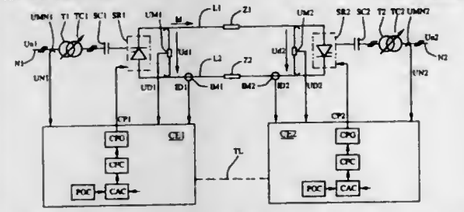
Per-Erik Björklund, Bjursås; Tomas Jonsson, Gräingesberg, and Lars-Erik Juhlin, Ludvika, all of Sweden, assignors to Asea Brown Boveri AB, Västeras, Sweden

Filed Oct. 3, 1995, Ser. No. 538,219

Claims priority, application Sweden, Oct. 13, 1994, 9403486

Int. Cl.[6] H02J *3/36*

U.S. Cl. 363—35 **10 Claims**



1. A method for control of an installation for transmission of high-voltage direct current, comprising a first and a second series-compensated converter (SR1, SR2, respectively) which are mutually connected via a common dc connection (L1, L2), each one controlled by a separate piece of control equipment (CE1, CE2, respectively) and each one connected to a separate alternating-voltage network (N1, N2, respectively), each one of the pieces of control equipment comprising a current controller (CC), which is supplied with a current reference value (IOL1, IOL2, respectively) for the current (Id) in the dc connection, the current controller of the first converter being supplied with a first current reference value (IOL1) and the current controller of the second converter being supplied with a second current reference value (IOL2) and, in addition, with a current margin (IOM), a first value (IOMf) is assigned to the current margin when the direct voltage at the second converter exceeds a first preselected voltage level (Udf) and a second value (IOMs) is assigned to the current margin, the magnitude of said second value being greater than the magnitude of the first value, when said direct voltage is lower than the first voltage level.

5,621,627

A.C. TO A.C. POWER CONVERTER FOR THE ADAPTIVE CORRECTION OF WAVEFORM ABNORMALITIES

John Krawchuk, Toronto; Ian J. Forsyth, Minesing, and John G. H. Eriksen, Thorhill, all of Canada, assignors to AC International Inc., Bridgetown, Barbados

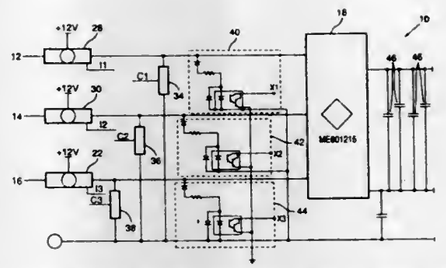
Filed Apr. 14, 1995, Ser. No. 422,272

Int. Cl.[6] H02M *5/45;5/456;3/24;5/42*

U.S. Cl. 363—37 **15 Claims**

1. A device for controlling energy being delivered to an AC output from an AC supply, comprising:

a plurality of input sensors connectable to the AC supply for monitoring frequency and voltage of the AC supply and generating input signals proportional thereto;



a power amplifier module connectable to the AC supply, said power amplifier module having means for converting an AC supply to DC and having a pulse width modulator for convening the DC to an AC output,

a plurality of output sensors connected the AC output for monitoring frequency and current of the AC output and generating output signals proportional thereto, said AC output connectable to an AC load; and

a control module in communication with the plurality of input sensors and the plurality of output sensors for receiving said input signals and said output signals and with the power amplifier module, said control module having a look up table having stored therein a plurality of pulse width modulation sequences for triggering said pulse width modulator to generate an AC waveform, said control module having an electronic memory comprising an active section and a standby section, the control module selects from said look up table a pulse width modulation sequence for initially triggering said pulse width modulator to convert the DC to the AC output and stores said pulse width modulation sequence in said active section of the memory to trigger said pulse width modulator, said control module continuously receives and compares the input signals and the output signals to responsively select another pulse width modulation sequence from the look-up table and store said another pulse width sequence in said standby section, said control module switches between the standby section and the active section at a next zero crossing of the AC supply to maintain a current being drawn by the AC load substantially in phase relative to the voltage of the AC supply.

5,621,628

POWER CONVERTER

Satoshi Miyazaki, Kanagawa-ken, and Kazuaki Yuki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1996, Ser. No. 659,373

Claims priority, application Japan, Jun. 13, 1995, 7-145755; Mar. 12, 1996, 8-055032

Int. Cl.[6] H02M *5/453*

U.S. Cl. 363—37 **17 Claims**

1. A power converter, comprising:

a converter;

a three-level DC voltage source, composed of a series connected capacitors connected between outputs of said converter, to generate a positive potential, a neutral potential and a negative potential;

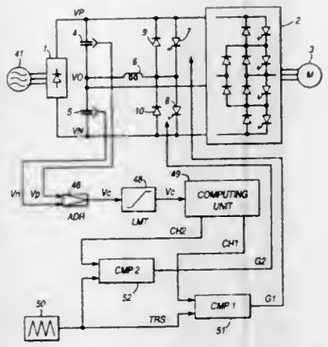
a three-level NPC inverter connected to said three-level DC voltage source;

a chopper circuit; and

chopper control means for controlling said chopper circuit;

said chopper circuit including,

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a series circuit of a first switching device and a second switching device connected between a positive potential point and a negative potential point of said three-level DC voltage source,

a first diode connected in antiparallel with said first switching device,

a second diode connected in antiparallel with said second switching device, and

a reactor,

an anode of said first switching device being connected to said positive side potential point of said three-level DC voltage source,

a cathode of said first switching device being connected to an anode of said second switching device,

a cathode of said second switching device being connected to said negative side potential point of said three-level DC voltage source,

said reactor being connected between a neutral potential point of said three-level DC voltage source and a connecting point of said first and second switching devices;

said chopper control means including,

first voltage detecting means for detecting a first voltage between one of said capacitors,

second voltage detecting means for detecting a second voltage between the other of said capacitors,

voltage control means connected to receive said first voltage and said second voltage for comparing said first voltage with said second voltage to generate a voltage difference and for generating a voltage control output signal so that said voltage difference becomes zero, and

control means connected to receive said voltage control output signal for driving said first and second switching devices based on said voltage control output signal;

whereby to suppress the fluctuation of said neutral potential of said three-level DC power source.

5,621,629

SWITCHING POWER SUPPLY FOR USE IN AN ELECTRONIC ENERGY METER HAVING A WIDE RANGE OF INPUT VOLTAGES

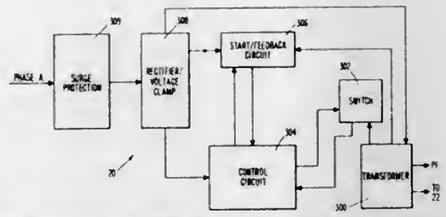
Rodney C. Hemminger; Mark L. Munday, both of Raleigh, N.C., and Fred F. Schleifer, Grand Chute, Wis., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Continuation of Ser. No. 384,398, Feb. 3, 1995, Pat. No. 5,457,621, which is a continuation of Ser. No. 259,116, Jun. 10, 1994, abandoned, which is a continuation of Ser. No. 839,967, Feb. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,137

Int. Cl.[6] H02H *7/122*

U.S. Cl. 363—56 **68 Claims**

1. A power supply for use in apparatus for electronically measuring electrical energy supplied by an electrical service provider,



said electrical energy being specified from a wide range of service voltages supplied by electrical service providers, said power supply comprising:

a transformer comprising first and second windings, wherein an input voltage based on said wide range of service voltages is provided to said first winding so that current flows through said first winding, said second winding defines the output of said power supply, wherein said output is regulated to provide a predetermined output voltage independent of said input voltage, wherein said wide range of service voltages include RMS voltages between about 96 Vrms and about 528 Vrms.

5,621,630

POWER SOURCE APPARATUS OF IMAGE FORMING APPARATUS

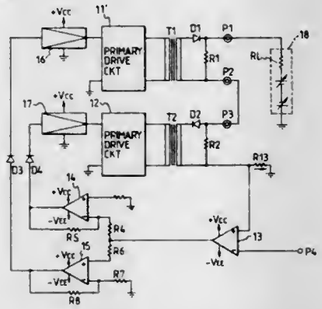
Koji Suzuki, Yokohama; Hajime Motoyama, and Hiroshi Saito, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1994, Ser. No. 231,488

Claims priority, application Japan, Apr. 26, 1993, 5-099258; Dec. 15, 1993, 5-315286

Int. Cl.[6] H02M *7/02*

U.S. Cl. 363—71 **23 Claims**



1. A power source apparatus comprising:

a first DC power source which can vary a first output;

a second DC power source which can vary a second output and in which an output terminal of the same polarity as that of one output terminal of said first DC power source is connected to said one output terminal;

connecting means for connecting another output terminal of said first DC power source to one terminal of a load and connecting another output terminal of said second DC power source to another terminal of the load: and

control means for making operative and controlling said first and second DC power sources in accordance with an output of said power source apparatus.

5,621,631

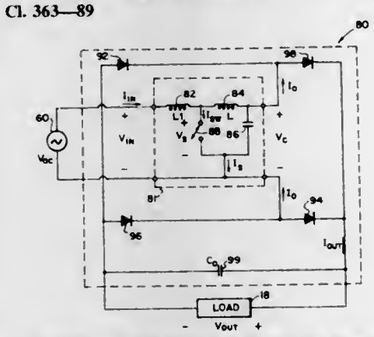
AC TO DC BOOST SWITCHING POWER CONVERTERS

Patrizio Vinciarelli, Boston, and Jay Prager, Tyngsboro, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Division of Ser. No. 274,991, Jul. 13, 1994, Pat. No. 5,572,417. This application Jun. 2, 1995, Ser. No. 459,513

Int. Cl.[6] H02M *7/04*

U.S. Cl. 363—89 **7 Claims**



1. A bipolar boost cell for use in an AC-DC boost switching power converter of the kind that delivers power from an input voltage source of either polarity to a load at a unipolar load voltage comprising

two input terminals for connection to said input source,

an input inductive element for receiving an input current, Iin, of either polarity, from said input source,

a bipolar switch, capable of (a) blocking a voltage of either polarity when off, (b) conducting a current of either polarity when on, and (c) being turned off while carrying current, said bipolar switch providing a shunt path for returning a shunt current of either polarity, Is, to said input source, and

two output terminals for delivering an output current, Io, to said load via unidirectional conduction paths.

5,621,632

SWITCH MODE POWER SUPPLY CIRCUIT

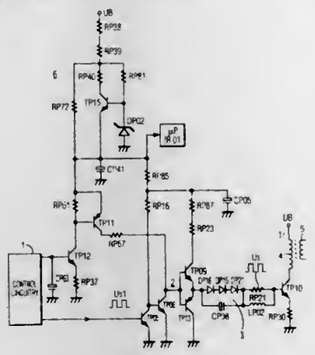
Kian P. Hoh, and Chun H. Wu, both of Singapore, Singapore, assignors to Thomson Consumer Electronics, S.A., Courbevole, France

Filed Sep. 30, 1994, Ser. No. 316,493

Claims priority, application United Kingdom, Oct. 20, 1993, 9321583

Int. Cl.[6] H02M *7/5375*

U.S. Cl. 363—97 **10 Claims**



1. A switch mode power supply comprising:

a power controlling transistor having a current responsive control electrode for switching the transistor to an "on" state when said current is above a first threshold value and an "off" state when said current is below a second threshold value,

a micro-controller for switching the operation of said power supply between a power-off mode, a stand-by mode and a normal run mode;

control circuitry having an output whose voltage level controls said control electrode, the level of said output being low when the power supply is in the power-off mode or in the standby mode so that the current received by said control electrode is below the second threshold current, said output providing a pulsed train when the power supply is in said run mode, said pulsed train switching periodically on and off said current flowing in said control electrode, said control circuitry having an input responsive to a switching signal generated by said micro-controller and having first and second states where in said first state said pulse train is disabled and in said second state said pulse train is enabled,

a circuit responsive to said pulse train and coupling and decoupling said control electrode respectively to and from a current source in response to the level of the pulse train,

a first capacitor coupled to a power supply terminal of said circuit responsive to said pulse train for storing a charge supplied via a charging path to provide a supply voltage for energizing said circuit responsive to said pulse train, and

circuit means for disabling said control circuit if said first capacitor is not fully charged when said power supply is switched into the run mode.

5,621,633

APPARATUS FOR CONTROLLING CONVERTER HAVING SELF-ARC-EXTINCTION ELEMENTS

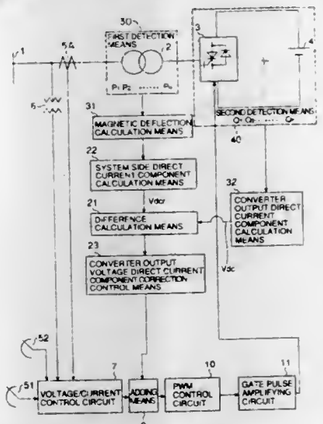
Kenichi Tanomura, Fuchu, and Yoichi Uemura, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1995, Ser. No. 429,503

Claims priority, application Japan, Apr. 27, 1994, 6-112072

Int. Cl.[6] H02H *7/12*

U.S. Cl. 363—97 **9 Claims**



1. An apparatus for controlling a converter including self-arc-extinction elements and connected between a direct current load and a power system through a transformer by a pulse width

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modulation (PWM) corresponding to a first reference value of an output voltage of a voltage/current control circuit: comprising

first detection means for detecting a first electricity quantity necessary to obtain a deflection of a magnetic flux of an iron core of the transformer;

magnetic deflection quantity calculation means for calculating a magnetic deflection quantity as the deflection of the magnetic flux of the iron core of the transformer on the basis of the first electricity quantity detected by the first detection means;

system side direct current component calculation means for calculating a second reference value of a direct current component of an output voltage of the converter on the basis of the magnetic deflection quantity calculated by the magnetic deflection quantity calculation means;

second detection means for detecting a second electricity quantity necessary to obtain a direct current component in the output voltage of the converter;

converter side direct current component calculation means for calculating an actual value of the direct current component in the output voltage of the converter on the basis of the second electricity quantity detected by the second detection means;

difference calculation means for obtaining a difference between the second reference value of the direct current component in the output voltage of the converter calculated by the system side direct current component calculation means and the actual value of the direct current in the output voltage of the converter calculated by the converter side direct current component calculation means; and

converter output direct current component correction control means for introducing a third electricity quantity for correcting the output voltage of the converter on the basis of the difference between the second reference value and the actual value with respect to the direct current component in the output voltage of the converter obtained by the difference calculation means.

5,621,634

POWER CONVERTER

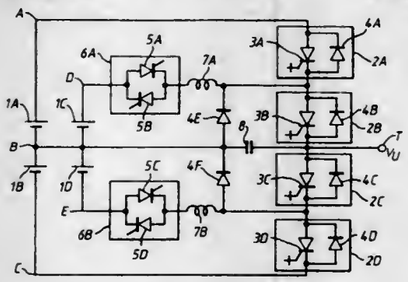
Shinji Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 8, 1996, Ser. No. 598,355

Claims priority, application Japan, Feb. 14, 1995, 7-025163; Jun. 28, 1995, 7-162572

Int. Cl.[6] H02M *3/24*

U.S. Cl. 363—98 **16 Claims**



1. A power converter comprising:

a series circuit of a positive side DC power source and a negative side DC power source connected at a neutral-point power source terminal;

a direction from an anode to a cathode being designated as forward direction and a direction from a cathode to an anode being designated as reverse direction:

a series circuit of a positive side first reverse conducting semiconductor switch and a positive side second reverse conducting semiconductor switch connected in series in said forward direction from a positive side power source terminal of said positive side DC power source toward an AC output terminal of said power converter;

a series circuit of a negative side first reverse conducting semiconductor switch and a negative side second reverse conducting semiconductor switch connected in series in said reverse direction from a negative side power source terminal of said negative side DC power source toward said AC output terminal;

a forward diode connected from said neutral-point power source terminal toward a cathode of said positive side first reverse conducting semiconductor switch in said forward direction;

a reverse diode connected from said neutral-point power source terminal toward an anode of said negative side first reverse conducting semiconductor switch in said reverse direction;

a positive side intermediate DC power source connected to said neutral-point power source terminal for generating a predetermined voltage between potentials of said positive side power source terminal and said neutral-point power source terminal at a positive side intermediate voltage terminal;

a negative side intermediate DC power source connected to said neutral-point power source terminal for generating a predetermined voltage between potentials of said negative side power source terminal and said neutral-point power source terminal at a negative side intermediate voltage terminal;

a first commutation circuit composed of a series circuit of a two-way semiconductor switch capable of controlling forward and reverse currents individually and a reactor, connected between said positive side intermediate voltage terminal and said cathode of said positive side first reverse conducting semiconductor switch;

a second commutation circuit composed of a series circuit of a two-way semiconductor switch capable of controlling forward and reverse currents individually and a reactor, connected between said negative side intermediate voltage terminal and said anode of said negative side first reverse conducting semiconductor switch; and

a voltage change-rate suppressing capacitor connected between one of said positive side power source terminal, said neutral-point power source terminal, said negative side power source terminal, said positive side intermediate voltage terminal and said negative side intermediate voltage terminal and one of connecting points of adjacent two of said positive side first reverse conducting semiconductor switch, said positive side second reverse conducting semiconductor switch, said negative side second reverse conducting semiconductor switch and said negative side first reverse conducting semiconductor switch.

5,621,635

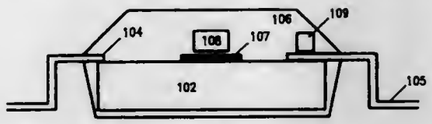
INTEGRATED CIRCUIT PACKAGED POWER SUPPLY

Hem Takiar, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 3, 1995, Ser. No. 397,950

Int. Cl.[6] H05K *7/20*

U.S. Cl. 363—141 **20 Claims**



1. An integrated circuit packaged power supply or power converter, comprising:

a lead frame having a main body and leads extending from the main body;

an inductor or transformer attached to and in thermal contact with the main body of the lead frame; and

an integrated circuit die which is a component of the power supply or power converter mounted on and in direct thermal contact with the inductor or transformer.

5,621,636

THIN DC-DC CONVERTER ARRANGEMENT

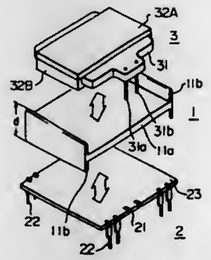
Kenichi Tanigawa; Hosei Hirano; Shingo Katayama; Nobuyoshi Tanaka, and Sueyuki Yahagi, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,923

Claims priority, application Japan, Feb. 22, 1994, 6-024028; Mar. 18, 1994, 6-049308; Apr. 19, 1994, 6-080597

Int. Cl.[6] G05F *3/16*

U.S. Cl. 363—147 **16 Claims**



1. A thin DC-DC converter arrangement comprising:

an inductor including a thin ring-shaped coil having a hole in its center and a thin ferrite core for providing a closed magnetic path passing through the central hole of said coil and interlinking the ring-shaped coil, reducing magnetic leakage flux which emanates from said ring-shaped coil;

a thin circuit board formed on its one surface with an electric circuit of said DC-DC converter; and

a radiator having at least one flat part,

wherein said inductor, said circuit board and said radiator are integrally assembled.

5,621,637

METHOD OF CONTROLLING THE QUALITY IN THE PRODUCTION OF A PLURALITY OF YARNS

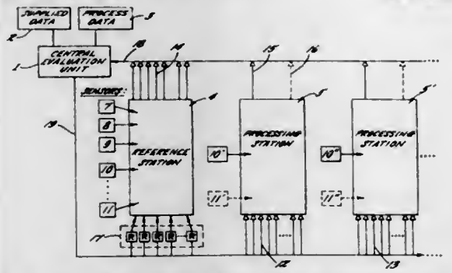
Jorg Spahlinger, Unterweg, Germany, assignor to Barmag AG, Remscheid, Germany

Filed Sep. 21, 1994, Ser. No. 309,806

Claims priority, application Germany, Sep. 21, 1993, 43 32 002.3; Oct. 19, 1993, 43 35 590.0

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—138 **20 Claims**



1. A method for controlling the quality in the production of a plurality of yarns in a corresponding number of identical processing stations which define a production line, comprising the steps of:

continuously and simultaneously measuring at least one process parameter (**10**, **10'**, **10"**) in each processing station of the production line;

comparing the process parameter (**10**, **10'**, **10"**) or a characteristic value derived from the process parameter (**10**, **10'**, **10"**) of a least one selected processing station (**4**) with a corresponding desired value or a desired characteristic value;

determining a control signal on the basis of the comparison;

supplying the determined control signal to all processing stations and controlling an identical control element at all of the processing stations; and

determining a quality value for each processing station by correlating at least one process parameter measured therein with a reference signal.

5,621,638

METHOD AND APPARATUS FOR OPTIMUM REGULATION OF THE INSIDE OF PREMISES

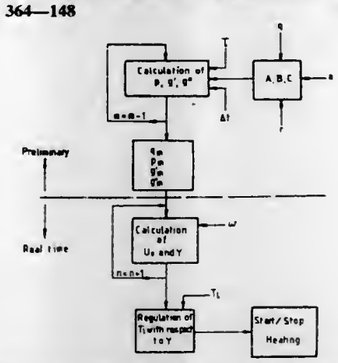
Afshin Afshari, Meudon, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Continuation of Ser. No. 103,375, Aug. 6, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,614

Claims priority, application France, Aug. 18, 1992, 92 10105

Int. Cl.[6] G05B *13/02*; **F28D** *19/00*

U.S. Cl. 364—148 **19 Claims**



1. A method of controlling a regulating means for regulating an inside temperature of premises, comprising the steps of performing an optimization calculation to calculate an optimum control value u* to control the regulating means, the control value being calculated based on a measured temperature value w and at least one index representing a thermal characteristic of the premises as a function of a time of day, the at least one index being precalculated before the optimization calculation is performed wherein the control value u* is chosen to minimize J(u) and wherein, at each instant in time that is separated from a following instant in time by an interval Δt, the function J(u) is minimized over a duration **T0**, with:

$$J(u)=\int_t^{t+T0}\{qe^2+ru^2\}dt;$$

with a first order model of thermal behavior e(t) where:

$$e(t)=x(t)+au-y \text{ and}$$

$$dx/dt=f(t,x)=-x/\tau+u(1-a)/\tau+w/t;$$

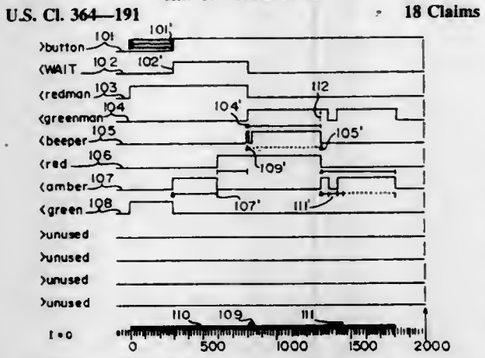
where x(t) is a function representative of a thermal state of a structure of the premises, q is a preset reference function, a is an instantaneous response factor of said premises, u is a function of time of a power supplied to means for producing or removing heat, w is an external temperature, r is a dimensionless coefficient, y represents a reference temperature, and τ is a time constant of an exponential curve characteristic of a variation in the inside temperature of the premises over time.

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5,621,639
PROCESS CONTROL

Paul J. Fray, 34 Madingley Road, Cambridge, CB3 0EX, England

Continuation of Ser. No. 777,275, Nov. 29, 1991, abandoned. This application May 31, 1995, Ser. No. 456,232
Claims priority, application United Kingdom, Jun. 1, 1989, 8912599
Int. Cl.[6] G05B *19/42*
U.S. Cl. 364—191 **18 Claims**



1. An event based apparatus for controlling with an independent set of program instructions a real-time process governed by causes and effects comprising:

input means for producing input information in the form of selectable data representing the causes and effects;

image display means for displaying a timing chart visually representing a data structure corresponding to the causes and effects which in turn correspond to input and output signals desired to control the real time process;

processor means responsively coupled to the input means for producing the data structure, the image display means being responsively coupled to the processor means and the input means, said processor means including:

storage means responsive to the input means for storing the data structure corresponding to the causes and effects in the real-time process, said input means operative when activated for entering the selectable data into said data structure for storage;

means responsive to the input means for creating the timing chart of selectively variable input and output signals for display on said image display means;

means responsive to input and output signals of the means for creating the timing chart for producing the data structure;

means responsively coupled to the storage means for converting the stored data structure to the set of program instructions for monitoring the input signals and producing the output signals, said instructions being operative when executed to produce the causes and effects for governing the real-time process; and

means responsive to the instructions for controlling the real-time process by processing the set of program instructions.

5,621,640
AUTOMATIC PHILANTHROPIC CONTRIBUTION SYSTEM

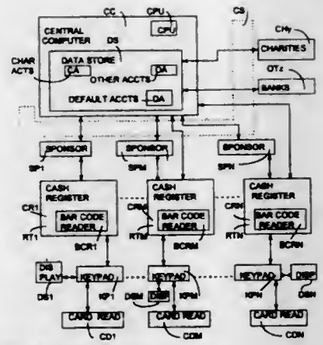
Bertram V. Burke, No. Plainfield, N.J., assignor to Every Penny Counts, Inc., Navesink, N.J.

Continuation of Ser. No. 18,821, Feb. 18, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,353
Int. Cl.[6] G06G *1/12;7/52;1/14;* **G06F** *17/60*
U.S. Cl. 395—214 **30 Claims**

16. A point of sale operating method, comprising:

entering an amount corresponding to a price of a product into a cash register;

entering an amount corresponding to cash being paid;



determining any excess cash payment;

entering a card identifier;

apportioning at least a part of the excess cash payment among one or more of a number of predetermined accounts as determined by the card identifier; and

crediting the excess paid to the accounts to the card identifier;

the predetermined accounts being identified with said card identifier independent of said cash register.

5,621,641
COMPUTER ASSISTED TEXT SYSTEM

Alfred B. Freeman, 1465 Hooksett Rd., #377, Hooksett, N.H. 03106

Continuation-in-part of Ser. No. 808,843, Dec. 17, 1991, which is a continuation-in-part of Ser. No. 440,994, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,727, Aug. 11, 1989, abandoned, and a continuation-in-part of Ser. No. 288,011, Dec. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,640
Claims priority, application Canada, Dec. 21, 1989, 2006163
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—796 **12 Claims**

1. A method for outputting words to an applications program performed by a computer apparatus which runs said applications program and includes a data processing means and an input means in which the data processing means normally processes the signals from said input means for input to said applications program; and by a word producing program run by said computer apparatus and including a control means having an Off state and an On state; the method comprising the steps of:

a) setting said control means to the On state responsive to On signals from said input means;

b) resetting said control means to the Off state responsive to Off signals from said input means;

c) intercepting the signals from said input means while said control means is in the On state;

d) selecting words responsive to the signals intercepted; and

e) outputting the words selected to said data processing means responsive to signals intercepted;

wherein said word producing program includes a vocabulary of a plurality of sets of words stems assigned to letter strings from 1 to N letters long; wherein some of the signals of said input means represent letters and wherein step d) includes:

d1) storing the letters inputted;

d2) accessing the set of word stems assigned to the letters stored;

d3) selecting a word from the accessed set of word stems responsive to some of said signals or selecting the stored letter string as a word responsive to another of said signals.

6. A method for outputting words to an applications program performed by a computer apparatus running said application program and including a data processing means, a memory, a display, and an input means; and by a word producing program running on said computer apparatus and having a vocabulary consisting of a plurality of words arranged into first through Nth pluralities of word sets wherein each of the sets of said first plurality are assigned to single letters and each of the sets of said Nth plurality are assigned to a string of N letters; said method comprising the steps of:

a) starting a word by accessing a first word set;

b) inputting letters responsive to operation of said input means;

c) storing the letters inputted as a letter string in said memory;

d) selecting a word of the accessed set responsive to each letter inputted;

e) accessing the word set assigned to the letter string stored;

f) changing the selected word to a different word of the accessed set responsive to another input from said input means; and

g) outputting the selected word or the stored letter string responsive to a signal from said input means.

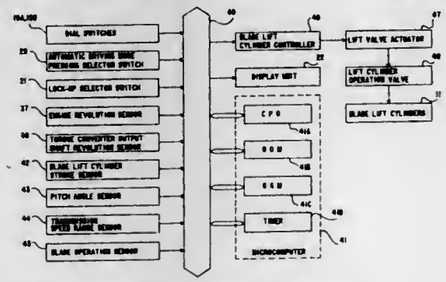
5,621,642

Patent Not Issued For This Number

5,621,643
DOZING SYSTEM FOR BULLDOZERS

Hiroshi Nakagami; Shigenori Matsushita, and Shigeru Yamamoto, all of Hirakata, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP92/00457, § 371 Date Oct. 7, 1993, § 102(e) Date Oct. 7, 1993, PCT Pub. No. WO92/18706, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 129,080
Claims priority, application Japan, Apr. 12, 1991, 3-108451
Int. Cl.[6] B60K *28/16*
U.S. Cl. 364—424.07 **28 Claims**



1. A dozing system for a bulldozer comprising:

(a) running slip detector means for detecting the running slip of a vehicle body;

(b) actual tractive force detector means for detecting an actual tractive force of the vehicle body, said vehicle body having an operable blade, and said tractive force being a force applied to the blade of the vehicle body; and

(c) comparison controller means, operably coupled to said running slip detector means and said actual tractive force detector means, for comparing the actual tractive force detected by the actual tractive force detector means with a target tractive force which has been preset, and

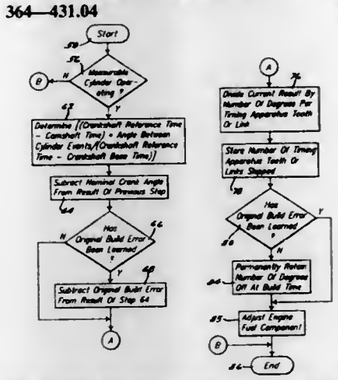
(i) for controlling a blade such that the blade is lifted or lowered so as to make the actual tractive force coincident with the target tractive force, controlling the blade by lifting or lowering the blade such that a position of a cutting edge of the blade with respect to the ground is maintained to be a preset target cutting edge position with respect to the ground, and performing the control by making the actual tractive force coincident with the target tractive force in preference to the control for maintaining the position of the cutting edge of the blade with respect to the ground to be the target cutting edge position with respect to the ground, especially when the difference between the actual tractive force and the target tractive force is small when the running slip has not been detected by the running slip detector means, and

(ii) for controlling the blade to be lifted so as to eliminate the running slip when the running slip has been detected by the running slip detector means.

5,621,644
METHOD FOR DETERMINING CAMSHAFT AND CRANKSHAFT TIMING DIAGNOSTICS

Robert P. Carson, Oxford; William J. Hynes, Ann Arbor; Edward W. Czarnecki, Washington; Christoph Micha, Farmington Hills, and Edwin W. Bacon, Jr., Goodrich, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Feb. 8, 1995, Ser. No. 385,483
Int. Cl.[6] G01M *15/00*
U.S. Cl. 364—431.04 **12 Claims**



1. In an engine, associated control system, and method, the engine including at least one camshaft having an angular position at a given point in time, and a crankshaft having an angular position at a given point in time, the method comprising the steps of:

producing camshaft angular position pulses, which occur at camshaft times and crankshaft angular position pulses, which occur at crankshaft times, corresponding to angular positions of the camshaft and the crankshaft, respectively;

measuring a first window of time using at least one crankshaft angular position pulse as a reference point in time, the first window of time equal to a reference crankshaft time, less a base crankshaft time;

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measuring a second window of time using at least one camshaft angular position pulse as a reference point in time, the second window of time equal to a camshaft time, less a reference crankshaft time,

ascertaining an angular position difference between at least one camshaft and crankshaft equal to the second window of time divided by the first window of time;

determining whether a misalignment between the at least one camshaft and the crankshaft exists by comparing the angular position difference between the at least one camshaft and crankshaft to a predetermined value; and

controlling operation of a component in the engine if the misalignment between the at least one camshaft and the crankshaft exists.

5,621,645

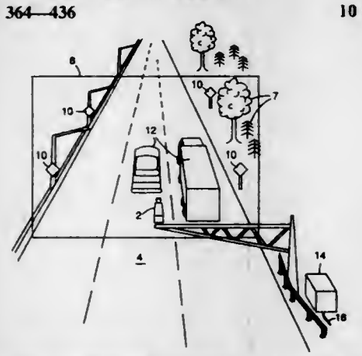
AUTOMATED LANE DEFINITION FOR MACHINE VISION TRAFFIC DETECTOR

Mark J. Brady, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1995, Ser. No. 377,711

Int. Cl.[6] G08G *1/04*

U.S. Cl. 364—436 **10 Claims**



1. A system for defining the boundaries of a roadway and lanes therein, said system comprising:

image acquisition means for acquiring images of said roadway and objects traveling thereon;

means for measuring motion of said objects between said images and for producing a motion image representing measured motion;

edge detection means for detecting edges within said motion image and for producing an edge image;

means for locating parallel edges within said edge image, said parallel edges representing edges of said objects parallel to the motion of said objects; and

means for generating curves based on said parallel edges, wherein said generated curves are indicative of the boundaries of the roadway and the lanes therein.

5,621,646

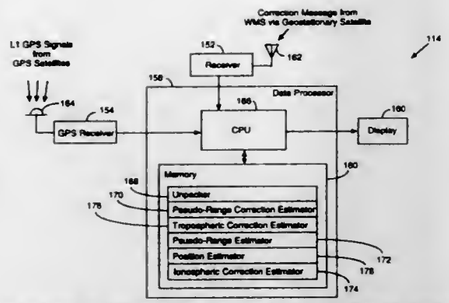
WIDE AREA DIFFERENTIAL GPS REFERENCE SYSTEM AND METHOD

Per K. Enge; Todd F. Walter, both of Mountain View, and Yi-Chung Chao, Stanford, all of Calif., assignors to Stanford University, Palo Alto, Calif.

Continuation of Ser. No. 374,165, Jan. 17, 1995, abandoned. This application Jul. 22, 1996, Ser. No. 681,087

Int. Cl.[6] G01S *5/02*

U.S. Cl. 364—449 **15 Claims**



1. A GPS reference system for providing ephemeris and/or clock corrections for GPS satellites to users at measurement epochs of the GPS reference system, the GPS reference system comprising:

a network of reference stations, each of the reference stations receiving GPS signals from those of the GPS satellites it observes and computing in response at each of the measurement epochs a pseudo-range residual for each of the GPS satellites it observes at the measurement epoch; and

a master station in communication with the reference stations to receive the computed pseudo-range residuals at each of the measurement epochs, the master station comprising:

a pseudo-range residual synchronizer to remove at each of the measurement epochs clock differences between the reference stations from the received pseudo-range residuals at the measurement epoch so as to synchronize them in time;

for each of the GPS satellites observed at each of the measurement Epochs by at least one of the reference stations, a corresponding, independent ephemeris and clock correction estimator to compute at the measurement epoch an ephemeris correction and a clock correction for the corresponding GPS satellite in response to each of the synchronized pseudo-range residuals at the measurement for the corresponding GPS satellite and independent of the synchronized pseudo-range residuals at the measurement for the other GPS satellites observed by the reference stations; and

a transmitter to transmit to users at each of the measurement epochs the computed ephemeris and/or clock corrections for each of the GPS satellites observed at the measurement epoch by at least one of the reference stations;

wherein, for at least a subset of the measurement epochs, at least a subset of the GPS satellites for which the ephemeris and/or clock corrections are transmitted are observed by at least one but no more than three of the reference stations such that the transmitted ephemeris and/or clock corrections for each of the at least subset of GPS satellites at each of the at least subset of measurement epochs are computed in response to at least one but no more than three synchronized pseudo-range residuals for the GPS satellite at the measurement epoch.

5,621,647

METHOD OF CREATING A COMPREHENSIVE MANUFACTURING, SHIPPING AND LOCATION HISTORY FOR PIPE JOINTS

Mark S. Kraemer, and James A. Ratliff, both of Katy, Tex., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 215,497, Mar. 18, 1994, Pat. No. 5,491,637. This application Oct. 16, 1995, Ser. No. 543,391

Int. Cl.[6] G06F *19/00*

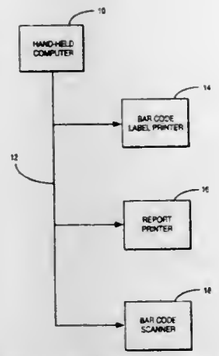
U.S. Cl. 364—468.22 **5 Claims**

1. A method of determining the number of a plurality of pipe joints that can be shipped on a transportation means without exceeding a predetermined weight by use of a bar code reader coupled to a computer, said method comprising the steps of:

(a) determining a weight for one of said plurality of pipe joints;

(b) creating a bar code label for said one of said plurality of pipe joints, said bar code label containing at least said weight of said one of said plurality of pipe joints;

(c) attaching said bar code label to said one of said plurality of pipe joints;



(d) repeating steps (a) through (c) for each of said plurality of pipe joints;

(e) entering said predetermined weight for said transportation means in said computer;

(f) scanning said bar code for one of said plurality of pipe joints which is capable of being shipped on said transportation means with said bar code reader;

(g) calculating a shipment weight in said computer, said shipment weight being the summation of said weights of said plurality of pipe joints scanned by said bar code scanner;

(h) comparing said shipment weight to said predetermined weight; and

(i) repeating steps (f) through (h) for each of said plurality of pipe joints until said shipment weight exceeds said predetermined weight.

5,621,648

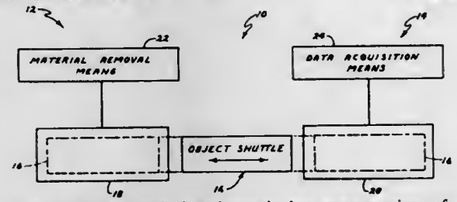
APPARATUS AND METHOD FOR CREATING THREE-DIMENSIONAL MODELING DATA FROM AN OBJECT

Craig D. Crump, 8383 Red Rock Rd., Eden Prairie, Minn. 55347

Filed Aug. 2, 1994, Ser. No. 284,253

Int. Cl.[6] G06F *17/00;19/00*

U.S. Cl. 364—468.19 **28 Claims**



3. Apparatus for producing electronic data representations of an object, the object being formed from at least one material, said apparatus comprising:

a material removal station;

a data gathering station; and

a shuttle providing relative movement of the object between said stations;

wherein said material removal station comprises:

means for removing a predetermined layer of material from the object to expose a surface;

wherein said data gathering station comprises:

means for successively imaging the exposed surface of the object after removal of a predetermined layer; and

means for storing data gathered by said means for imaging; and

wherein said shuttle comprises:

a table for holding the object;

means for providing relative movement of said table between said material removal station and said data gathering station;

wherein said means for moving said table comprises:

means for moving said table in a first, substantially linear direction between a first position in which said table is at said data gathering station in imaging alignment with said means for successively imaging the object, and a

second position in which said table is at said material removal station in material removing alignment with said means for removing a predetermined layer of material from the object, said first direction moving means comprising:

a screw drive having first and second ends;

a first motor, said motor being drivingly attached to said first end of said drive, said second end of said screw drive being rotationally mounted by a bearing; and

a nut threadingly engaging said screw, said table being mounted to said nut.

5,621,649

METHOD FOR ANALYZING ELECTROMAGNETIC FIELD

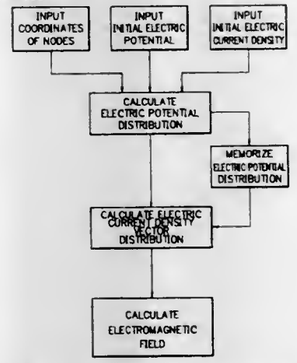
Keiji Iwata; Hosei Hirano, both of Kawasaki; Takatsugu Ueyama, and Kenji Umetsu, both of Futtsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 93,538

Claims priority, application Japan, Jul. 20, 1992, 4-214503; Aug. 26, 1992, 4-250815; Nov. 10, 1992, 4-324848; Nov. 10, 1992, 4-324849; Feb. 26, 1993, 5-062970

Int. Cl.[6] G01R *29/08*

U.S. Cl. 364—483 **8 Claims**



1. A method for designing electrical equipment by creating a computer model of an electromagnetic field of a region a part of which comprises an electric conductor, said method comprising: initializing a central processing unit of a computer, inputting into said central processing unit electric potential information representing electric potential at a predetermined portion of said electric conductor as an initial condition, ascertaining within said central processing unit the distribution of exciting current density vectors in said electric conductor on the basis of said electric potential information so as to meet the condition of continuity of electric current, and transforming said electric potential information on the basis of said distribution of exciting current density vectors into a computer model of the electromagnetic field of the region, said electromagnetic field comprising at least one of magnetic flux density distribution, magnetic field, electric field and eddy current density distribution of said region, and designing electrical equipment in accordance with said computer model.

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5,621,650

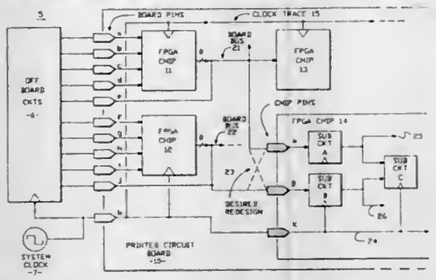
PROGRAMMABLE LOGIC DEVICE WITH INTERNAL TIME-CONSTANT MULTIPLEXING OF SIGNALS FROM EXTERNAL INTERCONNECT BUSES

Om P. Agrawal, Los Altos, Calif., and Michael J. Wright, Boulder, Colo., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 80,658, Jun. 18, 1993, which is a continuation-in-part of Ser. No. 429,125, Oct. 30, 1989, Pat. No. 5,233,539, and Ser. No. 12,573, Feb. 1, 1993, Pat. No. 5,329,460. This application Jun. 1, 1995, Ser. No. 456,946

Int. Cl.[6] H03K *17/693*

U.S. Cl. 364—489 **29 Claims**



1. A user-programmable multi-chip system comprising:

a plurality of user-programmable integrated circuit chips; and

a plurality of multi-line chip-external buses coupled to the chips, at least one of said chips having lines of at least two of the chip-external multi-line buses coupled thereto;

where the at least one of said chips is a floating-I/O chip that includes:

(a) user-programmable chip-internal logic circuitry for performing digital logic operations in accordance with user-programming, said logic circuitry generating output signals in response to supplied input signals;

(b) a plurality of first through Nth Input/Output Blocks (IOB's) each for receiving output signals of the chip-internal logic circuitry and coupling the output signals to points outside the floating-I/O chip, and for receiving input signals from points outside the floating-I/O chip and supplying the received input signals to the chip-internal logic circuitry;

(c) a plurality of first through Mth longlines coextensive with the first through Nth IOB's; and

(d) user-programmable bus multiplexing means for selectively coupling respective ones of the first through Nth IOB's to programmably-selected ones of the first through Mth longlines in accordance with user-programming, the bus multiplexing means providing selective coupling between at least one of the longlines and a programmably selected one or another of at least two IOB's such that signal propagation delay between the at least one longline and the programmably selected one or the other of the at least two IOB's within the floating-I/O chip is substantially the same irrespective of which of the at least two IOB's is selected;

wherein a first line belonging to a first of the at least two chip-external multi-line buses is coupled to a first of the programmably selectable at least two IOB's; and

wherein a second line belonging to a second of the at least two chip-external multi-line buses is coupled to a second of the programmably selectable at least two IOB's.

5,621,651

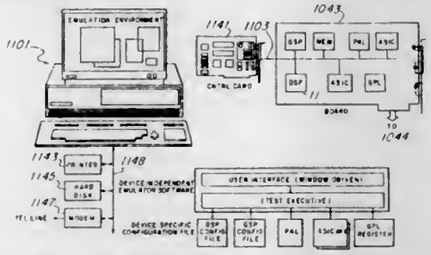
EMULATION DEVICES, SYSTEMS AND METHODS WITH DISTRIBUTED CONTROL OF TEST INTERFACES IN CLOCK DOMAINS

Gary L. Swoboda, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 209,127, Mar. 9, 1994, abandoned. This application May 6, 1996, Ser. No. 643,703

Int. Cl.[6] G06F *17/00; 11/00*

U.S. Cl. 364—489 **12 Claims**



1. An electronic device, comprising:

a semiconductor chip having an integrated circuit fabricated thereon;

said integrated circuit including functional circuitry for performing normal operating functions of said integrated circuit, and auxiliary circuitry for performing auxiliary functions that provide information regarding the machine state of said functional circuitry, said auxiliary circuitry including state machine circuitry having an input which is accessible externally of said integrated circuit for permitting external control of said auxiliary functions;

said auxiliary circuitry including a plurality of test architectures distributed throughout said functional circuitry and operatively associated with respective portions of said functional circuitry and capable of executing operations according to a test methodology, each said test architecture having a control interface through which said test architecture is controllable, each said control interface being embedded within said integrated circuit; and

said auxiliary circuitry further including adaptor circuitry interfacing between said state machine circuitry and said test architectures for providing a control signal used to operate said control interfaces, and a plurality of latch circuits physically distributed throughout said functional circuitry, each said latch circuit connected between said adaptor circuitry and a respective one of said control interfaces for selectively latching said control signal and providing the latched control signal for use in operating the respective control interface.

5,621,652

SYSTEM AND METHOD FOR VERIFYING PROCESS MODELS IN INTEGRATED CIRCUIT PROCESS SIMULATORS

John C. Eakin, Foster City, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 21, 1995, Ser. No. 408,856

Int. Cl.[6] G06F *17/50;* **G06G** *7/48*

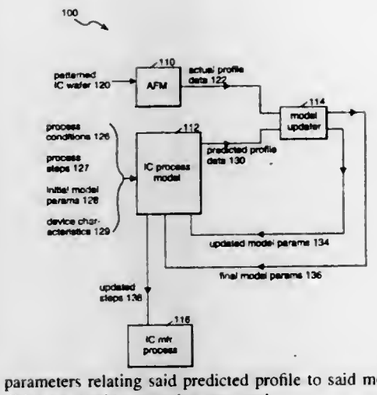
U.S. Cl. 364—490 **9 Claims**

1. An apparatus for verifying a semiconductor process model comprising:

(a) an atomic force microscope configured to measure an actual profile of a semiconductor device feature created during a processing step;

(b) said semiconductor process model being configured to predict a profile of said feature under a set of model processing conditions specified to match actual processing conditions under which said processing step took place; said semiconductor process model having an associated set of process parameters relating said predicted profile to said model conditions and said processing step; and

(c) a model updater configured to adjust said process parameters of said semiconductor process model so that said predicted profile more closely approximates said actual profile, said model updater iteratively adjusting said parameters until a final set of process parameters is arrived at for which said predicted profile approximates said actual profile within a predefined margin of error.



5,621,653

METHOD OF AND AN APPARATUS FOR CONVERTING LAYOUT DATA IN CONDUCTIVE PORTIONS

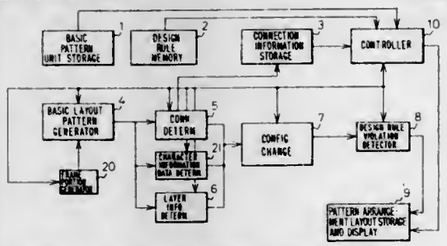
Naoki Yuzawa, Kawasaki, Japan, asslgnor to Fujltsu Limited, Kawasaki, Japan

Continuation of Ser. No. 79,915, Jun. 23, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 497,133

Claims priority, application Japan, Jun. 23, 1992, 4-164915; Jun. 21, 1993, 5-149382

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—491 **13 Claims**



1. A layout data conversion method, comprising:

performing a predetermined data conversion to correct design data of a semiconductor integrated circuit which is designed by joining basic pattern units which are selected from a pattern unit storage part in which a plurality of basic pattern units having different conductive arrangement patterns are stored, the data conversion being achieved by performing reduction computation to reduce the configurations of the conductive portions or shift computation to change the widths of the conductive portions of the basic pattern units, so as reduce the areas of the conductive portions;

analyzing the design data;

if conductive portions of adjacent basic pattern units are connected to each other, omitting the data conversion on the conductive portions;

omitting the data conversion on a portion of the conductive portion of one of the adjacent basic pattern units which is in contact with the conductive portion of the other one of the adjacent basic pattern units, and

performing the data conversion by performing a layout data conversion by changing coordinate values of the design data for a portion of the conductive portion of one of the adjacent basic pattern units which is not in contact with the conductive portion of the other one of the adjacent basic pattern units.

5,621,654

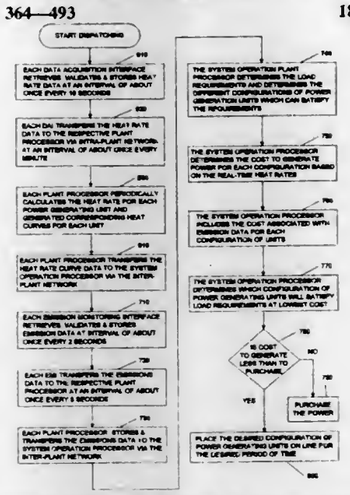
SYSTEM AND METHOD FOR ECONOMIC DISPATCHING OF ELECTRICAL POWER

Jason M. Cohen, West Islip, and Douglas B. Page, Smithtown, both of N.Y., assignors to Long Island Lighting Company, Hicksville, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,225

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—493 **18 Claims**



1. A method for dispatching electrical power, comprising the steps of:

utilizing measuring means for measuring operating parameters for a plurality of power generating units to obtain real-time heat rate data for each of said plurality of power generating units, said measuring means including for each power generating unit at least one sensing device for measuring the operating parameters;

utilizing a central processor for polling each power generating unit for retrieving the measured operating parameters;

transferring said measured operating parameters to said central processor at regular intervals for calculating the real-time heat rate for each of said plurality of power generating units from said heat rate data;

obtaining load requirements for a geographical area;

determining configurations of said plurality of power generating units which satisfy the load requirements of a geographic area;

determining a cost of generating electrical power for each said configuration, said cost determination being based upon said real-time heat rate data;

obtaining a price for purchasing power;

comparing said cost determination for generating power with said price for purchasing power and selecting the lowest cost for the power generation; and

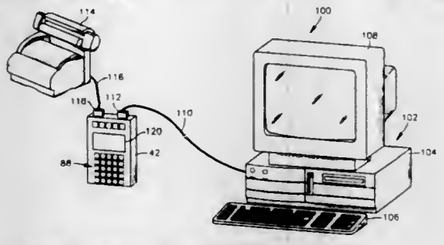
dispatching the electrical power during a real-time operation of said plurality of power generating units by selecting one of said configurations with the lowest power generating cost if said cost of generating electrical power is less than said price for purchasing power.

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5,621,655
CENTRALIZED ALIGNMENT MANAGEMENT SYSTEM

Daniel L. Nower, Knoxville; Willie T. King, Powell, and Kenneth R. Piety, Knoxville, all of Tenn., assignors to Computational Systems, Inc., Knoxville, Tenn.

Continuation of Ser. No. 72,397, Jun. 3, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 382,270
Int. Cl.[6] G06F *17/40;19/00*
U.S. Cl. 364—506 **34 Claims**

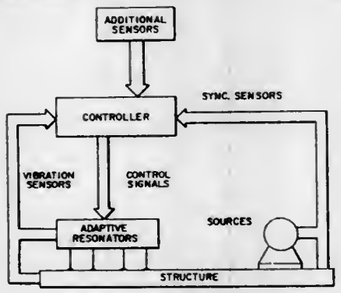


1. A shaft alignment system comprising:
a base computer having a memory, a data port, and an input device,
alignment documentation corresponding to at least one alignment job residing in a data base in the memory of the base computer,
a portable alignment analyzer having memory, a data port, and an input device,
a data link for communicating between the base computer data port and the analyzer data port,
means for transferring the alignment documentation from the data base in the memory of the base computer, through the data port of the base computer, through the data link, through the data port of the analyzer, and into the memory of the analyzer,
means for editing the alignment documentation transferred to the analyzer, while the alignment documentation is in the analyzer, and means for reconfiguring the analyzer in automated response to the alignment documentation stored in the analyzer's memory to produce a reconfigured analyzer.

5,621,656
ADAPTIVE RESONATOR VIBRATION CONTROL SYSTEM

Andrew J. Langley, Welwyn, Great Britain, assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

PCT No. PCT/US92/03024, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO93/21687, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 15, 1992, Ser. No. 318,630
Int. Cl.[6] H03B *29/00*
U.S. Cl. 364—508 **14 Claims**

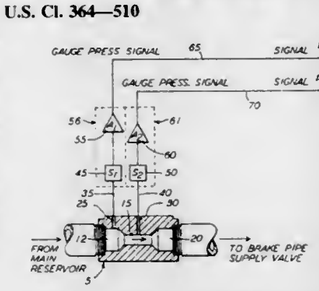


1. A noise or vibration control system for controlling noise or vibration from one or more sources comprising:
one or more self adaptive resonator means, attached to one or more points on a structure, whose resonance frequencies are adjustable by control signals;
sensor means on said resonator means, the structure, or both said resonator means and said structure that are used to determine tuning of the resonator means;
one or more sensor means on the source of vibration, the structure, or both said source of vibration and said structure that can be used to derive frequencies of various components of the vibration;
a control system that has as inputs output signal from the sensor means, and as outputs control signals to change the resonance frequencies of the resonator means,
wherein the control system incorporates a control algorithm to tune the resonator means close to selected frequencies in the noise or vibration, and to keep them tuned as those frequencies drift or as other factors affecting the resonator means' performances change.

5,621,657
AUTOMATIC DETECTION OF AIR FLOW TRANSDUCER TYPE UNDER SOFTWARE CONTROL

Vincent Ferri, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sep. 25, 1995, Ser. No. 533,370
Int. Cl.[6] G06G *7/57*
U.S. Cl. 364—510 **20 Claims**

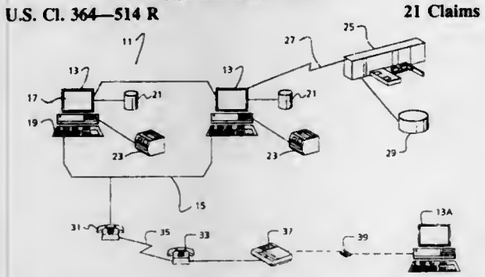


1. An apparatus for generating at least one signal indicative of a flow rate of fluid in a fluid pressure communication conduit having local variations of flowpath and at least two pressure taps disposed at predetermined locations on such fluid pressure communication conduit, said apparatus comprising:
(a) a programmed computer system having at least two data input channels;
(b) at least one transducer adapted for fluid pressure connection to such at least two pressure taps and electrically connected to at least one of said at least two data input channels of said programmed computer system, said programmed computer system being connectable to at least two configurations of said at least one transducer; a first one of such transducer configurations includes at least two pressure transducers having fluid pressure connection to at least two of such pressure taps, outputs of such at least two pressure transducers connected to at least two of said data input channels of said computer system, and a second one of such transducer configurations includes a differential pressure transducer having fluid pressure connection to at least two of such pressure taps for measuring a pressure difference between two of such pressure taps, an output of such differential pressure transducer connected to a predetermined one of said at least one data input channel of said computer system;
(c) means disposed in said computer system for determining a condition when such flow of such fluid is equal to zero, and for generating at least one first logical signal indicative of such condition;
(d) means responsive to said first logical signal indicative of such condition when such flow of such fluid is equal to zero to receive at least one data signal from said predetermined one of said at least one data input channel to generate a second logical signal indicative of a type of transducer connected to said predetermined one of said at least one data input channel;
(e) means responsive to said second logical signal and responsive to at least one signal from at least two of said data input channels for generating at least one signal indicative of a pressure difference between at least two of such pressure taps; and
(f) means responsive to said at least one signal indicative of a pressure difference between at least two of such pressure taps for generating said at least one signal indicative of such flow rate of such fluid.

5,621,658
METHOD AND APPARATUS FOR COMMUNICATING AN ELECTRONIC ACTION FROM A DATA PROCESSING SYSTEM TO ANOTHER DATA PROCESSING SYSTEM VIA AN AUDIO DEVICE

Brion K. Jackson, Flower Mound; Paul L. Miller, Irving; William E. Warren, III, Richland Hills, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1993, Ser. No. 90,731
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **21 Claims**



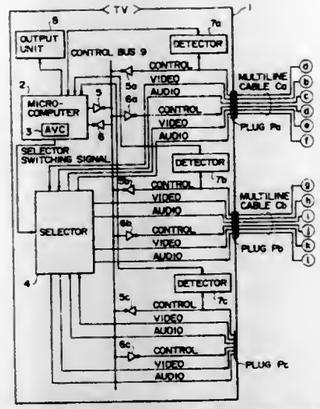
1. A method of communicating an electronic mail object from a first data processing system to a second data processing system by way of an audio device, comprising the steps of:
a) determining if said object includes an action that is executable on said second data processing system;
b) if said object includes said action, then convening said action into a predetermined audio pattern; and
c) communicating said audio pattern to said audio device.

5,621,659
CENTRAL CONTROL DEVICE AND OPERATION DEVICES

Kazutoshi Matsumoto, Saitama; Hatsuhiko Shinoda, Tokyo; Yosuke Yukihira, Kanagawa, and Hiroshi Moriuchi, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,846
Claims priority, application Japan, Oct. 29, 1993, 5-271435
Int. Cl.[6] H03K *17/00*
U.S. Cl. 364—514 R **12 Claims**

1. In a system comprising a central control device and plurality of operation devices for connection to said central control device, wherein said central control device and said plurality operation devices can each output and/or input video and/or audio signals and operate in an interlocked manner by exchanging control signals among said central control device and said plurality of operation devices, the improvement wherein:
said central control device comprises
first control means for generating a first control signal requesting each of said plurality of operation devices to transmit to said central control device a second control signal indicating a status of each of said operation devices and outputting the first control signal to each of said operation devices for preforming an initialization operation,
a plurality of identical first connectors for exchanging the control, video and audio signals with said plurality of operation devices, and
storage means for storing plug information identifying each of said plurality of first connectors and information relating to addresses of each of said plurality of operation devices corresponding to respective ones of said first connectors connected respectively to said plurality of operation devices; and
said plurality of operation devices each comprise
a second connector for connection to any one of said plurality of identical first connectors for exchanging the respective control, video and audio signals with said central control device and
second control means for generating the second control signal for indicating a status of said operation device in response to the first control signal and outputting the second control signal to said central control device; wherein
when said first control means receives the second control signal, said operation device outputting the second control signal is judged to be connected to said central control device and said storage means stores pairs of said plug information and operation device addresses for indicating a specific operation device connected to a specific plug.



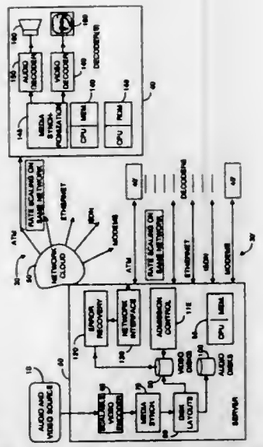
5,621,660
SOFTWARE-BASED ENCODER FOR A SOFTWARE-IMPLEMENTED END-TO-END SCALABLE VIDEO DELIVERY SYSTEM

Navin Chaddha, Stanford; J. Duane Northcutt, Sunnyvale; Gerard A. Wall, San Jose, and James G. Hanko, Redwood City, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 18, 1995, Ser. No. 423,812
Int. Cl.[6] H04N *9/79*
U.S. Cl. 364—514 R **21 Claims**

1. For use in a video delivery system server having a source of video images, an encoder providing an embedded bit stream containing information including image data at at least two spatial resolutions, said embedded bit stream being sent over at least one network to at least one decoder, the encoder including:
a central processor unit coupled to a memory unit; encoding means, digitally stored in said memory unit and coupled to said source of video images and receiving a first image at first spatial resolution, for decimating said first image to form an first intermediate image at half said highest resolution, for decimating said first intermediate image to form a second

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intermediate image, for compressing said second intermediate image to form a base layer image whose resolution is less than said first image;

said encoding means further decompressing said base layer image to form a third intermediate image, and interpolating said third intermediate image to form a fourth intermediate image, and for subtracting said fourth intermediate image from said first intermediate image to form a fifth intermediate image, and for compressing said fifth intermediate image to form a first enhancement layer image whose resolution is less than said first image but greater than said base layer image;

said embedded bit stream having data packets of fixed length code words and containing at least said base layer image and said first enhancement layer image.

5,621,661

INDUCTIVE LOOP DIAGNOSTIC INTERFACE

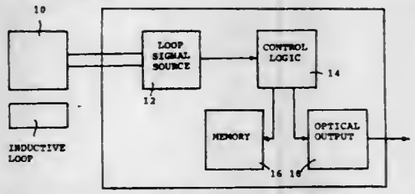
Cyril A. Farrow, Pietermaritzburg, South Africa, assignor to Electromatic (Proprietary) Limited, Pietermaritzburg, South Africa

Filed Aug. 3, 1994, Ser. No. 285,119

Claims priority, application South Africa, Aug. 4, 1993, 93/5634

Int. Cl.[6] H04B *10/00*; **G08G** *1/042*

U.S. Cl. 364—516 **4 Claims**



1. An inductive loop vehicle detector comprising:

an inductive loop mountable in a pavement structure; and

a detector unit connected to the loop wherein the detector unit includes:

a signal source for energizing the loop;

control means for monitoring the loop and generating diagnostic data relating to operation of the loop and the signal source;

memory means for storing the diagnostic data generated; and

optical output means for producing an optical output signal, the optical output means being controlled by the control means so that the optical output signal is repetitively modulated by a modulation signal based on the stored diagnostic data at a rate such that the data is not discernible by a human.

5,621,662

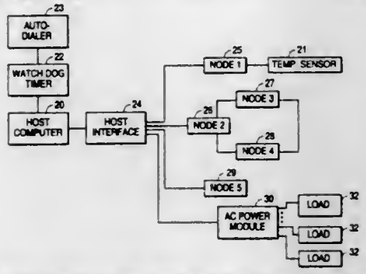
HOME AUTOMATION SYSTEM

L. Scott Humphries; Glenn Rasmussen; Douglas L. Volta, and James D. Pritchett, all of Naples, Fla., assignors to IntelliNet, Inc., Naples, Fla.

Filed Feb. 15, 1994, Ser. No. 196,503

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—550 **54 Claims**



1. An automation system having a home security sub-system, a lighting sub-system, and an environmental control sub-system, comprising:

a controller for providing centralized control of a plurality of sub-systems in said home automation system;

a host interface for interfacing said central controller to a network;

a plurality of nodes connected to said network and located in said sub-systems; and

a watch dog timer circuit;

wherein said controller periodically supplies a signal to said watch dog timer circuit, said watch dog timer circuit including timer means which initiates a phone call to an off-site location when said operation signal is not received in a predetermined time interval thereby indicating to said off-site location that said processor is not operational.

5,621,663

METHOD AND SYSTEM FOR MONITORING A COMPUTER SYSTEM

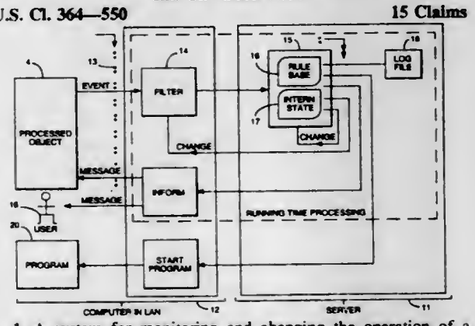
Lennart Skagerling, Sollentuna, Sweden, assignor to ICL Systems AB, Kista, Sweden

Continuation of Ser. No. 170,193, Jun. 22, 1992, abandoned. This application Apr. 26, 1995, Ser. No. 428,472

Claims priority, application Sweden, Jun. 20, 1991, 9101942

Int. Cl.[6] G06F *11/30*

U.S. Cl. 364—550 **15 Claims**



1. A system for monitoring and changing the operation of a computer system automatically, which computer system comprises at least one local area network including a plurality of computers and a server, wherein said monitoring and changing includes error processing, performance processing and utilisation processing, wherein a plurality of different programs are executable in the computer system and any particular computer can be executing a different program to one or more of the other computers at any particular point in time, and wherein the monitoring and changing system includes:

at least one event report generator in each said program of the plurality and whose execution is to be monitored, an event corresponding to the occurrence of a predetermined situation;

an event processing machine included in the server for processing events which are reported by the event report generators in the monitored programs during execution thereof in the computer system, depending on a respective rule base which is included in the event processing machine and associates certain events with predetermined actions, for determining the respective action associated with each reported event, all events occurring in the computer system computers being reportable to the event processing machine in the server;

equipment controlled by the event processing machine and adapted to perform actions determined by the event processing machine

and an interface for transferring information about events reported by the event report generators in the monitored programs to the event processing machine, and for transmitting messages, regarding the respective actions associated with the events and determined by the rule base, from the event processing machine, optionally via and for processing in a further event processing machine of the computer system, to at least one of the group consisting of the respective monitored program of the plurality whose event report generator had reported the associated event and a program of the plurality other than the respective monitored program, an action message to the respective monitored program serving to change the operation of the respective monitored program and correspondingly to change the operation of the computer system, and an action message to the other program serving to start it automatically and correspondingly to change the operation of the computer system.

5,621,664

MONITORING SYSTEM STATUS

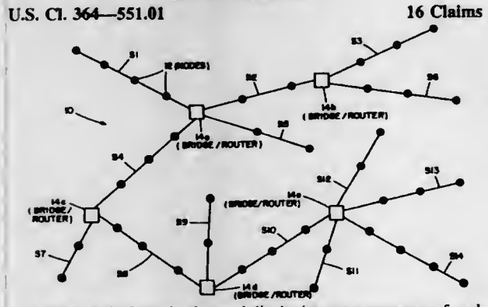
Peter Phaal, Bristol, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 481,196, Jun. 7, 1995. This application Jun. 27, 1996, Ser. No. 673,770

Claims priority, application European Pat. Off., Oct. 22, 1992, 9222282; Apr. 8, 1993, 9307494

Int. Cl.[6] H04B *3/46*

U.S. Cl. 364—551.01 **16 Claims**



1. A method of monitoring and displaying measurements of each of multiple different parameters related to an operational status of a system, comprising the computer implemented steps of:

acquiring multiple measurements of each of said parameters by monitoring the operational status of the system;

for each parameter, selecting one of said multiple measurements in accordance with a predetermined criterion;

creating a graphical display including plural axes, each axis manifesting a scale which is associated with a parameter being measured, each axis identified as to a respective parameter being measured;

indicating on said graphical display for each said measured parameter, said selected one only of said multiple measurements of that parameter on a corresponding axis;

detecting operator identification of a parameter included in said graphical display; and

in response to said operator identification, presenting a second display of additional ones of said measurements of the operator-identified parameter, said second display including said selected one of said multiple measurements of that parameter together with other ones of said multiple measurements of that parameter which were unselected and were omitted from said graphical display.

5,621,665

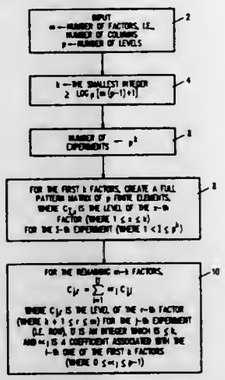
SELECTING LEVELS FOR FACTORS FOR INDUSTRIAL PROCESS EXPERIMENTS

Saki P. Ghosh, San Jose, and Vijendra P. Singh, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 990,876, Dec. 15, 1992, abandoned. This application Aug. 31, 1994, Ser. No. 299,462

Int. Cl.[6] G05B *13/00*

U.S. Cl. 364—552 **36 Claims**



1. A method for optimizing an industrial process comprising the steps of:

operating a digital data processor to build a machine-readable table structure in a memory coupled to the data processor to determine a mininum number of experiments necessary to identify optimal levels for the factors in the industrial process, said table structure comprising an orthogonal array in which each experiment has a combination of levels, including a selected level for each of the factors:

performing the experiments specified by the table structure by running experimental runs of the industrial process, each experimental run being based on one of the plurality of combinations of levels for the factors, to produce a plurality of experimental results; and

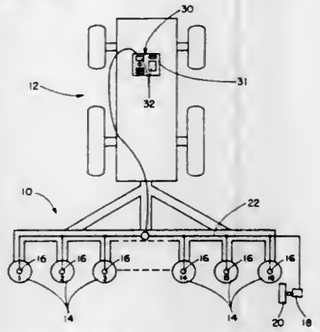
using the experimental results to identify optimal levels for the factors such that the industrial process using the optimal factors produces optimal results.

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5,621,666
PLANTER MONITOR

Donald L. O'Neall, Downs, and Richard T. Borovec, Champaign, both of Ill., assignors to Dynavisions, Inc., Downs, Ill.

Filed Apr. 20, 1995, Ser. No. 425,912
Int. Cl.[6] G01N *15/00*
U.S. Cl. 364—555 **33 Claims**



1. A monitoring apparatus for monitoring a plurality of selectable functions of an agricultural planter, said planter including a plurality of seed sensors each associated with a corresponding seed dispensing unit and each generating a seed signal representative of the depositing of each seed by the associated seed dispensing unit, said monitoring apparatus comprising:

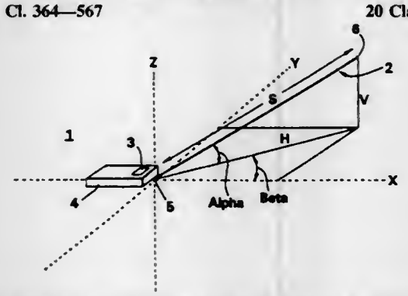
memory means for cumulatively storing population data, said population data including an associated cumulative count of seeds dispensed by each of said dispensing units, and a cumulative count of seeds dispensed by all said dispensing units; and

a microprocessor responsive to receipt of a seed signal from one or more of said seed sensors for asynchronously accumulating and updating said cumulative counts associated with said selected seed sensors, and for asynchronously storing said updated cumulative counts in said memory means, wherein said seed signals are received simultaneously by said microprocessor and are provided to said microprocessor asynchronously relative to an operating speed of said microprocessor.

5,621,667
LIFT TASK ANALYSIS SYSTEM

Thomas R. Waters, Fairfield, Ohio, assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 159,284, Nov. 30, 1993, abandoned. This application Jan. 17, 1996, Ser. No. 590,060
Int. Cl.[6] G01G *19/44*
U.S. Cl. 364—567 **20 Claims**



1. A lift task analysis system arranged to analyze specific lifting tasks, comprising:

(a) motion parameters measuring means, comprising a length of cable retractably stored and having a distal end movable by the hands of a person relative to an origin in a three-dimensional polar coordinate reference frame in correspondence with three-dimensional movements made by the person during a selected lifting task, means for determining physical locations of the distal end of the cable held by the person's hands and generating corresponding outputs in terms of three spherical polar coordinates relative to the origin, a horizontal plane containing the origin and a vertical plane containing the origin;

(b) input means for enabling a user to input selected parameters;

(c) a control processor including

(i) means for determining a recommended weight limit for the selected lifting task based upon said outputs from said physical location determining means and said user-inputted parameters;

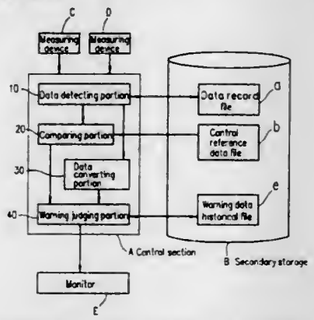
(ii) means for determining a lifting index for the selected lifting task based upon said recommended weight limit and the user-inputted parameters; and

(d) memory means for storing said lifting index and said recommended weight limit.

5,621,668
PREDICTION CONTROL METHOD AND A PREDICTION CONTROL DEVICE

Kazuki Nakata, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 8, 1994, Ser. No. 255,485
Claims priority, application Japan, Jun. 8, 1993, 5-137092
Int. Cl.[6] G04F *13/00*
U.S. Cl. 364—569 **20 Claims**



1. A method for predictively generating a warning information, comprising the steps of:

a) detecting a value of at least one parameter representing a condition of an object to be controlled at a predetermined time interval, and adding the detected value to a history of one of the at least one parameter;

b) preparing at least one first layer, each of the at least one first layer including a graph representing the history of one of the at least one parameter having an axis representing time;

c) preparing at least one second layer, each of the at least one second layer corresponding to one of the at least one first layer and being divided into a plurality of elements each having a data value of 1 or 0, the data value of each of the plurality of elements being determined based on a positional relationship between the graph in each of the at least one first layer and the plurality of elements in each of the at least one second layer;

d) preparing a third layer from the at least one second layer, the third layer being divided into a plurality of elements each having a data value of 1 or 0, the data value of each of the plurality of elements being determined as a logical OR of all of the data values of the corresponding elements of the at least one second layer;

e) preparing a fourth layer from the third layer and a warning layer stored in a storage means, the fourth layer and the warning layer each being divided into a plurality of elements each having a data value of 1 or 0, the data value of each of the plurality of elements being determined as a logical AND of the data values of the corresponding elements of the third layer and the warning layer;

f) judging whether a ratio of the number of elements having a data value of 1 in the fourth layer to the total number of the plurality of elements in the fourth layer exceeds a predetermined value;

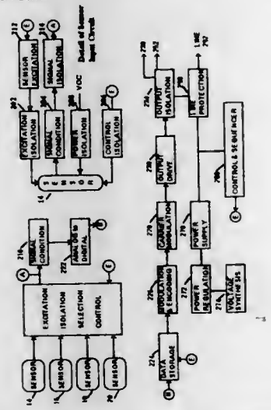
g) storing the data values of the third layer as the data values of the warning layer in the storage means in accordance with a result of the judging in step f); and

h) generating a warning information in accordance with a result of the judging in step f).

5,621,669
MOISTURE SENSOR PROBE AND CONTROL MECHANISM

Eyjolf S. Bjornsson, P.O. Box 512, Placerville, Calif. 95667

Continuation-in-part of Ser. No. 32,159, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 558,424, Jul. 27, 1990, abandoned. This application Feb. 10, 1994, Ser. No. 194,611
Int. Cl.[6] A01G *25/16*
U.S. Cl. 364—571.01 **10 Claims**



1. A sensor system for measuring and controlling a predetermined quantity, comprising:

means for isolatably connecting one or more sensors to said system isolated from one another;

means providing bipolar excitation of said sensors:

means for establishing a desired value of said quantity;

said sensors producing an output signal determining the relation of the quantity to its desired value;

means for transforming an output signal of the sensors into a first digital signal form related to the output signal;

means for transforming the digital signal into a second digital signal for transmission over a path to a remote receiving device;

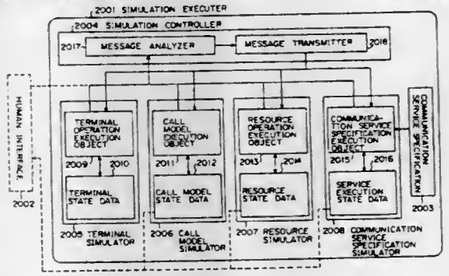
means for responding to receipt of said second digitized signal to produce a correction signal indicative of a correction to be made to return the quality to the desired level,

feedback means employing digitalized correction signals in the format received to actuate means situated for correcting the quantity to the desired value.

5,621,670
COMMUNICATION SERVICE SIMULATOR AND A COMMUNICATION SERVICE SPECIFICATION VERIFYING METHOD

Jun Maeda; Akiko Hiramatsu, and Yasuo Iwami, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1992, Ser. No. 922,877
Claims priority, application Japan, Aug. 1, 1991, 3-193264; Dec. 4, 1991, 3-320268
Int. Cl.[6] H04M *3/24*
U.S. Cl. 364—578 **18 Claims**



1. A communication service simulator for simulating a communication service specification for a communication network having components including terminals and server nodes which control communication between the terminals, comprising:

communication service specification storage means for storing a communication service specification defined by a user, said communication service specification to be verified based on user messages transmitted to and from the user;

communication service specification simulation means for controlling a simulation of operations of the server nodes based on sequential execution of said communication service specification stored in said communication service specification storage means, and for controlling a state of the sequential execution of said communication service specification based on control messages;

terminal simulation means for controlling a simulation of an operation of at least one of the terminals during the sequential execution of said communication service specification based on the control messages, thereby simulating an input and output operation of the terminals;

call model simulation means for performing a simulation of a switching operation and a calling operation of the server nodes during the sequential execution of said communication service specification based on the control messages;

resource simulation means for performing a simulation of an output operation of the server nodes during the sequential execution of said communication service specification based on the control messages;

human interface means for transmitting the user messages to the user and from the user in response to actual operations performed by the user via an operational terminal included among the terminals, during the sequential execution of said communication service specification; and

simulation control means for controlling transmission among said communication service specification simulation means, said terminal simulation means, said call model simulation means, said resource simulation means, and said human interface means based on the control messages and the user messages.

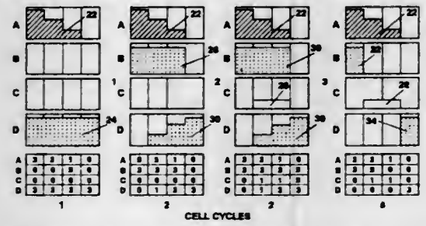
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5,621,671

DIGITAL SIMULATION OF ORGANISMAL GROWTH

John W. Bodnar, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1995, Ser. No. 405,638
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—578 16 Claims



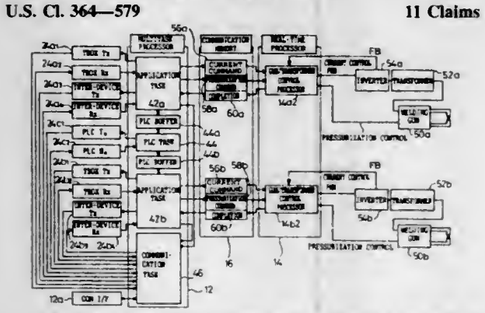
13. A method of depicting growth and development of a biological organism from input data generated in response to said organism undergoing molecular and cellular processes involving gene activation and repression, comprising the steps of: converting said input data into a digital approximation of regulator concentration; processing said digital approximation under simulation transcription rules into a sequence of digital statements corresponding to various degrees of said gene activation and repression; and transforming said sequence of digital statements into a display simulating the growth and development of the biological organism.

5,621,672

MULTITASK CONTROL SYSTEM

Minoru Kobayashi; Toshiaki Nagasawa; Makoto Suzuki, and Shigeo Kobayashi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 222,484, Apr. 4, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,091
Claims priority, application Japan, Apr. 6, 1993, 5-079663
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—579 11 Claims



1. A welding robot control system for controlling a plurality of welding robots, comprising:

a plurality of welding robots each of which is connected to a common signal line;

a multitask processor including a plurality of application task means corresponding to each of said welding robots, said plurality of application task means performing parallel processing on a time-shared basis of a plurality of processes which are to be affected respectively by each of said welding robots;

real-time welding robot processing means for performing operational control and position decisional control of each of the said welding robots;

a communications memory tier transmitting and receiving predetermined instructions and data liar the operational control and the position decisional control between said application task means of said multitask processor and said real-time welding robot processing means; and

inter-task signal communication means for communicating signals including signals related to said welding robots between respective application task means,

wherein said multitask processor and said real-time welding robot processing means are provided as subcomponents of a control system physically separated from each of said welding robots, both multitasking and real-time welding robot processing operations being performed in said control system prior to transmitting corresponding command signals to said welding robots,

wherein the command signals are conveyed between said real-time welding robot processing means and each of said welding robots which are physically separated from the control system.

5,621,673

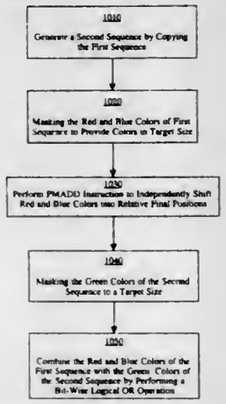
Patent Not Issued For This Number

5,621,674

COMPUTER IMPLEMENTED METHOD FOR COMPRESSING 24 BIT PIXELS TO 16 BIT PIXELS

Patricia Gray, Mesa; Jackie Harrison, Chandler, both of Ariz., and Mike Keith, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 15, 1996, Ser. No. 601,800
Int. Cl.[6] G06F *7/00;15/00*
U.S. Cl. 364—715.02 19 Claims



1. In a computer system a method for compressing bit formats in a first packed data sequence, said method comprising the steps of:

generating, in response to executing a first instruction, a second packed data sequence by copying said first packed data sequence;

masking, in response to executing a second instruction, a portion of said first packed data sequence;

shifting data elements of said first packed data sequence, in response to executing a third instruction, wherein said data elements are independently shifted by separate shift counts;

masking, in response to executing a fourth instruction, a portion of said second packed data sequence;

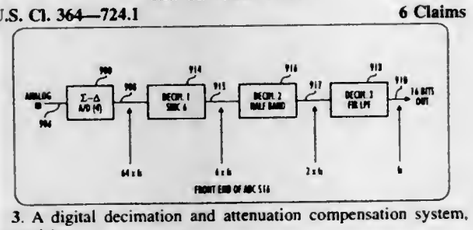
generating, in response to executing a fifth instruction, a final result by joining said second and first packed data sequences.

5,621,675

DIGITAL DECIMATION AND COMPENSATION FILTER SYSTEM

Alfredo R. Linz, and Glen Brown, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Filed Nov. 2, 1994, Ser. No. 333,403
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—724.1 6 Claims



3. A digital decimation and attenuation compensation system, comprising:

a first decimator stage, which decimates by a factor of 16, having an input and an output, wherein said input is connected to a digital signal output from a sigma-delta modulator;

a second decimator stage, which decimates by a factor of two, having an input and an output, wherein said input is connected to the output of said first decimator stage;

a third decimator stage, which decimates by a factor of two, having an input and an output, wherein said input is connected to the output of said second decimator stage and said output provides a multi-bit digital output signal; and

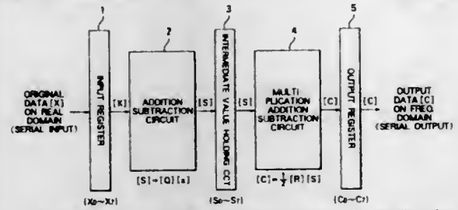
a digital compensation filter, wherein said filter comprises a Nyquist rate FIR compensation filter, having an input and an output, wherein said compensation filter input is connected to said multi-bit digital output signal of said third decimator stage, and wherein said compensation filter increases the amplitude of a signal output from said third decimator stage to compensate for frequency rolloff introduced by said first, second or third decimator stage, and wherein said output of said digital compensation filter provides a multi-bit digital output signal.

5,621,676

DISCRETE COSINE TRANSFORMATION SYSTEM AND INVERSE DISCRETE COSINE TRANSFORMATION SYSTEM, HAVING SIMPLE STRUCTURE AND OPERABLE AT HIGH SPEED

Eiji Iwata, Chiba, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 115,756, Sep. 3, 1993. This application Nov. 9, 1995, Ser. No. 552,497
Claims priority, application Japan, Sep. 17, 1992, 4-273738
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—725 10 Claims



1. A discrete cosine transformation system, for performing a matrix computation successively on at least one constant matrix having factors of +1, −1, and 0, a matrix including irrational numbers defined by the discrete cosine transformation, and a matrix of input data,

said system comprising:

at least one addition and subtraction means for performing addition and subtraction resulting in an inner product of said constant matrix and said matrix of input data;

a multiplication and addition means for performing multiplication and addition resulting in an inner product of said matrix including irrational numbers and said inner product of said constant matrix and said matrix of input data; and

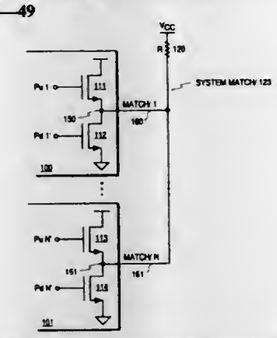
means for communicating said inner product of said constant matrix and said matrix of input data from said at least one addition and subtraction means to said multiplication and addition means.

5,621,677

METHOD AND APPARATUS FOR PRECHARGING MATCH OUTPUT IN A CASCADED CONTENT ADDRESSABLE MEMORY SYSTEM

Christopher W. Jones, Pleasanton, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Apr. 29, 1994, Ser. No. 235,663
Int. Cl.[6] G11C *15/04*
U.S. Cl. 365—49 19 Claims



9. A cascaded Content Addressable Memory (CAM) system comprising:

a plurality of CAMs;

each of said CAMs having a corresponding match output circuit for generating a match output on a match line, each of said match output circuits being coupled to a corresponding one of said match lines;

each of said match output circuits having a precharge circuit and a pull-down circuit coupled to a corresponding one of said match lines;

a system match line being coupled to each of said match lines; and

a load being coupled to said system match line, said load for coupling to a power supply voltage,

wherein each of said pre-charge circuits pre-charges said system match line before said match output circuits receive a new match signal, and

wherein said system match line is tri-stated after each of said pre-charge circuits pre-charge said system match line and before said match output circuits receive said new match signal.

5,621,678

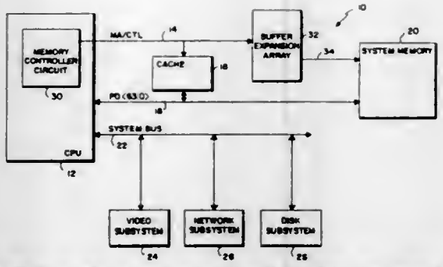
PROGRAMMABLE MEMORY CONTROLLER FOR POWER AND NOISE REDUCTION

Michael J. Barnaby, West Boylston, and James W. Brissette, Worcester, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 13, 1995, Ser. No. 422,237
Int. Cl.[6] G11C *5/02*
U.S. Cl. 365—52 31 Claims

1. An apparatus for providing signals to a Single In-Line Memory Module (SIMM) connector, the connector for accepting a SIMM having dynamic random access memories(DRAMs)

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mounted on one or two sides thereof, wherein the connector provides a channel of signals for each side of the SIMM, comprising:

a memory controller circuit producing memory address and control signals;

drivers each associated with one of the channels, each driver accepting as input one of the memory address and control signals, each driver driving as output a buffered memory signal to the associated channel via a corresponding signal line when that driver is in an enabled state and placing the corresponding signal line in a high impedance state when that driver is in a disabled state;

means coupled to the memory controller circuit for determining whether a SIMM is present in the connector; and

programmable disabling means coupled to the memory controller circuit and being programmed according to memory address and control signals received from the memory controller circuit so as to place the drivers associated with the channels of the connector in the disabled state in response to a determination by the means for determining that no SIMM is present in the connector.

5,621,679

SEMICONDUCTOR MEMORY DEVICE FOR ACHIEVING HIGH BANDWIDTH AND METHOD FOR ARRANGING SIGNAL LINES THEREFOR

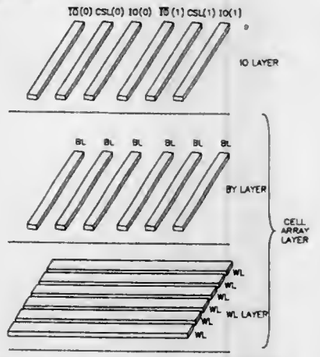
Dong-Il Seo, Suwon, and Se-Jin Jeong, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 22, 1995, Ser. No. 445,784

Claims priority, application Rep. of Korea, May 20, 1994, 11050/1994

Int. Cl.[6] G11C *5/06*

U.S. Cl. 365—63 **8 Claims**



1. A semiconductor memory device comprising:

an array comprised of a plurality of memory cells;

a plurality of word lines extending in a first direction of a chip;

a plurality of bit line pairs extending in a second direction perpendicular to said first direction, each of said plurality of bit line pairs comprised of a bit line and a complementary bit line;

a plurality of data I/O line pairs arranged above said array and extending in said second direction, each of said plurality of data I/O line pairs comprised of a data I/O line and a complementary data I/O line and capable of being respectively connected to each of said bit line pairs, and

a plurality of column selection lines arranged in said second direction and adjacent to respective ones of said plurality of said data I/O line pairs, for operably connecting each of said plurality of bit line pairs to said respective ones of said plurality of data I/O line pairs.

5,621,680

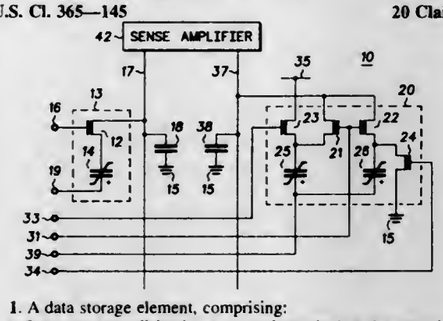
DATA STORAGE ELEMENT AND METHOD FOR READING DATA THEREFROM

David A. Newman, Tempe, and Ziye Zhou, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1996, Ser. No. 617,724

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—145 **20 Claims**



1. A data storage element, comprising:

a first memory cell having a control terminal, a data terminal, and a cell plate terminal, wherein the control terminal is coupled for receiving a first memory control signal, the data terminal is coupled for transmitting a data signal, and the cell plate terminal is coupled for receiving a first extraction signal; and

a first reference which comprises:

a first reference capacitor with polarization retention having a first electrode and a second electrode, the first electrode coupled for receiving a second extraction signal;

a first switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the control electrode is coupled for receiving a first reset signal, the first current conducting electrode is coupled to the second electrode of the first reference capacitor, and the second current conducting electrode is coupled to a first voltage supply conductor;

a second switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the control electrode is coupled for receiving a first reference control signal, the first current conducting electrode is coupled to the second electrode of the first reference capacitor, and the second current conducting electrode is coupled for transmitting a reference signal;

a second reference capacitor with polarization retention having a first electrode and a second electrode, the first electrode coupled for receiving the second extraction signal;

a third switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the control electrode is coupled for receiving a second reset signal, the first current conducting electrode is coupled to the second electrode of the second reference capacitor, and the second current conducting electrode is coupled to a second voltage supply conductor; and

a fourth switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the control electrode is coupled to the control electrode of the second switch, the first current conducting electrode is coupled to the second electrode of the second reference capacitor, and the second current conducting electrode is coupled to the second current conducting electrode of the second switch.

5,621,681

DEVICE AND MANUFACTURING METHOD FOR A FERROELECTRIC MEMORY

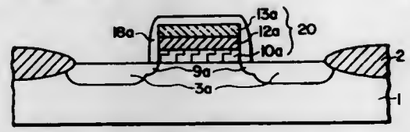
Jong Moon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 22, 1996, Ser. No. 620,209

Claims priority, application Rep. of Korea, Mar. 22, 1995, 95-6108

Int. Cl.[6] H01L *27/108*

U.S. Cl. 365—145 **7 Claims**



1. A ferroelectric memory device comprising:

a semiconductor substrate of a first conductive type;

a yttrium oxide (Y_2O_3) gate film formed over the semiconductor substrate;

a ferroelectric gate film formed over the yttrium oxide film;

a gate electrode formed over the ferroelectric film; and

a source/drain region of a second conductive type different from the first conductive type, formed in said semiconductor substrate along sides of the gate electrode.

5,621,682

MEMORY SYSTEM

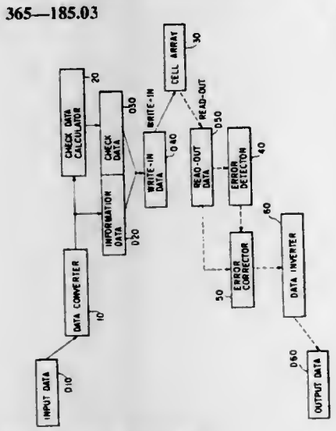
Toru Tanzawa, Ebina, and Tomoharu Tanaka, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 364,997

Claims priority, application Japan, Dec. 28, 1993, 5-354152; Dec. 27, 1994, 6-326344

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.03 **41 Claims**



1. A memory system comprising:

storing means having a plurality of memory elements each of which stores one of n-value storage states corresponding to data "0", "1", . . . , "n−1". said storing means including a plurality of information memory elements for storing n-value information data and a plurality of check memory elements for storing check data;

converting means for respectively converting the information data and the check data stored in said plurality of memory elements into binary codes having a plurality of bits each constituted by 0 or 1, the binary codes corresponding to the information data and the check data; and

detecting/correcting means for detecting and correcting an error on the basis of said binary codes corresponding to the check data and the information data.

5,621,683

SEMICONDUCTOR MEMORY WITH NON-VOLATILE MEMORY TRANSISTOR

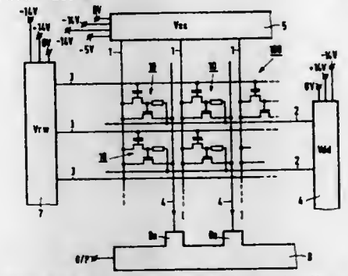
Nigel D. Young, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,250

Claims priority, application United Kingdom, Dec. 6, 1994, 9424598

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.05 **10 Claims**



1. A semiconductor memory comprising a plurality of memory cells each including a load driven by a non-volatile memory transistor, the memory transistor having a conduction channel which is conductive in a first memory state of the memory transistor and which is less conductive in a second memory state of the memory transistor so as to provide a difference in signal at a node between the memory transistor and the load, characterized in that each cell further comprises a switch having a control electrode coupled to the node and switched from one output state to another by the signal at the node, and in that the output state of the switch provides an output signal from the cell.

5,621,684

NONVOLATILE SEMICONDUCTOR MEMBER WITH DIFFERENT PASS POTENTIAL APPLIED TO THE FIRST TWO ADJACENT WORD

Tae-Sung Jung, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 29, 1996, Ser. No. 623,793

Claims priority, application Rep. of Korea, Mar. 31, 1995, 7532/1995

Int. Cl.[6] G11C *16/06*

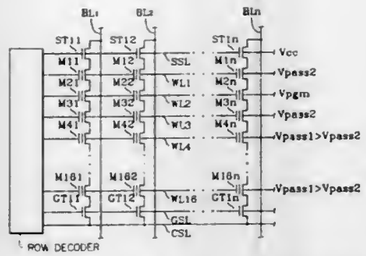
U.S. Cl. 365—185.17 **20 Claims**

1. A nonvolatile semiconductor memory comprising:

a plurality of cell units each having a plurality of series-connected memory transistors, each of said memory transistors having a source, a drain, a floating gate and a control gate; and

a decoder coupled to said control gates of said memory transistors, said decoder selecting at least one of said cell units and one of said memory transistors within said selected cell unit

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for programming said cell unit with data corresponding to erased data, said decoder providing a programming potential to said control gate of said selected memory transistor and rendering nonconductive first and second adjacent memory transistors respectively coupled to said drain and said source of said selected memory transistor, said drain and said source of said selected memory transistor being charged to a local boost potential so that said selected memory transistor maintains a threshold voltage corresponding to said erased data.

5,621,685

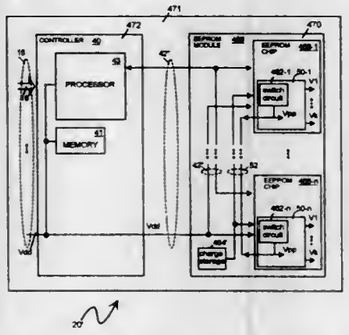
PROGRAMMABLE POWER GENERATION CIRCUIT FOR FLASH EEPROM MEMORY SYSTEMS

Raul-Adrian Cernea, Cupertino; Douglas J. Lee, San Jose; Mehrdad Mofidi, Fremont, and Sanjay Mehrotra, Milpitas, all of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Division of Ser. No. 325,774, Oct. 17, 1994, Pat. No. 5,508,971. This application Jun. 7, 1995, Ser. No. 484,991

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.18 **6 Claims**



1. In a flash EEPROM memory system including at least one flash EEPROM chip, a charge pump circuit comprising:

charge storage means externally coupled to said at least one flash EEPROM chip; and

a plurality of transistors formed on said at least one flash EEPROM chip and coupled to said charge storage means such that said plurality of transistors and said charge storage means cooperate to generate from an input voltage, an output voltage greater than said input voltage.

5,621,686

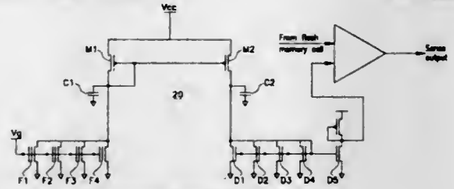
MULTIPLY AND DIVIDE CURRENT MIRROR

Ranjeet Alexis, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 7, 1995, Ser. No. 480,797

Int. Cl.[6] G11C *7/02*

U.S. Cl. 365—185.21 **20 Claims**



1. A current mirroring circuit comprising:

a first field effect transistor device,

a second field effect transistor device,

the first and second transistor devices being connected to provide current mirroring,

a first plurality of identical field effect transistor devices connected in parallel to provide current for the first field effect transistor device, the current through the first field effect transistor device being the sum of identical currents through each of the individual ones of the first plurality of identical field effect transistor devices,

a second plurality of identical field effect transistor devices connected in parallel to divide current from the second field effect transistor device, the current through the second field effect transistor device being the sum of identical currents through each of the individual ones of the second plurality of identical field effect transistor devices, and

an output field effect transistor device being connected to mirror the current through any one of the second plurality of field effect transistor devices.

5,621,687

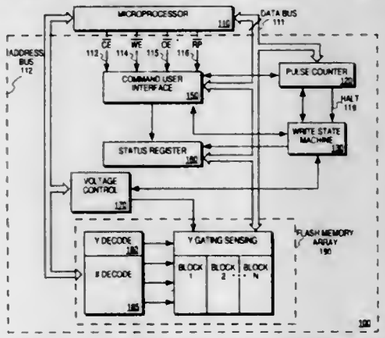
PROGRAMMABLE ERASURE AND PROGRAMMING TIME FOR A FLASH MEMORY

Edward M. Doller, El Dorado Hills, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 31, 1995, Ser. No. 456,908

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.29 **12 Claims**



1. A method of programming and erasing a nonvolatile memory array of a memory device, the method comprising the steps of:

(a) determining a user-defined first value representing a predetermined number of times an operation is to be reinitiated on the nonvolatile memory array;

(b) setting a pulse counter value to an initial value;

(c) initiating the operation on the nonvolatile memory array and incrementally changing the pulse counter value, wherein the operation is a program operation or an erase operation performed by a write state machine of the memory device;

(d) verifying the nonvolatile memory array to determine if the operation was successful;

(e) repeating steps (b) and (c) if the operation was not successful until the pulse counter value is equal to the predetermined number of times.

5,621,688

Patent Not Issued For This Number

5,621,689

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING CONTROLLED CHARGE PUMP LOAD

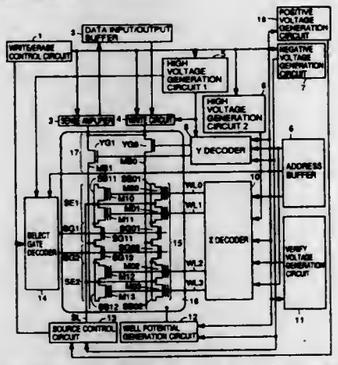
Kiyohiko Sakakibara, and Natsuo Ajika, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 457,708

Claims priority, application Japan, Aug. 26, 1994, 6-201880

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **14 Claims**



1. A nonvolatile semiconductor memory device comprising:

a semiconductor substrate including a main surface,

a well region formed in the main surface of the semiconductor substrate,

a memory transistor formed on said well region for storing data,

a charge pump connected to a drain region of said memory transistor for generating a predetermined voltage applied to said memory transistor during data writing/erasing, and

charge pump load control means connected to a source region of said memory transistor for suppressing charge pump load variation.

5,621,690

NONVOLATILE MEMORY BLOCKING ARCHITECTURE AND REDUNDANCY

Owen W. Jungroth, Sonora, and Mark D. Winston, El Dorado Hills, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 28, 1995, Ser. No. 430,344

Int. Cl.[6] G11C *7/00;29/00*

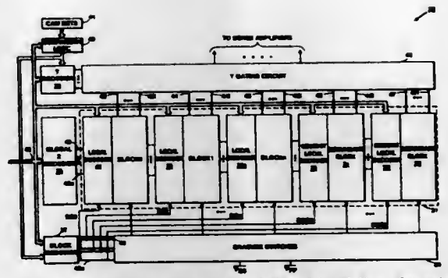
U.S. Cl. 365—200 **17 Claims**

1. A nonvolatile memory, comprising:

(A) a global line;

(B) a plurality of memory blocks and a redundant block, each comprising

(i) a plurality of local lines;



(ii) a decoder coupled to the global and local lines for selectively coupling the global line to one of the local lines in accordance with an address information when the decoder is enabled and for isolating the local lines from the global line when the decoder is disabled such that when one of the memory blocks is a defective block, the defective block does not affect the global line and can be replaced by the redundant block;

(C) circuitry for disabling the decoder of the defective block and enabling the decoder of the redundant block only when the defective block is addressed.

5,621,691

COLUMN REDUNDANCY CIRCUIT AND METHOD OF SEMICONDUCTOR MEMORY DEVICE

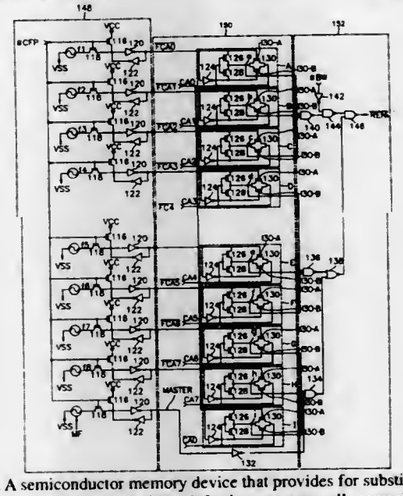
Churoo Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 24, 1995, Ser. No. 518,863

Claims priority, application Rep. of Korea, Aug. 25, 1994, 1994-21091

Int. Cl.[6] G11C *7/00;8/00;17/00*

U.S. Cl. 365—200 **15 Claims**



1. A semiconductor memory device that provides for substituting a normal memory cell with a defective memory cell, comprising:

a column redundancy circuit including a program circuit that programs and stores a plurality of repair column address in a register, a comparison circuit that compares said repair column address stored in said register with a column address externally input, a decoder that operates to decode said repair column address and obtain decoded signals, and a redundancy column select circuit that operates in a block select mode to generate a column redundancy enable signal corresponding to data input from a data input buffer and said decoded signals.

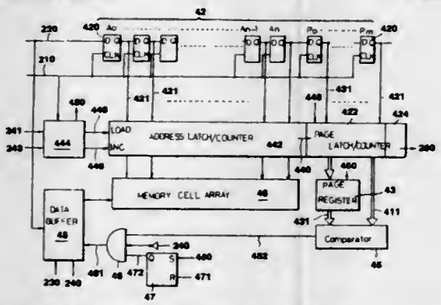
VOL 1197 ISS 3 AP 15 1997 UMI

5,621,692

MEMORY DEVICE WITH PAGE SELECT CAPABILITY

James J. Y. Lin, Hsinchu, Taiwan, assignor to Winbond Electronics Corporation, Taiwan

Division of Ser. No. 248,520, May 24, 1994, Pat. No. 5,485,428. This application Aug. 18, 1995, Ser. No. 516,611
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—221 **9 Claims**



1. A serial access memory system, comprising:

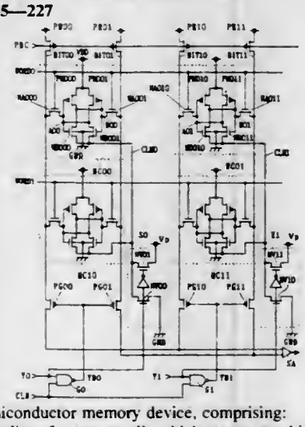
a plurality of serial access memory devices, each of the plurality of serial access memory devices being coupled to each other in cascade to form the serial access memory system, the plurality of serial access memory devices having a first and a last serial access memory device, each of the plurality of serial access memory devices having a memory cell array which has a plurality of address locations, having an EOM terminal for sending an End of Memory signal when a last location of the memory cell array is accessed and having an access control input, the EOM terminal of each, except the last serial access memory device, of the plurality of serial access memory devices being coupled to the access control input of the other serial access memory in cascade to form the serial access memory system.

5,621,693

SEMICONDUCTOR MEMORY DEVICE

Yasunobu Nakase, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,147
Claims priority, application Japan, Oct. 24, 1995, 7-275245
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—227 **17 Claims**



1. A semiconductor memory device, comprising:

(a) a plurality of memory cells which are arranged in a matrix of rows and columns, each of said rows to which each said plurality of memory cells belongs being determined when one of a plurality of word lines is selected, each of said plurality of columns to which each said memory cells belongs being determined when one of a plurality of bit line pairs is selected in response to original column select signals which are activated mutually exclusively from each other, each of said memory cells comprising:

(a-1) a first information holding node and a second information holding node which receive mutually exclusive logic;

(a-2) a power source input terminal;

(a-3) a first switch which makes a condition between a first bit line of said one of said bit line pairs and said first information holding node conductive or non-conductive in accordance with whether said one of said plurality of word lines which corresponds to said each of said rows to which each said memory cells belongs is selected or not selected;

(a-4) a second switch which makes a condition between a second bit line of said one of said bit line pairs and said second information holding node conductive or non-conductive in accordance with whether said one of said plurality of word lines is selected or not selected;

(a-5) a first load having one end which is connected to said second information holding node and the another end for receiving a first potential;

(a-6) a second load having one end which is connected to said first information holding node and the another end for receiving said first potential;

(a-7) a first drive transistor having a gate connected to said first information holding node, a drain connected to said second information holding node, and a source connected to said power source input terminal; and

(a-8) a second drive transistor having a gate connected to said second information holding node, a drain connected to said first information holding node, and a source connected to said power source input terminal;

(b) power save circuits which are disposed to correspond to said columns, respectively, each comprising:

(b-1) an input terminal for receiving an associated one of said original column select signals which corresponds to an associated one of said columns; and

(b-2) an output terminal for outputting a second potential, which is different from said first potential, to said power source input terminal of every one of said memory cells which belong to said associated one of said columns, when said associated one of said original column select signals is active, said output terminal outputting a third potential, which is between said first and said second potentials, to said power source input terminal of every one of said memory cells which belong to said associated one of said columns, when said associated one of said original column select signals is not active;

(c) a sense amplifier; and

(d) bit line connecting means which are disposed to correspond to said columns, respectively, each receiving said associated one of said original column select signals which corresponds to said associated one of said columns and a clock signal and connecting said sense amplifier to said one of said bit line pairs only when the associated original column select signal and the clock signal are both active,

wherein said bit line pairs are precharged to said first potential when said first and said second switches are non-conductive.

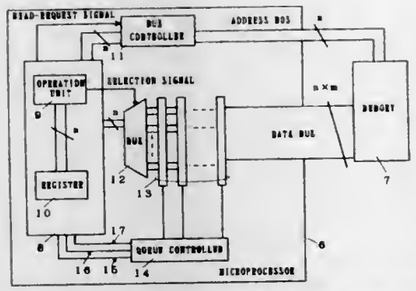
5,621,694

SEMICONDUCTOR INTEGRATED DEVICE WITH AN IMPROVED PERFORMANCE

Mamoru Sakugawa; Takeshi Hashizume, and Kazuhiro Sakashita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1995, Ser. No. 550,809
Claims priority, application Japan, Dec. 28, 1994, 6-327596
Int. Cl.[6] G11C 7/00;8/00; G06G 9/30
U.S. Cl. 365—230.02 **25 Claims**

1. A semiconductor integrated circuit, comprising:



a core for processing first data in units of n bits (n is an integer more than 1);

at least one queue of (n×m)-bit width (m>1), for receiving second data having a bit width of (n×m) bits or less from an external memory and storing said second data therein; and

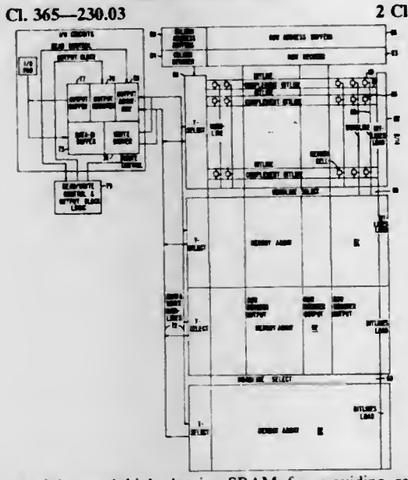
a multiplexer for receiving said second data from said at least one queue and selectively outputting n bits out of said second data to said core as said first data.

5,621,695

SRAM WITH SIMPLIFIED ARCHITECTURE FOR USE WITH PIPELINED DATA

Thinh D. Tran, Milpitas, Calif., assignor to Galvantech, Inc., Milpitas, Calif.

Filed Jul. 17, 1995, Ser. No. 502,974
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.03 **2 Claims**



1. A high speed high density SRAM for providing random access to stored data in a pipelined read data mode of operation, said SRAM comprising:

row, column and block address circuitry for receiving pipelined row, column and block address information during a pipelined read operation;

a plurality of memory arrays each having a plurality of memory cells and a plurality of word lines and bit lines coupled to individual ones of said memory cells, the total capacity of said plurality of memory arrays being at least 256K bits;

a plurality of block word line select logic circuits each associated to a different one of said plurality of arrays of memory cells and coupled to said row and block address circuitry for selecting individual ones of said word lines in response to receipt of row and block address information;

a plurality of column select logic circuits each associated to a different one of said plurality of arrays of memory cells and coupled to said column and block address circuitry for selecting individual ones of said bit lines in response to receipt of column and block address information;

data input/output circuitry for manifesting in pipelined form data read from individual memory cells specified by said row, column and block address information; and

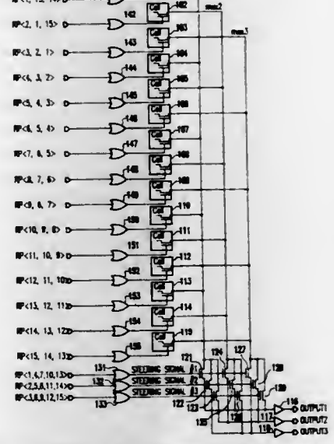
a plurality of data lines coupled between said input/output circuitry and said plurality of memory arrays, said SRAM being devoid of secondary sense amplifiers and secondary write drivers whereby data is read directly from said plurality of memory arrays in pipelined mode, said data input/output circuitry including a plurality of read/write interface circuits, each interface circuit including a data input buffer, a data output buffer, a data input write driver coupled to said data input buffer and coupled directly to selected ones of the memory cells in a memory array selected during a write operation, a sense amplifier coupled directly to selected ones of the memory cells during a read operation, and an output register coupled between said sense amplifier and said data output buffer.

5,621,696

VIRTUAL MULTIPLE-READ PORT MEMORY ARRAY

Sang H. Dhong, Austin, Tex., and Joseph J. Nocera, Jr., Pleasant Valley, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 26, 1996, Ser. No. 626,613
Int. Cl.[6] G11C 8/02
U.S. Cl. 365—230.05 **3 Claims**



1. A virtual multiple-read port memory array comprising:

an array of single-read port memory cells;

a plurality of output drivers for the array;

steering means located between a column of cells and the output drivers for the array for directing outputs of selected rows to corresponding ones of the output drivers, said steering means being controlled by read pointers such that a steering signal for a given output driver configuration is active only when read pointers for that output driver configuration are active, said read pointers representing a decoded read address and only one read pointer is active at a time; and

a plurality of OR gates, one per row, receiving predetermined combinations of read pointers so that a given pointer will activate the read port of a plurality of consecutive memory cells.

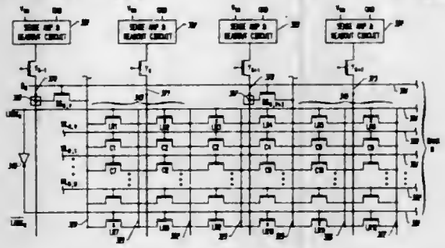
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5,621,697

HIGH DENSITY INTEGRATED CIRCUIT WITH BANK SELECT STRUCTURE

Wu-An Weng, Hsinchu, and Yaou-Dong Wang, Taipei, both of Taiwan, assignors to Macronix International Co., Ltd., Taiwan

Filed Jun. 23, 1995, Ser. No. 493,553
Int. Cl.[6] G11C *5/06*
U.S. Cl. 365—230.06 **31 Claims**



1. An integrated circuit formed on a substrate, comprising: a plurality of banks BK_N of memory cells arranged in rows and columns, each bank BK_N including,

a plurality of interbank bitlines in the substrate, adjacent ones of said plurality of interbank bitlines separated by at least two memory cell columns, and each interbank bitline extending into one of a bank BK_{N-1} immediately above and a bank BK_{N+1} immediately below bank BK_N;

an intrabank bitline substantially parallel with and between said adjacent ones of the plurality of interbank bitlines and connecting said at least two of the memory cell columns in bank BK_N;

a plurality of wordlines substantially perpendicular to the plurality of interbank bitlines; and

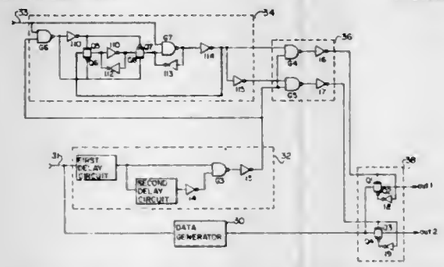
a plurality of column select lines for accessing either one of said at least two memory cell columns, each column select line coupled to a one of said plurality of interbank bitlines.

5,621,698

DATA SIGNAL DISTRIBUTION CIRCUIT FOR SYNCHRONOUS MEMORY DEVICE

Jae J. Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 580,164
Claims priority, application Rep. of Korea, Dec. 31, 1994, 94-40590
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 **5 Claims**



1. In a synchronous memory device comprising a data generation source for generating successive data signals in response to an external clock signal, a data signal distribution circuit comprising:

delay means for delaying the external clock signal by a propagation delay time of said data generation source;

data conversion means for converting the data signals from said data generation source into true and complementary data signals in response to the delayed external clock signal from said delay means;

at least two true switching means for transferring the true data signal from said data conversion means to peripheral circuits connected to at least two true output lines;

at least two complementary switching means for transferring the complementary data signal from said data conversion means to peripheral circuits connected to at least two complementary output lines;

logic combination means for logically combining the true and complementary data signals from said data conversion means to generate a data clock signal; and

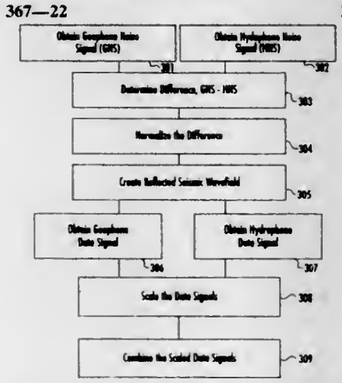
internal address generation means for generating an internal address signal in response to the data clock signal from said logic combination means and supplying the generated internal address signal to said true and complementary switching means, said internal address signal having at least two bits, only one of which has a predetermined logic level.

5,621,699

APPARATUS AND METHOD OF CALIBRATING VERTICAL PARTICLE VELOCITY DETECTOR AND PRESSURE DETECTOR IN A SEA-FLOOR CABLE WITH IN-SITU PASSIVE MONITORING

Timothy B. Rigsby, Fulshear, and Joe I. Sanders, Sugarland, both of Tex., assignors to PGS Ocean Bottom Seismic, Inc., Houston, Tex.

Filed Jul. 7, 1995, Ser. No. 499,764
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—22 **20 Claims**



1. A method of processing data from a co-located hydrophone-geophone pair of seismic receivers, the method comprising:

obtaining a geophone noise signal that represents ambient noise for the geophone;

obtaining a hydrophone noise signal that represents ambient noise for the hydrophone;

generating a normalized relative noise signal that is the normalized difference between the geophone noise signal and the hydrophone noise signal; and

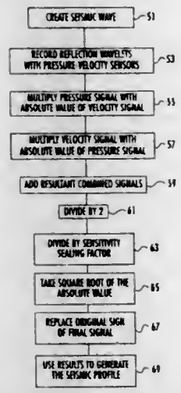
adjusting the relative amplitude between the data from the hydrophone and the data from the geophone by a function dependant upon the normalized relative noise signal.

5,621,700

METHOD FOR ATTENUATION OF REVERBERATIONS USING A PRESSURE-VELOCITY BOTTOM CABLE

Nicolae Moldoveanu, Houston, Tex., assignor to Schlumberger Technology Corporation, Geco-Prakla Div., Houston, Tex.

Filed May 20, 1996, Ser. No. 650,325
Int. Cl.[6] G01V *1/28; 1/38*
U.S. Cl. 367—24 **13 Claims**



1. A method of generating a seismic profile using an ocean bottom cable having at least one sensor pair comprising a pressure sensor and a velocity sensor, comprising:

generating a seismic wave for reflection from earth strata;

collecting pressure data with the pressure sensor and velocity data with the velocity sensor;

multiplying the pressure data with the absolute value of the velocity data to produce a first result;

multiplying the velocity data with the absolute value of the pressure data to produce a second result;

summing the first result and the second result to create a third result;

dividing the third result by a factor of 2 to obtain a fourth result;

dividing the fourth result by a sensitivity scaling factor;

recording a positive/negative sign for the fourth result;

taking the square root of the absolute value of the fourth result to produce a fifth result;

replacing the positive/negative sign of the fourth result into the fifth result to produce a sixth result; and

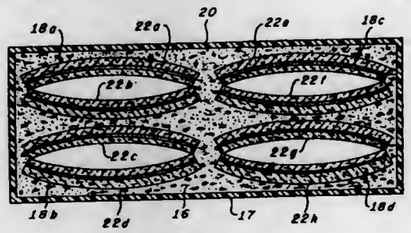
incorporating the sixth result into the seismic profile.

5,621,701

CONTROLLED COMPLIANCE ACOUSTIC BAFFLE

Alfred Denaro, Commack; Thomas J. Bertram, Garden City Park, and John D. Lea, Huntington, all of N.Y., assignors to Lockheed Martin Tactical Systems, Inc., Bethesda, Md.

Filed Aug. 10, 1989, Ser. No. 391,901
Int. Cl.[6] H04R *23/00*
U.S. Cl. 367—151 **10 Claims**



1. A compliant acoustic baffle for reflecting sound waves in a liquid medium, comprising:

a fluid impermeable enclosure of a first compressible medium and defining a first planar baffle face,

an assembly of lenticular-shaped resilient members within said enclosure and disposed in parallel with said baffle face for controlling the compliance of said acoustic baffle by symmetrically and proportionately deflecting in response to hydrostatic pressure loading from said liquid medium,

said lenticular-shaped resilient members embedded within a second compressible medium for providing compliance at a first operating pressure, said members having a predetermined compliance such that a maximum deflection is achieved at a second operating pressure,

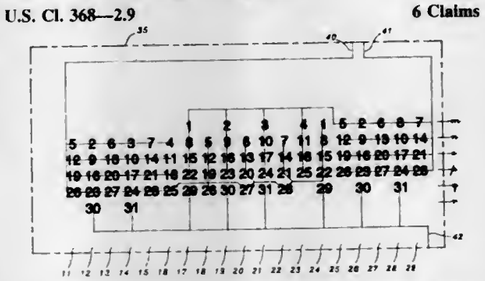
wherein said resilient members are comprised of complementary first and second resilient members having opposing convex faces and first and second ends circumferentially disposed therefrom, and disposed to provide said lenticular shape, each of said members comprised of a pair of first and second resilient elements with a viscoelastic damping layer bonded therebetween, so that upon response to hydrostatic pressure said elements are caused to flatten in proportion to said pressure until at said predetermined maximum pressure said first and second members are in contact at points intermediate said faces, said viscoelastic layer providing resonant damping over a predetermined range of operating frequencies.

5,621,702

ELECTRONIC CALENDAR DISPLAY DEVICE

Ronald S. Lizzi, West Hartford, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Dec. 5, 1994, Ser. No. 349,298
Int. Cl.[6] G04B *19/24*
U.S. Cl. 368—2.9 **6 Claims**



1. An improved perpetual calendar display device of the type including first and second spaced and opposed patterns of electrodes having overlapped portions, and a liquid crystal material sandwiched between the electrode patterns, wherein the improvement comprises:

the overlapped portions of the opposed patterns of electrodes forming at least five rows and at least nineteen columns of numerals, the numerals commencing with numeral "1" consecutively increasing by one in alternating columns of each row such that at least three rows commencing with the second row have two sets of consecutive numerals interleaved among the columns; and

circuit means for selecting and driving the electrodes for display or non-display, the circuit means being adapted to select at least four consecutive rows, and to select alternating columns for driving to display calendar months, the leftmost column of the displayed month being the same preselected day of the week regardless of which calendar month is displayed.

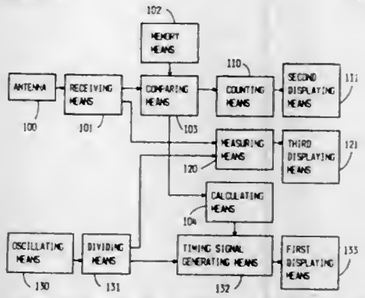
VOL 1197 ISS 3 APR 15 1997 UMI

5,621,703

RADIO WAVE-CORRECTED TIMEPIECE

Toshiya Kanesaka, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Nov. 30, 1994, Ser. No. 346,900
Claims priority, application Japan, Dec. 1, 1993, 5-301807
Int. Cl.[6] G04C *11/02*
U.S. Cl. 368—47 **18 Claims**



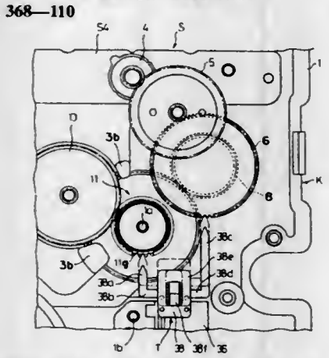
1. A radio wave-corrected timepiece comprising: oscillating means for generating a periodic signal; dividing means for producing an output having a frequency that is a submultiple of a frequency of an output from the oscillating means; timing signal generating means for receiving the output from the dividing means and counting time; first displaying means for displaying the time counted by the timing signal generating means; an antenna for receiving radio waves containing encoded time data; receiving means for receiving an output from the antenna and producing a pulse train containing the encoded time data; a memory for storing rules of the encoded time data; comparing means for comparing an output signal from the receiving means with an output from the memory; counting means for counting an output of the comparing means; second displaying means for displaying information representative of the count performed by the counting means; and calculating means for receiving an output from the comparing means and providing an output capable of correcting the time counted by the timing signal generating means.

5,621,704

TIMEPIECE MOVEMENT WITH A SECOND STOP DEVICE

Koji Baba, and Katsuhiro Hatano, both of Tokyo, Japan, assignors to Seiko Clock Inc., Japan

Filed Oct. 25, 1995, Ser. No. 548,021
Claims priority, application Japan, Oct. 25, 1994, 6-260769; Sep. 27, 1995, 7-249296
Int. Cl.[6] G04B *11/00*
U.S. Cl. 368—110 **23 Claims**



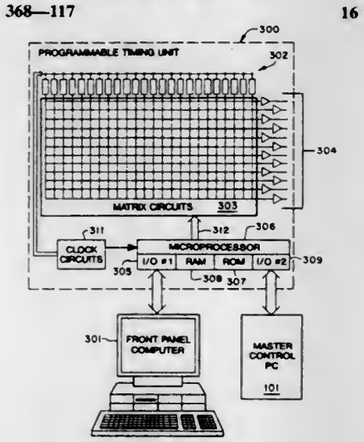
1. A timepiece movement comprising: a first gear; intermittent rotating means for intermittently rotating the first gear; a second gear; first transmitting means for transmitting the intermittent rotation of the first gear to the second gear; a third gear; second transmitting means for transmitting the rotation of the second gear to the third gear; third transmitting means for transmitting the rotation of the third gear to a second hand wheel; means for absorbing a velocity variation due to the intermittent rotation of the third gear to thereby transmit a smooth and continuous rotary movement to the second hand wheel; and stop means for simultaneously stopping rotation of the first gear and the third gear when the stop means is in a first state, the first gear and the third gear being simultaneously allowed to rotate at respective predetermined velocities thereof when the stop means is in a second state.

5,621,705

PROGRAMMABLE TIMING UNIT FOR GENERATING MULTIPLE COHERENT TIMING SIGNALS

Richard W. Quine, Denver, Colo., assignor to Colorado Seminary, Denver, Colo.

Filed May 2, 1994, Ser. No. 236,643
Int. Cl.[6] G04F *8/00*
U.S. Cl. 368—117 **16 Claims**



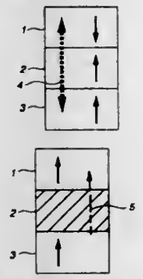
1. A programmable timing unit comprising:
a plurality of event marker circuits, each event marker circuit having:
1) a clock port for receiving a clock signal,
2) means coupled to the clock port for detecting a predetermined time period from the clock signal, and
3) an output for providing an event signal when the predetermined time occurs;
a plurality of function circuits, each function circuit having a trigger input for receiving the event signal; and
means for programmably connecting each of the function circuits to the output of at least one of the number of event marker circuits.

5,621,706

METHOD AND APPARATUS FOR MAGNETIC SUPER-RESOLUTION RECORDING

Toshifumi Kawano, and Hidetaka Ito, both of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 343,007
Claims priority, application Japan, Nov. 24, 1993, 5-293549; Mar. 24, 1994, 6-053525; Mar. 24, 1994, 6-053526; Mar. 24, 1994, 6-053527
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 **27 Claims**



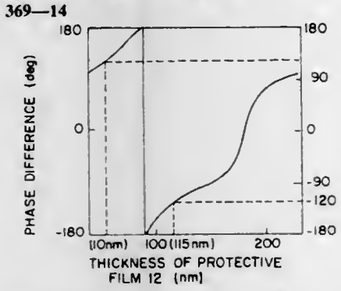
1. A magneto-optical recording medium comprising a substrate and a magnetic layer comprising at least a readout layer, a cut-off layer and a memory layer disposed on said substrate in that order, wherein
said magnetic layer has the property that when said magnetic layer is heated by irradiation from a readout beam, for readout of information without applying any readout magnetic field, a sub-lattice magnetization direction, of said readout layer in said magnetic layer at a high-temperature region, is reversed, relative to the magnetization direction at a pre-irradiation temperature of said region, and
when the temperature of said magnetic layer declines after passage of the readout beam, the sub-lattice magnetization direction which existed at said pre-irradiation temperature is restored.

5,621,707

METHOD FOR ERASING REWRITABLE OPTICAL DISK USING TWO LASER BEAMS AND AN ERASINGSPACEHEAD THEREFOR

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,160
Claims priority, application Japan, Nov. 16, 1994, 6-282046; Dec. 28, 1994, 6-328880
Int. Cl.[6] G11B *13/00*
U.S. Cl. 369—14 **5 Claims**



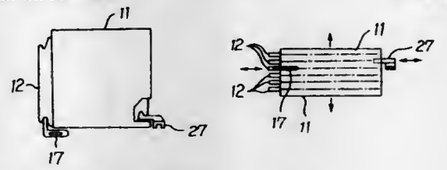
1. A data reproducing method for a phase difference optical disk apparatus which comprises an erasable optical disk of a phase change medium, and optical heads of a recording head, a reproducing head and an erasing head disposed on a track of the same circumference along a direction of rotation of the optical disk and wherein data are reproduced by an optical equivalence method, comprising the steps of:
recording data onto an optical disk which provides a phase difference smaller than 180 degrees in reflected light from the optical disk based on data recorded on the optical disk;
scanning the optical disk, on which the data are recorded, by a laser beam irradiated from one of said optical heads;
detecting the reflected light from the optical disk by means of an optical sensor which is divided into at least two portions of a front half portion and a rear half portion in the scanning direction; and
delaying and adding an output of the front half portion of said optical sensor to an output of the rear half portion of said optical sensor to reproduce a signal corresponding to the data recorded on the optical disk.

5,621,708

DISK PLAYER EQUIPPED WITH DISK CHANGER

Yoshihiro Fujita, Mitaka; Makoto Takahashi, Oume; Shinji Yamaguchi, Hachiouji, and Ryota Okabe, Akikawa, all of Japan, assignors to Kabushiki Kaisha Kenwood Precision, Akikawa, Japan

Filed Sep. 8, 1995, Ser. No. 525,210
Claims priority, application Japan, Sep. 16, 1994, 6-246714
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—38 **3 Claims**



1. A disk player comprising:
a stocker capable of housing a plurality of disks;
a playing unit for playing a disk;
first transport means for retrieving a disk from the stocker at a first height and transporting a disk between said stocker and the outside of the disk player;
second transport means for retrieving a disk from said stocker at a second height different from the first height and transporting a disk between said stocker and said playing unit, at a different position from said first transport means relative to said stocker; and
stocker moving means for moving said stocker so as to make the height of a disk flush with the transport height of said first or second transport means,
wherein a disk is adapted to be transported to the outside of the disk player and replaced by a new disk while another disk is being played.

5,621,709

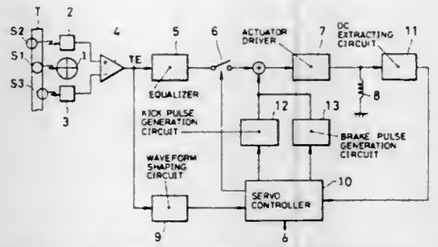
TRACKING SERVO APPARATUS

Hiroyuki Takahashi, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 27, 1991, Ser. No. 676,002
Claims priority, application Japan, Jun. 26, 1990, 2-168125
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.32 **4 Claims**

1. A tracking servo apparatus including a servo loop which opens in response to a jump command to initiate a jump and which closes at the end of said jump, said servo loop having means for generating a tracking error signal in response to deviation of an information reading spot of a pickup in a radius direction relative to a recording track of a disk, and actuating means for positionally compensating said information reading spot in the disk radius direction in accordance with said tracking error signal, said apparatus comprising:

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pulse applying means for applying kick pulses to said actuating means when said jump command is generated and for applying brake pulses, having pulse width and peak value, to said actuating means at a predetermined point in time during said jump;

eccentricity detecting means for detecting eccentricity of said disk; and

control means for varying at least either the pulse width or the peak value of said brake pulses in accordance with the eccentricity of the disk as detected, wherein said eccentricity detecting means detects said eccentricity of the disk based on a DC component of a signal output from a driver that drives said actuating means.

5,621,710

CD-ROM DRIVE AND A CONTROL METHOD FOR OPTIMALLY CONTROLLING THE SPINDLE MOTOR

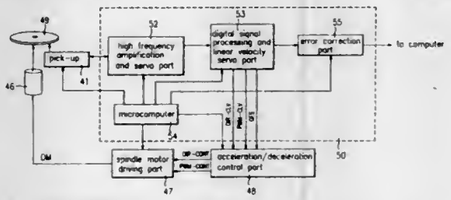
Bon H. Koo, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 13, 1995, Ser. No. 501,993

Claims priority, application Rep. of Korea, Jul. 14, 1994, 16993/1994

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—50 **9 Claims**



1. A CD-ROM drive comprising:

a pick-up for detecting recorded data from a CD-ROM;

a control signal generation means for generating a acceleration/deceleration control signal, a driving extent control signal, and a guaranteed frame synchronizing signal by processing a high frequency signal received from the pick-up;

acceleration/deceleration control means for receiving the acceleration/deceleration control signal, the driving extent control signal, and the guaranteed frame synchronization signal from the control signal generation part, outputting the acceleration/deceleration control signal and the driving extent control signal that are the same as the received acceleration/deceleration control signal and the driving extent control signal respectively in case mode is not a searching mode but a normal linear velocity mode, and modifying the acceleration/deceleration control signal and the driving extent control signal based on a result obtained by subjecting the acceleration/deceleration control signal, the driving extent control signal, and the guaranteed frame synchronization signal to an operation so that the guaranteed frame synchronization signal can reach to high voltage within a short time in case the mode is a searching mode and outputting the modified acceleration/deceleration control signal driving extent control signal; and,

a spindle motor for rotating the CD-ROM in response to the acceleration/deceleration control signal and the driving extent control signal outputted from the acceleration/deceleration control means.

5,621,711

VELOCITY DETECTION CIRCUIT

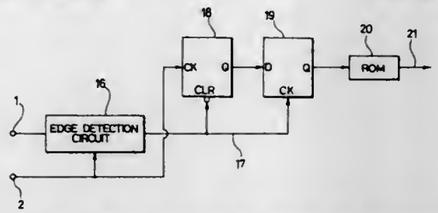
Mitoshi Sohmuta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 348,062, Nov. 23, 1994, Pat. No. 5,493,550. This application Dec. 8, 1995, Ser. No. 569,294

Claims priority, application Japan, Dec. 16, 1993, 5-316151

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—50 **6 Claims**



1. A velocity detection circuit for an optical head which moves along an optical disk in a radial direction of the optical disk, comprising:

an edge detection circuit for detecting, based on a clock signal of a predetermined period, both or one of a rising edge and a falling edge of a position detection signal corresponding to the movement of said optical head to produce an edge signal;

counting means for counting, based on the edge signal produced by said edge detection circuit, the number of pulses of the clock signal of the predetermined period within an interval from a first edge to a succeeding second edge of the position detection signal;

calculation means for calculating, based on the edge signal produced by said edge detection circuit, time data from the data obtained by the counting of said counting means; and

a read-only memory having a predetermined address corresponding to the time data calculated by said calculation means, stored in the predetermined address data thereof the data obtained by multiplying a reciprocal number to the time data by an arbitrary coefficient for producing velocity data from the time data.

5,621,712

REPRODUCING SYSTEM FOR AN OPTICAL RECORDING MEDIUM HAVING IMPROVED RESPONSE TO A HIGH SPEED SCANNING INSTRUCTION

Yoshiya Nonaka, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 342,014, Nov. 16, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,751

Claims priority, application Japan, Nov. 27, 1993, 5-288410

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—60 **5 Claims**

1. A system for reproducing data recorded on an optical disk, said system comprising:

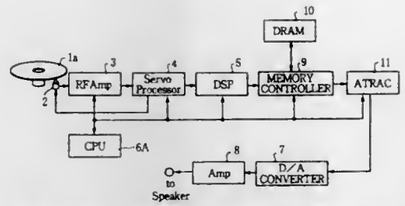
a pickup for reading data on the disk;

a memory for receiving and storing the data read by said pickup;

an output for reading the stored data;

a memory controller governing a writing rate at which the data read from the disk is received by said memory and a reading rate at which the stored data is read by said output, wherein the writing rate can exceed the reading rate; and

a means for responding to a high speed scanning instruction, said means (i) determining a start address of said memory



corresponding to a portion of the stored data stored prior to the scanning instruction but not yet read by said output, and (ii) controlling said output to perform alternating jump and read operations, thereby outputting intermittent portions of the stored data beginning at the determined start address, and simultaneously controlling said pickup to alternately jump and read portions of the disk in a predetermined direction.

5,621,713

DISC PLAYER APPARATUS

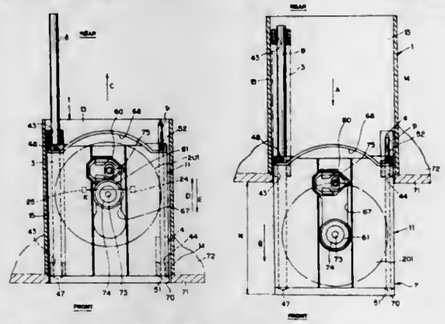
Futoshi Sato, Kanagawa; Takashi Tsugami, Kanagawa, and Masaki Enomoto, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,559

Claims priority, application Japan, Aug. 26, 1994, 6-202112

Int. Cl.[6] G11B *33/02*

U.S. Cl. 369—75.2 **11 Claims**



10. A disc player apparatus comprising:

a tray unit supported for movement between a position of being housed within an outer casing and a position of being protruded outwardly from the outer casing;

a pickup device arranged on said tray unit for reading out the recorded information from a recording disc;

first driving means for moving said tray unit between the position of being housed within the outer casing and the position of being protruded outwardly from the outer casing;

a disc table, supported on said tray unit for movement in a direction towards and away from said pickup device, said disc table holding and rotating said recording disc; and

second driving means for moving said disc table on said tray unit in a direction towards and away from said pickup device, said second driving means moving said disc table to a position furthest from the outer casing in a range of predetermined movement of the disc table relative to the tray unit when said first driving means moves said tray unit to the position of being protruded from the outer casing, said second driving means also moving said disc table to a position most proximate to the pickup device in the range of predetermined movement of the disc table relative to the tray unit when said first driving means moves said tray unit to the position of being housed within said outer casing.

5,621,714

OPTICAL PICK-UP APPARATUS HAVING HOLOGRAM AND BEAM SPLITTER WITH BIREFRINGENT MEMBER AND POLARIZING FILM

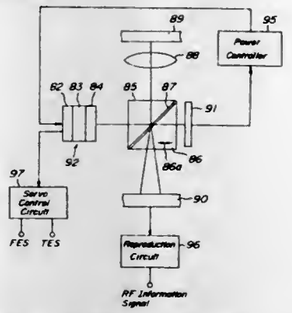
Shohei Kobayashi; Takeshi Yamazaki, both of Hachioji, and Hiroyuki Imabayashi, Machida, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 400,757

Claims priority, application Japan, Feb. 12, 1994, 6-307418; Mar. 8, 1994, 6-037068; Mar. 10, 1994, 6-039649; Mar. 24, 1994, 6-053823

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—103 **18 Claims**



1. An optical pick-up apparatus comprising:

a light source means for emitting a light beam;

an optical means including a uniaxial birefringent crystal member having a surface and a polarizing film provided on said surface of the uniaxial birefringent crystal member, said polarizing film being arranged such that said light beam emitted by said light source means is made incident upon the polarizing film;

a converging means for converging the light beam emitted by said light source means and reflected said polarizing film of the optical means to obtain a converged light beam, directing the converged light beam onto a magneto-optical information record medium and directing a return light beam reflected by said magneto-optical information record medium toward said polarizing film, said polarizing film transmitting a first portion of said return beam into said uniaxial birefringent crystal member;

a hologram means for dividing a second portion of said return beam reflected by the magneto-optical information record medium into at least two light beams;

a first photodetecting means for receiving two mutually orthogonally polarized return light beams transmitted through said polarizing film and refracted by said uniaxial birefringent crystal member to produce first output signals, an information signal being reproduced by processing said first output signals; and

a second photodetecting means for receiving said at least two light beams emanating from said hologram means to produce second output signals, a positional error signal including at least a focusing error signal being obtained by processing said second output signals.

5,621,715

OPTICAL INTEGRATED CIRCUIT

Minoru Ohyama, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 19, 1995, Ser. No. 424,695

Claims priority, application Japan, Apr. 19, 1994, 6-104732

Int. Cl.[6] G11B *7/135*

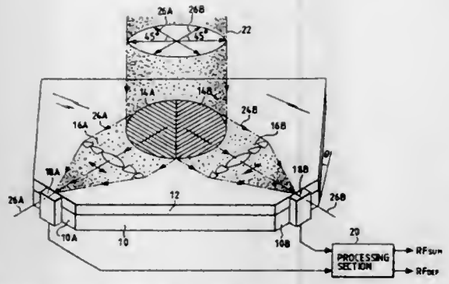
U.S. Cl. 369—112 **19 Claims**

1. An optical integrated circuit comprising:

a substrate;

a thin film formed on the substrate;

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a waveguide formed by the thin film;

a grating coupler including a plurality of coupling regions for introducing an incident light beam into the waveguide, and for selecting from the incident light beam components which are perpendicularly polarized to each other and providing output light beams, wherein the output light beams are in a same waveguide mode and have polarization directions perpendicular to each other respectively; and

photodetectors exposed to the output light beams for detecting the output light beams respectively;

wherein the output light beams are propagated to respective photodetectors in respective propagation directions in the waveguide, said respective propagation directions being different from each other.

5,621,716

OPTICAL PICKUP HAVING A TRANSPARENT LENS MEMBER WITH TWO REFLECTING SURFACES

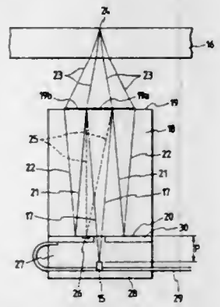
Kouki Kojima, and Syougo Horinouchi, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 18,573, Feb. 17, 1993, Pat. No. 5,422,870, which is a continuation-in-part of Ser. No. 952,224, Sep. 28, 1992, Pat. No. 5,377,177. This application Apr. 25, 1995, Ser. No. 429,278

Claims priority, application Japan, Sep. 27, 1991, 3-249005; Nov. 13, 1991, 3-296818; Feb. 19, 1992, 4-31744; Mar. 27, 1992, 4-70707; Apr. 14, 1992, 4-94035

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—112 **2 Claims**



1. An optical pickup comprising:

light-emitting means for emitting light;

grating lens means for condensing incident light on an optical disc, said grating lens means comprising a first reflecting surface means and a grating means provided on a same flat surface opposed to said optical disc;

said first reflecting surface means reflecting the light emitted from said light-emitting means;

second reflecting surface means for reflecting light, reflected from said first reflecting surface means, toward said grating means; and

light-receiving means for receiving light reflected from said optical disc.

5,621,717

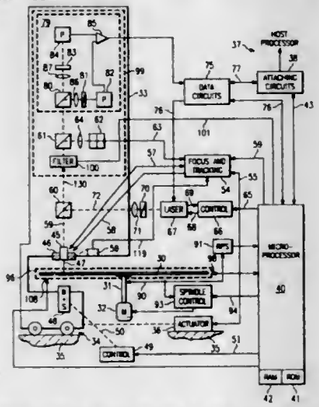
READING OPTICAL DISKS HAVING SUBSTRATES WITH DIVERSE AXIAL THICKNESSES

Blair I. Finkelstein, Tucson, Ariz., and Timothy C. Strand, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 476,739

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—112 **31 Claims**



1. An optical data device having a laser for supplying a laser beam, an optical disk receiver means for sequentially removeably receiving one disk at a time of a plurality of optical disks as a received disk in a play position, optical means for communicating said supplied laser beam to each of said received optical disks and for receiving said supplied laser beam after being reflected by said each of said received optical disks as a reflected laser beam, a read optical portion in said optical means having laser beam receiving means and laser beam output means for transferring said reflected laser beam from said optical means to an optical detector:

an improvement, in combination:

first and second optical disks, each of said first and second optical disks respectively having first and second recording layers respectively disposed on thick and thin transparent substrates, each of said thick and thin substrates having a laser beam receiving surface through which said supplied and reflected laser beams traverse to and from the first and second recording layers, respectively;

said thick substrate having a first axial extent between said laser beam receiving surface of said thick substrate and said first recording layer;

said thin substrate having a second axial extent between said laser beam receiving surface of said thin substrate and said second recording layer;

said first axial extent being substantially greater than said second axial extent such that a laser beam traveling through said first axial extent of said first substrate is substantially inoperative to access said recording layer of said second one of said optical disks;

said read optical portion operative to read said second recording layer but not said first recording layer;

said read optical portion having filter means having a laser-beam annular filter means for reading said first recording layer; and

control means connected to said read optical portion and said filter means for actuating said read optical portion to selectively read said first and second disks, respectively.

5,621,718

COMPACT DISC PLAYING MECHANISM HAVING FIRST AND SECOND OPERATING POSITIONS

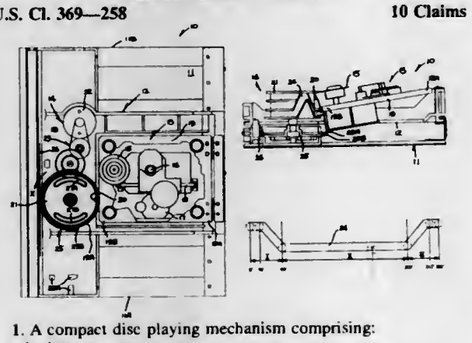
Wilson W. S. Leung, Hong Kong, Hong Kong, assignor to Alco Electronics, Ltd., Quarry Bay, Hong Kong

Filed Jan. 13, 1995, Ser. No. 372,135

Claims priority, application United Kingdom, Oct. 7, 1994, 9420227

Int. Cl.[6] G11B 17/30;23/00

U.S. Cl. 369—258 **10 Claims**



1. A compact disc playing mechanism comprising:

a body tray;

a platform engaged with said body tray;

a body plate having first and second ends, the first end being pivotally connected to said platform, and the second end including an engagement part which moves during transport through at least first and second horizontal positions;

a pick-up mechanism disposed on said body plate, said pick-up mechanism having a motor-driven spinning support for supporting and spinning a compact disc and a motor-driven laser pick-up device for reading data recorded on the spinning compact disc; and

a unitary moving mechanism adapted to move the pick-up mechanism from the first to the second position and to, at each of the first and second positions, pivot the pick-up mechanism upwards for operation and downwards for transit, said moving mechanism being movable with the pickup mechanism from the first to the second position, said moving mechanism including a movable track along which the engagement part slidably engages such that movement of the track relative to the engagement part causes the upward and downward pivoting of said pick-up mechanism, the track being angularly movable and rotatable.

5,621,719

OPTICAL DISK AND APPARATUS FOR REPRODUCING THE SAME

Takayuki Nomoto, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Feb. 27, 1995, Ser. No. 394,824

Claims priority, application Japan, Mar. 3, 1994, 6-033897

Int. Cl.[6] G11B 7/24

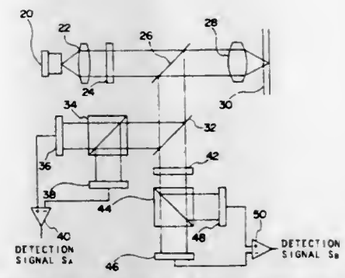
U.S. Cl. 369—275.3 **8 Claims**

6. In combination an optical disk and an apparatus for reproducing information from said optical disk, said optical disk comprising:

an information recording surface;

a first surface-transformed portion array formed on said information recording surface and comprising first surface-transformed portions transformed in shapes, said first surface-transformed portion reflecting a laser light, when said laser light is irradiated thereon, polarized in accordance with the transformed shape thereof so that major axis of the polarized light is oriented to a first direction; and

second surface-transformed portion array formed on said information recording surface and comprising second surface-transformed portions transformed in shapes, said second surface-transformed portion reflecting a laser light, when said laser light is irradiated thereon, polarized in accordance with the transformed shape thereof so that major axis of the polarized light is oriented to a second direction, the first surface-transformed portion array and the second surface-transformed portion array being formed alternately in a radial direction of said optical disk, and the first direction and the second direction differing from each other by 45 degrees; and said apparatus comprising:



laser light irradiating means for irradiating the laser light onto the information recording surface;

light separating means for separating the polarized light reflected by the information recording surface into the polarized light having major axis oriented to the first direction and the polarized light having major axis oriented to the second direction;

first photodetecting means for detecting, from the polarized light having major axis oriented to the first direction, light component of the first direction and light component of a direction perpendicular to the first direction;

second photodetecting means for detecting, from the polarized light having major axis oriented to the second direction, light component of the second direction and light component of a direction perpendicular to the second direction;

first operation means for obtaining information recorded on the first surface-transformed portion array from the light components detected by the first photodetecting means; and

second operation means for obtaining information recorded on the second surface-transformed portion array from the light components detected by the second photodetecting means.

5,621,720

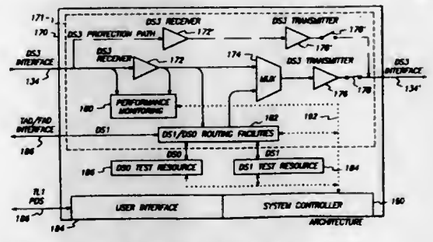
MULTICHANNEL ALIGNMENT SYSTEM AND METHOD

Jeffery S. Bronte; Mark J. Lever, both of San Diego; Kevin T. Pope, Poway, and Paul R. Hartmann, Escondido, all of Calif., assignors to Applied Digital Access, Inc., San Diego, Calif.

Continuation of Ser. No. 330,214, Oct. 24, 1994, Pat. No. 5,553,056, which is a continuation-in-part of Ser. No. 862,470, Apr. 2, 1992, abandoned. This application Feb. 14, 1996, Ser. No. 601,264

Int. Cl.[6] H04J 3/14

U.S. Cl. 370—13 **8 Claims**



1. A multichannel alignment system, comprising:

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a first channel access subsystem that provides a first round-trip, rate-controlled, flame-aligned channel;

a second channel access subsystem that provides a second round-trip, rate-controlled, flame-aligned channel;

a test resource transceivably connected to each of the channel access subsystems; and

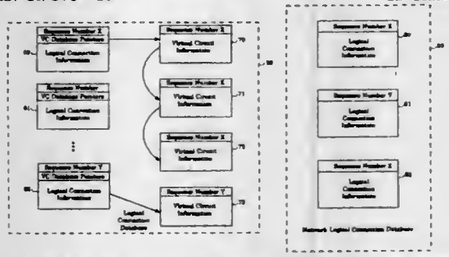
an alignment software program executed on the test resource that aligns the first channel with the second channel, wherein the program drops data from one of the channels until the other channel is aligned.

5,621,721

MAINTAINING DATABASE INTEGRITY THROUGHOUT A COMMUNICATION NETWORK

Mark Vatuone, Nine Mile Falls, Wash., assignor to Stratacom, Inc., San Jose, Calif.

Filed Jan. 12, 1995, Ser. No. 372,032
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—16 **12 Claims**



1. A method for determining database consistency in a communication network, comprising the steps of:

storing a sequence number and a set of routing information for each of a set of virtual circuits of the communication network into a main database and an auxiliary database in each of a set of communication nodes in the communication network, the main database and the auxiliary database each comprising a set of logical connection entries and a set of virtual circuit envies, the sequence number for a virtual circuit being updated each time the virtual circuit is routed or rerouted within the communication network; and

verifying the sequence numbers in the main database or the auxiliary database in each of the communication nodes if one of the communication nodes switches between the main database and the auxiliary database by comparing the sequence numbers of the logical connection entries to the sequence numbers of the corresponding virtual circuit entries to determine if a sequence number mismatch exists.

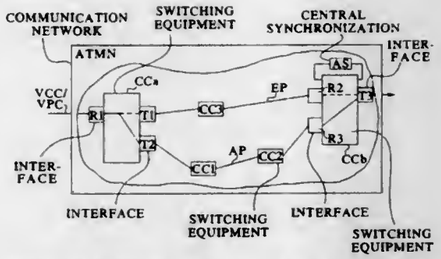
5,621,722

METHOD AND CIRCUIT ARRANGEMENT FOR DISTURBANCE-FREE REDIRECTION OF A MESSAGE CELL STREAM ONTO AN ALTERNATE ROUTE

Bernhard Edmaier, Seefeld, and Wolfgang Fischer, Germering, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 11, 1995, Ser. No. 438,787
Claims priority, application Germany, May 11, 1994, 44 16 719.9
Int. Cl.[6] H04L *1/22*
U.S. Cl. 370—16 **18 Claims**

1. A method for redirecting a message cell stream transmitted in a virtual path or during the course of a virtual connection via an active route onto an alternate route that forms a virtual route pair together with an active route in a cell-oriented communication network having a plurality of switching equipment, comprising the steps of:



transmitting a message cell stream via an active route from a first switching equipment located at a start of the route pair to a second switching equipment located at an end of the route pair;

duplicating, in response to a request signal, the message cell stream supplied to the first switching equipment to form duplicate first and second message cell streams;

separately supplying the first and second message cell streams via the active route and via the alternate route, respectively, to a central synchronization means allocated to the second switching equipment or virtual connection,

initially supplying from said central synchronization means only the first message cell stream, supplied via the active route, to the allocated second switching equipment for forwarding;

synchronizing in the central synchronization means the first and second message cell streams;

supplying, when such a synchronization has been achieved by the central synchronization means, the second message cell stream, supplied via the alternate route, to the allocated second switching equipment for forwarding, instead of the first message cell stream initially supplied via the active route; and

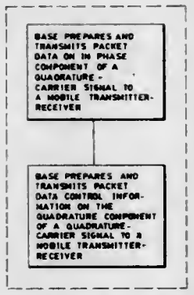
disconnecting, after the second message cell stream has been forwarded, the central synchronization means from the alternate route for the second message cell stream.

5,621,723

POWER CONTROL IN A CDM A NETWORK

Jay R. Walton, Jr., Westford, and John W. Ketchum, Watertown, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 312,851, Sep. 27, 1994. This application Jun. 5, 1995, Ser. No. 463,411
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—18 **1 Claim**



1. A method of communicating forward packet data and forward packet data control information over a forward link in a packet-switched CDMA network, comprising the steps of:

carrying the packet data on the in-phase component of a quadrature-carrier signal; and

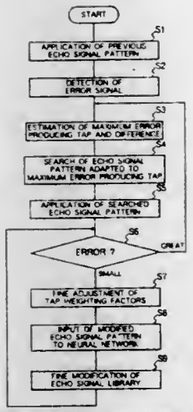
carrying the packet data control information on the quadrature component of said quadrature-carrier signal.

5,621,724

ECHO CANCELLING DEVICE CAPABLE OF COPING WITH DETERIORATION OF ACOUSTIC ECHO CONDITION IN A SHORT TIME

Toshio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 24, 1996, Ser. No. 590,630
Claims priority, application Japan, Jan. 24, 1995, 7-009109
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—32.1 **3 Claims**



1. An echo cancelling device comprising a first transmission-side amplifier for amplifying an input transmission speecb signal, a transmission-side adaptive echo canceller connected to said first transmission-side amplifier, a second transmission-side amplifier connected to said transmission-side adaptive echo canceller for amplifying an output signal of said transmission-side adaptive echo canceller to produce an output transmission speech signal, a first reception-side amplifier for amplifying an input reception speech signal, a reception-side adaptive echo canceller connected to said first reception-side amplifier, and a second reception-side amplifier connected to said reception-side adaptive echo canceller for amplifying an output signal of said reception-side adaptive echo canceller to produce an output reception speech signal, said transmission-side adaptive echo canceller being connected also to said reception-side adaptive echo canceller and being for producing a transmission-side pseudo echo signal in response to the output signal of said reception-side adaptive echo canceller and for cancelling said transmission-side pseudo echo signal from an output signal of said first transmission-side amplifier to produce an echo-cancelled transmission speech signal as the output signal of said transmission-side adaptive echo canceller, said reception-side adaptive echo canceller being connected also to said transmission-side adaptive echo canceller and being for producing a reception-side pseudo echo signal in response to the output signal of said transmission-side adaptive echo canceller and for cancelling said reception-side pseudo echo signal from an output signal of said first reception-side amplifier to produce an echo-cancelled reception speech signal as the output signal of said reception-side adaptive echo canceller, said echo cancelling device further comprising:

a neural network type controller using a neural network and connected to said transmission-side adaptive echo canceller;

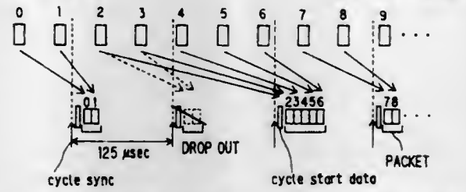
said neural network type controller having an echo signal pattern library containing, as registered echo signal patterns, past echo signal patterns of past echo signals each of which is a part of said output reception speech signal that enters into said first transmission-side amplifier, said neural network type controller being responsive to cancelling errors from a plurality of taps of said transmission-side adaptive echo canceller and carrying out estimation of a maximum error producing tap, which is one of said plurality of taps that produces a maximum error, and of the maximum error of said maximum error producing tap, search of said registered echo signal patterns registered in said echo signal pattern library to find adaptive echo signal patterns adapted to said maximum error producing tap and said maximum error as estimated, change of weighting factors for the plurality of taps of said transmission-side adaptive echo canceller in accordance with said adaptive echo signal patterns as searched, identification of a particular adaptive echo signal pattern minimizing the cancelling errors from the plurality of taps of said transmission-side adaptive echo canceller as a result of the above-mentioned change of the weighting factors, preparation of a modified echo signal pattern for eliminating a residual error of said particular adaptive echo signal pattern as identified, fine adjustment of the weighting factors for the plurality of taps of said transmission-side adaptive echo canceller in accordance with said modified echo signal pattern, and registration of said modified echo signal pattern in said echo signal pattern library.

5,621,725

COMMUNICATION SYSTEM CAPABLE OF PREVENTING DROPOUT OF DATA BLOCK

Harumi Kawamura, Tokyo; Hisato Shima, Chiba, and Keiko Tamamizu, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,784
Claims priority, application Japan, May 25, 1994, 6-134940
Int. Cl.[6] H04L *29/12*
U.S. Cl. 370—43 **10 Claims**



7. A communication method for transmitting a plurality of data blocks comprising the steps of:

receiving a communication start signal;

receiving data from an apparatus;

arranging the received data as an array of data blocks, each data block having a predetermined size;

numbering the data blocks;

forming the numbered data blocks into packets of data blocks according to their data block numbers;

outputting a packet of data blocks after a communication start signal is received.

5,621,726

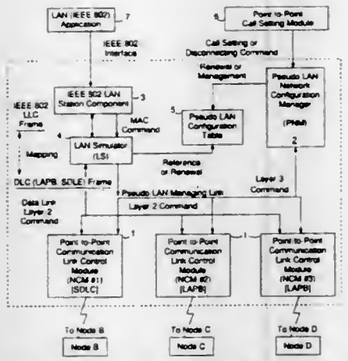
POINT-TO-POINT COMMUNICATION NETWORK AND METHOD AND ADAPTER FOR VIRTUALIZING A LAN SYSTEM

Kazutaka Murakimi, Pittsburgh, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,362
Claims priority, application Japan, May 31, 1991, 3-156213
Int. Cl.[6] H04L *12/56;12/28*
U.S. Cl. 370—60 **14 Claims**

1. A method for establishing a pseudo LAN system in a point-to-point communication network, wherein nodes are being connected through point-to-point communication links, comprising the steps of:

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generating logical link control sub-layer data unit from an upper layer command;

establishing and controlling said point-to-point communication links to form the pseudo LAN system;

storing configuration information on the pseudo LAN system;

modifying said configuration information based on connection and disconnection of said point-to-point communication links;

in response to said modified configuration information, converting said logical link control sub-layer data unit to a point-to-point communication link data unit and transferring it through said point-to-point communication links; and

converting said point-to-point communication link data unit received through said point-to-point communication links to said logical link control sub-layer data unit.

5,621,727

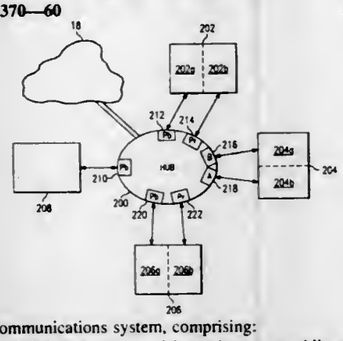
SYSTEM AND METHOD FOR PRIVATE ADDRESSING PLANS USING COMMUNITY ADDRESSING

Gregory M. Vaudreuil, Dallas, Tex., assignor to Octel Communications Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 307,517, Sep. 16, 1994. This application Jul. 7, 1995, Ser. No. 499,198

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—60 **2 Claims**



1. A communications system, comprising:

a network hub system comprising at least one public access port and at least one private access port;

a messaging system operable to contact and connect to both the private and public access ports, the messaging system accessible to users and operable to receive and deliver messages from and to the users of the messaging system where at least some of the users are able to use public addressing and private addressing forms to address messages; and

the network hub system comprising stored user tables comprising community information identifying particular users who are able to use private addressing forms to route messages to each other such that such users may use private global address forms unique within a community to address messages.

5,621,728

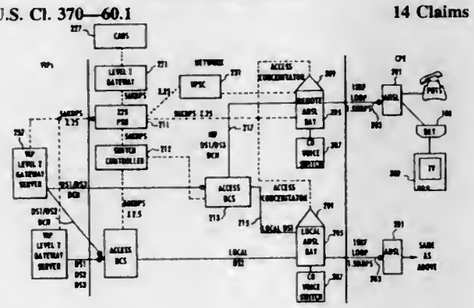
LEVEL 1 GATEWAY CONTROLLING BROADBAND COMMUNICATIONS FOR VIDEO DIAL TONE NETWORKS

Regina Lightfoot, New Carrollton, Md.; Bill Goodman, Collegeville, Pa.; Bahman Amin-Salehi, Washington, D.C.; Ulric E. Arthur, Burtonsville, Md.; John A. Bigham, Pottstown, Pa., and Kamran Sistanizadeh, Arlington, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 304,174, Sep. 12, 1994. This application Mar. 28, 1995, Ser. No. 413,812

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **14 Claims**



1. A communication network comprising:

a plurality of digital entertainment terminals for receiving and processing digital broadband information and transmitting control signals in response to user inputs;

a plurality of interactive information provider systems;

a backbone subnetwork providing point-to-point two-way communication sessions for broadband interactive multimedia communications signals with a selected one of the interactive information provider systems;

a backbone subnetwork controller controlling establishment of point-to-point communication sessions through the backbone subnetwork;

an access subnetwork receiving digital broadband information signals from the selected interactive information provider system from the backbone subnetwork for transmission to one of the digital entertainment and supplying control signals from the one digital entertainment terminal to the backbone subnetwork for transmission to the selected interactive information provider system, and receiving broadcast digital broadband information signals from a plurality of broadcast information providers for selective distribution to the digital entertainment terminals;

an access subnetwork controller controlling the access subnetwork to provide two-way communications between the one digital entertainment terminal and the backbone subnetwork and to control access to the broadcast digital broadband information signals through the digital entertainment terminals; and

a gateway interacting with the backbone subnetwork controller, the access subnetwork controller and at least the one digital entertainment terminal to establish communication between the one digital entertainment terminal and the selected interactive information provider system and interacting with the access subnetwork controller to make certain broadcast services available to authorized digital entertainment terminals.

5,621,729

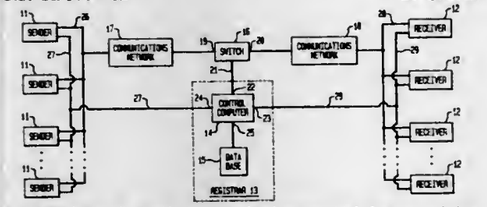
RECEIVER CONTROLLED COMMUNICATION SYSTEM

Jack J. Johnson, and William F. Coyle, both of Summit, N.J., assignors to Geophonic Networks, Inc., Summit, N.J.

Filed Jun. 7, 1995, Ser. No. 480,201

Int. Cl.[6] H04L *12/14;12/16*

U.S. Cl. 370—62 **20 Claims**



1. Within an electronic communications network for transmitting a message from at least one sender to at least one receiver over a transmission path including a telecommunications carrier, a registrar comprising:

a. a switch with a least one input port for receiving the message, at least one output port for transmitting the message, switching means for directing the message from the at least one sender to the at least one receiver in response to a first vector transmitted to the switch by a first sender of the at least one senders, the first vector representing a first sender identifier and a first receiver token;

b. a control computer with at least one first data channel, at least one second data channel, at least one third data channel, at least one fourth data channel, and means for generating the first vector representing the first sender identifier and the first receiver token, the control computer including means for communicating with the switch through the at least one first data channel, communicating with the at least one receiver through the at least one second data channel, for determining the state of the first vector, the state of the first vector being under control of the receiver corresponding to the first receiver token, communicating with the at least one sender through the at least one third data channel, for receiving the sender identifier and the receiver token, and transmitting the first vector to the sender; and

c. a database communicating with the control computer through at least one fourth data channel, including means for storing the first vector and vector state information received from the control computer, and responding to state determination queries from the control computer.

5,621,730

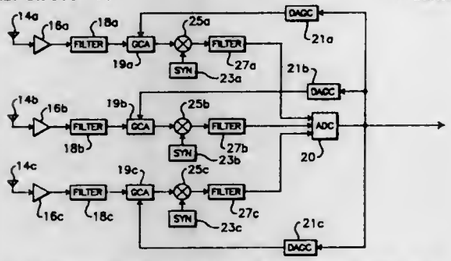
MULTIPLE USER DIGITAL RECEIVER APPARATUS AND METHOD WITH TIME DIVISION MULTIPLEXING

Edwin A. Kelley, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 714,492, Jun. 13, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,180

Int. Cl.[6] H04J *1/02*

U.S. Cl. 370—70 **9 Claims**



1. A multiple use radio frequency (RF) receiver, comprising:

means for providing anti-alias filtering for a received analog RF signal;

gain control amplifier means for providing amplification to the filtered and received analog RF signal;

means for digitizing the amplified, filtered and received analog RF signal;

multiple simultaneous digital tuner means for selecting, by time division multiplexing, signals at at least three desired frequencies from the digitized signal, with said desired frequencies distributed at unequal frequency spacings along a frequency spectrum, said digital tuner means consisting of a modified programmable direct digital frequency synthesizer, selecting signals at said desired frequencies from separate RF service bands that are distributed at unequal frequency spacing along said frequency spectrum;

digital filter means for isolating the signals at the desired frequencies selected by said tuner means from interfering signals by time division multiplexing, said digital filter means comprising a plurality of digital finite impulse response, FIR, filters that include respective FIR filter coefficient memories corresponding to said service bands, means for digitally time division multiplexing among said FIR filter coefficient memories, in synchronism with said multiple simultaneous digital tuner means, and means controlling said multiplexing among said FIR filter coefficient memories in synchronism with the selection of signals at said desired frequencies from a digitized signal so that the selected frequency signals for each service band are processed by a corresponding FIR filter coefficient memory for that service band, said FIR filters including respective accumulators for each of said service bands, a complex multiplier for multiplying multiplexed selected frequency signals by the FIR filter coefficients for their respective service bands, and de-multiplexing means for directing the results of said multiplications for each service band to a respective accumulator; and

digital demodulator and signal processing means for digitally demodulating and signal processing the signals at the desired frequencies selected by said tuner means and isolated by said digital filter means, wherein digital demodulation occurs in synchronism with digital tuner multiplexing.

5,621,731

PRIVATE EXCHANGE FOR ISDN

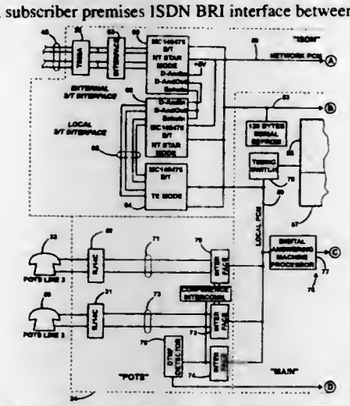
Allan D. Dale, Haslett; Earl Goodrich, II, East Lansing; Thomas R. Bayerl, Williamston; Brian P. Dick, Haslett; Scott W. B. English, Okemos, and John C. Dougherty, Lansing, all of Mich., assignors to Omnilink Communications Corporation, Lansing, Mich.

Filed Feb. 4, 1994, Ser. No. 192,177

Int. Cl.[6] H04Q *5/00;* **H04M** *1/00*

U.S. Cl. 370—79 **72 Claims**

59. A subscriber premises ISDN BRI interface between an ISDN



BRI local exchange and at least one subscriber station device, comprising:

A U-channel port configured to interface directly with a U channel of an ISDN BRI local exchange;

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at least one additional port configured to interface directly with a subscriber station device;

an exchange circuit controlling communication between said U-channel port and said at least one additional port, wherein said exchange circuit includes a system for determining the type of ISDN BRI local exchange to which said ISDN BRI interface is connected and wherein said exchange circuit automatically uses ISDN BRI control signals compatible with the local exchange to which said ISDN BRI interface is connected; and

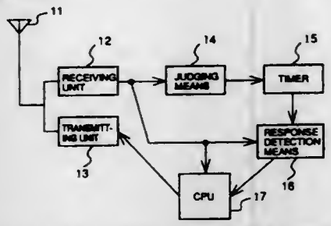
a power supply for converting high voltage levels to low voltage levels to supply power to said exchange circuit and said port.

5,621,732

ACCESS METHOD AND A RELAY STATION AND TERMINALS THEREOF

Tomoki Osawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 18, 1995, Ser. No. 423,105
Claims priority, application Japan, Apr. 18, 1994, 6-078296
Int. Cl.[6] H04B *7/204*
U.S. Cl. 370—79 **23 Claims**



16. A relay station for relaying and transferring data from a first terminal to a second terminal when said data cannot be directly transmitted from said first terminal to said second terminal in a data transmission system having a procedure to exchange control information at least one time between said first terminal and said second terminal to transmit said data from said first terminal to said second terminal, said relay station comprising:

means for receiving and judging said control information transmitted from said first terminal and judging said control information from among said information;

means for detecting a response of said control information from said second terminal during a preset detection time interval from a time of reception of said control information;

means for exchanging, instead of said second terminal, said control information with said first terminal, receiving said data from said first terminal, exchanging said control information with said second terminal and transferring said data to said second terminal when said response has not been detected during said detection time interval.

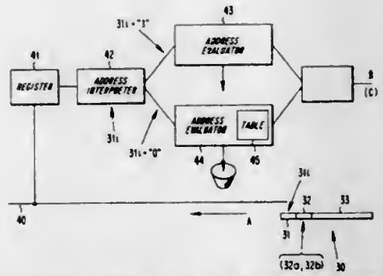
5,621,733

PACKET DATA NETWORK

Nils K. J. Rooth, Trångsund, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 6, 1993, Ser. No. 161,466
Claims priority, application Sweden, Dec. 14, 1992, 9203762
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—94.1 **13 Claims**

1. A method of transmitting an information sequence from a transmitting user unit in a packet network on a communication means or a connection either to solely one single selected receiving user unit in the network or commonly to a selected number of receiving user units in said network, said transmitted information sequence being comprised of one or more data cells, each comprising a header and an information-carrying part, wherein the header includes within a bit field a bit configuration which represents a



final destination address, and the information-carrying part includes within a bit field a bit configuration which represents relevant information, wherein when transmitting a single user data cell which is to be received by solely one receiving user unit the transmitting user unit allocates to the bit-configuration for the final destination address in the header an identity which is significant solely to the single selected receiving user unit, wherein upon receipt of said single user data cell, the selected receiving user unit reacts to accept the single user data cell or at least its information-carrying part, wherein when transmitting a plural users data cell which is intended to be received by a plurality of selected receiving user units, the transmitting user unit allocates to the bit configuration representing the final destination address in the header an identity which is common and significant to the selected receiving user units, wherein upon receiving said plural users data cell each of said selected receiving user units reacts to accept the plural users data cell or at least its information-carrying part, wherein each user receiving unit is programmed to interpret a logic value of an indicated status bit as a category indication; the address-department bit configuration pertaining to each data cell header appearing on the communication means or connection is interpreted in each receiving user unit in accordance with the logic value of an indicated status bit so as to determine therewith how a received final destination address shall be interpreted, wherein, as a result of said programming of said receiving units, in the case of a first logic value each receiving user unit shall interpret the final destination address as a direct coding of an address which is pertinent to solely one receiving user unit and the information sequence in the data cell is therewith received solely in the receiving user unit corresponding to the indicated final destination address, and in the case of a second logic value the address is interpreted as a channel-number-coded address pertaining to a plurality of receiving user units and the information sequence pertaining to the data cell is therewith receiving in each of the receiving user units that correspond to the indicated final destination address.

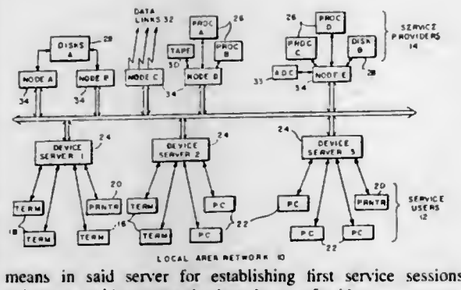
5,621,734

LOCAL AREA NETWORK WITH SERVER AND VIRTUAL CIRCUITS

Bruce E. Mann, Mason, N.H.; Darrell J. Duffy, Mountain View, Calif.; Anthony G. Lauck, Wellesley, and William D. Strecker, Lincoln, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 31,069, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 724,064, Jul. 1, 1991, abandoned, which is a division of Ser. No. 412,576, Sep. 25, 1989, Pat. No. 5,058,108, which is a continuation of Ser. No. 338,485, Apr. 13, 1989, abandoned, which is a continuation of Ser. No. 178,430, Apr. 6, 1988, abandoned, which is a division of Ser. No. 88,063, Aug. 24, 1987, Pat. No. 4,823,122, which is a division of Ser. No. 27,033, Mar. 19, 1987, abandoned, which is a continuation of Ser. No. 616,553, Jun. 1, 1984, abandoned. This application Apr. 8, 1994, Ser. No. 225,365
Int. Cl.[6] H04L *12/40;* **H04J** *3/26*
U.S. Cl. 370—94.1 **13 Claims**

1. A system for communicating between users connected to a server and service providers connected to a node, comprising:



means in said server for establishing first service sessions between said server and selected ones of said users;

means in said node for establishing second service sessions between said node and selected ones of said service providers; and

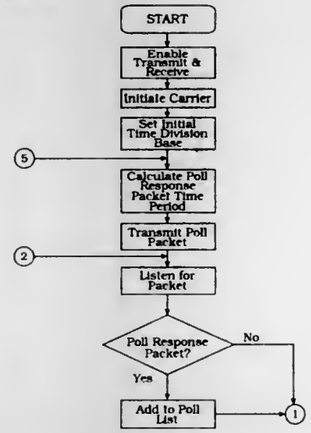
means in said server and in said node for supporting a virtual circuit therebetween and for gathering session messages generated by said first service sessions or said second service sessions into a single virtual circuit message for transfer through said virtual circuit.

5,621,735

ADAPTIVE TIME-DIVISION MULTIPLEXING COMMUNICATIONS PROTOCOL METHOD AND SYSTEM

Virgil M. Rochester, Jr., Las Vegas, Nev.; Ariel M. Hunt, Vista, Calif.; Charles S. Jonson, and John D. Weaver, both of Las Vegas, Nev., assignors to Utics Corporation, Las Vegas, Nev.

Continuation of Ser. No. 341,015, Nov. 17, 1994, abandoned, which is a continuation of Ser. No. 930,576, Aug. 13, 1992, abandoned. This application Feb. 28, 1996, Ser. No. 608,131
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—346 **2 Claims**



1. A communication protocol method for communicating data between a central unit and a plurality of remote units, the method comprising the steps of:

transmitting a first signal from said central unit within a transmission range;

receiving the first signal by remote units within the transmission range of the first signal;

transmitting first response signals from remote units which received the first signal, in response to the receipt of the first signal;

receiving first response signals by the central unit;

transmitting a second signal from sad central unit to each remote unit from which one of the first response signals was received;

receiving the second signal by remote units to which the second signal was sent;

transmitting a data signal from each remote unit which received the second signal to said central unit, in response to the receipt of the second signal;

receiving data signals by said central unit;

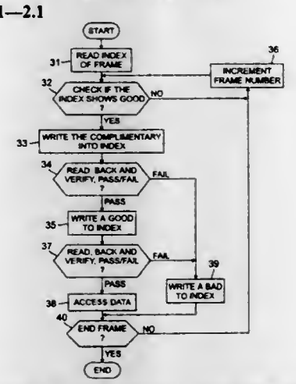
wherein the second signal includes control data for controlling the remote units, wherein the control data includes data for controlling at least one of the signal frequency of the data signal to be sent by the remote units, the data format and the type of data to be included in the data signal.

5,621,736

FORMATTING OF A MEMORY HAVING DEFECTIVE CELLS

Lu-Wei Tsao; Lung-Yuh Liu, and Hong-Long Lin, all of Hsin-chu, Taiwan, assignors to Winbond Electronics Corp., Hsin-chu, Taiwan

Filed Apr. 12, 1995, Ser. No. 420,868
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—2.1 **7 Claims**



1. A method for accessing a memory having defective cells, the memory being partitioned into a plurality of frames, each of the plurality of frames having a corresponding N-bit of cell, and a M-bit of cell for storing an index representative of the defectiveness of the corresponding (M+N)-bit cell, to each frame of the memory comprising the steps of:

(1) reading the index of a frame of the memory to determine whether the corresponding (M+N)-bit cell is good;

(2) performing a predetermined pattern write-read access test to the corresponding M-bit of cell to determine whether the M-bit of cell is good, if the index shows a GOOD;

(3) reading the data stored in the N-bit of cell, if the result of step (2) is good.

5,621,737

COMMUNICATION SYSTEM WITH LINK MARGIN CONTROL AND METHOD

William A. Bucher, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

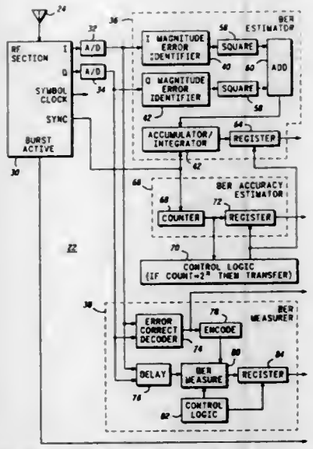
Filed Jul. 18, 1994, Ser. No. 276,728
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.1 **18 Claims**

16. A data communication system that maintains a desired link margin, comprising:

a first node having a transmitter configured to transmit a data communication signal at a programmable power level;

a second node having an RF section configured to receive said data communication signal;

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a bit error rate estimator, coupled to said RF section, for generating a first parameter that corresponds to an estimate of a bit error rate for said data communication signal;

an accuracy estimator, coupled to said RF section, for generating a second parameter that assesses accuracy of said first parameter; and

a controller coupled to said bit error rate estimator and to said accuracy estimator, said controller being configured to program said programmable power level in response to said first and second parameters, wherein said controller is configured to program an increase in said power level when said bit error rate estimate exceeds a decision point that varies in response to the accuracy of said bit error rate estimate.

5,621,738

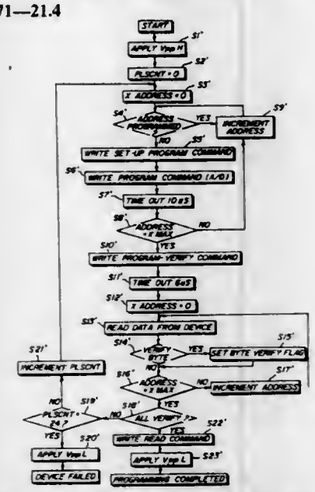
METHOD FOR PROGRAMMING FLASH EEPROM DEVICES

John Caywood, Sunnyvale, and Jagdish Pathak, Los Altos Hills, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 10, 1991, Ser. No. 805,328

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.4 **2 Claims**



1. A method of programming a semiconductor memory comprising the steps of: a) selecting a row address of the semiconductor memory to be programmed; b) initializing a column address of the semiconductor memory to be programmed; c) writing a data byte, comprising a plurality of bits, to the selected row and column addresses of the semiconductor memory in a programming mode of operation: d) determining if additional data bytes are to be written to the selected row address; e) incrementing the column address if additional data bytes are to be written to the selected row address; f) switching the operation of the semiconductor memory from a programming mode of operation to a verification mode of operation if additional data bytes are not to be written to the selected row address, providing a predetermined voltage settling time period, and performing a verification operation on the data bytes written to the selected row address, wherein said verification operation is performed after a plurality of sequential data bytes have been written to the selected row address.

5,621,739

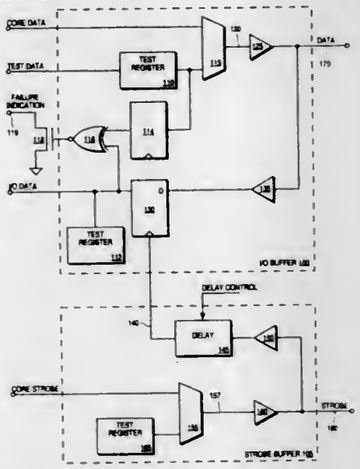
METHOD AND APPARATUS FOR BUFFER SELF-TEST AND CHARACTERIZATION

Christopher J. Sine, San Jose; Alper Ilkbahar, Santa Cruz, and Tak M. Mak, Union City, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 7, 1996, Ser. No. 643,954

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **30 Claims**



1. A self-testing buffer circuit comprising:

an input circuit having an input circuit output, and an input circuit input coupled to receive a data value generated by the self-testing buffer circuit;

a latch having a latch clock input and a latch input coupled to the input circuit output; and

an adjustable delay circuit having a delay adjust input, a strobe input, and a delay circuit output coupled to provide a delayed strobe at the latch clock input.

5,621,740

OUTPUT PAD CIRCUIT FOR DETECTING SHORT FAULTS IN INTEGRATED CIRCUITS

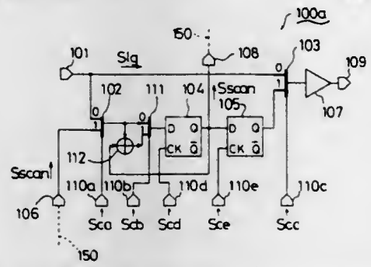
Takehiro Kamada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 155,168, Nov. 19, 1993, Pat. No. 5,450,415. This application May 13, 1994, Ser. No. 242,673

Claims priority, application Japan, May 14, 1993, 5-112843

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **10 Claims**



1. An output pad circuit comprising:

(a) input means for receiving a logic signal of first logic or a logic signal of second logic from the outside of said output pad circuit,

(b) a variable signal-current-level generator, connected to an output of said input means, for generating a logic signal identical in logic value with said logic signal from said input means, and

(c) a controller for exerting control in order that said generator generates a first logic signal and a second logic signal at different electric current levels in a test mode and generates a first logic signal and a second logic signal at the same current level in a normal mode.

3. A test circuit for the testing of a wire connected between integrated circuits, said test circuit incorporated in an integrated circuit, comprising:

(a) an internal logic circuit for generating either an internal logic signal of first logic or an internal logic signal of second logic,

(b) test signal generation means for generating either a test signal of first logic or a test signal of second logic,

(c) a plurality of output pad circuits connected to an output of said internal logic circuit as well as to an output of said test signal generation means, for generating given logic signals,

(d) an output pin, connected to a wire connected between integrated circuits as well as to an output pad circuit, for applying said given logic signals generated by said output pad circuit to said wire, and

(e) measurement means for measuring the logic value of said given logic signals from said output pad circuit,

wherein said each output pad circuit comprises:

(i) a logic input terminal connected to said internal logic circuit,

(ii) input means for alternatively inputting an internal logic signal and a test signal according to a mode-switch control signal for switching between a test operation mode and a normal operation mode and outputting the same,

(iii) a variable signal-current-level generator, connected to an output of said input means, for generating a logic signal identical in logic value with said logic signal outputted from said input means,

(iv) a controller for exerting control in order that said variable signal-current-level generator generates a first logic signal and a second logic signal at different electric current levels in a test mode and generates a first logic signal and a second logic signal at the same current level in a normal mode, and

(v) a logic output terminal connected to an output of said variable signal-current-level generator as well as to said output pin.

5,621,741

METHOD AND APPARATUS FOR TESTING TERMINAL CONNECTIONS OF SEMICONDUCTOR INTEGRATED CIRCUITS

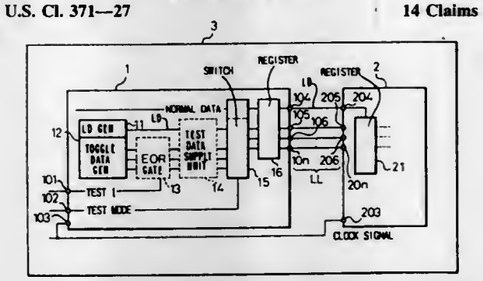
Kiyoshi Kohiyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 1, 1993, Ser. No. 115,138

Claims priority, application Japan, Mar. 1, 1993, 5-040032

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27 **14 Claims**



1. A method of dynamically testing connections between terminals of a first semiconductor integrated circuit and terminals of a second semiconductor integrated circuit, each thereof performing realtime operations in transmission of test data between respective terminals of the first and second semiconductor integrated circuits in synchronism with a clock signal and wherein said first and second semiconductor integrated circuits are mounted on a printed circuit board and said first semiconductor integrated circuit comprises a test data generation circuit which generates test data outputs for said terminal connection test, the method comprising:

selecting test data outputs of said test data generation circuit of said first semiconductor integrated circuit during a terminal connection test, in synchronism with but independently of the clock signal, and providing the selected test data outputs to an output connection of said first semiconductor integrated circuit;

on said second semiconductor integrated circuit and in synchronism with but independently of the clock signal, fetching from the output connection of the first semiconductor integrated circuit, and holding, the selected test data outputs; and

testing the terminal connections of said first and second semiconductor integrated circuits by verifying whether or not the test data which is fetched by and held in said second semiconductor integrated circuit represents a predetermined value.

5,621,742

METHOD AND APPARATUS FOR TESTING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Kenji Yoshino, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Continuation of Ser. No. 171,403, Dec. 22, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,927

Claims priority, application Japan, Dec. 22, 1992, 4-342351

Int. Cl.[6] G01R *31/30*

U.S. Cl. 371—28 **17 Claims**

1. A method for testing a semiconductor integrated circuit device, comprising the steps of:

(a) supplying a power supply voltage to the semiconductor integrated circuit device;

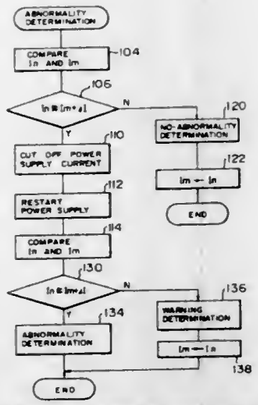
(b) intermittently generating a latch up pulse in the power supply voltage to the semiconductor integrated circuit device;

(c) determining whether a latch up condition is present in the semiconductor integrated circuit device;

(d) temporarily cutting off the power supply voltage to the semiconductor integrated circuit device when the latch up condition is present;

(e) resupplying the power supply voltage to the semiconductor integrated circuit device;

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(f) generating additional latch up pulses in the power supply voltage;

(g) determining whether additional latch up conditions are present in the semiconductor integrated circuit device within a predetermined number of the additional latch up pulses;

(h) cutting off the power supply to the semiconductor integrated circuit device when a predetermined number of additional latch up conditions are present in the predetermined number of additional latch up pulses; and

(i) repeating steps (b–h) when the additional latch up conditions do not occur in the predetermined number of latch up pulses.

5,621,743

CD-ROM DECODER FOR CORRECTING ERRORS IN HEADER DATA

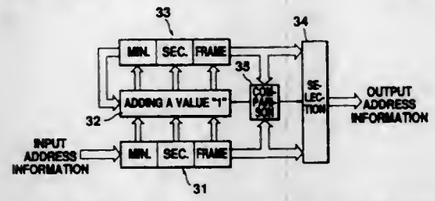
Shin-ichiro Tomisawa, Gifu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 14, 1995, Ser. No. 388,875

Claims priority, application Japan, Feb. 18, 1994, 6-021150; Feb. 18, 1994, 6-021151; Feb. 28, 1994, 6-030322; Feb. 28, 1994, 6-030323

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—30 **16 Claims**



1. A CD-ROM decoder for correcting a code error in digital data read out from a ROM disc and divided into frames and for transferring the error-corrected digital data to a host computer, the CD-ROM decoder comprising:

a specific data detection circuit for detecting specific data assigned for every frame among the digital data, the specific data is a synchronization signal representing a timing of the digital data, wherein the specific data detection circuit generates a first timing signal when detecting the synchronization signal; and

an interrupt signal generating circuit for generating an interrupt signal when the specific data is not detected for a given number of sequential frames, thereby stopping the digital data transfer to the host computer in response to the interrupt signal, wherein the interrupt signal generating circuit includes a first counter for receiving the first timing signal from the specific data detection circuit, the first counter is motivated by the first timing signal and counts a time period of one frame period to generate a second timing signal at a time when the next synchronization signal is estimated to be detected, and a second counter, which is reset to an initial value when the first and second timing signals match and advances a count value when the two timing signals do not match, thereby generating the interrupt signal when the count value of the second counter reaches a given value.

5,621,744

CONTINUOUS-WAVE ULTRAVIOLET LASER LIGHT GENERATING APPARATUS

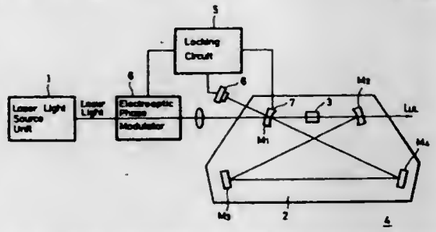
Hiroki Kikuchi; Asif A. Godil, both of Tokyo, and Michio Oka, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 17, 1995, Ser. No. 544,195

Claims priority, application Japan, Oct. 18, 1994, 6-252480

Int. Cl.[6] H01S *3/11*

U.S. Cl. 372—12 **5 Claims**



1. A continuous-wave ultraviolet laser light generating apparatus comprising:

a laser light source unit for generating laser light from visible light to near-infrared light;

a wavelength converting means which comprises an optical resonator and a wavelength convertor disposed in said optical resonator for converting a wavelength of incident laser light, and converts the laser light from said laser light source unit into continuous-wave ultraviolet laser light to emit the latter;

a locking means for adjusting said optical resonator so as to have a predetermined cavity length; and

an electrooptic phase modulator for modulating a phase of the laser light from said laser light source unit in response to a resonance frequency of said optical resonator, wherein said electrooptic phase modulator is made of an electrooptic crystal having a composition of $ATiOXO_4$ where A depicts any one of K, Cs and Rb and X depicts any one of P and As.

5,621,745

INTRACAVITY MODULATED PULSED LASER AND METHODS OF USING THE SAME

Michael J. Yessik, Burlingame, and Richard G. Thompson, Fairfield, both of Calif., assignors to American Dental Technologies, Inc., Southfield, Mich.

Continuation-in-part of Ser. No. 951,075, Sep. 25, 1992, Pat. No. 5,390,204. This application Dec. 7, 1994, Ser. No. 350,951

Int. Cl.[6] H01S *3/117;3/109*

U.S. Cl. 372—26 **28 Claims**

16. A laser comprising:

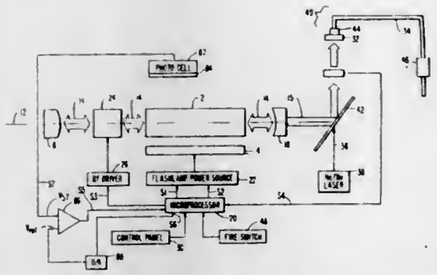
a totally reflective mirror and a partially reflective mirror disposed along an optical axis;

an amplification medium disposed along said optical axis between said mirrors;

a flashlamp disposed adjacent said amplification medium,

a flashlamp power source electrically coupled to said flashlamp;

a modulator having a variably controllable modulation gating frequency disposed along said optical axis between said amplification medium and one of said mirrors;



a control circuit electrically coupled to said flashlamp power source and to said modulator for triggering one or more pump pulse discharges by said flashlamp and for controlling said modulation gating of said modulator; and

a fluorescence feedback circuit electrically coupled to said control circuit and providing a signal to said control circuit when a fluorescence of said amplification medium reaches a predetermined level, such that said laser, in response to each triggering of a pump pulse discharge by said flashlamp, generates an output burst comprising a plurality of sub-pulses having predetermined, uniform peak powers.

5,621,746

SEMICONDUCTOR LASER AND METHOD OF MANUFACTURING SAME

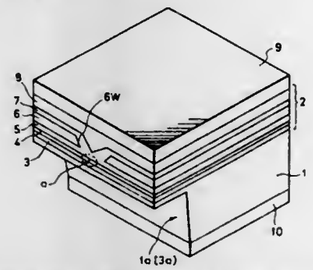
Makoto Futatsugi, Kanagawa; Katsumi Ando, Tokyo, and Tadashi Yamamoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,965

Claims priority, application Japan, Oct. 14, 1992, 4-276213; Sep. 17, 1993, 5-231864

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **14 Claims**



10. A semiconductor laser, comprising a semiconductor substrate having a first surface and a second surface which is opposite to the first surface;

a laser diode region disposed on the first surface of the semiconductor substrate and comprising an active layer for emitting a laser beam, and first and second cladding layers which sandwich the active layer to form a laser beam emission end in a face surface of the laser diode region;

a first electrode formed over the first surface of the semiconductor substrate;

a second electrode formed on the second surface of the semiconductor substrate; and

said semiconductor substrate having a front surface below the laser beam emission end, said front surface being stepped back from said end so as to be retracted from the laser beam emission end, wherein said front surface comprises an optically roughened surface,

wherein said laser diode region has a front surface above the laser beam emission end, said front surface being retracted from the laser beam emission end.

5,621,747

MULTI QUANTUM WELL SEMICONDUCTOR LASER AND OPTICAL COMMUNICATION SYSTEM USING THE SAME

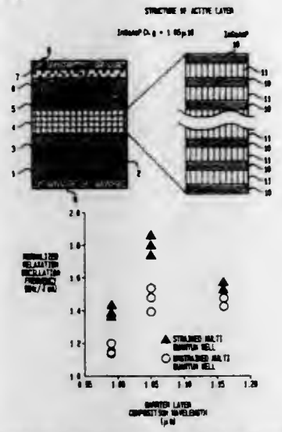
Masahiro Kitoh, Toyonaka; Nobuyuki Otsuka, Kawanishi; Masato Ishino, Shijonawate, and Yasushi Matsui, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 209,538, Mar. 11, 1994, abandoned. This application Dec. 29, 1994, Ser. No. 366,027

Claims priority, application Japan, Mar. 12, 1993, 5-051892

Int. Cl.[6] H01S *3/18*

U.S. Cl. 372—45 **5 Claims**



1. A multi quantum well semiconductor laser comprising an InP substrate and a multi-layered structure formed on the InP substrate, lasing at 1.29 μm to 1.33 μm wavelength,

wherein the multi-layered structure includes at least a multi quantum well active layer, the multi quantum well active layer including InGaAsP well layers and InGaAsP barrier layers alternately provided, the InGaAsP well layers have a compressive strain and the InGaAsP barrier layers are lattice matched with the InP substrate, and a bandgap wavelength of the InGaAsP barrier layers is substantially equal to 1.05 μm, and

wherein the multi-layered structure further includes at least one InGaAsP optical wave guide layer provided so as to be adjacent to the multi quantum well active layer, the InGaAsP optical wave guide layer is lattice matched with the InP substrate, and a bandgap wavelength of the InGaAsP optical wave guide layer is substantially equal to 1.05 μm.

5,621,748

STRIPE LASER DIODE HAVING AN IMPROVED EFFICIENCY FOR CURRENT CONFINEMENT

Makoto Kondo; Akira Furuya; Chikashi Anayama; Mami Sugano; Kay Domen; Toshiyuki Tanahashi, and Hiroshi Sekiguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 228,453, Apr. 15, 1994, Pat. No. 5,436,194, which is a continuation of Ser. No. 947,171, Sep. 18, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,352

Claims priority, application Japan, Sep. 20, 1991, 3-241533; Dec. 25, 1991, 3-342825; Mar. 4, 1992, 4-46547; Mar. 10, 1992, 51563; Mar. 26, 1992, 4-68000; May 25, 1992, 4-132304

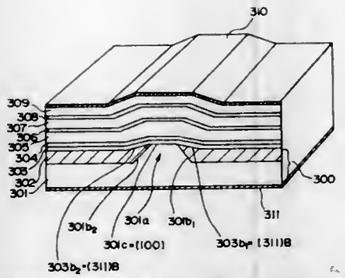
Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **10 Claims**

1. A stripe laser diode, comprising:

a semiconductor substrate doped to a first conductivity type, said substrate having an upper major surface and a lower major

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surface and extending in a longitudinal direction of the laser diode from a first end to a second, opposite end thereof;

a first stripe structure formed on said upper major surface of said semiconductor substrate as a part of said substrate, said first stripe structure comprising a first stripe surface formed of a crystal surface having a first crystal orientation and extending in said longitudinal direction and a second stripe surface formed of a crystal surface having a second, different crystal orientation and extending in said longitudinal direction adjacent to said first stripe surface;

a first clad layer of InGaAlP having upper and lower major surfaces and provided on said semiconductor substrate so as to extend in said longitudinal direction from a first end to a second, opposite end thereof;

a second stripe structure formed on said upper major surface of said first clad layer so as to extend in said longitudinal direction as a part of said first clad layer and in conformity with said first stripe structure, said second stripe structure comprising a third stripe surface corresponding to said first stripe surface and formed of a crystal surface having said first crystal orientation, said third stripe surface extending in said longitudinal direction, and a fourth stripe surface corresponding to said second stripe surface and formed of a crystal surface having said second crystal orientation, said fourth stripe surface extending in said longitudinal direction adjacent to said third stripe surface;

an active layer of undoped semiconductor material having upper and lower major surfaces and provided on said first clad layer so as to extend in said longitudinal direction from a first end to a second, opposite end, said active layer being supplied with first type carriers of a first polarity and second type carriers of a second, opposite polarity for producing an optical beam as a result of recombination of said first and second type carriers;

a third stripe structure formed on said upper major surface of said active layer so as to extend in said longitudinal direction as a part of said active layer and in comformity with said first and second stripe structures, said third stripe structure comprising a fifth stripe surface corresponding to said third stripe surface and formed of a crystal surface having said first crystal orientation, said fifth stripe surface extending in said longitudinal direction, and a sixth stripe surface corresponding to said fourth stripe surface and formed of a crystal surface having said second crystal orientation, said sixth stripe surface extending in said longitudinal direction along said fifth stripe surface;

a second clad layer of InGaAlP having upper and lower major surfaces and provided on said active layer so as to extend in said longitudinal direction from said first end to said second end of said substrate;

a fourth stripe structure formed on said upper major surface of said second clad layer so as to extend in said longitudinal direction as a part of said second clad layer and in conformity with said first through third stripe structures, said fourth stripe structure comprising a seventh stripe surface formed of a crystal surface having said first crystal orientation, said seventh stripe surface extending in said longitudinal direction, and an eighth stripe surface formed of a crystal surface having said second crystal orientation, said eighth stripe surface extending in said longitudinal direction adjacent to said seventh stripe surface;

first electrode means, provided on said lower major surface of said substrate, for establishing an ohmic contact therewith and injecting said first type carriers into said active layer via said first clad layer;

second electrode means, provided on said upper major surface of said second clad layer, for establishing an ohmic contact therewith and injecting said second type carriers into said active layer via said second clad layer;

one of said first and second clad layers being doped, at least in a part thereof, with a p-type dopant and simultaneously with an n-type dopant and thereby forming a current guiding structure for guiding a drive current of the laser diode such that said drive current is injected selectively into said active layer in correspondence to a region defined in said third stripe structure by said fifth stripe surface; and

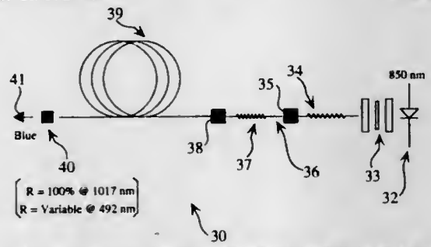
each of said first, third, fifth and seventh stripe surfaces being formed of a (311)A-oriented crystal surface and being inclined with respect to said upper major surface of said substrate and each of said second, fourth, sixth and eighth stripe surfaces being formed of a crystal surface coincident to the crystal surface forming said upper major surface of said substrate.

5,621,749

PRASEODYMIUM-DOPED FLUORIDE FIBER UPCONVERSION LASER FOR THE GENERATION OF BLUE LIGHT

Douglas M. Baney, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 6, 1995, Ser. No. 524,058
Int. Cl.[6] H01S *3/09*
U.S. Cl. 372—69 **18 Claims**



1. An upconversion laser for generating blue light at a wavelength of substantially 492 nm, the laser comprising:

an optical cavity, said optical cavity being resonant at least at a wavelength of light emitted by ytterbium ions falling from a $^2F_{5/2}$ state;

one and only one laser pump optically coupled to said optical cavity, said laser pumps generating light at a wavelength shorter than said wavelength of said light emitted by said ytterbium ions; and

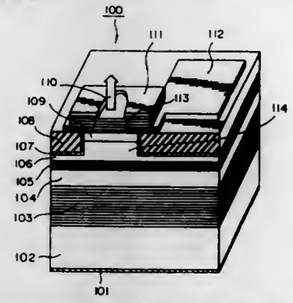
a ytterbium/praseodymium doped fluorine fiber in said optical cavity, in which a first energy transfer occurs by cross relaxation in which energy from said laser pump raises a ytterbium ion to a $^2F_{5/2}$ state, and is transferred from said ytterbium ion at said $^2F_{5/2}$ state to said fiber to raise a praseodymium ion to a $^1G_4$ state, and in which a second energy transfer directly from said laser pump further excites said praseodymium ion in said $^1G_4$ state to a $^3P_0$ state from which said praseodymium ion falls to a ground state resulting in blue light emission at the wavelength of substantially 492 nm.

5,621,750

SURFACE EMISSION TYPE SEMICONDUCTOR LASER, METHOD AND APPARATUS FOR PRODUCING THE SAME

Hideaki Iwano; Katsumi Mori; Takayuki Kondo, and Tatsuya Asaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP95/00060, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO95/20254, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 20, 1995, Ser. No. 491,955
Claims priority, application Japan, Jan. 20, 1994, 6-4859
Int. Cl.[6] H01S *3/19;* **H01L** *21/20*
U.S. Cl. 372—96 **50 Claims**



1. A surface emission type semiconductor laser comprising:

a substrate formed of a compound semiconductor of a first conductance type;

a lower electrode formed on the bottom of said substrate;

a distributed reflection multilayer film mirror of the first conductance type formed on the top of said substrate;

a first clad layer of the first conductance type formed on said distributed reflection multilayer film mirror;

a quantum well active layer formed on said first clad layer;

a second clad layer of a second conductance type formed on said quantum well active layer and having one or more column-like portions;

a contact layer of the second conductance type formed on the column-like portion or portions in the second clad layer;

a buried insulation layer embedded around said column-like portion or portions of said second clad layer and said contact layer, including at least a first insulation layer which covers the surface of said second clad layer and said contact layer and which is formed of a silicon compound;

an upper electrode forming a bridge between said contact and buried insulation layers and having an opening facing part of said contact layer; and

a dielectric multilayer film mirror formed at least on said contact layer to cover the opening of said upper electrode.

5,621,751

CONTROLLING ELECTRODE GAP DURING VACUUM ARC REMELTING AT LOW MELTING CURRENT

Rodney L. Williamson, Albuquerque; Frank J. Zanner, Sandia Park, both of N.M., and Stephen M. Grose, Glenwood, W. Va., assignors to Sandia Corporation, Albuquerque, N.M.

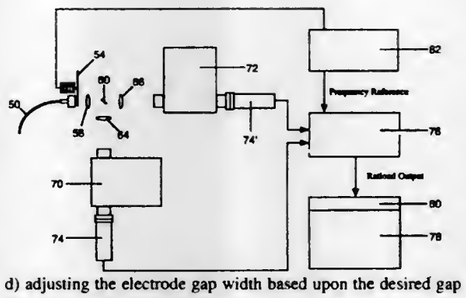
Filed Apr. 21, 1995, Ser. No. 426,532
Int. Cl.[6] H05B *7/148*
U.S. Cl. 373—70 **17 Claims**

1. A method of controlling electrode gap width in a vacuum arc remelting furnace, the method comprising the steps of:

a) directing electromagnetic emissions from a metal vapor plasma within the furnace to a spectroscopic detector outside the furnace;

b) spectroscopically analyzing the emissions;

c) determining a desired electrode gap width from the spectroscopic analysis; and



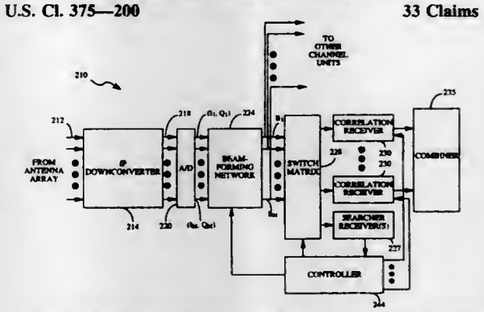
d) adjusting the electrode gap width based upon the desired gap width.

5,621,752

ADAPTIVE SECTORIZATION IN A SPREAD SPECTRUM COMMUNICATION SYSTEM

Franklin P. Antonio, Del Mar, Calif.; Klein S. Gilhousen, Bozeman, Mont.; Jack K. Wolf, La Jolla, and Ephraim Zehavi, San Diego, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jun. 23, 1994, Ser. No. 265,664
Int. Cl.[6] H04B *15/00;* **H04K** *1/00;* **H04L** *27/30*
U.S. Cl. 375—200 **33 Claims**



1. A digital communication system in which information signals are communicated among a plurality of users, said system comprising:

means for providing at least first and second electromagnetic beams for receiving components of said information signals transmitted by said users;

means for allocating said first electromagnetic beam to receive a first of said information signal components transmitted over a first transmission path so as to generate a first received signal, said first information signal component comprising at least a portion of a first information signal transmitted by a first of said users;

means for generating a first beam signal from said first received signal;

a first beam tracking network for generating a first beam tracking signal by demodulating said first beam signal; and

beam switching means for spatially tracking said first signal component by assigning said second electromagnetic beam to receive said first signal component based upon said first beam tracking signal.

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5,621,753

DIGITAL COMMUNICATION SYSTEM AND A PRIMARY STATION FOR USE IN SUCH A SYSTEM

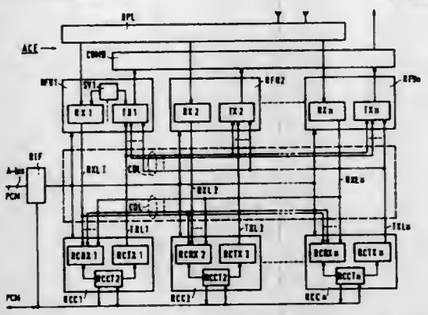
Hubert R. Weber, Eckental-Forth, Germany, assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 19, 1994, Ser. No. 326,612

Claims priority, application European Pat. Off., Oct. 21, 1993, 93202956

Int. Cl.[6] H04B 1/713

U.S. Cl. 375—202 8 Claims



1. A primary station for use in a digital communication system having a plurality of secondary stations and wherein the primary station communicates with each of the secondary stations by frequency hopping of time division data bursts among different frequency channels; said primary station comprising:

a plurality of transceivers each of which includes a transmitter section (TX1, TX2 . . . , TXn) and a receiver section (RX1, RX2 . . . , RXn);

a plurality of transceiver controllers (RCC1, RCC2, . . . , RCC_n), each of which has a transmitter section and a receiver section, and which in accordance with a frequency hopping algorithm supply data bursts to the transmitter sections of each of said transceivers and receive data bursts from the receiver sections of each of said transceivers; and

a distribution arrangement for coupling the transceivers to the transceiver controllers, said distribution arrangement comprising (i) a first set of point-to-multipoint links (RXL1, RXL2, . . . , RXL_n) which respectively couple the receiver section of each respective transceiver to the receiver sections of all of the transceiver controllers, and (ii) a second set of point-to-multipoint links (TXL1, TXL2, . . . , TXLn) which respectively couple the transmitter section each respective transceiver controller to the transmitter sections of all of the transceivers;

each of said sets of point-to-multipoint links being divided into data links (CDL) and timing links (CTL), the links between the transceivers and the transceiver controllers being data links; and

a primary station controller (RIF) coupled to said timing links for supplying operation control signals to the transceivers and to the transceiver controllers by way of said timing links.

5,621,754

Patent Not Issued For This Number

5,621,755

CMOS TECHNOLOGY HIGH SPEED DIGITAL SIGNAL TRANSCEIVER

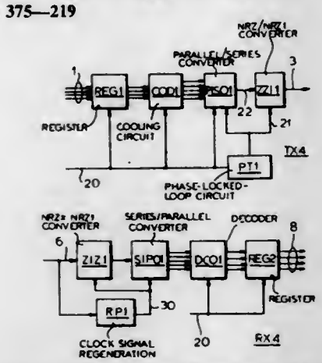
Valter Bella, Turin; Andrea Finotello, Settimo Torinese; Danilo Galgani, and Marco Gandini, both of Turin, all of Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Oct. 28, 1994, Ser. No. 330,914

Claims priority, application Italy, Dec. 16, 1993, TO93A0955

Int. Cl.[6] H04B 1/38; H04L 5/16

U.S. Cl. 375—219 2 Claims



1. A high speed digital signal transceiver in CMOS technology comprising:

a transmitter in which an incoming parallel flow is coded in a code having a high number of transitions, converted into serial form and coded in a line code, and

a receiver in which an incoming serial flow is decoded from a line code, converted into parallel form and decoded in order to re-obtain an original parallel flow, said transceiver having a unit for generating a clock signal for the decoding from line code and conversion into parallel form, said unit comprising:

a voltage-controller local oscillator controlled by two feedback loops, a first of said loops comprising:

a crystal oscillator;

a binary divider which divides a signal provided by the local oscillator;

a phase-frequency detector which operates on signals provided by the binary divider and by the crystal oscillator, providing outputs with signals at a certain logic state if the frequencies of the incoming signals are different, and correction pulses at respective instants if the incoming signals have equal frequencies but are out of phase with respect to each other; and

a first low-pass filter, which receives the signals provided by the phase-frequency detector and controls the local oscillator;

the second reaction loop comprising:

a phase detector, which operates on signals provided by the local oscillator and on an incoming serial flow, providing at an output of said phase detector a third pulse reference signal and a fourth pulse signal active for a time varying as a function of a phase error between signals at inputs of the phase detector; and

a second low-pass filter which receives the signals provided by the phase detector and controls the local oscillator,

said phase detector comprising:

a first D-type flip-flop having a data input receiving the incoming serial flow and a clock input receiving a signal provided by the local oscillator;

a second D-type flip-flop having a data input receiving an output signal from the first flip-flop and a clock input is receiving the signal provided by the local oscillator inverted by an inverter; and

two exclusive-OR gates each with inputs connected to the data input and to the output of one of said flip-flops and with outputs connected to outputs of the phase detector.

5,621,756

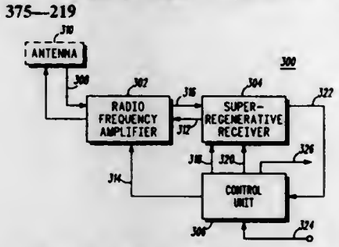
METHOD SUPER-REGENERATIVE TRANSCEIVER, AND COMPUTER SYSTEM FOR PROVIDING SHORT RANGE COMMUNICATION WITH REDUCED CURRENT DRAIN

Harry D. Bush, Palatine; George N. Kotzamanis, Schaumburg, and James O. Tomaszewski, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1995, Ser. No. 380,902

Int. Cl.[6] H04B 1/38; 1/16

U.S. Cl. 375—219 4 Claims



1. A method for providing short range communication with reduced current drain, the method comprising detecting received data by:

providing, by a control unit, an amplifier "ON" pulse periodically to a radio frequency amplifier to allow reduced current drain, wherein the radio frequency amplifier eliminates antenna effects in an input signal to provide an amplified input signal; and

providing, by the control unit, a receiver "ON" pulse to a super-regenerative receiver immediately following the amplifier "ON" pulse to allow reduced current drain, Wherein the super-regenerative receiver detects received data given the amplified input signal,

wherein the method further comprises providing data transmission by:

generating, by the super-regenerative receiver, a transmit radio frequency signal in response to a transmit data signal; and

passing the transmit radio frequency signal through the radio frequency amplifier from an output of the radio frequency amplifier to an input of the radio frequency amplifier to provide an attenuated transmit radio frequency signal.

5,621,757

CIRCUIT FOR MEASURING ELECTRIC FIELD BY RAPID MEASUREMENT AND NORMAL MEASUREMENT IN A MOBILE COMMUNICATION SYSTEM AND METHOD OF USING SAME

Tsuguo Hori, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation-in-part of Ser. No. 230,616, Apr. 21, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,433

Claims priority, application Japan, Apr. 22, 1993, 5-096071

Int. Cl.[6] H04B 3/46; 17/00; H04L 27/06

U.S. Cl. 375—224 14 Claims

1. A method of measuring an electric field of an incoming signal implemented in a mobile communication system, comprising the steps of:

heterodyning the incoming signal with a local signal produced by a phase-locked synthesizer means when a normal measurement of the electric field is to be effected, and

when a rapid measurement of the electric field is to be effected, disconnecting the phase-locked synthesizer means, generating a local signal having a prescribed frequency change, and heterodyning the incoming signal with the local signal of the prescribed frequency change, the rapid measurement being effected at initial time of the electric field measurement and when the measured electric field level does not exceed a predetermined reference level, and the normal measurement being effected when the measured electric field level exceeds the reference level.

5,621,758

PWM COMMUNICATION SYSTEM

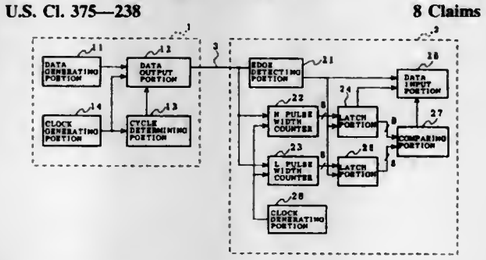
Shinichi Suzuki, and Hirofumi Yamazoe, both of Hyogo, Japan, assignors to Mitsubishi Electric Semiconductor Software, Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Jan. 25, 1996, Ser. No. 591,718

Claims priority, application Japan, Aug. 9, 1995, 7-203184

Int. Cl.[6] H03K 9/08

U.S. Cl. 375—238 8 Claims



1. A PWM communication system comprising:

signal transmitting circuit which creates a pulse signal having a pulse width according to a value of transmit data by counting pulses in a clock signal, and transmits the created pulse signals to a transmission line on a predetermined cycle;

pulse width measuring circuit coupled to the transmission line to receive, as input, the pulse signal from the transmission line, said pulse width measuring circuit measuring a length of a high level period and a length of a low level period in the pulse signal by using a clock signal having a frequency equivalent to a frequency of the clock signal used in the signal transmitting circuit; and

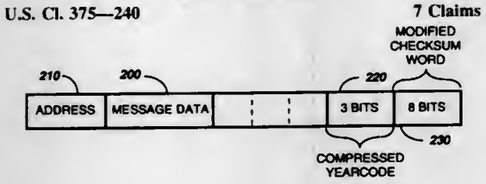
comparing circuit which compares a sum of the length of the high level period and the length of the low level period measured by said pulse width measuring circuit with the predetermined cycle, and outputs an error signal when the sum is not identical with the predetermined cycle.

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5,621,759
METHOD FOR COMPRESSING MESSAGE CHECKSUM AND MESSAGE YEARCODE INFORMATION IN A MESSAGING SYSTEM

Gerald R. King, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 431,870
Int. Cl.[6] H04B 7/02
U.S. Cl. 375—240 7 Claims



1. In a subscription messaging system in which a plurality of receivers subscribe to receive messages for a predetermined subscription period, a method comprising steps of:

generating a message represented by a plurality of message data bits, wherein the message data bits are grouped into bytes;

generating a datecode for the message which defines a subscription date to be associated with the message, the datecode comprising a predetermined number of bits;

generating a compressed datecode based on the datecode generated for the message, the compressed datecode comprising a plurality of bits equal to a predetermined number of least significant bits of the predetermined number of bits of the datecode, which is less than the predetermined number of bits of the datecode generated for the message;

generating a modified checksum word for the message based on the message data bits and the predetermined number of bits which represent the datecode for the message by summing together the bytes of the message to generate a transmission checksum and adding to the transmission checksum the predetermined number of bits which represent the datecode corresponding to the subscription date to be associated with the message;

transmitting a signal over-the-air which includes the message, compressed datecode and modified checksum word;

storing in a receiver at least one datecode which defines a subscription period during which the receiver is entitled to display received messages and a subscription table which comprises a plurality of datecodes;

receiving the signal in the receiver and recovering the message data bits, the compressed datecode and the modified checksum word;

determining from at least one datecode stored in the subscription table of the receiver an uncompressed datecode which is a stored datecode whose predetermined number of least significant bits matches the plurality of bits of the compressed datecode;

computing a modified checksum in the receiver based on the uncompressed datecode and the message data bits recovered from the signal received by the receiver;

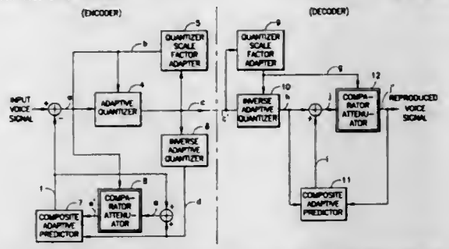
comparing the modified checksum word in the signal received by the receiver with the modified checksum computed in the receiver; and

displaying the message represented by the message data bits recovered from the signal received by the receiver if the modified checksum computed in the receiver matches the modified checksum word recovered from the signal received by the receiver.

5,621,760
SPEECH CODING TRANSMISSION SYSTEM AND CODER AND DECODER THEREFOR

Hiroki Gotoh; Seishi Sasaki, and Masayasu Miyake, all of Sendai, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 917,832, Jul. 21, 1992, abandoned.
This application May 16, 1996, Ser. No. 649,067
Int. Cl.[6] H04B 14/06; H03M 3/04
U.S. Cl. 375—245 5 Claims



1. A speech coding transmission system using adaptive differential PCM comprising:

a coder receptive of an input speech signal for producing a coded output from said adaptive differential PCM by quantizing a difference between a first predictive value from a first composite adaptive predictor and the input speech signal by use of an adaptive quantizer in accordance with a level of the difference to send out the coded output to a transmission medium; and

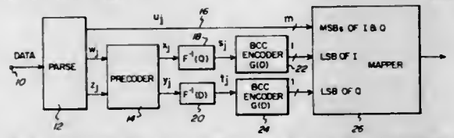
a decoder receptive of the coded output from the transmission medium for demodulating the coded output by inversely quantizing the coded output with an inverse adaptive quantizer to produce a decoded residual and by adding the decoded residual to a second predictive signal from a second composite adaptive predictor to reproduce a reproduced speech signal;

at least one of said coder and said decoder comprising a comparator-attenuator for attenuating an amplitude of an input signal to the first composite adaptive predictor or the second composite adaptive predictor to a value smaller than a predetermined value.

5,621,761
ROTATIONALLY INVARIANT TRELLIS CODING INCORPORATING TRANSPARENT BINARY CONVOLUTIONAL CODES

Chris Heegard, Ithaca, N.Y., assignor to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Dec. 9, 1994, Ser. No. 353,064
Int. Cl.[6] H04L 5/12;23/02
U.S. Cl. 375—265 27 Claims



1. A rotationally invariant trellis coder for encoding input data to be transmitted to a receiver via a two-dimensional symbol modulation, comprising:

a precoder for processing said input data, said precoder comprising nonlinear logic that is the inverse of logic provided by a counterpart postcoder at said receiver;

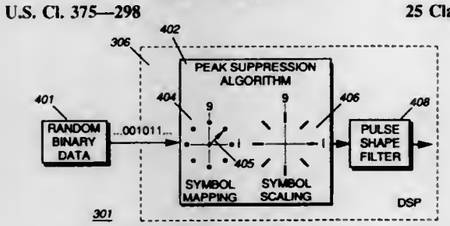
an encoder for encoding the precoded data using a transparent binary convolutional code; and

means for mapping the encoded data from said encoder to a two-dimensional signal space having a plurality of signal points, said points being labeled with unique binary codes in which the two least significant bits, denoted by (I_j, Q_j), are permuted and partially complemented to $(\tilde{Q}_j, I_j)$ for each 90° phase rotation around the signal space in a counter clockwise direction, the remaining most significant bits for each point, if any, being invariant to such rotation.

5,621,762
RADIO WITH PEAK POWER AND BANDWIDTH EFFICIENT MODULATION

Scott L. Miller, Gainesville, and Robert J. O'Dea, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 12, 1995, Ser. No. 489,630
Int. Cl.[6] H04L 27/36
U.S. Cl. 375—298 25 Claims



1. A method for modulating a digital information, comprising:

generating the digital information;

mapping the digital information onto a constellation diagram to produce data symbols each having an onset;

processing the data symbols at a rate which separates them at their respective onset via a symbol interval;

representing the data symbols in I and Q signal components; and

scaling the I and Q signal components to reduce peak power while maintaining average power.

5,621,763
APPARATUS AND METHOD FOR GENERATING A TRANSITION BETWEEN THE ON AND OFF STATES OF A RADIO FREQUENCY TRANSMITTER

Thomas J. Walczak, Woodstock; Robert I. Greene, Streamwood; Stephen V. Cahill, Palatine, and John W. Diehl, Glen Ellyn, all of Ill., assignors to Motorola, Schaumburg, Ill.

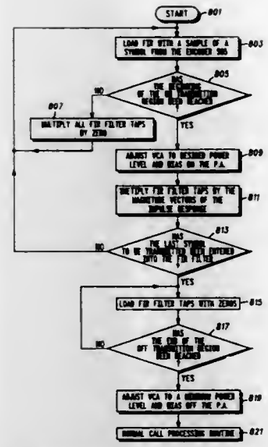
Continuation of Ser. No. 154,680, Nov. 18, 1993, abandoned, which is a continuation of Ser. No. 733,494, Jul. 22, 1991, abandoned. This application May 15, 1995, Ser. No. 440,854
Int. Cl.[6] H04L 27/04
U.S. Cl. 375—312 12 Claims

1. A method for generating a digital burst signal in a transmitter, the digital burst signal defining a predetermined time duration including a first, a second and a third time period, the first time period providing a first transition time during which the transmitter is permitted to adjust between first and second output power levels, the second time period providing a transmission time during which the transmitter is permitted to transmit a predetermined number of sequential symbols at the transmitter's second output power level, the third time period providing a second transition time during which the transmitter is permitted to adjust between the second and first output power levels, the method comprising the steps of:

generating a first set of predetermined number of sequential symbols, which are sequentially followed by a second set of predetermined number of sequential symbols, which are sequentially followed by a third set of predetermined number of sequential symbols, wherein each of predetermined number of sequential symbols in the first and third sets of predetermined number of sequential symbols have a zero value;

filtering the generated predetermined number of sequential symbols responsive to a predetermined impulse response having a leading portion and a trailing portion; and

controlling the timing of when the first, second and third sets of predetermined number of sequential symbols are generated by

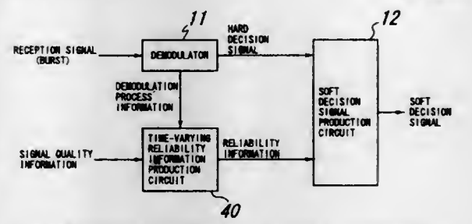


the step of generating responsive to the predetermined impulse response, wherein the first set of predetermined number of sequential symbols sequentially followed by the second set of predetermined number of sequential symbols are generated at a predetermined time for loading into predetermined taps forming the leading portion of the predetermined impulse response to cause the transmitter to adjust between the first and second output power levels only during the first transition time and wherein the second set of predetermined number of sequential symbols sequentially followed by the third set of predetermined number of sequential symbols are generated at a predetermined time for loading into predetermined taps forming the trailing portion of the predetermined impulse to cause the transmitter to adjust between the second and the first output power levels only during the second transition time.

5,621,764
SOFT DECISION SIGNAL OUTPUTTING RECEIVER

Akihisa Ushirokawa; Kazuhiro Okanoue, and Akira Hioki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 493,158
Claims priority, application Japan, Jun. 21, 1994, 6-138821
Int. Cl.[6] H04L 25/06
U.S. Cl. 375—317 30 Claims



1. A soft decision signal outputting receiver, comprising:

a demodulator for modulating a burst signal and outputting a hard decision signal;

a reliability information production circuit for producing reliability information regarding the hard decision signal from signal quality information for each plurality of symbol times; and

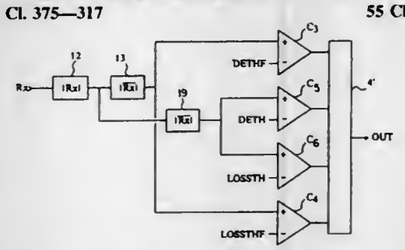
a soft decision signal production circuit for producing a soft decision signal from the hard decision signal and the reliability information;

wherein the plurality of symbol times is set equal to a time of one burst length, and the signal quality information for each

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burst time includes at least one of a number of errors upon demodulation of a known signal portion within the burst, a mean square value of an error signal of said demodulator, and an unequalizable interference amount obtained from a known signal portion within the burst.

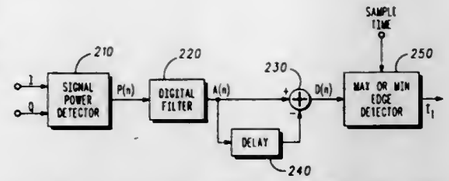
5,621,765
DETECTOR OF THE PRESENCE OF A TRANSMISSION IN A MODEM
William Glass, Seyssinet Pariset, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France
Filed Sep. 11, 1995, Ser. No. 526,505
Claims priority, application France, Sep. 14, 1994, 94 11211
Int. Cl.[6] H03K *9/00;* **H04L** *27/06;27/14;27/72*
U.S. Cl. 375—317 **55 Claims**



1. A detector of the presence of a modem transmission, comprising:
an absolute value circuit that receives a modem signal and determines an absolute value of the modem signal;
a first averaging circuit, having an input coupled to the absolute value circuit and an output, that generates a first average of the absolute value of the modem signal over a first time period;
a first pair of comparators, each having an input coupled to the output of the first averaging circuit, that respectively compare the first average of the absolute value of the modem signal against a first pair of predetermined thresholds that includes a first upper threshold and a first lower threshold, the first upper threshold establishing a detection of a modem transmission and lower threshold establishing an absence of a modem transmission;
a second averaging circuit, having an input coupled to the absolute value circuit and an output, that generates a second average of the absolute value of the modem signal over a second time period that is shorter than the first time period; and
a second pair of comparators, each having an input coupled to the output of the second averaging circuit, that respectively compare the second average of the absolute value of the modem signal to a second pair of predetermined thresholds that includes a second upper threshold and a second lower threshold, the second upper threshold being greater than the first upper threshold, the second lower threshold being less than the first lower threshold.

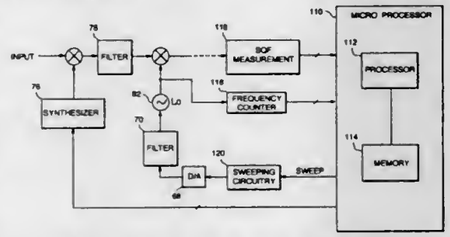
5,621,766
METHOD AND APPARATUS FOR BURST DETECTING
Bradley B. Bakke, Elgin, and John W. Arens, Grayslake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 31, 1994, Ser. No. 332,159
Int. Cl.[6] H03D *1/00*
U.S. Cl. 375—340 **36 Claims**

1. A burst detector for detecting a burst, comprising:
a filter having an impulse response characteristic of an expected burst to filter a received signal;



a subtractor operatively coupled to said filter to provide a detection signal by subtracting a filtered version of the received signal from a delayed and filtered version of the received signal; and
a burst edge detector operatively coupled to said subtractor to receive the detection signal and to detect a leading edge of the burst.

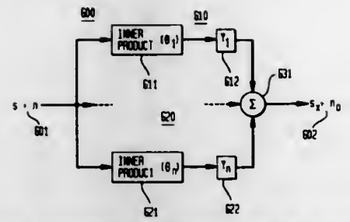
5,621,767
METHOD AND DEVICE FOR LOCKING ON A CARRIER SIGNAL BY DIVIDING FREQUENCY BAND INTO SEGMENTS FOR SEGMENT SIGNAL QUALITY DETERMINATION AND SELECTING BETTER SIGNAL QUALITY SEGMENT
Andrew Brandt, Frederick, and Sasan Rostami, Germantown, both of Md., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Sep. 30, 1994, Ser. No. 316,044
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—344 **19 Claims**



1. A method of locking onto a carrier signal located within a frequency band comprising the steps of:
dividing the frequency band into a plurality of segments;
measuring a signal quality value for each of the segments;
setting a threshold value in a front-end circuit based on the measured signal quality, wherein the threshold value is set to a value higher than an average signal quality value measured for each segment, but lower than the signal quality value for the selected segment;
periodically reducing the threshold value in small increments while the front-end circuit is attempting to lock onto the carrier signal;
selecting one of the segments based on the measured signal quality values; and
sweeping the selected segment to lock onto the carrier signal.

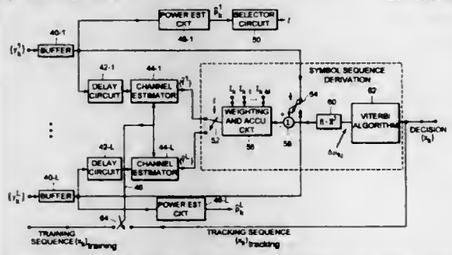
5,621,768
GENERALIZED NOISE CANCELLATION IN A COMMUNICATION CHANNEL
Joseph W. Lechleider, Morristown, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.
Filed Nov. 29, 1994, Ser. No. 346,446
Int. Cl.[6] H04B *1/10;* **H04L** *1/00*
U.S. Cl. 375—346 **10 Claims**

1. A noise canceler for processing a channel output signal composed of a signal plus noise to produce a filtered channel output signal, the noise being a linear combination of first and second noise components, the canceler comprising



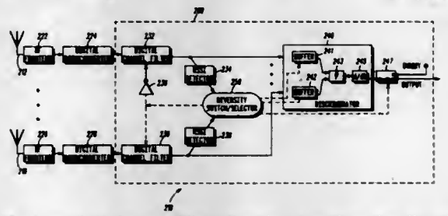
a parallel arrangement of a plurality of cascade networks, each cascade network being responsive to the signal and the noise to produce an output signal, wherein each cascade network includes: an inner product filter circuit having a filter characteristic determined from a first eigenvector equation corresponding to minimization of noise in the first noise component, in series with a second filter having a characteristic determined from a second eigenvector equation related to the first eigenvector equation, and
means for combining the outputs of the second filters to produce the filtered channel output signal.

5,621,769
ADAPTIVE-SEQUENCE-ESTIMATION APPARATUS EMPLOYING DIVERSITY COMBINING/SELECTION
Yongbing Wan, and Qingli Liu, both of Calgary, Canada, assignors to NovAtel Communications Ltd., Calgary, Canada
Filed Jun. 8, 1992, Ser. No. 895,542
Int. Cl.[6] H04L *1/02;* **H03D** *1/00*
U.S. Cl. 375—347 **25 Claims**



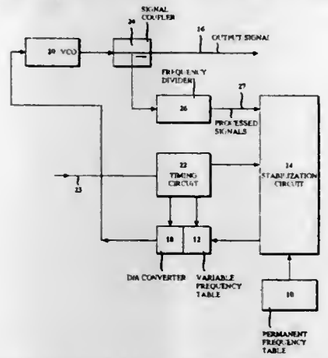
18. A receiver for receiving signals transmitted in bursts over a plurality of channels, the receiver including:
A) for each of the plurality of channels, a channel-impulse-response estimator that includes model parameters that represent a model of that channel;
B) a symbol-sequence-derivation circuit for
(i) determining, for each of a plurality of candidate symbol subsequences representing a portion of one of the bursts, an associated response of each channel estimator model to that candidate symbol sub-sequence,
(ii) calculating metrics associated with each candidate sub-sequence, the metrics based on the responses of the channel estimator models,
(iii) determining, from the metrics, which candidate sub-sequence is the most likely, and
(iv) applying as a reference signal to all of the channel-impulse-response estimators a signal based on the same, single most likely candidate sub-sequence, to update the model parameters produced by the channel-impulse-response estimators,
each channel-impulse-response estimator updating its model based on each of the reference signals received from the symbol-sequence-derivation circuit.

5,621,770
METHOD AND SYSTEM FOR PROCESSING FIRST AND SECOND DIGITAL SIGNAL VERSIONS OF A SIGNAL IN A DIVERSITY RECEIVER
Bruce J. Zastera, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 31, 1994, Ser. No. 298,876
Int. Cl.[6] H04B *7/08;* **H04L** *1/06*
U.S. Cl. 375—347 **19 Claims**



9. A receiver for providing diversity reception, the diversity receiver having at least first and second branches for receiving at least first and second signal versions of a signal, comprising:
(a) first and second filter and decimator devices coupled to the first and second branches, respectively;
(b) a diversity switch controller, responsive to the first and second filter and decimator devices;
(c) a demodulator responsive to the diversity switch controller and the first and second filters, said demodulator comprising a phase detector responsive to the first and second filter and decimator devices, the phase detector determining phase information based on a filtered, but not decimated, signal produced by the first filter and decimator device and a decimated signal produced by the second filter and decimator device.

5,621,771
OPEN LOOP SWITCHING FREQUENCY SOURCE UTILIZING CLOSED LOOP STABILIZATION
Moshe Dvir, Kiryat Bialik, Israel, assignor to State of Israel Rafael-Armament Development Authority
Filed Mar. 10, 1994, Ser. No. 208,327
Claims priority, application Israel, Mar. 28, 1993, 105180
Int. Cl.[6] H04L *7/00;* **H03L** *7/00;* **H04B** *1/40;1/18*
U.S. Cl. 375—354 **15 Claims**



1. A frequency source for generating output signals having a sequence of discrete frequencies, comprising:
(a) a permanent frequency table having a plurality of permanent frequency entries;
(b) a variable frequency table having a plurality of variable frequency entries;
(c) open loop signal generator means for generating the output signal from said variable frequency table, wherein each of the

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frequencies in the sequence is determined by any one of said plurality of variable frequency entries:

(d) a closed loop stabilization circuit for comparing any frequency of the output signal with the frequency of the corresponding entry in said permanent frequency table and updating said variable frequency table accordingly, the comparing and the updating occurring simultaneously with the generation of the output signal, said closed loop stabilization circuit coupled to said permanent frequency table and said variable frequency table; and

(e) timing means for synchronizing the updating of said variable frequency table, said timing means coupled to said closed loop stabilization circuit.

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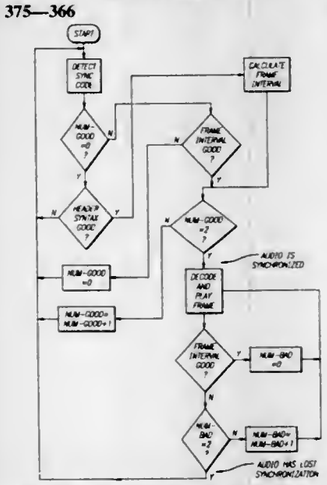
HYSTERETIC SYNCHRONIZATION SYSTEM FOR MPEG AUDIO FRAME DECODER

Greg Maturi, Tracy, and Gregg Dierke, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 20, 1995, Ser. No. 376,005

Int. Cl.[6] H04C 7/06

U.S. Cl. 375—366 **18 Claims**



1. A synchronization system for synchronizing a data processing unit to an input data bitstream including synchronization codes that are successively spaced from each other by a predetermined interval, and data for processing by the processing unit disposed between the synchronization codes, comprising:

synchronization code detecting means for detecting said synchronization codes;

interval sensing means for sensing intervals between successive synchronization codes;

comparator means for comparing said intervals with said predetermined interval; and

control means for determining that the system is synchronized to the bitstream after the comparator means has detected a first predetermined number of said intervals corresponding to successive synchronization codes that are equal to said predetermined interval; and determining that the system is unsynchronized to the bitstream after the comparator means has detected a second predetermined number of said intervals corresponding to successive synchronization codes that are not equal to said predetermined interval, in which:

the bitstream further comprises a data header including information from which said predetermined interval can be calculated;

the system further comprises header sensor means for sensing said header and calculating said predetermined interval from said information;

said information comprises a bitrate and a sampling frequency; and

the header sensor means calculates said interval as:

$$N = K(\text{bitrate/sampling frequency})$$

where N is said predetermined interval and K is a predetermined constant.

5,621,773

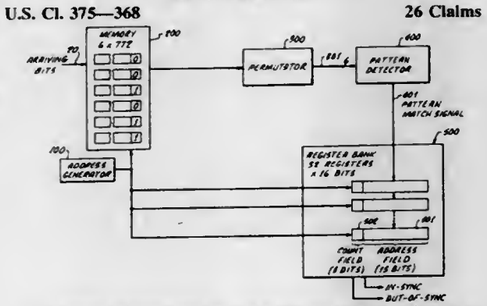
METHOD AND APPARATUS FOR FAST SYNCHRONIZATION OF T1 EXTENDED SUPERFRAMES

Subir Varma, San Jose; Thomas Daniel, Los Altos Hills, and Dieter Nattkemper, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 8, 1996, Ser. No. 611,327

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—368 **26 Claims**



1. A frame synchronizer for synchronizing a data receiver to an incoming T1 data bit stream, the T1 data bit stream including a repeated deterministic frame alignment signal within a 4632-bit extended superframe, the frame synchronizer comprising:

a random access memory (RAM) for storing an extended superframe's worth of consecutively received bits;

an address generator for controlling read and write addresses for said RAM;

a serial to parallel converter for converting serial bits read from said RAM beginning with a starting address, to a 6-bit parallel word;

a pattern detector for determining whether said 6-bit parallel word including any circularly shifted version thereof matches said frame alignment signal, and generating a pattern match signal in response thereto;

a plurality of registers, each register comprising:

an address field for storing a RAM address; and

an associated count field incremented upon observed pattern matches at said RAM address, and decremented upon observed pattern violations at said RAM address;

means for declaring in-sync and out-of-sync conditions in response to values contained within said count fields; and

wherein said count fields are incremented and decremented in response to observed pattern matches and pattern violations, respectively, during both in-sync and out-of-sync conditions.

5,621,774

METHOD AND APPARATUS FOR SYNCHRONIZING PARALLEL DATA TRANSFER

Kenichi Ishibashi, Kokubunji; Akira Tanaka, Koganei; Akira Yamagiwa, Hadano, and Takehisa Hayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

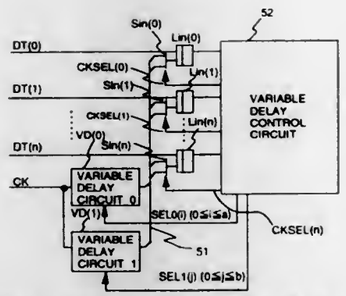
Filed Nov. 28, 1994, Ser. No. 348,242

Claims priority, application Japan, Nov. 30, 1993, 5-299381

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—371 **5 Claims**

1. A data transfer method comprising the steps of:



generating a plurality of data and a clock having a predetermined timing relationship to said plurality of data;

transferring said data and clock in parallel;

receiving said transferred data and clock; and

inputting said plurality of data to latch circuits after adjusting phase of said data and clock by using output signals of the latch circuits when said plurality of data are latched at timing of the received clock,

wherein the phase of said clock and a first data group including a part of said plurality of data is adjusted by means of a first delay circuit so that an AND signal of latched output signals corresponding to said first data group is high level and the phase of said clock and a second data group of said plurality of data other than said first data group is then adjusted by means of a second delay circuit so that an AND signal of latched output signals corresponding to said second data group is high level.

5,621,775

DEVICE FOR JUSTIFYING A DIGITAL BIT STREAM AT REGULAR INTERVALS

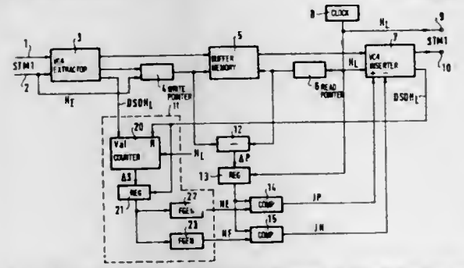
Jean-Paul Etienne, St Quay-Perros, France, assignor to Alcatel Cit, Paris, France

Filed Oct. 18, 1994, Ser. No. 324,609

Claims priority, application France, Oct. 20, 1993, 93 12497

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—372 **10 Claims**



1. A device for justifying at regular intervals a digital bit stream received from a first synchronous link timed by a first clock and to be sent on a second synchronous link timed by a second clock, said digital bit stream comprising a continuous sequence of rows of bits, each row comprising a fixed total number of bits but including a payload comprising a variable number of bits and a header comprising a variable number of bits, the numbers of bits varying according to whether said row has been subjected to positive justification, negative justification or no justification, the device including:

a buffer memory into which said payload is written under the control of said first clock and from which said payload is read under the control of said second clock;

means for calculating a filling value indicative of how full said buffer memory is;

means for comparing said filling value to first and second variable threshold values to produce a negative justification command signal when it is greater than said first threshold value and to produce a positive justification command signal when it is less than said second threshold value; and

means for determining the first and second variable threshold values according to the phase difference between the header of a row received from said first link and the header of a row sent on said second link.

5,621,776

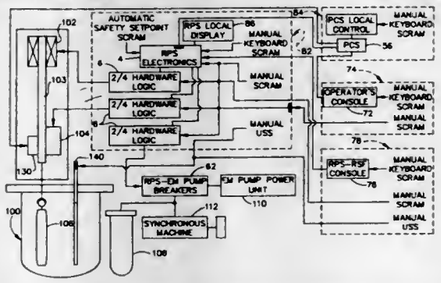
FAULT-TOLERANT REACTOR PROTECTION SYSTEM

Donald C. Gaubatz, Cupertino, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 14, 1995, Ser. No. 502,411

Int. Cl.[6] G21C 7/00

U.S. Cl. 376—242 **20 Claims**



1. A system for initiating safety action in response to monitoring of a critical parameter, comprising:

first through fourth sensors for independently detecting the value of a critical parameter and outputting first through fourth sensor readings respectively;

first through fourth division electronics respectively connected to said sensors for processing said first through fourth sensor readings respectively; and

cross communication channels for interconnecting said first through fourth division electronics such that each one of said first through fourth division electronics receives the processed sensor readings from the other division electronics,

wherein said first division electronics comprises means for determining when its own sensor reading is not valid due to a fault, means for storing its own valid sensor reading as a spare, means for outputting a safety actuation inhibition signal, and means for terminating the output of said safety actuation inhibition signal in response to any two of three valid sensor readings communicated from said second, third and fourth division electronics being in excess of a set point, or in response to an invalid or missing sensor reading from one of said second, third and fourth division electronics and at least two of three valid sensor readings—consisting of the spare valid sensor reading and the two valid sensor readings from the remaining two of said second, third and fourth division electronics—being in excess of said set point.

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5,621,777

PUMP DRIVE SYSTEM FOR RECIRCULATION OF COOLANT FLOW IN A NUCLEAR REACTOR VESSEL

Christer Ring, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

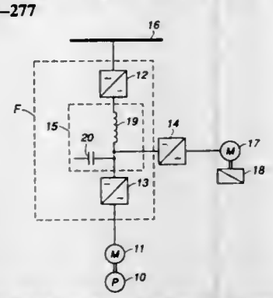
PCT No. PCT/SE94/01096, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO95/15024, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 18, 1994, Ser. No. 381,861

Claims priority, application Sweden, Nov. 24, 1993, 9303889-1

Int. Cl.[6] H02J 9/06; G21C 9/00

U.S. Cl. 376—277 10 Claims



6. A nuclear reactor comprising a plurality of main recirculation pumps for internal recirculation of coolant in the reactor, wherein each main recirculation pump is provided with a drive system comprising a pump motor connected to the main recirculation pump and a static frequency converter for connection to an alternating voltage network and for feeding the pump motor, wherein the frequency converter comprises a rectifier for connection between the alternating voltage network and a d.c. intermediate link and a first inverter for connection between the d.c. intermediate link and the pump motor for controlling the speed of the pump, wherein the drive system comprises an energy storage magazine connected to the d.c. intermediate link via a second static inverter, which in the absence of voltage from the alternating voltage network feeds energy from the energy storage magazine back to the d.c. intermediate link for controlled reduction of the speed of the main recirculation pump, the first inverter being controllable independently of the energy in the energy storage magazine, and wherein the speed of the main recirculation pump can be rapidly reduced during a nuclear reactor trip.

5,621,778

SHROUD RESTRAINT STABILIZER

John G. Erbes, Mt. View, Calif., assignor to General Electric Company, San Jose, Calif.

Filed May 19, 1994, Ser. No. 245,947

Int. Cl.[6] G21C 19/00

U.S. Cl. 376—302 18 Claims

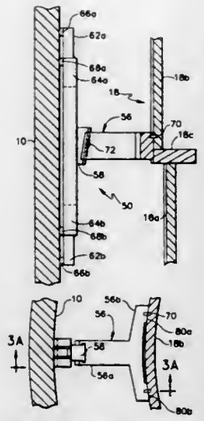
12. A nuclear reactor comprising:

a reactor pressure vessel having an inner circumferential surface;

a core shroud arranged inside said reactor pressure vessel with an annular space therebetween, said core shroud having an outer circumferential surface; and

a first spring assembly arranged between and in abutment with said inner circumferential surface of said reactor pressure vessel and said outer circumferential surface of said core shroud,

wherein said first spring assembly comprises a spring which flexes in response to deflection toward said reactor pressure vessel of a portion of said core shroud in a vicinity of said first spring assembly, and a load-transmitting member which abuts said outer circumferential surface of said core shroud at first and second azimuthal positions, and said spring abuts



said inner circumferential surface of said reactor pressure vessel at a third azimuthal position disposed between said first and second azimuthal positions.

5,621,779

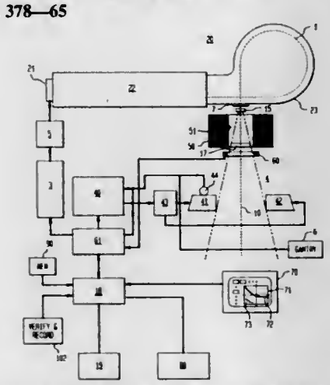
APPARATUS AND METHOD FOR DELIVERING RADIATION TO AN OBJECT AND FOR DISPLAYING DELIVERED RADIATION

John H. Hughes, Martinez; Francisco M. Hernandez, Concord; Aleksander Ustaszewski, Pleasant Hill, and Randall V. Tarr, Concord, all of Calif., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jul. 20, 1995, Ser. No. 504,722

Int. Cl.[6] H05G 1/64

U.S. Cl. 378—65 14 Claims



1. A system for delivering and displaying radiation delivered to an object, the system comprising:

a radiation source with an output beam;

beam-shielding means for delimiting the output beam to at least one predetermined irradiation field of the object;

sensing means for sensing radiation output of the shielded output beam and for generating radiation output signals corresponding to radiation output delivered to predetermined portions of the field;

processing means for accumulating the radiation output signals; and

display means for displaying the accumulated dose signals and for updating the display throughout the delivery of radiation:

input means for inputting to the processing means a predetermined prescribed dose profile, wherein the display means is

further provided for displaying an indication of the prescribed dose profile simultaneously with the display of the accumulated dose signals.

5,621,780

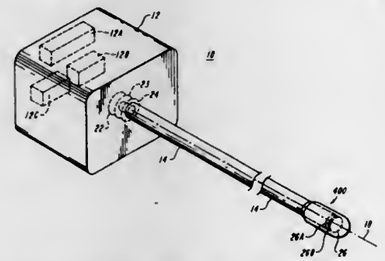
X-RAY APPARATUS FOR APPLYING A PREDETERMINED FLUX TO AN INTERIOR SURFACE OF A BODY CAVITY

Donald O. Smith, Lexington; Alan P. Sliski, Lincoln, and Kenneth J. Harte, Carlisle, all of Mass., assignors to Photoelectron Corporation, Lexington, Mass.

Continuation of Ser. No. 273,645, Jul. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 184,271, Jan. 21, 1994, Pat. No. 5,422,926, which is a continuation-in-part of Ser. No. 955,494, Oct. 2, 1992, Pat. No. 5,369,679, which is a continuation-in-part of Ser. No. 577,883, Sep. 5, 1990, Pat. No. 5,153,900. This application Jul. 27, 1995, Ser. No. 507,845

Int. Cl.[6] H01J 35/32

U.S. Cl. 378—65 24 Claims



1. A kit for applying x-rays to an interior surface of a body cavity, said kit comprising:

A. an x-ray source including:

i. a tubular element having a beam source end and a target end and defining an interior region extending along a source axis between said source end and said target end,

ii. beam source means, disposed proximal to said beam source end, for generating an electron beam passing substantially along said source axis toward said target end,

iii. target means, disposed proximal to said target end, for generating x-rays in response to incidence thereon of said electron beam, and

iv. control means for selectively activating said beam source means such that said electron beam is incident on said target means, and

B. a balloon assembly including an inflatable balloon positioned at said target end of said tubular element, and defining an interior region disposed adjacent and extending beyond said target end when inflated.

5,621,781

X-RAY TUBE

James A. Blake, Franklin; Steven D. Hansen, Port Washington, and Jonathan R. Schmidt, Wales, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 14, 1995, Ser. No. 572,587

Int. Cl.[6] H01J 35/14

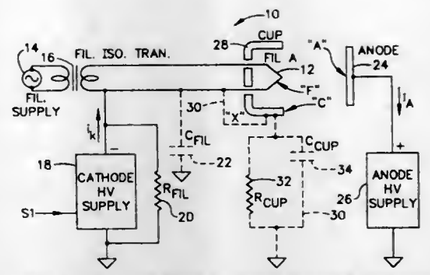
U.S. Cl. 378—138 11 Claims

1. A rotating X-ray tube comprising:

a cathode assembly including a cathode and a cathode current supply;

an anode assembly having an anode current controlled via the cathode current supply;

an electron emitting means separated from the cathode for emitting electrons;



a cathode cup associated with the cathode assembly for supporting the electron emitting means and providing electron field shaping assistance;

a cathode cup distributed capacitance for affecting the cathode cup electron field; and

a resistor for providing an insulator leakage resistance, whereby the cathode cup is allowed to float on the insulator leakage resistance.

5,621,782

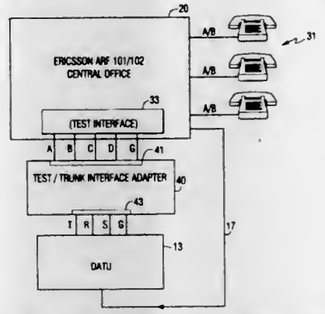
TEST INTERFACE ADAPTER EMULATING ON TEST TRUNK INTERFACE FOR NON-STANDARD CENTRAL OFFICE SWITCH

Robert B. Walance, Newbury Park, and Derek G. Foster, Thousand Oaks, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 2, 1995, Ser. No. 460,179

Int. Cl.[6] H04M 1/24;3/08

U.S. Cl. 379—22 31 Claims



1. A test interface adapter for enabling a line-conditioning/test device, that is normally connected to a first type of central office switch via respective leads of a test interface of said first type of central office switch, to be coupled to and communicate with the respective ports of a multi-lead interface of a second type of central office switch that is not equipped with said test interface, so that conditioning and/or testing of subscriber telephone lines served by said second type of central office switch may be carried out, said test interface adapter comprising first interface ports that are directly connectable to said multi-lead interface of said second type of central office switch, second interface ports that are directly connectable to leads of said line-conditioning/test device, and a lead condition mapping mechanism which is coupled to each of said first and second interface ports, and is operative to map, to said first interface ports, electrical input conditions, asserted at said second interface ports by said line conditioning/test device, into electrical output conditions to which said second type of central office switch is responsive, and to map, to said second interface

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ports, electrical input conditions, asserted at said first interface ports by said second type of central office switch, into electrical output conditions expected to be presented to said line conditioning/test device by said test interface.

5,621,783

METHOD AND AN ARRANGEMENT RELATING TO TELECOMMUNICATIONS SYSTEMS

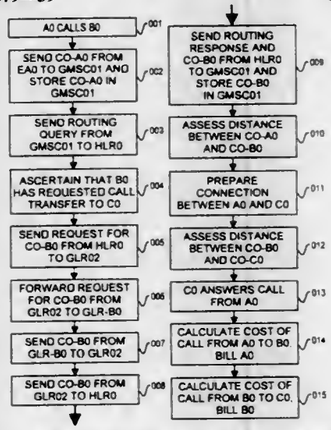
Sven J. Lantto, Tullinge; Mats O. Stille, Stockholm; Mats W. Gandils, Älvsjö; Bo A. V. Åström, Tullinge, all of Sweden, and Ari Peltonen, Aachen, Germany, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 21, 1994, Ser. No. 326,947

Claims priority, application Sweden, Oct. 22, 1993, 9303491

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **56 Claims**



3. A method for transferring a position mark of a mobile subscriber in a telecommunications system which includes a mobile telephone network, a first telephone network in the telecommunications system, wherein the subscriber is permanently registered in a home location register in the mobile telephone network, wherein the mobile telephone network includes at least one main switching centre to which at least one first switching centre is connected, wherein the first switching centre includes a visitor location register in which the mobile subscriber, which is temporarily handled by the first switching centre, is registered together with information relating to the position mark, there being a request from the mobile subscriber for a call transfer to an end-subscriber, and a call from a calling subscriber which is connected to a second switching centre in a second telephone network in the telecommunications system to the mobile subscriber, the method comprising the steps of:

sending from the second switching centre to the main switching centre a position mark which marks the geographic position of the calling subscriber;

storing the position mark in the main switching centre, whereafter the inventive method comprises the steps of

transferring the position mark of the called mobile subscriber from the visitor location register to the home location register;

forwarding the position mark of the called mobile subscriber from the home location register to the main switching centre; and

storing the position mark of the called subscriber in the main switching centre.

5,621,784

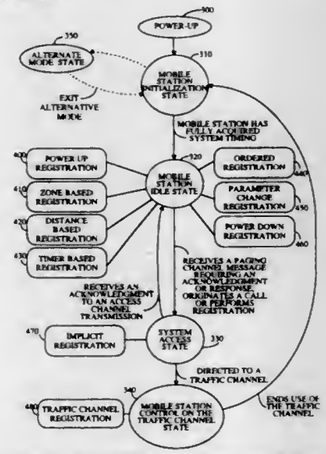
COMPREHENSIVE MOBILE COMMUNICATIONS DEVICE REGISTRATION METHOD

Edward G. Tiedemann, Jr.; Gadi Karmi, and Frank Quick, all of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Division of Ser. No. 370,771, Dec. 23, 1994, abandoned, which is a continuation of Ser. No. 26,899, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 763,091, Sep. 20, 1991, Pat. No. 5,289,527. This application Sep. 29, 1995, Ser. No. 536,580

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **17 Claims**



1. The method of mobile station registration through a base station with a system controller wherein said mobile station communicates with said base station in at least two states, a traffic channel state and a system access state, comprising the steps of:

registering explicitly by said mobile station through said base station with said system controller by entering said system access state to communicate an explicit registration communication message;

registering implicitly through said base station with said system controller by said mobile station by entering said system access state to communicate to said base station a message other than said explicit registration communication message; and

registering said mobile station by said base station with said system controller when said mobile station terminates communication in said traffic channel state with said base station.

5,621,785

PORTABLE TELEPHONE SET TRANSMITTING AREA IDENTIFICATION SIGNAL INDICATIVE OF A RADIO ZONE OCCUPIED THEREBY

Noriko Norimatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

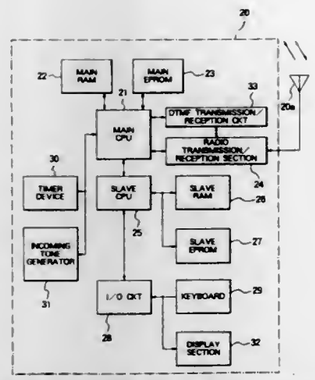
Filed Apr. 5, 1996, Ser. No. 628,293

Claims priority, application Japan, Apr. 5, 1995, 7-079243

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **12 Claims**

1. A portable telephone set for use in a mobile communication system comprising a plurality of base stations disposed in respective radio zones, the base stations being assigned with area identifiers for identifying the respective radio zones, the base stations transmitting area identification signals indicative of the area identifiers on a control channel, said portable telephone set being located in a first one of said radio zones for a first one of the base stations so that said portable telephone set enables to communicate



with said first one of the base stations via the control channel and a plurality of voice channels, said portable telephone set comprising:

receiving means for receiving a first area identification signal transmitted from said first one of the base stations via the control channel;

area identification holding means, connected to said receiving means, for holding the first area identification signal as a current area identification signal;

determining means, responsive to an incoming call signal from said first one of the base stations, for determining whether or not a user of said portable telephone set answers to the incoming call signal within a predetermined time interval elapsed since the incoming call signal is received;

ensuring means, connected to said determining means, for ensuring one of the voice channels as an ensured voice channel by carrying out an automatic answering for the incoming call signal when said user does not answer to the incoming call signal within the predetermined time interval; and

transmitting means, connected to said ensuring means and said area identification holding means, for transmitting the current area identification signal on the ensured voice channel.

5,621,786

CELLULAR COMMUNICATIONS SYSTEM HAVING PASSIVE HANDOFF

Larry G. Fischer; Philip M. Wala, and Jeffrey Brennan, all of Waseca, Minn., assignors to ADC Telecommunications, Inc., Bloomington, Minn.

Division of Ser. No. 204,660, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 183,221, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,389, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,402, Sep. 17, 1992, abandoned, Ser. No. 946,964, Sep. 17, 1992, abandoned, Ser. No. 946,931, Sep. 17, 1992, abandoned, and Ser. No. 946,548, Sep. 17, 1992, abandoned. This application Aug. 23, 1994, Ser. No. 294,742

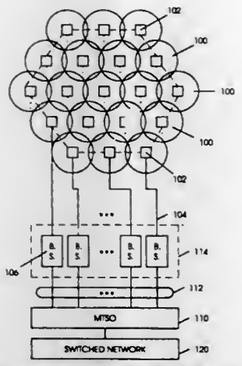
Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—60 **6 Claims**

1. A cellular communications system including a cell divided into a plurality of zones, wherein a plurality of telephone signals are transmitted to and received from a plurality of mobile units in the zones using RF transmission, comprising:

a cell base station unit connected by transmission means to a plurality of antenna units, at least one antenna unit located in each zone, each antenna unit having an antenna located for broadcast and reception of signals in the associated zone, the base station unit including:

analog RF signal generation means for generating a plurality of separate RF signals on different channels for carrying telephone signals to mobile units in the cell;



first switch means responsive to a first control signal for switching and combining the RF signals to form a composite RF signal for each zone, the composite analog signal for each zone containing multiple selected channels;

analog-to-digital conversion means for convening the composite analog signal for each zone directly to a corresponding digitized stream of samples; and

means for applying the digitized stream of samples to the transmission means for transmission to each corresponding antenna unit;

wherein each antenna unit further includes:

digital-to-analog means for receiving the digitized stream of samples from the base station unit, reconstructing a corresponding composite analog RF signal representing all the multiple selected channels;

means for amplifying the composite analog RF signal; and

means for applying the amplified signal to the antenna so that it is broadcast into the zone associated with the antenna unit;

analog-to-digital means for receiving an RF signal received at the antenna, convening the received RF signal to a digitized stream of samples; and

means for applying the digitized stream of samples to the transmission means for transmission to the base station unit;

wherein each base station unit further includes:

digital-to-analog converter means for receiving the digitized stream of samples from each antenna unit, and reconstructing a single analog RF signal representing multiple channels received at each antenna unit;

second switch means responsive to a second control signal for selectively combining the analog RF signals from the antenna units to form a plurality of composite analog signals for application to receivers of the base station, each of the composite signals comprising one or more of the RF signals from the antenna units; and

control means for monitoring the digitized streams of samples from all of the antenna units and digitally analyzing the energy level of each channel in each zone, and in response thereto generating the first and second control signals to selectively control the zones in which each channel is broadcast and the zone from which each channel is received.

5,621,787

PREPAID CASH CARD

Reginald V. McKoy, Silver Spring, Md.; Lilly Chin-Aronds, Clark, N.J., and Robert D. Farris, Sterling, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

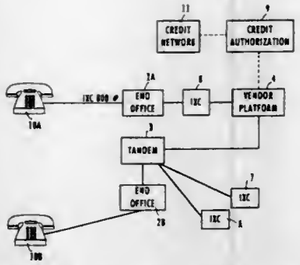
Filed Sep. 13, 1995, Ser. No. 527,595

Int. Cl.[6] H04M *15/00;17/00;* **G06K** *5/00;* **G06F** *7/08*

U.S. Cl. 379—144 **49 Claims**

1. A method of purchasing services via a telephone connection, comprising the steps of:

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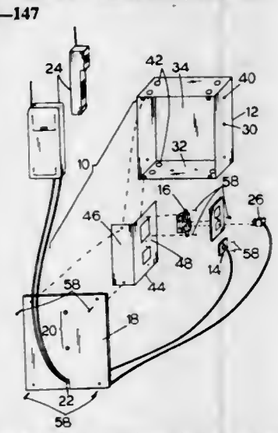
(a) generating, by a sales agent, a prepaid cash card which includes a unique data set for identification (ID) purposes;
(b) selecting an interexchange carrier for use with said prepaid cash card by an agent selling said prepaid cash card;
(c) purchasing said prepaid cash card from said agent by said user and assigning a monetary value to said prepaid cash card;
(d) registering said ID data set via a telephone connection to an authorization platform;
(e) selecting a second interexchange carrier by said user in use of said card; and
(f) following said registration of said ID data set by using said card in carrying out a purchase via a telephone connection to a vendor.

5,621,788

ELECTRICAL WALLBOX FOR TELEPHONE DEVICES

Marvin L. Eiken, 9213 Hwy. 50 W., Centertown, Mo. 65023

Filed Aug. 9, 1995, Ser. No. 513,005
Int. Cl.[6] H04M *17/00;1/00;9/00*
U.S. Cl. 379—147 **11 Claims**



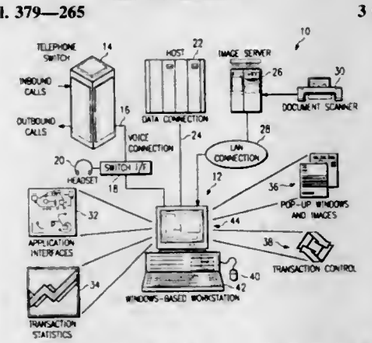
1. A box for attaching a telephone device to a wall comprising:
a generally rectangular shaped box that can be recessed mounted on a wall, said generally rectangular shaped box having an interior area and a front edge that is mounted flush with a wall surface;
a plurality of electrical inlets along perimeter wall surfaces and back side of said generally rectangular shaped box, said electrical inlets for bringing electrical power and telephone wires into said interior area of said generally rectangular shaped box;
an outlet mounted within said generally rectangular shaped box, said outlet situated for receipt of a power supply, said electrical power terminating at said outlet, said outlet and power supply fitting completely within said interior area of said generally rectangular shaped box;
a telephone jack mounted within said generally rectangular shaped box, said telephone wires terminating at said telephone jack;
a cover plate attachable to the front of said generally rectangular shaped box and mounted flush to the wall surface, said cover plate completely covering and closing said generally rectangular shaped box, said cover plate having an opening for passage of a telephone cord and a power cord through said cover plate; and
a telephone mounting means attached to a front surface of said cover plate, said telephone mounting means for attaching a telephone device, a telephone cord from said telephone device extends through said opening and attaches to said telephone jack within said interior area of said generally rectangular shaped box, a power cord extending from said power supply within said interior area passes through said opening and attaches to the telephone device for supplying power to the telephone device; said telephone cord, power cord, power supply, outlet and telephone jack being completely hidden from view behind said cover plate and within said interior area of said generally rectangular shaped box.

5,621,789

METHOD AND SYSTEM FOR INTEGRATING A PLURALITY OF CALL CENTER AGENT PERFORMANCE ENHANCEMENT MODULES

David T. McCalmont, San Jose; Bruce L. Hitson, Mountain View, both of Calif., and Michael J. Maloney, Plano, Tex., assignors to Teknekron Infoswitch Corporation, Fort Worth, Tex.

Filed Sep. 1, 1993, Ser. No. 115,524
Int. Cl.[6] H04M *3/50*
U.S. Cl. 379—265 **3 Claims**



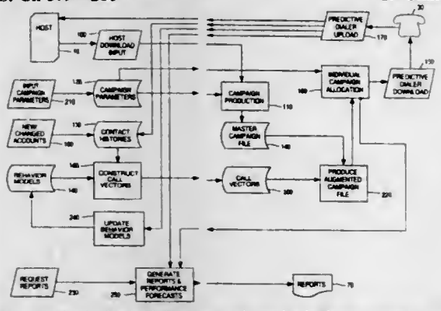
1. A system for integrating a plurality of agent call handling instruments in a single workstation to assist a call center agent in servicing calls through a call distribution system, the integration system comprising:
a workstation having a computer processor, a display, an interface device for coupling said workstation to the call distribution system, a headset coupled to said interface device to allow the call center agent to communicate by audio with the call distribution system, and a memory for storing a plurality of processor implemented computer instructions; and
a plurality of modules within the processor implemented computer instructions, said instructions modules further comprising;
an agent interface module for interfacing the agent's headset with the call distribution system through said interface device in supporting both in-bound and out-bound calls,
an agent statistic module for generating statistics associated with the performance of the agent in servicing both in-bound and out-bound calls and displaying those statistics on said workstation's display,
a host applications module for allowing the customer service agent to access a plurality of host applications programs, said host applications module associated with said agent interface module and said agent statistics module for permitting simultaneous presentation on a single graphical user interface screen on said workstation's display data and images associated with said agent interface module, said agent statistics module, and at least one of said host applications programs, and
a control module for controlling said agent interface module, said agent statistics module, and said host applications module.

5,621,790

METHOD AND SYSTEM FOR OPTIMIZATION OF TELEPHONE CONTACT CAMPAIGNS

Harry Grossman, Rockville, and LeRoy F. Simmons, Pasadena, both of Md., assignors to ASPI Software Development Company , LLC, Bethesda, Md.

Continuation-in-part of Ser. No. 152,060, Nov. 16, 1993, Pat. No. 5,436,965. This application Jun. 7, 1995, Ser. No. 486,577
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—266 **19 Claims**



1. A method of scheduling an outbound telephone contact campaign for a first interval with an optimized probability of contacting targeted individuals during the campaign on a computer system using a predictive dialer system, a plurality of telephone operators, and stored accounts, each account being associated with an individual having a telephone, said method comprising the steps of:
segmenting the first interval into a plurality of second intervals;
determining for each of said accounts the probability of contacting the individual associated with each of said accounts during each of said second intervals;
determining for each of said accounts a first time period corresponding to one of said second intervals during which the probability of contacting the individual associated with said account is highest; and
allocating each of said accounts to said second interval corresponding to said first time period for said account.

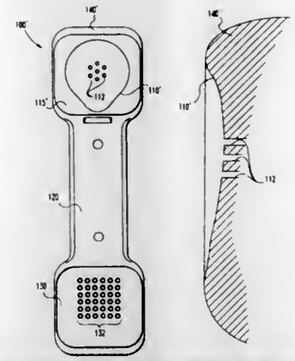
5,621,791

ERGONOMICALLY DESIGNED TELEPHONE HANDSET

Roderick M. Sloan, Houston, Tex., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 183,961, Jan. 21, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,973
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—433 **2 Claims**

1. A method for comfortably coupling an ergonomically designed telephone handset to the outer ear of a user without causing discomfort to the tragus and antitragus of the ear, comprising the steps of:
providing a telephone handset comprising:
a mouthpiece portion including an internal microphone;
a speaker portion including an internal speaker and at least one planar surface;
a sound cavity molded into said speaker portion, a cross-sectional outline of said sound cavity being defined at the intersection of said planar surface and said sound cavity as having an inverted tear-drop shaped outline, said sound cavity being disposed above said internal speaker for focusing sound from said internal speaker into the outer ear, wherein said sound cavity includes a maximum width dimension and a maximum length dimension;
an elongate grip portion including first and second ends, said first end attached to said mouthpiece portion, said second end attached to said speaker portion, a grip axis being defined through the length of said elongate grip portion;
wherein a length axis is defined through the maximum length dimension of said sound cavity, said length axis being parallel to said grip axis, and wherein a width axis is defined through said maximum width dimension of said sound cavity, said width axis being perpendicular to said length axis, wherein said maximum length dimension of said sound cavity is greater than said maximum width dimension of said sound cavity,
said inverted tear-drop shaped outline having a semicircular outline above said width axis, directed away from said mouthpiece portion and a tapered outline portion below said width axis, said tapered outline portion tapering towards said mouthpiece portion,
wherein the depth of said sound cavity relative to a plane through said planar surface of said speaker portion is greatest over said internal speaker comparing to the depth of a top portion of the semicircular outline and the depth of the tear-drop shaped cavity, the depth of said tear-drop shaped cavity is more shallow in said tapering outline portion of said sound cavity comparing to the depth of the semicircular outline, said depth of said shallow portion being sufficient to seat at least a portion of the fleshy lobe of the ear of the user in said shallow portion during normal use of the telephone handset;
coupling said handset to the outer ear, and
positioning said handset against said outer ear such that said teardrop shaped sound cavity substantially encompasses the tragus and anti-tragus of the user's outer ear and such that at least a portion of the fleshy lobe of the outer ear is seated in and supported by said shallow portion of said sound cavity, whereby the application of pressure directly across the tragus and antitragus of the ear by said planar surface of said speaker portion is avoided.



5,621,792

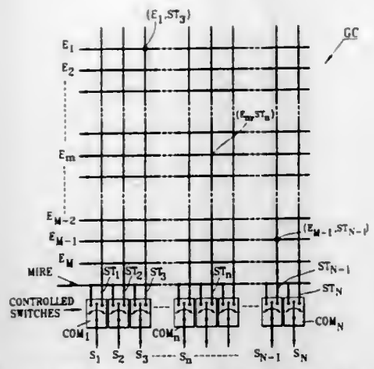
METHOD AND SYSTEM OF CONTROLLING THE MODE OF ACCESS TO SIGNALS, IN PARTICULAR PICTURE SIGNALS

Roger Charton, and Alain Gelly, both of Paris, France, assignors to Telediffusion de France, Paris, France

Filed Mar. 15, 1995, Ser. No. 404,541
Claims priority, application France, Jul. 20, 1993, 93 08992
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—7 **10 Claims**

1. A system for controlling a mode of access (SCM) to a wanted signal (IMAGE), comprising:

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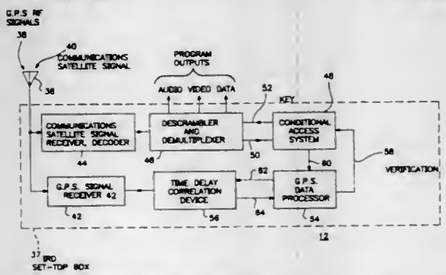


(a) a switching grid (GC) including a matrix of switching crosspoints, (E_1, ST_1–E_M, ST_N) between plural matrix row inputs (E_1 to E_M) respectively receiving wanted signals, and plural matrix column outputs (ST_1 to ST_M) supplying wanted signals (IMAGE), a single crosspoint being established at any one time in a matrix column between the output, (ST_n) of said column and one (E_m) of the inputs of the matrix;

(b) switching means (COM_n;40;S_1) associated with each grid output (ST_n) and having a first input (E_1;e_1) connected with said grid output (ST_n) and a second input (E_3,E_4;e_2) receiving a picture-jamming signal (MIRE **1**), and an output (S;S_{COM}) adapted for connection with one input of said switching means; and

(c) control means (UC:**53**,**54**,**55**) controlling said switching means to connect selectively said switching means output, (S;S_{COM}) either with said first input (E_1;e_1) or, periodically and alternatively, with said first and second inputs (E_1, E_3, E_1;e_1, e_2).

5,621,793
TV SET TOP BOX USING GPS
Robert A. Bednarek, and Philip A. Rubin, both of Washington, D.C., assignors to Rubin, Bednarek & Associates, Inc., Washington, D.C.
Filed May 5, 1995, Ser. No. 437,424
Int. Cl.[6] H04N *7/167*; **H04L** *9/00*
U.S. Cl. 380—20 **39 Claims**



1. A video signal access control system comprising a customer access control operable at a customer location and having:

a signal input to receive at least one video signal from a remote source;

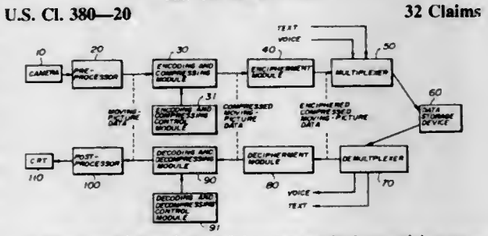
a video signal processor operably connected to receive video signals from the signal input;

a conditional accesser operably connected to the video signal processor;

a signal output operably connected to the video signal processor and providing a useable video output signal only upon the conditional accesser authorizing access to one or more video signals from the remote source; and

a GPS signal receiver operable at the customer location to receive position information from remote sources and operably connected to the conditional accesser, the conditional accesser authorizing access only if the GPS signal receiver receives signals consistent with the customer access control being at an authorized location.

5,621,794
MOVING-PICTURE ENCIPHERMENT METHOD AND SYSTEM, AND ENCIPHERED MOVING-PICTURE DECIPHERMENT METHOD AND SYSTEM
Masahiro Matsuda; Naoya Torii; Takayuki Hasebe; Noboru Iwayama, and Masahiko Takenaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 21, 1995, Ser. No. 517,245
Claims priority, application Japan, Dec. 6, 1994, 6-302249
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—20 **32 Claims**



1. A moving-picture data encipherment method comprising steps of:

a) encoding moving-picture data in a frame, without depending on another frame of moving-picture data;

b) encoding moving-picture data in a frame, depending on another frame of moving-picture data;

c) determining whether each frame of moving-picture data was encoded in said step a) or in said step b);

d) enciphering the frame of moving-picture data which was determined in the step c) as being the frame encoded in said step a); and

e) producing enciphered moving-picture data including the frame of moving-picture data which was enciphered in said step d) and the frame of moving-picture data which was determined in said step c) as being the frame which was encoded in said step b).

5,621,795
SYSTEM AND METHOD FOR FAULT TOLERANT KEY MANAGEMENT
Walter J. Baker, Stratford; Feliks Bator, Easton, and Chunhua Li, North Haven, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 27, 1994, Ser. No. 364,323
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—21 **9 Claims**

1. A key distribution system for generating and maintaining cryptographic keys comprising:

a key distribution computer;

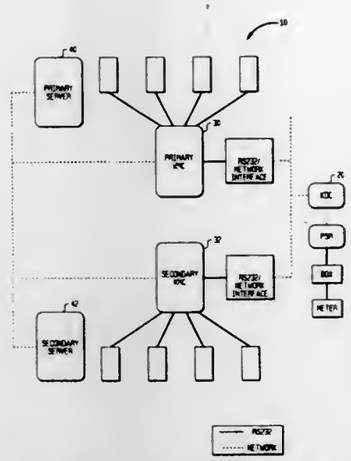
a primary key management computer operatively coupled to said key distribution computer by a first interface;

a secondary key management computer Operatively coupled to said key distribution computer by a second interface, said second interface being parallel to said first interface;

a primary server computer operatively coupled to said primary and secondary key management computers; and

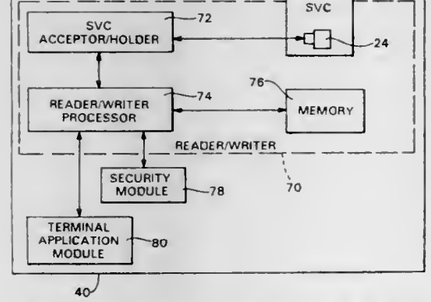
a secondary server computer operatively coupled to said primary and secondary key management computers;

wherein one of said primary and secondary key management computers is operating on-line at a time, said operating one of said primary and secondary key management computers



including means for writing key data received from said key distribution computer to an archive database in each of said primary and secondary server computers.

5,621,796
TRANSFERRING INFORMATION BETWEEN TRANSACTION NETWORKS
Terry L. Davis, Scottsdale, Ariz.; James F. Russell, Hockessin, Del.; John W. Sears, Peoria, and Philip H. Trice, Phoenix, both of Ariz., assignors to Electronic Payment Services, Inc., Wilmington, Del.
Filed Sep. 30, 1994, Ser. No. 316,663
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—24 **12 Claims**



1. A stored value transaction system having a plurality of value storing transfer devices, comprising:

first and second stored value transaction networks, each network including:

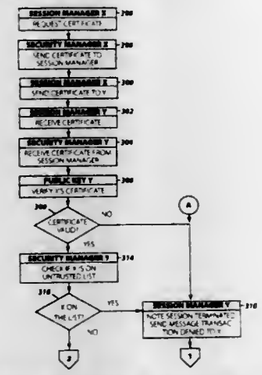
a plurality of value transferring devices including a value distributing device for distributing cash-equivalent value to a user and a value collecting device for collecting cash-equivalent value from a user, each value transferring device including a memory for storing value transfer information corresponding to each transfer;

a consolidation device for periodically receiving the stored value transfer information from the memory of at least one of the value transferring devices, the consolidation device including a first memory for storing the received value transfer information, a processor for consolidating the received value transfer information into consolidated information, and a second memory for storing the consolidated information; and

a network settlement device coupled to the consolidation device for receiving the consolidated information from the second memory of the consolidation device, the network settlement device including a first memory for storing the received consolidation information, a processor for performing settlement according to at least a portion of the consolidated information to produce settlement information, and a second memory for storing the settlement information; and

an internetwork network device coupled to the first and second networks for interfacing the first and second networks and for receiving at least a portion of the consolidation information from the first memory of the network settlement device of each of the first and second networks, the internetwork network device including a first memory for storing the received consolidation information and a processor for transmitting at least a portion of the received consolidation information from the first network to the second network and at least a portion of the received consolidation information from the second network to the first network.

5,621,797
ELECTRONIC TICKET PRESENTATION AND TRANSFER METHOD
Sholom S. Rosen, New York, N.Y., assignor to Citibank, N.A., New York, N.Y.
Division of Ser. No. 234,461, Apr. 28, 1994, Pat. No. 5,557,518.
This application Dec. 19, 1995, Ser. No. 576,992
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—24 **16 Claims**



1. A method for presenting an electronic ticket for services utilizing a customer trusted agent, a first host processor, a merchant trusted agent and a second host processor, comprising the steps of:

establishing a secure session between said customer trusted agent and said merchant trusted agent by using cryptographic means;

said first host processor providing a first signal informing said customer trusted agent of said electronic ticket selected for presentation;

said customer trusted agent sending a second signal including a copy of said electronic ticket to said merchant trusted agent, via said secure session;

said merchant trusted agent checking the validity of said electronic ticket;

said merchant trusted agent providing a third signal notifying said second host processor to deliver services identified by said electronic ticket;

said merchant trusted agent sending a fourth signal notifying said customer trusted agent, via said secure session, that said electronic ticket is in use;

said second host processor providing a fifth signal informing said merchant trusted agent that said services have been rendered;

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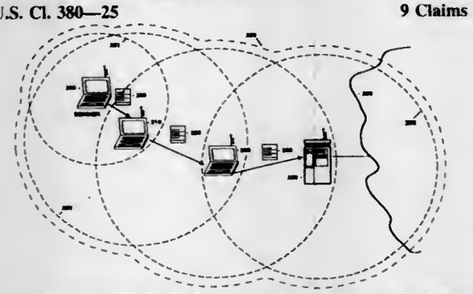
said merchant trusted agent sending a sixth signal including a new ticket value to said customer trusted agent;
said customer trusted agent marking said electronic ticket not in use and updating ticket value;
said customer trusted agent providing a seventh signal notifying said first host processor of the end of the transaction;
said merchant trusted agent receiving an eighth signal from said customer trusted agent and providing a ninth signal notifying said second host processor of the end of the transaction,
where in the event said transaction fails, said first and second trusted agents can roll-back their states using abort means.

5,621,798

METHOD AND APPARATUS FOR COOPERATIVE MESSAGING

David W. Aucsmith, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 18, 1995, Ser. No. 423,306
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—25 **9 Claims**



1. A wireless network apparatus, said wireless network apparatus comprising the elements of:
a wired communication network;
at least one transmitter/receiver base station, said transmitter/receiver base station coupled to said wired communication network;
at least one mobile communication device, said mobile communication device comprising the elements of
a transmitter/receiver component, said transmitter/receiver component for transmitting outbound messages and for receiving broadcast messages from said transmitter/receiver base station and other mobile communication devices;
a memory unit, said memory unit for storing messages; and
a cooperative messaging logic for controlling said transmitter/receiver component, said cooperative messaging logic for periodically retransmitting an outbound message using said transmitter/receiver component until a corresponding confirmation message is received.

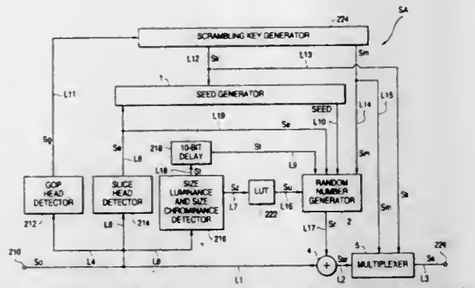
5,621,799

SCRAMBLED TRANSMISSION SYSTEM

Noboru Katta, Itami; Hiroki Murakami, Osaka; Susumu Ibaraki, and Seiji Nakamura, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 19, 1994, Ser. No. 325,057
Claims priority, application Japan, Oct. 19, 1993, 5-260754; Nov. 9, 1993, 5-279529
Int. Cl.[6] H04N *7/167*; H04L *9/00*
U.S. Cl. 380—48 **21 Claims**

1. A scrambled transmission system for transmitting a digital data containing variable length coding, said system comprising:
a first scramble key generating means for generating a first scramble key at a first predetermined interval;



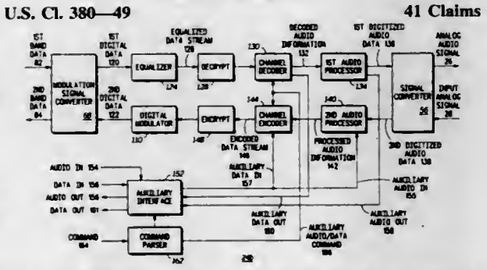
a second scramble key generation means for generating a second scramble key based on said first scramble key at a second predetermined interval which is smaller than said first predetermined interval;
a scrambling means for scrambling said digital data based on said second scramble key; and
a multiplexing means for multiplexing said first scramble key together with said scrambled digital data.

5,621,800

INTEGRATED CIRCUIT THAT PERFORMS MULTIPLE COMMUNICATION TASKS

Chia-Shiann Weng; Walter U. Kuenast; Paul M. Astrachan; Donald C. Anderson; Peter C. Curtis, and Jose G. Corleto, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1994, Ser. No. 333,152
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **41 Claims**



17. An integrated circuit for performing multiple communications tasks, comprising:
a memory that stores audio information including echo cancellation information and tone generation data;
a central processing unit, operably coupled to the memory via a first information bus, the central processing unit having access to all of the memory;
a first co-processor operably coupled to only a portion of the memory, via a second information bus, the portion of the memory being used for storing the echo cancellation information, the first co-processor is coupled to the central processing unit, wherein the first co-processor contains an echo cancellation algorithm and performs, utilizing the echo cancellation information, the echo cancellation algorithm upon the audio data under control of the central processing unit;
a second co-processor operably coupled to the central processing unit and to the memory, wherein the second co-processor executes, under control of the central processing unit, a user tone generation algorithm using the tone generation data;
a third co-processor operably coupled to the memory and the central processing unit, wherein the third co-processor executes, under control of the central processing unit, art encryption algorithm; and

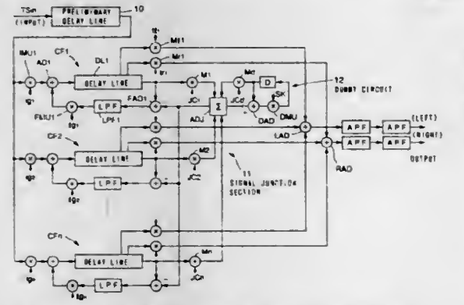
a fourth co-processor operably coupled to the central processing unit, wherein the fourth co-processor executes, under control of the central processing unit, an equalization algorithm.

5,621,801

REVERBERATION EFFECT IMPARTING SYSTEM

Toshifumi Kunimoto; Masahiro Kakishita, and Chifumi Takeuchi, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jun. 9, 1994, Ser. No. 257,544
Claims priority, application Japan, Jun. 11, 1993, 5-165083
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—63 **15 Claims**



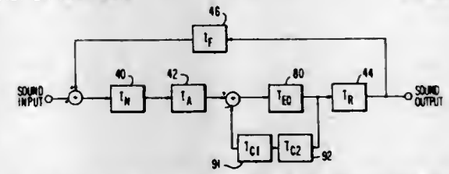
1. A reverberation effect imparting system comprising:
a plurality of comb filter means arranged in parallel for receiving a common sound signal to which a reverberation effect is to be imparted, each of said comb filter means including a closed loop into which said common sound signal is received, each said closed loop having a delay element and a loop gain control, a first characteristic of said reverberation effect being controlled by controlling variable loop gain coefficients associated with each of said comb filter means;
takeout means for taking out at least one signal from each of said comb filter means;
junction means for outputting at least one junction output signal that is a function of said signals taken out by said takeout means, said function being controlled by at least one junction control signal comprising a plurality of independently variable junction coefficients respectively associated with each of said comb filter means, said at least one junction control signal controlling a second characteristic of said reverberation effect;
introduction means for introducing said at least one junction output signal into each of said comb filter means; and
reverberation output means for extracting at least one signal from at least one of said comb filter means and outputting said at least one extracted signal as a reverberation output signal having said reverberation effect imparted thereto,
wherein said first characteristic and said second characteristic of said reverberation effect imparted to said reverberation output signal are variable with respect to each other, said first characteristic increasing relative to said second characteristic as said junction control signal is decreased and said second characteristic increasing relative to said first characteristic as said junction control signal is increased,
whereby an intermediate reverberation characteristic between said first reverberation characteristic and said second reverberation characteristic is achieved by controlling said junction control signal.

5,621,802

APPARATUS FOR ELIMINATING ACOUSTIC OSCILLATION IN A HEARING AID BY USING PHASE EQUALIZATION

Ramesh Harjani, and Rongtai Wang, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 54,041, Apr. 27, 1993, abandoned. This application Mar. 19, 1995, Ser. No. 403,564
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68.2 **4 Claims**



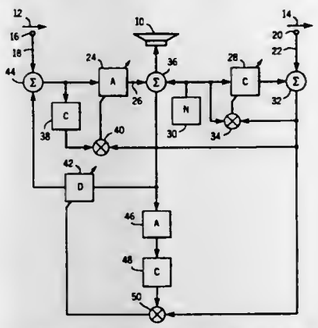
1. An improved hearing aid of the in-the-ear kind that has a microphone, an amplifier supplied with an output of the microphone, and a receiver arranged collectively in a housing for placement in the ear of a wearer, in which an acoustic feedback path exists between the receiver and the microphone, the improvement comprising:
a phase equalization filter serially connected between the amplifier and the receiver for canceling a sum of minimum phase factors present in respective transfer functions of the microphone, the amplifier, the receiver, and the acoustic feedback path, respectively; and further comprising a negative feedback loop connected for feeding back an output of said phase equalization filter to one input of a signal adder that has another input connected to an output of the amplifier, an output of said signal adder being connected to an input of said phase equalization filter, wherein said negative feedback loop includes first and second filters connected in series for reducing a magnitude response of an open loop transfer function at frequencies above and below the audio frequency range.

5,621,803

ACTIVE ATTENUATION SYSTEM WITH ON-LINE MODELING OF FEEDBACK PATH

Trevor A. Laak, Madison, Wis., assignor to Digisonix, Inc., Middleton, Wis.

Continuation of Ser. No. 300,315, Sep. 2, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,126
Int. Cl.[6] A61F *2/20*; H03B *29/00*
U.S. Cl. 381—71 **3 Claims**



1. An active adaptive attenuation system having an output transducer outputting a control signal combining with a system input signal to yield a system output signal, an error transducer sensing said system output signal and outputting an error signal, a first adaptive filter model having a model input from a reference signal correlated to said system input signal, an error input from said

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error signal, and a model output outputting a correction signal to said output transducer to introduce said control signal to minimize said error input, a second adaptive filter model having a model input from said correction signal, an error input from said error signal, and a model output also supplied to said model input of said first model, wherein each model actively adapts during active adaptive on-line operation of the other model, a third adaptive filter model having a model input and having a model output summed with said error signal and modeling the transfer function from the output of said first adaptive filter model to said error transducer, an auxiliary signal source supplying an auxiliary signal to said output transducer and to the model inputs of each of said second and third models, such that said auxiliary signal is filtered by said second adaptive filter model and supplied to the model input of said first model.

5,621,804

COMPOSITE LOUDSPEAKER APPARATUS AND DRIVING METHOD THEREOF

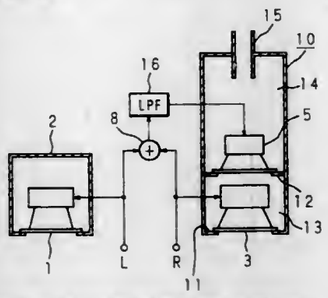
Satoshi Beppu, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 346,914, Nov. 23, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 688,219

Claims priority, application Japan, Dec. 28, 1993, 5-334395

Int. Cl.[6] H04R *1/02*

U.S. Cl. 381—90 **14 Claims**



1. A composite loudspeaker apparatus, comprising:

a cabinet including, a first air chamber and a second air chamber adjacent to said first air chamber;

a first loudspeaker, mounted in said first air chamber of said cabinet;

a second loudspeaker, mounted in said second air chamber of said cabinet, at a boundary of said first air chamber and said second air chamber;

means for driving said first loudspeaker with an entire frequency spectrum of one of a left and right channel audio signal; and

means for driving said second loudspeaker with a synthesized audio signal, synthesized from the left and right channel audio signals,

wherein said second air chamber includes a sound port, a drone cone or a resonance duct.

5,621,805

APPARATUS FOR SAMPLE RATE CONVERSION

Ngiang G. Lob, and Jesper B. Henriksen, both of Singapore, Singapore, assignors to Aztech Systems Ltd., Singapore, Singapore

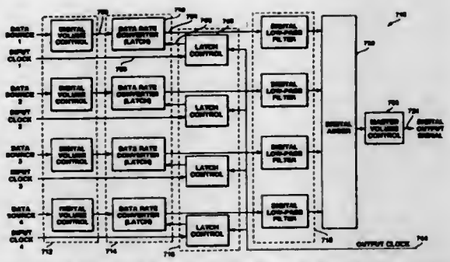
Filed Jun. 7, 1994, Ser. No. 255,258

Int. Cl.[6] G11B *27/031;* **G10L** *3/02;* **G10F** *1/08*

U.S. Cl. 381—119 **8 Claims**

1. A fully digital mixer comprising:

a first digital input receiver for receiving a plurality of digital input signals and a corresponding plurality of input clock signals;



a second digital receiver for receiving a digital output clock signal;

a digital latch coupled to said first digital input receiver and said second digital receiver, said digital latch for storing said digital input signal and for producing a plurality of output signals that corresponds with said digital output clock signal;

a digital latch control unit coupled to said first digital input receiver and said second digital receiver, said digital latch control unit for disabling said digital output clock signal while one of said plurality of digital input signals is transitioning to a new state;

a digital filter unit coupled to said digital latch, said digital filter unit including a plurality of digital filters for filtering said plurality of output signals to produce a plurality of filtered digital output signals; and

a digital blending unit coupled to said digital filter unit, said digital blending unit including logic for combining said plurality of filtered digital output signals to produce a mixed digital output signal, wherein said digital blending unit is a digital adder.

5,621,806

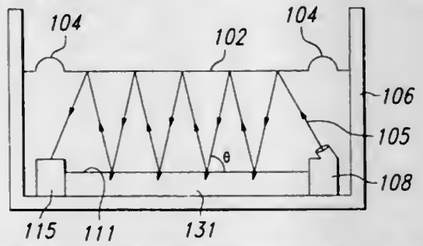
APPARATUS AND METHODS FOR DETERMINING THE RELATIVE DISPLACEMENT OF AN OBJECT

Steven L. Page; James Hollander, both of Dallas, and Gene Frantz, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 14, 1992, Ser. No. 837,291

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—172 **7 Claims**



1. An apparatus for detecting relative displacement of an object, wherein said object is a diaphragm flexibly mounted to a base so as to be displaced when impinged upon by sound waves, comprising:

a signal source for providing a predetermined signal having pulses, wherein said predetermined signal is an electrical signal;

a structure for receiving and distorting said predetermined signal in response to relative displacement of said diaphragm to produce a distorted signal, said structure for receiving and distorting said predetermined signal is an electrical circuit having a variable inductance value determined by said diaphragm, wherein said structure for receiving and distorting said predetermined signal distorts said electrical signal by distorting the relative phase of a series of uniformly spaced electrical pulses;

a processor receiving said distorted signal and determining said relative displacement from said distorted signal, wherein said processor is a digital signal processor;

memory circuits connected to said digital signal processor for storing instructions for said digital signal processor, and

additional memory circuits connected to said processor for storing values corresponding to predetermined levels of signal distortion.

5,621,807

INTELLIGENT RANGE IMAGE CAMERA FOR OBJECT MEASUREMENT

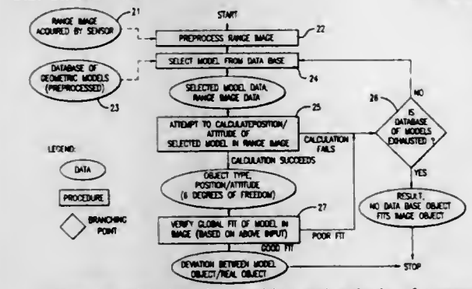
Max Eibert, Friedrichshafen; Harald Hopfmüller, Markdorf; Rolf Katzenbeisser, Ravensburg, and Christoph Schaefer, Friedrichshafen, all of Germany, assignors to Dornier GmbH, Germany

Continuation-in-part of Ser. No. 263,336, Jun. 21, 1994, abandoned. This application Oct. 13, 1994, Ser. No. 322,343

Claims priority, application Germany, Jun. 21, 1993, 43 20 485.6

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—103 **17 Claims**



1. Apparatus for detecting position and attitude of remotely sensed objects, comprising:

a sensor for acquiring three-dimensional surface contour image data of a remote object;

a memory having stored therein three-dimensional surface contour model data for a geometric model of at least one object;

object type hypothesis means for iteratively selecting one of said at least one geometric model and for reading said three-dimensional surface contour model data for said selected geometric model from said memory; and

a data processor for comparing said surface contour model data for said selected geometric model with said image data of said remote object and for generating output signals representative of an object classification, position and attitude for said remote object;

wherein said data processor includes a coarse position/attitude unit and a fine position/attitude unit, said coarse position/attitude unit comprising:

means for determining a two-dimensional partial horizontal contour of said remote object, as a function of said three-dimensional surface contour image data acquired by said sensor;

means for determining a two-dimensional complete horizontal contour of said geometric model, as a function of said surface contour model data stored in said memory;

means for determining a likelihood of a match of said partial horizontal contour and said complete horizontal contour independent of horizontal position and vertical rotation of said remote object, by comparing distances of three points on said partial horizontal contour with distances of three corresponding points on said complete horizontal contour;

means for iteratively selecting horizontal positions and vertical rotations of said remote object for maximization of said likelihood of a match;

means for identifying a horizontal position and vertical rotation for which said likelihood of a match is large and yields a true match of said partial and said complete horizontal contours; and

means for selecting a different geometric model if no spacial position and rotation yields a true match of said partial and said complete horizontal contours.

5,621,808

Patent Not Issued For This Number

5,621,809

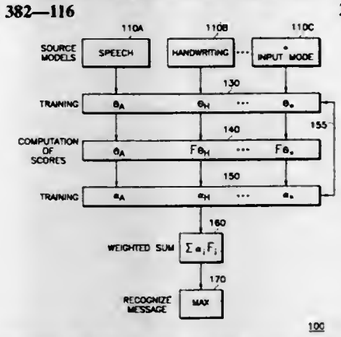
COMPUTER PROGRAM PRODUCT FOR AUTOMATIC RECOGNITION OF A CONSISTENT MESSAGE USING MULTIPLE COMPLIMENTARY SOURCES OF INFORMATION

Jerome R. Bellegarda, Goldens Bridge, and Dimitri Kanevsky, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 300,232, Sep. 6, 1994, Pat. No. 5,502,774, which is a continuation of Ser. No. 895,967, Jun. 9, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 481,150

Int. Cl.[6] G06K *9/00;9/62;* **G10L** *5/06*

U.S. Cl. 382—116 **26 Claims**



1. A computer program product for use with a computer system, comprising:

a computer usable medium having computer readable program code means embodied therein for causing a computer to transform a consistent message into a message recognizable by a computer, said computer program product having

first computer readable program code means for causing the computer to transform the consistent message generated by a human in at least two formats into electrical signal representations of the consistent message;

second computer readable program code means for causing the computer to produce from said electrical signal representations of the consistent message a set of parameters for each said format;

third computer readable program code means for causing the computer to generate a likelihood score of recognition from each said set of parameters;

fourth computer readable program code means for causing the computer to use said sets of parameters to train a weighting coefficient for each of the at least two formats of the consistent message, wherein said training of a weighting coefficient further comprises

partitioning means for partitioning information in each said format into one or more subunits, wherein each subunit corresponds to a piece of the message,

grouping means for grouping said subunits from each said format into a plurality of groups, wherein each said subunit in a group corresponds to the same piece of the message,

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first determining means for determining a likelihood score of recognition for each of said groups of subunits,

second determining means for determining a global score for the information based on said likelihood score of recognition, and

third determining means for using said global score to determine said trained weighting coefficients;

fifth computer readable program code means for causing the computer to generate a weighted expression based on said trained weighting coefficients and said likelihood scores of recognition; and

sixth computer readable program code means for causing the computer to select a candidate message unit that maximizes said weighted expression to transform said electrical signal representations of the consistent message into a computer recognizable message.

5,621,810

IMAGE READING OR PROCESSING WITH ABILITY TO PREVENT COPYING OF CERTAIN ORIGINALS

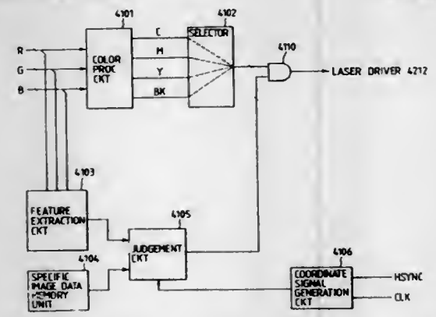
Yoshiyuki Suzuki, Kawasaki; Masahiro Funada, Yokohama; Kenichi Outa, Yokohama, and Michio Kawase, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 957,528, Oct. 6, 1992, Pat. No. 5,426,710, which is a division of Ser. No. 939,544, Aug. 28, 1992, Pat. No. 5,216,724, which is a continuation of Ser. No. 478,280, Feb. 9, 1990, abandoned. This application Nov. 16, 1994, Ser. No. 341,937

Claims priority, application Japan, Feb. 10, 1989, 1-031415; Feb. 10, 1989, 1-031419; Apr. 25, 1989, 1-106711; Apr. 27, 1989, 1-111025

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—135 **20 Claims**



1. A controlling method for controlling an image forming apparatus which sequentially forms a plurality of color component images on a medium to produce a color image, said method comprising the steps of:

inputting color image data representing an original;

judging whether the original is a specific image based on the color image data; and

controlling the image forming apparatus based on the judgment, in a case where the original is the specific image, such that accurate image forming of at least one, but not all, of the plurality of color component images is prevented.

5,621,811

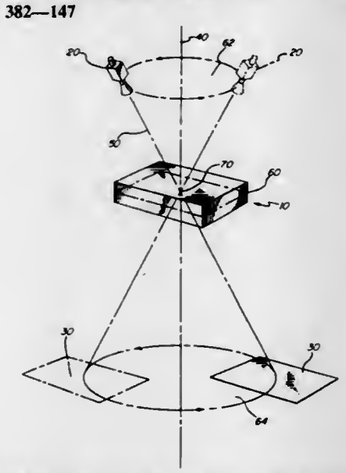
LEARNING METHOD AND APPARATUS FOR DETECTING AND CONTROLLING SOLDER DEFECTS

Paul A. Roder, San Diego; John A. Adams, Escondido, both of Calif.; Bruce D. Baker, Bellevue, Wash.; Robert L. Corey, San Diego, Calif., and Edward W. Ross, Escondido, Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation-in-part of Ser. No. 740,631, Aug. 5, 1991, Pat. No. 5,291,535, which is a continuation-in-part of Ser. No. 479,092, Feb. 12, 1990, Pat. No. 5,097,429, which is a continuation of Ser. No. 115,171, Oct. 30, 1987, Pat. No. 4,926,452. This application Feb. 4, 1994, Ser. No. 192,413

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—147 **5 Claims**



1. A method of determining the quality of an electrical connection comprising the steps of:

acquiring a cross sectional image of a cutting plane of an electrical connection on a first circuit board;

defining a region of interest proximate the electrical connection on the first circuit board;

measuring a characteristic of the region of interest on said first circuit board and storing said measured characteristic;

acquiring a cross sectional image of a cutting plane of an electrical connection on a second circuit board; and

calculating a correction factor for said cross sectional image of a cutting plane of said electrical connection on said second circuit board which is a function of said measured characteristic.

5,621,812

METHOD AND SYSTEM FOR BUILDING A DATABASE FOR USE WITH SELECTIVE INCENTIVE MARKETING IN RESPONSE TO CUSTOMER SHOPPING HISTORIES

David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation of Ser. No. 886,383, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application May 17, 1993, Ser. No. 63,413

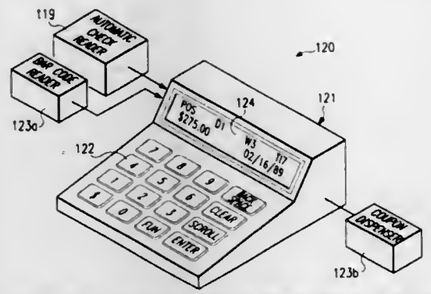
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—100 **91 Claims**

1. A system for performing targeted marketing on shopping customers comprising:

a device for entering a customer's account number as a unique customer identification code;



a terminal for entering data relating to the customer's shopping transactions, said transaction data including at least each customer's purchased products;

means for creating a database of the store's customers' account and transaction data in response to said device and terminal;

circuitry for generating a signal upon entry of the account number of customers whose previously purchased products at the store meet predetermined shopping history criteria; and

a coupon printer for dispensing a sales promotion to the customer at the point of sale during a customer's checkout in response to said signal, said sales promotion being efficiently directed toward only the class of customers who meet said predetermined shopping history criteria, and such that validity of said sales promotion is contingent upon a customer meeting a predetermined future shopping criteria.

5,621,813

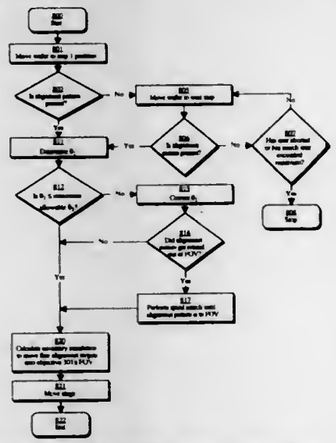
PATTERN RECOGNITION ALIGNMENT SYSTEM

Robert L. Brown, Palo Alto; Hwan J. Jeong, Los Altos; David A. Markle, Saratoga; David S. Pan, Fremont; Richard B. Ward, and Mark S. Wanta, both of Sunnyvale, all of Calif., assignors to Ultratech Stepper, Inc., San Jose, Calif.

Continuation of Ser. No. 431,683, May 2, 1995, abandoned, which is a continuation of Ser. No. 4,688, Jan. 14, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 558,613

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—151 **16 Claims**



1. An exposure and alignment system comprising:

an optical projection system disposed to expose a substrate with an exposure pattern from a reticle;

an optical alignment system disposed to form a first alignment image of a first region of said reticle defining a first key pattern therein and a superimposed image of a first portion of said substrate defining a first target pattern therein through said optical projection system;

a memory;

a pattern recognition system to recognize said first key and target patterns in said first alignment image, wherein said first key and target patterns to be recognized are arbitrary and user selectable, wherein said first key and target patterns are learned by said pattern recognition system and stored in said memory;

a computational subsystem coupled to said pattern recognition system to compute positions of said first key and target patterns and their positional difference to determine a deviation in position between said substrate and a reference position, in response to said position of said first key pattern.

5,621,814

IMAGE RECOGNITION APPARATUS CAPABLE OF INSPECTING HEIGHT AND METHOD FOR INSPECTING HEIGHT BY USING TWO SLIT INCIDENT BEAMS OF LIGHT

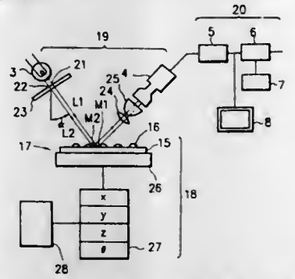
Motoharu Honda, Shiga, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,492

Claims priority, application Japan, Oct. 22, 1993, 5-264454

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—152 **4 Claims**



1. An image recognition apparatus having a coordinate system associated therewith, the apparatus comprising:

illuminant means for emitting a flux of rays of light;

slit means for converting the flux of rays of light into a combination of first and second slits of light parallel to each other and incident on an inspection object at a variable oblique angle, the first and second slits of light scanning the inspection object;

image pickup means for picking up an image of first and second bright lines made by the first and second slits of light, respectively, on a surface region which the inspection object has in a local domain of the coordinate system; and

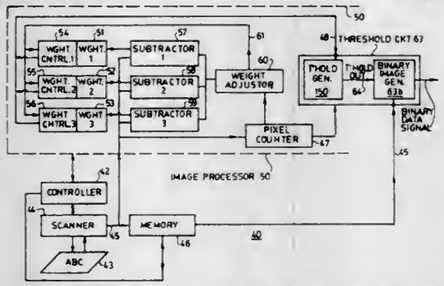
image processing means for comparing and collating the picked-up image with a stored image representative of a pattern showing a presence and an absence of the first and second bright lines on the surface region of the inspection object in the local domain of the coordinate system so that, for a height of a convex shape on the surface region, a conformity is determined based on a broken one of the first and second bright lines and a discrimination is made between a first non-conformity due to the height of the convex shape being greater than a first height and a second non-conformity due to the height of the convex shape being less than a second height, based on an order in which the first and second bright lines are broken, as the first and second slits of light correspond to upper and lower limits of the conformity, respectively.

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5,621,815
GLOBAL THRESHOLD METHOD AND APPARATUS

Dipankar Talukdar, Buffalo; Ramalingam Sridhar, East Amherst, and Victor Demjanenko, North Tonawanda, all of N.Y., assignors to The Research Foundation of State University of New York, Buffalo, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,199
Int. Cl.[6] G06K *9/62;9/36;9/46;* **H04N** *1/40*
U.S. Cl. 382—159 **26 Claims**



1. A method for global thresholding of image signals comprising:

scanning a document to generate a series of pixel data signals, each pixel data signal representative of the intensity of the pixel;

storing the pixel data signals in a memory;

comparing each pixel data signal to at least first and second weight signals to determine the weight signal closest to the pixel data signal;

changing the value of said weight signal closest to the pixel data signal;

counting the number of times each weight signal is changed;

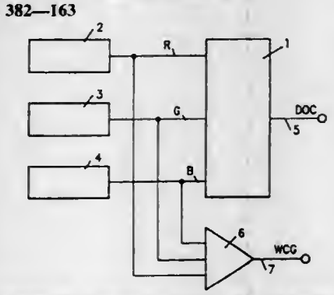
averaging the changed weight signals to determine a threshold signal; and

comparing the pixel data signals to the threshold signal to determine which pixel data signals are greater than the threshold signal and which pixel data signals are less than said threshold signal.

5,621,816
METHOD AND APPARATUS FOR ELIMINATION OF COLOR FROM MULTI-COLOR IMAGE DOCUMENTS

Werner Ruppert, Schoenaich, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 135,820, Oct. 13, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 393,302
Claims priority, application European Pat. Off., Oct. 19, 1992, 92117810
Int. Cl.[6] G06K *9/54*
U.S. Cl. 382—163 **8 Claims**



1. Apparatus for elimination of color from a multi-color image of a document having an image and a background comprising:

a) means for providing concurrently signals for all color information of each picture element of the image of said document;

b) means for determining a maximum signal value for all color information signals for analyzing said color information signal of all input colors of each picture element simultaneously and for outputting only said signal having the determined maximum value;

c) means for converting said signal having a maximum value to a value representative of either a black or white picture element with the color dropped out of said image;

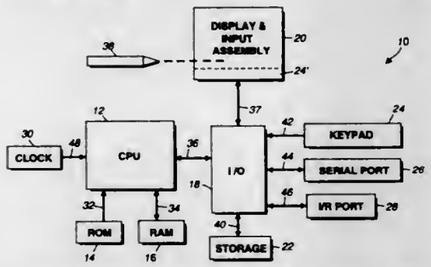
d) means for assembling a data base of the values representing all picture elements of an image with the color dropped out of said image, for character recognition, and

e) a weighting adder to which said color information signals are input, said adder combining and weighting said color information signals for providing a weighted color grey value for archiving said image.

5,621,817
POINTER-BASED COMPUTER SYSTEM CAPABLE OF ALIGNING GEOMETRIC FIGURES

Radmilo Bozinovic, San Jose, and Giulia Pagallo, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 180,559, Jan. 12, 1994, Pat. No. 5,452,371, which is a continuation-in-part of Ser. No. 1,122, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 422,130
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—189 **13 Claims**



1. A pointer-based computer system capable of aligning geometric figures in clusters, the system comprising:

a display screen sensitive to the location of a pointer;

a stroke grouper receptive to a plurality of strokes formed on the display screen by the pointer and operative to group the plurality of strokes into a stroke group;

a shape recognition engine receptive to the stroke group and capable of recognizing said stroke group as a geometric figure taken form the classes of at least one of circles and squares;

means for determining the value of an alignment parameter for a new geometric figure provided to the display screen;

means for determining, for a cluster of geometric figures on said display screen, a fixed value for the alignment parameter, a mean value of the alignment parameter, and a variance from the mean value for geometric figures making up the cluster;

means for determining whether the alignment parameter of the new geometric figure added to the display screen is within a defined threshold distance of the cluster's mean value;

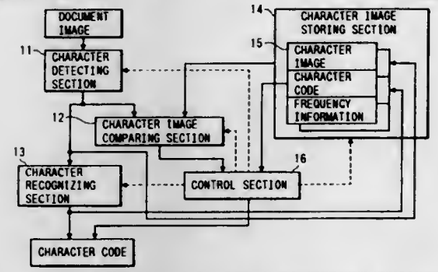
means for aligning the new geometric figure with the cluster on the display screen such that the new geometric figure is aligned with the fixed value of the cluster; and

means for redefining the cluster's mean value and variance from the mean for new geometric figures making up the cluster to account for the addition of the new shape to the cluster.

5,621,818
DOCUMENT RECOGNITION APPARATUS

Kiyoshi Tashiro, Kanagawa, Japan, assignor to Fujl Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 910,377
Claims priority, application Japan, Jul. 10, 1991, 3-195100
Int. Cl.[6] G06K *9/64*
U.S. Cl. 382—227 **13 Claims**



1. A document recognition apparatus in which character images are detected from a document image to be recognized, and character recognition for outputting a character code is effected so as to sequentially recognize a plurality of different characters, said document recognition apparatus comprising:

character detecting means for detecting character images;

character recognizing means for processing, when activated, each detected character image to generate a corresponding character code during a first time interval commencing from the activation to the generation of the character code, said character recognizing means includes means for outputting the generated corresponding character code at the end of the first time interval;

character comparing means for comparing, when activated, each detected character image with a stored character image during a second time interval commencing from activation until the reading of the character code corresponding to the stored character image, said character comparing means includes means for reading the character code corresponding to the stored character image in response to a favorable character image comparison, and means for outputting the read character code corresponding to the stored character image at the completion of the second time interval; and

control means for activating the character recognizing means and the character comparing means at substantially the same time for processing the same detected character image, said control means including means for storing each recognized character image together with its corresponding character code, and means responsive to the outputting of a character code for deactivating one of the character recognizing and character comparing means to discontinue the corresponding process prior to the completion of one of the first and second time intervals.

5,621,819
MULTIDIMENSIONAL MULTI-VALUED COLOR IMAGE COMPRESSION AND DECOMPRESSION METHOD

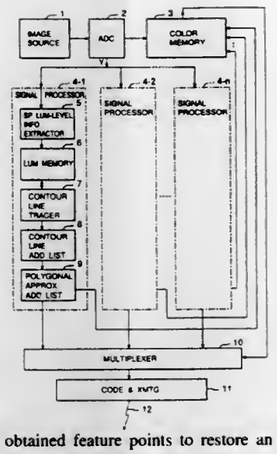
Yoshiko Hozumi, Zushi, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 21, 1995, Ser. No. 427,095
Claims priority, application Japan, Apr. 22, 1994, 6-107819; Jul. 8, 1994, 6-180830
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—232 **12 Claims**

1. A multidimensional multi-valued image compression and decompression method of obtaining feature points satisfying a specific condition on an equi-luminance line set for each specific luminance value previously determined for an image luminance function, and transmitting and recording positions and luminance values at the obtained feature points to restore an image, which comprises, in compression, the steps of:

tracing at least one pixel contour on the equi-luminance line; and

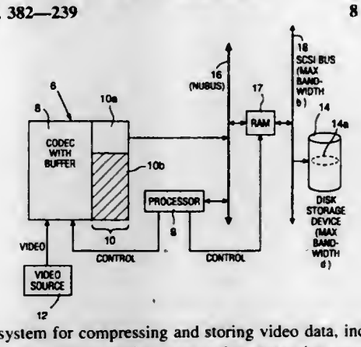
shifting specific equi-luminance line passing-point coordinates on the traced pixel contour to a central position of the pixel, respectively.



5,621,820
VIDEO DATA COMPRESSION METHOD AND SYSTEM WHICH MEASURES COMPRESSED DATA STORAGE TIME TO OPTIMIZE COMPRESSION RATE

Michel Rynderman, San Jose, and Jay Cuccarese, Boulder Creek, both of Calif., assignors to Radius Inc., Sunnyvale, Calif.

Continuation of Ser. No. 205,959, Mar. 3, 1994, Pat. No. 5,563,961. This application Aug. 25, 1995, Ser. No. 519,515
Int. Cl.[6] G06K *9/40*
U.S. Cl. 382—239 **8 Claims**



1. A system for compressing and storing video data, including:

variable rate compression means for generating compressed video data by compressing input video data at a first compression rate selected from a range of compression rates in response to a control signal;

a data storage device connected to the variable rate compression means, for storing the compressed video data; and

control means, connected to the variable rate compression means and the data storage device, for measuring average throughput time for data transfer to and from the data storage device, selecting a desired compression rate in response to measured average throughput time, and generating the control signal so that said control signal sets the first compression rate to be said desired compression rate.

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5,621,821
APPARATUS AND METHOD FOR DETECTING DISTORTIONS IN PROCESSED IMAGE DATA

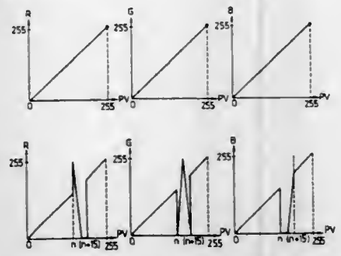
James B. Pearman, Glendale, Calif., and Peter Kavanagh, Guildford, England, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Continuation of Ser. No. 57,473, May 6, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,057

Claims priority, application United Kingdom, Jun. 4, 1992, 9211862

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—254 **1 Claim**



1. An image data processing apparatus comprising:
an image memory for storing an array of pixel values representing high resolution image data;
display means for displaying low resolution image data corresponding to said high resolution image data stored in said image memory, said display means including a monitor of a general purpose computer and having low resolving power;
a display palette for storing mapping information defining mapping between each pixel value of said high resolution image data stored in said image memory and an appearance image representing said low resolution image data that are to be displayed on said display means;
user control means responsive to user input for varying a position of a cursor within a linear scale displayed on said display means;
modifying means for modifying said mapping information stored in said display palette based on said position of said cursor so as to enhance said appearance image displayed on said display means; and
display control means coupled to said image memory, said display palette and said display means for controlling the same so as to cause the enhanced appearance image representing said low resolution image data to be displayed in response to the modified mapping information provided by said modifying means.

5,621,822
METHOD OF DETECTING FOCUS POSITION OF OBJECT FROM VARIABLE GRAY LEVEL IMAGE OF OBJECT

Noriaki Yukawa, Nara-ken; Satoru Kimura, Sakai, and Takeo Sato, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

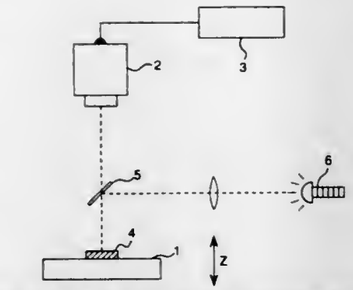
Filed Jul. 29, 1994, Ser. No. 282,430

Claims priority, application Japan, Jul. 30, 1993, 5-189573

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—255 **6 Claims**

1. A focus position detecting method comprising steps of:
obtaining quantized two-dimensional image data including an object to be in focus with respect to an optical system by imaging the object through the optical system;
defining a specified area in the two-dimensional image data;
defining a partial image in the specified area, the partial image being composed of a target pixel and peripheral pixels on a line in a specified direction in which the target pixel exists;



defining a left area and a right area respectively positioned on left and right sides of the target pixel on the line in the specified direction;
calculating gray-level data of each pixel in the left area;
calculating gray-level data of each pixel in the right area;
obtaining as a gray-level ratio a ratio of calculation result of the left area to calculation result of the right area;
calculating an evaluation function by means of the gray-level ratio by repeating the gray-level ratio calculating step in the specified area;
obtaining a plurality of evaluation function calculation values in a variety of optical positions by repeating the steps for calculating the gray-level data of the left and right areas, obtaining the gray-level ratio, and calculating the evaluation function through variation of the optical position of the object; and
obtaining a focus position of the object with respect to the optical system based on the evaluation function calculation values;
wherein after an average value AV1 of gray-level data of each pixel in the right area and an average value AV2 of gray-level data of each pixel in the left area are calculated, the gray-level ratio of the average value AV1 to the average value AV2 is calculated by the following condition:
when the average value AV1 of the right area is larger than the average value AV2 of the left area, the gray-level ratio is AV1/AV2;
when the average value AV1 of the right area is smaller than the average value AV2 of the left area, the gray-level ratio is AV2/AV1; and
when the average value AV1 of the right area is the same as the average value AV2 of the left area, the gray-level ratio is 1.0.

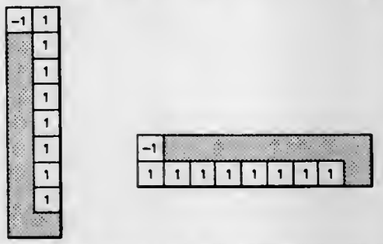
5,621,823
IMAGE PROCESSING METHOD FOR THINNING LINES USING INDEX VALUES

Ryohei Kumagai, Tokyo, Japan, assignor to Yozan, Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Continuation of Ser. No. 759,655, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 292,349, Dec. 30, 1988, abandoned. This application Jan. 8, 1993, Ser. No. 3,861

Int. Cl.[6] G06K *9/44*

U.S. Cl. 382—259 **8 Claims**



1. A method for thinning a line in an image comprising steps of:

acquiring a microscopic image of a material sample in the form of image pixel density values, said image containing a configuration of pixels having configuration densities and also containing background pixels having background densities;
selecting a first neighborhood of pixels which includes a first center pixel to be processed;
replacing the density of the first center pixel with an index density when the first center pixel is a boundary pixel and the densities of the first array of pixels satisfy one of a set of conditions:
selecting a second neighborhood of pixels which includes a second center pixel to be processed, the densities of pixels in said second neighborhood including the index density of the first center pixel;
selectively retaining or replacing the density value of the second center pixel when
i) the second center pixel is a boundary pixel, and
ii) the densities of the second neighborhood of pixels include an index density; and
generating a processed image which includes the selectively converted or retained density value of the second center pixel.

5,621,824
SHADING CORRECTION METHOD, AND APPARATUS THEREFOR

Takashi Ijiri; Toshihiko Matsumoto; Toshimichi Masaki; Naoshi Awano, and Osamu Motooka, all of Kyoto, Japan, assignors to Omron Corporation, Japan

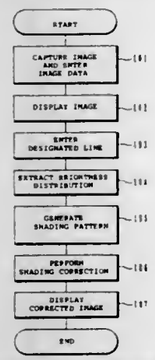
PCT No. PCT/JP91/01664, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO92/10810, PCT Pub. Date Jun. 26, 1992

PCT Filed Nov. 29, 1991, Ser. No. 70,360

Claims priority, application Japan, Dec. 6, 1990, 2-407404

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—274 **10 Claims**



1. A shading correction method comprising the steps of:
imaging a columnar object using an image pick-up device to obtain image data representing the object;
displaying the image represented by said image data on a display unit;
designating a line on said image displayed by said display unit in a direction perpendicular to a longitudinal direction of said object;
said designated line being one where there are no images, defects or other noisy images present and where a density level is uniform along said longitudinal direction on said line;
extracting the image data along the designated line to form a density level distribution;
repeatedly arranging the same said density level distribution in said longitudinal direction to form shading pattern data representing the distribution of brightness on the surface of the object in two dimensions; and
performing a shading correction of the image data presenting the object by using said shading-pattern data.

5,621,825
IMAGE PROCESSOR, IMAGE PROCESSING METHOD AND APPARATUS APPLYING SAME

Toshimichi Masaki, and Yutaka Kato, both of Kyoto, Japan, assignors to Omron Corporation, Japan

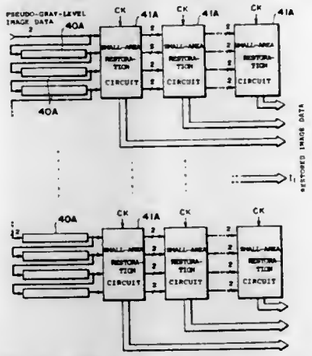
PCT No. PCT/JP93/00285, § 371 Date Nov. 5, 1993, § 102(e) Date Nov. 5, 1993, PCT Pub. No. WO93/18471, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 8, 1993, Ser. No. 146,022

Claims priority, application Japan, Mar. 6, 1992, 4-084786

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—274 **27 Claims**



1. An image processor, comprising:
pseudo-gray-scale image generating circuit means for converting input image data, which is represented by a first prescribed number of bits per pixel, into pseudo-gray-scale image data represented by a second prescribed number of bits, which is less than said first prescribed number of bits;
image restoration circuit means for restoring the pseudo-gray-scale image data for each and every one of a plurality of small areas, each of which comprises a plurality of pixels and is provided in a window that scans the pseudo-gray-scale image generated by said pseudo-gray-scale image generating circuit means, with said each small area serving as one restored pixel, and outputting restored image data for a window at each and every position; and
similarity operating circuit means for calculating an index value representing a degree of similarity by comparing the restored image data of each window sequentially outputted by the image restoration circuit means and reference data representing a standard image.

5,621,826
IMAGE REDUCTION APPARATUS

Akihiro Katayama, Kawasaki; Mitsuru Maeda, Yokohama; Yasuji Hirabayashi, Tokyo, and Tadashi Yoshida, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 206,212, Mar. 3, 1994, Pat. No. 5,448,654, which is a division of Ser. No. 895,241, Jun. 8, 1992, Pat. No. 5,345,517, which is a continuation of Ser. No. 501,155, Mar. 29, 1990, abandoned. This application May 19, 1995, Ser. No. 444,770

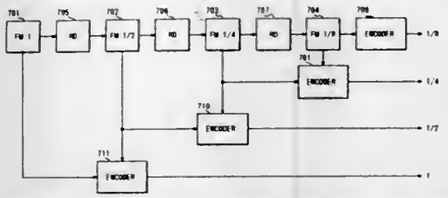
Claims priority, application Japan, Apr. 10, 1989, 1-90073; Apr. 10, 1989, 1-90074; Apr. 10, 1989, 1-90075; Apr. 10, 1989, 1-90080

Int. Cl.[6] G06K *9/42*

U.S. Cl. 382—298 **18 Claims**

1. An image reduction method for reducing an original image, comprising:
an inputting step of inputting original image data representing the original image.
a subjecting step subjecting the original image data input in said inputting step to a reduction process; and

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an outputting step of outputting reduced image data representing a reduced image obtained in said subjecting step,

wherein said subjecting step further comprises:

a first step of holding reduced image data obtained in said subjecting step of a previous cycle of image reduction, and

a second step of referring to image data of pixels defined by the following (a-1) to (b-2):

(a-1) the original image data of an object pixel X(i,j) input in said inputting step;

(a-2) the original image data of surrounding eight pixels X(i−1,j−1), X(i−1,j), X(i−1,j+1), X(i,j−1), X(i,j+1), X(i+1,j−1), X(i+1,j), X(i+1,j+1) of the object pixel X(i,j) input in said inputting step;

(b-1) the reduced image data of a first reduced pixel X'(i−1,j) held in said first step, the first reduced pixel being located ahead of a reduced object pixel X'(i,j);

(b-2) the reduced image data of a second reduced pixel X'(i,j−1) held by said first step, the second reduced pixel being located above the reduced object pixel X'(i,j), and

a third step of determining the image data of a pixel composing the reduced image on the basis of the image data referred to in said second step.

5,621,827

IMAGE PROCESSING METHOD AND APPARATUS FOR OBTAINING OBJECT DATA TO RECONSTRUCT THE ORIGINAL IMAGE

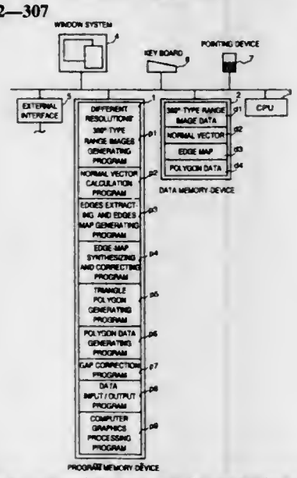
Shinji Uchiyama; Hiroyuki Yamamoto, both of Yokohama, and Toshikazu Ohshima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 266,683

Claims priority, application Japan, Jun. 29, 1993, 5-159549

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—307 **40 Claims**



1. An image processing apparatus for approximating an object shape and reconstructing the corresponding image by subjecting a radial range image to approximating with polygons, comprising:

inputting means for inputting a radial range image corresponding to a direction from a prescribed axis to a point on an object's surface and the point's location to the prescribed axis;

generating means for generating radial range images each having different resolutions based upon the input radial range image by said inputting means;

calculating means for calculating a normal vector at said point on each of the generated radial range images by said generating means;

making means for making edge-maps each based upon neighboring points' locations around a notice point and the corresponding normal vectors calculated by said calculating means, on each of said generated radial range images;

synthesizing means for synthesizing the edge-map made by said making means into a synthesized edges-map; and

polygon data generating means for generating polygon data representing an object's shape depending upon an input radial range image input by inputting means, based upon a synthesized edge-map synthesized by said synthesizing means.

5,621,828

INTEGRATED TUNABLE OPTICAL FILTER

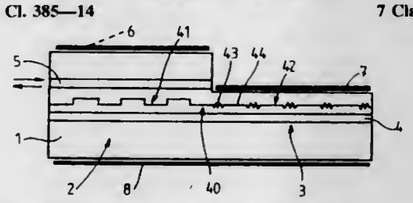
Roel Baets, Deinze, and Jan Willems, Gentbrugge, both of Belgium, assignors to Interuniversitair Micro-Elektronica Centrum VZW, Leuveo, Belgium

Continuation of Ser. No. 244,110, May 18, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 635,057

Claims priority, application Belgium, Sep. 24, 1992, 09200838

Int. Cl.[6] G02B *6/12; G02F 1/295*

U.S. Cl. 385—14 **7 Claims**



1. An integrated tunable optical filter comprising:

a substrate made of semiconducting material,

a first section on said substrate forming a transmission filter having a low spectral selectivity, said first section including a first waveguide system with upper and lower waveguides, a periodic rib shaped structure between said upper and lower waveguides defining a filter response with a central coupling wavelength, and

a second section on said substrate forming a reflector with a spectral reflection with a plurality of reflection peaks, said second section including a second waveguide coupled with said lower waveguide in said first section and having a periodically broken short-period reflection structure including short period stripped regions alternating with non-stripped regions;

first means for injecting current into said first section, said filter response of said first section being shifted in wavelength over a range covering a plurality of said reflection peaks of said second section; and

second means for injecting current into said second section, said reflection spectrum of said second section being shifted in wavelength and one reflection peak of said plurality of reflection peaks corresponding to said central coupling wavelength of said first section;

wherein said optical filter has a reflection response in said upper waveguide with a narrow bandwidth and wide tunability.

5,621,829

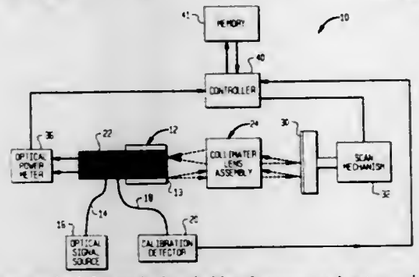
FIBER OPTIC SWITCHING DEVICE AND METHOD USING FREE SPACE SCANNING

Joseph E. Ford, Oakhurst, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 2, 1996, Ser. No. 626,653

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—22 **24 Claims**



1. A method for optical switching between at least one input fiber and at least one output fiber, said at least one output fiber being located in a fiber bundle, the method comprising:

positioning a light directing mechanism proximate a face of said fiber bundle;

transmitting a test light signal through said input fiber, wherein said test light signal is directed toward light directing mechanism;

collimating said test light signal to produce a collimated test light signal;

redirecting said collimated test light signal with said light directing mechanism;

focusing said collimated test light signal at said face of said fiber bundle;

altering said light directing mechanism to cause a scanning of said face of said fiber bundle with said test light signal; and

identifying an orientation of said light directing mechanism during the scanning that directs light to said at least one output fiber.

10. An optical switching device for selectively optically connecting at least one first fiber in a fiber bundle to at least one second fiber in the fiber bundle, comprising:

a collimator for collimating light emitted by said at least one first fiber and producing a substantially collimated beam; and

a light directing mechanism for reflecting said substantially collimated beam back through said collimator along an optical path, wherein said collimator focuses said substantially collimated beam at said at least one second fiber in the fiber bundle.

5,621,830

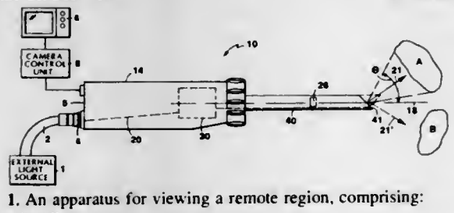
ROTATABLE FIBER OPTIC JOINT

Paul V. Lucey, Sandown, and Roger D. Greeley, Portsmouth, both of N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Filed Jun. 7, 1995, Ser. No. 475,900

Int. Cl.[6] G02B *23/26*

U.S. Cl. 385—25 **21 Claims**



1. An apparatus for viewing a remote region, comprising:

a handle;

an elongated outer member configured to be inserted into the remote region and having a proximal end rotatably mounted to said handle;

a device disposed in a distal end of said outer member for viewing the remote region, a portion of said device being coupled to said handle by an inner member disposed along an axis within said outer member;

a first set of optical fibers disposed in said handle and having a distal end at which individual fibers thereof are arranged around said inner member;

a second set of optical fibers disposed in said outer member and having a proximal end at which individual fibers thereof are arranged around said inner member; and

a joint between said distal end of said first set of optical fibers and said proximal end of said second set of optical fibers, said inner member extending through said joint, said joint being constructed to allow relative rotation between said first and second sets of optical fibers about said axis of said inner member in response to relative rotation between said outer member and said handle.

5,621,831

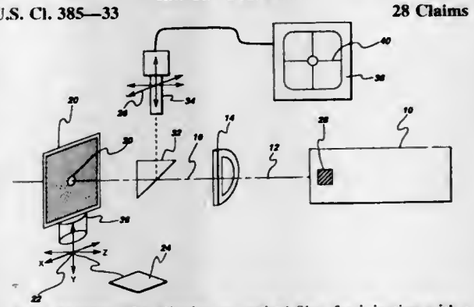
APPARATUS AND METHOD FOR HIGH POWER LASER-TO-FIBER ALIGNMENT

Philip R. Staver, Hagaman; Sandra F. Feldman, Schenectady, and Angel L. Ortiz, Jr., Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,600

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—33 **28 Claims**



1. An apparatus for aligning an optical fiber for injection with a laser beam, comprising:

a laser source for emitting a laser beam;

a focusing means aligned with laser beam's path;

a coupon aligned with laser beam's path and with said focusing means for marking the injection point of an emitted laser beam when said beam passes through said focusing means and is projected upon said coupon; and

a camera coupled to a monitor positioned adjacent said coupon for viewing an image of said marked injection point on said coupon and for accurately positioning an optical fiber tip at said injection point.

5,621,832

BEAM SPLITTER AND OPTICAL COUPLER USING THE SAME

Jun Yokoyama, Tokyo, and Masaaki Miyake, Shizuoka, both of Japan, assignors to NEC Corporation, and Vacuum Optics Corporation, both of Japan

Filed Dec. 14, 1994, Ser. No. 355,853

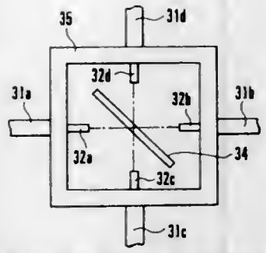
Claims priority, application Japan, Dec. 14, 1993, 5-313455

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—48 **33 Claims**

1. A beam splitter which is an optical multilayer film obtained by sequentially stacking first to fifth layers respectively having refrac-

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tive indexes of n_1 to n_5 and geometrical thicknesses d_1 to d_5 on a substrate having a refractive index n_G,

wherein the refractive indexes of said substrate and said first to fifth layers satisfy the following relationship: of n_G=1.45 to 1.60, n_1=2.02 to 2.20, n_2=2.25 to 2.38, n_3=1.44 to 1.47, n_4=2.25 to 2.38, and n_5=1.44 to 1.47, and

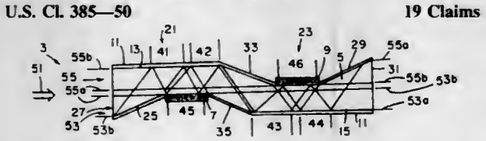
a geometrical thickness d_i of an ith layer of the first to fifth layers satisfies relationship $n_i d_i \cos(\theta_i)=¼\lambda$, where n_i is a refractive index of the ith layer, θ_i is an angle of refraction in the ith layer, and λ is a center wavelength of an incident light beam to the multilayer film with an angle of incidence of 40° to 50°.

5,621,833

SUPERPOSITION OF TWO-DIMENSIONAL ARRAYS

Ronnie C. Lau, 17009 Paula La., Lutz, Fla. 33549, and Patrick E. Crane, 13706 Chestersall Dr., Tampa, Fla. 33634

Filed Jun. 12, 1995, Ser. No. 489,437
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—50 **19 Claims**



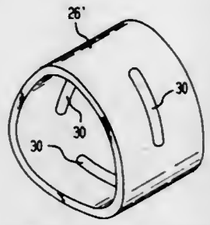
1. An optical waveguide apparatus comprising a block, the block having a left end, a right end, a left portion and a right portion, the left portion having a first top side, a first bottom side, at least two ports on the first top side, at least one port on the first bottom side, and a first sloped portion extending upward between a bottom of the left end of the block and a port on the first bottom side, and the right portion having a second top side, a second bottom side, at least one port on the second top side, at least two ports on the second bottom side, and a fourth sloped portion extending downward between a top of the right end of the block and a port on the second top side, a third sloped portion extending downward between the first top side and the second top side, a second sloped portion extending downward between the first bottom side and the second bottom side, the second sloped portion and the third sloped portion being parallel to each other, a first two-dimensional array positioned on a port on the left portion, a second two-dimensional array positioned on a port on the right portion, the first array and the second array positioned on opposing sides of the block, and a reflective surface covering the first top side, the second top side, the first bottom side, the second bottom side, the first sloped portion, the second sloped portion, the third sloped portion and the fourth sloped portion, except for areas where the first two-dimensional array and the second two-dimensional array are positioned.

5,621,834

CLOSED ALIGNMENT SLEEVE FOR OPTICAL CONNECTORS

Jerry M. Anderson, Austell; Ray R. Cammons, Woodstock, and Wilton W. King, Chamblee, all of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 362,094
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—72 **7 Claims**



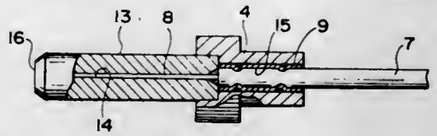
1. An alignment sleeve for use in receiving a ferrule, said alignment sleeve having a cylindrical wall with an inner surface having a generally circular cross-section, said alignment sleeve having means for contacting said ferrule when said ferrule is inserted within said sleeve and for centering said ferrule within said sleeve, said contacting means comprising three lobes formed along a length of said sleeve on said inner surface of said sleeve which are angularly equally spaced about said inner surface, and wherein said sleeve further includes means for decoupling deformation at a first end of said sleeve from a second end of said sleeve.

5,621,835

OPTICAL FIBER ASSEMBLY AND MANUFACTURING METHOD FOR THE SAME

Mitsuo Takahashi, and Kunio Yamada, both of Matsudo, Japan, assignors to Seikoh Giken Co., Ltd., Matsudo, Japan

Continuation-in-part of Ser. No. 314,253, Sep. 29, 1994, abandoned. This application Aug. 8, 1995, Ser. No. 512,411
Claims priority, application Japan, May 20, 1994, 6-129922; Mar. 31, 1995, 7-100670
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 **6 Claims**



1. An optical fiber assembly comprising:

an optical fiber having a protective sheath at a distal end thereof, said optical fiber projecting from said sheath;

a pipe surrounding said protective sheath adjacent the distal end of said optical fiber, said pipe being secured to said sheath by crimping;

a ferrule surrounding the distal end of said optical fiber;

a supporting sleeve having a stepped portion at one end thereof for receiving an end of said ferrule, said supporting sleeve surrounding said pipe and said ferrule; and

a thermosetting resin for adhering said optical fiber and said pipe to said ferrule and said supporting sleeve.

5. A method of manufacturing an optical fiber assembly including a ferrule, a supporting sleeve, an optical fiber having a protective sheath at a distal end thereof, and a metal pipe, said method comprising the steps of:

inserting an end of the ferrule into an end of the supporting sleeve;

exposing a portion of said optical fiber so that it projects from said sheath;

inserting the distal end of the optical fiber into the metal pipe whereby the pipe surrounds the protective sheath;

deforming the metal pipe by crimping thereby securing it to the sheath, projections on an internal wall of the pipe resulting from said deformation biting into the sheath;

applying a thermosetting adhesive agent to the ferrule;

inserting the exposed portion of the optical fiber into an opening in the ferrule and the metal pipe into the supporting sleeve; and

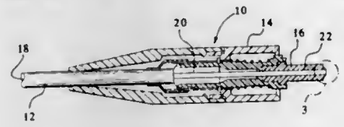
heating the resulting assembly thereby fixing with the adhesive agent the optical fiber to the ferrule and the metal pipe to the supporting sleeve.

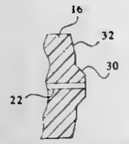
5,621,836

PLASTIC FIBER ALIGNMENT FERRULE AND TERMINATION METHOD

Philip W. Schofield, Oak Park; Michael A. Reed, Norridge, and Kenneth Marchman, Chicago, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Nov. 28, 1994, Ser. No. 345,620
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—80 **10 Claims**





1. A molded plastic ferrule for a fiber optic connector comprising an elongated body having an opening therethrough, said opening having an entry end and an exit end surrounded by a raised pedestal and the exit end having a strain relief member formed by the raised pedestal and an anaerobic adhesive composition injected only within the exit end opening and not to the rest of the ferrule surrounding and supporting a fiber bonded within the raised pedestal with the anaerobic adhesive composition wherein the fiber may be easily cleaved and polished.

5,621,837

OPTO-ELECTRONIC HYBRID INTEGRATION PLATFORM, OPTICAL SUB-MODULE, OPTO-ELECTRONIC HYBRID INTEGRATION CIRCUIT AND PROCESS FOR FABRICATING PLATFORM

Yasufumi Yamada; Shinji Mino, both of Mito; Ikuo Ogawa, Yokohama; Hiroshi Terui; Kaoru Yoshino, both of Mito; Kuniharu Kato, Tokaimura; Kazuyuki Moriwaki, Mito; Akio Sugita, Tomobe-machi; Masahiro Yanagisawa, and Toshikazu Hashimoto, both of Mito, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

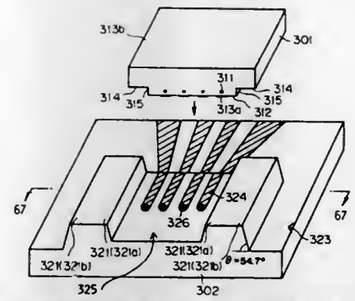
Filed Aug. 8, 1994, Ser. No. 286,968
Claims priority, application Japan, Aug. 9, 1993, 5-197325; Dec. 7, 1993, 5-306578; May 20, 1994, 6-106492; Jun. 29, 1994, 6-148222
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—88 **3 Claims**

1. An optical sub-module, comprising:

an optical functional device having an active layer and an optical device height reference surface separated from said active layer by a predetermined distance;

a carrier having an optical device holding surface for holding said optical functional device, a carrier height reference surface separated from said optical device holding surface by a predetermined distance, and a carrier electrical wiring, wherein said carrier is formed of a substrate having a protrusion and a recess, wherein said optical device holding surface and said carrier height reference surface are formed of said substrate protrusion, and wherein said carrier electrical wiring is formed within said substrate recess;

said optical device height reference surface of said optical functional device being fixedly contacted with the optical device holding surface of said carrier, and an active-layer-side electrode of said optical functional device being electrically connected to said carrier electrical wiring.

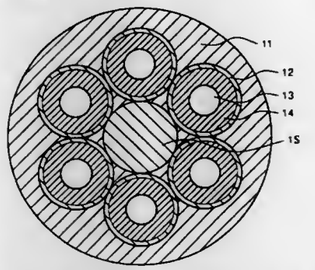


5,621,838

RESINS FOR COATED OPTICAL FIBER UNITS

Kaori Nomura; Tomoyuki Hattori; Tsuyoshi Nonaka, and Nobuhiro Akasaka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

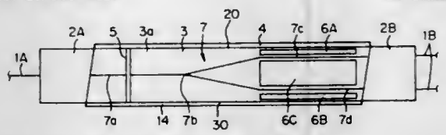
Continuation of Ser. No. 204,998, Mar. 3, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 493,520
Claims priority, application Japan, Mar. 4, 1993, 5-067316
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—100 **9 Claims**



1. A coated optical fiber unit comprising at least two coated optical fibers, wherein each of said coated optical fibers has a coloring layer as the outermost layer and is coated with a bundling coating layer, wherein said coloring layer contains a first releasing agent in an amount not greater than 5% by weight based on the weight of said coloring layer, and further wherein said bundling coating layer contains a second releasing agent in an amount not greater than 5% by weight based on the weight of said bundling coating layer.

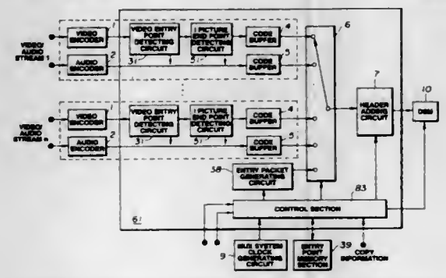
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5,621,839
OPTICAL WAVEGUIDE DEVICE HAVING SUBSTRATE MADE OF FERROELECTRIC CRYSTALS
Masato Asano, Nagoya, and Tetsuya Ejiri, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Aug. 24, 1994, Ser. No. 294,915
Claims priority, application Japan, Aug. 26, 1993, 5-211606; Sep. 6, 1993, 5-221038; Aug. 1, 1994, 6-180102; Aug. 2, 1994, 6-181527
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—129 **14 Claims**



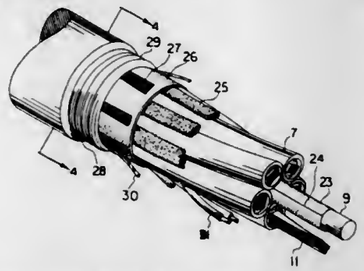
7. An optical waveguide device, comprising:
an optical waveguide substrate comprising ferroelectric crystals having a spontaneous electric polarization direction, said optical waveguide substrate having first and second crystal planes formed therein, charges of first and second opposite polarities being generated along said first and second crystal planes, respectively, due to pyroelectrical effects;
an optical waveguide formed in said optical waveguide substrate through which light propagates along a propagation direction, said optical waveguide including a functional portion for dividing or coupling light passing therethrough;
a first conductive layer formed on said optical waveguide substrate along a first region extending from said first crystal plane to said functional portion; and
a second conductive layer formed on said optical waveguide substrate along a second region extending from said second crystal plane to said functional portion, wherein said first conductive layer and said second conductive layer are electrically connected to each other such that said first and second conductive layers are held at substantially the same potential, and said spontaneous electric polarization direction and said propagation direction are transverse with each other.

5,621,840
DATA TRANSMISSION METHOD AND APPARATUS, DATA DECODING APPARATUS, AND DATA RECORDING MEDIUM
Makoto Kawamura; Yasushi Fujinami, both of Kanagawa, and Markus H. Veltman, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
PCT No. PCT/JP94/01556, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO95/08823, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 21, 1994, Ser. No. 432,145
Claims priority, application Japan, Sep. 21, 1993, 5-235121
Int. Cl.[6] H04N *5/91;5/928;5/917;7/26*
U.S. Cl. 386—68 **32 Claims**



1. A data transmission method for carrying out transmission of video encoded data suitable for storage in a storage medium, the video encoded data includes intra-coded video data portions, the method comprising the steps of:
detecting a first entry point in the video encoded data which corresponds to a position of a first intra-coded video portion;
generating, on the basis of the detected first entry point, at least one packet that includes position information relating to at least one second entry point and at least one additional information relating to the video encoded data, said second entry point exists in a forward direction or in a backward direction relative to the first entry point and corresponds to a position of at least one second intra-coded video data portion, and
multiplexing the packet at a predetermined position of the video encoded data, wherein the multiplexed video encoded data is suitable for selective high speed reproduction of the intra-coded video data portions.

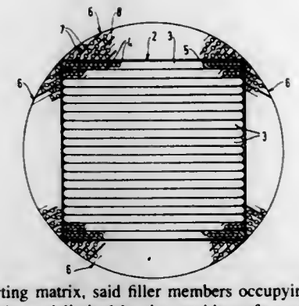
5,621,841
OPTICAL FIBER CABLE CONTAINING RIBBONS IN STRANDED TUBES
Larry W. Field, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.
Filed Sep. 20, 1995, Ser. No. 531,359
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—113 **13 Claims**



1. A telecommunications cable, comprising:
a longitudinally extending central strength member;
a longitudinally extending tape comprising water-absorptive material, said tape wrapped around the central member without a substantial degree of lay;
an outer substantially fluid impervious plastic sheath surrounding the wrapped central member, said sheath delimiting a first space between said tape and the outer sheath; and,
at least one telecommunication element disposed within the first space.

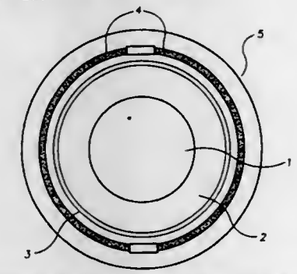
5,621,842
OPTICAL FIBER CABLE AND DEVICE FOR MANUFACTURING A CABLE OF THIS KIND
David Keller, Vaureal, France, assignor to Alcatel Cable, Clichy Cedex, France
Filed Sep. 22, 1995, Ser. No. 532,144
Claims priority, application France, Sep. 26, 1994, 94 11437
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—114 **16 Claims**

1. Optical fiber cable comprising:
a stacked plurality of optical fiber ribbons each including a plurality of optical fibers disposed side by side in substantially the same plane and all embedded in a common covering or matrix of said ribbon,
a protective outer sheath to protect the cable against radial compression loads,
reinforcing members for withstanding traction loads applied to the cable, which further comprises filler members of a material based on reinforcing fibers and having a coefficient of expansion similar to that of said optical fibers embedded in a



connecting matrix, said filler members occupying all or part of a volume delimited by the outside surface of the stacked ribbons and by the inside surface of said outer sheath so that the combination of said stack and said filler members has an external contour in cross-section that is substantially circular, said filler members being adapted to protect said ribbons against radial and longitudinal loads applied to said cable and to oppose contraction of said cable by more than 0.2%.

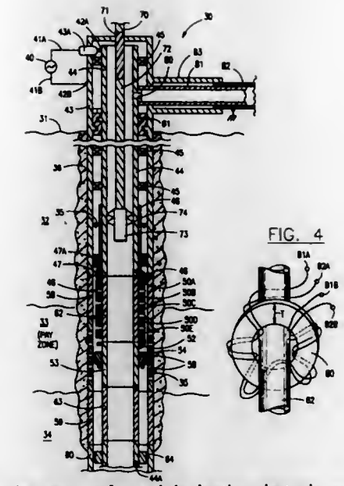
5,621,843
SILICA LIGHTGUIDE FOR UV APPLICATIONS
Wolfgang Neuberger, Monchengladbach, Germany, assignor to CeramOptec Industries, Inc., East Longmeadow, Mass.
Filed Jun. 9, 1994, Ser. No. 257,550
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—123 **17 Claims**



1. A lightguide for stable transmission of UV light, said lightguide comprises:
a. a core;
b. a microporous silica cladding laver overlaying said core; and
c. heating means for elevating and maintaining the temperature of said lightguide to between 200° C. and 400° C., while trasmitting said UV light in said lightguide.

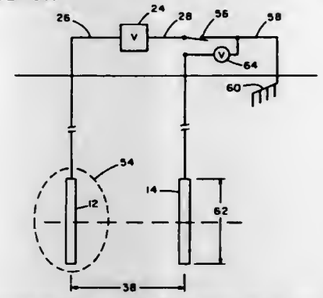
5,621,844
ELECTRICAL HEATING OF MINERAL WELL DEPOSITS USING DOWNHOLE IMPEDANCE TRANSFORMATION NETWORKS
Jack E. Bridges, Park Ridge, Ill., assignor to Uentech Corporation, Houston, Tex.
Filed Mar. 1, 1995, Ser. No. 396,620
Int. Cl.[6] E21B *43/00*
U.S. Cl. 392—301 **22 Claims**

1. An A.C. electrical heating system for heating a fluid reservoir in the vicinity of a mineral fluid well, utilizing A.C. electrical power in a range of 25 Hz to 30 KHz, the well comprising a borehole extending down through an overburden and into a subterranean fluid reservoir, the well having a casing including an upper electrically conductive casing around the borehole in the overburden, at least one electrically conductive heating electrode located in the reservoir and an electrically insulating casing interposed



between the upper casing and the heating electrode, and an electrically isolated conductor extending down through the casing, the heating system comprising:
an electrical A.C. power source having first and second outputs;
a downhole voltage-reducing impedance transformation network having a primary and a secondary;
primary connection means connecting the primary of the transformation network to the first and second outputs of the power source; and
secondary connection means connecting the secondary of the transformation network to the heating electrode.

5,621,845
APPARATUS FOR ELECTRODE HEATING OF EARTH FOR RECOVERY OF SUBSURFACE VOLATILES AND SEMI-VOLATILES
Jack E. Bridges, Park Ridge, and Guggilam C. Sresty, Burbank, both of Ill., assignors to IIT Research Institute, Chicago, Ill.
Division of Ser. No. 831,589, Feb. 5, 1992, Pat. No. 5,420,402. This application May 18, 1995, Ser. No. 444,228
Int. Cl.[6] H05B *3/03;6/54;* E21B *36/04*
U.S. Cl. 392—303 **4 Claims**



1. An apparatus for electrically heating an in situ subsurface formation having a volume and a thickness, to remove volatile and semi-volatile hazardous waste material therefrom over a processing time, comprising:
at least n electrodes of substantially equal length each having substantially the same input resistance, and placed in a subsurface formation substantially equidistantly, wherein n is greater than the product of the volume of the formation of cubic meters, multiplied by the input resistance of an electrode in ohms, multiplied by the constant 75 kilowatt hours,

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divided by 20 and further divided by the processing time in hours, the effective number of electrodes within the formation being sufficient to mitigate the evaporation of water near the electrodes and increase the temperature at a mid-point between adjacent electrodes,

electrical energy supply means for supplying electrical energy of opposite polarity to at least two of said electrodes,

means for passing a gas into said subsurface formation,

means for collecting gas, and

means for removing hazardous vapors from said collected gas.

5,621,846

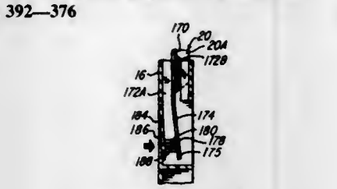
RADIANT ELECTRIC SPACE HEATER WITH ANGULAR ADJUSTMENT SUPPORT BRACKET

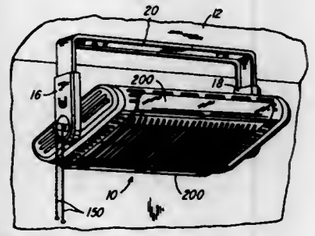
Barry W. Smith, Scioto Township, Delaware County, and Michael T. Kopczewski, Orient, both of Ohio, assignors to The W. B. Marvin Manufacturing Company, Urbana, Ohio

Filed May 17, 1995, Ser. No. 443,219

Int. Cl.[6] F24C *1/14*; F24H *3/00*

U.S. Cl. 392—376 **27 Claims**





1. A radiant electric heater, comprising:

a housing;

a reflector assembly mounted in said housing;

a heating element disposed in said reflector assembly and extending between opposite ends thereof;

a first bracket arm rotatably connected to one end of said housing;

a second bracket arm rotatably connected to the opposite end of said housing, said bracket arms defining an axis of rotation of said housing;

an inverted U-shaped support bracket mounted to a planar surface and having first and second mutually spaced support arms, said first bracket arm detachably connected to said first support arm and said second bracket arm detachably connected to said second support arm; and

a control switch mounted on one of said bracket arms and electrically connected to said heating element, said control switch having a control shaft extending therefrom substantially centered on said axis of rotation.

5,621,847

DYNAMIC VACUUM EVAPORATION SYSTEM

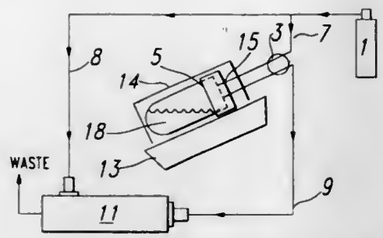
Barton D. Tillotson, Allen; Anthony J. Schleisman, Plano; David S. Bollinger, Grapevine, and Stephen C. Skinner, Colleyville, all of Tex., assignors to Texas Instruments Incorporation, Dallas, Tex.

Filed May 25, 1995, Ser. No. 450,453

Int. Cl.[6] F24F *6/00*; C23C *14/00*

U.S. Cl. 392—391 **24 Claims**

1. An ultraclean evaporation system for hydrogen peroxide samples which comprises:



(a) a vessel having an inlet and an outlet formed of a fluoropolymer inert to hydrogen peroxide and having an impurity level less than the impurity level of hydrogen peroxide samples to be analyzed therein;

(b) a radiant heater spaced from said vessel for uniformly heating the contents of said vessel;

(c) a shield coated with a fluoropolymer encasing said vessel in conjunction with said heater;

(d) an inert gas supply coupled to said vessel with a coupler of fluoropolymer inert to hydrogen peroxide; and

(e) a vacuum pump coupled to the outlet of said vessel for creating a dynamic vacuum in said vessel to maintain a mole percentage of hydrogen peroxide vapor in said vessel below an equivalent of 26 mole percent at atmospheric pressure.

5,621,848

METHOD OF PARTITIONING A SEQUENCE OF DATA FRAMES

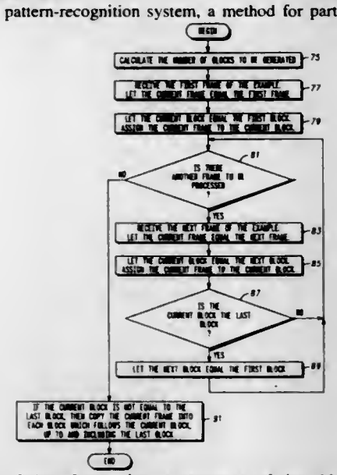
Shay-Ping T. Wang, Long Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1994, Ser. No. 254,847

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.2 **21 Claims**

1. In a pattern-recognition system, a method for partitioning a



sequence of data frames into a sequence of data blocks, said method comprising the following steps:

(a) converting a spoken word into a signal representing said sequence of data frames;

(b) receiving a first data frame of said sequence of data frames;

(c) equating a current data frame to said first data frame;

(d) equating a current data block to a first data block of said sequence of data blocks;

(e) assigning said current data frame to said current data block;

(f) determining whether there is a next data frame in said sequence of data frames:

(i) if so, proceeding to step (g);

(ii) if not, concluding said method;

(g) equating said current data frame to said next data frame;

(h) equating said current data block to a next data block in said sequence of data blocks;

(j) assigning said current data frame to said current data block;

(k) determining if said current data block is a last one of said sequence of data blocks;

(i) if so, proceeding to step (l);

(ii) if not, returning to step (f); and

(l) equating said next data block to said first data block, and returning to step (j).

5,621,849

VOICE RECOGNIZING METHOD AND APPARATUS

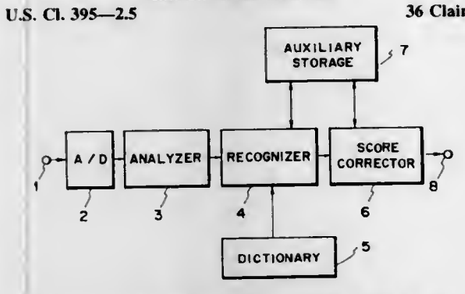
Atsushi Sakurai, Yokohama; Junichi Tamura, Tokyo; Tetsuo Kosaka, Kyoto, and Hiroshi Matsuo, Akita, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 895,007, Jun. 8, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,494

Claims priority, application Japan, Jun. 11, 1991, 3-139092

Int. Cl.[6] G10L *5/06*; *9/00*

U.S. Cl. 395—2.5 **36 Claims**



1. A voice recognizing method comprising the steps of:

inputting a vocal sound into a voice recognition apparatus;

performing matching between the input vocal sound and stored standard patterns, the matching producing a matching score representative of the degree of similarity between the input vocal sound and a matched standard pattern;

correcting the matching score of a specific standard pattern produced in said performing step by multiplying the matching score of the specific standard pattern by a correction value corresponding to a time length of an input vocal sound matching the specific standard pattern; and

determining a recognition result in accordance with the corrected matching score.

5,621,850

SPEECH SIGNAL PROCESSING APPARATUS FOR CUTTING OUT A SPEECH SIGNAL FROM A NOISY SPEECH SIGNAL

Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 101,825, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 706,576, May 28, 1991, abandoned. This application Dec. 21, 1994, Ser. No. 361,152

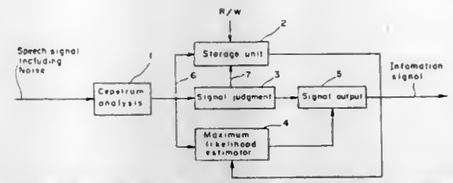
Claims priority, application Japan, May 28, 1990, 2-138053; May 28, 1990, 2-138061; May 28, 1990, 2-138062; May 28, 1990, 2-138063; May 28, 1990, 2-138067

Int. Cl.[6] G10L *3/02*; *9/00*

U.S. Cl. 395—2.15 **2 Claims**

1. A signal detecting apparatus for detecting a group of an inputted speech signal based on successive intervals of said inputted speech signal including a noise, comprising:

cepstrum analysis means for performing a cepstrum analysis for each successive interval of said inputted speech signal including said noise and for outputting a corresponding cepstrum analysis result indicative of a relationship between a cepstrum level and quefrency of each successive interval of said inputted speech signal;



storage means for previously storing information of respective relationships between a quefrency of a cepstrum peak of speech signals of predetermined plural groups and said plural groups;

signal judgment means for detecting whether each interval of said inputted speech signal is a speech signal interval containing speech based on the presence or absence of a cepstrum peak within each interval as indicated by the cepstrum analysis result outputted from said cepstrum analysis means;

maximum likelihood estimation means for detecting a group of said inputted speech signal by comparing a quefrency of a cepstrum peak present within each interval as indicated by said cepstrum analysis outputted from said cepstrum analysis means with said information of respective relationships stored in said storage means; and

signal output means for outputting a pair of said speech signal intervals of said inputted speech signal detected by said signal judgment means and said group detected by said maximum likelihood estimation means.

5,621,851

METHOD OF EXPANDING DIFFERENTIAL PCM DATA OF SPEECH SIGNALS

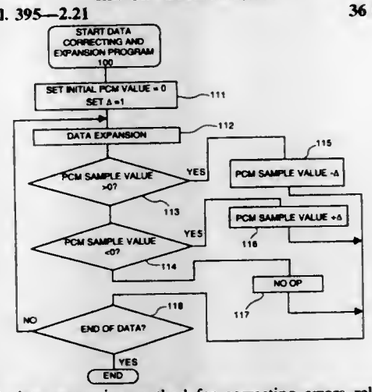
Toshio Moriya, Yokohama; Kunihiro Yanagi; Motoaki Satoyama, both of Sagamihara, and Yoshihiro Mizuno, Daito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1994, Ser. No. 192,578

Claims priority, application Japan, Feb. 8, 1993, 5-019887

Int. Cl.[6] G10L *3/02*; *9/00*

U.S. Cl. 395—2.21 **36 Claims**



1. A data processing method for correcting errors relating to expansion of compressed data, comprising the steps of:

a) inputting a plurality of differential compressed data in sequence on a sample by sample basis;

b) inputting an initial expanded data;

c) setting a correction value Δ;

d) for one sample of the differential compressed data, executing one iteration comprising

expanding the one sample of the differential compressed data to a current sample of expanded data and

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adding the current sample of expanded data to the initial expanded data; and

e) thereafter repeating the iteration in the sequence on at least one of the remaining samples so that said adding adds a next sample of the differential compressed data to a preceding current sample of expanded data to obtain a new current sample of expanded data, and for each iteration correcting the correction value Δ to the new current sample of expanded data for decreasing the new current sample of expanded data when the expanded data is greater in amplitude than a first threshold value and for increasing the new current sample of expanded data when the expanded data is less in amplitude than a second threshold value to obtain a corrected current sample of expanded data to be used as the preceding current sample for a next iteration.

5,621,852

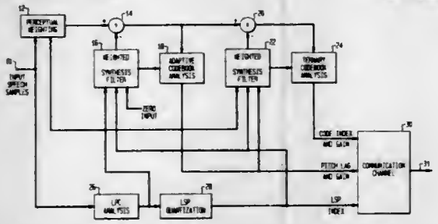
EFFICIENT CODEBOOK STRUCTURE FOR CODE EXCITED LINEAR PREDICTION CODING

Daniel Lin, Montville, N.J., assignor to Interdigital Technology Corporation, Wilmington, Del.

Filed Dec. 14, 1993, Ser. No. 166,223

Int. Cl.[6] G10L *9/18*

U.S. Cl. 395—2.28 **40 Claims**



1. In a speech communication system having a CELP speech decoder, including an LPC synthesis filter and a decoder codebook containing a plurality of codevectors, means for selecting at least one of said plurality of codevectors and means for applying said selected one of said plurality of codevectors to said LPC synthesis filter, an improved decoding method comprising:

storing a first codebook containing a plurality of first digital value sequences;

storing a second codebook containing a plurality of second digital value sequences;

receiving a first index representing one of said plurality of first digital value sequences in said first codebook;

receiving a second index representing one of said plurality of second digital value sequence in said second codebook;

retrieving a first stored digital value sequence corresponding to said first index from said first codebook;

retrieving a second stored digital value sequence corresponding to said second index in said second codebook;

combining said retrieved first digital value sequence with said retrieved second digital value sequence to form a third digital value sequence;

applying said third digital value sequence as said one of said codevectors to said LPC synthesis filter and

wherein said first and second digital value sequences each comprise a binary value sequence having values selected from a set of two values, and wherein at least one member of said first digital sequence is non-zero, and the corresponding member of said second digital sequence is non-zero, and said third digital value sequence comprises a ternary value sequence formed as the sum of said first digital value sequence and said second digital value sequence, and having values selected from a set of three values.

5,621,853

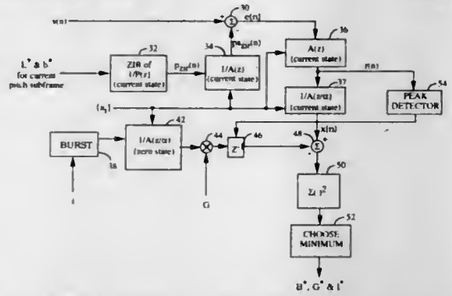
BURST EXCITED LINEAR PREDICTION

William R. Gardner, 1072 Hayes Ave., San Diego, Calif. 92103

Continuation of Ser. No. 189,814, Feb. 1, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,374

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.28 **12 Claims**



1. In a linear prediction coder in which short term redundancies and long term redundancies are removed from frames of digitized speech samples resulting in a residual waveform, within said linear prediction coder an apparatus for encoding said residual waveform using a burst shape of a dimension smaller than said residual waveform comprising:

candidate waveform generator means for selecting said burst shape, a burst gain and a burst location and for generating a candidate waveform of a first number of samples in accordance with said burst gain, said burst location and said burst shape wherein said burst shape is of a second number of samples less than said first number of samples and for outputting said candidate waveform; and

comparison means for receiving said residual waveform and said candidate waveform and for comparing said candidate waveform to said residual waveform and outputting a comparison signal in accordance with said comparison.

5,621,854

METHOD AND APPARATUS FOR OBJECTIVE SPEECH QUALITY MEASUREMENTS OF TELECOMMUNICATION EQUIPMENT

Michael P. Hollier, Suffolk, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB93/01322, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO94/00922, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 24, 1993, Ser. No. 351,421

Claims priority, application United Kingdom, Jun. 24, 1992, 9213459

Int. Cl.[6] H04B *3/46*

U.S. Cl. 395—2.37 **65 Claims**

28. Telecommunications testing apparatus comprising: a signal generator for supplying a test signal, and analysis means arranged to:

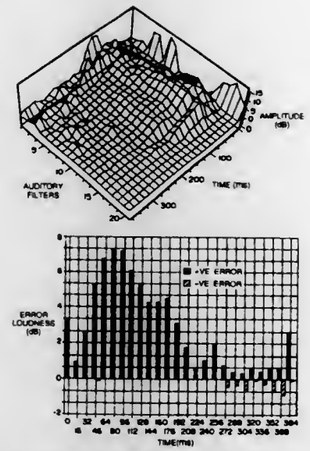
(a) receive a distorted signal which corresponds to said test signal when distorted by telecommunications apparatus to be tested,

(b) to decompose said distorted signal into a plurality of spectral component bands, the spectral component bands having bandwidths approximately evenly spaced in pitch,

(c) to calculate the temporal masking of the distorted signal,

(d) to form for each of the spectral component signals, the difference between the distorted signal and a correspondingly calculated test signal component for a plurality of successive temporal portions of the test signal; and

(e) to generate a distortion perception measure which indicates the extent to which the distortion of said signal will be perceptible to a human listener by deriving a measure of the said spectral component differences over a plurality of said



temporal portions and said spectral components, and a measure of the distribution of said differences over said temporal portions and spectral components.

5,621,855

SUBBAND CODING OF A DIGITAL SIGNAL IN A STEREO INTENSITY MODE

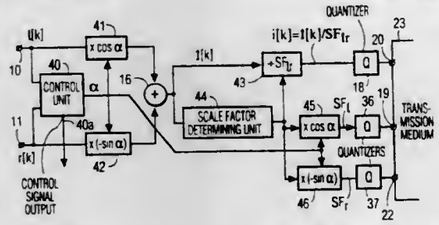
Raymond N. J. Veldhuis; Robbert G. van der Waal, and Leon M. van de Kerkhof, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 829,789, Jan. 31, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 326,145

Claims priority, application Netherlands, Feb. 1, 1991, 9100173

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.38 **56 Claims**



1. A coding system for coding a digital signal having a first-signal component and a second signal component, the coding system comprising:

subband coding means for generating (a) a first subband signal in response to the first signal component, the first subband signal including a first signal block of q samples of that subband signal, where q is a positive integer, and (b) a second subband signal in response to the second signal component, the second subband signal including a second signal block of q samples of that subband signal, the first and the second subband signals being in a same subband and the first and second signal blocks being time-equivalent;

control means for:

(a) processing the first and second signal blocks to obtain a minimum distance value representative of a distance between a line and a plurality of points if (i) the points correspond to the respective pairs of time-equivalent samples in the first signal block and the second signal block, and are plotted in a coordinate system having a first axis and a second axis intersecting at an origin such that each of the points has a location along the first axis dictated by the sample from the first signal block for that point and at a location along the second axis dictated by the sample from the second signal block for that point, and (ii) the line is plotted such that it traverses the origin and the points at a minimum distance from the points in the coordinate system; and

(b) when the minimum distance value is less than or equal to a threshold distance value, (i) generating a control signal and (ii) determining a value β which is representative of an angle formed between the line and the first axis if the points and the line are plotted;

quantizing means for quantizing, when the control signal is generated, a composite signal block composed of q samples obtained by adding the respective pairs of time-equivalent samples in the first and second signal blocks together after multiplying each of the samples of the first signal block by cos(α) and each of the samples of the second signal block by −sin(α), where α is determined based on β, each of the q samples in the composite signal block after quantization being represented by n_c bits, where n_c is a variable.

5,621,856

DIGITAL ENCODER WITH DYNAMIC QUANTIZATION BIT ALLOCATION

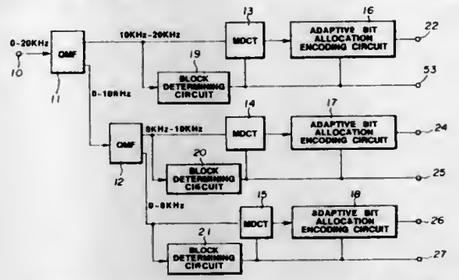
Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 272,872, Jul. 8, 1994, which is a continuation of Ser. No. 924,298, Aug. 3, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,340

Claims priority, application Japan, Aug. 2, 1991, 3-216216; Aug. 2, 1991, 3-216217; Aug. 27, 1991, 3-271774

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.38 **13 Claims**



1. A digital encoding apparatus for compressing a digital input signal to provide a compressed digital output signal, the digital input signal representing an audio information signal, the compressed digital output signal, after expansion, conversion to an analog signal and reproduction of the analog signal, being for perception by the human ear, the apparatus comprising:

first frequency dividing means for receiving the digital input signal and for dividing the digital input signal into a plurality of frequency ranges;

time dividing means for dividing in time at least one of the frequency ranges of the digital input signal into a plurality of blocks;

second frequency dividing means for orthogonally transforming each block to provide a plurality of spectral coefficients;

means for grouping the plurality of spectral coefficients into critical bands;

noise factor setting means for setting a noise shaping factor in response to an amplitude of the digital input signal; and

bit allocating means for allocating among the critical bands a total number of quantizing bits available for quantizing the spectral coefficients, the quantizing bits being allocated among the critical bands according to the noise-shaping factor.

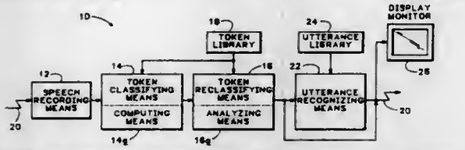
VOL 1197 ISS 3 AP 15 1997 UMI

5,621,857

METHOD AND SYSTEM FOR IDENTIFYING AND RECOGNIZING SPEECH

Ronald A. Cole, and Mark A. Fanty, both of Portland, Oreg., assignors to Oregon Graduate Institute of Science and Technology, Portland, Oreg.

Filed Dec. 20, 1991, Ser. No. 811,819
Int. Cl.[6] G10L *5/06;9/00*
U.S. Cl. 395—2.41 **1 Claim**



1. A computer-implemented method for recognizing and identifying a vocalized component of speech, the method comprising:

capturing such a vocalized component of speech:

dividing a time-domain representation of said captured component into a plurality of time frames embracing a plurality of sub-components of said captured component;

processing each such sub-component by comparing spectral energy contained within a window of time surrounding and including such sub-component with a machine-learned and library-stored set of recognizable, spectral energy-based elemental speech characteristics to locate sub-component segment boundaries defining therebetween an hypothesized speech token that can be matched with a characteristic element in the library;

defining a string of time-connected verified ones of such sub-components:

following said processing, and based upon an analysis of such defined string of time-connected verified sub-components assigning time-based speech-pattern segmentation to said captured component utilizing a machine-learned capability to relate such time-connected string of verified sub-components to a recognizable speech component;

classifying such assigned segmentation into a set of component scores using a neural network classifier presented with selected features based upon the located sub-component segment boundaries produced by said processing, to identify said captured component; and

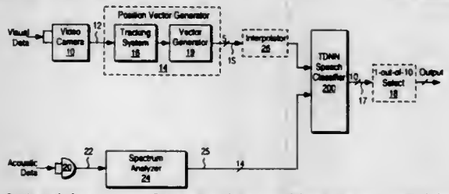
storing said component scores and repeating said capturing, dividing, processing, defining, assigning and classifying steps, thereafter determining the best match between the successive component scores and each of a plural-component recognition library, thereby to recognize a phrase within the plural-component library.

5,621,858

NEURAL NETWORK ACOUSTIC AND VISUAL SPEECH RECOGNITION SYSTEM TRAINING METHOD AND APPARATUS

David G. Stork, Stanford, and Gregory J. Wolff, Mountain View, both of Calif., assignors to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 889,619, May 26, 1992, Pat. No. 5,586,215. This application Oct. 14, 1993, Ser. No. 137,318
Int. Cl.[6] G01L *5/06;9/00*
U.S. Cl. 395—2.41 **10 Claims**



1. A training system for a speech recognition system comprising:

(a) a speech recognition system for recognizing utterances belonging to a pre-established set of allowable candidate utterances using acoustic speech signals and selected concomitant dynamic visual facial feature motion between selected facial features associated with acoustic speech generation, comprising,

(i) an acoustic feature extraction apparatus for converting signals representative of dynamic acoustic speech into a corresponding dynamic acoustic feature vector set of signals,

(ii) a dynamic visual feature extraction apparatus for converting signals representative of the selected concomitant dynamic facial feature motion associated with acoustic speech generation into a corresponding dynamic visual feature vector set of signals, and

(iii) a time delay neural network classifying apparatus with an input-to-output transfer characteristic controlled by a set of adjustable synaptic weights for generating an output response vector representing a conditional probability distribution of the allowable candidate speech utterances by accepting and operating on a set of corresponding time-delayed dynamic acoustic and visual feature vector pairs that are respectively supplied by the acoustic and visual feature extraction apparatus to a set of inputs; and

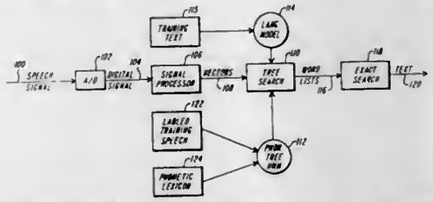
(b) a control system comprising a control processor and an associated memory coupled to the speech recognition system for initializing parameters, for controlling the speech recognition system, for storing acoustic and visual output exemplar vectors, for computing output errors, and for adjusting the time delay neural network classifying apparatus synaptic weights based on the computed errors in accordance with a prescribed training procedure.

5,621,859

SINGLE TREE METHOD FOR GRAMMAR DIRECTED, VERY LARGE VOCABULARY SPEECH RECOGNIZER

Richard M. Schwartz, Sudbury, and Long Nguyen, Medford, both of Mass., assignors to BBN Corporation, Cambridge, Mass.

Filed Jan. 19, 1994, Ser. No. 183,719
Int. Cl.[6] G10L *5/06;9/00*
U.S. Cl. 395—2.65 **32 Claims**



13. A method of recognizing a word as being one of a plurality of words in a vocabulary, the method comprising the steps of:

constructing a phonetic tree having a plurality of branches, a phoneme being associated with each branch, a phonetic HMM being associated with each branch so as to model the phoneme, and a word being associated with the end of a sequence of branches, such that all words that include the same initial phonemes include the same initial branches in the phonetic tree, each branch having a left-context consisting of no more than a single branch, and each branch having a right-context that includes at least one branch:

determining for each branch as many triphone hidden Markov models of the phoneme associated with the branch as there are branches in the right-context of the branch;

computing for each branch a composite triphone model based upon all triphone models associated with the branch, and associating said composite triphone model with the branch;

compiling a statistical language model having a plurality of grammar states and transition probabilities between grammar states, each grammar state including at least one word;

associating with each branch a set of common-phoneme words, each word including the phoneme associated with the branch;

computing, for each set of common-phoneme words and for each preceding grammar state, the total probability, summed over all the common-phoneme words of a set, that a common-phoneme word of the set will follow a preceding grammar state;

associating a hypothesis having a path score, a traceback time, and a partial grammar score with each state of each phonetic HMM associated with a branch in said phonetic tree, the hypothesis being updatable upon each frame;

updating upon each frame the path score of each hypothesis, only if the path score computed in the preceding frame exceeds a first threshold value;

propagating upon each frame the partial grammar score and the traceback time of the dominant hypothesis of the previous frame to update the hypothesis of each state of the present frame;

remembering upon each frame a partial grammar score and a traceback time of the hypothesis entering a branch with the highest path score;

remembering upon each frame the maximum path score of all phonetic models in the phonetic tree HMM, and recomputing the first threshold value using the maximum path score and a beam width;

computing at each frame, for each phoneme branch associated with the last phoneme of a word, a word-ending score;

compiling upon each frame a first list of words, each word of the first list being associated with a grammar state, and each word of the first list being characterized by a word-ending score that exceeds the first threshold value, the first list of words being for use in a backwards pass of a forward-backward search;

computing upon each frame a second threshold value that is greater than the first threshold value and less than the greatest word-ending score;

compiling and storing upon each frame a second list of words that are each characterized by a word-ending score that exceeds the second threshold value, each word of the second list being associated with a grammar state;

for each phoneme-ending state of a phoneme branch, and for the root node, propagating the path score and an associated partial grammar score into each right-context branch thereof, only if the path score at the phoneme-ending state exceeds the first threshold;

adjusting the path score to provide an adjusted path score, upon the path score and the associated partial grammar score being propagated into a right-context branch, by dividing the path score by the associated partial grammar score, and then multiplying by the partial grammar score of the right-context branch; and

adding the state associated with the adjusted path score to a list of active states, only if the adjusted path score has exceed the first threshold.

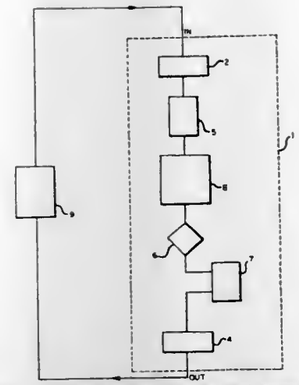
5,621,860

MEMORY ORGANIZATION METHOD FOR A FUZZY LOGIC CONTROLLER AND CORRESPONDING DEVICE

Biagio Russo; Mascalucia; Claudio Luzzi, Acri, and Rinaldo Poluzzi, Milan, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

Filed Jun. 9, 1994, Ser. No. 257,775
Claims priority, application European Pat. Off., Jun. 9, 1993, 93830252
Int. Cl.[6] G06G *7/00*
U.S. Cl. 395—3 **21 Claims**

1. A method for loading information into a memory of an electronic controller which performs fuzzy inference operations according to rules, wherein each rule comprises at least one preposition and at least one implication, wherein the rules use a number



of membership functions are defined for a finite number of points within a universe of discourse, the method comprising the steps of:

generating values of the membership functions appearing in the preposition of at least one of the rules, wherein each value is indicative of a predetermined degree of membership,

storing in the memory section, for each of the finite number of points, the values of only those membership functions for the point which are not zero,

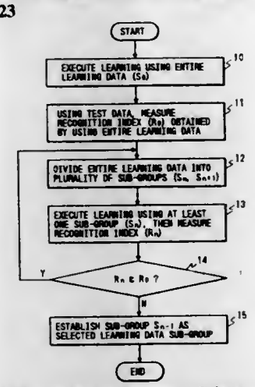
wherein a length of a word of the memory section is dependent on the number of non-zero values, and wherein the length of the memory word is equal to (nf(m)–1)*(dim(G)+dim(f(m))), where nf(m) is a number of non-null values at the point of the universe of discourse where the number is largest, dim(G) is a word size required to represent an aggregate of the values of the degree of membership, and dim(f(m)) is a word size required to represent the number of the membership functions.

5,621,861

METHOD OF REDUCING AMOUNT OF DATA REQUIRED TO ACHIEVE NEURAL NETWORK LEARNING

Masaaki Hayashi, and Takuml Takahashi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 21, 1994, Ser. No. 264,091
Claims priority, application Japan, Jul. 27, 1993, 5-184792
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/17*
U.S. Cl. 395—23 **11 Claims**



1. A method of reducing an amount of data used in a neural network learning procedure by deriving, from an original set of learning sample data (S_0) consisting of a plurality of sample patterns, a sub-group of said original set of learning sample data for use in the learning procedure for a neural network, each sample

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pattern in said original set and in said sub-group comprising a set of n pattern component values where n is a fixed integer, said neural network having an input layer formed of n units respectively coupled to receive said component values, said method comprising the steps of:

executing said learning procedure by supplying said original set of learning sample data to said input layer of said neural network, and measuring a first value of recognition index (R_0) that is obtained by the neural network;

dividing said original set of learning sample data into a plurality of respectively different sub-groups, said sub-groups having respective contents determined from analysis of distance relationships among said original learning sample data (S_0) by treating said sample pattern values of said original learning sampled data as respective points in an n-dimensional metric space; and

deriving and judging respective values of recognition index obtained by using respective ones of said sub-groups as learning sample data in said learning procedure, and selecting from said sub-groups for use in the learning procedure one sub-group meeting a criterion of providing a value of recognition index that is at least equal to said first value of recognition index (R_0) and having a minimal size among sub-groups meeting that criterion.

5,621,862

INFORMATION PROCESSING APPARATUS FOR IMPLEMENTING NEURAL NETWORK

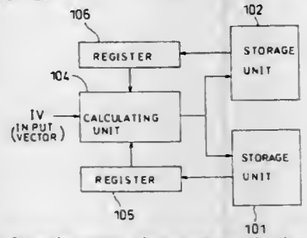
Hiroyuki Nakahira; Masakatsu Maruyama; Shiro Sakiyama; Susumu Maruno, all of Osaka; Toshiyuki Kouda, Nara, and Masaru Fukuda, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1994, Ser. No. 281,683

Claims priority, application Japan, Jul. 29, 1993, 5-188121; Sep. 13, 1993, 5-226956; Jul. 11, 1994, 6-158454

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **18 Claims**



1. An information processing apparatus for implementing a multi-layer neural network having a plurality of neurons, each of which recognizes or learns an input signal through a calculation in the network, said apparatus comprising:

a first storage means for storing network interconnection information which indicates the information which indicates the interconnection of said plurality of neurons in said neural network by showing the process in which said plurality of neurons were generated by proliferation so that the network interconnection information can be rewritten;

a second storage means for storing neuron internal information which is specific information on individual neurons in said neural network so that the neuron internal information can be rewritten;

a third storage means for storing a neuron read out of said first storage means;

a fourth storage means for storing the neuron internal information read out of said second storage means; and

a calculating means for retrieving the neuron which responds to said input signal by using the network interconnection information stored in said first storage means, reading out of said first storage means the retrieved neuron so that it is written in said third storage means, reading out of said second storage means the neuron internal information corresponding to the neuron stored in said third storage means so that it is written in said fourth storage means, and performing said calculation in the network by using the neuron internal information stored in said fourth storage means.

5,621,863

NEURON CIRCUIT

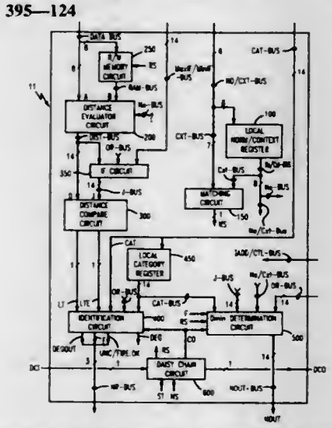
Jean-Yves Boulet, Ballancourt Sur Essonne; Didier Louis, Fontainebleau; Catherine Godefroy, Corbeil Essonnes; Andre Steimle, Evry; Pascal Tannhof, Cely En Biere, and Guy Paillet, Montpellier, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 481,591

Claims priority, application European Pat. Off., Jul. 28, 1994, 94480067

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—124 **9 Claims**



1. A neuron circuit for receiving an input vector and generating local (neuron) result signals and local (neuron) outputs therefrom, said neuron circuit comprising:

R/W memory means for storing a prototype vector (B), said R/W memory means receiving an input vector and storing said input vector as the prototype vector under the control of a memory control (RS) signal;

distance evaluation means for calculating the distance between said input vector (A) and said stored prototype vector (B) and generating therefrom a distance signal D;

Influence Field (IF) register means for storing the actual influence field value (AIF) of the stored prototype vector B, said actual influence field having a lower limit (MinIF) and an upper limit (MaxIF), said influence field means selectively outputting a selected one of said stored actual influence field, the calculated distance D, or the said minimum influence field value (MinIF);

Distance compare means for comparing the calculated distance D with the output of said IF register means and generating first and second comparison signals (LT, LTE) therefrom, wherein said first comparison signal (LT) is active during a recognition phase if D<AIF and said second comparison signal is active during a learning phase if D<=MinIF;

Local category register means for storing a local category C assigned to the stored prototype vector when the neuron circuit is engaged;

Identification means for receiving said first and second comparison signals, a feed-back signal (OR) on a feed-back bus (OR-BUS), an input category signal (CAT), and a local category signal (C) and for generating therefrom local result signals (F, DEGOUT, UNC/FIRE.OK).

5,621,864

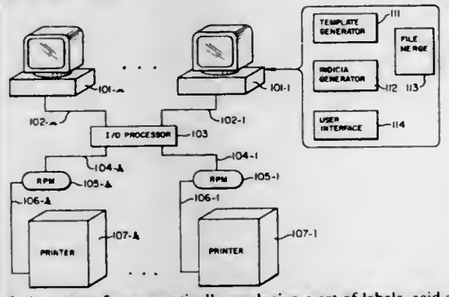
LABEL GENERATION APPARATUS

Daniel A. Benade, Lakewood, and Mack E. Johnson, Arvada, both of Colo., assignors to Engineered Data Products., Inc., Broomfield, Colo.

Continuation of Ser. No. 489,250, Jun. 14, 1995, which is a continuation of Ser. No. 797,457, Nov. 22, 1991. This application Sep. 3, 1996, Ser. No. 706,922

Int. Cl.[6] G06M *15/00*

U.S. Cl. 395—117 **60 Claims**



1. Apparatus for automatically producing a set of labels, said set consisting of a plurality of labels, all of which uniquely identify a single entity, each label in said set of labels containing a combination of indicia and template fields that is individual to said label, comprising:

means for defining a set of label templates, said set of label templates consisting of a plurality of label templates, each label template having at least one writable indicia field;

means for automatically generating a single set of indicia, said single set of indicia including at least one indicia that uniquely identifies said single entity;

means for automatically aggregating a subset of indicia from said generated single set of indicia for each of said label templates, each said subset of indicia including at least one indicia that uniquely identifies said single entity;

means for automatically generating data representative of each of said plurality of templates and a corresponding subset of indicia, said data defining said set of labels;

means, responsive to said means for automatically generating, for producing said set of labels; means for color coding at least one of said excerpted indicia according to a predetermined color to indicia correspondence; and

wherein said means for automatically generating data generates data including said color coding of said at least one excerpted indicia.

5,621,865

GRAPHICS PROCESSING APPARATUS USING GRID AND A METHOD THEREOF

Naoki Iwamoto, Yokohama; Toshio Abe, Yachiyo, and Hiroyuki Sakai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 175,754, Dec. 30, 1993, abandoned. This application Jul. 29, 1996, Ser. No. 688,217

Claims priority, application Japan, Jan. 18, 1993, 5-006116

Int. Cl.[6] G06F *15/00*

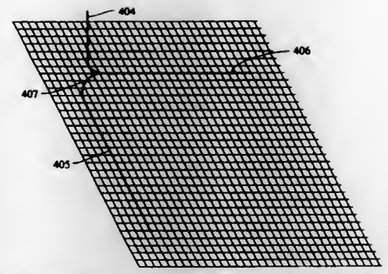
U.S. Cl. 395—119 **20 Claims**

1. A graphics processing apparatus for plotting a graphic by using a grid, comprising:

a grid display means for causing display of the grid of an XY plane, YZ Plane or ZX plane on a display means;

plotting means for plotting a graphic by using the displayed grid;

changing means for changing a plane of the displayed grid to a grid of another plane, and plotting the graphic again, by using the grid of the other plane; and



display control means for controlling said apparatus to display the graphic, as plotted by said plotting means, and the graphic, as plotted again, on the same display screen.

5,621,866

IMAGE PROCESSING APPARATUS HAVING IMPROVED FRAME BUFFER WITH Z BUFFER AND SAM PORT

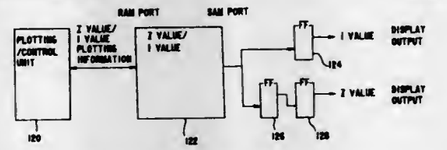
Masahiro Murata, and Takahiro Sakuraba, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 22, 1993, Ser. No. 94,880

Claims priority, application Japan, Jul. 24, 1992, 4-197338; Oct. 16, 1992, 4-278666

Int. Cl.[6] G06T *15/40*

U.S. Cl. 395—122 **11 Claims**



1. An image processing apparatus comprising:

a frame buffer for storing image information and depth information per pixel, said frame buffer comprising a single device with a SAM port;

said frame buffer including

an image buffer for simultaneously storing image information of a predetermined number of pixels arranged in a horizontal direction in response to write permit signals corresponding to said pixels, respectively; and

a Z buffer for simultaneously outputting stored depth information of said predetermined number of pixels and simultaneously storing new depth information of said predetermined number of pixels in response to said write permit signals;

identifying means for identifying whether a condition indicating that an image to be plotted is a horizontal line is satisfied or not; and

a plurality of as many write permit signal output means as said predetermined number, for simultaneously calculating respective items of new depth information of said predetermined number of pixels when said condition is satisfied as identified by said identifying means, comparing the depth information read from said Z buffer with the calculated depth information, and simultaneously outputting the write permit signals of said predetermined number of pixels to said image buffer and said Z buffer in response to the comparison.

VOL 1197 ISS 3 AP 15 1997 UMI

5,621,867
IMAGE SYNTHESIZING SYSTEM

Hiroyuki Murata, Tokyo; Takashi Yokota, Yokohama, and Katsuhiro Miura, Ichikawa, all of Japan, assignors to Namco Ltd., Tokyo, Japan

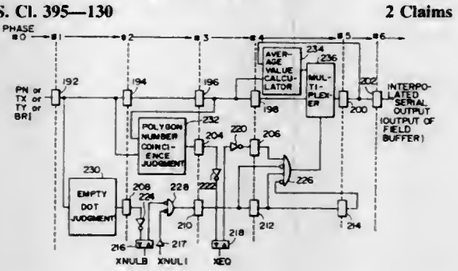
PCT No. PCT/JP93/01205, § 371 Date Apr. 1, 1994, § 102(e) Date Apr. 1, 1994, PCT Pub. No. WO94/04989, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 26, 1993, Ser. No. 211,398

Claims priority, application Japan, Aug. 26, 1992, 4-252139

Int. Cl.[6] G06T *7/40*

U.S. Cl. 395—130 **2 Claims**



1. An image synthesizing system for forming a displayed image which includes a polygon image and a background image comprising:

an image computing unit for determining coordinates of dots in polygons forming said polygon image and polygon texture coordinates corresponding to said coordinates of dots,

a background dot judgment unit for judging that a dot not used to display polygons in the displayed image is a background dot,

a background texture coordinate generating unit for generating background texture coordinates by given computation and for varying said background texture coordinates to perform at least one of rotation, enlargement and reduction of said background image,

a selector for selecting for output one of said polygon texture coordinates input from said field buffer unit and said background texture coordinates input from said background texture coordinate generating unit, based on a judgment of said background dot judgment unit,

a rendering data storage unit for storing rendering data at an address specified by said polygon texture coordinates and said background texture coordinates input from said selector, and

an interpolation unit, wherein

empty dot information is written to a dot not used to draw the polygon image,

said image computing unit computes coordinates of subsampled dots and corresponding subsampled polygon texture coordinates,

said subsampled polygon texture coordinates and a polygon identification number for identifying a polygon are written in said field buffer unit,

said interpolation unit carries out interpolation of the subsampled polygon texture coordinates written in said field buffer unit when a dot to be processed is an empty dot and dots adjacent to the empty dot have the same polygon identification numbers and are not empty dots, and

said background dot judgment unit judges that the dot to be processed is a background dot when the dot to be processed is an empty dot and dots adjacent to the empty dot have different polygon identification numbers or at least one of the dots adjacent to the empty dot is an empty dot.

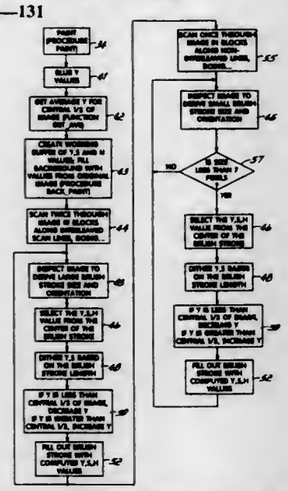
5,621,868
GENERATING IMITATION CUSTOM ARTWORK BY SIMULATING BRUSH STROKES AND ENHANCING EDGES

Masao Mizutani, San Jose, and Chuen-Chien Lee, Fremont, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Apr. 15, 1994, Ser. No. 228,286

Int. Cl.[6] G06T *5/00*

U.S. Cl. 395—131 **32 Claims**



1. A method for modifying an initial image to produce a resulting image having the appearance of custom art work, comprising

storing a pixellated representation of said initial image in an electronic memory,

inspecting pixels of said pixellated representation of said initial image to derive, without human input, modifications which reduce the precision of said initial image in a manner simulating techniques used by humans to produce custom art work, by selecting locations in said initial image, determining contrast of said initial image at each location in at least two directions, determining a direction of maximum contrast at each location, and selecting elongated portions of said initial image at each location, the elongated portion at each respective location being oriented with its elongated dimension perpendicular to the direction of maximum contrast at said respective location,

automatically applying said modifications to said pixels of said pixellated representation of said initial image to generate a pixellated representation of said resulting image by blurring said initial image to form a background within which said portions are modified, and modifying each selected portion to approximate one or more of uniform luminance, uniform color saturation and uniform color hue as compared to said initial image, whereby said resulting image has the appearance of brush strokes, and

producing a visual output of said resulting image.

5,621,869
MULTIPLE LEVEL COMPUTER GRAPHICS SYSTEM WITH DISPLAY LEVEL BLENDING

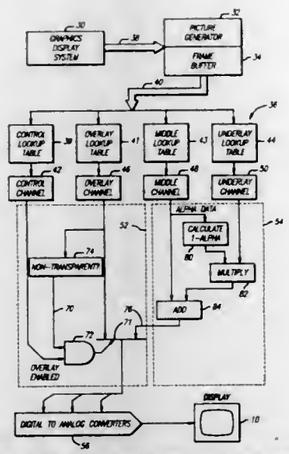
Michael D. Drews, 7924 Showcase La., Sandy, Utah 84094-7234

Continuation of Ser. No. 267,585, Jun. 29, 1994, abandoned. This application May 28, 1996, Ser. No. 640,409

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—135 **6 Claims**

1. A picture display system for producing composite-image displays including a graphics unit for producing multiple level graphics display data including control signals comprising:



a frame buffer for storing said multiple level graphics display data as prioritized pixel data to represent multiple image levels, including overlay level pixel data, middle level pixel data, underlay level pixel data and said control signals;

a logic system for receiving said prioritized pixel data to resolve priority for individual pixels and including a blending unit for blending said middle level pixel data and said underlay level pixel data to provide blended pixel data in accordance with said prioritized pixel data, and an enable unit for controlling said overlay level pixel data in accordance with said control signals to provide enabled overlay level pixel data;

a data selector for providing said blended pixel data as final display data in the absence of said enabled overlay level pixel data, otherwise providing said enabled overlay level pixel data as final display data; and

a display structure for receiving said final display data to provide said composite-image displays.

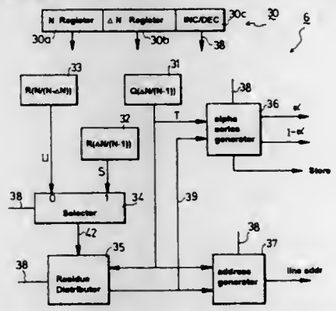
5,621,870
METHOD AND APPARATUS FOR UNIFORMLY SCALING A DIGITAL IMAGE

Rong-Fuh Shyu, Hsin-Chu City, and Feng-Ling Chang, Taipei Hsien, both of Taiwan, assignors to Winbond Electronic Corp., Hsin-Chu Hsien, Taiwan

Filed Jul. 26, 1995, Ser. No. 507,755

Int. Cl.[6] G06T *3/40*

U.S. Cl. 395—139 **33 Claims**



19. An apparatus for processing an original digital image to obtain a uniformly scaled desired digital image, the original digital image having a number (N) of successive original image data, the desired digital image having a number (M) of successive desired image data, the number (M) being greater than the number (N), said apparatus comprising:

first linear interpolator; and

first controller means, connected to said first linear interpolator, for controlling said first linear interpolator to perform a linear interpolation of (n)th and (n+1)th ones of the original image data to produce a residual interpolated image data inserted therebetween when division of (M−N) by (N−1) results in a remainder (S) and when (n) is a minimum number which meets a condition (n+1)*(S)>(s)*(N), wherein (s) ranges from 1 to (S), said first controller means further controlling said first linear interpolator to perform a linear interpolation of the (n)th and (n+1)th ones of the original image data to produce an additional number (T) of successive interpolated image data inserted therebetween when (M−N) is larger than (N−1), the number (T) being equal to a quotient resulting from the division of (M−N) by (N−1).

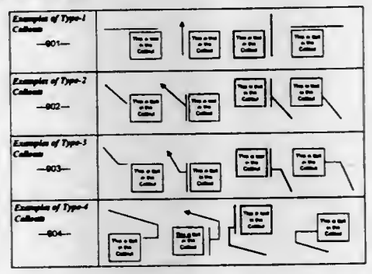
5,621,871
AUTOMATED SYSTEM AND METHOD FOR ANNOTATION USING CALLOUTS

Mark Jaremko, 3410-179th Ave. NE., Redmond, Wash. 98052, and Peter L. Engrav, 1100 East Harrison, #402, Seattle, Wash. 98102

Filed Aug. 31, 1994, Ser. No. 299,923

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—141 **22 Claims**



1. In a system comprising a processor, a visual display operatively coupled to the processor, and an activatable pointing device, an automated method of providing a callout in a display field of the visual display, the method comprising the steps of:

receiving an indication that the pointing device was activated while the pointing device pointing to a first display location in the display field;

receiving an indication that the pointing device was moved while activated to point to a second display location in the display field, then deactivated;

providing a vehicle for selecting formatting criteria for the callout;

in response to a selection of formatting criteria through the vehicle, automatically creating with the system a callout that conforms with the selected formatting criteria, the callout comprising a stem region and an annotation region, the stem region having a first vertex displayed proximally to the designated first display location and a second vertex displayed proximally to the annotation region, the annotation region being displayed proximally to the designated second display location.

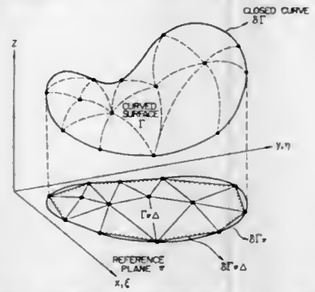
VOL 1197 ISS 3 AP 15 1997 UMI

5,621,872

CURVED SURFACE GENERATING METHOD AND APPARATUS THEREFOR

Shinji Tokumasu; Shiro Nonaka; Yasumasa Kawashima; Takayuki Ishikawa, and Norihiro Nakajima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,135
Claims priority, application Japan, Mar. 8, 1991, 3-043247
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—142 **30 Claims**



1. A curved surface generating method of generating an arbitrarily-shaped curve surface and for displaying said curved surface on a display, said method comprising the steps of:

providing a boundary of an arbitrarily-shaped curved surface to be generated in three-dimensional space as a closed loop;

generating a curved surface bounded by said closed loop such that said curved surface satisfies an equation of a predetermined physical property; and

changing a shape of said curved surface by changing boundary conditions and values of parameters of said equation.

5,621,873

DOCUMENT PROCESSING WITH SIMPLIFIED INPUT AND EDITING OF FORMAT INFORMATION

Kensaku Tanaka, Yokohama; Naohiro Yoshikawa, Kawasaki, and Yasuhiro Watanabe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,026, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 575,880, Aug. 31, 1990, abandoned. This application May 25, 1995, Ser. No. 450,134
Claims priority, application Japan, Aug. 31, 1989, 1-225351; Nov. 16, 1989, 1-299057
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—779 **30 Claims**

6. A document processing method comprising the steps of:

reading, from a memory, format information including a plurality of format elements relating to document information to be output, and area information including color information;

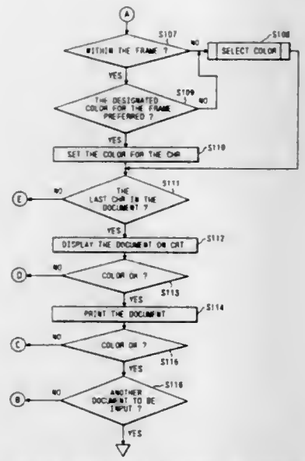
first setting a designated color for a designated one of the plurality of format elements read in said reading step;

second setting a designated color for a designated one of the plurality of area information read in said reading step;

setting a priority as to which one of the format information and the area information read from the memory has a higher priority;

determining which of the format information or the area information read in said reading step, has higher priority based on the priority set in said setting a priority step; and

outputting a character pattern in a color set for one of the plurality of format elements corresponding to the character pattern in said first setting step if the format information has the higher priority as determined in said determining step, and for outputting a character pattern in a color set for one of the plurality of area information including the character pattern in said second setting step if the area information has the higher priority as determined in said determining step.

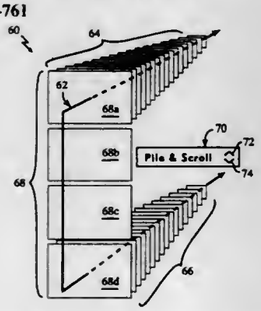


5,621,874

THREE DIMENSIONAL DOCUMENT REPRESENTATION USING STRANDS

Peter Lucas, and Jeffrey A. Senn, both of Pittsburgh, Pa., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 123,403, Sep. 17, 1993, Pat. No. 5,499,330. This application Jun. 7, 1995, Ser. No. 476,792
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—761 **8 Claims**



1. An apparatus for displaying documents, comprising:

a computer controlled display device;

means for displaying a strand of documents on said display device, said strand having a parent document and one or more child documents, said parent document represented on said display device by a screen object, each one of said child documents represented on said display device by a screen object displayed on a strand path, said strand path consisting of a two dimensional line through a three dimensional virtual display space in which said parent document and said child documents are arranged; and

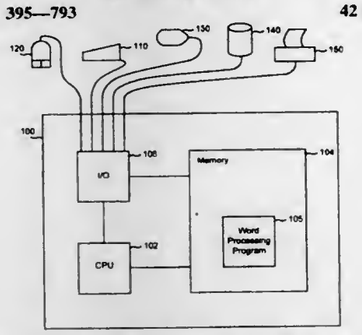
a set of one or more constraints associated with said parent document, said set of constraints including a strand function, said strand function defining said strand path when said strand function is evaluated.

5,621,875

METHOD AND SYSTEM FOR AUTOMATIC FORMATTING OF USER SELECTED TEXT

Christopher A. Mason, Woodinville; Devindra S. Chainani, Redmond; Pamela P. Ho, and Susan M. Wilkins, both of Bellevue, all of Wash., assignors to Microsoft Corp., Redmond, Wash.

Filed Oct. 26, 1993, Ser. No. 143,288
Int. Cl.[6] G06F *17/24*
U.S. Cl. 395—793 **42 Claims**



1. A method of formatting text in a computer system having a display and a pointing device, the method comprising the steps of:

displaying text on the display;

receiving from a user an indication of a text format to be applied to portions of displayed text; and

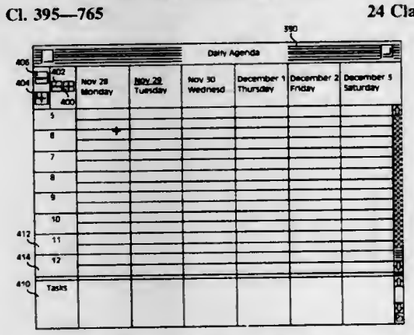
in response to the user selecting each of a plurality of non-contiguous portions of the displayed text by using the pointing device to point to each portion, formatting and redisplaying each selected portion of the displayed text in accordance with the received indication of the text format before receiving from the user any additional indications of text format.

5,621,876

METHOD AND APPARATUS FOR MODIFYING A DISPLAY MATRIX IN A COMPUTER WINDOW BY ADDING ONE COLUMN OR ROW AT A TIME

Seth T. Odam, Palo Alto; James R. Harker, Los Altos; Joseph G. Ansanelli, Palo Alto, all of Calif., and John L. Welde, Jr., Pope AFB, N.C., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 7, 1995, Ser. No. 418,417
Int. Cl.[6] G06F *17/24*; G06T *3/40*
U.S. Cl. 395—765 **24 Claims**



1. A method of modifying a display matrix in a matrix display area in a window on a computer display screen, comprising:

displaying data in a matrix format, thereby frowning a display matrix in said matrix display area, said matrix display area having a first dimension;

increasing, responsive to a selection of an increase activator, the number of existing columns of matrix cells in said display matrix by adding an additional column of matrix cells to said display matrix;

computing, using a central processing unit, a computed width of a column of matrix cells in said existing columns of matrix cells if said column of matrix cells is reduced in width to accommodate said additional column of matrix cells;

reducing said width of said column of matrix cells to accommodate said additional column of matrix cells within said first dimension if said computed width does not fall below a predefined minimum column width; and

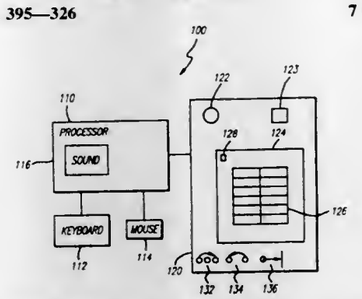
automatically increasing a width of said matrix display area to accommodate said additional column of matrix cells if said computed width falls below said predefined minimum column width.

5,621,877

REWINDING TIME-BASED SCRIPT SEQUENCES

Erik R. Neumann, Redwood City, and Albert J. Fenton, III, San Jose, both of Calif., assignors to Object Technology Licensing Corporation, Cupertino, Calif.

Continuation of Ser. No. 305,793, Sep. 13, 1994, Pat. No. 5,475,811, which is a continuation of Ser. No. 40,479, Mar. 31, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 510,131
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—326 **7 Claims**



7. A digital computer-based apparatus for rewinding a time-based script, the script comprising an ordered sequence of commands, each command associated with a corresponding time value, said apparatus comprising:

a plurality of data objects, each one of the data objects having a state, the commands being operable to modify said states, and one or more of the commands being conditional;

a clock for generating a sequence of time values in real-time, starting from an initial time value;

means for executing the script command associated with each generated time value, at least one of the associated script commands being conditional;

means for interactively specifying a desired time value earlier than the currently generated time value;

means for restoring each data object to its state as of the initial time value;

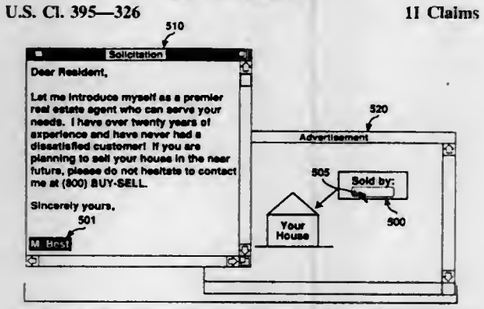
means for skipping ahead to the desired time value in the script sequence, by restoring each data object to its state as of the desired time value, in less time than the difference between the initial time value and the desired time value; and

means for resetting the clock to the desired time value, thereby rewinding the time-based script to the desired time value.

5,621,878
METHOD AND APPARATUS OR MANIPULATING DATA FROM A SUSPENDED APPLICATION PROGRAM ON A COMPUTER-CONTROLLED DISPLAY SYSTEM

David H. Owens, Los Altos; Herman J. Camarena, Cupertino; Stephen Fisher, Menlo Park, and Bruce B. Gaya, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 26,318, Mar. 3, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 585,958
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—326 **11 Claims**



1. A method of manipulating data between application programs in a computer-controlled display system comprising the following steps:

a. a user selecting an item in a background window, said background window under control of a first process, said first process not being a currently active context, sad background window remaining in the background during and after the user selection of the item;

b. a process management task detecting said user selection;

c. said user dragging said selected item to a foreground window said foreground window under control of a second process, said second process being said currently active context;

d. said process management task causing said item to be provided to said second process, said first process remaining inactive and said background window remaining in the background during said step of dragging said selected item from said background window to said foreground window.

5,621,879
WINDOW MANAGEMENT INFORMATION INPUT/ OUTPUT SYSTEM

Youji Kohda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

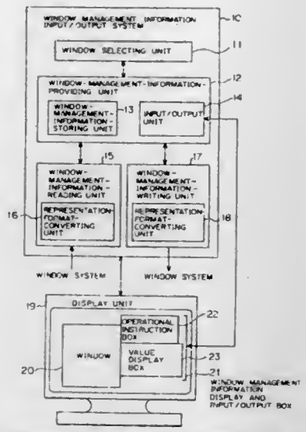
Continuation of Ser. No. 267,214, Jul. 6, 1994, abandoned, which is a continuation of Ser. No. 954,049, Sep. 30, 1992, abandoned. This application May 28, 1996, Ser. No. 654,004
Claims priority, application Japan, Sep. 30, 1991, 3-250027
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—340 **20 Claims**

1. A window management information input/output unit used in a window-based data processing system having a function of displaying on a screen of a display a window controlled by a window system and a window manager, said window system having a plurality of windows, said window management input/output unit coexisting with said window manager and comprising:

window selecting means for selecting an arbitrary on-the-screen window corresponding to window management information to be accessed by a user,

window-management-information-providing means for inputting to and outputting from said display, window management information in a representation format comprehensible to a user;

window-management-information-reading means for reading window management information from said window system for said window selected by said window selecting means, converting the representation format of said window management information to generate a result in a representation format for said window-management-information-providing means, and outputting the result to said window-management-information-providing means; and



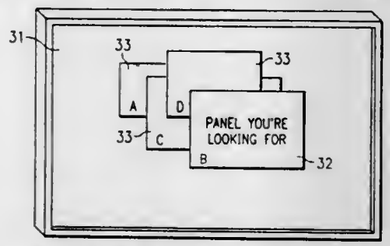
window-management-information-writing means for converting said window management information output from said window-management-information-providing means to the original representation format in said window system to generate an output result, and outputting the output result to said window system as window management information for said selected window,

said window management information input/output unit, independently of said window system, handling specified window management information and establishing window management information, by using window management information read from a first arbitrarily selected window, for a second arbitrarily selected window.

5,621,880
METHOD AND APPARATUS FOR PROVIDING CONTEXTUAL NAVIGATION TO HISTORICAL DATA

William J. Johnson, Flower Mound, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 293,361, Aug. 19, 1994, abandoned. This application May 14, 1996, Ser. No. 668,090
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—326 **20 Claims**



1. A method of providing navigation in a multitasking windowing environment to display a window of an active object that contains data matching a specific, previously displayed user-specified search criteria, said method comprising the computer implemented steps of:

forming a buffer holding historical data of previously displayed windows for for each active object in said multitasking windowing environment;

storing sequential in said historical data buffer for an active object, the data displayed in each said window of said active object as said data is displayed;

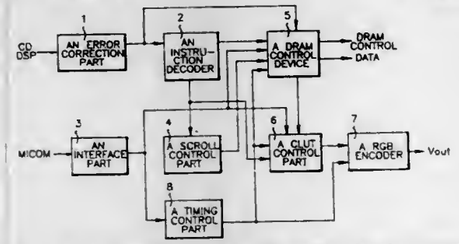
in response to entry of a search string, searching each said historical data buffer for data matching said search string; and,

providing focus to said specific, previously displayed window in an active object having a historical data buffer entry that matches said search string.

5,621,881
DRAM CONTROL DEVICE OF A CD GRAPHICS DECODER

Eul W. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 25, 1994, Ser. No. 348,090
Claims priority, application Rep. of Korea, Nov. 26, 1993, 25334/1993
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—501 **11 Claims**



1. A DRAM control device of a CD graphics decoder comprising:

a DRAM writing control part for generating and applying various writing control signals which generate writing address in a DRAM and control writing on the DRAM according to various instruction signals received from outside;

a DRAM reading control part for generating and applying various reading control signals which generate reading address in the DRAM and control reading in from the DRAM according to various instruction signals received from outside;

a first multiplexer for selecting and applying the writing and reading addresses and the various writing and reading control signals received from the DRAM writing control part and the DRAM reading control part in response to the control signal received from the DRAM writing control part; and,

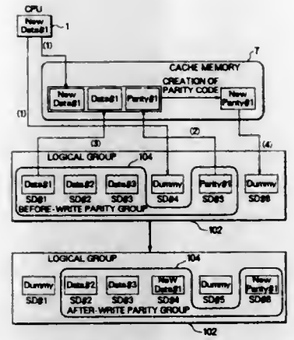
a DRAM data interface part for presenting color data through applying pack data received from outside to the DRAM and receiving the data applied from the DRAM in response to various control signals received from the DRAM writing control part and the DRAM reading control part.

5,621,882
DISK ARRAY SYSTEM AND METHOD OF RENEWING DATA THEREOF

Hitoshi Kakuta, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 173,557
Claims priority, application Japan, Dec. 28, 1992, 4-348301
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—482.04 **8 Claims**

3. A disk array system including a disk apparatus having a plurality of disk drives storing therein data segments of a plurality of parity groups, and a control device for controlling data storing operation of the disk apparatus in response to a data input and output request from an external unit, said control device selecting a plurality of data segments from the stored data segments, generating a parity code therefrom, forming a unit of one parity group including a set of the parity code and associated data segments, and storing for a parity group the parity code and associated data segments of the parity group in the disk drives, wherein the control device comprises:



means for distributing data transferred from the external unit as a unit of a read or write operation to respective storage areas of the disk drives to store the data therein in a form of data segments;

means for selecting a plurality of data segments from the data segments thus distributively stored, generating a parity code therefrom, forming a unit of one parity group including the parity code and the data segments, and assigning a plurality of dummy data segments to the parity group; and

means for writing the plural dummy data segments of the parity group in discrete disk drives other than disk drives in which the parity code and associated data segments are written, the disk drives which store a parity group and the disk drives which store associated dummy data segments forming a logical drive group,

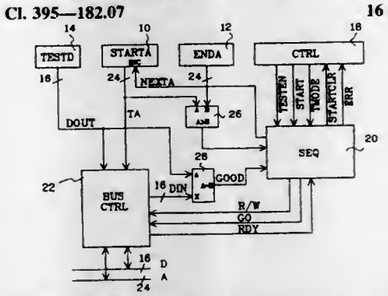
wherein the control device further includes an address translation table, and

the control device translates, in response to a write request from the upper-level device, a data address specified as a destination of the write request by the upper-level device into a physical address of the dummy data item in the parity group and writes the physical address in the table.

5,621,883
CIRCUIT FOR TESTING MICROPROCESSOR MEMORIES

Pierre-Yves Thoulon, Voreppe, and Pierre Sauvage, Vif, both of France, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 143,782, Nov. 1, 1993, abandoned. This application Mar. 11, 1996, Ser. No. 613,597
Claims priority, application France, Oct. 30, 1992, 92 13430
Int. Cl.[6] G06F *11/00*; G11C *29/00*
U.S. Cl. 395—182.07 **16 Claims**



1. A direct memory access (DMA) controller for use in a microprocessor-based system for enabling a microprocessor of the

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system to set up DMA transfers between a memory of the system and other elements of the system, the DMA controller comprising

register means coupled with the microprocessor so the microprocessor can write data into the register means for setting up said transfers;

means for controlling the register means so that:

(a) in a first mode the microprocessor sets up normal DMA transfers in the register means, and

(b) in a second mode the microprocessor activates the register means to perform a read-after-write test on a block of addresses in said memory specified by the data the microprocessor writes into said register means, said read-after-write test resulting in (i) test data being written into addresses of said block of addresses and (ii) reading back the contents of thus-written-into addresses, said means for controlling the register means including means for generating said test data by using for said test data address bits of addresses to be tested; and

comparator means for comparing bits read back from the memory addresses in the tested block of addresses in said memory specified by data the microprocessor writes into said register means with bits stored in said register means representing the test data written into the tested block of addresses.

5,621,884

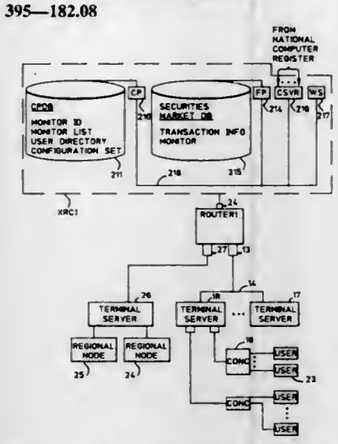
DISTRIBUTED DATA ACCESS SYSTEM INCLUDING A PLURALITY OF DATABASE ACCESS PROCESSORS WITH ONE-FOR-N REDUNDANCY

Norman J. Beshears, Orange; Douglas Flanagan, Hermosa Beach, and Peter Y. Kui, Laguna Niguel, all of Calif., assignors to Quotron Systems, Inc., Los Angeles, Calif.

Continuation of Ser. No. 55,849, Apr. 30, 1993, Pat. No. 5,408,649. This application Jan. 18, 1995, Ser. No. 375,388

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.08 **11 Claims**



1. A computer product combination for providing computer redundancy in a computer system which distributes securities information to a plurality of users through a plurality of computer facilities and includes a communication facility connected to the computer facilities which routes securities information from each computer facility to a respective set of users, the computer product combination including:

means for obtaining sets of connectivity data structures from a plurality of computer facilities, each set of connectivity data structures including data for routing securities information from a respective computer facility to a respective set of users;

means for storing the sets of connectivity data structures in a single archive database separate from the plurality of computer facilities;

means for periodically obtaining state of health (SOH) information from each computer facility of the plurality of computer facilities, SOH information indicating a level of operation of a computer facility;

means for detecting a failed computer facility in response to SOH information from the failed computer facility; and

means for substituting a spare computer facility for the failed computer facility by transferring to the spare computer facility a set of connectivity data structures for the failed computer facility from the archive database.

5,621,885

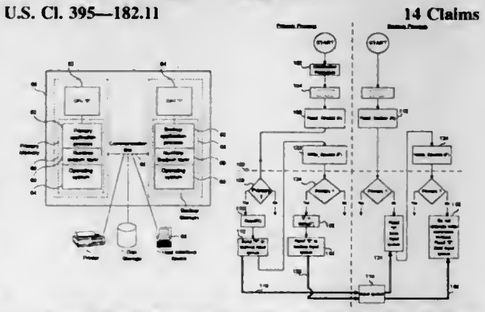
SYSTEM AND METHOD FOR PROVIDING A FAULT TOLERANT COMPUTER PROGRAM RUNTIME SUPPORT ENVIRONMENT

Paul Del Vigna, Jr., San Jose, Calif., assignor to Tandem Computers, Incorporated, Cupertino, Calif.

Filed Jun. 7, 1995, Ser. No. 475,195

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.11 **14 Claims**



1. A method for automatically converting a non-fault tolerant primary program running on a computer system having an operating system into a fault tolerant program, the method comprising the steps of:

a. creating a duplicate backup program;

b. determining whether the non-fault tolerant primary program or the backup program issued operating system I/O calls;

c. for I/O calls issued by the non-fault tolerant primary program, causing the operating system to execute the calls and transmitting the results of the calls to the backup program; and

d. for I/O calls issued by the backup program, Preventing the operating system from executing the I/O calls issued by the backup program and reading the results transmitted as a result of the execution of the corresponding calls in the non-fault tolerant primary program;

whereby the non-fault tolerant primary program is converted into a fault tolerant program.

5,621,886

METHOD AND APPARATUS FOR PROVIDING EFFICIENT SOFTWARE DEBUGGING

Donald Alpert, Santa Clara, and Gary Hammond, Campbell, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

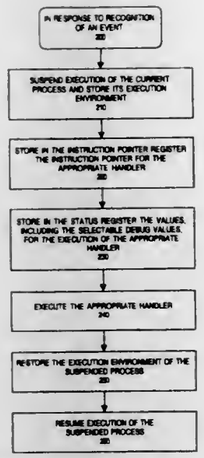
Filed Jun. 19, 1995, Ser. No. 492,293

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **34 Claims**

1. A processor operable in a first mode and a second mode said processor comprising:

a first storage area configured to store a first indication indicating which of said first mode and said second mode said processor is currently operating in; and



a circuit configured to store a second indication and a third indication, said second indication for indicating whether a debug event is to be recognized while said processor is operating in said first mode, said third indication for indicating whether said debug event is to be recognized while said processor is operating in said second mode; and

a debug circuitry coupled to said first storage area to receive said first indication, said debug circuitry coupled to said circuit to receive one of said second indication and said third indication as a current indication based on said first indication, said debug circuitry allowing recognition of said debug event based on said current indication.

5,621,887

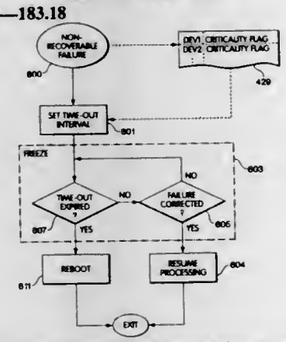
FAULT TOLERANT DISK MANAGEMENT SYSTEM WHICH TESTS FAILED DISKS DURING VARIED TIME INTERVALS WHICH ARE BASED UPON THE CRITICALITY ASSOCIATED WITH THE FAILED DISKS

Sanjoy Chatterji, Waltham, Mass., assignor to Sequoia Systems, Inc., Marlboro, Mass.

Filed Apr. 7, 1993, Ser. No. 44,303

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.18 **1 Claim**



1. In a computer system with an operating system and a disk system, a method of managing faults in the disk system including a plurality of logical disks which each have one of a plurality of criticalities associated therewith and stored in a logical device table descriptive of the plurality of disks, comprising the steps of:

identifying the failed logical disk from among the plurality of logical disks;

determining a criticality associated with the failed logical disk by reading the logical device table;

initiating a time out having a predetermined interval selected from a plurality of intervals based upon the criticality associated with the failed logical disk, each of the plurality of intervals being associated with a corresponding at least one of the plurality of criticalities;

retesting the failed logical disk during the time out interval to determined if the failed logical disk has returned to a non-failed state; and

reinitializing the operating system upon expiration of the time out interval.

5,621,888

METHOD OF BUILDING UP MESSAGES FOR DRIVING A DATA PROCESSING ARRANGEMENT WITH SEVERAL STATIONS RECEIVING CONNECTED THERETO

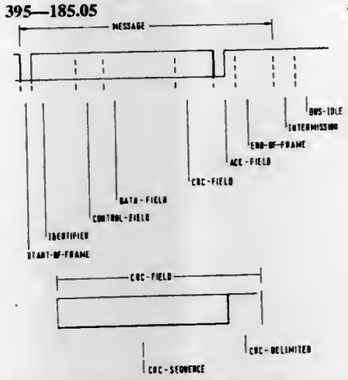
Wolfgang Botzenhardt, Göppingen; Siegfried Dais, Gerlingen; Uwe Kiencke, Ludwigsburg; Martin Litschel, Vaihingen/Enz, and Wolfgang Krampe, Renningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 185,024, Jan. 24, 1994, which is a division of Ser. No. 856,430, Mar. 23, 1992, Pat. No. 5,303,348, which is a continuation of Ser. No. 511,080, Apr. 19, 1990, abandoned, which is a continuation of Ser. No. 831,475, Feb. 20, 1986, Pat. No. 5,001,642. This application Jun. 5, 1995, Ser. No. 464,383

Claims priority, application Germany, Feb. 22, 1985, 35 06 118.9

Int. Cl.[6] G06F *11/08*

U.S. Cl. 395—185.05 **4 Claims**



1. In a data processing arrangement including a plurality of data stations interconnected by a serial data bus, a method of building up a message in one of said data stations for transmission to at least one of the other ones of said data stations, the method comprising the steps of:

forming a message to have, in the following order, at least a defined bit pattern at start of frame, an identifier, a control field, a data field, a CRC field having a CRC-check;

providing a bit pattern at the end of said CRC field which is complementary to said bit pattern at said start of frame; and,

said control field having a bit pattern indicating whether said message is for transmitting or requesting data.

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5,621,889

FACILITY FOR DETECTING INTRUDERS AND SUSPECT CALLERS IN A COMPUTER INSTALLATION AND A SECURITY SYSTEM INCLUDING SUCH A FACILITY

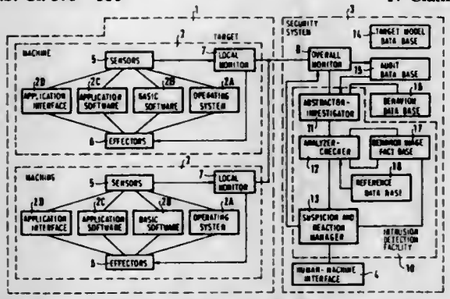
Jean-Marc Lermuzeaux, St Michel sur Orge; Thierry Emery, St Germain les Arpajon, and Patrice Gonthier, Antony, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris-Cedex, France

Filed Jun. 8, 1994, Ser. No. 257,052

Claims priority, application France, Jun. 9, 1993, 93 06935

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—186 **17 Claims**



1. A facility for detecting at least one of intrusions and suspect users, in a computer installation, making use of surveillance data streams relating to the behavior of the computer installation in operation and to the actions of the users of said installation, said data streams being generated in the installation, the facility comprising:

a first system which models, based on said computer installation and its users and their respective behaviors, a target as a symbolic representation using a semantic network, by employing previously acquired knowledge and rules;

a second system which compares said target with normal behavior expected for the same conditions as modelled by behavior rules and security rules contained in a knowledge data base of said second system, and which infers therefrom either an anomaly object in the event that at least one of the behavior rules is violated, or an intrusion object or an intrusion hypothesis object in the event that at least one of the security rules is violated;

a third system which interprets the anomaly and intrusion objects by implementing said previously acquired rules and knowledge used by said first system so as to generate, reinforce, or confirm a corresponding intrusion hypotheses;

a fourth system which correlates and compares said intrusion hypotheses and intrusions by implementing said previously acquired rules and knowledge used by said first system in order to relate various intrusion hypotheses and/or intrusions, and to infer new intrusion hypotheses and/or intrusions therefrom;

a communication system which cooperates with the first through fourth systems to provide the various data items that said first through fourth systems produce relating to behavior, anomalies, intrusion hypotheses, and intrusions;

an abstract-investigator which constructs an image representing behavior of said target modeled by said first system and performs investigations in data bases and a fact base of the facility and also in the computer installation;

an analyzer-checker, coupled to said abstract-investigator, which receives image data representing said image from said abstract-investigator, analyzes said data to interpret behavior of the computer installation and its users with reference to said target to detect anomalies, and outputs anomaly data indicative thereof; and

a suspicion and reaction manager, coupled to said analyzer-checker, which analyzes said anomaly data, received from said analyzer-checker, to interpret the detected anomalies and intrusions, identify the users actually responsible for anomalies and intrusions, attribute a degree of suspicion to at least one of said users so as to trigger corresponding messages for transmission via a human-machine interface, and optionally trigger restraint measures applicable to the computer installation via said human-machine interface.

5,621,890

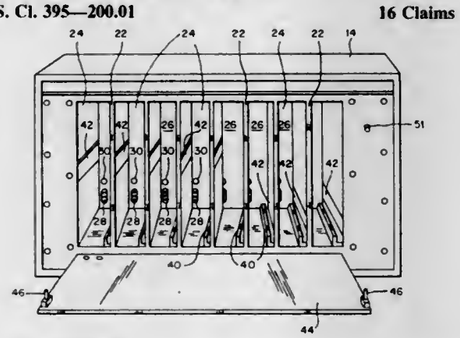
METHOD AND APPARATUS FOR TRANSFERRING DATA BETWEEN A HOST DEVICE AND A PLURALITY OF PORTABLE COMPUTERS

John Notarianni, 23 Crestwood La., Lake Ronkonkoma, N.Y. 11791; Jerry Cohen, Plainview, N.Y.; John P. D'Ambrosio, Sayville, N.Y., and Charles Orlowski, Huntington Sta., N.Y., assignors to John Notarianni, Lindenhurst, N.Y.

Continuation of Ser. No. 718,358, Jun. 21, 1991, Pat. No. 5,301,346. This application Nov. 10, 1993, Ser. No. 150,393

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.01 **16 Claims**



1. In combination:

a plurality of pen based computers, each pen based computer including a battery, a display and an unlighted pen for hand-written input of information on the display; and

apparatus for transferring data from the plurality of pen based computers, which comprises:

a housing;

a support frame mounted in the housing, the support frame being adapted to support a plurality of pen based computers, the support frame including a plurality of spaced apart parallel divider panels, adjacent divider panels defining between them a slot for receiving a respective pen based computer, the support frame further including a first back panel, the first back panel being mounted on the divider panels and being disposed transversely thereto;

a plurality of data input/output connectors, the data connectors being mounted on the first back panel and positioned between adjacent divider panels so as to be adapted to mate with corresponding data connectors mounted on the pen based computers;

a plurality of power connectors, the power connectors being mounted on the first back panel and positioned between adjacent divider panels so as to be adapted to mate with corresponding power connectors mounted on the pen based computers;

circuit means coupled to the plurality of data input/output connectors for automatically transmitting data concurrently to the plurality of pen based computers for storage of the data therein and for automatically receiving data concurrently from the plurality of pen based computers; and

means coupled to the power connectors for discharging and recharging the batteries of the pen based computers.

5,621,891

DEVICE FOR GENERATING ANNOUNCEMENT INFORMATION

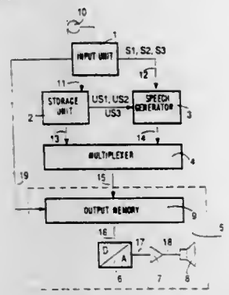
Hans-Wilhelm Rühl, Schwaig, and Peter Meyer, Fürth/Bay, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,097

Claims priority, application Germany, Nov. 19, 1991, 41 38 016.9

Int. Cl.[6] G10L *3/00*

U.S. Cl. 395—2.79 **13 Claims**



1. A device for generating speech information signal, comprising:

input means for generating a first control signal and a second control signal that are mutually exclusive in time;

storage means for storing natural speech information in the form of first time-sequential strings each having one or more distinct words;

speech generating means for, under control of said second control signal, generating synthetic speech information as further time-sequential strings each having one or more further distinct words; and

multiplexing means coupled to said storage means and to said speech generating means for receiving said natural speech information and said synthetic speech information and for selectively outputting on a word-by-word basis one of said natural speech information and said synthetic speech information in response to said first control signal and said second control signal, respectively, to generate said speech information signal, while being blocked from switching-over between said storage means and said speech generating means other than at the end of said time-sequential string.

5,621,892

METHOD AND APPARATUS FOR MANAGING ALERTS AND EVENTS IN A NETWORKED COMPUTER SYSTEM

Colin Cook, Lindon, Utah, assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 10, 1995, Ser. No. 541,493

Int. Cl.[6] G06F *15/177*

U.S. Cl. 395—200.1 **24 Claims**

1. In a networked computer system having a plurality of nodes and a server coupled together on a network, a process for managing events in said networked computer system, said process comprising the steps of:

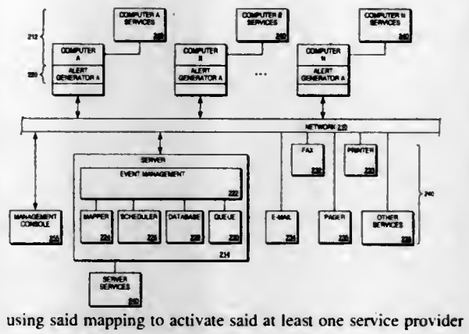
providing an event manager in said server;

registering an alert with said event manager;

registering one or more service providers with said event manager;

selectively mapping said alert to at least one of said service providers in a mapping;

receiving said alert from a node of said plurality of nodes, said event manager receiving said alert; and



using said mapping to activate said at least one service provider in response to receipt of said alert.

5,621,893

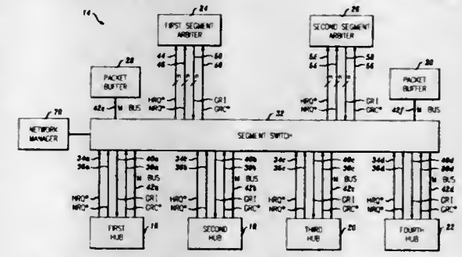
SYSTEM FOR EXPANDING PORTS WHEREIN SEGMENT SWITCH SELECTIVELY ASSOCIATES PLURALITY OF HUBS COUPLED TO FIRST ARBITER AND PLURALITY OF HUBS COUPLED TO SECOND ARBITER

Clarence C. Joh, Allentown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1994, Ser. No. 343,290

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.02 **18 Claims**



1. A method for expanding the number of ports available to a local area hub network including a plurality of hubs coupled along a common memory bus, wherein said hubs must be granted controlling access to said memory bus before transmitting packets on the memory bus, comprising the steps of:

providing a plurality of hubs;

providing a first segment arbiter means for granting a hub controlling access to a first segment memory bus for transmission of a packet on said first segment memory bus based upon an internal protocol;

providing a second segment arbiter means for granting a hub controlling access to a second segment memory bus for transmission of a packet on said second segment memory bus based upon an internal protocol;

coupling said plurality of hubs to said first segment arbiter means and said second segment arbiter means via a segment switch, wherein said segment switch selectively associates said plurality of said hubs with said first segment arbiter means and said second segment arbiter means to form separate and distinct system units.

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5,621,894

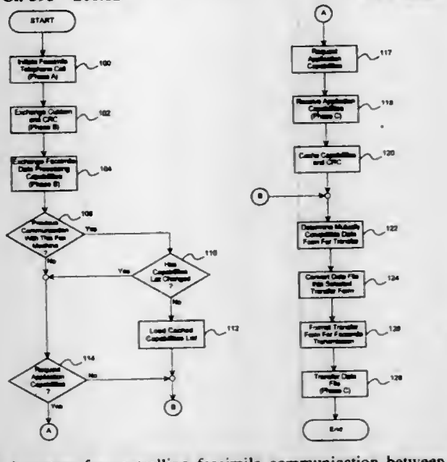
SYSTEM AND METHOD FOR EXCHANGING COMPUTER DATA PROCESSING CAPABILITES

Arul Menezes, Bellevue; Sharad Mathur, Redmond, and Michael Ginsberg, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 149,507, Nov. 5, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 512,948

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.12 **42 Claims**



1. A system for controlling facsimile communication between first and second facsimile machines, the system comprising:

a first facsimile mode storage area in the first facsimile machine having a first facsimile data processing mode list containing at least one facsimile data processing mode of the first facsimile machine defined by an industry standard;

facsimile capability transfer means defined by said standard for transferring said first facsimile data processing mode list from the first facsimile machine to the second facsimile machine during a negotiation phase of the facsimile communication;

a first custom mode storage area in the first facsimile machine having a first custom data processing mode list containing at least one data processing mode of the first facsimile machine;

custom capabilities transfer means using a non-standard facilities data frame to transfer said first custom data processing mode list from the first facsimile machine to the second facsimile machine during said negotiations phase;

a first application data processing mode storage area in the first facsimile machine having a first application program data processing capabilities list containing data related to software application program data processing capabilities of the first facsimile machine;

a second facsimile mode storage area in the second facsimile machine having a second facsimile data processing mode list containing at least one facsimile data processing mode of the second facsimile machine defined by said industry standard, said first and second facsimile data processing mode lists having at least one mutually compatible facsimile data processing mode;

a second custom mode storage area in the second facsimile machine having a second custom data processing mode list containing at least one data processing mode of the second facsimile machine;

a second application data processing mode storage area in the second facsimile machine having a second application program data processing capabilities list containing data related to software application program data processing capabilities of the second facsimile machine;

application capabilities transfer means for transferring said first application program capabilities list to the second facsimile machine; and

selection means within the second facsimile machine for selecting a transfer form in which to transfer a data file, said selection means comparing said first and second application program capabilities lists and said first and second custom mode lists to determine if there is an application program capability common to both said first and second application program capabilities lists or a custom data processing mode common to both said first and second custom mode lists, said selection means selecting said common application program capability from said first and second application program capabilities lists if said data file utilizes said common application program capability, selecting said common custom data processing mode from said first and second custom mode lists if said common application program capability is not selected, and selecting said mutually compatible data processing mode from said first and second facsimile mode lists if neither said common application program capability nor said common custom data processing mode are selected.

5,621,895

FRAME-STRUCTURED BUS SYSTEM FOR TRANSMITTING BOTH SYNCHRONOUS AND ASYNCHRONOUS DATA OVER A STAR-COUPLED LOCAL OPERATION NETWORK

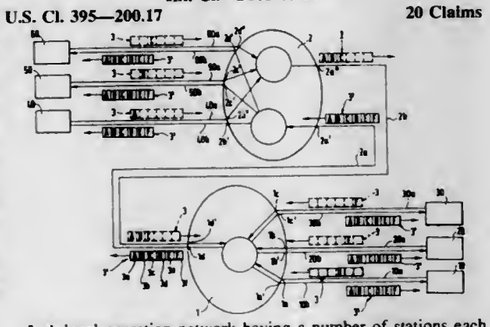
Bernd X. Weis, Korntal; Anke Schmietainski, Hemmingen, and Heinz Schlesinger, Mundelsheim, all of Germany, assignors to Alcatel Sel Aktiengesellschaft, Stuttgart, Germany

Continuation of Ser. No. 92,159, Jul. 15, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,741

Claims priority, application Germany, Jul. 23, 1992, 42 24 339.4

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.17 **20 Claims**



1. A local operation network having a number of stations each connected by a bus line to a central star coupler, wherein

each message sent out by a respective sending station is transmitted via the central star coupler to all stations of the local operation network,

at least one of said stations is a master station including a frame clock generator for generating a master frame clock in the form of a sequence of data frames of a defined bit length, each said data frame including a start module followed by an isochronous frame module having a variable first bit length, an end module preceded by an asynchronous frame module having a variable second bit length, and a division module between the isochronous frame module and the asynchronous frame module,

said master frame clock is transmitted from said master station to the central star coupler,

in the central star coupler, the time sequence of the data frames of the master frame clock defines a reference frame clock governing the signal processing of the stations of the local operation network,

each of the stations of the local operation network determines a respective propagation delay from that station to the central star coupler and uses that propagation delay to generate an individual frame transmit clock, such that

each message transmitted by said respective sending station arrives at the central star coupler at the latter at a respective assigned instant of the reference frame clock at which that message must be incorporated into a current data frame then present in the central star coupler, and

the current data frame containing messages from a plurality of the sending stations is sent to all stations,

each of a plurality of asynchronous submodules is assigned to a respective bus station,

isochronous data is transmitted at the beginning of each frame during said isochronous frame module,

the plurality of asynchronous submodules are transmitted at the end of each frame within said asynchronous frame module, and

said division module is transmitted by said master station at different respective locations within two successive frames, thereby dynamically establishing said variable first and second bit lengths for each of the frames.

5,621,896

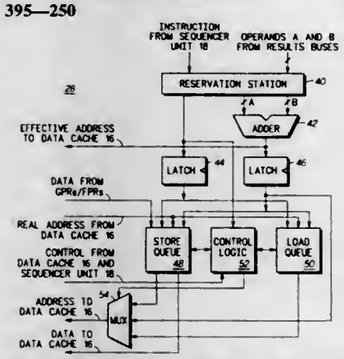
DATA PROCESSOR WITH UNIFIED STORE QUEUE PERMITTING HIT UNDER MISS MEMORY ACCESSES

David P. Burgess; Milton M. Hood, Jr.; Betty Y. Kikuta, and Graham R. Murphy, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill., and International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 252,473, Jun. 1, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,313

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **6 Claims**



1. A store queue for use in a data processor with a memory cache, the memory cache storing a subset of data stored in a memory storage system, the data processor executing a plurality of store instructions, each one of the plurality of store instructions writing one of a plurality of data to a location in the memory storage system, the store queue comprising:

a write first-in-first-out ("FIFO") queue comprising a plurality of entries, each one of the plurality of entries storing one of a plurality of store instructions executed by the data processor;

means for maintaining a valid state or an invalid state of each one of the plurality of the entries; and

control circuitry coupled to the write FIFO queue, the control circuitry comprising a first pointer, a second pointer, and a third pointer, the first pointer, the second pointer, and the third pointer indexing an entry in the write FIFO queue,

the control circuitry storing each one of the plurality of store instructions in the entry indexed by the first pointer, the control circuitry incrementing the first pointer responsive to storing each one of the plurality of store instructions in the write FIFO queue,

the control circuitry incrementing the second pointer responsive to presenting the one of the plurality of store instructions stored in the one of the plurality of entries indexed by the second pointer to the memory cache, the control circuitry invalidating the one of the plurality of entries indexed by the second pointer if the data accessed is present in the memory cache, the control circuitry continuing to present ones of the plurality of store instructions to the memory cache after a miss to the memory cache,

the control circuitry incrementing the third pointer responsive (1) to presenting the one of the plurality of store instructions stored in the one of the plurality of entries indexed by the third pointer to the memory system, or (2) to determining that the one of the plurality of store instructions stored in the one of the plurality of entries indexed by the third pointer is in the invalid state and thereby not presenting the one to the memory system.

5,621,897

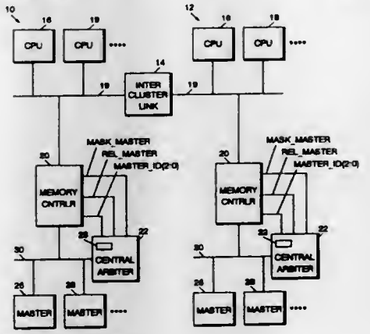
METHOD AND APPARATUS FOR ARBITRATING FOR A BUS TO ENABLE SPLIT TRANSACTION BUS PROTOCOLS

Bechara F. Boury, Boca Raton, Fla.; Charles E. Kuhlmann, Youngsville, N.C.; Terence J. Lohman, Boca Raton, Fla.; Neil W. Songer, San Jose, Calif., and Ronald E. Valli, West Columbia, S.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,114

Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—296 **35 Claims**



1. A system comprising:

a bus;

a plurality of masters coupled to the bus, said masters including logic for requesting arbitration for the bus and for initiating a transaction upon being granted the bus;

a plurality of slaves coupled to the bus, with at least one of said slaves including logic for indicating readiness of the slave to complete said transaction; and

an arbiter that includes logic for forcing a master off the bus when a slave from which the transaction has been requested is not ready to complete the transaction, and logic for preventing the master from re-arbitrating for the bus until the slave is ready to complete the transaction,

where said logic for indicating readiness of the slave to complete the transaction includes a first output coupled to the arbiter and at which a first signal is produced, said first signal indicating that the slave is not ready to complete the transaction with a requesting master; and

a second output coupled to the arbiter and at which a second signal is produced, said second signal indicating that the slave is ready to complete the transaction with the requesting master; and

wherein the arbiter includes a masked master register that sets in response to the first signal a mask indicator identifying the requesting master;

logic for preventing the requesting master from re-arbitrating for the bus as long as the masked master register contains the mask indicator of the requesting master and for allowing the requesting master to re-arbitrate for the bus when the masked

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master register does not contain the mask indicator of the requesting master; and

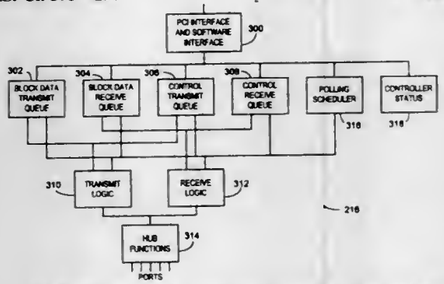
logic for resetting the mask indicator of the requesting master from the masked master register in response to the receipt of the second signal.

5,621,898

ARBITER ORGANIZATION FOR SERIAL BUS TRANSFERS

David R. Wooten, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 29, 1994, Ser. No. 346,097
Int. Cl.[6] G06F *13/14;* **H04L** *12/56*
U.S. Cl. 395—297 **18 Claims**



1. An arbiter for use in controlling operations, the operations including data transfers of a plurality of different data types including isochronous block data, asynchronous block data and asynchronous control data, the arbiter comprising:

a periodic timer for establishing a basic time period;

a periodic data transfer queue containing isochronous and asynchronous block data transfers;

an aperiodic data transfer queue containing asynchronous block data transfers;

a control data transfer queue containing control data transfers;

means for determining the free time in said basic time period after scheduling all periodic data transfers and performing any other transfers;

means for selecting the next transfer to be performed from one of said periodic queue, said aperiodic queue and said control queue, said means for selecting the next periodic data transfer if the free time is less than zero, alternating selection between the next periodic data transfer and the next control data transfer in each respective queue if the free time is greater than zero until all the free time becomes zero or all periodic data transfers completed and alternating between the next control data transfer and the next aperiodic data transfer if all periodic data transfers in the periodic queue have been completed and the free time is greater than zero.

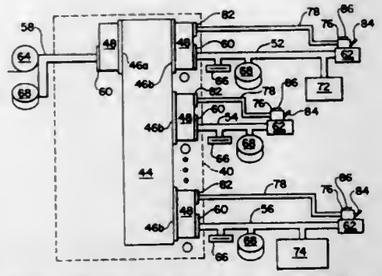
5,621,899

SWITCH FOR DISTRIBUTED ARBITRATION DIGITAL DATA BUSES

Thomas A. Gafford, Redondo Beach, and Botond G. Eröss, deceased, late of Palo Alto, both of Calif., assignors to Thomas A. Gafford, Redondo Beach, Calif.

Division of Ser. No. 923,996, Aug. 16, 1993. This application Jun. 6, 1995, Ser. No. 471,864
Int. Cl.[6] G06F *13/368*
U.S. Cl. 395—299 **14 Claims**

1. A method for operating a repeater for exchanging information between a first digital computing device directly connected to a first distributed arbitration digital data bus and a second digital computing device directly connected to a second distributed arbitration digital data bus; said first and said second distributed arbitration digital data buses being interconnected by said repeater



into a single, composite distributed arbitration digital data bus; the first and the second digital computing devices connecting in parallel respectively to said first, to said second and to said composite distributed arbitration digital data buses;

said first and said second distributed arbitration digital data buses individually, and when joined together by said repeater into said composite distributed arbitration digital data bus, employing an identical protocol for exchanging information between pairs of digital computing devices connected thereto, which protocol includes:

a bus free phase during which none of the digital computing devices connected to said distributed arbitration digital data bus exchanges a signal with any other digital computing device connected thereto;

said protocol further including an arbitration phase, that follows said bus free phase, during which a digital computing device connected to said distributed arbitration digital data bus arbitrates to acquire, for an interval of time, a status of a winning digital computing device, and to thereby become entitled to participate in a subsequent information exchange phase of said protocol;

said protocol further including a selection phase, that follows said arbitration phase, during which the winning digital computing device selects a particular digital computing device with which the winning digital computer device will exchange information during said subsequent information exchange phase of said protocol;

said first and said second distributed arbitration digital data buses individually, and when joined together by said repeater into said composite distributed arbitration digital data bus, including:

a busy signal that is asserted by a digital computing device connected to said distributed arbitration digital data bus to indicate a beginning for said arbitration phase of said protocol, and that the digital computing device asserting the busy signal both is participating in said arbitration phase of said protocol, and is attempting to become the winning digital computing device on said distributed arbitration digital data bus;

said distributed arbitration digital data bus also including a plurality of device identification signals that a digital computing device participating in said arbitration phase of said protocol selectively asserts during said arbitration phase of said protocol, concurrently with assertion of the busy signal by such digital computing device, to indicate a priority which such digital computing device has been assigned for use by such digital computing device in arbitrating to win control of said distributed arbitration digital data bus; furthermore, during said selection phase of said protocol the device identification signals are selectively asserted by the winning digital computing device to identify the particular digital computing device connected to said distributed arbitration digital data bus with which the winning digital computing device will exchange information;

said distributed arbitration digital data bus further including a selection signal that is asserted during said selection phase of said protocol by the winning digital computing device, concurrently with assertion of the device identification signals by the winning digital computing device, to indicate that such winning digital computing device is selecting the

particular digital computing device for an exchange of information; during said selection phase of said protocol the particular digital computing device transmitting a signal to the winning digital computing device acknowledging that the particular digital computing device has been selected for information exchange;

said repeater receiving signals from and selectively applying signals both to said first and to said second distributed arbitration digital data buses; said method for operating said repeater comprising the steps of:

while both said first and said second distributed arbitration digital data buses remain in their bus free phases of said protocol, remaining in a quiescent state in which said repeater asserts none of the signals that said repeater can apply either to said first or to said second distributed arbitration digital data buses;

if said first digital computing device initiates said arbitration phase of said protocol by asserting the busy signal on said first distributed arbitration digital data bus, responding to such assertion of the busy signal by asserting the busy signal on said second distributed arbitration digital data bus;

during said arbitration phase of said protocol, responding to assertion of a device identification signal on said first distributed arbitration digital data bus by asserting that same device identification signal on said second distributed arbitration digital data bus;

upon assertion of the selection signal by the winning digital computing device, storing information identifying to which of said first or said second distributed arbitration digital data buses the winning digital computing device directly connects;

during said selection phase of said protocol, responding to assertion of the selection signal on said first or on said second distributed arbitration digital data bus to which the winning digital computing device directly connects by asserting the selection signal on said second or on said first distributed arbitration digital data bus to which said winning digital computing device does not directly connect;

during said selection phase of said protocol, responding to the winning digital computing device's assertion of a device identification signal on said first or on said second distributed arbitration digital data bus to which said winning digital computing device directly connects by asserting that identification signal on said second or on said first distributed arbitration digital data bus to which said winning digital computing device does not directly connect; and

upon the particular digital computing device transmitting a signal acknowledging that it has been selected for information exchange, storing information identifying to which of said first or of said second distributed arbitration digital data buses the particular digital computing device directly connects.

5,621,900

METHOD AND APPARATUS FOR CLAIMING BUS ACCESS FROM A FIRST BUS TO A SECOND BUS PRIOR TO THE SUBTRACTIVE DECODE AGENT CLAIMING THE TRANSACTION WITHOUT DECODING THE TRANSACTION

Thomas R. Lane, San Jose, and James P. Kardach, Saratoga, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 17, 1995, Ser. No. 442,690
Int. Cl.[6] G06F *13/36;13/372*
U.S. Cl. 395—300 **19 Claims**

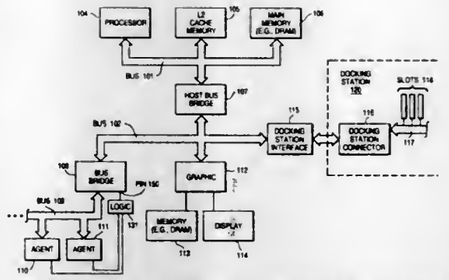
1. A computer system comprising:

a bus;

a first agent coupled to the bus that issues a transaction on the bus, wherein the transaction is aborted if not claimed within a finite period of time;

a second agent coupled to the bus that claims the transaction prior to expiration of the finite period of time without performing decoding to determine ownership of the transaction if the transaction has not been previously claimed; and

a third agent coupled to the bus that claims the transaction prior to the second agent claiming the transaction without performing decoding on the transaction to determine ownership.



5,621,901

METHOD AND APPARATUS FOR SERIAL BUS ELEMENTS OF AN HIERARCHICAL SERIAL BUS ASSEMBLY TO ELECTRICALLY REPRESENT DATA AND CONTROL STATES TO EACH OTHER

Jeff C. Morriss, Boulder Creek, and Andrew M. Volk, Loomis, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 31, 1994, Ser. No. 332,337
Int. Cl.[6] G06F *13/40*
U.S. Cl. 395—306 **25 Claims**

	DATA AND CONTROL STATES	ELECTRICAL REPRESENTATION
706	CONNECT	V+ and V– >Vse0 for 16 bit times
708	DISCONNECT	V+ and V– < Vse0 for 16 bit times
710	START OF PACKET	V+ and V– < Vse0 for 3 bit times
712	END OF PACKET	V+ and V– < Vse0 for 1 bit times
702	LOGICAL "1"	(V+) – (V–) > VDiff
704	LOGICAL "0"	(V+) – (V–) < VDiff

1. An apparatus for incorporation into a first and a second serial bus element of a serial bus assembly having a plurality of serial bus elements, to allow the two serial bus elements to electrically represent data and control states to each other, said apparatus comprising:

first driver means for incorporation into the first serial bus element for driving a first pair of electrical signals in selected ones of voltage states for selected ones of time durations in a differential manner over a first pair of signal wires disposed in a first cable interconnecting the first and second serial bus elements;

encoding means for incorporation into the first serial bus element and coupled to the first driver means for controlling the first driver means thereby encoding data and control states in the first pair of electrical signals;

second driver means for incorporation into the second serial bus elements for receiving the first pair of electrical signals, and in response, outputting difference signals; and

decoding means for incorporation into the second serial bus elements and coupled to the second driver means for receiving and decoding the difference signals.

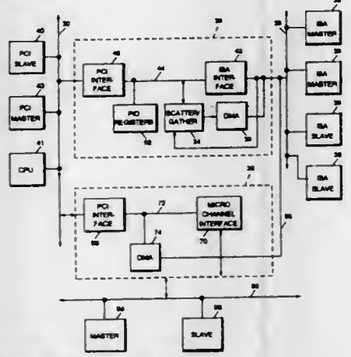
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COMPUTER SYSTEM HAVING A BRIDGE BETWEEN TWO BUSES WITH A DIRECT MEMORY ACCESS CONTROLLER AND AN ALTERNATIVE MEMORY ACCESS CONTROLLER

Moises Cases, Delray Beach, Fla.; Richard G. Hofmann, Cary, N.C., and Lance M. Venarchick, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 351,195
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—309 **3 Claims**



1. A computer system comprising:
a first bus and a second bus;
first devices coupled to the first bus;
second devices coupled to the second bus;
a first bridge coupled between the first and second buses, the first bridge having: a first direct memory access (DMA) control circuit for controlling DMA transfers with the devices coupled to the second bus, said first DMA control circuit being capable of being in an enabled state and a disabled state;
wherein said enabled state is characterized in that said first DMA control circuit controls DMA transfers with the devices coupled to the second bus and wherein said disabled state is characterized in that said first DMA control circuit does not control DMA transfers with the devices coupled to the second bus;
a third bus;
third devices coupled to the third bus; and
a second bridge coupled between the first and third buses, the second bridge having: an alternate DMA control circuit that controls DMA transfers with the devices coupled to the first, second and third buses; and logic that disables the first DMA control circuit only when said first DMA control circuit is present in said system such that only the alternate DMA control circuit controls DMA transfers with devices coupled to the first, second and third buses within the computer system.

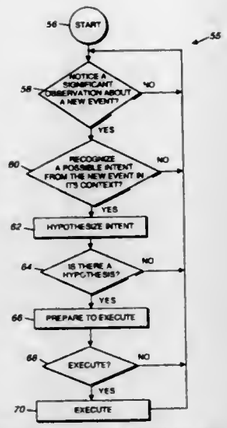
5,621,903

METHOD AND APPARATUS FOR DEDUCING USER INTENT AND PROVIDING COMPUTER IMPLEMENTED SERVICES

William W. Luciw, Morgan Hill; Stephen P. Capps, San Carlos, and Lawrence G. Tesler, Portola Valley, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 889,225, May 27, 1992, Pat. No. 5,390,281. This application Sep. 19, 1994, Ser. No. 308,746
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—326 **23 Claims**

1. A method of executing an operation on a computer system in response to an opportunistic event occurring in the computer



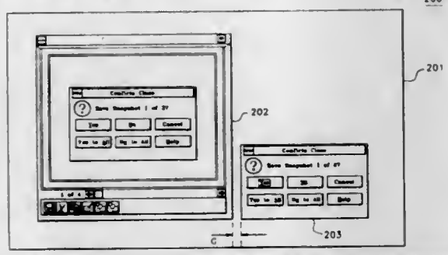
system, opportunistic events recognized by the computer system including at least fax alerts and mail alerts, the method comprising the following steps:
(a) monitoring events occurring in the computer system;
(b) recognizing the opportunistic event, the recognizing including the substep of creating a significant observation set having at least one observation of a significant event, significant events including opportunistic events and user initiated events such as pen stroke entry and user defined preferences for handling opportunistic events, the significant observation set being indicative of the opportunistic event;
(c) comparing the significant observation set with a plurality of templates stored in the computer system, the templates defining operations that can be performed with the computer system, the templates also specifying one or more steps associated with their operations;
(d) selecting a single template from among the plurality of templates, the selected template having the best agreement with the significant observation set; and
(e) executing the operation associated with the single template.

5,621,904

METHOD AND APPARATUS FOR AVOIDING OVERLAPPED WINDOWS AND A GUTTER SPACE

John D. Elliott, Aloha; Rune A. Skarbo, Hillsboro, and Kevin A. Watts, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 24, 1995, Ser. No. 377,081
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—342 **36 Claims**



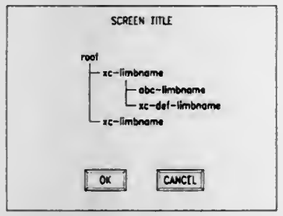
1. A computer-implemented method for positioning windows displayed on a screen of a video processing system, comprising the steps of:
(a) determining the size of the screen;
(b) determining the position and size of a first window displayable on the screen;
(c) determining the size of a new window to be displayed on the screen;
(d) determining whether there is room to display the new window plus a predetermined gutter space outside the first window and within the screen; and
(e) setting the position of the new window in accordance with the determination of step (d).

5,621,905

TREE FORM MENU DISPLAY FOR A DATA PROCESSING SYSTEM

Michael A. Jewson, Eastleigh, and Paul A. Beaven, Romsey, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1993, Ser. No. 134,196
Claims priority, application United Kingdom, Oct. 12, 1992, 9221405
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—353 **8 Claims**



1. A data processing system comprising:
means for processing electric signals representative of options for selection by a user of the data processing system;
means for presenting the options as a hierarchical tree form diagram within a single window on a display screen of the data processing system;
means responsive to user input for signalling a first option selected to the processing means;
programmed means for calculating which further selections are available and which further selections are not available as a result of the selected option, the further selections being dependent on the first option;
means for modifying the display screen to display what further options are and are not available for selection;
a memory for storing a selection list of each selection input by a user;
programmed means for calculating whether or not the selection list is complete;
means, responsive to the selection list calculating means, for indicating on the display screen whether or not the selection list is complete; and
means for processing the options input by a user when the selection list is complete.

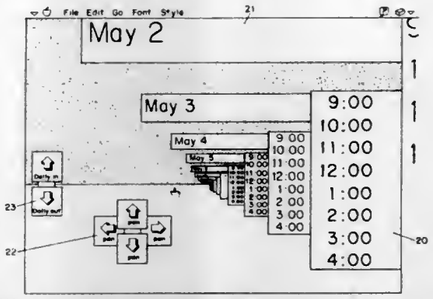
5,621,906

PERSPECTIVE-BASED INTERFACE USING AN EXTENDED MASTHEAD

Rory O'Neill, and Eden G. Muir, both of New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Feb. 13, 1995, Ser. No. 388,553
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—355 **14 Claims**

1. A display system comprising a two-dimensional graphical display device, processor means operationally coupled to the display device for forming a display of a plurality of one-dimensionally ordered planar display surfaces on the display



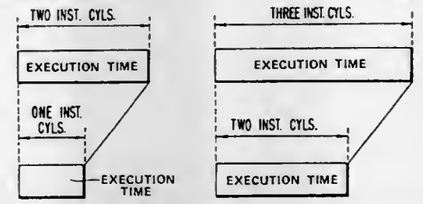
device, and input means operationally coupled to the processor means for controlling the display, wherein the processor means is instructed:
for forming the display such that the display surfaces appear in a corridor perspective in their one-dimensional order, wherein each display surface has at least one extended masthead within the plane;
for receiving dollying control input from the input means; and
for changing the display in response to the dollying control input so as to produce a display effect which gives a viewer of the display a perception of dollying along the corridor perspective.

5,621,907

MICROPROCESSOR WITH MEMORY STORING INSTRUCTIONS FOR TIME-COMPRESSED FETCHING OF INSTRUCTION DATA FOR A SECOND CYCLE WITHIN A FIRST MACHINE CYCLE

Nobuhisa Watanabe, Kanagawa-ken, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 82,822, Jun. 28, 1993, which is a continuation of Ser. No. 810,532, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 465,613, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 368,942, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 251,039, Sep. 23, 1988, abandoned, which is a continuation of Ser. No. 810,357, Dec. 18, 1995, abandoned. This application Feb. 1, 1995, Ser. No. 382,392
Claims priority, application Japan, Dec. 29, 1984, 59-276835
Int. Cl.[6] G06F *9/30;9/38*
U.S. Cl. 395—383 **4 Claims**



1. A pipeline processor comprising:
(a) a memory for storing instructions, one of said instructions at least including a first byte and a second byte, each of said bytes of each said instruction being stored at respective addresses in said memory;
(b) a counter for outputting sequentially a respective one of said addresses of said memory for reading out said instruction bytes, said counter having a first and second input, said first input receiving a predetermined sequence of clock pulses defining a machine cycle;
(c) a decoder for receiving said first byte of each said instruction read out from said memory and for outputting corresponding control signals, said control signals being supplied to the

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second input of said counter when said first byte in said decoder indicates the instruction has a plurality of bytes;

wherein said counter is incremented one count value in response to said control signal; and

wherein a time-compressed fetching of the next byte of instruction following its first byte occurs within one machine cycle in a way that instruction data for a later, second instruction execution cycle is fetched from said memory during a current, first instruction cycle.

5,621,908

PARALLEL SORTING SYSTEM TO REDUCE THE AMOUNT OF COMMUNICATION BETWEEN PROCESSING DEVICES

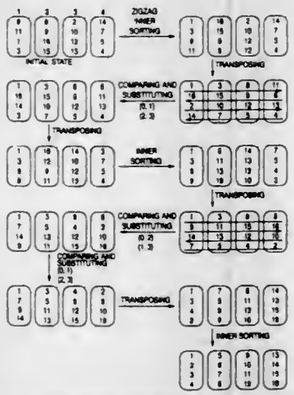
Naoki Akaboshi; Yasuo Noguchi; Riichiro Take, all of Kawasaki, and Haruo Yokota, Nomi-gun, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 139,156, Oct. 21, 1993, abandoned. This application Jul. 14, 1995, Ser. No. 502,858

Claims priority, application Japan, Oct. 21, 1992, 4-283285

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—607 **14 Claims**



12. A method of performing a parallel sorting using a plurality of processing devices connected to a network, comprising the steps of:

storing sort elements to be sorted in storing means in one of the processing devices, wherein the sort elements are represented in a matrix with each processing device representing one of a row and a column in the matrix;

sorting the sort elements stored in the storing means in one of a larger-to-smaller order and a smaller-to-larger order, in said one of the processing devices;

transposing the matrix representing the sort elements by exchanging stored sort elements stored in the storing means represented at positions in the matrix with stored sort elements received from a processing device through said network and represented at corresponding transposed positions in the matrix, in said one of the processing devices;

storing the sort elements received from the processing device at the transposed position in said matrix in said one of the processing devices;

comparing a first sort element and a second sort element stored in said sort element storing step, in said one of the processing devices; and

substituting the order of the first and second sort elements in said one of the processing devices.

5,621,909

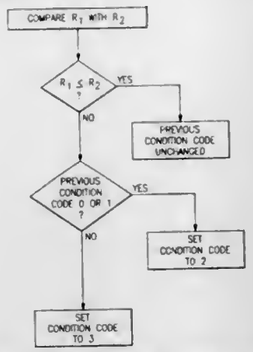
SPECIALIZED MILLICODE INSTRUCTION FOR RANGE CHECKING

Charles F. Webb, Poughkeepsie; Mark S. Farrell, Pleasant Valley, and Wen H. Li, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,148

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—564 **1 Claim**



1. In a pipelined computer processor, which executes a relatively simple instruction set in a hardware controlled execution unit and executes a relatively complex instruction set in a milli-mode architected state with a millicode sequence of simple instructions in said hardware controlled execution unit, a millicode method for performing range a comparison between two values (R1, R2) stored respectively in two millicode registers, comprising the steps of:

storing a millicode instruction that includes a field specifying one value (R1) of said two values and a field specifying one value (R2) of said two values;

fetching said millicode instruction from storage; and

performing a logical comparison between said one (R1) value and said other (R2) value and setting a condition code to one of four condition code values (0,1,2, or 3) as follows:

condition code 0 if R1 is greater than R2 and the previous condition code is set to 0,

condition code 1 if R1 is greater than R2 and a previous condition code is set to 1,

condition code 2 if R1 is greater than R2 and a previous condition code is set to 2,

condition code 2 if R1 is less than or equal R2 and a previous condition code is set to 0 or 1,

condition code 3 if R1 is less than or equal to R2 and a previous condition code is set to 2,

condition code 3 if a previous condition code is set to 3.

5,621,910

SYSTEM FOR CONTROLLING INSTRUCTION DISTRIBUTION FOR USE IN SUPERSCALAR PARALLEL PROCESSOR

Masato Nagamatsu, Ooita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 876,077, Apr. 28, 1992, abandoned. This application Jan. 20, 1995, Ser. No. 376,645

Claims priority, application Japan, Apr. 30, 1991, 3-099131

Int. Cl.[6] G06F *9/38;9/46*

U.S. Cl. 395—379 **5 Claims**

1. A system for controlling instruction distribution for use in a superscalar parallel processor configured to execute N instructions in parallel, wherein N is greater than 1, the system comprising:

an instruction distribution starting position pointing register for generating an instruction distribution starting position pointing signal indicating from which instruction of the N instructions an instruction distribution is started, the instruction distribution starting position pointing register for receiving a flag signal and updating said instruction distribution starting position pointing signal;

an instruction distribution enable/disable signal generating circuit connected to said instruction distribution starting position pointing register, for receiving said instruction distribution starting position pointing signal and a resource conflict signal and outputting an instruction distribution enable/disable signal indicating an enabled-distribution indicating which instruction of the N instructions is enabled and a disabled-distribution indicating which instruction of the N instructions is disabled;

a transferring line for transferring said instruction distribution enable/disable signal to an instruction executing system;

a flag signal generating circuit, connected to said instruction distribution enable/disable signal generating circuit, for receiving said instruction distribution enable/disable signal and a data conflict signal and for outputting said flag signal indicating which of the N instructions has been executed; and

a feedback line for feeding said flag signal back to said instruction distribution starting position pointing register.

5,621,911

CACHE MEMORY WITH AN UPDATABLE ADDRESS STORING UNIT

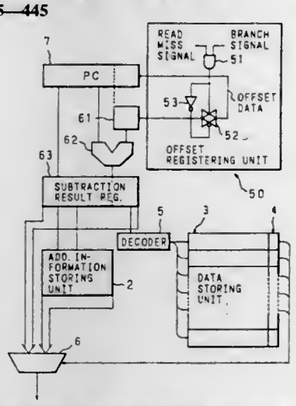
Tsukuo Nakamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1994, Ser. No. 304,182

Claims priority, application Japan, Sep. 13, 1993, 5-227100

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—445 **9 Claims**



1. A cache memory built in a microprocessor having access to an external memory, comprising:

a register for storing a value used by said microprocessor as an address to access said external memory;

an address information storing unit for storing value of the high-order digits of said address;

a data storing unit for registering data of said external memory defined by an address range; and

agreement detecting means for detecting agreement of the value stored in said address information storing unit and the value of said register;

wherein when agreement is detected by said agreement detecting means, the data stored in said data storing unit is accessed, and

when disagreement is detected by said agreement detecting means, said external memory is accessed, the value of said address information storing unit is updated in accordance with the value of said register, and the contents of said data storing unit are made invalid.

5,621,912

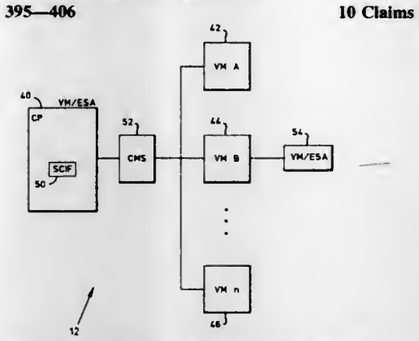
METHOD AND APPARATUS FOR ENABLING MONITORING OF GUESTS AND NATIVE OPERATING SYSTEMS

Steven M. Borruso, Conklin, and Steven M. Krol, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1994, Ser. No. 366,279

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—406 **10 Claims**



4. A method of providing a virtual machine guest, emulated by a control program of a host computer in a host-primary address space and communicating with one or more computer users, with access to an execution address space in memory of the host computer, the method comprising the steps of:

designating the virtual machine guest computer user as a class of operator that the host computer will recognize as being entitled to a special field support level of operation;

enabling a public and a shared bit flag stored in a block of the host computer memory that permits access to the execution address space of the host computer, thereby permitting any virtual machine to have access to the host computer execution address space; and

adding the execution address space of the host computer into an access list of the virtual machine guest.

5,621,913

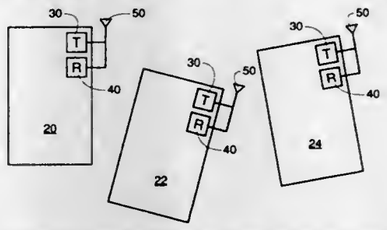
SYSTEM WITH CHIP TO CHIP COMMUNICATION

Mark E. Tuttle, and John R. Tuttle, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 989,246, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 894,879, Jun. 8, 1992, Pat. No. 5,300,875, and Ser. No. 884,507, May 15, 1992, abandoned. This application Nov. 15, 1994, Ser. No. 340,016

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—90 **21 Claims**



21. A method of manufacturing an single electronic component, comprising the steps of:

providing an enclosure composed of electrically conductive material; and

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mounting within the enclosure a plurality of semiconductor chips, wherein each chip includes an RF transceiver for transmitting data to, and receiving data from, the other chips independent of the physical alignment between each two chips within said plurality of chips, and wherein the chips are mounted without any physical connectors between the chips for transferring said data;

whereby the electrically conductive enclosure maintains communication among the chips of the single electronic component.

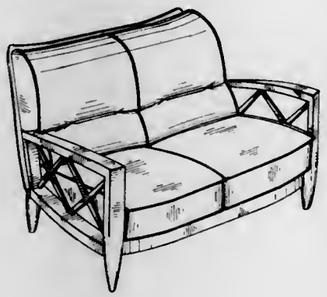
DESIGNS

APRIL 15, 1997

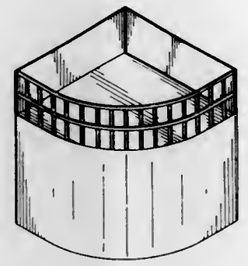
378,787
WALL COVERING
Debbie T. Guseman, 160 Shawnee Dr., Lancaster, Ohio 43130
Filed Oct. 2, 1995, Ser. No. 44,596
Term of patent 14 years
U.S. Cl. D5—8



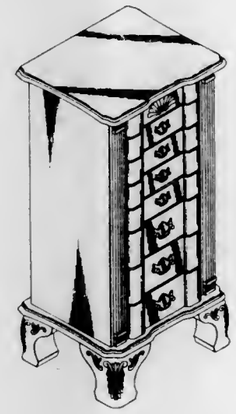
378,788
SEAT
Adam Tihany, New York, N.Y., assignor to The Pace Collection, Inc., Long Island City, N.Y.
Continuation-in-part of Ser. No. 15,936, Dec. 2, 1993, Pat. No. Des. 359,176. This application Dec. 2, 1994, Ser. No. 31,706
The portion of the term of this patent subsequent to Jun. 13, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—381



378,789
BABY CRIB
JoAnna Morris, 921 Highland St., Syracuse, N.Y. 13203
Filed Feb. 26, 1996, Ser. No. 50,800
Term of patent 14 years
U.S. Cl. D6—390

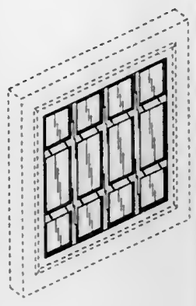


378,790
JEWELRY CASE
Don-Fong Yeh, 8F, No. 65, Sung-Chiang Rd., Taipei City, Taiwan
Filed Dec. 28, 1995, Ser. No. 48,438
Term of patent 14 years
U.S. Cl. D6—446

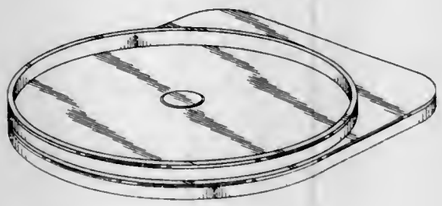


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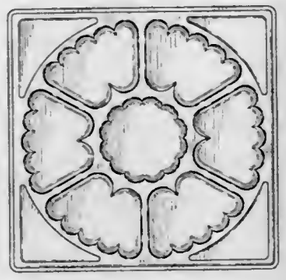
378,791
DOOR FRONT
Guy A. Walters, III, High Point, and Avis E. Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 20, 1994, Ser. No. 29,978
Term of patent 14 years
U.S. Cl. D6—492



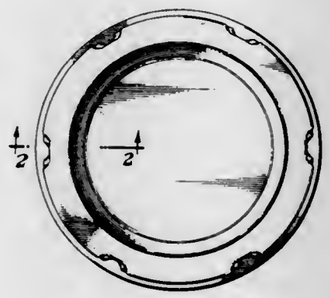
378,792
LAZY SUSAN
Michael Westcott, Cohasset, Mass., assignor to Emplast, Inc., Shakopee, Minn.
Filed May 10, 1996, Ser. No. 54,221
Term of patent 14 years
U.S. Cl. D7—501



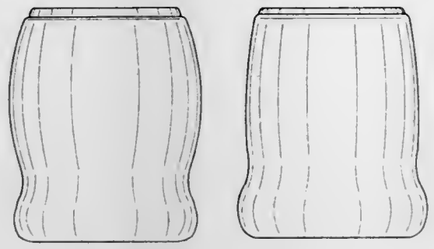
378,793
COMBINED COMPARTMENTALIZED FOOD TRAY WITH WINDOWED SLEEVE
Michael Kanan, Chagrin Falls, Ohio, assignor to King Nut Company, Solon, Ohio
Filed Jun. 21, 1995, Ser. No. 41,684
Term of patent 14 years
U.S. Cl. D7—553



378,794
DINNERWARE
Kenneth M. Joyce, 15 Dow La., Novato, Calif. 94947
Filed Nov. 2, 1995, Ser. No. 45,941
Term of patent 14 years
U.S. Cl. D7—585



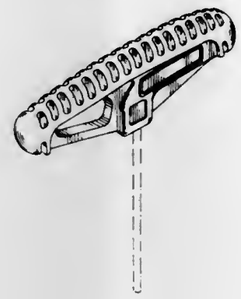
378,795
INSULATED BOTTLE AND CAN HOLDER
Jon E. King, St. Louis, Mo., assignor to Sinclair & Rush, Inc., St. Louis, Mo.
Filed Jan. 26, 1996, Ser. No. 49,547
Term of patent 14 years
U.S. Cl. D7—608



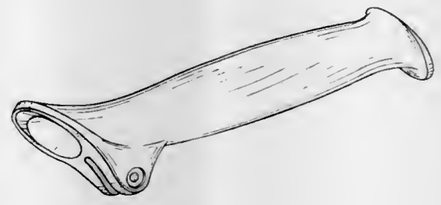
378,796
FOOD FORK
Pieter K. J. DeCoster, Aalst, Belgium, assignor to Dart Industries Inc., Orlando, Fla.
Filed Jan. 18, 1996, Ser. No. 48,225
Term of patent 14 years
U.S. Cl. D7—683



378,797
TOOL HANDLE
Charles A. Poremba, Wadsworth, Ill.; Joseph A. Sorensen, Lincoln, and Anthony B. Fuller, DeWitt, both of Nebr., assignors to American Tool Companies, Inc., Kenosha, Wis.
Filed Mar. 1, 1995, Ser. No. 35,543
Term of patent 14 years
U.S. Cl. D8—107

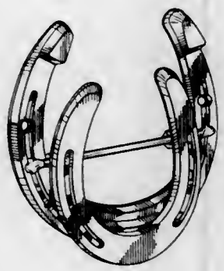


378,798
SPONGE MOP HANDLE
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Sep. 22, 1995, Ser. No. 44,327
Term of patent 14 years
U.S. Cl. D8—107

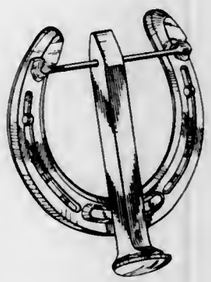


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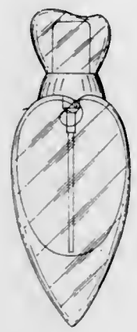
378,799
KNOCKER
Donald A. Erickson, 4665 S. Box Elder St., Murray, Utah 84107
Filed Aug. 22, 1995, Ser. No. 42,982
Term of patent 14 years
U.S. Cl. D8—401



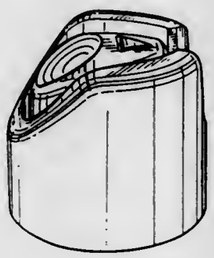
378,800
KNOCKER
Donald A. Erickson, 4665 Box Elder St., Murray, Utah 84107
Filed Nov. 21, 1995, Ser. No. 46,933
Term of patent 14 years
U.S. Cl. D8—401



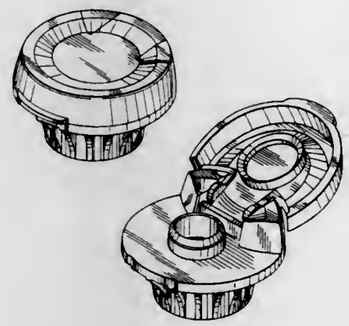
378,801
ATOMIZER PERFUME BOTTLE
Eric Blanche, Paris, France, assignor to Voltiris, Paris, France
Filed Aug. 3, 1995, Ser. No. 42,183
Claims priority, application France, Feb. 17, 1995, 950686
Term of patent 14 years
U.S. Cl. D9—315



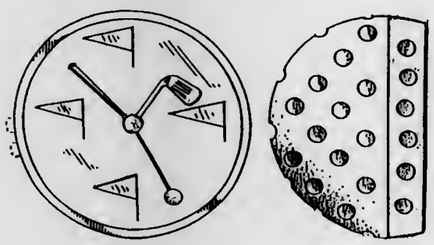
378,802
AEROSOL ACTUATOR CAP
Michael Corcoran, Newcastle, United Kingdom, assignor to Reckitt & Colman Products Limited, London, England
Filed Aug. 4, 1995, Ser. No. 42,255
Claims priority, application United Kingdom, Feb. 7, 1995, 2045033
Term of patent 14 years
U.S. Cl. D9—448



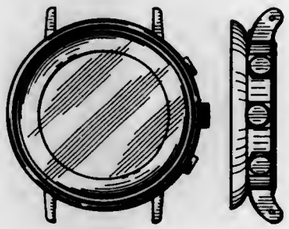
378,803
DISPENSING CLOSURE
Robert J. Bolen, Jr., Closter, N.J., and Thomas R. Bolen, Queensbury, N.Y., assignors to Bolen Packaging Corporation, Closter, N.J.
Filed Dec. 13, 1995, Ser. No. 47,835
Term of patent 14 years
U.S. Cl. D9—449



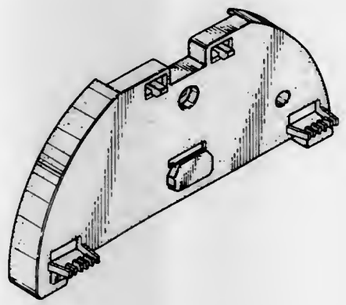
378,804
TIMEPIECE
Ira S. Levine, 40 Morrow Ave., Apt. 4RS, Scarsdale, N.Y. 10583
Continuation-in-part of Ser. No. 502,669, Apr. 2, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 16,786
Term of patent 14 years
U.S. Cl. D10—6



378,805
CASE FOR ANALOG WRISTWATCH
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 13, 1995, Ser. No. 43,824
Term of patent 14 years
U.S. Cl. D10—30



378,806
UTILITY METER FACEPLATE
William C. Phelps, III, Lawrenceville, Ga., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 7, 1996, Ser. No. 50,598
Term of patent 14 years
U.S. Cl. D10—103

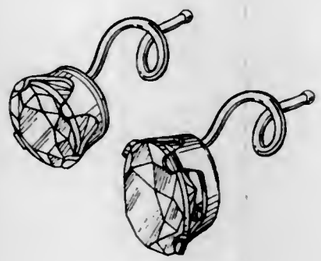


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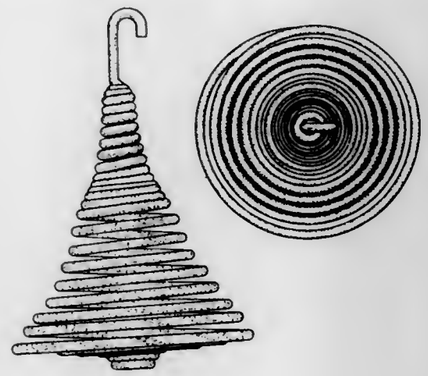
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WRISTWATCH STRAP
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jan. 5, 1996, Ser. No. 48,603
Term of patent 14 years
U.S. Cl. D11—3



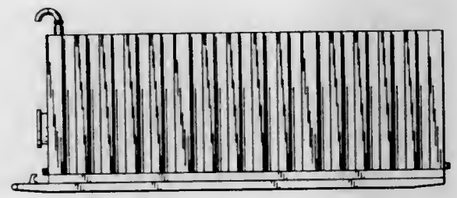
378,808
EARRING
Jaime Shechter, 330 Mechan Ave., Far Rockaway, N.Y. 11691
Filed Jan. 5, 1996, Ser. No. 48,613
Term of patent 14 years
U.S. Cl. D11—40



378,809
STYLIZED BELL ORNAMENT
John D. Jacobson, Southington, and Brian P. Kranz, Bristol, both of Conn., assignors to Newcomb Spring Corporation, Southington, Conn.
Division of Ser. No. 40,180, Jun. 12, 1995. This application Mar. 6, 1996, Ser. No. 51,859
Term of patent 14 years
U.S. Cl. D11—121



378,810
ROLL-OFF FLUID STORAGE TANK WITH SKIDS
Eddy Norman, Jr., Springer, and Billy S. Brown, Sulfur, both of Okla., assignors to Spade Leasing, Inc., Springer, Okla.
Filed Jun. 30, 1995, Ser. No. 40,963
Term of patent 14 years
U.S. Cl. D12—95



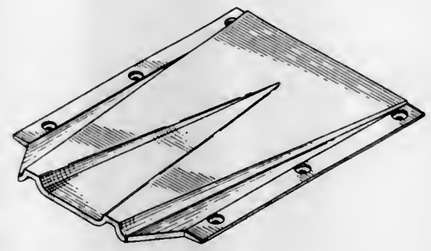
378,811
SURFACE PATTERN FOR A TIRE SIDEWALL
John S. Attinello, Hartville; William E. Glover, Akron; Samuel P. Landers, Uniontown, all of Ohio, and Kevin A. Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 740,218, Aug. 5, 1991, Pat. No. Des. 362,223, which is a continuation-in-part of Ser. No. 667,100, Mar. 8, 1991, abandoned. This application Mar. 6, 1995, Ser. No. 35,670
Term of patent 14 years
U.S. Cl. D12—152



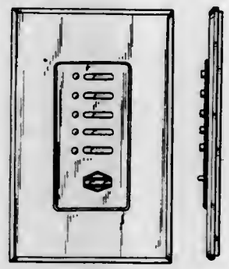
378,812
REAR SIDE PANEL PROTECTOR FOR PICKUP TRUCKS
Greg Aycock, 33215 Buckshot La., Magnolia, Tex. 77355
Division of Ser. No. 33,552, Jan. 17, 1995. This application Apr. 8, 1996, Ser. No. 53,327
Term of patent 14 years
U.S. Cl. D12—167



378,813
RIDE PLATE FOR PERSONAL WATER CRAFT
Greg Jacques, 1578 Riverside Pl., Costa Mesa, Calif. 92627
Filed Dec. 11, 1995, Ser. No. 47,722
Term of patent 14 years
U.S. Cl. D12—317

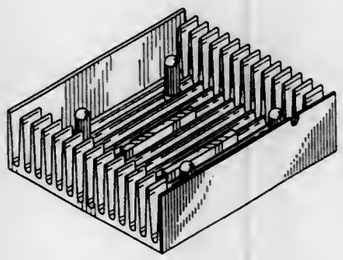


378,814
ELECTRICAL LOAD CONTROL PANEL
Jason O. Adams, Emmaus; Russel J. Jacobs, Center Valley; Noel Mayo, Philadelphia; Brett A. Pierce, Hellertown, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co., Ltd., Coopersburg, Pa.
Division of Ser. No. 754,435, Sep. 3, 1991, Pat. No. Des. 344,068. This application Nov. 15, 1993, Ser. No. 15,541
Term of patent 14 years
U.S. Cl. D13—164



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378,815
HEAT SINK
Douglas A. Dodson, 5995 Avenida Encinas, Carlsbad, Calif. 92008
Filed Jun. 19, 1995, Ser. No. 40,437
Term of patent 14 years
U.S. Cl. D13—179



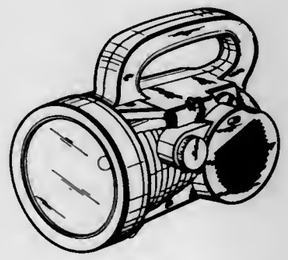
378,816
WIRELESS TELEPHONE
Ichiro Hino, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 9, 1995, Ser. No. 46,232
Claims priority, application Japan, Jul. 26, 1995, 7-21463
Term of patent 14 years
U.S. Cl. D14—138



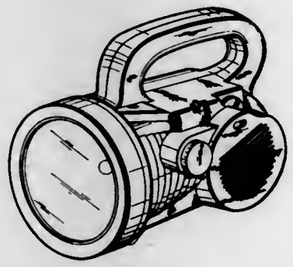
378,817
TELEPHONE
Tjeerd Dijkstra, Leiderdorp, Netherlands, assignor to Polyflame International, Netherlands
Filed Mar. 19, 1996, Ser. No. 51,897
Claims priority, application Hague Agreement, Oct. 20, 1995, DM/034451
Term of patent 14 years
U.S. Cl. D14—143



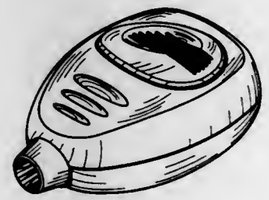
378,818
COMBINED RADIO AND FLASHLIGHT
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 24, 1994, Ser. No. 27,549
Claims priority, application United Kingdom, Jun. 2, 1994, 2039449
Term of patent 14 years
U.S. Cl. D14—168



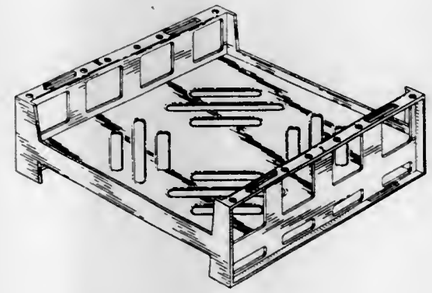
378,819
COMBINED RADIO, CLOCK AND FLASHLIGHT
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Division of Ser. No. 27,549, Aug. 24, 1994. This application Dec. 4, 1995, Ser. No. 47,446
Claims priority, application United Kingdom, Jun. 2, 1994, 2039449
Term of patent 14 years
U.S. Cl. D14—168



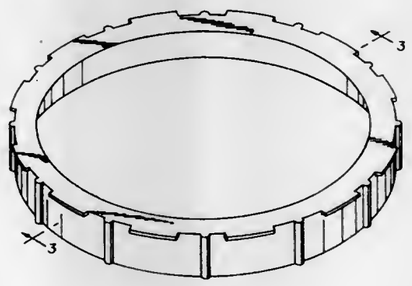
378,820
MOBILE MICROPHONE
Masaru Tokiyama, Coral Springs, and Jerry R. Nichols, Margate, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 1, 1995, Ser. No. 38,243
Term of patent 14 years
U.S. Cl. D14—225



378,821
FREEZER SHELF
Michael Westcott, Cohasset, Mass., assignor to Emplast, Inc., Shakopee, Minn.
Filed May 10, 1996, Ser. No. 54,234
Term of patent 14 years
U.S. Cl. D15—89

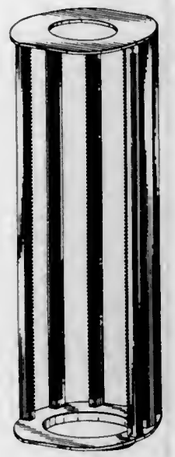


378,822
MOLD FOR FORMING CONCRETE CIRCULAR STEPPING STONES
Jack T. Hupp, P.O. Box 1206, Richmond, Tex. 77469
Filed Mar. 14, 1996, Ser. No. 51,592
Term of patent 14 years
U.S. Cl. D15—136

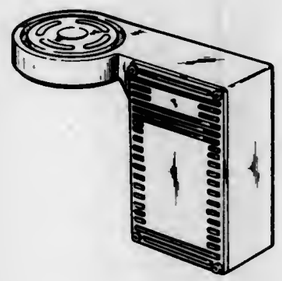


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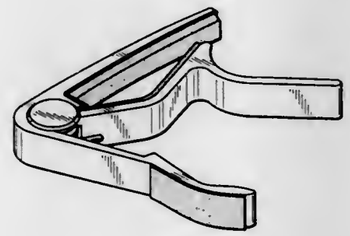
378,823
WAFER BOAT
Shingo Watanabe, and Hirofumi Kitayama, both of Kanagawa-Ken, Japan, assignors to Tokyo Electron Limited, Tokyo-to, Japan
Filed Nov. 30, 1995, Ser. No. 47,277
Claims priority, application Japan, May 30, 1995, 7-15174
Term of patent 14 years
U.S. Cl. D15—140



378,824
STEERING-GEAR
Per Nestvall, Mölndal, Sweden, assignor to AB Volvo Penta, Sweden
Filed Jan. 4, 1996, Ser. No. 49,615
Claims priority, application Sweden, Jul. 7, 1995, 95-1357
Term of patent 14 years
U.S. Cl. D15—148



378,825
TRIGGER CAPO
James A. Dunlop, Benicia, Calif., assignor to Dunlop Manufacturing, Inc., Benicia, Calif.
Filed Feb. 20, 1996, Ser. No. 50,621
Term of patent 14 years
U.S. Cl. D17—20



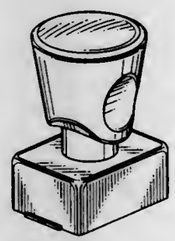
378,826
STUD CALCULATOR
Tjeerd Dijkstra, Leiderdorp, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Jul. 6, 1995, Ser. No. 41,105
Claims priority, application United Kingdom, Jan. 6, 1995, UK/HK2044296
Term of patent 14 years
U.S. Cl. D18—7



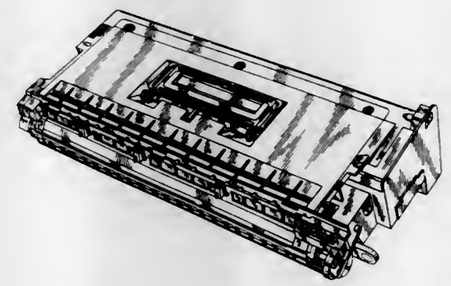
378,827
STAMP
Yoichi Uchiyama, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Jan. 13, 1995, Ser. No. 33,492
Claims priority, application Japan, Jul. 13, 1994, 6-21030; Jul. 13, 1994, 6-21031
Term of patent 14 years
U.S. Cl. D18—15



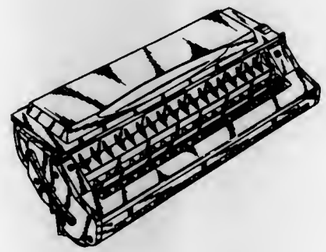
378,828
STAMPER
Dan Harden, Palo Alto, Calif., assignor to Shachihata Inc., Aichi-ken, Japan
Filed Mar. 4, 1996, Ser. No. 51,127
Claims priority, application Japan, Sep. 7, 1995, 7-26517
Term of patent 14 years
U.S. Cl. D18—15



378,829
IMAGE FORMING APPARATUS
Mamoru Aoyama, and Eiji Nittono, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Feb. 1, 1996, Ser. No. 49,861
Claims priority, application Japan, Aug. 10, 1995, 7-23291
Term of patent 14 years
U.S. Cl. D18—40



378,830
PROCESS CARTRIDGE
Sung W. Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jan. 16, 1996, Ser. No. 49,640
Claims priority, application Rep. of Korea, Jul. 19, 1995, 1995-13591
Term of patent 14 years
U.S. Cl. D18—43

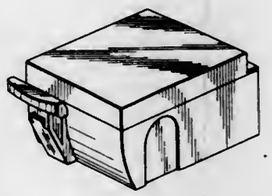


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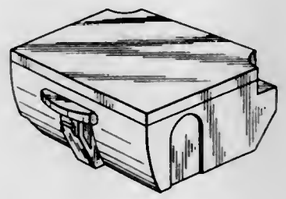
378,831
OFFSET PRINTING MACHINE
Nobuhiko Karafuji, Chiyoda-ku, and Katsushi Hirokawa, Fuchu, both of Japan, assignors to Ryobi Limited, Hiroshima, Japan
Filed Sep. 1, 1995, Ser. No. 43,338
Claims priority, application Japan, Mar. 2, 1995, 7-5954
Term of patent 14 years
U.S. Cl. D18—53



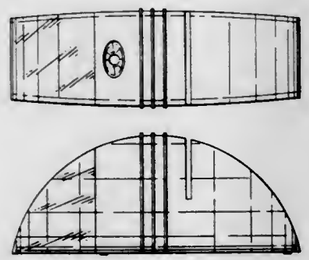
378,832
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,288
Claims priority, application Japan, Feb. 6, 1995, 7-2776
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



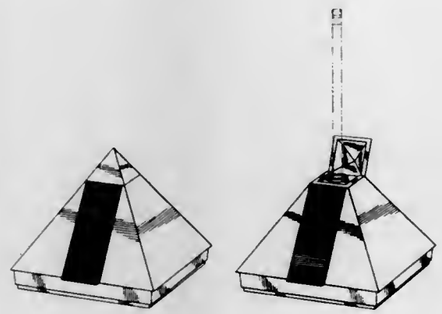
378,833
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,295
Claims priority, application Japan, Feb. 6, 1995, 7-2787
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



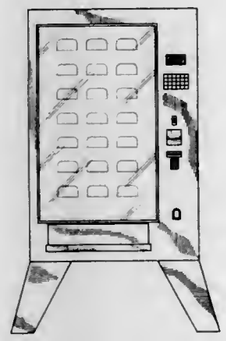
378,834
BATTERY OPERATED PENCIL SHARPENER WITH LETTER OPENER
John S.-K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Nov. 8, 1995, Ser. No. 46,162
Claims priority, application United Kingdom, May 11, 1995, 2047414
Term of patent 14 years
U.S. Cl. D19—73



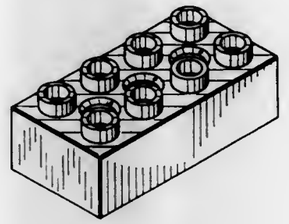
378,835
COSMETIC PENCIL SHARPENER
Marie C. Guerrero, Paradise Valley, Ariz., assignor to Z-Pointe Incorporated, Scottsdale, Ariz.
Filed Oct. 5, 1995, Ser. No. 46,571
Term of patent 14 years
U.S. Cl. D19—73



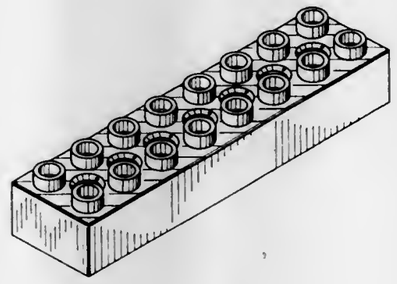
378,836
CREDIT CARD VENDING MACHINE
Kenneth P. Kirtland, 90 Los Cabos La., Ventura, Calif. 93001
Filed Jan. 19, 1996, Ser. No. 49,214
Term of patent 14 years
U.S. Cl. D10—4



378,837
TOY BUILDING ELEMENT
Flemming H. Olsen, Espergærde, and Per Brømsø , Copenhagen, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,920
Term of patent 14 years
U.S. Cl. D21—108



378,838
TOY BUILDING ELEMENT
Flemming H. Olsen, Espergærde, and Per Brømsø , Copenhagen, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,964
Term of patent 14 years
U.S. Cl. D21—108



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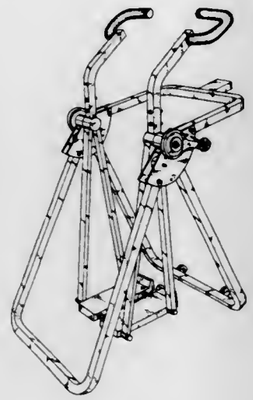
378,839
TOY CALF
Christian Stephensen, Hellerup, and Jacob Nielsen, Copenhagen S, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,977
Term of patent 14 years
U.S. Cl. D21—148



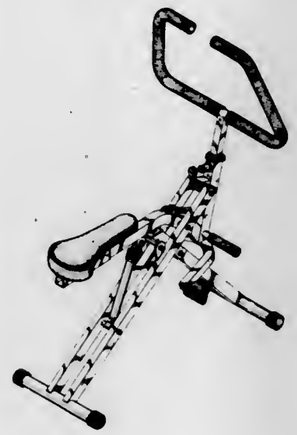
378,840
TOY FOAL
Helle Rahbek, Vildbjerg, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,980
Term of patent 14 years
U.S. Cl. D21—165



378,841
HIKING EXERCISER
Hui-Mei Huang, No. 266, Tung Hsin Road, Tung Leh Village, Yuan San Hsiang, I Lan Hsien, Taiwan
Filed Jan. 19, 1996, Ser. No. 49,217
Term of patent 14 years
U.S. Cl. D21—191



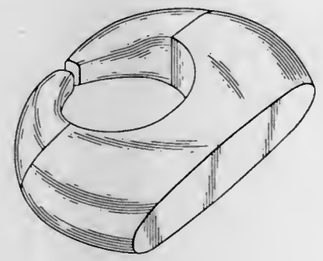
378,842
FOLDABLE EXERCISER HORSE
Kuo-Ron Lee, No. 61, Mai Jou II Rd., Yi Lan City, Taiwan
Filed Feb. 16, 1996, Ser. No. 50,404
Term of patent 14 years
U.S. Cl. D21—195



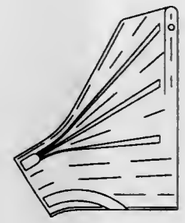
378,843
MOLDED BROOM HEAD
Pierre Laforest, P.O. Box 294, Nigadoo, New Brunswick, Canada
Filed Dec. 14, 1995, Ser. No. 47,896
Term of patent 14 years
U.S. Cl. D21—210



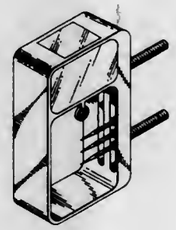
378,844
GOLF PUTTER HEAD
Randall S. Shine, 10231 Von Kleiben Rd., Sonora, Calif. 95370
Filed Dec. 11, 1995, Ser. No. 47,690
Term of patent 14 years
U.S. Cl. D21—217



378,845
COMPONENT OF PLAYGROUND SLIDE
Steven G. King, Long Lake, Minn., assignor to Landscape Structures Inc., Delano, Minn.
Division of Ser. No. 23,883, Jun. 2, 1994, Pat. No. Des. 371,414. This application Jun. 13, 1995, Ser. No. 40,225
Term of patent 14 years
U.S. Cl. D21—244

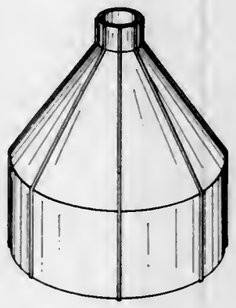


378,846
RANGE-FINDING ARCHERY SIGHT
John C. Sodaro, P.O. Box 71, Monkton, Vt. 05469
Filed Nov. 14, 1995, Ser. No. 46,432
Term of patent 14 years
U.S. Cl. D22—107



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378,847
SHAPED CHARGE COVER
Anthony L. Ey, North Sydney, Australia, assignor to Dyno Wesfarmers Limited, North Sydney, Australia
Filed Apr. 3, 1995, Ser. No. 37,062
Term of patent 14 years
U.S. Cl. D22—112



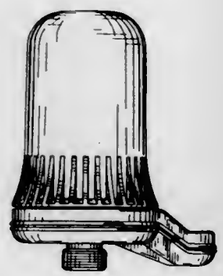
378,848
LIMB BUCK SAW
Thomas P. Corcoran, P.O. Box 266, East Arlington, Vt. 05252
Filed Jul. 17, 1995, Ser. No. 41,471
Term of patent 14 years
U.S. Cl. D22—115



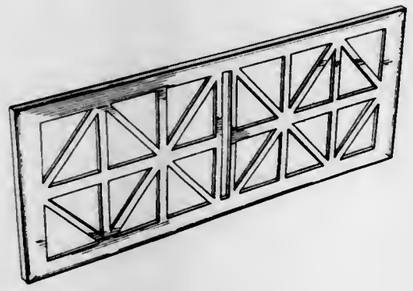
378,849
FISHLINE GUIDE PIPE
Seiji Myojo; Yasunori Hosoya, and Hiroshi Hashimoto, all of Osaka, Japan, assignors to Shimano Ioc., Osaka, Japan
Division of Ser. No. 29,362, Oct. 4, 1994. This application Oct. 24, 1995, Ser. No. 45,588
Claims priority, application Japan, Jun. 17, 1994, 6-17887; Jun. 17, 1994, 6-17888; Jun. 17, 1994, 6-17889
Term of patent 14 years
U.S. Cl. D22—142



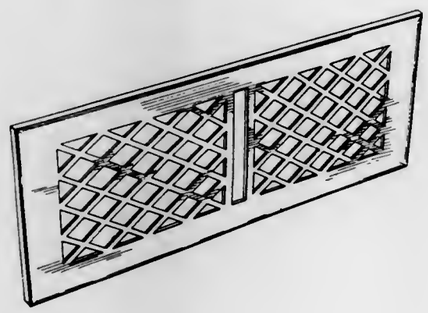
378,850
SHOWER WATER FILTER
Peggy Howe, Milwaukee, and Gary L. Hatch, Sheboygan, both of Wis., assignors to Ametek, Inc., Sheboygan, Wis.
Filed Mar. 13, 1996, Ser. No. 51,579
Term of patent 14 years
U.S. Cl. D23—209



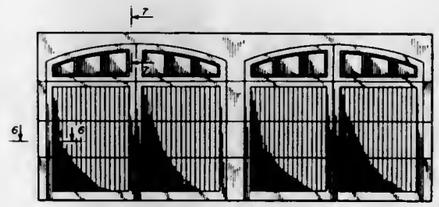
378,851
FLOOR REGISTER
Morris Smolarski, Clayton, Australia, assignor to Ripponlea Australia Pty. Ltd., Victoria, Australia
Filed Mar. 7, 1995, Ser. No. 35,800
Claims priority, application Australia, Sep. 7, 1994, 121754
Term of patent 14 years
U.S. Cl. D23—388



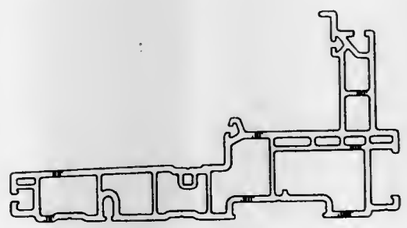
378,852
FLOOR REGISTER
Morris Smolarski, Clayton, Australia, assignor to Ripponlea Australia Pty. Ltd., Victoria, Australia
Filed Mar. 7, 1995, Ser. No. 35,801
Claims priority, application Australia, Sep. 7, 1994, 121756
Term of patent 14 years
U.S. Cl. D23—388



378,853
DOOR
Kent H. Forsland, 275 Market Square, Minneapolis, Minn. 55405
Filed Feb. 16, 1996, Ser. No. 50,386
Term of patent 14 years
U.S. Cl. D25—49

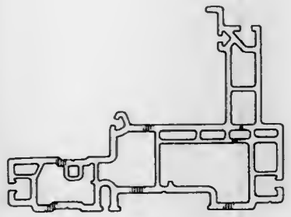


378,854
CASEMENT WINDOW FRAME COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 20, 1996, Ser. No. 51,951
Claims priority, application Canada, Sep. 22, 1995, 1995-2142
Term of patent 14 years
U.S. Cl. D25—124

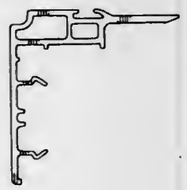


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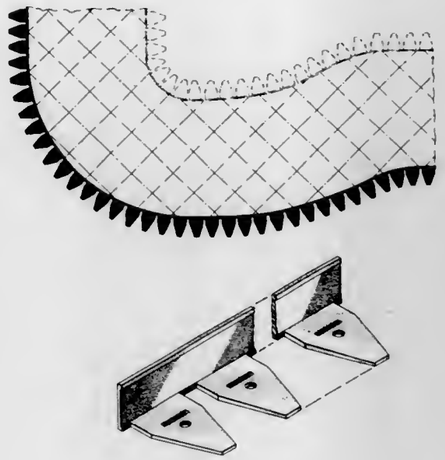
378,855
CASEMENT WINDOW FRAME COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 20, 1996, Ser. No. 51,958
Claims priority, application Canada, Sep. 22, 1995, 1995-2136
Term of patent 14 years
U.S. Cl. D25—124



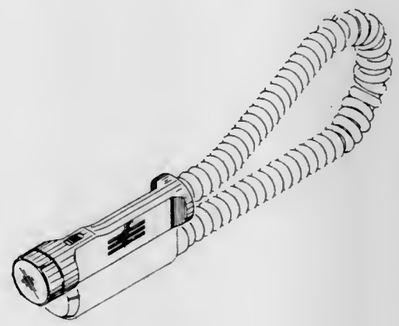
378,856
PATIO DOOR MEETING RAIL COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Quebec, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 21, 1996, Ser. No. 52,046
Claims priority, application Canada, Sep. 22, 1995, 1995-2149
Term of patent 14 years
U.S. Cl. D25—125



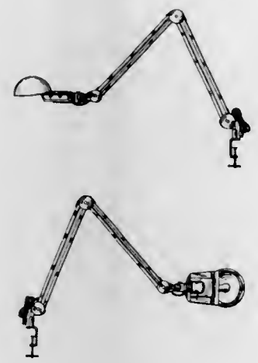
378,857
FLEXIBLE PAVER RESTRAINT
Glen H. Hale, Marietta, Ohio, assignor to Dimex Corporation, Marietta, Ga.
Filed Apr. 12, 1996, Ser. No. 52,980
Term of patent 14 years
U.S. Cl. D25—164



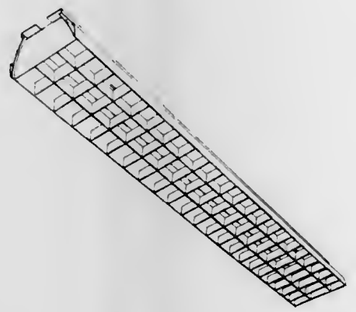
378,858
HEAD FOR A FLEXIBLE FLASHLIGHT
David W. Kaiser, North Haven, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,597
Term of patent 14 years
U.S. Cl. D26—43



378,859
DESK LAMP
Atsushi Yumita, Saitama, and Naoto Ogimoto, Okayama, both of Japan, assignors to Yamagiwa Kabushiki Kaisha, Tokyo, and Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, both of Japan
Filed Apr. 5, 1995, Ser. No. 37,177
Claims priority, application Japan, Oct. 5, 1994, 6-30249
Term of patent 14 years
U.S. Cl. D26—65



378,860
LIGHTING FIXTURE
Kenneth Galletly, Winchcombe, Great Britain, assignor to The Louvre Company Ltd., London, England
Filed Oct. 3, 1995, Ser. No. 44,900
Claims priority, application United Kingdom, Apr. 6, 1995, 2046592
Term of patent 14 years
U.S. Cl. D26—77



378,861
TORCHIERE LAMP WITH DOUBLE HEMISPHERE TRANSITION
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.
Filed Feb. 7, 1996, Ser. No. 50,056
Term of patent 14 years
U.S. Cl. D26—110



378,862
DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,242
Term of patent 14 years
U.S. Cl. D26—152



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DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,243
Term of patent 14 years
U.S. Cl. D26—152



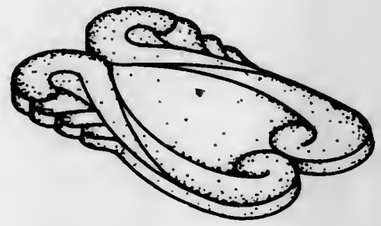
378,865
DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,246
Term of patent 14 years
U.S. Cl. D26—152



378,864
DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,244
Term of patent 14 years
U.S. Cl. D26—152



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DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,247
Term of patent 14 years
U.S. Cl. D26—152



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15th DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.K. Technical Laboratory Inc.: *See*—
Nakajima, Hisashi; and Koda, Hideaki, 5,620,650, Cl. 264-520.000.

A-Line Products Corporation: *See*—
Laura, Alger E.; Easton, Ronald J.; Frisch, Kurt C.; and Xiao, Han X., 5,620,747, Cl. 427-385.500.

A. Monforts GmbH & Co.: *See*—
Pabst, Manfred, 5,619,808, Cl. 34-640.000.

Aaslyng, Dorrit A.: *See*—
Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., 5,621,089, Cl. 536-23.200.

AB Volvo: *See*—
Janiszewski, Grzegorz, 5,620,387, Cl. 475-150.000.

Abadia, Roger, to Valeo Equipements Electriques Moteur. Alternator supply and control unit. 5,621,265, Cl. 310-68.00D.

ABB Atom AB: *See*—
Dahlbäck, Mats, 5,620,536, Cl. 148-519.000.
Ring, Christer, 5,621,777, Cl. 376-277.000.

ABB Power T&D Company Inc.: *See*—
Hemminger, Rodney C.; Munday, Mark L.; and Schleifer, Fred F., 5,621,629, Cl. 363-56.000.

ABB Signal AB: *See*—
Berggren, Clarence; Eklund, Lars; and Norrgård, Uno, 5,620,156, Cl. 246-221.000.

Abbas, S. Zaheer: *See*—
Ratcliffe, Robert M.; Venot, Andre P.; and Abbas, S. Zaheer, 5,620,902, Cl. 436-518.000.

Abbott Critical Care Systems: *See*—
Hughes, Timothy J., 5,620,002, Cl. 128-713.000.

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Choudhury, Hrishikesh, 5,620,555, Cl. 156-580.200.
Norbeck, Daniel W.; Sham, Hing L.; Kempf, Dale J.; and Zhao, Chen, 5,621,109, Cl. 548-182.000.

Abdel-Malek, Airman A.; and Rigby, Kenneth W., to General Electric Company. Enhanced method for reducing ultrasound speckle noise using wavelet transform. 5,619,998, Cl. 128-660.070.

Abdou-Sabet, Sabet: *See*—
Patel, Raman; and Abdou-Sabet, Sabet, 5,621,045, Cl. 525-237.000.

Abe, Tetsuya: *See*—
Hasushita, Sachio; Abe, Tetsuya; Yoneyama, Shuji; Matsuo, Hirofumi; Ogawa, Ryota; Taguchi, Ichiro; and Yokota, Hidetaka, 5,621,568, Cl. 359-432.000.

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Iwamoto, Naoki; Abe, Toshio; and Sakai, Hiroyuki, 5,621,865, Cl. 395-119.000.

Abela, George S.; and Maruska, H. Paul, to Abela, George S.; and Spire Corporation. Catheter and technique for endovascular myocardial revascularization. 5,620,439, Cl. 606-11.000.

Abrams, Richard W.: *See*—
Martin, Wallace A.; Abrams, Richard W.; Kindt-Larsen, Ture; and Wang, Daniel T.-F., 5,620,087, Cl. 206-5.100.

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Abtox, Inc.: *See*—
Wensky, Afaf; Martens, Phillip A.; and Caputo, Ross A., 5,620,656, Cl. 422-28.000.

AC International Inc.: *See*—
Krawchuk, John; Forsyth, Ian J.; and Eriksen, John G. H., 5,621,627, Cl. 363-37.000.

Acampora, Alfonse A.: *See*—
Lyons, Paul W.; D'Alessandro, Victor V.; Acampora, Alfonse A.; and Fedele, Nicola J., 5,621,463, Cl. 348-387.000.

Accurail, Inc.: *See*—
Storzek, Dennis, 5,620,106, Cl. 213-75.0TC.

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Cai, Sui X.; Keana, John F. W.; and Weber, Eckard, 5,620,978, Cl. 514-249.000.

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Ackerman, Allen D.: *See*—
Grenkowitz, Robert W.; Braskich, Michael J.; and Ackerman, Allen D., 5,620,044, Cl. 164-134.000.

Ackers, Stanley: *See*—
Krzewki, Rudolf J.; and Ackers, Stanley, 5,620,696, Cl. 424-411.000.

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Kotterer, Werner J., 5,619,923, Cl. 101-226.000.

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Sugiura, Yoshinori; Ishikawa, Noriyoshi; Setoriyama, Takeshi; Tenpaku, Chitose; Hamada, Tatsuo; Tsuchiya, Yoshiro; Kubota, Takeshi; Murooka, Ken; Niimura, Takeshi; Adachi, Nobukazu; Kuroda, Akira; Sugita, Takeshi; Yuza, Akira; and Azuma, Jun, 5,621,451, Cl. 347-112.000.

Adamec, William B.; Columbus, Ronald J.; Gosse, James A.; Johnston, David J.; Leone, Steven V.; and Servidone, Francesco, to United Technologies Corporation. Pulse width modulated solenoid driver controller. 5,621,603, Cl. 361-154.000.

Adams, Craig: *See*—
St. George, Charles W.; Adams, Craig; Gonrowski, Donald; and Rose, William, 5,619,821, Cl. 49-57.000.

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Adams, John E.: *See*—
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Adams, Julian: *See*—
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,620,974, Cl. 514-220.000.

ADC Telecommunications, Inc.: *See*—
Fischer, Larry G.; Wala, Philip M.; and Brennan, Jeffrey, 5,621,786, Cl. 379-60.000.

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Admotion Corporation: *See*—
Bronaugh, William R.; and Dehli, Hans J., 5,621,502, Cl. 355-79.000.

Advanced Micro Devices, Inc.: *See*—
Agrawal, Om P.; and Wright, Michael J., 5,621,650, Cl. 364-489.000.
Linz, Alfredo R.; and Brown, Glen, 5,621,675, Cl. 364-724.100.
Spak, Michael E.; and Gulick, Dale E., 5,621,402, Cl. 341-26.000.

Aerojet General Corporation: *See*—
Anderson, Brad J.; and Sieger, Scott N., 5,620,616, Cl. 219-121.520.

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AGFA Division, Bayer Corporation: *See*—
Brook, Mark G.; and Tellam, Mark E., 5,621,563, Cl. 359-210.000.

AGFA-Gevaert, N.V.: *See*—
Coppens, Paul; Hoes, Eric; De Keyzer, René; and Van der Linden, Bart, 5,620,830, Cl. 430-204.000.
Deprez, Lode, 5,620,829, Cl. 430-204.000.
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Leenders, Luc; Uyttendaele, Carlo; and Uytterhoeven, Herman, 5,621,449, Cl. 347-101.000.
Oelbrandt, Leo; and Leenders, Luc, 5,621,448, Cl. 347-96.000.
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Tavernier, Serge; Ruttens, Frank; Van Hove, Bart; Piron, Gustaaf; and Stuer, Theophiel, 5,620,826, Cl. 430-137.000.
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Aghajanian, Michael K.: *See*—

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Kennedy, Christopher R.; Aghajanian, Michael K.; and Nagelberg, Alan S., 5,620,804, Cl. 428-609.000.

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Agpro, Inc.: *See—*
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John, Maliyakal, 5,620,882, Cl. 435-172.300.

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Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,620,562, Cl. 162-42.000.

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Engdahl, Holger; and Tormikoski, Pekka, 5,620,596, Cl. 210-188.000.

Ahn, Seung-Ho: *See—*
Mok, Seung-Kon; Ahn, Seung-Ho; and Kim, Gu-Sung, 5,621,242, Cl. 257-666.000.

Aiba, Yoshinobu: *See—*
Sakai, Masanori; Yoshihara, Kunio; Aiba, Yoshinobu; Ohmura, Hiroshi; Kohtani, Hideto; Sakaguchi, Eiji; Utsunomiya, Takehito; and Kikugawa, Makoto, 5,621,541, Cl. 358-407.000.

Aikyo, Hiroyuki: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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AIWA Research and Development, Inc.: *See—*
Ang, Jane, 5,620,581, Cl. 205-96.000.
Gray, G. Robert; and Malhotra, Arun, 5,621,594, Cl. 360-123.000.

Ajika, Natsuo: *See—*
Sakakibara, Kiyohiko; and Ajika, Natsuo, 5,621,689, Cl. 365-189.090.

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Kley, Ernst-Bernhard, to Leica Lithographie Systeme Jena GmbH. Process and arrangement for producing dose profiles for the fabrication of structured surfaces. 5,620,814, Cl. 430-5.000.
Klinck, Barry W. Safety latch for a removable clip for a colostomy bag. 5,619,775, Cl. 24-30.50R.
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Horton, H. Burke, to Thistle Sports Enterprises, Inc. Roller brake. Re. 35,493, Cl. 280-11.200.

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Gerhardt, Karsten H., to Ultra-Hold Corporation. Hanger for articles of different sizes and shapes. B1 5,116,003, Cl. 248-312.000.
Jollivette, Wilbert: *See—*
Collins, Robert H., Jr.; and Jollivette, Wilbert, B1 5,297,779, Cl. 254-98.000.
Oren, Isaac, to Tiny Love Ltd. Baby's mattress. B1 8,359,869, Cl. D6-596.000.

Sumner Manufacturing, Co., Inc.: *See—*
Collins, Robert H., Jr.; and Jollivette, Wilbert, B1 5,297,779, Cl. 254-98.000.
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Attinello, John S.; Glover, William E.; Landers, Samuel P.; and Reid, Kevin A., to Goodyear Tire & Rubber Company, The. Surface pattern for a tire sidewall. 378,811, Cl. D12-152.000.
Aycock, Greg. Rear side panel protector for pickup trucks. 378,812, Cl. D12-167.000.
Berti, Enzo, to Libman Company, The. Sponge mop handle. 378,798, Cl. D8-107.000.
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35 5,620,192
47.31 5,620,193
81.6 5,620,194
149.2 5,620,195
281.1 5,620,196
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507 5,620,198
691 5,620,199
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735 5,620,202
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741 5,620,205

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21.1 5,620,206
29 5,620,207

CLASS 285
21.1 5,620,208
23 5,620,209
81 5,620,210

CLASS 290
30 R 5,621,248
38 R 5,621,249

CLASS 292
1.5 5,620,211
113 5,620,212
210 5,620,213
217 5,620,214
256 5,620,215
337 5,620,216

CLASS 293
102 5,620,217
117 5,620,218
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CLASS 294
1.3 5,620,220
1.5 5,620,221
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CLASS 296
26 5,620,224
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CLASS 297
4 5,620,227
188.17 5,620,228
229 5,620,229
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250.1 5,620,231
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10.2 5,621,251
5,621,252
10.8 5,621,253
64 5,621,254
106 5,621,255
125 5,621,256
5,621,257

CLASS 310
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12 5,621,259
68 D 5,621,265
154 5,621,260
168 5,621,261
239 5,621,262
333 5,621,263
339 5,621,264

CLASS 312
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CLASS 313
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422 5,621,271
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645 5,621,331
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CLASS 327
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172 5,621,343
181 5,621,344
254 5,621,345
355 5,621,346
540 5,621,347
589 5,621,348

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CLASS 330
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10 5,621,351
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321.4 5,621,606
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525 5,621,608
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681 5,621,611
683 5,621,612
687 5,621,613
698 5,621,614
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5,621,616
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20 5,621,623
21 5,621,624
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489 5,621,650
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514 R 5,621,658
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230.05 5,621,696
230.06 5,621,697
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75.2 5,621,713
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5,621,717
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43 5,621,725
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60.1 5,621,728
62 5,621,729
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26 5,621,745
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202 5,621,753
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240 5,621,759
245 5,621,760
265 5,621,761
298 5,621,762
312 5,621,763
317 5,621,764
5,621,765
340 5,621,766
344 5,621,767
346 5,621,768
347 5,621,769
5,621,770
354 5,621,771
366 5,621,772
368 5,621,773
371 5,621,774
372 5,621,775

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277 5,621,777
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2.79 5,621,891
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171 5,620,274
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34 5,620,278

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286 5,620,283

CLASS 408

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CLASS 420

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532 5,620,652

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58 5,620,658
90 5,620,659
100 5,620,660
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104 5,620,663
122 5,620,664
135 5,620,665
171 5,620,666
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213 5,620,670
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45 5,620,678
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443 5,620,701
448 5,620,702
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491 5,620,708
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302 5,620,727
312 5,620,728
327 5,620,729
399 5,620,730
505 5,620,731
565 5,620,732
580 5,620,733
601 5,620,734
614 5,620,735
641 5,620,736
5,620,737

CLASS 427

2.3 5,620,738
79 5,620,739
100 5,620,740
108 5,620,924
181 5,620,741
209 5,620,742
213 5,620,743
236 5,620,744
249 5,620,745
282 5,620,746
385.5 5,620,747
389 5,620,748
393.5 5,620,749
421 5,620,750
506 5,620,751
541 5,620,752
547 5,620,753
554 5,620,754

CLASS 428

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5,620,756
34.8 5,620,757
35.2 5,620,758
5,620,759
35.5 5,620,760
35.7 5,620,761
36.1 5,620,762
36.9 5,620,763
39 5,620,764
64.1 5,620,765
64.3 5,620,766
64.4 5,620,767
77 5,620,768
100 5,620,769
121 5,620,770
131 5,620,771
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145 5,620,773
148 5,620,774
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156 5,620,776
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690 5,620,806

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98 5,620,808
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223 5,620,812
5,620,813

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42 5,620,820
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49 5,620,822
102 5,620,823
106.6 5,620,824
109 5,620,825
137 5,620,826
138 5,620,827
191 5,620,828
204 5,620,829
5,620,830
280.1 5,620,831
311 5,620,832
394 5,620,833
398 5,620,834
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506 5,620,837
512 5,620,838
523 5,620,839
567 5,620,840
600 5,620,841

CLASS 431

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344 5,620,318
360 5,620,319

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19 5,620,321
39 5,620,322
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CLASS 434

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258 5,620,325
268 5,620,326

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7.1 5,620,856
5,620,857
7.32 5,620,862
7.8 5,620,858
7.9 5,620,859
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5,620,861
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15 5,620,864
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123 5,620,875
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142 5,620,878
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404 5,620,885

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45 5,620,898
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5,620,902
533 5,620,903

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50 5,620,929
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163 5,620,905
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253 5,620,917
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278 5,620,915
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320 5,620,907
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421 5,620,930
507 5,620,557
530 5,620,926
641 5,620,925
703 5,620,909
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770 5,620,932

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350 5,620,330
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417 5,620,332
471 5,620,333
5,620,334
491 5,620,335
501 5,620,336
508 5,620,337
522 5,620,338
578 5,620,339
608 5,620,340
620 5,620,341
637 5,620,342
699.2 5,620,343
736 5,620,344
746 5,620,345
752 5,620,346
851 5,620,347

CLASS 442

50 5,620,786
59 5,620,789
102 5,620,787
118 5,620,788

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24 5,620,348
26 5,620,349
50 5,620,350

CLASS 446

15 5,620,351
120 5,620,352
136 5,620,353
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5,620,355

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9 5,620,357
22 5,620,358
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81 5,620,362
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CLASS 452

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CLASS 454

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186 5,620,368
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130 5,620,374

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180 5,620,375
233 5,620,376
238 5,620,377
282 5,620,378
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319 5,620,380
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331 5,620,382
423 5,620,186
521 5,620,180
564 5,620,179

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82 5,620,384
112 5,620,385

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140 5,620,386
150 5,620,387
230 5,620,388
249 5,620,389

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168 5,620,394

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142 5,620,404

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CLASS 507

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350 5,620,952

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12 5,620,954
14 5,620,955

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16 5,620,959
23 5,620,960
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25 5,620,962
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53 5,620,964
159 5,620,965
174 5,620,966
178 5,620,921
186 5,620,967
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214 5,620,973
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221 5,620,975
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237.8 5,620,977
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5,620,982
261 5,620,983
263 5,620,984
283 5,620,985
284 5,620,986
307 5,620,987
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317 5,620,989
5,620,990
319 5,620,991
321 5,620,992
5,620,993
326 5,620,994
350 5,620,995
5,620,996
373 5,620,997
382 5,620,998
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398 5,620,999
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451 5,621,002
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551 5,621,004
557 5,621,005
5,621,006
561 5,621,008
568 5,621,009
596 5,621,010
618 5,621,011

CLASS 521

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159 5,621,016

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16 5,621,017
35 5,621,018
49 5,621,019
99 5,621,020

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161 5,621,022
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324 5,621,024
444 5,621,025

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66 5,621,041
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193 5,621,044
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240 5,621,046
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540 5,621,053

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238.23 5,621,056
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318.44 5,621,059

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21 5,621,061
30 5,621,062
45 5,621,063
60 5,621,064
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353 5,621,068
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305 5,621,073
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350 5,621,075
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5,621,082
391.9 5,621,083

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209 5,621,153

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310 5,621,155

CLASS 600

21 5,620,407
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CLASS 601

2 5,620,409
40 5,620,410

CLASS 602

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CLASS 604

22 5,620,414
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49 5,620,416
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133 5,620,420
135 5,620,421
187 5,620,422
217 5,620,423
265 5,620,424
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283 5,620,426
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115 5,620,483

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446 378,790
492 378,791
D7— 501 378,792
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683 378,796
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D9— 315 378,801
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449 378,803
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378,852
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110 378,861
152 378,862
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01 : 5,620,058	5,620,040	5,620,653	5,621,245	5,621,624	5,620,169
5,620,134	5,620,073	5,620,656	5,621,267	5,621,635	5,620,193
5,621,156	5,620,086	5,620,657	5,621,270	5,621,646	5,620,195
5,621,170	5,620,091	5,620,689	5,621,284	5,621,650	5,620,210
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02 : 5,620,049	5,620,114	5,620,705	5,621,312	5,621,660	5,620,402
04 : 5,619,820	5,620,129	5,620,708	5,621,338	5,621,665	5,620,573
5,619,850	5,620,141	5,620,720	5,621,340	5,621,669	5,620,608
5,620,140	5,620,143	5,620,755	5,621,341	5,621,677	5,620,652
5,620,763	5,620,183	5,620,773	5,621,360	5,621,685	5,620,670
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5,621,225	5,620,255	5,620,849	5,621,416	5,621,720	5,621,421
5,621,274	5,620,269	5,620,852	5,621,420	5,621,730	5,621,454
5,621,308	5,620,282	5,620,853	5,621,428	5,621,738	5,621,582
5,621,538	5,620,283	5,620,854	5,621,431	5,621,739	5,621,586
5,621,617	5,620,287	5,620,858	5,621,432	5,621,745	5,621,705
5,621,674	5,620,309	5,620,861	5,621,434	5,621,749	5,621,864
5,621,680	5,620,320	5,620,863	5,621,435	5,621,752	09 : 5,619,875
5,621,717	5,620,356	5,620,867	5,621,441	5,621,772	5,619,920
5,621,737	5,620,380	5,620,877	5,621,445	5,621,773	5,619,965
5,621,796	5,620,400	5,620,878	5,621,456	5,621,776	5,619,968
05 : 5,620,588	5,620,417	5,620,885	5,621,489	5,621,778	5,620,036
5,621,215	5,620,421	5,620,887	5,621,490	5,621,779	5,620,165
06 : 5,619,748	5,620,427	5,620,888	5,621,502	5,621,782	5,620,303
5,619,751	5,620,441	5,620,901	5,621,535	5,621,784	5,620,304
5,619,752	5,620,450	5,620,902	5,621,545	5,621,789	5,620,333
5,619,759	5,620,472	5,620,907	5,621,551	5,621,811	5,620,335
5,619,786	5,620,473	5,620,919	5,621,556	5,621,813	5,620,348
5,619,802	5,620,476	5,620,927	5,621,559	5,621,817	5,620,458
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5,619,815	5,620,479	5,620,933	5,621,574	5,621,821	5,620,502
5,619,830	5,620,481	5,620,937	5,621,579	5,621,853	5,620,571
5,619,837	5,620,486	5,620,956	5,621,583	5,621,858	5,620,612
5,619,873	5,620,518	5,620,963	5,621,588	5,621,868	5,620,628
5,619,912	5,620,519	5,620,967	5,621,590	5,621,876	5,620,862
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5,619,948	5,620,525	5,620,979	5,621,592	5,621,878	5,620,969
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5,619,960	5,620,529	5,621,080	5,621,595	5,621,885	5,621,001
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the German mark, the dollar amount of the search fee charged by the European Patent Office for international applications filed in the United States Receiving Office will decrease to $1425.00, effective May 1, 1997.

The International Bureau of the World Intellectual Property Organization has also informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, the dollar amount of certain other fees for international applications filed in the United States Receiving Office will decrease, effective May 1, 1997. The amount of these fees will be:

Basic fee (first 30 pages)	$530.00
Basic supplemental fee (for each page over 30)	$10.00

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March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 19, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,303,423 through 5,305,469
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 17, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,916,752 through 4,918,751
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 15, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,581,771 through 4,583,245
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity.....$1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity.....$2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity.....$3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity.....$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional.....$1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 12, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33359	07/399,602	10/02/90
Re. 33588	07/508,487	05/14/91
Re. 34006	07/640,264	07/28/92
Re. 34269	07/837,573	06/01/93
4,498,201	06/414,300	02/12/85
4,498,202	06/469,246	02/12/85
4,498,204	06/534,157	02/12/85
4,498,205	06/445,781	02/12/85
4,498,206	06/487,230	02/12/85
4,498,208	06/498,632	02/12/85
4,498,217	06/390,320	02/12/85
4,498,223	06/371,326	02/12/85
4,498,225	06/522,768	02/12/85
4,498,228	06/550,847	02/12/85
4,498,242	06/536,396	02/12/85
4,498,252	06/431,155	02/12/85
4,498,256	06/292,913	02/12/85
4,498,257	06/496,909	02/12/85
4,498,268	06/235,502	02/12/85
4,498,282	06/450,298	02/12/85
4,498,284	06/381,892	02/12/85
4,498,285	06/502,837	02/12/85
4,498,286	06/502,838	02/12/85
4,498,288	06/465,295	02/12/85
4,498,293	06/479,795	02/12/85
4,498,299	06/526,668	02/12/85
4,498,301	06/466,935	02/12/85
4,498,302	06/442,382	02/12/85
4,498,306	06/440,403	02/12/85
4,498,308	06/430,699	02/12/85
4,498,311	06/472,497	02/12/85
4,498,312	06/554,525	02/12/85
4,498,313	06/565,606	02/12/85
4,498,316	06/535,078	02/12/85
4,498,321	06/512,126	02/12/85
4,498,334	06/433,119	02/12/85
4,498,338	06/461,033	02/12/85
4,498,340	06/483,078	02/12/85
4,498,342	06/486,144	02/12/85
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4,498,352	06/385,393	02/12/85
4,498,357	06/421,612	02/12/85
4,498,360	06/532,194	02/12/85
4,498,363	06/466,364	02/12/85
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4,498,502	06/551,926	02/12/85
4,498,505	06/506,556	02/12/85
4,498,513	06/565,885	02/12/85
4,498,516	06/580,104	02/12/85
4,498,517	06/466,499	02/12/85
4,498,519	06/491,381	02/12/85
4,498,522	06/392,762	02/12/85
4,498,523	06/494,071	02/12/85
4,498,527	06/314,967	02/12/85
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4,499,016	06/290,648	02/12/85	4,499,326	06/422,822	02/12/85
4,499,021	06/599,374	02/12/85	4,499,329	06/515,972	02/12/85
4,499,023	06/493,869	02/12/85	4,499,330	06/564,668	02/12/85
4,499,029	06/504,702	02/12/85	4,499,336	06/437,646	02/12/85
4,499,030	06/571,074	02/12/85	4,499,341	06/421,704	02/12/85
4,499,031	06/423,536	02/12/85	4,499,344	06/483,995	02/12/85
4,499,034	06/414,193	02/12/85	4,499,346	06/515,371	02/12/85
4,499,038	06/549,040	02/12/85	4,499,347	06/543,079	02/12/85
4,499,041	06/497,312	02/12/85	4,499,352	06/436,888	02/12/85
4,499,046	06/321,513	02/12/85	4,499,355	06/589,857	02/12/85
4,499,054	06/411,019	02/12/85	4,499,356	06/481,878	02/12/85
4,499,066	06/403,475	02/12/85	4,499,369	06/496,635	02/12/85
4,499,074	06/527,361	02/12/85	4,499,373	06/383,574	02/12/85
4,499,078	06/487,899	02/12/85	4,499,375	06/376,775	02/12/85
4,499,079	06/442,681	02/12/85	4,499,378	06/473,344	02/12/85
4,499,083	06/298,844	02/12/85	4,499,379	06/473,345	02/12/85
4,499,086	06/467,828	02/12/85	4,499,384	06/269,863	02/12/85
4,499,087	06/554,097	02/12/85	4,499,391	06/416,933	02/12/85
4,499,090	06/539,285	02/12/85	4,499,392	06/514,610	02/12/85
4,499,091	06/466,095	02/12/85	4,499,396	06/409,280	02/12/85
4,499,092	06/435,230	02/12/85	4,499,402	06/370,428	02/12/85
4,499,095	06/501,856	02/12/85	4,499,410	06/505,300	02/12/85
4,499,102	06/329,296	02/12/85	4,499,414	06/438,692	02/12/85
4,499,112	06/477,234	02/12/85	4,499,419	06/273,536	02/12/85
4,499,116	06/556,479	02/12/85	4,499,440	06/525,204	02/12/85
4,499,118	06/553,657	02/12/85	4,499,445	06/610,783	02/12/85
4,499,119	06/511,354	02/12/85	4,499,464	06/350,399	02/12/85
4,499,133	06/492,680	02/12/85	4,499,466	06/394,243	02/12/85
4,499,139	06/585,696	02/12/85	4,499,470	06/375,620	02/12/85
4,499,144	06/457,523	02/12/85	4,499,474	06/363,264	02/12/85
4,499,145	06/480,034	02/12/85	4,499,476	06/372,355	02/12/85
4,499,146	06/555,401	02/12/85	4,499,479	06/413,039	02/12/85
4,499,147	06/451,940	02/12/85	4,499,492	06/464,600	02/12/85
4,499,153	06/466,708	02/12/85	4,499,499	06/454,230	02/12/85
4,499,155	06/452,675	02/12/85	4,499,514	06/362,614	02/12/85
4,499,159	06/600,066	02/12/85	4,499,515	06/398,419	02/12/85
4,499,165	06/473,825	02/12/85	4,499,516	06/346,557	02/12/85
4,499,166	06/273,283	02/12/85	4,499,521	06/562,324	02/12/85
4,499,170	06/505,231	02/12/85	4,499,522	06/393,767	02/12/85
4,499,174	06/592,766	02/12/85	4,499,523	06/480,427	02/12/85
4,499,176	06/421,271	02/12/85	4,499,530	06/424,369	02/12/85
4,499,184	06/383,849	02/12/85	4,499,533	06/471,525	02/12/85
4,499,191	06/375,201	02/12/85	4,499,539	06/450,894	02/12/85
4,499,192	06/444,119	02/12/85	4,499,541	06/364,401	02/12/85
4,499,193	06/450,336	02/12/85	4,499,546	06/376,983	02/12/85
4,499,196	06/482,778	02/12/85	4,499,549	06/392,374	02/12/85
4,499,202	06/393,500	02/12/85	4,499,550	06/430,390	02/12/85
4,499,208	06/494,547	02/12/85	4,499,563	06/361,704	02/12/85
4,499,210	06/561,658	02/12/85	4,499,568	06/449,199	02/12/85
4,499,211	06/402,266	02/12/85	4,499,570	06/338,716	02/12/85
4,499,212	06/575,224	02/12/85	4,499,572	06/402,075	02/12/85
4,499,214	06/491,070	02/12/85	4,499,575	06/420,210	02/12/85
4,499,217	06/343,920	02/12/85	4,499,580	06/398,150	02/12/85
4,499,222	06/523,640	02/12/85	4,499,585	06/434,415	02/12/85
4,499,228	06/507,303	02/12/85	4,499,586	06/470,830	02/12/85
4,499,235	06/534,244	02/12/85	4,499,595	06/307,541	02/12/85
4,499,236	06/562,218	02/12/85	4,499,596	06/392,839	02/12/85
4,499,238	06/464,500	02/12/85	4,499,598	06/394,674	02/12/85
4,499,248	06/493,892	02/12/85	4,802,243	07/112,556	02/07/89
4,499,249	06/489,289	02/12/85	4,802,246	07/018,495	02/07/89
4,499,252	06/594,063	02/12/85	4,802,256	07/094,140	02/07/89
4,499,253	06/514,765	02/12/85	4,802,259	07/028,216	02/07/89
4,499,256	06/438,730	02/12/85	4,802,261	06/918,135	02/07/89
4,499,257	06/485,946	02/12/85	4,802,262	07/083,462	02/07/89
4,499,262	06/588,168	02/12/85	4,802,272	07/109,452	02/07/89
4,499,278	06/443,701	02/12/85	4,802,273	07/033,100	02/07/89
4,499,281	06/352,689	02/12/85	4,802,280	07/151,158	02/07/89
4,499,285	06/437,937	02/12/85	4,802,281	07/205,599	02/07/89
4,499,287	06/403,194	02/12/85	4,802,283	07/048,835	02/07/89
4,499,289	06/549,534	02/12/85	4,802,289	07/029,816	02/07/89

4,802,291	07/075,717	02/07/89	4,802,578	07/049,210	02/07/89
4,802,296	06/947,688	02/07/89	4,802,584	07/156,985	02/07/89
4,802,298	07/179,635	02/07/89	4,802,585	06/888,749	02/07/89
4,802,305	06/867,595	02/07/89	4,802,590	07/112,405	02/07/89
4,802,309	07/082,292	02/07/89	4,802,597	07/142,864	02/07/89
4,802,310	07/147,539	02/07/89	4,802,598	07/188,320	02/07/89
4,802,311	06/924,855	02/07/89	4,802,599	07/073,559	02/07/89
4,802,316	07/078,853	02/07/89	4,802,600	07/125,479	02/07/89
4,802,319	07/086,606	02/07/89	4,802,605	07/034,068	02/07/89
4,802,326	07/108,732	02/07/89	4,802,610	07/196,831	02/07/89
4,802,331	07/098,914	02/07/89	4,802,617	07/158,308	02/07/89
4,802,332	07/123,296	02/07/89	4,802,619	07/185,428	02/07/89
4,802,335	07/128,387	02/07/89	4,802,621	06/911,335	02/07/89
4,802,338	07/155,764	02/07/89	4,802,633	07/209,714	02/07/89
4,802,341	06/695,484	02/07/89	4,802,635	07/094,714	02/07/89
4,802,342	07/182,655	02/07/89	4,802,637	07/184,679	02/07/89
4,802,343	07/068,876	02/07/89	4,802,638	07/079,052	02/07/89
4,802,356	07/082,360	02/07/89	4,802,643	07/096,949	02/07/89
4,802,357	07/054,893	02/07/89	4,802,645	07/151,227	02/07/89
4,802,359	07/112,905	02/07/89	4,802,646	07/136,289	02/07/89
4,802,362	06/914,466	02/07/89	4,802,651	07/096,150	02/07/89
4,802,366	07/199,026	02/07/89	4,802,665	07/078,955	02/07/89
4,802,367	07/147,070	02/07/89	4,802,671	07/083,811	02/07/89
4,802,371	07/118,048	02/07/89	4,802,678	06/825,541	02/07/89
4,802,374	07/006,689	02/07/89	4,802,682	07/089,159	02/07/89
4,802,378	07/063,642	02/07/89	4,802,686	07/115,535	02/07/89
4,802,381	07/027,358	02/07/89	4,802,691	07/037,039	02/07/89
4,802,383	07/053,061	02/07/89	4,802,693	06/876,478	02/07/89
4,802,384	07/103,481	02/07/89	4,802,696	06/922,482	02/07/89
4,802,386	07/016,174	02/07/89	4,802,697	07/094,688	02/07/89
4,802,387	06/934,102	02/07/89	4,802,710	07/112,190	02/07/89
4,802,388	06/757,257	02/07/89	4,802,712	06/847,225	02/07/89
4,802,390	07/028,188	02/07/89	4,802,718	06/903,275	02/07/89
4,802,404	07/034,858	02/07/89	4,802,727	07/080,467	02/07/89
4,802,407	07/055,782	02/07/89	4,802,728	07/153,381	02/07/89
4,802,410	07/058,272	02/07/89	4,802,731	07/111,350	02/07/89
4,802,411	07/011,568	02/07/89	4,802,734	07/106,266	02/07/89
4,802,414	07/116,023	02/07/89	4,802,735	06/849,990	02/07/89
4,802,415	07/138,259	02/07/89	4,802,736	06/925,806	02/07/89
4,802,417	07/073,016	02/07/89	4,802,749	07/081,333	02/07/89
4,802,421	07/093,498	02/07/89	4,802,753	07/095,005	02/07/89
4,802,424	07/199,276	02/07/89	4,802,754	07/034,283	02/07/89
4,802,426	07/185,841	02/07/89	4,802,763	07/173,151	02/07/89
4,802,427	07/155,876	02/07/89	4,802,773	06/948,446	02/07/89
4,802,433	07/090,951	02/07/89	4,802,774	07/108,143	02/07/89
4,802,435	07/138,951	02/07/89	4,802,788	07/143,369	02/07/89
4,802,437	06/925,957	02/07/89	4,802,789	07/192,911	02/07/89
4,802,448	07/156,607	02/07/89	4,802,791	07/103,268	02/07/89
4,802,455	06/918,123	02/07/89	4,802,795	07/110,666	02/07/89
4,802,459	07/135,932	02/07/89	4,802,804	07/189,783	02/07/89
4,802,461	07/089,579	02/07/89	4,802,808	07/078,919	02/07/89
4,802,462	07/136,017	02/07/89	4,802,810	07/100,735	02/07/89
4,802,463	07/112,952	02/07/89	4,802,815	06/767,268	02/07/89
4,802,469	07/080,985	02/07/89	4,802,816	06/785,601	02/07/89
4,802,475	07/064,619	02/07/89	4,802,817	07/137,163	02/07/89
4,802,476	07/056,434	02/07/89	4,802,819	07/095,665	02/07/89
4,802,477	07/047,869	02/07/89	4,802,823	07/191,324	02/07/89
4,802,485	07/092,055	02/07/89	4,802,827	07/137,680	02/07/89
4,802,489	07/076,785	02/07/89	4,802,832	07/112,263	02/07/89
4,802,492	07/024,684	02/07/89	4,802,833	07/170,784	02/07/89
4,802,493	07/016,487	02/07/89	4,802,837	07/120,355	02/07/89
4,802,494	06/914,270	02/07/89	4,802,843	07/141,012	02/07/89
4,802,495	06/733,989	02/07/89	4,802,847	07/097,618	02/07/89
4,802,497	07/136,938	02/07/89	4,802,849	07/126,026	02/07/89
4,802,501	07/076,056	02/07/89	4,802,851	07/152,033	02/07/89
4,802,502	07/016,854	02/07/89	4,802,852	06/917,669	02/07/89
4,802,509	07/133,074	02/07/89	4,802,854	07/185,898	02/07/89
4,802,519	07/059,573	02/07/89	4,802,858	06/928,282	02/07/89
4,802,523	06/513,372	02/07/89	4,802,859	07/176,502	02/07/89
4,802,532	07/027,321	02/07/89	4,802,869	07/086,322	02/07/89
4,802,538	06/832,102	02/07/89	4,802,872	06/904,151	02/07/89
4,802,541	07/166,859	02/07/89	4,802,873	07/104,166	02/07/89
4,802,543	07/041,225	02/07/89	4,802,875	07/022,656	02/07/89
4,802,552	07/078,677	02/07/89	4,802,879	06/859,699	02/07/89
4,802,558	07/103,208	02/07/89	4,802,880	07/038,603	02/07/89
4,802,563	06/924,344	02/07/89	4,802,881	07/083,618	02/07/89
4,802,568	07/063,039	02/07/89	4,802,885	06/875,421	02/07/89
4,802,570	07/095,839	02/07/89	4,802,889	07/088,831	02/07/89
4,802,571	06/856,695	02/07/89	4,802,890	07/023,389	02/07/89

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4,802,900	07/025,255	02/07/89	4,803,203	07/062,752	02/07/89		
4,802,909	07/107,437	02/07/89	4,803,211	06/885,085	02/07/89		
4,802,915	07/185,713	02/07/89	4,803,216	07/046,656	02/07/89		
4,802,918	07/050,290	02/07/89	4,803,217	06/946,545	02/07/89		
4,802,921	06/650,579	02/07/89	4,803,223	06/831,266	02/07/89		
4,802,922	07/034,526	02/07/89	4,803,225	07/127,366	02/07/89		
4,802,923	07/073,198	02/07/89	4,803,228	07/102,492	02/07/89		
4,802,929	06/943,795	02/07/89	4,803,230	07/124,680	02/07/89		
4,802,932	07/127,293	02/07/89	4,803,236	07/135,480	02/07/89		
4,802,940	06/887,989	02/07/89	4,803,237	07/158,822	02/07/89		
4,802,946	07/052,480	02/07/89	4,803,255	07/064,646	02/07/89		
4,802,948	06/938,184	02/07/89	4,803,257	07/042,070	02/07/89		
4,802,952	07/158,750	02/07/89	4,803,263	06/894,197	02/07/89		
4,802,955	07/117,636	02/07/89	4,803,268	07/008,445	02/07/89		
4,802,958	07/026,663	02/07/89	4,803,271	07/059,290	02/07/89		
4,802,964	06/938,707	02/07/89	4,803,272	07/017,889	02/07/89		
4,802,966	07/039,478	02/07/89	4,803,275	07/092,310	02/07/89		
4,802,968	07/150,361	02/07/89	4,803,279	06/856,246	02/07/89		
4,802,971	07/144,708	02/07/89	4,803,283	07/126,867	02/07/89		
4,802,974	07/025,299	02/07/89	4,803,284	07/087,040	02/07/89		
4,802,975	07/082,085	02/07/89	4,803,286	07/087,124	02/07/89		
4,802,984	07/190,204	02/07/89	4,803,288	07/136,437	02/07/89		
4,802,985	07/051,235	02/07/89	4,803,289	06/503,139	02/07/89		
4,802,994	07/088,011	02/07/89	4,803,291	07/062,941	02/07/89		
4,802,995	07/059,123	02/07/89	4,803,295	07/100,493	02/07/89		
4,802,996	07/092,826	02/07/89	4,803,296	07/166,948	02/07/89		
4,802,998	07/070,858	02/07/89	4,803,298	07/073,708	02/07/89		
4,803,001	07/141,165	02/07/89	4,803,299	07/034,832	02/07/89		
4,803,006	07/066,704	02/07/89	4,803,306	07/057,610	02/07/89		
4,803,009	07/151,539	02/07/89	4,803,307	07/066,993	02/07/89		
4,803,012	07/012,102	02/07/89	4,803,316	06/919,756	02/07/89		
4,803,013	07/169,221	02/07/89	4,803,327	07/123,066	02/07/89		
4,803,014	06/910,220	02/07/89	4,803,329	07/089,804	02/07/89		
4,803,016	07/154,987	02/07/89	4,803,335	07/056,771	02/07/89		
4,803,017	07/134,488	02/07/89	4,803,337	07/125,828	02/07/89		
4,803,019	06/579,222	02/07/89	4,803,339	07/097,233	02/07/89		
4,803,021	07/034,794	02/07/89	4,803,352	07/050,267	02/07/89		
4,803,025	06/602,683	02/07/89	4,803,355	07/030,179	02/07/89		
4,803,027	07/060,075	02/07/89	4,803,374	06/938,239	02/07/89		
4,803,034	06/879,209	02/07/89	4,803,383	07/115,870	02/07/89		
4,803,040	07/146,559	02/07/89	4,803,384	06/921,110	02/07/89		
4,803,046	07/085,502	02/07/89	4,803,387	07/067,746	02/07/89		
4,803,048	07/033,220	02/07/89	4,803,394	07/022,160	02/07/89		
4,803,050	06/888,848	02/07/89	4,803,397	07/083,146	02/07/89		
4,803,052	06/729,889	02/07/89	4,803,404	07/138,006	02/07/89		
4,803,061	06/947,122	02/07/89	4,803,405	07/040,565	02/07/89		
4,803,062	07/181,885	02/07/89	4,803,408	07/013,435	02/07/89		
4,803,068	07/115,553	02/07/89	4,803,411	07/101,588	02/07/89		
4,803,069	06/874,247	02/07/89	4,803,412	07/068,634	02/07/89		
4,803,073	07/023,185	02/07/89	4,803,414	07/087,036	02/07/89		
4,803,074	07/175,297	02/07/89	4,803,425	07/104,726	02/07/89		
4,803,082	07/114,483	02/07/89	4,803,432	07/085,408	02/07/89		
4,803,092	07/187,651	02/07/89	4,803,433	07/136,201	02/07/89		
4,803,095	07/154,290	02/07/89	4,803,437	07/084,250	02/07/89		
4,803,099	07/081,482	02/07/89	4,803,442	07/120,610	02/07/89		
4,803,107	07/189,400	02/07/89	4,803,444	07/127,403	02/07/89		
4,803,110	06/907,268	02/07/89	4,803,448	07/133,235	02/07/89		
4,803,113	07/097,575	02/07/89	4,803,451	07/055,563	02/07/89		
4,803,114	06/942,083	02/07/89	4,803,458	07/090,687	02/07/89		
4,803,115	06/911,531	02/07/89	4,803,465	06/880,626	02/07/89		
4,803,123	07/133,181	02/07/89	4,803,469	06/884,976	02/07/89		
4,803,124	07/085,355	02/07/89	4,803,470	06/854,801	02/07/89		
4,803,125	07/016,081	02/07/89	4,803,473	07/145,928	02/07/89		
4,803,127	07/111,144	02/07/89	4,803,489	07/068,178	02/07/89		
4,803,129	07/133,183	02/07/89	4,803,492	06/933,207	02/07/89		
4,803,132	07/047,326	02/07/89	4,803,493	06/936,354	02/07/89		
4,803,135	07/161,556	02/07/89	4,803,499	07/015,902	02/07/89		
4,803,137	07/185,995	02/07/89	4,803,501	07/013,830	02/07/89		
4,803,154	06/856,018	02/07/89	4,803,502	07/103,129	02/07/89		
4,803,162	06/610,324	02/07/89	4,803,510	07/019,721	02/07/89		
4,803,163	06/883,742	02/07/89	4,803,514	06/874,177	02/07/89		
4,803,166	06/881,767	02/07/89	4,803,525	06/933,416	02/07/89		
4,803,168	06/873,283	02/07/89	4,803,539	06/717,984	02/07/89		
4,803,170	06/946,475	02/07/89	4,803,551	07/150,503	02/07/89		
4,803,178	07/126,562	02/07/89	4,803,557	07/142,762	02/07/89		
4,803,184	06/675,285	02/07/89	4,803,564	07/092,427	02/07/89		
4,803,185	07/058,241	02/07/89	4,803,582	06/630,660	02/07/89		
4,803,193	07/137,368	02/07/89	4,803,583	07/039,558	02/07/89		
4,803,198	06/885,684	02/07/89	4,803,585	07/015,146	02/07/89		

4,803,590	07/041,084	02/07/89	5,184,547	07/691,303	02/09/93		
4,803,595	07/129,404	02/07/89	5,184,548	07/818,136	02/09/93		
4,803,600	07/143,896	02/07/89	5,184,550	07/663,396	02/09/93		
4,803,603	07/156,324	02/07/89	5,184,555	07/759,392	02/09/93		
4,803,605	07/081,655	02/07/89	5,184,558	07/799,042	02/09/93		
4,803,608	06/944,151	02/07/89	5,184,562	07/867,174	02/09/93		
4,803,624	07/073,213	02/07/89	5,184,568	07/900,669	02/09/93		
4,803,629	07/001,325	02/07/89	5,184,575	07/671,883	02/09/93		
4,803,640	07/048,631	02/07/89	5,184,583	07/824,017	02/09/93		
4,803,651	06/827,690	02/07/89	5,184,585	07/650,915	02/09/93		
4,803,656	07/028,463	02/07/89	5,184,593	07/805,767	02/09/93		
4,803,667	06/930,169	02/07/89	5,184,596	07/831,156	02/09/93		
4,803,669	06/944,401	02/07/89	5,184,598	07/730,192	02/09/93		
4,803,670	07/070,564	02/07/89	5,184,599	07/897,894	02/09/93		
4,803,685	07/021,253	02/07/89	5,184,607	07/827,701	02/09/93		
4,803,687	06/795,795	02/07/89	5,184,608	07/675,872	02/09/93		
4,803,697	07/117,668	02/07/89	5,184,632	07/797,655	02/09/93		
4,803,711	07/204,922	02/07/89	5,184,636	07/749,902	02/09/93		
4,803,716	07/075,995	02/07/89	5,184,637	07/573,331	02/09/93		
4,803,718	07/022,890	02/07/89	5,184,650	07/598,684	02/09/93		
4,803,720	06/910,055	02/07/89	5,184,654	07/716,935	02/09/93		
4,803,732	06/758,557	02/07/89	5,184,657	07/618,220	02/09/93		
4,803,738	07/012,227	02/07/89	5,184,658	07/660,200	02/09/93		
5,184,359	07/748,211	02/09/93	5,184,662	07/740,964	02/09/93		
5,184,361	07/874,437	02/09/93	5,184,666	07/720,707	02/09/93		
5,184,362	07/823,288	02/09/93	5,184,669	07/598,600	02/09/93		
5,184,371	07/677,167	02/09/93	5,184,675	07/775,349	02/09/93		
5,184,372	07/638,433	02/09/93	5,184,681	07/754,444	02/09/93		
5,184,373	07/812,620	02/09/93	5,184,684	07/737,434	02/09/93		
5,184,374	07/772,096	02/09/93	5,184,691	07/640,360	02/09/93		
5,184,375	07/832,943	02/09/93	5,184,698	07/719,143	02/09/93		
5,184,376	07/510,621	02/09/93	5,184,703	07/474,846	02/09/93		
5,184,379	07/653,256	02/09/93	5,184,707	07/831,423	02/09/93		
5,184,388	07/851,322	02/09/93	5,184,721	07/819,057	02/09/93		
5,184,391	07/778,044	02/09/93	5,184,722	07/764,709	02/09/93		
5,184,396	07/718,334	02/09/93	5,184,737	07/719,194	02/09/93		
5,184,404	07/891,831	02/09/93	5,184,740	07/839,570	02/09/93		
5,184,405	07/809,744	02/09/93	5,184,741	07/743,249	02/09/93		
5,184,410	07/714,505	02/09/93	5,184,743	07/923,852	02/09/93		
5,184,411	07/724,034	02/09/93	5,184,750	07/745,770	02/09/93		
5,184,414	07/651,806	02/09/93	5,184,752	07/797,782	02/09/93		
5,184,415	07/865,877	02/09/93	5,184,753	07/764,149	02/09/93		
5,184,416	07/800,993	02/09/93	5,184,754	07/599,433	02/09/93		
5,184,421	07/661,120	02/09/93	5,184,756	07/732,213	02/09/93		
5,184,422	07/805,467	02/09/93	5,184,762	07/826,484	02/09/93		
5,184,424	07/781,119	02/09/93	5,184,763	07/776,995	02/09/93		
5,184,427	07/589,042	02/09/93	5,184,779	07/756,201	02/09/93		
5,184,428	07/858,011	02/09/93	5,184,788	07/644,172	02/09/93		
5,184,432	07/759,875	02/09/93	5,184,789	07/654,742	02/09/93		
5,184,435	07/617,811	02/09/93	5,184,791	07/694,543	02/09/93		
5,184,436	07/789,996	02/09/93	5,184,792	07/776,985	02/09/93		
5,184,438	07/774,995	02/09/93	5,184,793	07/808,901	02/09/93		
5,184,440	07/675,897	02/09/93	5,184,795	07/765,882	02/09/93		
5,184,446	07/753,398	02/09/93	5,184,797	07/884,474	02/09/93		
5,184,452	07/841,786	02/09/93	5,184,799	07/850,603	02/09/93		
5,184,455	07/727,726	02/09/93	5,184,805	07/775,762	02/09/93		
5,184,457	07/683,873	02/09/93	5,184,806	07/859,098	02/09/93		
5,184,459	07/809,568	02/09/93	5,184,814	07/917,416	02/09/93		
5,184,460	07/647,902	02/09/93	5,184,816	07/837,164	02/09/93		
5,184,472	07/787,598	02/09/93	5,184,817	07/738,687	02/09/93		
5,184,476	07/746,613	02/09/93	5,184,818	07/792,117	02/09/93		
5,184,477	07/767,875	02/09/93	5,184,821	07/817,645	02/09/93		
5,184,481	07/903,161	02/09/93	5,184,822	07/613,863	02/09/93		
5,184,483	07/746,421	02/09/93	5,184,824	07/723,469	02/09/93		
5,184,488	07/756,469	02/09/93	5,184,826	07/879,312	02/09/93		
5,184,489	07/748,516	02/09/93	5,184,835	07/871,717	02/09/93		
5,184,491	07/555,166	02/09/93	5,184,838	07/870,320	02/09/93		
5,184,494	07/735,449	02/09/93	5,184,841	07/585,164	02/09/93		
5,184,499	07/647,269	02/09/93	5,184,849	07/696,736	02/09/93		
5,184,502	07/716,130	02/09/93	5,184,851	07/765,090	02/09/93		
5,184,506	07/723,220	02/09/93	5,184,852	07/734,566	02/09/93		
5,184,510	07/812,326	02/09/93	5,184,858	07/761,245	02/09/93		
5,184,513	07/588,878	02/09/93	5,184,860	07/667,904	02/09/93		
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5,184,532	07/822,466	02/09/93	5,184,892	07/734,650	02/09/93		
5,184,544	07/878,752	02/09/93	5,184,896	07/774,672	02/09/93		
5,184,546	07/832,333	02/09/93	5,184,897	07/714,514	02/09/93		

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5,184,899	07/903,330	02/09/93	5,185,327	07/572,231	02/09/93
5,184,905	07/588,081	02/09/93	5,185,331	07/699,850	02/09/93
5,184,909	07/828,787	02/09/93	5,185,333	07/721,011	02/09/93
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5,184,919	07/540,495	02/09/93	5,185,338	07/711,894	02/09/93
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5,184,934	07/727,868	02/09/93	5,185,397	07/396,854	02/09/93
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5,184,973	07/481,198	02/09/93	5,185,404	07/738,445	02/09/93
5,184,975	07/703,949	02/09/93	5,185,409	07/745,801	02/09/93
5,184,978	07/744,672	02/09/93	5,185,422	07/862,854	02/09/93
5,184,979	07/650,485	02/09/93	5,185,424	07/620,786	02/09/93
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5,184,998	07/682,427	02/09/93	5,185,432	06/834,172	02/09/93
5,185,002	07/722,982	02/09/93	5,185,434	07/317,864	02/09/93
5,185,003	07/833,601	02/09/93	5,185,435	07/828,334	02/09/93
5,185,005	07/710,060	02/09/93	5,185,436	07/501,080	02/09/93
5,185,011	07/722,683	02/09/93	5,185,441	07/237,309	02/09/93
5,185,016	07/778,466	02/09/93	5,185,442	07/821,514	02/09/93
5,185,025	07/418,791	02/09/93	5,185,451	07/771,600	02/09/93
5,185,026	07/680,495	02/09/93	5,185,457	07/237,796	02/09/93
5,185,036	07/722,740	02/09/93	5,185,462	07/771,789	02/09/93
5,185,039	07/382,772	02/09/93	5,185,465	07/577,233	02/09/93
5,185,041	07/791,349	02/09/93	5,185,471	07/797,584	02/09/93
5,185,045	07/735,958	02/09/93	5,185,484	07/457,211	02/09/93
5,185,048	07/698,729	02/09/93	5,185,487	07/789,210	02/09/93
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5,185,057	07/669,431	02/09/93	5,185,500	07/720,745	02/09/93
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5,185,075	07/603,287	02/09/93	5,185,511	07/710,652	02/09/93
5,185,077	07/674,242	02/09/93	5,185,528	07/741,658	02/09/93
5,185,078	07/768,872	02/09/93	5,185,536	07/766,762	02/09/93
5,185,085	07/713,880	02/09/93	5,185,541	07/801,480	02/09/93
5,185,088	07/689,406	02/09/93	5,185,542	07/750,941	02/09/93
5,185,093	07/674,910	02/09/93	5,185,544	07/857,450	02/09/93
5,185,095	07/792,159	02/09/93	5,185,549	07/287,345	02/09/93
5,185,103	07/812,778	02/09/93	5,185,564	07/790,498	02/09/93
5,185,108	07/727,746	02/09/93	5,185,568	07/643,832	02/09/93
5,185,113	07/902,456	02/09/93	5,185,569	07/744,242	02/09/93
5,185,114	07/580,355	02/09/93	5,185,570	07/478,795	02/09/93
5,185,120	07/774,445	02/09/93	5,185,571	07/646,792	02/09/93
5,185,122	07/629,687	02/09/93	5,185,575	07/624,716	02/09/93
5,185,130	07/447,855	02/09/93	5,185,583	07/719,448	02/09/93
5,185,131	07/802,926	02/09/93	5,185,587	07/716,382	02/09/93
5,185,133	07/235,081	02/09/93	5,185,592	07/771,118	02/09/93
5,185,136	07/746,265	02/09/93	5,185,593	07/719,066	02/09/93
5,185,147	07/234,381	02/09/93	5,185,594	07/703,282	02/09/93
5,185,157	07/518,499	02/09/93	5,185,595	07/714,501	02/09/93
5,185,178	07/706,793	02/09/93	5,185,608	06/234,035	02/09/93
5,185,182	07/624,823	02/09/93	5,185,612	07/737,208	02/09/93
5,185,184	07/662,702	02/09/93	5,185,613	06/911,017	02/09/93
5,185,185	07/632,484	02/09/93	5,185,617	07/633,223	02/09/93
5,185,191	07/593,991	02/09/93	5,185,639	07/651,401	02/09/93
5,185,192	07/756,964	02/09/93	5,185,640	07/759,452	02/09/93
5,185,194	07/500,584	02/09/93	5,185,645	07/659,008	02/09/93
5,185,197	07/348,902	02/09/93	5,185,675	07/441,324	02/09/93
5,185,200	07/676,670	02/09/93	5,185,690	07/778,683	02/09/93
5,185,203	07/436,541	02/09/93	5,185,697	07/435,969	02/09/93
5,185,225	07/605,376	02/09/93	5,185,711	07/623,235	02/09/93
5,185,226	07/723,351	02/09/93	5,185,725	07/863,401	02/09/93
5,185,234	07/736,562	02/09/93	5,185,727	07/613,895	02/09/93
5,185,261	07/726,698	02/09/93	5,185,738	07/618,590	02/09/93
5,185,264	07/611,222	02/09/93	5,185,743	07/651,797	02/09/93
5,185,268	07/640,961	02/09/93	5,185,753	07/781,428	02/09/93
5,185,269	07/479,766	02/09/93	5,185,756	07/711,006	02/09/93
5,185,319	07/520,203	02/09/93	5,185,760	07/635,619	02/09/93
5,185,320	07/707,247	02/09/93	5,185,773	07/732,525	02/09/93
5,185,324	07/448,903	02/09/93	5,185,774	07/617,191	02/09/93
5,185,326	07/709,902	02/09/93	5,185,776	07/740,066	02/09/93

5,185,784	07/825,780	02/09/93
5,185,805	07/628,635	02/09/93
5,185,831	07/876,022	02/09/93
5,185,839	07/635,841	02/09/93
5,185,840	07/696,238	02/09/93
5,185,857	07/544,826	02/09/93
5,185,858	07/444,767	02/09/93
5,185,881	07/581,563	02/09/93
5,185,882	07/515,382	02/09/93

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,535,773, Re. S.N. 08/799,770, Feb. 12, 1997, Cl. 604/51, SAFETY PUNCTURING INSTRUMENTS AND METHOD, Inhae Yoon, Owner of Record: *Inventor*, Attorney or Agent: Robert H. Epstein, Ex. Gp.: 3306

4,535,773, Re. S.N. 08/799,771, Feb. 12, 1997, Cl. 604/51, SAFETY PUNCTURING INSTRUMENT AND METHOD, Inhae Yoon, Owner of Record: *Inventor*, Attorney or Agent: Robert H. Epstein, Ex. Gp.: 3306

4,916,460, Re. S.N. 08/344,534, Nov. 23, 1994, Cl. 343/853, DISTRIBUTED ANTENNA SYSTEM, Alan J. Powell, Owner of Record: *Allen Telecom Group, Inc., Solon, Ohio,* Attorney or Agent: Roger N. Chauza, Ex. Gp.: 2514

5,384,986, Re. S.N. 08/789,304, Jan. 30, 1997, Cl. 51/262, POLISHING APPARATUS, Masayoshi Hirose, et. al., Owner of Record: *Ebana Corp., Tokyo, Japan,* Attorney or Agent: Mel R. Quintos, Ex. Gp.: 3203

5,493,146, Re. S.N. 08/795,098, Feb. 6, 1997, Cl. 257/530, ANTI-FUSE STRUCTURE FOR REDUCING CONTAMINATION OF THE ANTI-FUSE MATERIAL, Dipankar Pramanik, et. al., Owner of Record: *VLSI Technology, Inc., San Jose, Calif.*, Attorney or Agent: Thomas A. Jolly, Ex. Gp.: 1104

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,461,288, Reexam. No. 90/004,573, March 5, 1997, Cl. 602/023, MID-HIND FOOT STABILIZER, R. Stephen Curtis, Owner of Record: *Nike, Inc., Beaverton, Oreg.*, Attorney or Agent: Robert H. Johnston, III, Baker & Botts, Dallas, Tex., Ex. Gp.: 3302, Requester: Owner

5,043,429, Reexam. No. 90/004,576, March 7, 1997, Cl. 530/393, PROTEIN FRAGMENTS CONTAINING FACTOR VIII BINDING DOMAIN OF VON WILLEBRAND FACTOR, Theodore S. Zimmerman, et. al., Owner of Record: *Scripps Research Institute, La Jolla, Calif.*, Attorney or Agent: Kathryn M. Brown, Morgan & Finnegan, New York, N.Y., Ex. Gp.: 1815, Requester: Owner

5,260,274, Reexam. No. 90/004,577, March 7, 1997, Cl. 514/012, FACTOR VIII BINDING DOMAIN OF VON WILLEBRAND FACTOR, Theodore S. Zimmerman, et. al., Owner of Record: *Scripps Research Institute, La Jolla, Calif.*, Attorney or Agent: Kathryn M. Brown, Morgan & Finnegan, New York, N.Y., Ex. Gp.: 1801, Requester: Owner

5,389,248, Reexam. No. 90/004,571, Feb. 25, 1997, Cl. 210/151, BIOREACTOR FOR BIOLOGICAL TREATMENT OF CONTAMINATED WATER, Francois Pare, et. al., Owner of Record: *Bioremetek, Inc., Montreal, Canada,* Attorney or Agent: Stanley P. Fisher, Hazel & Thomas, Falls Church, Va., Ex. Gp.: 1308, Requester: Owner

5,405,922, Reexam. No. 90/004,574, March 5, 1997, Cl. 526/068, PROCESS FOR POLYMERIZING MONOMERS IN FLUIDIZED BEDS, Marc L. De Chellis, et. al., Owner of Record: *Exxon Chemical Co., Wilmington, Del.*, Attorney or Agent: Jaimes Sher, Exxon Chemical Corp., Baytown, Tex., Ex. Gp.: 1505, Requester: Arthur S. Garrett, Finnegan Henderson Farabow Garrett & Dunner, Wash., D.C.

5,479,652, Reexam. No. 90/004,578, March 7, 1997, Cl. 395/183.06, MICROPROCESSOR WITH AN EXTERNAL COMMAND MODE FOR DIAGNOSIS AND DEBUGGING, Robert S. Dreyer, et. al., Owner of Record: *Intel Corp., Santa Clara, Calif.*, Attorney or Agent: Blakely, Sokoloff, Taylor & Zafman, Los Angeles, Calif., Ex. Gp.: 2315, Requester: Owner

5,560,096, Reexam. No. 90/004,575, March 6, 1997, Cl. 029/558, METHOD OF MANUFACTURING FEMORAL KNEE IMPLANT, Ron Y. Stephens, Owner of Record: *Smith & Nephew Richards Inc., Memphis, Tenn.*, Attorney or Agent: Charles C. Garvey Jr., Pravel Hewitt Kimball & Kriegar, Metarie, La., Ex. Gp.: 3206, Requester: Mark A. Taylor, Sbefte, Pinckney & Sawyer, Charlotte, N.C.

5,579,669, Reexam. No. 90/004,572, March 3, 1997, Cl. 083/013, MOTORIZED DISPENSER FOR CONTINUOUS STRIP FOOD PRODUCT AND METHOD OF DISPENSING THE PRODUCT, Michael Kind, et. al., Owner of Record: *Basic Fun, Inc.*, Attorney or Agent: Caesar, Rivise, Berstein, Cohen & Pokotilow, Philadelphia, Pa., Ex. Gp.: 3204, Requester: Alan B. Amron, Syosset, N.Y.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
January 13, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,443	71/090,402	04/11/1916
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Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

St. Clair Window Fashions and Wallpaper Gallery Corp., Rochester, N.Y., Reg. No. 1,721,988, for the mark "WINDOW MAGIC AND DESIGN", Canc. No. 25,399.

Constance T. Romweber, Oakland, Calif., Reg. No. 1,711,836, for the mark "DINOMANIA", Canc. No. 25,950.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

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Disclaimers

D. 375,010 — Harry Karnes, Boise, Idaho. DISPOSABLE GLOVE DISPENSER. Patent dated Oct. 29, 1996. Disclaimer filed March 4, 1997, by the inventor.

Hereby enters this disclaimer to the entire term of said patent.

4,931,042 — William A. Holmes, Marblehead; Peter F. Costa, Cambridge, both of Mass. TROCAR ASSEMBLY WITH IMPROVED LATCH. Patent dated June 5, 1990. Disclaimer filed Dec. 30, 1996, by the assignee, United States Surgical Corp.

The term of this patent shall not extend beyond the expiration date of Pat. No. 4,902,280.

4,964,567 — Joseph H. Heffner, Chesterfield; G. Thomas Seener; Dennis L. Hoehne, both of St. Louis, all of Mo. EXPANSION AND CHECK VALVE COMBINATION. Patent dated Oct. 23, 1990. Disclaimer filed Dec. 15, 1995, by the assignee, Sporian Valve Co..

The term of this patent shall not extend beyond the expiration date of Pat. No. 4,852,364.

5,017,044 — Bruce R. Sharp, Cincinnati, Ohio. FIBROUS REINFORCED RESINOUS STORAGE TANKS WITH STRENGTHENED WALLS. Patent dated May 21, 1991. Disclaimer filed Jan. 14, 1997, by the inventor.

The term of this patent shall not extend beyond the expiration date of Pat. No. 4,739,659.

5,409,320 — Horst Maury, St. Sebastian; Dieter Henke, Hankensbuttel, both of Germany. BALL-AND-SOCKET JOINT AND METHOD FOR THE ASSEMBLY THEREOF. Patent dated April 25, 1995. Disclaimer filed Nov. 26, 1996, by the assignee, Stabilus GmbH.

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 20, 21, 22, 23, 25, 28, 29, 31, 32 and 33 of said patent.

Disclaimers and Dedications

4,935,849 — Glen S. Miranker, San Francisco, Calif. CHAINING AND HAZARD APPARATUS AND METHOD. Patent dated June 19, 1990. Disclaimer and Dedication filed Dec. 23, 1996, by the assignee, Kubota Graphics Liquidating Trust.

Hereby disclaims and dedicates to the Public all claims of said patent.

4,989,752 — John V. Birtwistle, Chesterfield; E. Ernest Morgenegg, Jr., St. Louis; Marvin W. Ringer, Jr., Chesterfield, all of Mo. FRANGIBLE ROOF JOINT FOR STORAGE TANKS. Patent dated Feb. 5, 1991. Disclaimer and Dedication filed Jan. 10, 1997, by the assignee, Monsanto Co.

Hereby disclaims and dedicates to the Public claims 1-9 of said patent.

5,591,390 — Kim L. Walton; Rajen M. Patel; Pak-Wing S. Chum, all of Lake Jackson; Todd J. Obijeski, Houston, all of Texas. METHOD OF MANUFACTURING PACKAGING AND WRAPPING FILM. Patent dated Jan. 7, 1997. Disclaimer and Dedication filed Jan. 3, 1997, by the assignee, The Dow Chemical Co.

Hereby disclaims and dedicates to the Public the entire term of said patent.

5,595,705 — Kim L. Walton; Rajen M. Patel; Pak-Wing S. Chum, all of Lake Jackson; Todd J. Obijeski, Houston, all of Texas. METHOD OF MANUFACTURING PACKAGING AND WRAPPING FILM. Patent dated Jan. 21, 1997. Disclaimer and Dedication filed Jan. 3, 1997, by the assignee, The Dow Chemical Co.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from January through March 1997. Information includes:

- subclasses established or abolished (major changes)
- subclass title, indent, or position change
- changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

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March 4, 1997

FREDERICK R. SCHMIDT
Administrator for Search and Information Resources

RECLASSIFICATION ALERT REPORT January—March 1997

Class	First Subclass	Last Subclass	Action	Order Number
2			DEFN. CHANGE	1629
2			DEFN. CHANGE	1631

Class	First Subclass	Last Subclass	Action	Order Number
2			DEFN. CHANGE	1633
7			DEFN. CHANGE	1629
15			DEFN. CHANGE	1631
16	1	3	ABOLISH	1633
16	2.1		ESTABLISH	1633
16	2.2		ESTABLISH	1633
16	2.3		ESTABLISH	1633
16	2.5		ESTABLISH	1633
16	17.1		ESTABLISH	1633
16	400	404	ESTABLISH	1633
16	233		TITLE CHANGE	1633
24			DEFN. CHANGE	1633
29			DEFN. CHANGE	1629
29			DEFN. CHANGE	1631
29			DEFN. CHANGE	1633
29			DEFN. CHANGE	1635
30			DEFN. CHANGE	1629
33			DEFN. CHANGE	1629
33			DEFN. CHANGE	1633
34			DEFN. CHANGE	1631
34			DEFN. CHANGE	1635
36			DEFN. CHANGE	1631
38			DEFN. CHANGE	1633
38			DEFN. CHANGE	1635
40			DEFN. CHANGE	1629
40	124.1		ABOLISH	1634
40	642		ABOLISH	1634
40	124.01	124.09	ESTABLISH	1634
40	124.11	124.19	ESTABLISH	1634
40	124.191		ESTABLISH	1634
40	642.01		ESTABLISH	1634
40	642.02		ESTABLISH	1634
40	654.01		ESTABLISH	1634
40	661.01	661.09	ESTABLISH	1634
40	661.11		ESTABLISH	1634
40	661.12		ESTABLISH	1634
40	658		TITLE CHANGE	1634
40	660		TITLE CHANGE	1634
40	647		POSITION CHANGE	1634
40	648		POSITION CHANGE	1634
40	24		DEFN. CHANGE	1634
40	63		DEFN. CHANGE	1634
40	101		DEFN. CHANGE	1634
40	119		DEFN. CHANGE	1634
40	281		DEFN. CHANGE	1634
40	283		DEFN. CHANGE	1634
40	402		DEFN. CHANGE	1634
43			DEFN. CHANGE	1629
43			DEFN. CHANGE	1631
44			DEFN. CHANGE	1635
47			DEFN. CHANGE	1632
47	66		ABOLISH	1638
47	65.5	65.9	ESTABLISH	1638
47	66.1	66.7	ESTABLISH	1638
47	902	904	ESTABLISH	1638
47	65		TITLE CHANGE	1638
47	65		POSITION CHANGE	1638
47	65		INDENT CHANGE	1638
49			DEFN. CHANGE	1633
52			DEFN. CHANGE	1629
52			DEFN. CHANGE	1631
55			DEFN. CHANGE	1631
57			DEFN. CHANGE	1631
62			DEFN. CHANGE	1635
63	1.1		ABOLISH	1637
63	2		ABOLISH	1637
63	1.11	1.18	ESTABLISH	1637
63	3.1		ESTABLISH	1637
63	3.2		ESTABLISH	1637
63	14.9		ESTABLISH	1637
63	15.9		ESTABLISH	1637
63	33	43	ESTABLISH	1637
63	900		ESTABLISH	1637
63	3		TITLE CHANGE	1637
63	12		TITLE CHANGE	1637
63	15		TITLE CHANGE	1637

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Class	First Subclass	Last Subclass	Action	Order Number
63	18	24	TITLE CHANGE	1637
63	32		TITLE CHANGE	1637
63	3		POSITION CHANGE	1637
63	4		POSITION CHANGE	1637
63	5.1		POSITION CHANGE	1637
63	5.2		POSITION CHANGE	1637
63	6	11	POSITION CHANGE	1637
63	15		INDENT CHANGE	1637
63	15.1	15.4	INDENT CHANGE	1637
63	15.45		INDENT CHANGE	1637
63	15.5		INDENT CHANGE	1637
63	15.6		INDENT CHANGE	1637
63	15.65		INDENT CHANGE	1637
63	15.7		INDENT CHANGE	1637
63	15.8		INDENT CHANGE	1637
66			DEFN. CHANGE	1631
73			DEFN. CHANGE	1629
74			DEFN. CHANGE	1633
81			DEFN. CHANGE	1629
92			DEFN. CHANGE	1631
99			DEFN. CHANGE	1635
100	93		ABOLISH	1635
100	300	340	ESTABLISH	1635
101			DEFN. CHANGE	1635
102			DEFN. CHANGE	1631
105			DEFN. CHANGE	1631
108			DEFN. CHANGE	1629
112			DEFN. CHANGE	1629
112			DEFN. CHANGE	1631
112			DEFN. CHANGE	1633
116			DEFN. CHANGE	1629
119			DEFN. CHANGE	1629
124			DEFN. CHANGE	1629
128	920	924	ESTABLISH	1636
131			DEFN. CHANGE	1631
135			DEFN. CHANGE	1629
138			DEFN. CHANGE	1631
138			DEFN. CHANGE	1633
139			DEFN. CHANGE	1631
144			DEFN. CHANGE	1635
150			DEFN. CHANGE	1629
156			DEFN. CHANGE	1635
160			DEFN. CHANGE	1633
162			DEFN. CHANGE	1631
162			DEFN. CHANGE	1635
164			DEFN. CHANGE	1633
166			DEFN. CHANGE	1631
168			DEFN. CHANGE	1633
174			DEFN. CHANGE	1633
177			DEFN. CHANGE	1630
187			DEFN. CHANGE	1633
194			DEFN. CHANGE	1629
205			DEFN. CHANGE	1631
206			DEFN. CHANGE	1638
209			DEFN. CHANGE	1631
210			DEFN. CHANGE	1631
210			DEFN. CHANGE	1636
211			DEFN. CHANGE	1633
217			DEFN. CHANGE	1633
219			DEFN. CHANGE	1635
220			DEFN. CHANGE	1629
231			DEFN. CHANGE	1629
235			DEFN. CHANGE	1630
241			DEFN. CHANGE	1635
242			DEFN. CHANGE	1629
242			DEFN. CHANGE	1633
244			DEFN. CHANGE	1631
245			DEFN. CHANGE	1631
248			DEFN. CHANGE	1629
248			DEFN. CHANGE	1638
250			DEFN. CHANGE	1629
250			DEFN. CHANGE	1636
252			DEFN. CHANGE	1631
254			DEFN. CHANGE	1629
254			DEFN. CHANGE	1633
264			DEFN. CHANGE	1631

Class	First Subclass	Last Subclass	Action	Order Number
269			DEFN. CHANGE	1629
273	1.5		ABOLISH	1629
273	25	31	ABOLISH	1629
273	55	57	ABOLISH	1629
273	57.1	57.3	ABOLISH	1629
273	58		ABOLISH	1629
273	60		ABOLISH	1629
273	61		ABOLISH	1629
273	65		ABOLISH	1629
273	67		ABOLISH	1629
273	72	76	ABOLISH	1629
273	83		ABOLISH	1629
273	84		ABOLISH	1629
273	128		ABOLISH	1629
273	318	328	ABOLISH	1629
273	341		ABOLISH	1629
273	344	347	ABOLISH	1629
273	411		ABOLISH	1629
273	413	428	ABOLISH	1629
273	341.1		ESTABLISH	1629
273	348.2	348.5	ESTABLISH	1629
273	108		TITLE CHANGE	1629
273	317		TITLE CHANGE	1629
280			DEFN. CHANGE	1633
283			DEFN. CHANGE	1629
292			DEFN. CHANGE	1633
313			DEFN. CHANGE	1631
338			DEFN. CHANGE	1631
343			DEFN. CHANGE	1631
348	845		ESTABLISH	1638
348	845.1	845.3	ESTABLISH	1638
361			DEFN. CHANGE	1629
362			DEFN. CHANGE	1629
364	464.01	464.04	ABOLISH	1630
364	465	467	ABOLISH	1630
364	464.1		ESTABLISH	1630
364	464.11	464.19	ESTABLISH	1630
364	464.2		ESTABLISH	1630
364	464.21	464.28	ESTABLISH	1630
364	413.01	413.31	ABOLISH	1636
368			DEFN. CHANGE	1630
369			DEFN. CHANGE	1633
377			DEFN. CHANGE	1629
377			DEFN. CHANGE	1630
382			DEFN. CHANGE	1630
382			DEFN. CHANGE	1631
382			DEFN. CHANGE	1636
383			DEFN. CHANGE	1629
384			DEFN. CHANGE	1633
395			DEFN. CHANGE	1636
404			DEFN. CHANGE	1629
424			DEFN. CHANGE	1632
428			DEFN. CHANGE	1629
428	224	303	ABOLISH	1631
428	311.1		ABOLISH	1631
428	311.3		ABOLISH	1631
428	311.5		ABOLISH	1631
428	311.7		ABOLISH	1631
428	311.9		ABOLISH	1631
428	292.1		ESTABLISH	1631
428	292.4		ESTABLISH	1631
428	292.7		ESTABLISH	1631
428	293.1		ESTABLISH	1631
428	293.4		ESTABLISH	1631
428	293.7		ESTABLISH	1631
428	294.1		ESTABLISH	1631
428	294.4		ESTABLISH	1631
428	294.7		ESTABLISH	1631
428	295.1		ESTABLISH	1631
428	295.4		ESTABLISH	1631
428	295.7		ESTABLISH	1631
428	296.1		ESTABLISH	1631
428	296.4		ESTABLISH	1631
428	296.7		ESTABLISH	1631
428	297.1		ESTABLISH	1631
428	297.4		ESTABLISH	1631

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428	297.7		ESTABLISH	1631
428	298.1		ESTABLISH	1631
428	298.4		ESTABLISH	1631
428	298.7		ESTABLISH	1631
428	299.1		ESTABLISH	1631
428	299.4		ESTABLISH	1631
428	299.7		ESTABLISH	1631
428	300.1		ESTABLISH	1631
428	300.4		ESTABLISH	1631
428	300.7		ESTABLISH	1631
428	301.1		ESTABLISH	1631
428	301.4		ESTABLISH	1631
428	311.11		ESTABLISH	1631
428	311.31		ESTABLISH	1631
428	311.51		ESTABLISH	1631
428	311.71		ESTABLISH	1631
428	311.91		ESTABLISH	1631
432			DEFN. CHANGE	1635
434			DEFN. CHANGE	1629
435	240.1	240.31	ABOLISH	1632
435	240.4	240.54	ABOLISH	1632
435	325	408	ESTABLISH	1632
435	410	431	ESTABLISH	1632
442	1	417	ESTABLISH	1631
446			DEFN. CHANGE	1629
450			DEFN. CHANGE	1631
451			DEFN. CHANGE	1631
453			DEFN. CHANGE	1629
463	47.1	47.7	ESTABLISH	1629
472			DEFN. CHANGE	1629
473	410	615	ESTABLISH	1629
473			TITLE CHANGE	1629
482			DEFN. CHANGE	1629
482	910		ESTABLISH	1633
501			DEFN. CHANGE	1631
523			DEFN. CHANGE	1631
530			DEFN. CHANGE	1632
602			DEFN. CHANGE	1631
604			DEFN. CHANGE	1631
606			DEFN. CHANGE	1629
800			DEFN. CHANGE	1632
935			DEFN. CHANGE	1632

Certificates of Correction
For the Week of April 22, 1997

P. 09,524	5,426,722	5,489,283	5,517,015
D. 347,200	5,429,208	5,489,400	5,518,378
D. 351,776	5,437,107	5,490,145	5,519,029
D. 352,039	5,438,438	5,490,727	5,519,780
D. 377,521	5,438,668	5,491,088	5,520,687
D. 377,960	5,447,305	5,492,405	5,522,950
4,517,330	5,457,316	5,492,423	5,523,854
4,667,122	5,458,794	5,494,790	5,524,829
4,771,285	5,461,031	5,497,509	5,526,034
4,965,033	5,461,044	5,500,673	5,526,568
5,011,820	5,461,252	5,500,852	5,531,771
5,084,190	5,462,106	5,501,232	5,532,824
5,096,764	5,462,644	5,502,274	5,534,326
5,201,095	5,462,927	5,502,604	5,534,340
5,217,481	5,464,348	5,502,986	5,534,929
5,225,473	5,471,410	5,503,210	5,537,073
5,241,743	5,471,962	5,504,232	5,537,184
5,244,921	5,473,708	5,504,389	5,538,141
5,261,631	5,475,962	5,504,752	5,539,082
5,298,267	5,480,833	5,508,813	5,541,405
5,326,901	5,482,406	5,511,212	5,541,655
5,338,750	5,483,900	5,511,302	5,542,174
5,339,430	5,484,344	5,512,110	5,542,970
5,353,940	5,485,301	5,512,210	5,543,373
5,369,798	5,486,707	5,512,452	5,543,412
5,377,059	5,486,901	5,514,699	5,543,480
5,384,763	5,487,024	5,514,883	5,543,757
5,417,286	5,487,855	5,516,352	5,543,955
5,544,249	5,559,070	5,568,268	5,576,701
5,544,256	5,559,169	5,568,272	5,576,907
5,545,169	5,559,369	5,568,285	5,577,107
5,545,632	5,559,543	5,568,676	5,577,965
5,545,747	5,560,181	5,568,914	5,578,395
5,546,541	5,560,878	5,569,410	5,578,501
5,546,656	5,560,980	5,570,167	5,578,577
5,547,714	5,561,454	5,570,205	5,578,579
5,548,137	5,561,744	5,570,764	5,578,747
5,548,204	5,561,762	5,571,515	5,578,761
5,548,208	5,562,230	5,571,747	5,579,159
5,548,809	5,563,445	5,571,883	5,579,208
5,549,569	5,563,830	5,572,193	5,579,281
5,550,581	5,563,854	5,572,298	5,579,800
5,550,639	5,563,910	5,572,306	5,579,897
5,550,997	5,564,046	5,572,439	5,579,919
5,551,092	5,564,469	5,572,784	5,580,198
5,551,343	5,564,668	5,573,884	5,580,278
5,552,374	5,564,939	5,574,170	5,580,371
5,552,875	5,565,450	5,574,172	5,580,624
5,552,914	5,565,991	5,574,310	5,580,907
5,554,142	5,566,002	5,574,576	5,580,965
5,554,147	5,566,006	5,574,733	5,580,983
5,554,197	5,566,040	5,575,017	5,581,082
5,554,992	5,566,827	5,575,364	5,581,225
5,556,582	5,567,069	5,575,424	5,581,325
5,557,674	5,567,217	5,575,481	5,581,412
5,557,939	5,567,235	5,575,798	5,581,498
5,558,184	5,567,373	5,575,859	5,581,674
5,558,660	5,567,630	5,575,977	5,581,717
5,558,741	5,568,191	5,575,986	5,581,862

5,581,938	5,583,438	5,586,791	5,589,422	5,591,838	5,593,239	5,598,530	5,601,633
5,581,983	5,583,868	5,587,345	5,589,518	5,591,968	5,593,675	5,598,770	5,603,935
5,582,280	5,583,955	5,587,475	5,589,589	5,592,250	5,594,525	5,599,219	5,604,554
5,582,505	5,584,126	5,587,507	5,589,849	5,592,337	5,594,550	5,599,331	5,605,294
5,582,668	5,584,812	5,588,211	5,590,697	5,592,394	5,594,917	5,599,593	5,606,526
5,582,859	5,585,000	5,588,280	5,590,733	5,592,439	5,595,276	5,599,975	
5,582,990	5,585,360	5,588,490	5,591,215	5,592,506	5,596,252	5,599,994	
5,583,204	5,585,508	5,588,517	5,591,416	5,592,598	5,596,362	5,601,110	
5,583,267	5,586,285	5,589,101	5,591,482	5,592,782	5,596,460	5,601,326	
5,583,395	5,586,319	5,589,220	5,591,616	5,593,012	5,598,340	5,601,533	

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

February 24-28, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-25	EX	74/511,849	Strippit, Inc.	2(e)(1) (deceptively misdescriptive)	Refusal Reversed		"SMART TOOL" (tooling for punch presses)		No
2-26	EX	74/498,247	Brian Santone	whether applicant is using the mark sought to be registered in connection with the services recited in the application	Refusal Affirmed		"SANTONE LURES" (manufacture of fishing lures to the order and/or specification of others)		No
2-26	EX (R)	74/101,177	EBSCO Industries, Inc.	whether the configuration of applicant's goods, which configuration applicant claims as its trademark, is de jure functional and, if not, whether the configuration is inherently distinctive	Request for Reconsideration Denied [Refusal Affirmed (on both grounds)]		configuration of a fishing lure [fishing lures]		No
2-26	EX	74/453,230	John Michaels, Inc.	2(d)	Refusal Affirmed		"MICHAEL'S" [frozen custard]	"MICHAEL'S" (and design) [restaurant services]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
2-26	OPP	85,880	SAS Institute Inc. v. Scientific and Engineering Software, Inc.	2(d)	Oppositions Dismissed	"SAS," "SAS/TMS," "SAS/IMS-DL/I," (and others) [all for "prerecorded computer programs" and/or "computer program manuals"]; "SAS/RTS" [prerecorded computer programs pertaining to econometrics and time series analysis and computer program manuals pertaining to same]; "SAS" (in stylized lettering) [computer programs for use in data management and analysis and information processing and user manuals for such programs]; "SAS/ASSIST" [computer programs for use as a menu driven user interface]; "SAS/STAT" [computer programs for use in data analysis and information processing and user manuals for such programs]; "SAS/CPE" [computer programs used in computer performance evaluation and user manuals for such programs]; et al.	"SES" (and design), "SES/SIM," "SES/SCOPE," "SES/DESIGN," and "SES/RTL" [all five marks for "computer programs and instructional manuals supplied therewith, all for use in the evaluation, design and simulation of complex electronic systems"]		No
2-26	OPP	85,881							
2-26	OPP	85,884							
2-26	OPP	85,903							
2-26	OPP	85,952							

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
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Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
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Connecticut	New Haven: Science Park Library	(203) 786-5447
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
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	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
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	Milwaukee Public Library	(414) 286-3051
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PATENT EXAMINING CORPS

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/06/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/14/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/27/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY	308-2351	10/25/95
STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-0196	03/13/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director		
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/07/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/18/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/21/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/29/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/26/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/02/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/26/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/29/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/08/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/05/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/09/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/01/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of March 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/25/96	12/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	10/25/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/96	02/19/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	11/06/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/03/96	11/11/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	12/02/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/23/96	12/06/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	12/17/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/24/96	12/10/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/27/97	—0—
Renewals (All Classes)	01/13/97	—0—
Section 12(c) Publications (All Classes)	09/01/96	—0—

1. ** Assigned to all Law Office

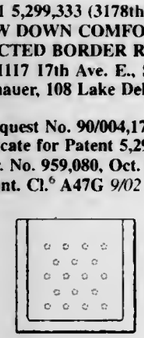
2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

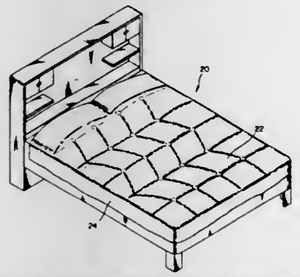
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,299,333 (3178th)
RANDOM FLOW DOWN COMFORTER WITH A RESTRICTED BORDER REGION
Samuel B. Pedersen, 1117 17th Ave. E., Seattle, Wash. 98112, and Nicholas J. Hanauer, 108 Lake Dell Ave., Seattle, Wash. 98122
Reexamination Request No. 90/004,177, Mar. 12, 1996.
Reexamination Certificate for Patent 5,299,333, issued Apr. 5, 1994, Ser. No. 959,080, Oct. 9, 1992.
Int. Cl.[6] A47G *9/02*
U.S. Cl. 5—502





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

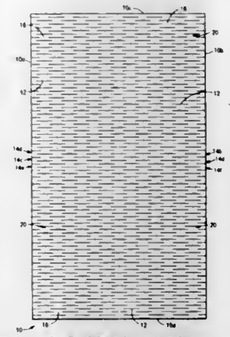
1. A random flow down comforter for use with a mattress having side and end edges, comprising:

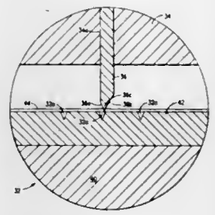
a random flow down comforter body having a center region with two side edges and foot and head end edges and an edge border region, wherein the border region extends around the two side edges and the foot end edge, but not the head end edge, of the center region, wherein the border region is continuous, approximately on the order of ten inches wide, and contains less down per unit volume than the center region; and

means separating the border region from the center region for preventing movement of down between the center region and the border region, wherein the separating means along the respective side edges of the comforter body is located approximately on the order of three inches outboard from the side edges of the mattress when the comforter is positioned thereon.

B1 5,365,819 (3179th)
METHOD AND PROCESS FOR MANUFACTURING EXPANDABLE PACKING MATERIAL
Richard C. Maida, Staten Island, and Joseph Sferlazza, West Hempstead, both of N.Y., assignors to Prompac Industries, Inc., Staten Island, N.Y.
Reexamination Request No. 90/004,170, Feb. 29, 1996.
Reexamination Certificate for Patent 5,365,819, issued Nov. 22, 1994, Ser. No. 213,993, Mar. 15, 1994.
Continuation of Ser. No. 994,708, Dec. 22, 1992, abandoned.
Int. Cl.[6] B23D *25/12*
U.S. Cl. 83—332

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:





Claims **3**, **8**, **10–12** and **13** are cancelled.

Claims **1**, **4**, **5**, **6**, **7** and **9** are determined to be patentable as amended.

Claim **2**, dependent on an amended claim, is determined to be patentable.

New claims **14–19** are added and determined to be patentable.

1. A process for forming a *paper* packing material, comprising:

providing a lower die plate including a top portion having a hardness less than d82 as measured on the shore d scale;

providing an upper die plate including a multitude of cutting blades having a hardness between C53 and C63 as measured on the Rockwell scale;

positioning a paper material on **[**a**]** *the top portion of the* lower die plate, *the paper material having a grain extending in a direction*; and

forcing **[**a**]** *the* multitude of cutting blades completely through the paper material and into *the top portion of* the lower die plate at a multitude of spaced apart locations to form a multitude of slits in the paper material *and to form a multitude of spaced apart recesses in the top portion of the lower die plate*;

wherein each of the cutting blades has a longitudinal axis and includes a multitude of notches and a multitude of cutting edges; *the longitudinal axes of the cutting blade are perpendicular to the grain of the paper; and* along the longitudinal axis of each cutting blade, the notches of the blade alternate with the cutting edges of the blade; and **[**the lower die plate forms a multitude of spaced apart recesses; and**]**

wherein the forcing step includes the step of forcing each of the cutting edges of each of the cutting blades into a respective one of the recesses in the lower die plate;

whereby the cutting blades completely cut through the paper material over substantially the entire length of each slit whereby the slits facilitate expanding the paper material into a three-dimensional shape.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,494

INTEGRATED ACTIVE LOW-PASS FILTER OF THE FIRST ORDER

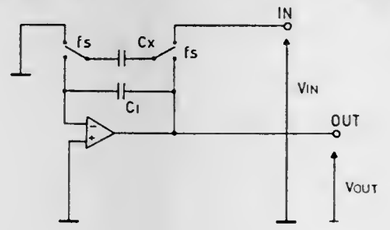
Germano Nicollini, Piacenza, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Original No. 4,899,069, dated Feb. 6, 1990, Ser. No. 285,204, Dec. 16, 1988. Continuation of Ser. No. 832,010, Feb. 6, 1992, abandoned. Application for reissue May 2, 1994, Ser. No. 236,673

Claims priority, application Italy, Dec. 22, 1987, 83685/87

Int. Cl.[6] H03B *1/00;* H03K *5/00*

U.S. Cl. 327—554 12 Claims



1. An integrated, low-pass, active *first order* filter [of the first order operable] for producing an output signal at an output terminal thereof [in] *as a* function of a signal applied to an input terminal thereof and comprising an operational amplifier having an inverting input [and] , a noninverting input, and [a single] *an* output [coinciding] *conterminous* with said output terminal of the filter [and], *said filter being* provided with a negative feedback network which comprises a continuous integration capacitor connected between said output terminal of the filter and said inverting input of the operational amplifier, the noninverting input of [which] *said operational amplifier* being connected to ground, [and characterized by] comprising:

a [single switched] capacitor and two switches operating at a preset frequency;

a first [armature] *side* of said [switched] capacitor being switched by a first one of said two switches between said inverting input of the operational amplifier and ground;

a second [armature] *side* of said [switched] capacitor being switched by the other of said two switches between said input terminal and said output terminal of the filter.

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PLANT PATENTS

GRANTED APRIL 22, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,862

HYBRID TEA ROSE PLANT NAMED 'WAMSPER'

Catherine M. Wambach, Fredericksburg, and Alex A. Wambach, deceased, late of Fredericksburg, both of Tex., assignors to Certified Roses, Inc., Tyler, Tex.

Filed Dec. 27, 1995, Ser. No. 579,124
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

9,863

'HARROW SWEET' PEAR

David M. Hunter, Ontario; Frank Kappel, British Columbia; Richard E. C. Layne, Ontario, and Harvey A. Quamme, British Columbia, all of Canada, assignors to Agriculture and Agri-Food Canada, Ontario, Canada

Filed Oct. 12, 1995, Ser. No. 542,398
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct pear tree substantially as shown and described herein.

9,864

APRICOT TREE "AUTUMN GLOW"

Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Feb. 5, 1996, Ser. No. 596,711
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by its large size, vigorous, semi-spreading growth and being a productive and regulaar bearer of large, yellow-flesh freestone fruit with good flavor and eating quality; the fruit is further characterized by being relatively uniform in ripening throughout the tree, having a high degree of soluble solids (average 16% Brix), having firm flesh with good handling and shipping quality, and ripening in the late maturity season.

9,865

TABLE GRAPE NAMED 'RALLI SEEDLESS'

Giuseppe Ralli; Iolanda Ralli; John Ralli, and Joseph Ralli, all of Victoria, Australia, assignors to G & J Ralli & Sons, Victoria, Australia

Filed Aug. 29, 1995, Ser. No. 520,375
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—47.1 **1 Claim**

1. A new and distinct red seedless grape plant known as "Ralli Seedless", substantially as shown and described.

9,866

STRAWBERRY PLANT CALLED 'ROSA LINDA'

Craig K. Chandler, Temple Terrace, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.

Filed Sep. 15, 1995, Ser. No. 528,541
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—49 **1 Claim**

1. A new and distinct variety of strawberry plant, substantially as illustrated and described, characterized by its upright plant habit and the visual and flavor qualities of its fruit.

9,867

SCAEVOLA PLANT NAMED FANCY

Wilhelm Westhoff, Südlohn, Germany, assignor to J+H Westhoff, Sudlohn, Germany

Filed Jan. 26, 1996, Ser. No. 592,657
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Scaveola plant named Fancy, as illustrated and described.

9,868

CHRYSANTHEMUM PLANT NAMED 'JINGLE TIME'

Peter Wain, Hants, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom

Filed Apr. 4, 1996, Ser. No. 627,457
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Jingle Time, as illustrated and described.

9,869

CHRYSANTHEMUM PLANT NAMED 'PINK VIEW TIME'

Peter Wain, Hayling Island, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom

Filed Apr. 8, 1996, Ser. No. 629,371
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Pink View Time, as illustrated and described.

9,870

CHRYSANTHEMUM PLANT NAMED 'NOON TIME'

Peter Wain, Hants, United Kingdom, assignor to Cleangro Ltd., Chicester, United Kingdom

Filed Apr. 4, 1996, Ser. No. 627,458
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Noon Time, as illustrated and described.

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DESIGN PATENTS

GRANTED April 22, 1997

ERRATA

For CLASS	See PATENT NO.
D003–010	D378,890

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GRANTED April 22, 1997

ERRATA

For CLASS	See PATENT NO.
128–630	5,622,428
395–200	5,622,429
438–710	5,622,595
438–702	5,622,596
438–053	5,622,633
438–005	5,622,636
264–045	5,622,763
442–401	5,622,772
442–135	5,622,773
442–136	5,622,774
442–392	5,622,775
442–118	5,622,776
442–374	5,622,777
442–118	5,622,778
216–018	5,622,895
356–351	5,623,307
396–380	5,623,324
396–515	5,623,325
396–055	5,623,326
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386–081	5,623,344
386–001	5,623,346
349–005	5,623,348

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ERRATA–CONTINUED

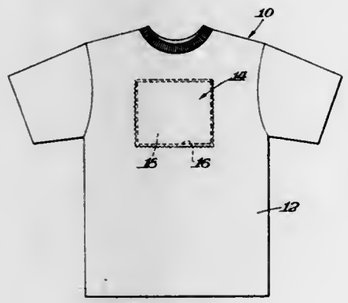
For CLASS	See PATENT NO.
349–008	5,623,349
349–038	5,623,350
349–100	5,623,351
349–017	5,623,352
349–122	5,623,353
349–124	5,623,354
395–228	5,623,403
395–209	5,623,404
395–230	5,623,405
395–753	5,623,406
438–598	5,623,438
392–303	5,623,576

PATENTS

GRANTED APRIL 22, 1997

GENERAL AND MECHANICAL

5,621,914
PROTECTIVE GARMENT FOR SPORTS PARTICIPATION
Patrick J. Ramone, Hockessin, and Paul M. Murphy, Wilmington, both of Del., assignors to Hardcore Sports, Inc., Wilmington, Del.
Filed Feb. 27, 1995, Ser. No. 394,615
Int. Cl.[6] F41H *1/02*
U.S. Cl. 2—463 **9 Claims**



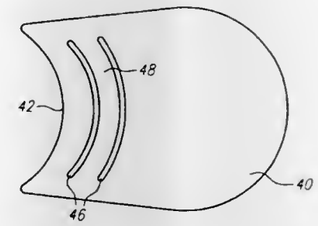


1. A protective garment for minimizing injury to the wearer as a result of impact to the general area of the heart for use in sports participation and the like comprising a shirt having a front side, said front side having a heart portion worn generally in front of the heart and having an abdomen portion, an impact resistant laminate mounted heart portion to shield the general area of the heart, said laminate comprising a protective plate and a cushioning structure mounted in front of said plate, said protective plate functioning as a means to disperse an impact force, and said cushioning structure functioning as a means to cushion the degree of impact from the impact force and to extend the time of impact for minimizing the likelihood that the impact would be confined to the instant of time between heartbeats, said cushioning structure being a layer of padding, a second layer of padding being provided on the side of said plate between said plate and the wearer's body and each of said layers of padding extending peripherally around said plate and being peripherally secured together to sandwich said plate therebetween.

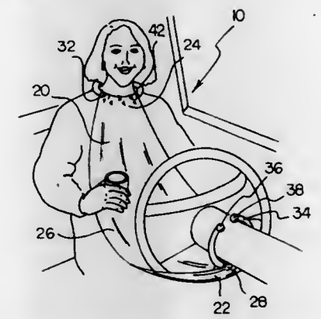
5,621,915
REMOVABLE CAP VISOR EXTENSION
Gary N. Schneider, 12630 Bonaparte Ave., Los Angeles, Calif. 90066; John R. DePaolo, Los Angeles, and Cyril E. Fankhouser, III, Costa Mesa, both of Calif., assignors to Gary N. Schneider, Los Angeles, Calif.
Filed Apr. 28, 1995, Ser. No. 431,372
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—10 **14 Claims**

10. A removable visor extension for a cap of the type having a lower edge and a visor permanently attached to the lower edge of the cap, comprising;

an extension unit with a mating edge and with at least one slot oriented substantially parallel to the mating edge of the extension unit such that a said permanently attached visor may be extended through the at least one slot to position the extension unit on said permanently attached visor, wherein the at least one slot is curved.



5,621,916
BIB FOR USE WHILE OPERATING A VEHICLE
Carol W. Bell, 1618 Dawnville Rd., Dalton, Ga. 30721
Filed Mar. 5, 1996, Ser. No. 611,270
Int. Cl.[6] A41B *13/10*; A41D *1/00*
U.S. Cl. 2—48 **4 Claims**



1. A new and improved bib for use while operating a vehicle, the bib comprising, in combination:

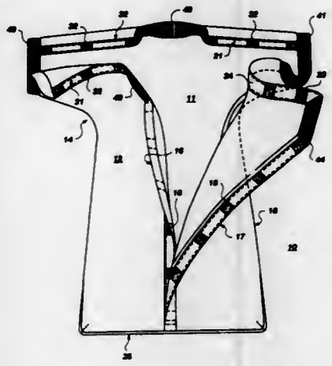
a plastic sheet having a first end with a first width and a second end with a second width and an intermediate extent with a third width, the width of the intermediate extent being greater than the width of the first and second ends, a first tubular opening formed adjacent the first end, a second tubular opening formed adjacent the second end, indicia formed upon the sheet;

a steering column ring having a first threaded end and a second threaded end and an intermediate extent therebetween, a first retaining ball adapted to be threadably secured over the first end, a second retaining ball adapted to be threadably secured over the second end, the intermediate extent of the ring positioned within the first tubular opening of the sheet, the steering column ring adapted to be positioned about a steering column of a vehicle with the first and second retaining balls securing the ring upon the steering column; and

a neck ring having a first threaded end, a second threaded end and an intermediate extent therebetween, a first retaining ball adapted to be threadably secured over the first end, a second retaining ball adapted to be threadably secured over the second end, the intermediate extent positioned within the second tubular opening of the plastic sheet, the neck ring adapted to be positioned about the neck of a wearer with the first and second securing balls retaining the ring in place.

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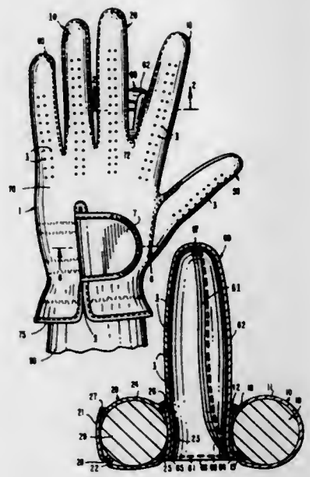
5,621,917
INFANT CARE GARMENT
Sandra R. Howsden, 3258 E. Ridge Pl., Twin Falls, Id. 83301
Filed Sep. 1, 1995, Ser. No. 522,584
Int. Cl.[6] A41B *9/00*
U.S. Cl. 2—111 **5 Claims**



1. A garment for clothing a neonatal intensive care or premature infant comprising:
a back panel having a generally T-shaped configuration, the back panel having a top edge, a bottom edge, a left outside edge and a right outside edge;
a left front panel having a generally L-shaped configuration, the left front panel having a top edge, an inside edge, an outside edge and a bottom edge, (I) the outside edge of the left front panel being permanently affixed to the left outside edge of the back panel; (ii) the bottom edge of the left front panel being permanently affixed to the bottom edge of the back panel, (iii) and the top edge of the left front panel having hook and loop attachment means disposed therealong for releasable attachment of the top edge of the left front panel to the top edge of the back panel;
a right front panel having a generally L-shaped configuration, the right front panel having a top edge, an inside edge, an outside edge and a bottom edge, (I) the outside edge of the right front panel being permanently affixed to the right outside edge of the back panel (ii) the bottom edge of the right front panel being permanently affixed to the bottom edge of the back panel, (iii) the top edge having hook and loop attachment means for releasably attaching the right front panel to the top edge of the back panel, and (iv) the inside edge of the right front panel being releasably attachable to the inside edge of the left front panel; and
wherein the left front panel and right front panel may be laid open when the top edges and inner edges of the panels are unattached.

5,621,918
GOLF GLOVE
Philip T. Bernhard, 1361 Lower Ferry Rd., Trenton, N.J. 08618
Filed Mar. 21, 1996, Ser. No. 620,075
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.2 **7 Claims**

1. A glove for use by a wearer, the glove to be worn on a wearer's first hand, comprising:
a palm portion for covering the palm of the wearer's hand;
a top hand portion for covering the top of the wearer's hand, the top hand portion communicating with the palm portion so as to form a first opening for receiving the fingers of the leading hand and the leading hand; and
a plurality of finger coverings communicating with the palm portion and the top hand portion at a first end of the palm portion and top hand portion opposite the first opening, said



plurality of finger coverings including at least a first finger covering and a second finger covering, each of said first finger covering and said second finger covering having an opening with an axis; and
an opposite hand finger covering for receiving a finger of the wearer's opposite hand, the opposite hand finger covering being disposed between said first finger covering and said second finger covering, said opposite hand finger covering having an opening with an axis, wherein the axis of the opposite hand finger covering opening is substantially perpendicular to the axes of the first finger covering opening and the second finger covering opening.

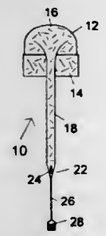
5,621,919
HAIR STYLE PROTECTION DEVICE
Sandra A. Graham, 124 Connecticut, Highland Park, Mich. 48203
Continuation of Ser. No. 228,112, Apr. 15, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,034
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—174 **10 Claims**



1. A hair wrap for covering strands of hair, said wrap comprising:
a) a fabric cover for covering strands of hair, wherein the fabric cover is formed from two abutting pieces of cloth sewn together such that a pocket in which to fit a voluminous hair style is formed, said cover having an outer decorative surface and inner surface for engaging said strands of hair, said abutting pieces of cloth forming an arcuate seam having a substantial circular curvature where the arcuate seam sweeps out a radius of curvature of about 60° of a circle;
b) a first wrap member extending from said fabric cover, said wrap member having a length sufficient to encircle a head of a user and a free end which is juxtapositioned over a securing area upon said decorative outer surface when in an operative position;

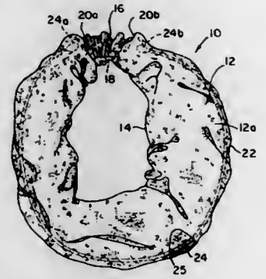
c) a first portion of a first hook and loop fastener attached to said securing area upon said decorative outer surface of said cover such that said first portion of said hook and loop fastener is outwardly exposed; and
d) a second portion of said first hook and loop fastener attached to said first wrap member near said free end for engaging said first portion of said hook and loop fastener, said first wrap member concealing said first and second portions of said first hook and loop fastener when in said operative position.

5,621,920
STOCKING CAP WITH TAIL SERVING AS A WRAP-AROUND END-ATTACHABLE SCARF AND/OR SKI MASK
Gary Gorsuch, 6300 SW. Arrowwood Dr., Portland, Oreg. 97223, and Kathy Gordon, 2424 NW. Northrup, Upper, Portland, Oreg. 97210
Filed Mar. 14, 1996, Ser. No. 601,185
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—195.8 **11 Claims**



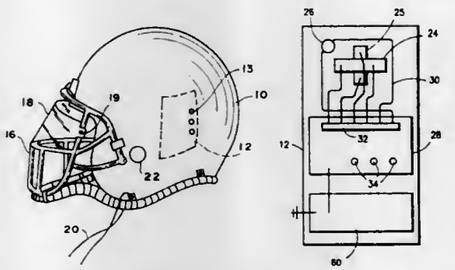
1. A stocking cap comprising:
an elongate, cylindrical body;
a band region encircling one end of said body;
at least one button attached to an outward side of said band region;
an elongate, cylindrical tail having a proximal end and a distal end attached to said body opposite said band region;
a slot body near the distal end of said tail and containing an elongate loop slot;
a cord attached to the distal end of said slot body; and
a tassel body attached to the distal end of said cord.

5,621,921
HAT/COLLAR
Claudette Outland, Bleibtreustrasse #4, 10623 Berlin, Germany
Filed May 15, 1995, Ser. No. 441,093
Claims priority, application Germany, Jul. 22, 1994, 9412183 U
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—207 **7 Claims**



1. A hat/collar comprising:
an elongated tubular sleeve having sufficient body and firmness to retain folds;
an elastic connector attached between opposite ends of the elongated tubular sleeve to elastically interconnect the ends to complete an annulus in such a way that an elastic stretch is provided and so that an inner periphery of the annulus may serve as a hat band, adjusting to a wearer's head size
a malleable wire within the sleeve having minimum elasticity and capable of being deformed by hand to change its shape and retaining such changed shape until again deformed by hand and of such length and general configuration as to conform to and generally define an outer periphery of the sleeve in the annular configuration throughout most of the length of the sleeve.

5,621,922
SPORTS HELMET CAPABLE OF SENSING LINEAR AND ROTATIONAL FORCES
Gus A. Rush, III, 1800 12th St., Meridian, Miss. 39301
Continuation-in-part of Ser. No. 471,360, Jun. 6, 1995, Pat. No. 5,539,935, which is a continuation-in-part of Ser. No. 288,078, Aug. 10, 1994, Pat. No. 5,546,609, which is a continuation-in-part of Ser. No. 66,670, May 25, 1993, Pat. No. 5,390,367, which is a continuation-in-part of Ser. No. 964,875, Oct. 22, 1992, Pat. No. 5,287,567, which is a continuation-in-part of Ser. No. 818,840, Jan. 10, 1992, abandoned. This application Dec. 20, 1995, Ser. No. 575,490
Int. Cl.[6] A42B *3/30*
U.S. Cl. 2—422 **12 Claims**

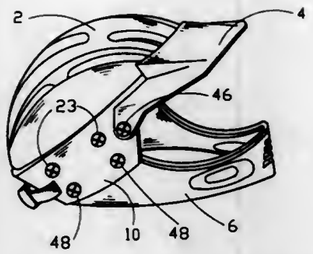


1. Headwear comprising a covering for enclosing at least a portion of the head of a user, said covering including:
a plurality of sensing devices, including at least one first sensing device constructed and arranged to detect a linear force and at least one second sensing device constructed and arranged to detect a rotational force, said plurality of sensing devices each being constructed and arranged to generate a signal in response to a sensed acceleration greater than a threshold acceleration; and
a signalling device connected to said plurality of sensing devices and being constructed and arranged to generate a perceivable signal in response to a signal received from either one of said plurality of signalling devices.

5,621,923
INTERFACE APPARATUS FOR ADAPTING A VISOR AND A CHIN PROTECTOR TO STANDARD BICYCLE HELMENTS AND THE LIKE
Bryan J. Tapocik, 2941 McAllister St., Riverside, Calif. 92503
Filed Feb. 2, 1996, Ser. No. 594,682
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—422 **22 Claims**

1. An interface apparatus attachable to a standard protective helmet for attaching a visor and a chin protector thereto, the interface apparatus comprising:

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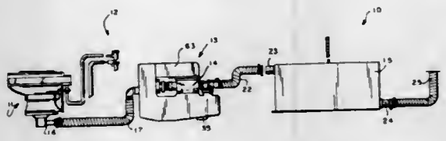
a. an elongated sheet of flexible material having an interior surface, an exterior surface and two opposite ends;
b. fastener means respectively attached to said two opposite ends of said sheet for adjustably fastening said two opposite ends of said sheet to form an ovoid shaped structure around the perimeter of said helmet;
c. means for detachably attaching said ovoid shaped structure to said perimeter of said helmet;
d. means for detachably attaching said chin protector to a lower side section of said ovoid shaped structure; and
e. means for detachably attaching said visor to a front end of said ovoid shaped structure;
f. whereby when said interface apparatus is attached around the perimeter of said helmet. Said interface apparatus thereby substantially adapts said visor and said chin protector to said helmet.

5,621,924

VACUUM TANK CONSTRUCTION FOR A VACUUM TOILET ASSEMBLY

William J. Friedman, Big Prairie, and James A. Sigler, Perrysville, both of Ohio, assignors to Sealand Ttechnology, Inc., Big Prairie, Ohio

Filed Jun. 7, 1995, Ser. No. 484,843
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—431 **21 Claims**



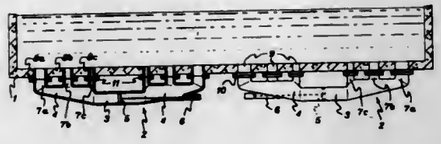
1. A vacuum toilet assembly comprising:
a vacuum toilet having a waste discharge normally closed by a vacuum-tight valve;
a vacuum tank having a first top surface, a bottom, a length, a width, an inlet, and an outlet, said top surface vertically above said bottom;
a waste tank having an inlet and an outlet;
a vacuum pump having an inlet and an outlet;
a first hose connecting said waste discharge of said toilet, adjacent said vacuum-tight valve, to said vacuum tank inlet;
a second hose connecting said vacuum pump outlet to said waste tank inlet;
said vacuum tank outlet directly connected to said vacuum pump inlet; and
said vacuum pump mounted on said first top surface of said vacuum tank.

5,621,925

POOL OR WATER TANK, SUCH AS A SWIMMING POOL, PROVIDED WITH MEANS GENERATING WAVES

Dirk Bastenhof, Edelvalk 32, NL-3905 RB Veenendaal, Netherlands

Filed Mar. 3, 1995, Ser. No. 397,970
Int. Cl.[6] E04H *3/16*
U.S. Cl. 4—491 **9 Claims**



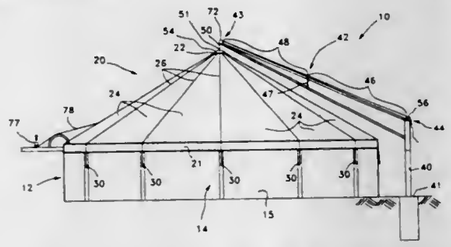
1. In combination, a wave generating device and a swimming pool or water tank comprising:
at least one pipe having first and second ends connected through a wall of the pool or tank so as to be in communication with the interior thereof below the water level; and
means located in said at least one pipe for selectively moving water back and forth axially in said at least one pipe so as to expel water from said first end into the pool or tank while intaking water from the pool or tank into said second end and subsequently to expel water from said second end while intaking water from the pool or tank at said first end so as to generate waves in said pool or tank.

5,621,926

SWIMMING POOL COVER SYSTEM

Gaétan La Madeleine, 13700 chemin St-Roch, Tracy, Québec, Canada

Filed Jul. 25, 1995, Ser. No. 507,675
Int. Cl.[6] E04H *4/10*
U.S. Cl. 4—498 **10 Claims**



1. A swimming pool cover system for removably covering a water surface delimited by a swimming pool periphery and for preventing objects or persons from falling into the water when the cover system is in a covering position, the cover system comprising:
a flexible cover sheet having an outer edge;
connecting means for removably fixing the outer edge of the sheet to locations along the swimming pool periphery; and
suspension means connectable to a central portion of the sheet for removably suspending the sheet above the water surface and for tautening the sheet in the covering position; said suspension means comprising:
a post adjacent to the swimming pool periphery;
a boom member rotatably mounted on the post, the boom member having a free end provided with a first pulley located near the free end, the boom member comprising a distal portion pivotally connected to a proximal portion, the distal portion being movable in a vertical plane between an unfolded position where it is extending linearly with the proximal portion and a folded position where it is folded on top of the proximal portion;

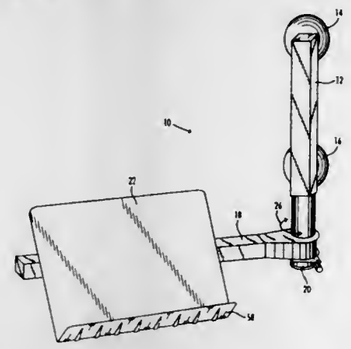
a tautening cable slidable through the first pulley and having a first end removably connectable to the central portion of the sheet; and first blocking means mounted on the boom member for removably blocking the tautening cable: whereby, in a covering position, the sheet is suspended above the water surface, fixed to locations along the swimming pool periphery and tautened thereto.

5,621,927

UTILITY TRAY AND BATHTUB CADDIE

Amy Reiss, 659 Radcliffe Ave., Pacific Palisades, Calif. 90272; Marjorie B. Friedman, 521 Montana, #307, Santa Monica, Calif. 90403, and Mark Shufelt, 10373 High St., Albion, Pa. 16401

Continuation of Ser. No. 81,579, Jun. 22, 1993, abandoned.
This application Feb. 1, 1995, Ser. No. 384,475
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—559 **14 Claims**



1. A utility tray apparatus to be secured to a fixture, the utility tray comprising:
a support member having a length dimension;
means for securing the support member to the fixture with the length dimension of the support member being arranged substantially vertically;
a pivotal arm pivotally coupled to the support member for pivotal motion relative to the support member, the pivotal arm having a length dimension, the pivotal arm being movable along at least a portion of the length of the support member;
a first coupler for securing the pivotal arm to the support member at a selectable location along the length dimension of the support member;
a tray supported by the pivotal arm and movable along the length dimension of the pivotal arm; and
a second coupler for securing the tray to the pivotal arm at a selectable location along the length dimension of the pivotal arm.

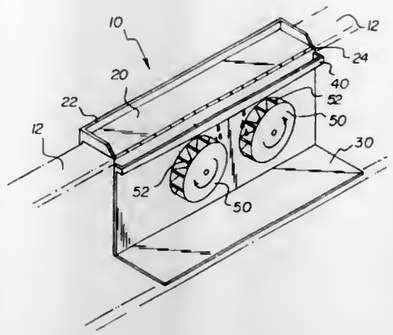
5,621,928

BATH WATER RETAINER AND TOY

Bryan Willhight, 2330 63rd St., Everett, Wash. 98203

Filed Aug. 12, 1996, Ser. No. 689,596
Int. Cl.[6] A47K *4/00*
U.S. Cl. 4—559 **6 Claims**

1. A Bath Water Retainer and Toy for use in a bathtub comprising:
a first L-shaped member, one leg of said L-shaped member adapted to lie against an exterior side of a bathtub sidewall, the other leg of said L-shaped member adapted to overlie a cornice of said sidewall;
a hinge secured to a terminal edge of said other leg of said L-shaped member;



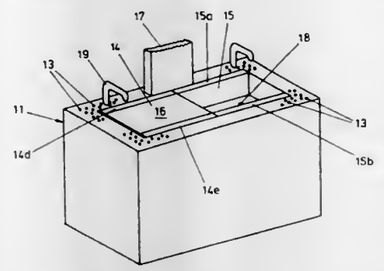
a water retaining wall projecting vertically upward from said other leg of said L-shaped member and extending around a perimeter thereof so as to form a U-shape, wherein an open portion of said U-shape is adapted to face into said bathtub;
a second L-shaped member having first and second legs, said second L-shaped member secured to said hinge at a terminal end of said first leg, said first leg adapted to overlie an interior side of said sidewall and said second leg projecting orthogonally from said first leg into an interior of said tub;
a water collecting tray secured to said first leg of said second L-shaped member for receiving water therein diverted from said water retaining wall, said water collecting tray having at least one water outlet nozzle therein; and,
at least one water wheel rotatably positioned on said first leg of said second L-shaped member below said water collecting tray such that water dispensed through said at least one water outlet nozzle falls onto said at least one water wheel to thereby rotate said at least one wheel.

5,621,929

WORK STATION

John W. Smith, Hessle, England, assignor to Afos Limited, England

Continuation of Ser. No. 83,904, Jun. 25, 1993, abandoned.
This application Mar. 6, 1995, Ser. No. 400,135
Claims priority, application United Kingdom, Jun. 25, 1992, 9213533
Int. Cl.[6] E03C *1/01*
U.S. Cl. 4—640 **7 Claims**



1. A work station which comprises:
(a) a support unit, which includes a liquid collection surface with a drain outlet, and which provides a horizontal support surface elevated above the liquid collection surface;
(b) at least two work facilities mounted removably in the support unit on the support surface, at least one of the at least two work facilities comprising a sink, the at least one of the at least two work facilities having a drain outlet through which liquid can drain from the work facility directly onto the

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collection surface of the support unit, for subsequent evacuation via the drain outlet of the collection surface, wherein the drain outlet of the collection surface of the support unit and the drain outlet of the work facility are spaced apart from one another vertically and are discrete;

(c) a plenum chamber defined within the support unit around said at least two work facilities when said facilities are mounted in the support unit; and

(d) a plurality of openings formed through the horizontal support surface to provide fluid communication between space outside the support unit and said plenum chamber for ventilating said plenum chamber.

5,621,930

SELF STANDING CONVERTIBLE FURNITURE FRAME ASSEMBLY

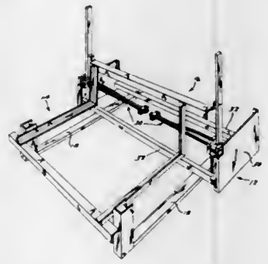
George S. Reppas, 1030 San Raymundo Rd., Hillsborough, Calif. 94010; Thomas M. Sherlock, Los Altos Hills, and Jeffery K. Sullivan, Alpine, both of Calif., assignors to George S. Reppas, Hillsborough, Calif.

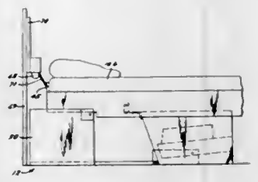
PCT No. PCT/US92/03817, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/21801, PCT Pub. Date Nov. 11, 1993

Continuation-in-part of Ser. No. 593,665, Oct. 5, 1990, Pat. No. 5,136,737. This PCT application May 7, 1992, Ser. No. 307,851

Int. Cl.[6] A47C *17/52*

U.S. Cl. 5—136 **50 Claims**





32. A convertible furniture frame assembly comprising:

a stationary base assembly;

at least one retractable supporting means coupled to said base assembly for supporting furniture components;

at least one generally horizontal self-standing support means fixedly attached to said base assembly that independently extends from said base assembly for stabilizing said convertible assembly; and

a torsion system wherein a first bar extends from said retractable supporting means and a second bar extends from said stationary base assembly generally parallel and adjacent to said first bar with one of said bars having a free end.

5,621,931

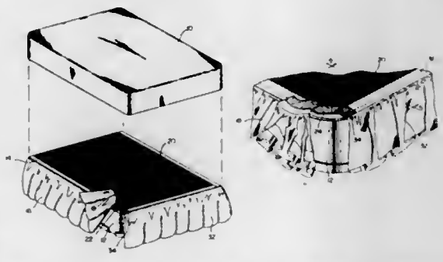
MATTRESS STABILIZING BEDSKIRT ASSEMBLY HAVING DETACHABLY ATTACHABLE SKIRT COMPONENTS

Samantha Hamilton, 103 W. Casino Rd., #8, Everett, Wash. 98204

Continuation-in-part of Ser. No. 570,777, Dec. 12, 1995, abandoned. This application Aug. 21, 1996, Ser. No. 697,194

Int. Cl.[6] A47G *9/02*

U.S. Cl. 5—493 **8 Claims**



1. A bedskirt assembly for use on a bed, said bed comprising a box spring and a mattress, said bedskirt assembly comprising:

a flexible, non-slip deck made from a friction-enhancing, non-slip material,

a skirt component and

means for attaching said skirt component to said flexible, non-slip deck,

said bedskirt assembly being installed on said bed by placing said flexible, non-slip deck on said box springs, placing said mattress on said flexible, non-slip deck and attaching said skirt component to said flexible, non-slip deck.

5,621,932

PATIENT SUPPORT SYSTEMS

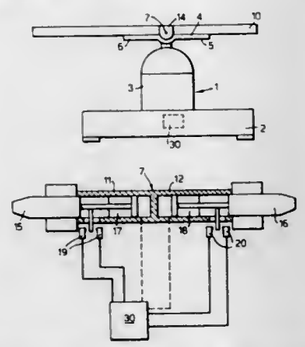
Julie Strachan, Hove, England, assignor to Smiths Industries Public Limited, London, England

Filed Aug. 3, 1995, Ser. No. 510,925

Claims priority, application United Kingdom, Aug. 20, 1994, 9416888

Int. Cl.[6] A61G *7/10*

U.S. Cl. 5—600 **10 Claims**



1. A patient support system comprising: a base assembly having an adjustable pedestal; a patient support member comprising a pair of leaves hinged about a lateral hinge, said patient support member including a table top that is removably attachable to an upper end of said pedestal; a primary lock at said upper end of said pedestal, said primary lock having two lock members that are displaceable outwardly from a first, unlocked state to a second, locking state in which they engage with said patient support member in the region

of said hinge; a lock sensor associated with said primary lock to detect the state of said lock and to provide an indication thereof; and secondary locks located on opposite sides of said hinge for engagement with said table top.

5,621,933

LIFT COLUMN FOR A SURGICAL SUPPORT

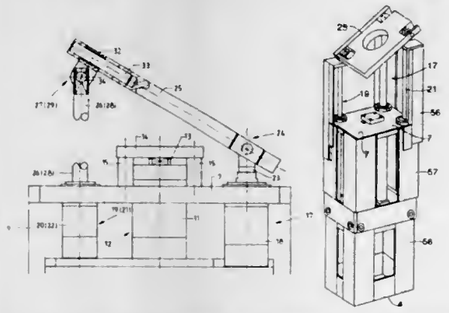
Jürgen Knapp, Heinrich-Heine-Strasse 10, D-93138 Lappersdorf, and Robert Geiger, Berg, Mettener Strasse 24, D-94526 Metten, both of Germany

Filed Dec. 8, 1994, Ser. No. 351,627

Claims priority, application Germany, Dec. 8, 1993, 43 41 779.5

Int. Cl.[6] A61G *13/00*

U.S. Cl. 5—608 **31 Claims**



31. Lift column for a raisable and lowerable carrier member, having a swing beam (**25**) bearing the carrier member and capable of being moved up and down by means of hydraulic cylinders (**12, 17, 19, 21**) for a controlled vertical travel and for being swung about two horizontal axes (**S1, S2**) perpendicular to each other for a tip or tilt motion, with at least one first lift cylinder (**12**) having a housing (**11**) acting between a lower member (**4**) connected to a base (**2**) of the lift column and an upper member (**7**) connected to the swing beam (**25**) for a reciprocating motion of the upper member in an axis of vertical travel (VH), with at least one second and one third lift cylinder each acting on the swing beam (**25**) arranged over the said upper member (**7**) in areas spatially displaced from each other, characterized in that at least one fourth lift cylinder (**21**) is provided, likewise acting on the swing beam (**25**) spatially displaced from the second and third lift cylinders (**17, 19**), and in that the second, third and fourth lift cylinders (**17, 19, 21**) connect the upper member (**7**) to the swing beam (**25**), for which purposes they act between the upper member (**7**) and the swing beam (**25**), and each acts in one of areas of action, spatially displaced from each other, of the upper member (**7**), and in that guide rails (**56**) are attached to upper ends of piston rods of the second, third and fourth lift cylinders (**17, 19, 21**), which guide rails are guided on guide rails (**57**) on said upper member (**7**).

5,621,934

MATTRESS

Kari Olkkonen, Tuusula, and Simo Paltere, Lohja, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

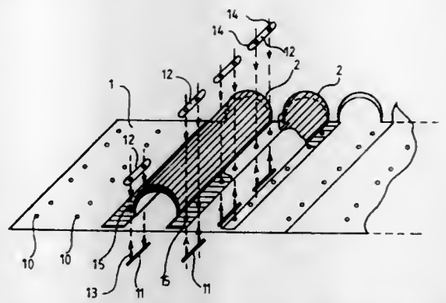
Continuation-in-part of Ser. No. 9,648, Jan. 27, 1993, Pat. No. 5,586,348, which is a continuation-in-part of Ser. No. 625,940, Dec. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 209,978, Jun. 22, 1988, Pat. No. 4,999,867. This application May 25, 1995, Ser. No. 450,426

Claims priority, application Finland, Jun. 17, 1994, 942946

Int. Cl.[6] A47C *27/08*

U.S. Cl. 5—710 **13 Claims**

1. An inflatable mattress, comprising:



a bottom element substantially rectangular in shape and forming a plate-shaped and bendable piece;

a plurality of first elongated, bag-shaped mattress elements capable of being inflated with a fluid, and being secured side by side to the bottom element of the mattress and transversally to a lengthwise direction of the mattress so that the first mattress elements form loop-shaped members when inflated with a fluid, the loop-shaped members resembling an overturned U-shape in cross-section and extending outwards from the bottom element, the first mattress elements being secured to the bottom element of the mattress by interlockable fastening members, receivable in flaps provided on longitudinal sides of the first mattress elements, so that each first mattress element is capable of being detached from the bottom element and replaced;

a plurality of second elongated, bag-shaped mattress elements capable of being inflated with gas or other fluid medium or being made of a solid, resilient material or being inflated with the solid, resilient material; the first mattress elements being arranged to encompass, at least partly, each second mattress element; and

wherein the fastening members are formed of matching male and female members, the longitudinal sides of each first mattress element and the bottom element of the mattress are provided with securing openings at a distance from each other at which the fastening members are locked to each other when the longitudinal side of each first mattress element and the bottom element have been placed between the fastening members, and the flaps on the longitudinal sides of adjacent first mattress elements are overlappable so that the adjacent first mattress elements are fastenable by a single fastening element.

5,621,935

METHOD AND APPARATUS FOR PROVIDING IMPROVED POCKETED INNERSPRING CONSTRUCTIONS

Albert R. St. Clair, Lilburn, Ga., assignor to Simmons Company, Atlanta, Ga.

Filed Sep. 8, 1994, Ser. No. 302,417

Int. Cl.[6] A47C *27/04*

U.S. Cl. 5—720 **17 Claims**

1. An innerspring construction, comprising:

a first elongate string of pocketed coils including a plurality of individual spaced-apart spring coils, each coil having a longitudinal axis lying substantially in a first plane and a first elongate tube of fabric having first transverse seams spaced along the length of said tube to define individual coil pockets corresponding to and containing individual ones of said spring coils, said tube being alternately bent proximate said first seams such that every other first seam lies on the same side of said first plane; and

a second elongate string of pocketed coils including a plurality of individual spaced-apart spring coils, each coil having a longitudinal axis lying substantially in a second plane and a second elongate tube of fabric having second transverse

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seams spaced along the length of said tube to define individual coil pockets corresponding to and containing individual ones of coils;

said second elongate string of pocketed coils being attached to said first elongate string of pocketed coils by bonds formed between circumferentially abutting surfaces on said coil pockets in said first and second elongate tubes of fabric.

5,621,936

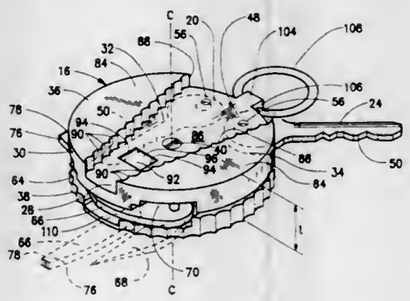
MULTI-PURPOSE HAND TOOL

Janet L. Penaligon, 5401 Beach Rd., and Jerry L. Smith, 5690 W. Rowland, both of Littleton, Colo. 80123

Filed Sep. 30, 1994, Ser. No. 315,860

Int. Cl.[6] B25F *1/00*

U.S. Cl. 7—151 **29 Claims**



1. A utensil adapted to be held by a user and manipulated by the user's hand and operative to act on a workpiece, comprising:

(a) a body member having flat first and second surfaces spaced apart from one another along a central axis, said body member including a peripheral edge extending therearound and having a thickness between said first and second surfaces, said body member having at least a first cavity formed into said peripheral edge between said first and second surfaces.

(b) a rigid first tool element sized and adapted to a received in a closely-fitted relationship by said first cap it so that said first tool element can move between a stowed state whereby said first tool element is disposed within said first cavity and an extended state whereby a proximal end portion of said first tool element is disposed within said first cavity while a distal end portion of said first tool element extends exteriorly of said first cavity so that said body member may be manipulated to act on said proximal end portion of said first tool element thereby to gain mechanical advantage on said distal end portion; and

(c) a peripheral recess formed into said peripheral edge of said body member, said peripheral recess tapering inwardly from said peripheral edge.

5,621,937

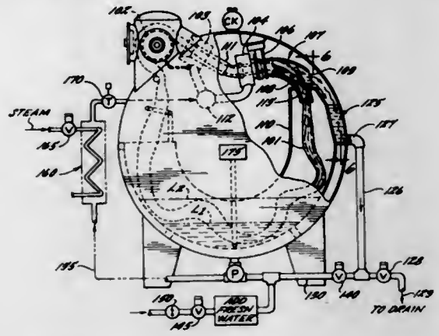
JET DYEING APPARATUS AND METHOD

Aristides Georgantas, Athens, Greece, assignor to S. Sclavos, S.A., Athens, Greece

Continuation-in-part of Ser. No. 222,090, Apr. 4, 1994, Pat. No. 5,440,771. This application Aug. 14, 1995, Ser. No. 514,701

Int. Cl.[6] D06B *3/24*

U.S. Cl. 8—149.3 **11 Claims**



8. A method of dyeing and rinsing a fabric article in continuous rope form within a jet dyeing apparatus of the type which includes a liquid treatment chamber positioned within a housing, a fabric transport tube positioned in the housing above the liquid treatment chamber, a liquid application jet positioned along the length of the fabric transport tube for applying pressurized liquid dye to the fabric as it is conveyed through the transport tube, a recirculating pump for recirculating liquid from the liquid treatment chamber to said liquid application jet, and a discharge nozzle for depositing the fabric conveyed through the transport tube into the liquid treatment chamber, said method comprising the steps of treating the fabric in said housing with dye liquor, introducing fresh water to said liquid application jet in order to rinse the treated fabric within the fabric transport tube as it is conveyed therethrough, diverting a portion of the excess rinse liquid from the discharge nozzle to an exterior header and returning at least a portion of the diverted rinse liquid in said header to the inlet of said recirculating pump.

5,621,938

EDGE-OF-DOCK LEVELER AND METHOD OF MAKING

Robert J. Warner, Mukwonago, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 131,990, Oct. 4, 1993, Pat. No. 5,450,643. This application Sep. 8, 1995, Ser. No. 525,474

Int. Cl.[6] E01D *1/00*

U.S. Cl. 14—69.5 **8 Claims**

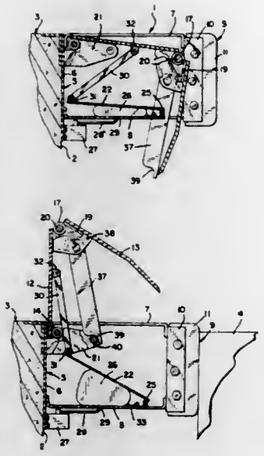
1. A dock leveler for mounting on a loading dock, comprising:

a supporting structure attachable to the loading dock;

a deck plate having a rear end pivotally connected to said supporting structure;

an inflatable bag operatively positioned to pivot said deck plate upon inflation and deflation of said bag;

inflating means for introducing a gas under pressure into said bag to selectively inflate and deflate said bag, thereby resulting in pivotal movement of said deck plate; and



means for preventing displacement of said inflatable bag, wherein said means for preventing displacement comprises a tether interconnecting said bag with said supporting structure.

6. A method of making a dock leveler, comprising the steps of:

pivotally connecting a rear end of a deck plate to a supporting structure;

attaching a bag support to the supporting structure;

positioning an inflatable bag on the supporting structure such that the deck plate is pivoted upon inflation and deflation of the bag; and

securing one portion of a tether to the inflatable bag and another portion of the tether to the bag support.

5,621,939

APPARATUS FOR REGENERATING RECORDING MEDIUM

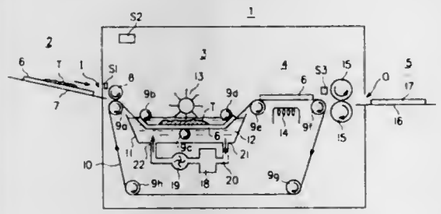
Masazumi Yoshida, Amagasaki; Susumu Tanaka, Aichi-ken; Junji Machida, and Kaoru Furusawa, both of Toyonaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 3, 1994, Ser. No. 177,001

Claims priority, application Japan, Jan. 8, 1993, 5-001657; Jan. 12, 1993, 5-003224; Oct. 29, 1993, 5-271665; Nov. 2, 1993, 5-274385

Int. Cl.[6] G03D *3/08*

U.S. Cl. 15—77 **6 Claims**



1. A regenerating apparatus which regenerates a recording medium on a surface of which a toner image is formed by an electrophotographic apparatus, said regenerating apparatus comprising:

a processing unit including an immersion bath for containing a cleaning liquid;

a feeding member which feeds the recording medium into the immersion bath;

a removing member provided around the immersion bath and which physically removes the toner image on the recording medium immersed in the cleaning liquid within the immersion bath; and

a drying member provided at a downstream side from the immersion bath with respect to a feeding direction of the recording medium and which dries the recording medium by heating,

wherein said processing unit further includes a collecting system for collecting the toner removed by said removing member, said collecting system having a circulation path connecting an inlet and an outlet provided at the bottom of the immersion bath and through which the cleaning liquid in the immersion bath is circulated, a pump provided in the circulation path, and a filter provided in the circulation path and at the upstream side from the pump with respect to a direction of the circulation of the cleaning liquid.

5,621,940

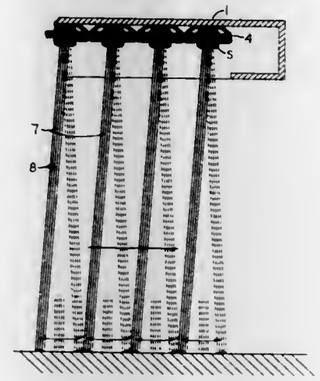
VEHICLE-MOUNTABLE PUSH BROOM

J. Harry Lewis, 68 Glass Avenue, London, Ontario, Canada, and Donald A. Lewis, London, Canada, assignors to J. Harry Lewis, London, Canada

Filed May 2, 1996, Ser. No. 641,723

Int. Cl.[6] E01H *1/02*

U.S. Cl. 15—78 **4 Claims**



1. Apparatus for sweeping surfaces, comprising a generally horizontal frame provided with a plurality of transverse downwardly-opening generally C-shaped channels, and a plurality of removable bristle strips positionable one in each said channel, each said bristle strip comprising a holder specifically configured to be accommodated within said channel, and a plurality of bristles mounted in and extending downwardly from said holder, said holders being only loosely held within said channels, such that said holders are permitted to rock within said channels, creating a sweeping action of said bristles during use of the apparatus.

5,621,941

BABY BOTTLE CLEANING DEVICE INCLUDING DUAL BRUSHES

Chih C. Liu, No. 25, Lane 16, Tung-Hsiog St., Shu Lin Town, Taipei Hsien, Taiwan

Filed Nov. 28, 1995, Ser. No. 563,721

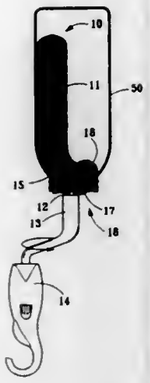
Int. Cl.[6] A46B *5/02*

U.S. Cl. 15—106 **3 Claims**

1. A baby bottle brush device, said brush device comprising:

an elongated main brush including a plurality of bristles supported by a main shaft, said main shaft having first and second

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elongated portions which are laterally and longitudinally offset with respect to one another and connected by an angled section;

an elongated second brush including a plurality of bristles supported by a second shaft, said second shaft having first and second elongated portions which are laterally and longitudinally offset with respect to one another and connected by an angled section;

an elongated connecting shaft, said connecting shaft having first and second elongated portions which are laterally and longitudinally offset with respect to one another and connected by an angled section, the second portion of the connecting shaft receives both the first portion of the main shaft and the first portion of the second shaft in an end thereof;

said first portion and angled section of the main shaft and said second portion and angled section of the connecting shaft together forming a substantially U-shape;

an elongated, substantially flat handle having first and second ends and opposed longitudinal edges, said first end of said handle has a hole therein and receives the first portion of the connecting shaft therein to couple the connecting shaft with the handle, the second end of the handle has a hook thereon, one of said opposed edges includes an arcuate protuberance thereon.

5,621,942

MOTOR VEHICLE HAVING A SCREEN WIPER FOR ITS REAR WINDOW AND A SUPPLEMENTARY REAR STOP LIGHT

Jean-Pierre Eustache, Antony, and Jack Schitter, Antran, both of France, assignors to Valeo Systemes D'Essuyage, Montigny-le-Bretonneux, France

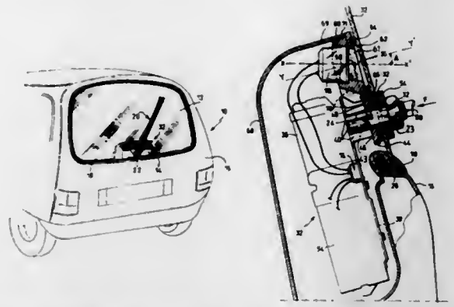
Filed Oct. 31, 1994, Ser. No. 331,689

Claims priority, application France, Nov. 4, 1993, 93 13127

Int. Cl.[6] B60S *1/58;1/06*

U.S. Cl. 15—250.3 **11 Claims**

1. A motor vehicle having a body, said body including a rear window, a screen wiping apparatus for wiping the rear window, means for mounting the screen wiping apparatus to said vehicle body, and a rear light within the vehicle in facing relationship with a portion of the rear window, the screen wiping apparatus including a screen wiper drive motor unit within the vehicle, said drive motor unit having an output spindle and a bearing in which said output spindle is moveably mounted, the vehicle body having a through hole for receiving said bearing therethrough, said bearing having a threaded portion extending outside of the vehicle, said mounting means for the screen wiping apparatus comprising: a shouldered mounting bush fitted in said through hole and surrounding said bearing, and a fastening nut secured on said threaded portion of the bearing so as to secure the screen wiping apparatus to the vehicle body, wherein the rear light comprises a lighting unit



support member carried by the screen wiping apparatus, and a lighting unit carried by the support member, and wherein said bearing includes a plurality of external longitudinal ribs spaced apart circumferentially and said shouldered mounting bush includes an axial projection which lies between consecutive ones of said ribs for angularly indexing said shouldered mounting bush with respect to said screen wiping apparatus.

5,621,943

WINDSCREEN WIPER DEVICE FOR A ROTATING MOTOR SHAFT

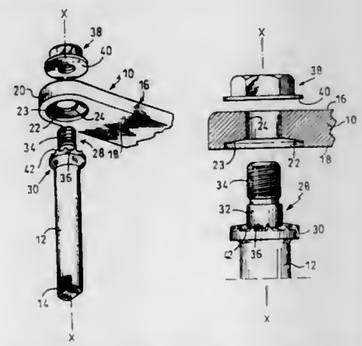
Gilles Berge, Clairefontaine/Yvelines; Jean-Pierre Eustache, Antony; Joël Princet, and Gilbert Bouy, both of Chatellerault, all of France, assignors to Valeo Systemes D'Essuyage, La Verriere, France

Filed Feb. 27, 1995, Ser. No. 395,040

Claims priority, application France, Feb. 28, 1994, 94 02240

Int. Cl.[6] B60S *1/34*

U.S. Cl. 15—250.34 **1 Claim**



1. A windshield wiper assembly, said assembly comprising:

an elongated, rotatable motor shaft defining a longitudinal axis, said motor shall includes a cylindrical main portion, a first free end portion and a second free end portion, the cylindrical main portion has a first outer diameter and the second free end portion includes means for rotational articulation of said motor shaft by a geared motor unit, said first free end portion includes;

an outer radial collar connected with and adjacent to said main portion, said outer radial collar defining a first cylindrical outer edge surface substantially parallel with said axis and having a second outer diameter greater than said first diameter, and a conical face which defines a radial annular bearing surface, said conical face includes a plurality of teeth projecting therefrom and radially spaced about said conical face;

a cylindrical coupling section connected with and adjacent to said outer radial collar, said coupling section defines a cylindrical, smooth outer surface having a third outer diameter less than said first diameter, wherein said plurality of teeth extend from said outer edge surface to said smooth outer surface;

a threaded cylindrical end section connected with and adjacent to said cylindrical coupling section, said end section having external threads thereon and having a fourth outer diameter less than said first diameter;

a driving head of a windshield wiper arm, said head having first and second substantially parallel faces, said first face has a conical countersinking formed therein which defines a radial stop surface and a second cylindrical outer edge surface substantially parallel with said axis, said second face has a cylindrical bore formed therein which is aligned with and extends into said conical countersinking;

a threaded nut, said nut includes a clamping face;

said free end portion of said shaft is coupled to said driving head, wherein said threaded end section passes through the cylindrical bore to extend from said first face such that the cylindrical coupling section lies within said bore, said threaded nut engages said threaded end section, with said clamping face engaging said first face of said head thus providing axial clamping force such that said teeth are embedded into said conical countersinking and the radial annular bearing surface engages said radial stop surface.

5,621,944

WIPER ARM WITH VIBRATION DAMPING

Tohru Sekiguchi; Eiji Mimura, both of Kosai; Takashi Saito; Hideshi Sahara, both of Toyohashi, and Takio Ohya, Musashino, all of Japan, assignors to Asmo Co., Ltd., Kosai, Japan

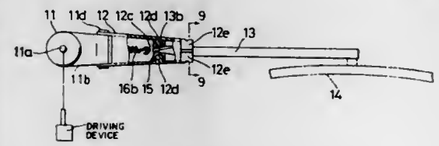
Continuation of Ser. No. 95,512, Jul. 26, 1993, abandoned.

This application Sep. 18, 1995, Ser. No. 529,804

Claims priority, application Japan, Jul. 24, 1992, 4-217465; Mar. 11, 1993, 5-076477

Int. Cl.[6] B60S *1/32*

U.S. Cl. 15—250.351 **12 Claims**



1. A wiper device comprising:

a wiper blade for wiping a surface of a windshield;

an elongated arm piece having a proximal end and a distal end, said wiper blade being connected to said arm piece, only at said distal end;

a rubber vibration damping member connected to said proximal end of said arm piece;

an elongated arm retainer supporting said rubber vibration damping member, said rubber vibration damping member and said proximal end of said arm piece being disposed within said arm retainer;

an arm head pivotally supporting said arm retainer;

said arm piece and said retainer extending in substantially the same direction wherein the proximal end of the arm piece is closer to the arm head than the distal end of the arm piece;

a driving device connected to said arm head, said driving device rotating said arm head within an angular range; and

a spring member connected between said arm retainer and said arm head, said spring member urging said wiper blade toward the surface of the windshield, wherein, when said driving device is actuated to cause said wiper blade to wipe the surface of the windshield, said rubber vibration damping member dampens an exciting force generated by friction between said wiper blade and the surface of the windshield so that said force is not transmitted from said arm piece to said arm head.

5,621,945

COLLECTION DEVICES

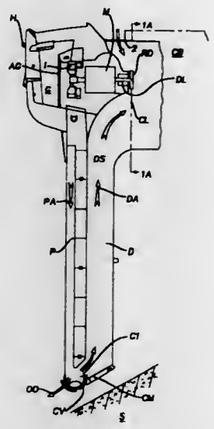
Paul E. Howells, Darlington, England, assignor to Electrolux Outdoor Products Limited, Durham, England

Filed Dec. 6, 1994, Ser. No. 349,943

Claims priority, application United Kingdom, Dec. 7, 1993, 9325016

Int. Cl.[6] A47L *5/16*

U.S. Cl. 15—339 **19 Claims**



19. An apparatus for collecting debris from a surface, said apparatus comprising:

a duct having an upstream end, a downstream region, and a collection mouth disposed at the upstream end of the duct, said duct serving to transport debris entrained in a stream of pressurized primary air from the collection mouth to the downstream region of the duct, and to discharge the debris from the downstream region of the duct;

a receptacle into which debris is discharged from the downstream region of the duct;

means for establishing a flow of pressure air;

at least one primary air inlet opening into the duct for delivering pressurized air into the duct to form the primary air stream directed generally downstream in the duct;

at least one air outlet for delivering pressurized air to form a secondary air stream directed onto the surface confronting the collection mouth, the secondary air stream serving to dislodge debris on the surface for entrainment in the primary air stream;

a cutting chamber disposed at a position displaced from the collection mouth for receiving entrained debris; and

reducing means including a cutting member within the cutting chamber for reducing the size of at least a portion of the collected debris.

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5,621,946

SUCTION TUBE MOUNTED WITH AN AUXILIARY BRUSH OF A VACUUM CLEANER

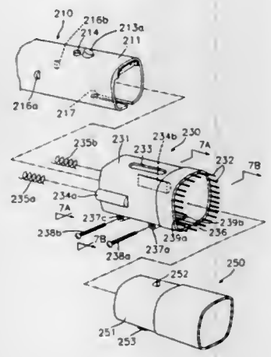
Nam-Ho Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 26, 1995, Ser. No. 578,484

Claims priority, application Rep. of Korea, Dec. 26, 1994, 94-36826; Dec. 29, 1994, 94-38982

Int. Cl.[6] A47L *9/06*

U.S. Cl. 15—373 **14 Claims**



1. A suction tube mounted with an auxiliary brush of a vacuum cleaner comprising:

a first extension pipe;

a second extension pipe having a neck inserted into the interior of said first extension pipe;

said auxiliary brush mounted to the outer periphery of said first extension pipe to be slidably moved in the lengthwise direction of said first extension pipe, said auxiliary brush having a brush body and a dust brush integrally formed with said brush body in one piece;

means for biasing said auxiliary brush toward the front side of said first extension pipe;

means in opposition to said biasing means for retracting said auxiliary brush toward the rear side of said first extension pipe; and

latching means having a press button for latching said second extension pipe into said first extension pipe when said second extension pipe is completely inserted within said first extension pipe and, at the same time, maintaining said auxiliary brush at a position retreating from the preceding end of said first extension pipe, and releasing the latching by the manipulation of said press button.

5,621,947

HINGE FOR AN ARTICLE OF FURNITURE WITH A FRAME

Helmut Fitz, Lustenau, and Erich Röck, Höchst, both of Austria, assignors to Julius Blum Gesellschaft m.g.H., Höchst, Austria

Filed May 11, 1995, Ser. No. 438,972

Int. Cl.[6] E05D *7/04;7/06*

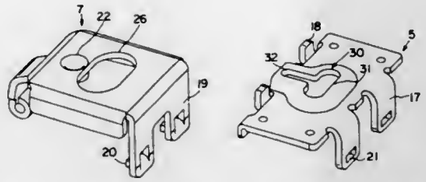
U.S. Cl. 16—249 **13 Claims**

1. A hinge for mounting a door on a frame of an article of furniture, said hinge comprising:

a mounting plate mountable on the frame, said mounting plate having therein a T-shaped hole including a broad first part and a narrow second part;

a hinge case mountable on the door;

a hinge arm connected to said hinge case by at least one hinge axle and mounted on said mounting plate, said hinge arm having therein a threaded opening;



an adjustment screw having a threaded part, a head part and a neck part, said neck part having a diameter smaller than a diameter of said threaded part;

said broad first part of said T-shaped hole having a width greater than a diameter of said head part of said adjustment screw, and said narrow second part of said T-shaped hole having a width less than said diameter of said head part and said diameter of said threaded part of said adjustment screw;

said threaded part of said adjustment screw being threaded into said threaded opening of said hinge arm, with said neck part of said adjustment screw being held in said narrow second part of said T-shaped hole, and with said head part of said adjustment screw abutting a rear side of said mounting plate opposite said hinge arm; and

said mounting plate including at least one flange injecting from said mounting plate in a direction away from said hinge arm, said hinge arm including at least one flange extending in said direction and abutting said flange of said mounting plate, and said flanges of said mounting plate and said hinge arm being connected by connection structure, such that threaded adjustment of said threaded part of said adjustment screw in said threaded opening of said hinge arm results in tilting of said hinge arm relative to said mounting plate about said connection structure.

5,621,948

METHOD AND APPARATUS FOR SEVERING A SLIVER DURING COILER CAN REPLACEMENT IN A DRAWING FRAME

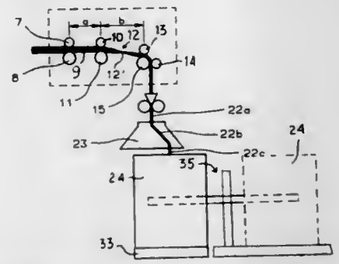
Reinhard Hartung, Mönchengladbach, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Mar. 8, 1996, Ser. No. 613,173

Claims priority, application Germany, Mar. 11, 1995, 195 08 868.9; Dec. 22, 1995, 195 48 232.8

Int. Cl.[6] B65H *67/04;54/76;* **D01H** *5/32*

U.S. Cl. 19—159 A **16 Claims**



1. In a method of processing and depositing sliver, including the steps of

drafting running sliver in a drawing frame;

forwarding the sliver by the drawing frame to a coiler head having a sliver outlet;

depositing the sliver by the coiler head into a coiler can located underneath the coiler head;

replacing a coiler can filled with sliver with an empty coiler can; and

rupturing the sliver during the replacing step;

the improvement wherein the step of rupturing comprises the following steps:

(a) increasing a draft of the running sliver in the drawing frame to such an extent as to provide a location of reduced thickness in the running sliver; and

(b) moving the full can away from under the coiler head when the location of reduced thickness in the running sliver is situated in a zone of the sliver outlet of said coiler head.

5,621,949

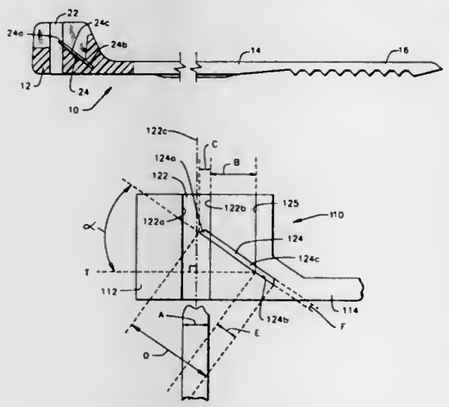
BARBED CABLE TIE

Peter Wells, Germantown, Tenn., and William A. Fortsch, Bernardsville, N.J., assignors to Thomas & Betts Corproation, Memphis, Tenn.

Filed Apr. 7, 1995, Ser. No. 418,339

Int. Cl.[6] B65D *63/00*

U.S. Cl. 24—16 PB **16 Claims**



1. A cable tie comprising:

an elongate cable tie strap having a given strap thickness;

a cable tie head including an elongate passage therethrough adapted to insertably receive said strap therein, said passage defining a cable insertion axis, said head including a barb support surface spaced from said passage;

an elongate barb having a first end portion embedded into said barb support surface, an intermediate portion extending from said first end portion and a second end portion opposite said first end portion extending into said passage for locking engagement with said strap, said intermediate portion of said barb spanning a transverse extent as measured substantially perpendicular to said cable insertion axis exceeding 1.9 times said strap thickness.

5,621,950

SPRING BIASED PAPER CLIP

Marvin D. White, 175 Telegraph Rd., Stafford, Va. 22554

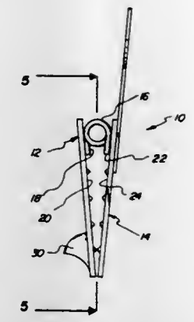
Filed Nov. 24, 1995, Ser. No. 562,549

Int. Cl.[6] B42F *1/02*

U.S. Cl. 24—67.5 **1 Claim**

1. A new and improved spring-loaded fastener for holding a large quantity of paper together, the apparatus adapted for use in association with a large quantity of paper together, the apparatus adapted for use in association with a large quantity of paper, said spring loaded fastener comprising:

a first rectangular plate having a long width and a short height and having an upper end and a lower end and further having an inner face and an outer face;



a second rectangular plate having a long width and a short height and having an upper end and a lower end and further having an inner face and an outer face

a tension spring with a first end and a second end, said tension spring being connected to said first plate and said second plate with the first end secured to the inner face of the first plate adjacent to the upper end thereof and the second end secured to the inner face of the second plate adjacent to the upper end thereof, said tension spring providing a substantial closing force between said first and second plates, thereby to normally keep first and second plates in an abutting relationship at lower ends thereof;

first gripping means for permitting a user to efficiently grip and force apart said first and second plates, whereby a large quantity of paper can be positioned between said first and second plates, the large quantity of paper being firmly gripped and retained between said first and second plates upon release of said first gripping means by a user of said fastener;

second gripping means formed on opposed paper contacting faces of said first and second plates; and

said second gripping means comprising a plurality of staggered rows and columns of raised protrusions on the majority of inner faces of each of said opposed paper contacting faces of said first and second plates, said protrusions on each face being engageable with said large quantity of paper, said raised protrusions being formed in a generally conical shape with a curvilinearly shape apex;

said protrusions on said first plate aligned and abuttable with said protrusions on said second plate, thereby to provide an increased gripping force between said first and second plates at a point of contact between said protrusions;

said first gripping means comprising a raised finger receiving surface on said first plate, whereby a finger of said user can be inserted therein to apply an opening force between said first and second plates; and

hanging means attached to the outer face of said second plate, said hanging means having a top end formed as a closed loop for facilitating an attachment of said fastener to a substantially vertical support surface, thereby to permit an accessible displaying of the large quantity of paper when the large quantity of paper is retained between said first and second plates.

5,621,951

DEVICE FOR COVERING AND CONCEALING BUTTONS

John C. Gould, 3320 Glencairn Ct., Unit 101, Bonita Springs, Fla. 33923

Filed Jun. 17, 1996, Ser. No. 664,670

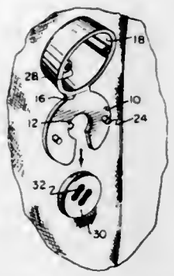
Int. Cl.[6] A44C *13/00;* **A44B** *1/16*

U.S. Cl. 24—90.5 **3 Claims**

1. A device for detachably covering and concealing a button having a thread secured thereto, said device being composed entirely of plastic and comprising:

a first horizontal plate having at least one opening therein, the opening defining a slot through which said thread can extend,

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the first plate being disposed behind the button with the thread extending throught the slot when the device is in use;

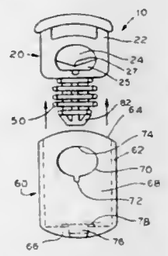
a hollow cylinder having opposite open ends;

a second horizontal plate spaced from the first plate, the second plate being secured to one end of the cylinder and closing same;

a living hinge integrally securing a portion of the periphery of the other open end of the cylinder to a peripheral portion of the first plate;

said device having an open position at which said other end of the cylinder is out of engagement with the first plate and having a closed position at which said other end of the cylinder is in mating engagement with the first plate, said cylinder and said first plate provided with detachable locking engagement means which are spaced apart when the device is in the open position and which are disposed in locking engagement when the device is in closed position, the button being concealed when the device is in closed position.

5,621,952
CORD CLOSURE
Frank Frano, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Sep. 25, 1995, Ser. No. 533,256
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—115 G **18 Claims**



1. A cord closure, comprising:

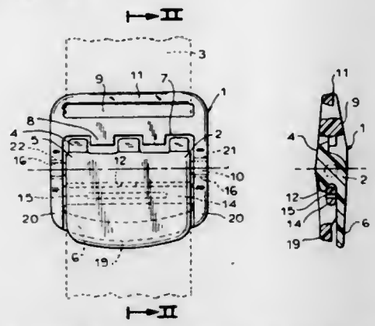
a housing having an open end, a surrounding side wall, and a closed end to form a cavity, said housing having a hole formed through opposite sides of said surrounding side wall;

a plunger having a body with a throughhole and a stem extending from a shoulder portion of said body, said stem having a resilient retaining member upon a distal end portion disposed away from said body; and

a bias spring disposed in releasable compression about said stem of said plunger such that opposite ends of said bias spring are interposed between said shoulder portion of said body and said resilient retaining member upon said distal end portion of said stem with the end of said bias spring operatively associated with said distal end portion of said stem being disposed in direct contact with said resilient retaining member of said distal end portion of said stem;

wherein at least a portion of said body and said stem of said plunger is reciprocally disposable within said cavity of said housing so that said throughhole of said plunger is alignable with said holes formed through said opposite sides of said housing so as to permit threading of a cord through said aligned holes of said cord closure without said bias spring urging said plunger away from said housing until said bias spring is released from said resilient retaining member, whereby said bias spring urges said plunger away from said housing so as to engage and retain said cord threaded through said holes of said cord closure, upon depressing said plunger into said cavity of said housing.

5,621,953
OVERALL BUCKLE
Gerhard Fildan, Wohnpark Alte Erlaa, Anton Baumgartner Str. 44, C 4 17 01, A-1232, Vienna, Austria
Filed Jan. 11, 1995, Ser. No. 371,546
Int. Cl.[6] A44B *11/12*
U.S. Cl. 24—170 **11 Claims**



11. An overall buckle comprising:

a frame formed with means at one end of said frame for detachably securing said buckle to a bib portion of an overall, and a pair of lateral limbs;

a flap swingably mounted on said frame between said limbs, said flap having teeth cooperating with counterteeth on said frame for gripping a strap of the overall in a closed position of said flap and for releasing said strap in an open position of said flap, thereby enabling adjustment of the strap relative to said bib portion; and

detent means between said frame and said flap releasably locking said flap in said closed position against unintentional opening, said detent means including:

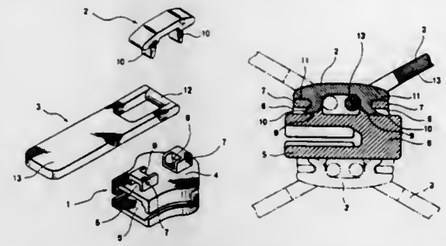
a tooth formed on said flap,

a flexible bar spanning said limbs in a path of said tooth, positioned for deflection by said tooth whereby said tooth engages behind said bar and midway between said limbs in said closed position, said bar being formed with at least one longitudinally extending slit therethrough in a plane perpendicular to a plane of the frame for facilitating flexing of said bar.

5,621,954
SLIDER FOR SLIDE FASTENER
Hiroshi Mizuno, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Jan. 30, 1996, Ser. No. 593,913
Claims priority, application Japan, Jan. 31, 1995, 7-013331; Sep. 29, 1995, 7-253113
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—429 **12 Claims**

1. A slider for a slide fastener, comprising:

(a) a slider body having upper and lower wings:

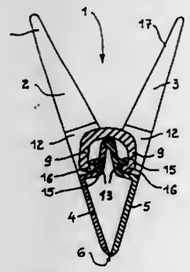


(b) a pair of attachment lugs projecting from an upper surface of said upper wing, each attachment lug having an insertion hole and a guide surface contiguous to said insertion hole;

(c) a pull tab having a pintle; and

(d) a pull tab retaining bar having a pair of legs each fitted in one of said insertion holes of each of said attachment lugs so as to define between said pull tab retaining bar and said upper surface of said upper wing an opening through which said pintle of said pull tab is to be inserted, said guide surfaces shaped to plastically bend said legs during insertion into said insertion holes to lock said retaining bar to said upper wing.

5,621,955
CLAMP MADE OF PLASTIC FOR CLAMPING SHEET-LIKE OBJECTS
Dieter Schmid, Radaustrasse 23a, D-86199 Augsburg, and Oliver Schmid, Grundweg 2, D-86356 Neusäss, both of Germany
PCT No. PCT/EP93/01867, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/13494, PCT Pub. Date Jun. 23, 1994
PCT Filed Jul. 16, 1993, Ser. No. 446,680
Claims priority, application Germany, Dec. 11, 1992, 92 16 896.5
Int. Cl.[6] A44B *21/00*; A47G *25/48*
U.S. Cl. 24—511 **5 Claims**



1. A sheet clamp comprising:

a first clamping lever including a clamping jaw, said clamping jaw extending along a clamping line, said first clamping lever also including a handle positioned substantially at a middle of said clamping line, said first clamping lever with said handle and said clamping jaw being formed as a single piece of plastic, said first clamping lever defining a first lever first recess and a first lever second recess, said first lever first recess and said first lever second recess being positioned substantially symmetrically about said handle in a direction of said clamping line, said first lever first recess and said first lever second recess each being open in a direction away from said clamping line;

a second clamping lever having a clamping jaw, said clamping jaw extending along said clamping line, said second clamping lever also including a handle positioned substantially at a middle of said clamping line, said second clamping lever with said handle and said clamping jaw being formed as a single piece of plastic, said second clamping lever defining a second lever first recess and a second lever second recess, said second lever first recess and said second lever second recess being positioned substantially symmetrically about said handle in said direction of said clamping line, said second lever first recess and said second lever second recess being open in said direction away from said clamping line;

mounting means positioned adjacent to said first lever first recess, said first lever second recess, said second lever first recess and said second lever second recess; said mounting means for pivotably connecting said first and second clamping levers, said mounting means including a bead integrally formed with said first clamping lever and including a groove defined by said second clamping lever;

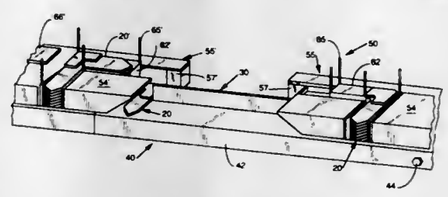
a first lever first recess shaped projection providing a projection surface positioned in said first lever first recess;

a first lever second recess shaped projection providing a projection surface positioned in said first lever second recess;

a second lever first recess shaped projection providing a projection surface positioned in said second lever first recess; a second lever second recess shaped projection providing a projection surface positioned in said second lever second recess;

and spring means for biasing said bead and said groove together and for biasing said clamping jaws of said first and second clamping levers together, said spring means including a first u-shaped spring with legs including lips which are slidable over said first lever first recess shaped projection and said second lever first recess shaped projection and for forming a snap like closure with said first lever first recess shaped projection and said second lever first recess shared projection and a second u-shaped spring with legs, said legs including lips which are slidable over said first lever second recess shaped projection and said second lever second recess shaped projection and for forming a snap like closure with said second lever first recess shaped projection and said second lever second recess shaped projection.

5,621,956
DUCT FRAME ASSEMBLY APPARATUS
John R. Kolesar, West Mifflin, Pa., assignor to Ward Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 179,412, Jan. 10, 1994, Pat. No. 5,448,815. This applicatioo Jan. 27, 1995, Ser. No. 379,799
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—243.5 **15 Claims**



1. Apparatus for inserting the legs of an L-shaped corner member into corresponding channels of elongated flange members used in an assembly for connecting the adjacent ends of sheet metal ducts, comprising:

a base member for supporting a first flange member in a first receiving position;

first positioning means attached to said base member for positioning said L-shaped corner member in a first insertion position wherein a first leg of said L-shaped corner member is in confronting relationship with the channel on a first end of said first flange member;

first insertion means attached to said base member for inserting said first leg of said L-shaped corner member into the channel of said first flange member adjacent said first end thereof;

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second positioning means attached to said base member for positioning a first end of a channel in a second flange member in confronting relationship with a second leg of said L-shaped corner member; and

second insertion means attached to said base for inserting said second leg of said L-shaped corner member into the channel of said second flange member adjacent said first end thereof.

5,621,957

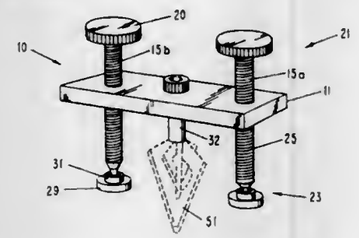
ARROWHEAD EXTRACTION TOOL

Robert C. Herrera, and Lillian M. Herrera, both of 9710 Sombrero Loop NE., Albuquerque, N.M. 87113

Filed Jul. 28, 1995, Ser. No. 508,627

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—264 **3 Claims**



1. An arrowhead extraction tool comprising:

a. a leverage plate having a first aperture disposed substantially in a coordinate center of said leverage plate, said leverage plate further having a first end and a second end;

b. adjustable means for providing an axial thrust disposed adjacent to said leverage plate's first and second ends;

c. means for attaching a lodged arrowhead, said means for attaching structurally communicating with said means for providing axial thrust, said means for attaching further comprises an attaching member having an integrally formed head at one end and means for coupling an arrowhead at another end, said head being larger than said first aperture, said attaching member having an external groove formed circumferentially which is positioned along said attaching member adjacent to said leverage plate, said groove adapted to engage a means for retaining said head rotatably communicating with said means for coupling to engage said lodged arrowhead, whereby upon operation of said means for providing axial thrust, said means for attaching engages externally threaded portion of a lodged arrowhead and extracts said arrowhead from its lodged position.

5,621,958

BRAKE ELEMENT PROCESSING DEVICE AND METHOD

Gordon G. Woodcox, R.R.#3 Cavan, Ontario, Canada

Filed Jan. 31, 1995, Ser. No. 381,186

Int. Cl.[6] B21J *15/50*

U.S. Cl. 29—426.4 **18 Claims**

1. A device for processing a brake element, comprising:

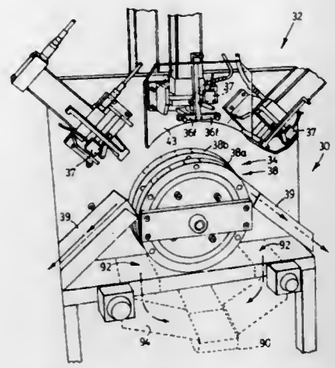
frame means;

fixture means supported by said frame means for locating a brake element, said brake element having an inner concave surface and an outer convex surface, said fixture means having a first surface to engage said inner concave surface;

clamping means for removably clamping said brake element to said fixture means;

said fixture means further comprising a plurality of rivet extraction means, each of said rivet extraction means being arranged to align with a corresponding rivet in said brake element;

said fixture means further comprising a second surface;



cam means providing a cam surface adjacent said second surface, each of said rivet extraction means being arranged to engage said cam means at said second surface;

wherein said cam means includes a first cam member and a shaft, said first cam member mounted on said shaft for rotation relative to said second surface, said shaft arranged to rotate about a central first axis, said cam means being operable in a plane perpendicular with said first axis.

5,621,959

METHOD OF ATTACHING A BEAD ASSEMBLY TO A TUBULAR CONDUIT

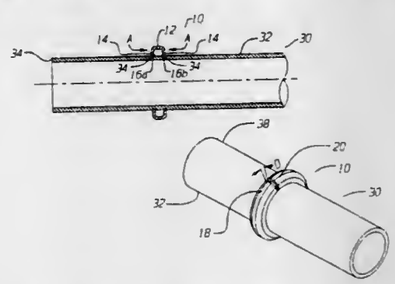
Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

PCT No. PCT/US92/02511, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/20377, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1992, Ser. No. 295,916

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—450 **10 Claims**



1. A method of attaching a bead assembly to a tubular conduit, the method comprising the steps of:

(a) providing a selectively deformable ring member having a first end and a second end, an inner surface, an outer surface, an axially tubular portion, and a pair of spaced apart radially projecting flanges having said tubular portion fitted therebetween, said ring member having a desired inner diameter in an undeformed condition;

(b) providing a tubular conduit having an outer diameter and at least one annular groove;

(c) expanding said ring member such that the ring member's inner diameter increases to a size greater than the tubular conduit's outer diameter by inserting a tool between said first and second ends;

(d) positioning said ring member over said tubular conduit; and

(e) removing said tool from between said first and second ends,

whereby removing said tool from between said first and second ends allows said ring member to spring back to its original position and said ring member after assembly on said tubular conduit returning to its undeformed inner diameter such that said inner diameter is less than said tubular conduit outer diameter to attach said ring member to said tubular conduit.

5,621,960

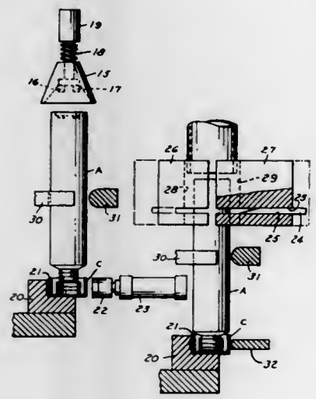
METHOD AND APPARATUS FOR FORMING AN ASSEMBLY OF A FLEXIBLE TUBE AND CLOSURE

Ronald S. Kaminski, Bowling Green, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 228,055, Apr. 15, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 356,936

Int. Cl.[6] B23P *11/00;19/00*

U.S. Cl. 29—456 **63 Claims**



1. In a method of forming a tube with a threaded closure from a container having a longitudinal axis formed with a threaded finish having an open end finish, a flexible side wall and a closed bottom which is thereafter cut to provide an open bottom, the improvement comprising

bringing a container into position adjacent said closure,

holding a closure having threads stationary prior to cutting the bottom, and

rotating the container about its longitudinal axis to apply the closure on the container,

thereafter cutting the bottom of the container from the remainder of the container along an axis transverse to the longitudinal axis of the container to provide a tube having an open bottom and a closure applied to its finish,

said container being formed with recess means in the closed bottom wherein the step of rotating said container comprises engaging said recess means and rotating the container.

5,621,961

METHOD FOR FORMING A CLINCH JOINT TECHNICAL FIELD

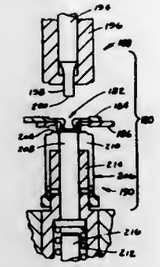
Louis C. Schleicher, Warren, Mich., assignor to Techline Engineering Co., Warren, Mich.

Division of Ser. No. 188,391, Jan. 27, 1994, Pat. No. 5,490,310, which is a continuation of Ser. No. 526,066, May 18, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,763

Int. Cl.[6] B23D *11/00*

U.S. Cl. 29—509 **3 Claims**

1. A method of forming a clinch joint fastening a plurality of sheets of deformable material together, comprising:



overlapping the sheets to be fastened together in a generally parallel relationship to form an overlap region having a first side and a second side;

positioning the first side of the overlap region, adjacent a die assembly which includes an elongated mandrel having first and second ends aligned along a die axis, an anvil projecting axially from the mandrel first end providing an anvil face and defining a shoulder on the mandrel extending about the anvil generally perpendicular to the die axis, and a die button surrounding the mandrel having a die button base ring and a plurality of die segments each having a leaf portion cantileveredly extended axially from the base ring toward the anvil and having an enlarged head portion at the free end of the leaf portion extending radially inward toward the anvil to collectively provide a die face surrounding the anvil and a central die recess, each of said head portions having a land generally parallel to and in cooperative support relationship with the mandrel shoulder to transmit axial loads exerted thereon into the mandrel;

positioning a punch adjacent the second side of the overlap region aligned coaxially with the first die recess;

drawing the sheets into the die recess by moving the punch relative to the die assembly deforming the material out of the plane of the overlap region into the die recess, while transmitting axial loads exerted on the die face during drawing directly from the head portion lands into the mandrel shoulder without axially loading die segment leaf portions;

squeezing the material between the punch and anvil together to radially extrude the material therebetween outwardly biasing the die segment heads as the die segment leaf portions elastically flex

retracting the punch after the material between the punch and anvil has been squeezed together to allow the material immediately surrounding the joint periphery to radially inwardly extrude;

providing a stripper-die adjacent the second side of the overlap region, said stripper-die having a raised face surrounding the punch aligned with the die button face; and opening the punch and die assembly allowing the finished joint to be removed.

5,621,962

METHOD OF MANUFACTURING CHISEL FOR IMPACT TOOL

Hiroshi Okada, and Tetsuji Nakai, both of Nabari, Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan

Filed Apr. 10, 1995, Ser. No. 419,395

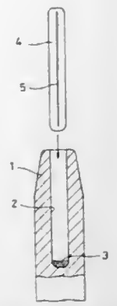
Int. Cl.[6] B23P *19/02*

U.S. Cl. 29—525 **3 Claims**

1. A method of manufacturing a chisel for use in an impact tool, the method comprising:

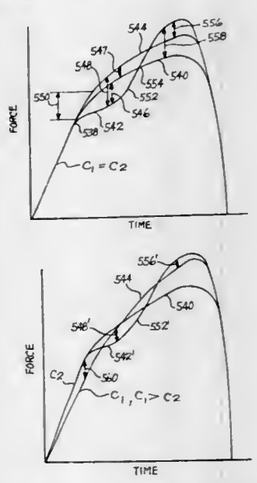
supplying a graphite powder, a talc powder, or a mixture of graphite and talc powder into an axial opening formed in a tip of a chisel body to provide a packing; and

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press-fitting a core member into the axial opening, wherein the core member is formed of a more durable material than the chisel body.

5,621,963
DIFFERENTIAL CAPACITANCE IN AN ELECTROMAGNETIC RIVETER
Gregory C. Givler, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 819,210, Jan. 9, 1992, which is a division of Ser. No. 632,445, Dec. 21, 1990, Pat. No. 5,231,747. This application Jun. 6, 1995, Ser. No. 466,864
Int. Cl.[6] B23P *11/00;19/04*
U.S. Cl. 29—525.06 **3 Claims**



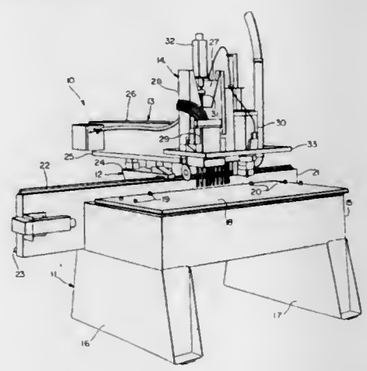
1. A method of upsetting a rivet, having a headed end and a nose end, in a countersunk hole using an electromagnetic riveting machine having two opposed drivers, a first one at said headed end of said rivet, and a second one at said tail end of said rivet, wherein the rivet is upset by impelling said drivers against said ends of the rivet with one or two strokes, comprising:

powering said first driver at said headed end of said rivet by a repulsive force created by two opposing magnetic fields, one of which is generated in a first coil through which a first capacitor discharges, the other of which is created by eddy currents induced in a first electrically conductive transducer by the rapidly changing magnetic field generated in said first coil by discharge of current from said first capacitor, thereby generating an opposing magnetic field to cause said first coil and said first transducer to experience mutually repulsive forces;

powering said second driver at said tail end of said rivet by a repulsive force created by two opposing magnetic fields, one of which is generated in a second coil through which a second capacitor, having a smaller capacitance than said first capacitor, discharges with a longer current rise time than the current rise time of discharge from said first capacitor, the other magnetic field of which is created by eddy currents induced in a second electrically conductive transducer by the rapidly changing magnetic field generated in said second coil by discharge of current from said second capacitor, thereby generating an opposing magnetic field to cause said second coil and said second transducer to experience mutually repulsive forces; and

driving said first driver and said second driver to upset said rivet whereby, said first driver is driven with a force pulse that is longer and lower than said second driver force pulse to minimize dimpling of thin workpieces and eliminate gaps under said rivet head.

5,621,964
METHOD FOR MAKING TOOLHEAD ASSEMBLY FOR MACHINE TOOLS
Kenneth J. Susnjara, Santa Claus; Michael P. Hardesty, Dale; Edwin H. Haefling, Evanston, and Robert A. Hardy, Gentryville, all of Ind., assignors to Thermwood Corporation, Dale, Ind.
Division of Ser. No. 298,096, Aug. 23, 1994, Pat. No. 5,471,724. This application Jul. 19, 1995, Ser. No. 504,019
Int. Cl.[6] B23P *21/00;* **B23B** *41/00*
U.S. Cl. 29—527.1 **19 Claims**



1. A method of making a toolhead for a toolhead assembly of a machine tool comprising:

forming a housing of a rigid material having at least one bore therein;

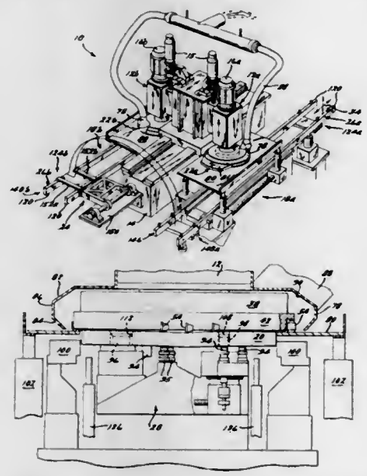
positioning a core member having a cylindrical outer surface in said bore with said cylindrical outer surface being spaced from a wall surface of said bore to provide a peripheral space therebetween;

injecting an uncured formulation of a structural polymer into said peripheral space;

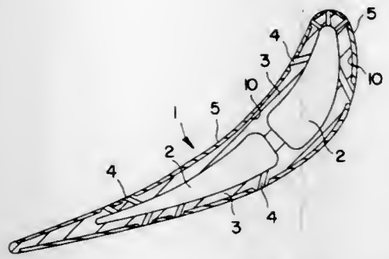
allowing said formulation of structural polymer to cure and harden, replicating the cylindrical surface of said core member; and

removing said core member to provide a bore for receiving a spindle assembly therein.

5,621,965
METHOD OF DEFLECTING A WORKPIECE TO ESTABLISH RIGIDITY IN WORK POSITIONING AND SUPPORT DURING A MACHINING OPERATION
Manuel C. Turchan, 42288 Crestview Cir., Northville, Mich. 48167
Division of Ser. No. 875,231, Apr. 28, 1992, abandoned. This application May 18, 1995, Ser. No. 444,212
Int. Cl.[6] B23Q *7/00*
U.S. Cl. 29—559 **12 Claims**



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forming a main body of an alloy so that the main body has an outer surface comprising raised portions having through holes therein and recessed portions;

forming a heat-shielding coating in the recessed portions; and

polishing the surface of the heat-shielding coating to a desired blade contour.

5,621,969

METHOD OF FABRICATING ROLLER THERAPEUTIC APPLIANCE

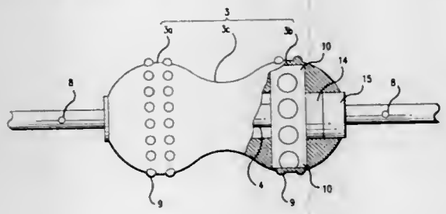
Isamu Masuda, Fukuoka, Japan, assignor to Nihon Kenko Zoushin Kenkyukai Corporation, Fukuoka, Japan

Division of Ser. No. 367,638, Jan. 3, 1995. This application Sep. 22, 1995, Ser. No. 532,913

Claims priority, application Japan, Dec. 15, 1994, 6-333963

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—895.21 **1 Claim**



1. A method of fabricating a roller therapeutic appliance comprising the steps of:

inserting a rod-shaped jig into an inner hole of an annular magnetic field generating source on the jig;

introducing the annular magnetic field generating source supported on said jig along with an elastic material between molds;

pressurizing and applying heat to said molds and thereby molding a pressure roller embedding said magnetic field generating source;

pulling out said jig from the molded pressure roller;

fitting bearings into an inner hole of the pressure roller; and

inserting a rod having an operation axis into the bearings, and thereby rotatably supporting the pressure roller on said rod for rotation about said operation axis.

5,621,970

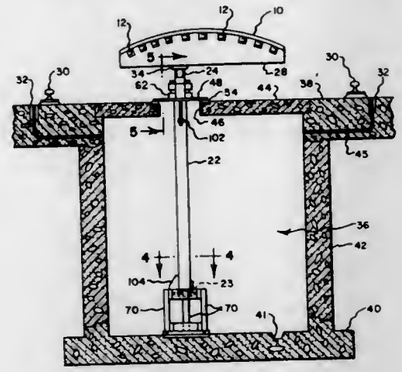
METHOD FOR POSITIONING A WING PANEL FOR RIVETING

Bradley M. Roberts, Williamsville; James J. Birke, North Tonawanda; Joseph Dionne, West Seneca, and Kurt R. Kubanek, Tonawanda, all of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Division of Ser. No. 241,352, May 11, 1994. This application Jun. 6, 1995, Ser. No. 465,727

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—897.2 **7 Claims**



1. A method comprising the steps of:

a. loading a workpiece on piston rods of a plurality of hydraulic cylinders spaced along the length of the workpiece;

b. operating the hydraulic cylinders to raise the workpiece to a position for conducting operations thereon; and

c. controlling hydraulic fluid flow to and from the hydraulic cylinders for synchronizing the movements of the piston rods so that each of the piston rods bears its share of the workpiece load throughout raising of the workpiece including inputting to a controller the position of each of the piston rods at each of increments of time during raising of the workpiece and further including operating the controller to output signals for controlling the speed of each of the piston rods individually in response to the inputted position thereof.

5,621,971

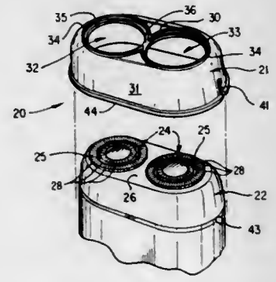
MULTI-PURPOSE ATTACHMENT FOR LADIES' SHAVER

Edward Szymansky, Fairfield, Conn., assignor to Remington Products Company, Bridgeport, Conn.

Filed Jul. 12, 1995, Ser. No. 501,694

Int. Cl.[6] B26B *19/42*

U.S. Cl. 30—43.6 **18 Claims**



1. A shaver for providing a close and comfortable shave on both legs and underarms, said shaver comprising:

A. a housing;

B. at least two rotationally driven cutting blades mounted to the housing;

C. at least two slotted holders mounted to the housing, each slotted holder comprising

a. a top surface and an outer wall connected to and extending from the top surface and a plurality of slots formed in the top surface and the outer wall, and

b. constructed for over lying, peripheral surrounding engagement with a respective one of said cutting blades for cooperating therewith to cut hairs entering the slots of the holder; and

D. a cutting guard member comprising

a. an enlarged plate removably mountable to the housing;

b. at least two apertures formed in the plate, each aperture being positioned for receiving engagement with one slotted holder in peripheral surrounding juxtaposed relationship therewith, partially blocking a portion of the outer wall of the holder and the slots formed therein, and

c. interlocking means formed on the guard member for cooperating with the housing to enable secure engagement with the housing as well as easy removal therefrom;

whereby close and comfortable shaving of both underarms and legs is attained by employing the guard member for shaving the soft, pliable, tender skin of the underarms, while removing the guard member for close shaving of legs.

5,621,972

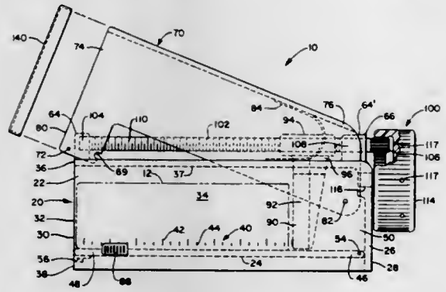
BUTTER PAT DISPENSER

Ochier H. Sala, 739 Broadview Ter., Hartford, Conn. 06106

Filed Oct. 10, 1995, Ser. No. 541,332

Int. Cl.[6] A21C *5/00*

U.S. Cl. 30—116 **14 Claims**



1. A dispenser for dispensing measured pats from a stick of butter or margarine comprising:

an elongated container defining an exterior and an interior, said container having a plurality of side portions, a closed end portion and an open end, said side portions comprising a first pair of oppositely disposed side portions defining a top panel and a bottom panel and a second pair of oppositely disposed side portions defining first and second side panels, said top panel defining a longitudinally extending slot, said bottom panel comprising a plate, said plate being mountable to said first and second side panels;

cutting means moveable between a first position adjacent a one of said side portions and a second position adjacent an oppositely disposed side portion; and

advancement means for advancing the stick through said open end comprising pusher means and driver means mounted exteriorly of said container, said pusher means comprising a pusher member disposed in said container, an extension member extending through said slot, and an engagement member defining a threaded longitudinal bore, said driver means comprising knob means rotatably mounted to said exterior of said container, said knob means defining a cylindrical void and an interior circumferential surface, said interior surface comprising a quantity of radially extending first teeth wherein said quantity of said first teeth equals N1, said driver means further comprising rod means rotatably mounted to said container having a first end portion and a threaded portion defining a thread, said thread having a pitch, said threaded portion being received in said bore wherein said threaded portion threadably engages said bore whereby said pusher member is displaced a longitudinal distance upon rotation of said rod means, said first end portion defining a quantity of radially extending second teeth wherein said quantity of said second teeth equals N2, said first end portion being disposed in said void wherein said second teeth engage said first teeth whereby said rod means rotates upon rotation of said knob means;

wherein said bottom panel is at least partially dismountable from said first and said second side panels whereby access is provided to said interior of said container and wherein said pitch, N1 and N2 are selected such that said pusher member is displaced a predetermined distance for a predetermined rotation of said knob means.

5,621,973

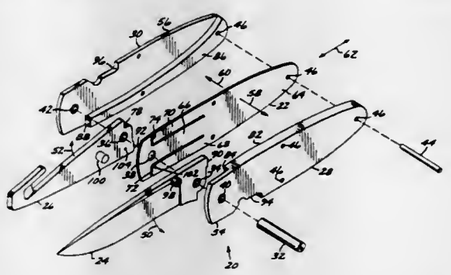
LOCKABLE FOLDING KNIFE WITH ROLLOVER BLADE SELECTION

Brett P. Seber, Escondido, and Roy L. Helton, Jr., San Diego, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.

Continuation of Ser. No. 138,670, Oct. 18, 1993. This application May 22, 1995, Ser. No. 445,579

Int. Cl.[6] B26B *1/04*

U.S. Cl. 30—161 **5 Claims**



1. A folding knife, comprising:

a knife body having a first knife side and a second knife side;

a common blade pivot pin extending between the first knife side and the second knife side;

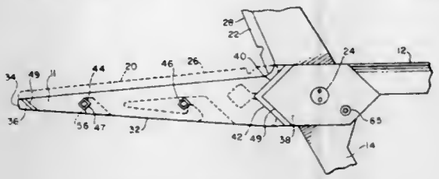
a first blade pivotably joined to the knife body at the common blade pivot pin and disposed within the knife body in a first blade closed position, the first blade being pivotable in a first rotational direction about the common blade pivot pin from the first blade closed position to a first blade open position;

a second blade pivotably joined to the knife body at the common blade pivot pin and disposed within the knife body in a second blade closed position, the second blade being pivotable in a second rotational direction opposite to the first rotational direction about the common blade pivot pin from the second blade closed position to a second blade open position; and

locking means for controllably locking the first blade in the first blade open position and for independently and controllably locking the second blade in the second blade open position, and wherein the locking means includes a side lock mechanism having a double side lock plate positioned between the first blade and the second blade.

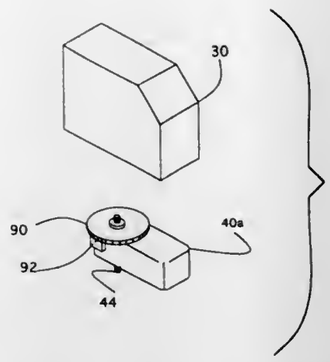
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5,621,974
CUTTING IMPLEMENT
Anthony T. Rose, and Theresa M. Rose, both of Westlake Village, Calif., assignors to Anthony W. Rose, Jr., Tempe, Ariz.
Filed Sep. 27, 1995, Ser. No. 534,483
Int. Cl.[6] B26B *13/04*
U.S. Cl. 30—260 **3 Claims**



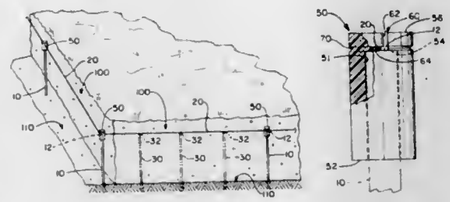
1. A cutting implement comprising:
an elongated shank having a forward end defining an open cavity;
said cavity defined by a reduced thickness of said forward end and terminating at the opposite ends of said cavity with angular shoulders;
at least one pair of posts carried on said forward end projecting through said cavity and disposed in fixed spaced-apart relationship with respect to said angular shoulders;
a cover plate closing a side of said cavity opposite to said forward end so that said cavity is open at top and bottom of said forward end;
a cutting blade mounted on said pair of posts within said cavity and having a cutting edge exposed beyond said cavity;
laser welds securing said cover plate to said angular shoulders;
said angular shoulders and said posts are stepped so as to include several enlarged bases supporting said blade on said forward end and for supporting said cover plate;
said blade is a permanent blade composed of a ceramic and carbide composition; and
said forward end includes a raised nose portion defining one end of said cavity and a tail portion spaced from said nose portion defining the other end of said cavity; and
said nose portion and said tail portion provided with flat surfaces on each of said angular shoulders for supporting said cover plate.

5,621,975
REMOTELY CONTROLLED SELF-LEVELING LASER INSTRUMENT WITH MODULAR CAPABILITY
Joseph F. Rando, Los Altos Hills, Calif., assignor to Levelite Technology, Mt. View, Calif.
Filed Aug. 22, 1995, Ser. No. 517,989
Int. Cl.[6] G01B *11/26;* **G02B** *7/00*
U.S. Cl. 33—227 **14 Claims**



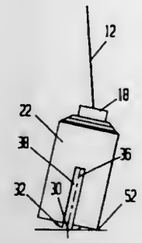
1. A system for use in layout of points or lines using a projected laser beam, comprising:
a hand carryable two-axis self-leveling laser instrument having an instrument housing and means for projecting at least one substantially horizontal laser beam in spite of a small tilt of the housing,
a remotely controlled turntable unit independent and separate from the laser instrument and having a motor positioned in a turntable unit housing and a rotatable turntable on the turntable unit housing connected to be rotated by the motor, and including means for receiving remote wireless signals to cause the motor to incrementally rotate the turntable as desired,
a hand held remote control unit having transmitter means for sending wireless signals to the remotely controlled turntable unit to cause the motor to rotate the turntable, with at least one control button switch for enabling an operator to send signals as desired for control of rotation of the turntable, and
means for securing the self-leveling laser instrument to the rotatable turntable of the remotely controlled turntable unit, so that an operator can rotate the laser instrument to swing the aim of the laser beam as desired from an operator position remote from the laser instrument.

5,621,976
GRADE STAKE LINE CAP DEVICE
Thomas Ochsenbine, 73881 Colerain Rd., Dillonvale, Ohio 43917
Filed Jun. 7, 1995, Ser. No. 475,636
Int. Cl.[6] G01C *15/00*
U.S. Cl. 33—339 **20 Claims**



1. A device for use by a construction contractor which may be carried on the top end of a grade stake to maintain a site grade level as between at least two grade stakes when each stake carries a said device and a contractor's line extends between them, the device comprising:
a substantially solid body forming a cap as defined by a top end and bottom end and longitudinal side walls interconnecting the top and bottom ends wherein the bottom end has an opening into a bore which penetrates longitudinally into the body a specific distance and is adapted for receiving a contractor's grade stake therein and the top end of the body has a slot which extends from a position on one longitudinal side wall of the body to a position on an opposite longitudinal side wall thereof and penetrates into the body to a depth such as to intercept the longitudinal bore, said slot exhibiting a configuration at the depthwise extent thereof such as to accept and maintain a contractor's line within the slot and on a top surface of a grade stake carried within the bore of the device.

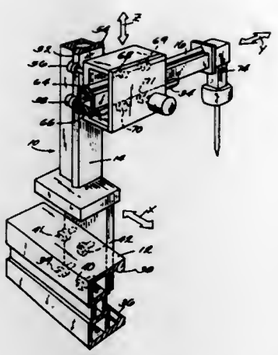
5,621,977
PLUMB BOB
Kenneth J. Hampton, 11731 Puryear La., Garden Grove, Calif. 92640
Filed Aug. 7, 1995, Ser. No. 512,069
Int. Cl.[6] G01C *15/10*
U.S. Cl. 33—392 **11 Claims**



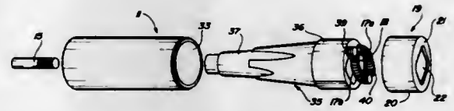
1. In a plumb bob having a body with a flexible cord attached to the upper end of the body by attachment means, and a tapered lower end terminating in a sharp point, with said attachment means and said flexible cord and a sharp point being located on a central axis passing through the center of gravity of said bob body, the improvement comprising:
a. a segmented bob body having at least two removably attached bob body segments consisting of:
(1) a bob body upper segment having said flexible cord attachment means, and
(2) a bob body lowermost segment including said tapered lower end removably attached to said upper body segment; and
b. center point registration means located on the undersurface of said upper body segment including a raised protuberance centrally located on the undersurface of said bob body upper sediment to permit said bob body upper segment to tilt, but not topple, on said central axis when rested on a supporting surface, whereby
a single worker can position the upper end of said flexible cord at a point on an elevated surface and transfer the location of said point to a remote lower surface without securing said flexible cord to said elevated surface.

5,621,978
BAR FOR COORDINATE MEASURING MACHINE
Alan J. Sarauer, Rte. 6, Box 58, Chippewa Falls, Wis. 54729
Continuation of Ser. No. 91,762, Jul. 14, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,612
Int. Cl.[6] G01B *5/004*
U.S. Cl. 33—503 **7 Claims**

1. A coordinate measuring machine having an aluminum horizontal rail defining an X-axis, a vertical rail movable along said horizontal rail defining a Z-axis, and horizontal arm orthogonally situated relative to said X and Z axes defining a Y-axis wherein,
said horizontal arm is movably supported in a support housing supported on said vertical rail for upward and downward movement therein, said arm being movably supported in said housing for extension and retraction along said Y-axis, said arm being of a rectangular cross section with top, bottom, and opposed lateral surfaces, said top and bottom surfaces being provided with first and second convex surfaces V-shaped in cross-section extending upwardly from its upper surface and downwardly from its lower surface, said V-shaped convex surfaces being machined to form accurate planar surfaces and engaging upper and lower concave mating supporting surfaces in said housing.



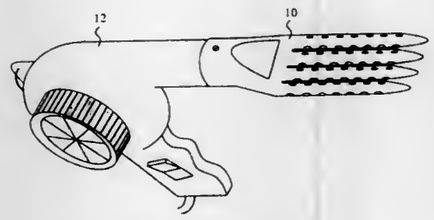
5,621,979
DRIVE ATTACHMENT DEVICE, PARTICULARLY FOR A PAINT BRUSH
David B. Taylor, Unit 1d Oldmixon Crescent, Weston Super Mare, Avon, BS24 9AX, United Kingdom
PCT No. PCT/GB94/00163, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO94/16909, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 27, 1994, Ser. No. 500,935
Claims priority, application United Kingdom, Jan. 27, 1993, 9301596
Int. Cl.[6] F26B *17/24*
U.S. Cl. 34—58 **6 Claims**



1. A drive attachment device comprising:
an elongate, substantially rigid housing body defining an axis, a drive means being received within said housing body to rotate said housing body about said axis,
said housing body defining an internal socket arranged coaxial with said axis and having an open end for the axial insertion into said socket of an end portion of an article to which drive is to be transmitted, said socket being shaped to restrain said inserted end against movement transverse to said axis, and
said housing body carrying resilient gripper members each attached at opposite edges to a selected end of said housing body adjacent said open end of said socket so as to extend across said open end, said gripper members capable of being stretched and resiliently forced apart upon the insertion of the end portion of the article into said socket between said gripper members and through said open end, said gripper members then gripping resiliently a part of said article spaced from said inserted end to fixedly retain said article in said socket upon rotation of said housing body about said axis.

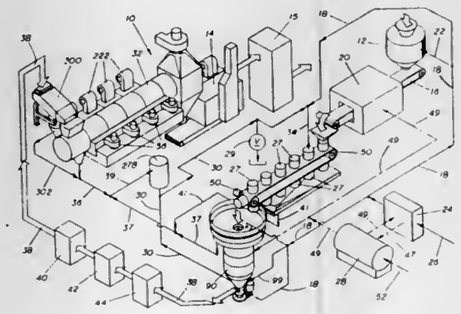
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5,621,980
BLOW DRYER ATTACHMENT FOR VOLUMIZING AND STYLING HAIR
Daniel B. Kingsbury, 1071 Vineland St., Cocoa, Fla. 32927
Filed Mar. 29, 1995, Ser. No. 412,894
Int. Cl.[6] A45D *20/00*
U.S. Cl. 34—97 9 Claims



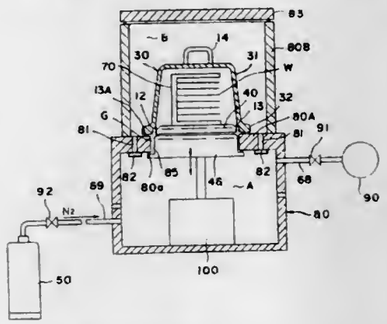
1. An attachment for a blowdryer comprising:
a cylindrical attachment portion adapted to fit over an air output of the blowdryer, the cylindrical attachment portion transitioning to, and attached to a large base end of, a hollow cone-shaped member, the cone-shaped member terminating in a funneling portion;
a plurality of hollow members extending from the funneling portion in a direction parallel to the direction of airflow through the cylindrical attachment portion and cone-shaped member, each hollow member having a plurality of apertures to allow air to exit the hollow members.

5,621,981
FOOD DRYING METHOD AND APPARATUS
John H. Kendall, Sugar Land; Ranvir B. Mohindra; Duane S. Rutherford, both of Houston, all of Tex.; Satoru Satake, Tokyo, Japan; Sigeharu Kanamoto, and Katsuyuki Kumamoto, both of Mihara, Japan, assignors to Riviana Foods, Inc., Houston, Tex., and Satake Corporation, Japan
Filed Sep. 2, 1993, Ser. No. 116,064
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—136 26 Claims



1. A method of drying a food granule slurry which comprises water and wet food granules, comprising:
a. moving the food granules within and in a direction along the length of a perforated rotating barrel, the barrel having separately controllable temperature zones therein; and
b. blowing air past the food granules along a path that passes through perforations in the barrel and across the inner space within the barrel and exits the barrel through perforations in the barrel.

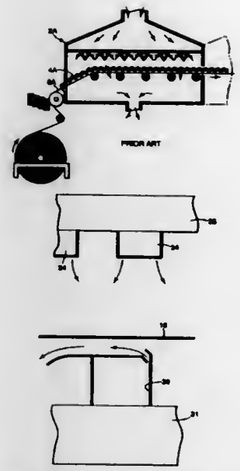
5,621,982
ELECTRONIC SUBSTRATE PROCESSING SYSTEM USING PORTABLE CLOSED CONTAINERS AND ITS EQUIPMENTS
Teppei Yamashita; Masanao Murata; Tsuyoshi Tanaka; Teruya Morita; Hitoshi Kawano; Mitsuhiro Hayashi; Atsushi Okuno, and Akio Nakamura, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 104,472, Jul. 28, 1993. This application Oct. 27, 1994, Ser. No. 329,904
Claims priority, application Japan, Jul. 29, 1992, 4-202660; Aug. 7, 1992, 4-211546; Aug. 20, 1992, 4-221474; Aug. 20, 1992, 4-221475
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—203 8 Claims



1. A purging station comprising:
an independent casing having a container carry-in/carry-out opening;
a purging unit provided in said casing, said purging unit having a container stand;
a portable closed container including a container body and a bottom lid for storing and conveying a cassette which accommodates electronic substrates, said cassette being placed on said container stand;
a container body lifting unit for lifting said container body;
purging pipes first ends of which are opened in said purging unit; and
a purging control unit for controlling said purge station
wherein said purging unit incorporates a purging mechanism which operates to open and close said bottom lid of said container on said container stand to selectively communicate the inside of said container with the inside of said purging unit.

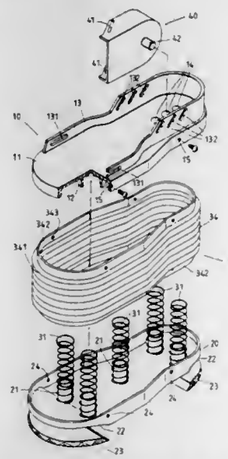
5,621,983
APPARATUS AND METHOD FOR DECKELING EXCESS AIR WHEN DRYING A COATING ON A SUBSTRATE
Thomas J. Lundemann, Maplewood; Robert A. Yapel, Oakdale; Roger K. Yonkoski, Woodbury, all of Minn., and Brian L. Strobush, Kingwood, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 29, 1996, Ser. No. 627,708
Int. Cl.[6] F26B *9/00*
U.S. Cl. 34—641 18 Claims

1. A method for evaporating a coating solvent from a coating on a first substrate surface of a first substrate and minimizing the formation of mottie as the coating solvent is evaporating, the first substrate also having a second substrate surface and a first substrate width, the coating having a first coating edge and an opposite second coating edge on the first substrate, the method comprising the steps of:
providing a drying path for the first substrate within a drying oven, the drying oven having a plurality of air foils positioned adjacent to the second substrate surface, each of the plurality



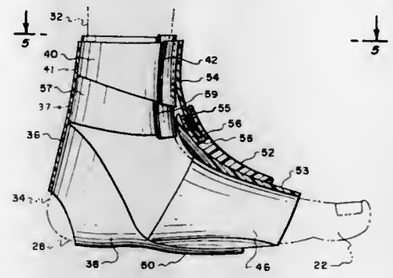
of air foils having a foil slot through which a stream of drying gas is supplied to the drying oven, the foil slot having a slot length and a first slot end;
adjusting the foil slot length to not be significantly greater than the first substrate width to minimize air flow over the first and second coating edges which minimizes the creation of mottle;
applying the coating onto the first substrate surface of the first substrate to form a first coated substrate, the first substrate having the first substrate width and having a first substrate end; and
transporting the first coated substrate through the drying path.

5,621,984
AMUSEMENT FOOTWEAR HAVING A RESILIENT SOLE
Frank Hsieh, 9th-1 Floor, Kuang Fu South Road, Taipei, Taiwan
Filed Aug. 7, 1995, Ser. No. 511,625
Int. Cl.[6] A43B *13/18;3/26*
U.S. Cl. 36—28 6 Claims



1. An amusement footwear comprising an insole, an outsole, and a resilient portion disposed between said insole and said outsole for providing said footwear with a bouncing effect; wherein said insole is provided integrally with a ring portion of a U-shaped construction having an open end corresponding in location to toes of a person's foot, said ring portion provided at said open end thereof with two front retaining holes opposite to each other, said ring portion further provided respectively at both sides of a closed end thereof with a plurality of first rear retaining holes parallel to each other, said insole having a rear end which is corresponding in location to heel of a person's foot and is provided with a plurality of first retaining means engageable with a second retaining means fastened to the underside of a bottom of an adjustment means dimensioned to fit into said rear end of said insole, said adjustment means provided respectively and correspondingly on both side walls thereof with a second rear retaining hole which is corresponding in location to one of said first rear retaining holes of said insole, said insole further provided on an underside thereof with a plurality of outer fitting means; wherein said outsole is provided thereon with a plurality of inner fitting means corresponding in location to said outer fitting means of said insole; and wherein said resilient portion comprises a plurality of coil springs which are fitted at one end thereof over said outer fitting means of said insole and are further fitted at another end thereof over said inner fitting means of said outsole, said resilient portion further comprising a resilient casing fastened securely with said insole and said outsole such that said casing encloses said coil springs.

5,621,985
JUMPING ASSIST SYSTEM
John H. Frost, 6900 Canby Ave - #110, Reseda, Calif. 91335
Division of Ser. No. 280,226, Jul. 25, 1994, Pat. No. 5,475,935, which is a continuation-in-part of Ser. No. 80,823, Jun. 24, 1993, abandoned. This application Oct. 2, 1995, Ser. No. 538,117
Int. Cl.[6] A43B *7/32;* A61H *1/00*
U.S. Cl. 36—89 3 Claims



1. A system for use with a foot attached to a lower leg of a human at an ankle joint, the lower leg having a front edge defined as a shin and a back edge defined as an Achilles area which includes the Achilles tendon, the foot having a bottom surface with a ball located forwardly and a heel located rearwardly, the forward top portion of the foot being defined as the dorsum, the foot being pivotly movable at the ankle joint to form an acute angle in a jump ready position and then an obtuse angle in a lift off position, with the foot in said jump ready position the shin moves forwardly towards the dorsum which lengthens the Achilles tendon, the jumping height is increased the faster the Achilles tendon contracts pulling on the heel which pivots the foot at the ankle joint locating the foot in the lift off position, a jumping system for a human comprising:
an Achilles tension brace extending between the lower leg and the bottom surface of the heel, said Achilles tension brace being anchored to a sling at an anchoring point, said anchoring point being located in alignment with the back of the lower leg, as the lower leg moves forwardly into the jump ready position said anchoring point moves forwardly thus increasing the distance from the heel thus exerting a force backward and downward on the lower leg and upward on the heel such that the opposing force from the lower leg from the forward weight and motion of the body of the human will

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help overcome resistance at the heel due to gravity thus applying a pulling force pulling the heel upward increasing the propulsion of the jump;

a leg strap attached to the top of the Achilles brace;

a dorsum tension brace located at the dorsum and connecting with said Achilles tension brace at the bottom of the foot, said dorsum tension brace augments the pulling force by exerting a force downward against the dorsum tending to move the foot from said jump ready position to said lift off position as well as serving to hold said sling in a correct position thus increasing the pulling tension of said Achilles tension brace between the lower leg and the heel; and

means for restricting downward movement of said Achilles tension brace at said anchoring point, means for restricting rearward movement of said dorsum tension brace by use of movement restricting braces mounted between said dorsum tension brace and said leg strap, said movement restricting braces being spaced from each other with the foot in said lift off position, said movement restricting braces abutting each other as the lower leg moves forwardly to said jump ready position.

5,621,986

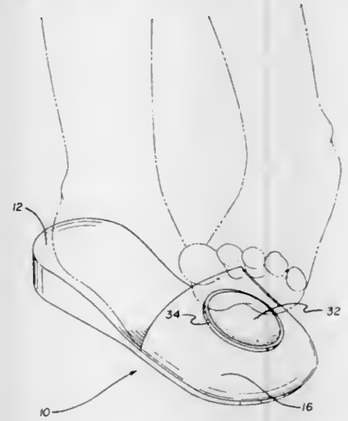
CALLOUS REMOVING SHOE

Emir A. Medina, 116-20 91st Ave., Queens, N.Y. 11418, and Clara D'Aiuto, 495 Main Ave., Wood-Ridge, N.J. 07075

Filed Oct. 2, 1995, Ser. No. 537,445

Int. Cl.[6] A43B *5/08;3/12*

U.S. Cl. 36—136 **3 Claims**



1. A therapeutic shoe comprising:

a sole;

solid cover means attached to said sole and being operable to overlie an upper surface of a wearer's foot, thereby to facilitate a retention of said sole on said wearer's foot, said solid cover means forming an enclosure over toes of said wearer's foot; and

abrasion means attached to said shoe and being utilizable to selectively provide abrasive treatment to said wearer's skin, said abrasion means being attached to said cover means forming a part of said therapeutic shoe, said abrasion means being retained within an opening formed in said cover means, said abrasion means including a retaining plate secured within said opening so as to effect a retention of said abrasion means therewith, wherein said abrasion means including a pumice stone, said pumice stone is secured within said opening by said retaining plate, said retaining plate being provided with an upstanding wall having an interior circumferential groove, said interior groove being engageable with a circumferentially extending ring member formed on said pumice stone, thereby to effect a retention of said pumice stone within said abrasion means.

5,621,987

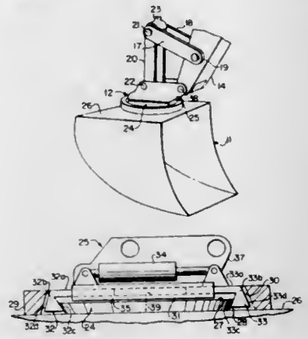
IMPLEMENT COUPLING ASSEMBLY FOR EXCAVATOR MACHINES AND THE LIKE

Samuel S. Pratt, Bedford; Dan Shaffer, Duncansville; Tim A. Davis, Berlin, and Ashley Heiple, Alum Bank, all of Pa., assignors to Rockland, Inc., Bedford, Pa.

Filed Jun. 8, 1995, Ser. No. 482,414

Int. Cl.[6] E02F *3/96*

U.S. Cl. 37—468 **27 Claims**



1. An assembly for coupling an implement to an operating arm of a machine comprising:

a first component fixedly mountable on said implement, having an annular gripping surface;

a second component connectable to said operating arm having a pair of gripping members displaceable along a first line of travel into and out of gripping engagement with the gripping surface of said first component, and means for selectively displacing said gripping members into and out of said gripping engagement; and

said first component having at least one pair of spaced, fixed abutment surfaces disposed in opposed relation to said gripping members for restricting displacement of said gripping members relative to said first component along a second line of travel intersecting said first line of travel, and at least one abutment surface engageable by said gripping members for restricting displacement of said gripping members along said first line of travel for retaining at least a portion of said gripping members in opposed relation to said pair of abutment surfaces, whereby said implement would be free to be displaced angularly relative to said second coupling component about the axis of said gripping surface and prevented from being fully separated relative to said second coupling component substantially along said second line of travel when said gripping members are out of gripping engagement with said gripping surface.

5,621,988

VALVES FOR REMOVABLE TANK OF STEAM IRON

Jean-Paul A. A. Bouleau, Champfleur, and Gerard L. H. Guillot, Radon, both of France, assignors to Moulinex, Bagnolet, France

PCT No. PCT/FR94/00994, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO95/05503, PCT Pub. Date Feb. 23, 1995

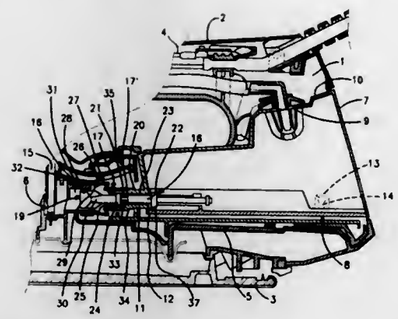
PCT Filed Aug. 10, 1994, Ser. No. 591,540

Claims priority, application France, Aug. 12, 1993, 93 09915

Int. Cl.[6] D06F *75/18*

U.S. Cl. 38—77.3 **7 Claims**

1. Steam iron comprising a casing in which a water reservoir is removably mounted, means for locking the reservoir in the casing, a filling orifice formed in a top part of said reservoir, and a water outlet orifice formed in a bottom part of said reservoir, a distribution chamber in which a drip feed device is mounted, said distribution chamber having an opening which communicates with the water outlet orifice through a pipe, a first valve being fitted to the water outlet orifice, a first reciprocal means for actuating the first valve suitable for opening the first valve when the reservoir is locked in the casing, a second valve being provided to close the opening, a second reciprocal means for actuating the second valve, one of the two valves having a movable shutter and a fixed seat, the other valve having a fixed shutter and a movable seat, and the two reciprocal actuating means being adapted to come into engagement, when the reservoir is locked in the casing, with the movable shutter and with the movable seat.



5,621,989

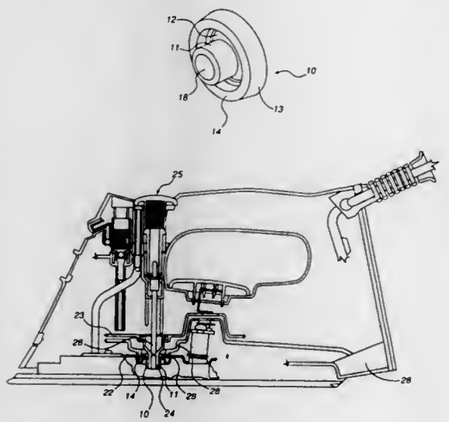
STEAM VALVE SEAL FOR IRON

Keith J. Hensel, North Sydney, and Richard L. Hoare, Neutral Bay, both of Australia, assignors to Sunbeam Products, Inc., Fort Lauderdale, Fla.

Filed Nov. 14, 1995, Ser. No. 557,305

Int. Cl.[6] D06F *75/18*

U.S. Cl. 38—77.8 **6 Claims**



1. A steam valve seal for a steam iron comprising:

a hollow cylindrical base;

an annular middle portion disposed between the base and an outer annular wall having a downwardly extending annular shoulder; and

an annular groove defined by and disposed between the annular middle portion and the outer annular wall.

5,621,990

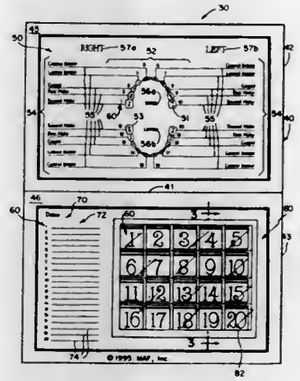
KEEPSAKE HOLDER FOR BABY TEETH

Anastasia Blanchard, 760 Islip Ave., Brentwood, N.Y. 11717

Filed Dec. 22, 1995, Ser. No. 577,293

Int. Cl.[6] G09F *1/00*

U.S. Cl. 40—124.06 **22 Claims**



1. A keepsake holder for a child's baby teeth, said holder comprising:

a generally planar support;

identifying means attached to said planar support for identifying each baby tooth of a child, wherein said identifying means comprises at lest one of graphical representations of each baby tooth of a child and dental terminology indicia of each baby tooth of a child;

recording means attached to said planar support for recording the date that each baby tooth of the child falls out;

retaining means attached to said planar support for separately retaining each baby tooth of the child; and

cross-referencing indicia comprising a first set of indicia, a second set of indicia, and a third set of indicia, said first set of indicia being operably disposed adjacent said identifying means, said second set of indicia being operably disposed adjacent said recording means, and said third set of indicia being operably disposed adjacent said retaining means, said cross-referencing indicia for cross-referencing each retained baby tooth in said retaining means to its identification in said identifying means and its recorded date in said recording means.

5,621,991

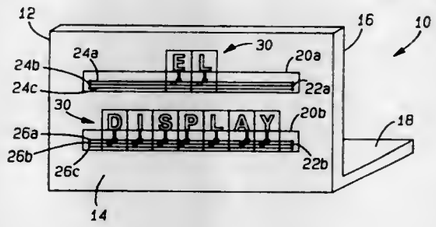
LIGHTED DISPLAY WITH ELECTROLUMINESCENT LAMPS

Thomas L. Gustafson, Southfield, Mich., assignor to Stan-Tech, Dearborn, Mich.

Filed Oct. 31, 1995, Ser. No. 550,713

Int. Cl.[6] G09F *13/22*

U.S. Cl. 40—544 **14 Claims**



1. A lighted electroluminescent display, comprising:

a display support;

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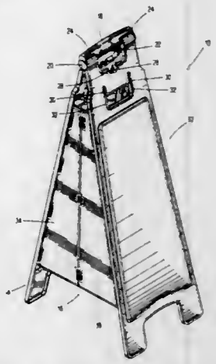
a power supply in electrical communication with said display support;

a bus bar mounted to said display support and having at least two bus wires extending therealong, said bus wires being electrically connected to said power supply;

an electroluminescent lamp in electrical communication with said bus bar, said electroluminescent lamp having substantially coplanar bus wire contact pads and being illuminated by electricity supplied by said power source to said contact pads through said bus wires;

said bus bar including a pressure pad mounted to one side thereof, said bus wires being mounted on said pressure pad to urge said lamp into electrical contact therewith.

5,621,992
FOUR SIDED COLLAPSIBLE FLOOR SIGN
Jonathan N. Mandell, Hattiesburg, Miss., and Glenn E. Tomblin, Winchester, Va., assignors to Rubbermaid Commercial Products, Inc., Winchester, Va.
Filed Apr. 13, 1995, Ser. No. 421,519
Int. Cl.[6] G09F *15/00*
U.S. Cl. 40—610 **11 Claims**



1. A self-standing all plastic floor sign comprising two end panels having an upper and lower end, said upper ends of said end panels hinged together for selectively folding and spreading said lower ends of said end panels apart, said end panels each having two outer edges, the improvement comprising:

securing means, disposed approximately adjacent said outer edges of each of said end panels, for assisting in securing a first and a second side panel to each of said end panels;

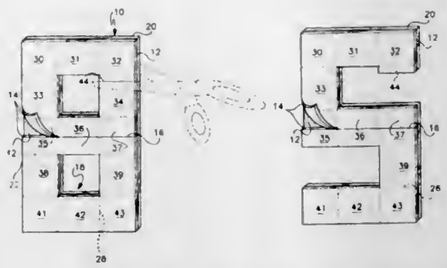
hinge means disposed within an approximate center of each of said first and said second side panels for allowing said side panels to collapse in a generally inwardly direction;

said side panels having two outer edges, and at least one pin member oriented adjacent each of said side panel outer edges;

each of said securing means comprising at least one generally C shaped channel oriented on an interior wall of said end panels and oriented approximately adjacent said outer edge of said end panels, said channel for mating with one of said corresponding pin members oriented adjacent said side panel outer edges.

5,621,993
NUMERIC INDICIA BLANK FOR FORMING SIGNS
Carl Stover, 222 Stover Dr., Delaware, Ohio 43015
Filed Oct. 24, 1995, Ser. No. 547,312
Int. Cl.[6] G09F *7/04*
U.S. Cl. 40—638 **16 Claims**

1. A preformed digit eight blank for forming numeric signs including digits from zero to seven and nine comprising:



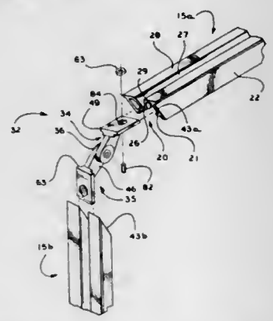
an opaque, flexible sheet material, having a face, a backside and a rectangular outer dimension;

two rectangular apertures of equal area centered within said outer dimension so as to define a digit eight figure with a pair of elongated legs of equal width integrally bridged by three horizontal elongated members of a width equal to the width of said pair of legs;

a flexible magnetic layer attached to and conforming to said digit eight figure; and

a flexible release liner layer applied to and conforming to said flexible magnetic layer, said release layer being provided with linear indicia defining edges of predetermined rectangular areas on said elongated legs and said elongated horizontal members, said linear indicia being arranged such that said rectangular areas can be selectively removed by cutting the magnetic layer and the sheet material along said linear indicia to form a digit from zero to seven and nine.

5,621,994
SIGN ASSEMBLY WITH ADJUSTABLE CORNERS
Ronald W. Cobb, Atlanta; Benjamin H. Bell, Avondale Estates; Jeff A. Hampton, Powder Springs, and Danny L. Roberts, Auburn, all of Ga., assignors to APCO Graphics, Inc., Atlanta, Ga.
Filed May 4, 1995, Ser. No. 434,245
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—782 **14 Claims**



1. An adjustable sign assembly, comprising:

a plurality of elongate edge members each having first and second ends;

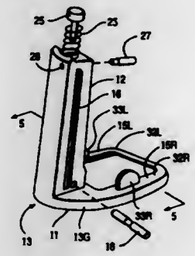
the edge members being arranged in an end-to-end configuration with the first end of one of said edge members located adjacent to the second end of another of said edge members at an included angle between adjacent edge members to form corners of a sign frame having a predetermined overall polygonal planar configuration;

separate corner connectors operatively interconnecting the adjacent ends forming at least some of the corners;

at least one said corner connector including means selectably adjustable to vary the included angle between two adjacent ones of said elongate edge members through a range of angles, thereby adjusting the overall polygonal configuration in the plane of the sign frame; and

said adjustable means being affixed to the two adjacent ones of said elongate edge members in lateral offset relation to said adjacent elongate edge members, thereby allowing said first and second ends of the elongate edge members to contact one another without interferences from the adjustable means.

5,621,995
GUN DOUBLE COLUMN STAGGERED ROUND HIGH CAPACITY MAGAZINE ENTRANCE GUIDE
Alan K. Smith, 113 La Fawn Cir., Garland, Tex. 75043
Filed Dec. 22, 1993, Ser. No. 172,484
Int. Cl.[6] F41A *9/65*
U.S. Cl. 42—7 **20 Claims**



1. An angled gun magazine entrance guide for easier and faster insertions of fresh magazines into a gun butt having a gun butt receiver opening comprising: extension means integral with a gun mainspring housing mounted on said gun butt having said gun butt receiver opening; said extension means including opposite side arms extended forwardly from said mainspring housing; said opposite side arms being formed with inner side angled opening outward slopes extended outwardly from said gun butt receiver opening to opposite sides of said gun butt receiver opening making the insertion of a fresh magazine into said gun butt receiver opening easier and faster; said opposite side arms each being formed with a flat surface abutting the surface of said gun butt receiver opening; and opposite side stabilizing extensions positioned on said flat surfaces to engage opposite sides of said gun butt receiver opening to resist torsion imposed from time to time on said extension means of said angled gun magazine entrance guide.

5,621,996
COMBINATION SECURITY AND DISPLAY DEVICE FOR FIREARMS
George M. Mowl, Jr., Cincinnati, Ohio, assignor to Pride Cast Metals, Inc., Cincinnati, Ohio
Filed Jun. 7, 1995, Ser. No. 478,953
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—70.07 **21 Claims**

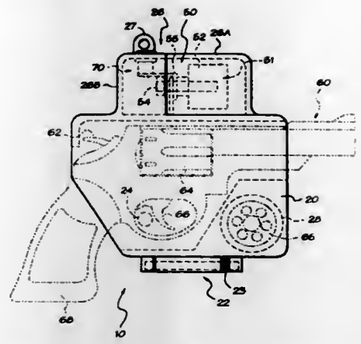
1. An apparatus for mounting, displaying, locking, and providing quick access to a firearm having operational portions, comprising:

a) a pair of complementary casings, including:

i. a base casing adapted for mounting onto a structure and for receiving and holding the firearm, and

ii. a cover casing adapted for interfacing with the base casing and at least partially covering the firearm;

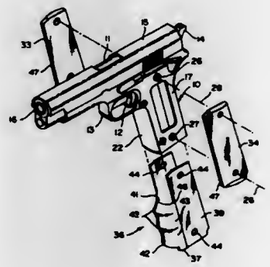
b) a connection between the cover casing and the base casing such that the casings have a predetermined open position providing substantially unimpeded access to the firearm, and a predetermined closed position whereby the casings prevent access to the operational portions of the firearm;



c) a locking system for locking the casings in the closed position to prevent the unauthorized opening of the casings to the open position, said locking system including a remote unlocking mechanism; and

d) a biasing element for automatically opening the casings to the open position when the locking system is unlocked.

5,621,997
HANDGUN GRIP ENHANCER
R. Lane Pearce, Bothell, Wash., assignor to Pearce Grip, Inc., Bothell, Wash.
Filed Jan. 29, 1996, Ser. No. 592,965
Int. Cl.[6] F41C *23/10*
U.S. Cl. 42—71.02 **11 Claims**



1. An enhancer for adding bulk to the grip of a side panel grip type handgun handle having a front edge and planar side surfaces and separate removable side panel grip elements with separate attachment means for normally attaching the elements with one surface thereof in direct contact with the planar sides of the gun handle comprising, in combination;

a flexible elastomeric grip body including a vertical cross panel, and

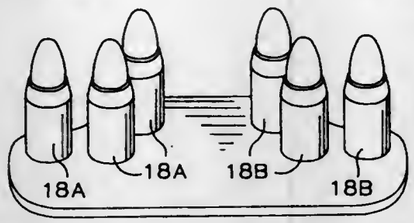
laterally spaced side wing anchor members attached to opposite side edges of said cross panel and extending therefrom between the grip elements and the handle in engagement with the side surfaces of the gun handle,

said side wing anchor members including mounting openings constructed and arranged to register with the attachment means for said side grip elements and to cover substantially the entire surface of the grip elements,

said wing anchor members substantially conforming and limited to the contours of the grip elements.

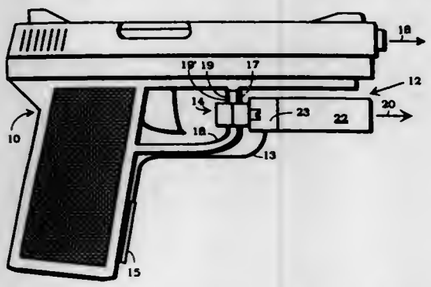
VOL 1197 ISS 4 APR 22 1997 UMI

5,621,998
SPEED LOADER
Charles Norgaard, 28400 NE. 91 Ave., Battle Ground, Wash. 98604
Filed Nov. 1, 1995, Ser. No. 551,524
Int. Cl.[6] F41A *9/85*
U.S. Cl. 42—89 **6 Claims**



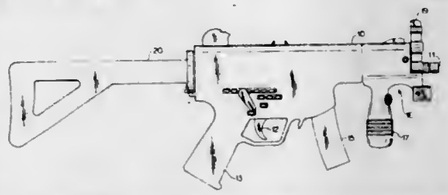
1. A speed loader for loading a plurality of cartridges having shells of predetermined caliber into respective chambers of a revolver cylinder, centers of the chambers being on a circle of predetermined radius, said speed loader comprising a sheet form piece of resilient material formed with six substantially circular bores of diameter slightly less than said predetermined caliber, whereby the cartridges can be fitted in the bores respectively and will be held in the bores by tension in the resilient material and frictional engagement between the resilient material and the shells of the cartridges, the six bores being arranged in a first group of an inner bore and two outer bores and a second group of an inner bore and two outer bores, the bores of the first group having their centers lying on a first arc of radius substantially equal to said predetermined radius and the centers of the two outer bores being angularly spaced along said arc at approximately 60° from the center of the inner bore, and the bores of the second group having their centers lying on a second arc of radius substantially equal to said predetermined radius and the centers of the two outer bores being angularly spaced along said arc at approximately 60° from the center of the inner bore, and wherein a line from the center of the inner bore of the first group through the center of curvature of the first arc and a line from the inner bore of the second group through the center of curvature of the second arc are in diverging relationship.

5,621,999
EXTERNALLY MOUNTABLE LASER SIGHT WITH SLIDE SWITCH
Larry Moore, Cottonwood, Ariz., assignor to Tac Star Industries, Inc., Cottonwood, Ariz.
Continuation-in-part of Ser. No. 364,794, Dec. 27, 1994. This application Aug. 8, 1995, Ser. No. 512,682
Int. Cl.[6] F41G *1/36*
U.S. Cl. 42—103 **14 Claims**



1. A light emitting module including a switching assembly, comprising:
a light emitting module selectively emitting a light beam in a first direction;
a base including a clamp adapted to affix said light emitting module to a weapon;
a battery; and
a switch having a sliding member within the base, said switch incorporating contact means adapted to complete an electrical circuit between said battery and said light emitting module to actuate said light emitting module when said sliding member is moved in a second direction perpendicularly transverse to the first direction.

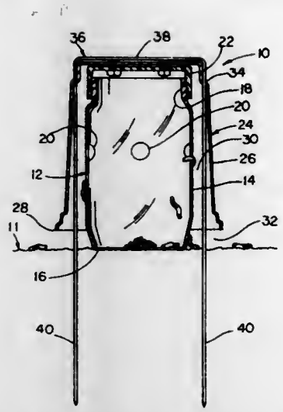
5,622,000
LASER SIGHTING SYSTEM FOR FIREARM FORE HANDGRIP ASSEMBLY
Ira M. Marlowe, 70 Hillside Ave., Cresskill, N.J. 07626
Filed Sep. 11, 1995, Ser. No. 526,219
Int. Cl.[6] F41G *1/34*
U.S. Cl. 42—103 **2 Claims**



1. In a firearm which includes a barrel having a longitudinal axis and a forward muzzle, a trigger, a pistol handgrip transverse to the barrel axis rearward of said trigger, a detachable fore handgrip assembly forward of the trigger including a frame removably secured relative to the barrel and a hollow grip element extending from the frame transverse to the barrel axis, and a component forward of the hollow grip element separate from and below the barrel, a laser sighting system mounted entirely on said fore handgrip assembly comprising
a) direct current battery means removably located within the hollow grip element with an opening at one end of the grip element remote from the frame for insertion of the battery means,
b) a laser diode assembly mounted on said frame forward of the grip element for directing a laser beam alongside and at least substantially parallel to the barrel axis,
c) the laser diode assembly comprising a laser diode element and an open-ended housing secured to said frame and encircling said diode element,
d) electrical circuit means in the grip element and frame connecting the battery means and the laser diode element,
e) said diode element being secured to the frame by adjustment screw means permitting angular adjustment in the direction of said laser beam in relation to the barrel axis, and
f) an on-off manually depressible button switch on a forward portion of the grip element adjacent the frame and rearward of the diode assembly for selectively energizing the laser diode element.

5,622,001
SLUG AND SNAIL TRAP
Michael L. Kazmierzak, 23405 Ardmore Trail, South Bend, Ind. 46628
Filed Jun. 7, 1995, Ser. No. 482,444
Int. Cl.[6] A01M *1/10*
U.S. Cl. 43—121 **5 Claims**

1. A trap for slugs, snails, and other creatures comprising:
a container for receiving and collecting slugs and snails and further for holding bait for attracting slugs and snails, said container including an outer wall, a base for placement on a support surface, a primary opening for allowing access to the interior of said container, and a plurality of ports in said outer wall;
a removable cover for covering said primary opening;
a skirt attached to said removable cover and extending outward and downward towards said base and covering said outer wall and said ports of said container but defining a chamber therebetween, said skin terminating in a lower edge, said lower edge of said skin cooperating with said base to define a gap therebetween; and
anchor means for anchoring said trap to the support surface and to prevent said trap from being overturned, said anchor means including an inverted U-shaped member, said inverted U-shaped member having a pair of prongs for insertion into the support surface and a center portion connecting said prongs for abutting said skirt, said skin including engagement means, wherein said center portion of said U-shaped member is disposed over said removable cover and said prongs coact with said engagement means and the support surface, whereby the bait in said container attracts creatures to enter through said gap, crawl upwardly along said outer wall through said chamber and then enter the container through said ports.



5,622,002
METHOD FOR REDUCING ABRASION OF TURFGRASS ON ACTIVITY FIELDS
John N. Rogers, III, Haslett, and Joseph T. Vanini, East Lansing, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed May 9, 1994, Ser. No. 239,868
Int. Cl.[6] A01G *9/02*
U.S. Cl. 47—1.01 **16 Claims**

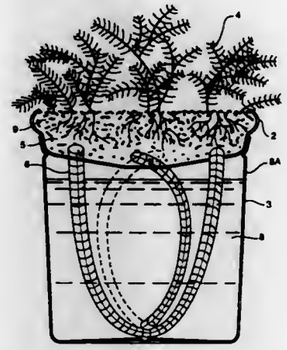


1. A method for protecting a crown portion of turfgrass on an activity area from damage at a ground level above soil from which the turfgrass grows which comprises:
applying solid elastomeric particles in at least two applications over time to the turfgrass and raking the particles into the turfgrass without mixing the particles into the soil so that the particles are distributed around the crown portion of the turfgrass in a layer which covers the crown portion of the turfgrass and resists abrasion of the crown portion as a result of the activity on the turfgrass, wherein the particles are essentially free of any other particles which can abrade the crown portion of the turfgrass.

5,622,003
SEED COATING CONTAINING MN $(NO_3)_2$ $\cdot 6H_2O$
Kolazi S. Narayanan, Wayne, N.J., assignor to ISP Investments Inc., Wilmington, Del.
Filed Jul. 11, 1995, Ser. No. 500,660
Int. Cl.[6] A01C *1/06*
U.S. Cl. 47—57.6 **13 Claims**

1. A method of use in coating seeds which comprises applying to seeds a homogeneous, aqueous, non-freezing seed coating composition comprising:
(a) as a nutrient, 40–60% $Mn(NO_3)_2.6H_2O$,
(b) as a film former, 0.5–8% of a water soluble polymer,
(c) as a plasticizer and antifreezer, 20–30% N-methylpyrrolidone, and
(d) as cosolvent, water, 10–15%.

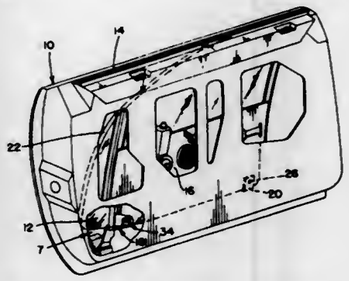
5,622,004
SELF-WATERING GROWING SYSTEMS
Lester Gidge, Nashua, N.H., assignor to Nashua Industrial Machine Corp., Nashua, N.H.
Filed Jul. 12, 1994, Ser. No. 273,732
Int. Cl.[6] A01G *9/04*
U.S. Cl. 47—71 **6 Claims**



1. A combination for a self-watering, self-contained growing system comprising:
a first container for holding liquid;
a second container for holding a growing medium comprising soilless mix; and
a wick for being located with a lower portion in contact with a liquid of the first container and with an upper portion in contact with a lower portion of the growing medium of the second container, with said wick formed of long-fiber sphagnum moss arranged in a random orientation and held together by mesh.

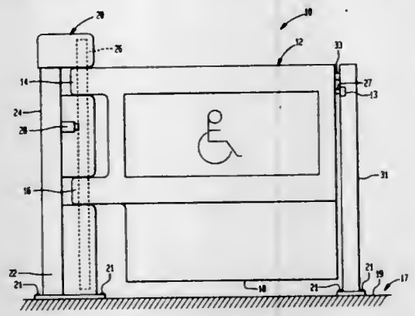
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5,622,005
AUTOMOTIVE DOOR GLASS ASSEMBLY
James E. Ochenski, Warren, and David M. Mooney, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 6, 1995, Ser. No. 554,056
Int. Cl.[6] E05F 11/38
U.S. Cl. 49—375 7 Claims



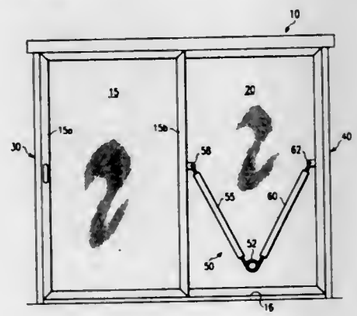
1. An automotive door glass assembly comprising:
a door glass having a first bore;
a shoe supporting the door glass, the shoe having an elongated slot intersecting the first bore of the door glass;
a cam plate fitted within the bore of the glass; and
a turn shaft torsionally connected to the cam plate and eccentrically positioned therein, extending through the slot of the shoe wherein rotation of the turn shaft adjusts the position of the door glass with respect to the shoe and wherein the turn shaft includes two members, the first member being an outer sleeve torsionally locked with the cam plate, and the second member being an inner fastener connected to the cam plate for permanently affixing the position of the glass with respect to the shoe.

5,622,006
SURFACE MOUNT BI-DIRECTIONAL GATE ASSEMBLY
Terence J. Collins, Schaumburg, Ill., assignor to General Signal Corporation, Stamford, Conn.
Filed Oct. 10, 1995, Ser. No. 541,554
Int. Cl.[6] E05F 1/10
U.S. Cl. 49—386 11 Claims



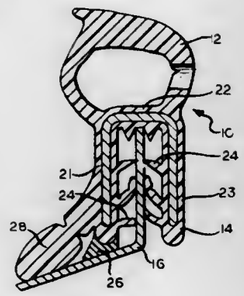
1. A bi-directional gate assembly which comprises:
a gate which comprises a gate body and at least one hinge; and
a support assembly mounted substantially perpendicular to a floor, said support assembly comprising: a housing; a stationary support shaft vertically disposed within said housing; means for rotating said gate about said stationary support shaft; and a controller assembly disposed within said housing above a surface of said floor, said controller assembly being connected to said means for rotating said gate about said stationary support shaft in such a way as to control the degree of rotation of said gate about said stationary support shaft and to cause said gate to return to its closed position at a predetermined speed.

5,622,007
SLIDING DOOR CLOSING DEVICE
Steven L. Archer, 2834 Wells Rd., Irving, Tex. 75061
Filed Jun. 15, 1995, Ser. No. 490,642
Int. Cl.[6] E05D 15/06
U.S. Cl. 49—404 50 Claims



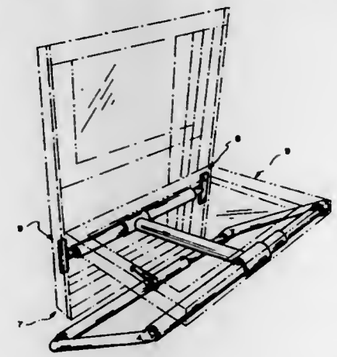
1. A device for closing a sliding panel, said device comprising:
a first arm having a first end and a second end;
means for coupling said first end of said first arm to a sliding panel;
a second arm having a first end and a second end;
means for coupling said first end of said second arm to a fixed structure; and
a spring providing a torsion force coupled to said second end of said first arm and said second end of said second arm, said spring providing the only pivotal connection between said first arm and said second arm, wherein said spring is operable to exert a force on said first arm and said second arm to spread apart said first arm and said second arm.

5,622,008
WEATHERSTRIP WITH UNCURED FOOT
S. Brian King, Noblesville, Ind., assignor to GenCorp Inc., Fairlawn, Ohio
Filed Jan. 12, 1995, Ser. No. 371,946
Int. Cl.[6] E06B 7/22
U.S. Cl. 49—498.1 14 Claims



1. An extruded weatherstrip of an elastomeric material formed by polymerization of ethylene propylene and diene monomers capable of adapting to a surface contour of a retention flange, said weatherstrip comprising:
a foot of pliable uncured elastomeric material; and
a seal member of cured elastomeric material formed integral with said foot, said seal member having a retention means to force said foot within imperfections and variations in the surface contour of the retention flange to provide a weather resistant seal with the retention flange.

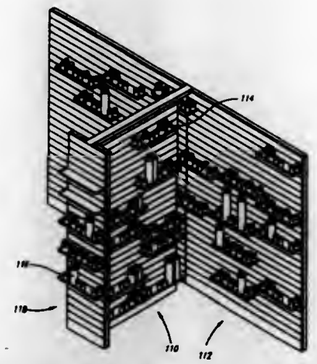
5,622,009
TILT TYPE WINDOW SUPPORT MECHANISM
John Healey, 20 Cooke Ave., Kingston, Mass. 02364-1837
Filed Oct. 2, 1995, Ser. No. 537,388
Int. Cl.[6] E06B 3/00
U.S. Cl. 49—507 12 Claims



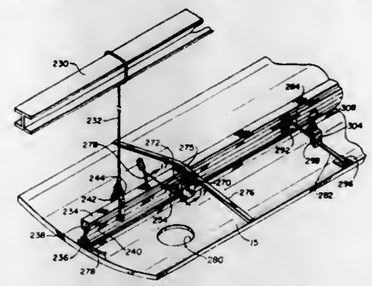
1. A tilting type window supporting mechanism comprising;
a window support structure having both a top element, at least one window sill catch to secure the bottom element of said window support structure in use with a window sill,
a retaining member, said retaining member capable of extension within jamb liners of said window frame whereby said jamb liners are capable of securing said retaining member within said window frame, and
a connecting element wherein said connecting element is slidably mounted to said retaining member at a first end and to the top element of said window support structure at a second end, said top element capable of supporting a disengaged end of a tilt type window pane.

5,622,010
MODULAR PHARMACY
Karl F. Weber, P.O. Box 151, Moose, Wyo. 83012
Filed Aug. 18, 1995, Ser. No. 516,616
Int. Cl.[6] E04F 19/00
U.S. Cl. 52—36.4 27 Claims

1. A pharmacy panel tray display system for improving storage capabilities beyond that of standard shelving in which shelves span continuously between end wall supports, the display system comprising:
a plurality of trays for storage and display of pharmaceutical products having a substantially flat bottom, a modular length of between approximately 12 and 20 inches, and a height, said modular length being chosen for allowing a plurality of trays to be arranged in a substantially side-to-side relationship on the display system, said height being chosen for allowing vertically adjacent trays to be closely spaced on the display system;
each tray comprising a hanger member, a tray shelf having a back retaining wall, a front, a first end and a second end, an upturned front retaining rail at the front of said tray shelf, a first upturned end retaining rail at the first end of said tray shelf and a second upturned end retaining rail at the second end of said tray shelf, with said back retaining wall being taller than said retaining rails; and
at least one tray support panel having a plurality of vertically spaced lip troughs that are vertically spaced at intervals of approximately one inch, each lip trough extending substantially continuously across said panel;
said trays being generally arranged in columns on said display, the vertical position of each tray being independent of the vertical position of a corresponding tray in an adjacent column;
wherein each hanger member is engaged in at least one of said lip troughs such that said support panel supports said trays, with said trays being easily removable from said lip troughs, and wherein said trays may be repositioned vertically and slid horizontally on said tray support panel and wherein, when products are stored on the trays, the vertical spacing of the trays within each of said columns is generally as close as the height of the products and the vertical spacing of the lip troughs permit, to minimize empty space on the display system.



5,622,011
PORTABLE PANELS FOR A STAGE SHELL
Michael D. Jines, Owatonna, Minn., assignor to Wenger Corporation, Owatonna, Minn.
Continuation-in-part of Ser. No. 342,084, Nov. 18, 1994. This application Feb. 16, 1995, Ser. No. 389,262
Int. Cl.[6] E04B 7/16
U.S. Cl. 52—66 14 Claims



1. A suspended canopy for a portable stage, the suspended canopy being suspended from suspension apparatus comprising:
at least one canopy section, the at least one canopy section having a canopy panel and a support beam rotatably mounted thereon, the support beam being dependent from the suspen-

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sion apparatus and being disposed with respect to the canopy panel such that the weight of the canopy panel biases the canopy panel to rotate with respect to the support beam to a substantially vertical storage orientation and the at least one canopy section having a releasable latchable stay assembly engageable by rotation of the canopy panel from the substantially vertical storage orientation to a selected performance angle, the stay assembly thereafter holding the canopy panel at the selected performance angle.

5,622,012

PANEL, AND ALSO A HINGE SECTION WHICH IS SUITABLE, INTER ALIA, FOR SUCH A PANEL

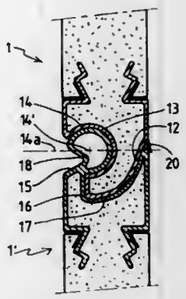
Hendrikus J. Schijf, 4, Robbenzand, 8223 CT Lelystad, Netherlands

Filed May 4, 1994, Ser. No. 237,837

Claims priority, application Netherlands, May 7, 1993, 9300778; Sep. 8, 1993, 9301551

Int. Cl.[6] E06B *3/48*

U.S. Cl. 52—71 **10 Claims**



1. Panel (1,1') for forming a garage door or the like comprising an elongated body part having first and second long narrow sides, a first hinge part (4) on said first long narrow side and a second hinge part (3) on said second long narrow side and both hinge parts extending over the length of the panel, said second hinge part having an arc-shaped nose, said first hinge part having an arc-shaped thickened part (14) to define a hinge pin and further having a first arc-shaped wall (17) spaced from said thickened part and coaxial therewith to define therewith a space to accommodate said nose of a second hinge part on an adjacent body panel such that said nose can grip around said thickened part to form a hinged connection between adjacent body panels, said body part further comprising two flat parallel plates defining side walls and spaced to define a space there between filled with a foam plastic, the nose of said second hinge part has an arc-shaped outer wall (12) extending from one side wall of the body part, said nose having an inside arc-shaped wall (13) coaxial with said thickened part and ending at the other side wall of the body part, said thickened body part of said first hinge part disposed on supporting portions (15,16) adjoining said other side wall, said first arc-shaped wall (17) extending from the base of said supporting part to said one side wall of the body part and merging to a rounded acute angle into said one side wall, the merging of said first arc-shaped wall and said one side wall being disposed on or past a plane passing through the axis of the thickened part and at right angles to the plane of the body part, the outside wall (12) of the nose of the second hinge part is provided with a sealing strip (20) near the merging of said first arc-shaped wall with the adjacent side wall of the panel.

5,622,013

STRUCTURE OF MULTIPURPOSE SUSPENDED ROOF ARENA CAPABLE OF CHANGING SPACE VOLUME AND CONSTRUCTION METHOD THEREOF

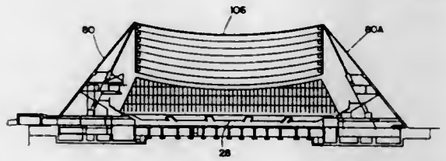
Shigeru Ban; Masaru Ozaki; Arata Yoshida; Masahiro Hanyu; Takeshi Miyazaki; Seiichi Muramatsu; Haruji Tsubota, and Naoya Sasaki, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,854

Claims priority, application Japan, Mar. 7, 1994, 7-046936; Mar. 24, 1994, 6-053504; Dec. 20, 1994, 6-316383

Int. Cl.[6] E04B *7/14*

U.S. Cl. 52—83 **16 Claims**



2. A permanent, rigid, non-foldable, non-retractable suspended roof arena comprising: opposed substantially parallel sides; opposed substantially parallel opposite ends transverse to said sides to define a rectangular arena floor plan having a transverse centerline; opposed roof supporting pylons arrayed parallel to said sides; one-piece rigid, non-rotatable, roof-supporting structural members suspended between pairs of opposed pylons, each having an upper end and a lower end, said pairs of pylons in height being of stepped descending order from the transverse centerline of said arena toward said opposite ends; and a first pair of rigid opposed spectator stands, each wheel-mounted for moving as an integral unit on parallel guide rails extending between said opposite ends.

5,622,014

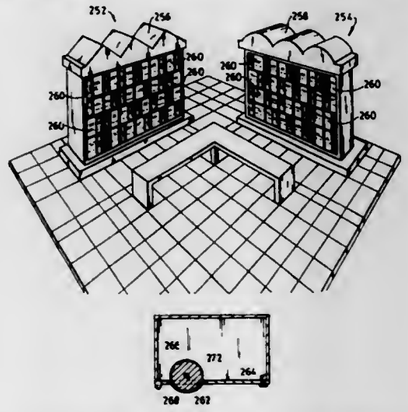
COLUMBARIUM WITH MOVABLE ELEMENT

Hall J. Weiss, 32 Union Square East, Suite 411, New York, N.Y. 10003

Continuation-in-part of Ser. No. 149,050, Nov. 8, 1993, Pat. No. 5,517,791. This application Apr. 8, 1996, Ser. No. 630,114

Int. Cl.[6] E04H *13/00*

U.S. Cl. 52—105 **7 Claims**



1. A columbarium structure comprising a first preformed niche unit and a second preformed niche unit, wherein each of said niche units has a bottom wall, a top wall, a first opposed side wall connected to said bottom wall and said top wall, and a second opposed side wall connected to said bottom wall and said top wall, wherein each of said niche units has a door hingably attached to one of said bottom wall, said top wall, said first opposed side wall, and said second opposed side wall, wherein a rotatable element having a longitudinal axis is rotatably mounted within said door about said longitudinal axis, and wherein:

(a) said door has a front face and an opposed back face,

(b) said rotatable element is disposed within and extends through said door, a first portion of said rotatable element extends past said front face of said door, and a second portion of said rotatable element extends past said back face of said door, wherein:

1. movement of said first portion of said rotatable element extending past said front face of said door causes said rotatable element to rotate, and
2. movement of said second portion of said rotatable element extending past said back face of said door causes said rotatable element to rotate.

5,622,015

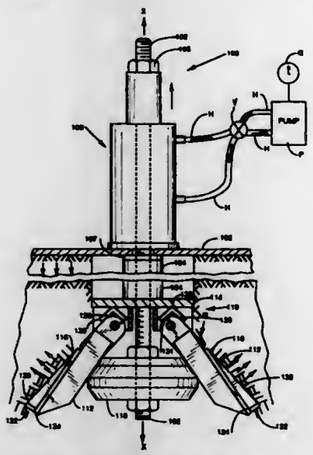
METHOD AND APPARATUS FOR CONSOLIDATING EARTH AND ANCHOR SETTING DEVICE

James S. Collins, 320 Muskingham Dr., Marietta, Ohio 45750

Filed Apr. 12, 1995, Ser. No. 420,430

Int. Cl.[6] E02D *5/74*

U.S. Cl. 52—160 **4 Claims**



1. An anchoring and foundation apparatus adapted to be installed in an earthen hole comprising:

a vertical support, said support comprising a vertical rod secured within a pipe column;

a pivot plate secured to said pipe column;

a plurality of spaced media consolidation plates swingably mounted about respective pivot points on said pivot plate, each of said plates having a media facing surface having an upper edge and a lower edge, said upper edge positioned relatively closer to said vertical pivot plate than said lower edge;

a plurality of pins secured to said pivot plate, wherein each of said media consolidation plates includes a lug attached thereto and pivotally attached to said pivot plate through respective ones of said pivot pins, an upper end of each of said lugs is arcuate shaped and slidably received within a support member attached to said pivot plate, said support member having a support surface whereby said arcuate shaped end slidably contacts said support surface;

a rib disposed along said lower edge of respective ones of said media consolidation plates with said upper edge of said respective plates being free of ribs;

tapered side ribs disposed along sides of respective ones of said media consolidation plates;

a cone adapted to contact said upper edge and force the plates outwardly and upwardly when moved in an upwardly vertical direction, said cone having a tapered contacting surface;

force applying means for swinging said media consolidation plates outwardly and upwardly, wherein said force applying means comprises a hydraulic motor means and gauge means for measuring the hydraulic force being applied by the force applying means; and

a bearing plate secured to said pipe column and adapted to rest on a soil surface, said vertical central rod includes threads and a threaded nut is threadably received on said vertical rod means adjacent one of said bearing plate and said pivot plate and said cone is secured to a lower end of said vertical rod adjacent said media consolidation plates, whereby said bearing plate is forced into the soil and in turn compacts and consolidates the soil between said bearing plate and said media consolidation plates when said media consolidation plates are forced outwardly and upwardly into the soil toward said bearing plate to compact and consolidate the soil adjacent thereto and whereby after said media consolidation plates are swung upwardly and outwardly, said nut is tightened against said one of said bearing plate and said pivot plate thereby locking said media consolidation plates in place.

5,622,016

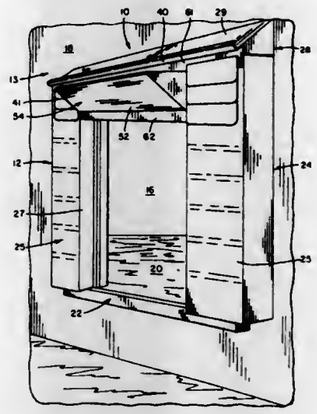
GUTTER AND SEAL ASSEMBLY

Robert J. Frommelt, Peosta; William Triervieler; David J. Hoffmann, both of Dubuque, all of Iowa; Kenneth F. Lenz, Cuba City, Wis.; Thomas J. Medley, and Thomas J. Boffeli, both of Dubuque, Iowa, assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Oct. 7, 1993, Ser. No. 133,410

Int. Cl.[6] F04H *14/00;* **F06B** *1/56*

U.S. Cl. 52—173.2 **18 Claims**

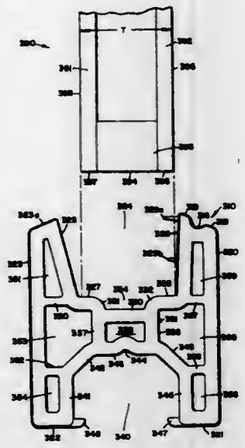


1. A dock seal assembly for use with a truck parked adjacent a dock opening in a building wall and the dock opening defined by a top side and opposing side walls, the truck having a roof and a rear peripheral edge, the seal comprising:

a gutter member attached to the dock opening so as to collect water runoff from the dock opening and deflect the water away from the roof of the truck and the dock opening and a resilient, compressible seal member pivotally suspended from the top side of the dock opening so as to engage the truck wherein the seal member has a front face adapted to sealably engage the edge of the truck and a reinforcement member disposed inside the seal member and along at least a portion of the width of the seal member to prevent sagging of the seal member.

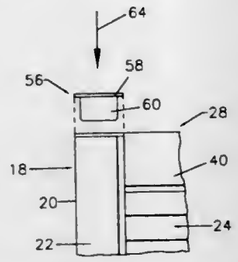
VOL 1197 ISS 4 AP 22 1997 UMI

5,622,017
WINDOW SASH
Jeffrey M. Lynn, Marine on St. Croix, and Todd W. Bruchu, Lake Elmo, both of Minn., assignors to Andersen Corporation, Bayport, Minn.
Filed Oct. 19, 1994, Ser. No. 326,020
Int. Cl.[6] E06B 7/14
U.S. Cl. 52—209 **23 Claims**



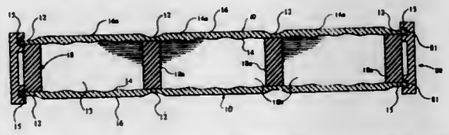
11. A profile of a sash for a framed glass assembly of a type that extends about a perimeter of a glass panel having an interior face, an exterior face, and a thickness defined therebetween, comprising:
an exterior face engaging segment;
an interior face engaging segment opposite said exterior face engaging segment and extending substantially parallel thereto;
a first thickness engaging segment extending perpendicular from said exterior face engaging segment, wherein said first thickness engaging segment engages said thickness proximate said exterior face;
a second thickness engaging segment extending perpendicular from said interior face engaging segment, wherein said second thickness engaging segment engages said thickness proximate said interior face; and
a generally U-shaped segment extending between said first thickness engaging segment and said second thickness engaging segment, wherein said generally U-shaped segment cooperates with a span of said thickness between said first thickness engaging segment and said second thickness engaging segment to form a cavity therebetween, wherein said generally U-shaped segment includes a base segment extending between a pair of opposing side segments that extend from said base segment toward the glass panel, and a first interior side segment extends away from the glass panel from a first end connected to one end of said base segment to a second end, and a second interior side segment extends away from the glass panel from a first end connected to an opposite end of said base segment to a second end, and an opposing base segment extends between said second end of said first interior side segment and said second end of said second interior side segment, opposite said base segment and substantially parallel thereto, wherein said base segments and said interior side segments cooperate to form an internal cavity therebetween, and further, wherein the profile is generally H-shaped, and said internal cavity and associated structure extend between an exterior side of the profile and an interior side of the profile, and said internal cavity and associated structure are disposed between a first generally U-shaped channel that opens toward and receives the glass panel and a second generally U-shaped channel that opens in an opposite direction and receives a stop extending along a side of the sash and selectively projecting outside said second generally U-shaped channel and into engagement with a frame.

5,622,018
SUPPORT RAIL END CAP FOR A COMPONENT SHUTTER
Charles E. Schiedegger, Metamora, Mich., assignor to Tapco International, Plymouth, Mich.
Filed Jun. 7, 1995, Ser. No. 488,043
Int. Cl.[6] E06B 1/04
U.S. Cl. 52—211 **2 Claims**



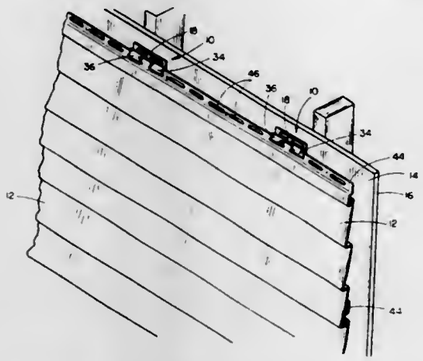
1. A shutter apparatus comprising:
a pair of side rails;
a center section disposed between said side rails;
at least one end rail having a length sufficient to span said center section and having outer end portions adapted to engage with said side rails, said side rails each including a front wall, said end rail and said front wall of side rail forming a pocket at an intersection thereof between a surface of said end rail and a surface of said side rail;
an end cap adapted to slidably engage within said pocket to provide a finished edge surface to said side rail;
said end cap including a planar top portion and a centrally disposed tongue portion, and wherein said surface of said end rail comprises an outer surface thereof, and wherein said surface of said side rail comprises an inner surface thereof;
said tongue portion extending between said outer surface of said end wall and said inner surface of said side rail when said end cap is fully inserted into said pocket;
said planar top portion having a cross-sectional width which is greater than a cross-sectional width of said tongue portion to thereby enable said planar top portion to form a shoulder, said shoulder resting upon an outermost edge portion of said side rail when said end cap is inserted into said pocket.

5,622,019
SIMULATED GLASS-BLOCK STRUCTURE
Joe Dorough, Jr., 2719 Royal La., #401, Irving, Tex. 75063
Filed Mar. 1, 1994, Ser. No. 203,432
Int. Cl.[6] E04C 2/36;2/54
U.S. Cl. 52—308 **18 Claims**



1. A translucent panel having the appearance of a panel formed by glass blocks having borders joined to form a matrix comprising:
a generally flat sheet of translucent material of substantially uniform thickness, said sheet having peripheral edges, each side of said sheet having a generally planar surface extending between said peripheral edges of said sheet, a grid pattern impressed in at least one of said generally planar surfaces of said sheet, a texture pattern impressed in at least one of said generally planar surfaces of said sheet, said grid pattern comprising a first plurality of parallel, spaced-apart linear grooves and a second plurality of parallel, spaced-apart linear grooves at right angles and intersecting the first plurality of grooves so that the first and second plurality of grooves together form a rectangular matrix impressed in the surface of said generally flat sheet to simulate borders of each of a plurality of glass blocks in a matrix of glass blocks, said texture pattern comprising a wavy pattern causing light to refract and to simulate the appearance of translucent surfaces on glass blocks; and
frame means to support said peripheral edges of said sheet.

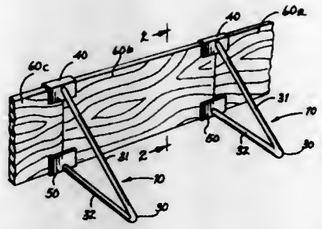
5,622,020
ATTACHMENT CLIP FOR HORIZONTAL SIDING PANELS
Margaret A. Wood, 9000 Kolbrook Rd., Denton, Nebr. 68339
Filed Dec. 5, 1995, Ser. No. 567,270
Int. Cl.[6] E04D 1/34
U.S. Cl. 52—546 **7 Claims**



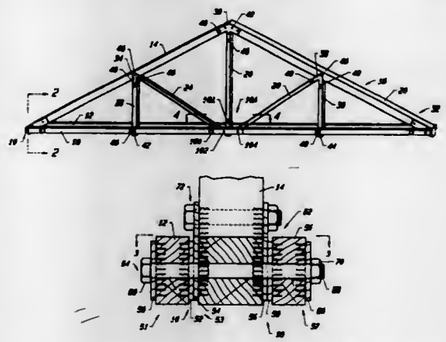
1. In combination:
an elongated, extended len..qth horizontal siding panel having a nailing flange formed continuously along an upper edge;
said nailing flange having a plurality of uniform length, uniformly spaced apart slots aligned parallel to the upper edge and spaced a predetermined distance therefrom; and
at least one attachment clip connected to the nailing flange to support that panel on a wall;
said clip including at least two legs, each said leg journaled through one of said plurality of nailing flange slots; and
said clip having a nail slot therein extending parallel to the nailing flange slots and having a length greater than each nailing flange slot.

5,622,021
WALL BRACE APPARATUS AND METHOD FOR HOLDING TOGETHER AND SUPPORTING WALLS AND FOR FORMING AN ARENA
Timothy A. Bookout, Coppell, Tex., assignor to Rapid Rink Systems, L.L.C., Stafford, Tex.
Filed Apr. 7, 1995, Ser. No. 422,063
Int. Cl.[6] F04B 2/74; F04H 17/00
U.S. Cl. 52—582.1 **33 Claims**

1. A wall brace for holding at least two walls together and supporting the at least two walls in upright positions comprising:
a frame having a support member and a base which provides support to the at least two walls to maintain the at least two walls in upright positions,
a separate one piece top bracing member attached to the support member of the frame that covers a portion of the top edges of the at least two walls for holding together top sides of the at least two walls and for holding the at least two walls generally in contact with each other at side edges of the at least two walls, and
a separate one piece bottom bracing member attached to the base of the frame that covers a portion of the bottom edges of the at least two walls for holding together bottom sides of the at least two walls and for holding the at least two walls generally in contact with each other at side edges of the at least two walls.



5,622,022
ARCHITECTURAL TRUSS CONNECTOR
Douglas C. Haisch, 1800 S. Barney St., Anderson, Calif. 96007
Filed May 30, 1995, Ser. No. 453,256
Int. Cl.[6] E04C 3/12; E04B 1/38
U.S. Cl. 52—713 **11 Claims**

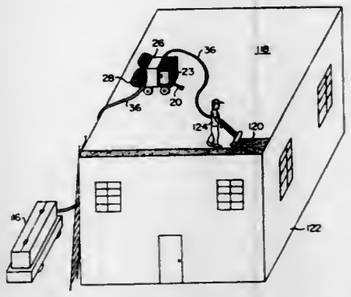


1. An architectural truss connector for uniting an outer first, a central second and third outer chord,
comprising:
a. first plate means adapted for engaging the outer first chord and for resisting movement relative to the outer first chord, upon the application of shear stress between the outer first chord and said finest plate means;
b. second plate means adapted for positioning between and engaging the outer first and central second chords, said second plate means adapted for resisting movement relative to the outer first and central second chords upon the application of shear stress between the outer first and central second chords and said second plate means;
c. third plate means adapted for positioning between and engaging the central second chord and the outer third chord, said third plate means adapted for resisting movement relative to the central second chord and the outer third chord upon the application of shear stress between the second chord and said third plate means;
d. fourth plate means adapted for engaging the outer third chord adapted for resisting movement relative to the outer third chord upon the application of shear stress between the outer third chord and said third plate means; and

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e. interconnecting means for engaging and arresting movement between said first, second, third, and fourth plate means.

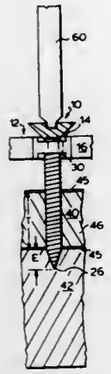
5,622,023
PROCESS FOR SPRAYING HOT ASPHALT TRANSFER
Louis T. Crispino, 2215 Cross Country Blvd., Baltimore, Md. 21209
Filed Mar. 30, 1995, Ser. No. 413,952
Int. Cl.[6] E04G *21/00*
U.S. Cl. 52—741.4 **6 Claims**



3. A method for automatically delivering hot asphalt material for application to a roof surface, comprising:
heating asphalt material to a liquid state in a large vessel;
pumping said asphalt material into a smaller heated storage tank through heated and insulated means for maintaining said liquid state of said asphalt material during pumping;
positioning said large vessel at ground level and said smaller heated storage tank at roof level and wherein said asphalt material is pumped automatically from said large vessel at ground level to said smaller heated storage tank at roof level;
maintaining said asphalt material in a liquid state in said smaller heated storage tank;
pumping said asphalt material from said smaller heated storage tank into an asphalt hand applicator means through another heated and insulated means for maintaining said liquid state throughout said pumping;
applying said asphalt material to a surface by utilization of said asphalt hand applicator means ending with a heated jet spraying applying means; and
rolling said asphalt material smooth.

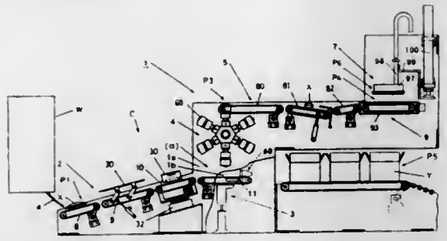
5,622,024
COLLATED DRYWALL SCREWS
Gordon L. Habermehl, 7528 Hickory Hill Ct., Whites Creek, Tenn. 37189
Filed Jun. 23, 1993, Ser. No. 81,829
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—747.1 **16 Claims**

1. A method of securing drywall of a given thickness of at least about one-half inch to support means with collated screws, which collated screws comprise:
a plurality of screws,
each screw having a head, a tip and a threaded shank with threads at least proximate the tip,
a holding strip holding the screws spaced in a row,
each screw received in the strip with the strip about its shank such that a screw on being screwed tip first into a workpiece is separated from the strip by the head of the screw engaging the strip and forceably releasing itself therefrom,
the head of the screw being spaced from the strip by a distance greater than the thickness of the drywall,
the method comprising:



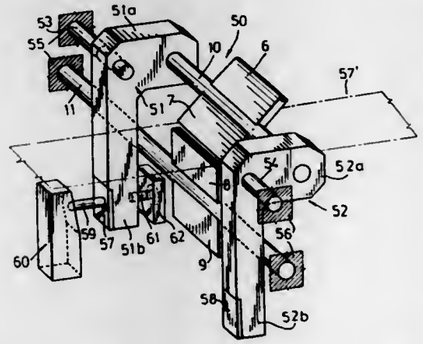
locating the strip with a screw directed towards the drywall with its tip proximate the drywall,
rotating the screw while holding the strip thereby advancing the screw relative the strip so that the screw is screwed through the drywall and at least partially into the support means prior to the head of the screw engaging the strip, and
continuing to rotate the screw engaged within the support means thereby separating the screw from the strip by the head of the screw engaging the strip.

5,622,025
PACKAGE TRANSPORTING AND LOADING SYSTEM
Kazumi Kitagawa, and Atsushi Fujiwara, both of Shiga, Japan, assignors to Ishida Co., Ltd., Kyoto, Japan
Filed Mar. 9, 1994, Ser. No. 207,959
Claims priority, application Japan, Mar. 9, 1993, 5-076148
Int. Cl.[6] B65B *57/00*
U.S. Cl. 53—53 **7 Claims**



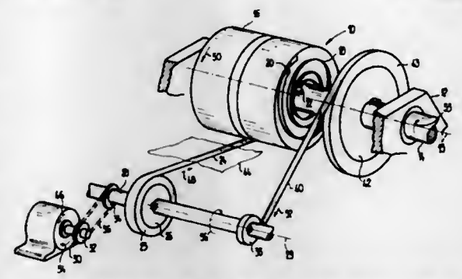
1. A transport apparatus for transporting products, supplied onto a lower transport path, successively to an upper transport path, which apparatus comprises:
first transport means defining the first transport path and for transporting the products supplied at a first station towards a second station;
lifter means for holding the products, having been transported to the second station, and transferring the products from the second station towards a third station defined generally above the second station, said lifter means including holding means for holding the products transported to the second station and rotary drive means for rotating the holding means to turn the products upside down during the transfer of such products from the second station towards the third station;
second transport means for receiving the products, which have been transferred to the third station by the lifter means, and transporting the products towards a fourth station,
said holding means including a carousel driven by the rotary drive means and having an axis of rotation, a plurality of radial arms disposed circumferentially with respect to the axis of rotation of the carousel and protruding radially outwardly from the carousel, a holding element mounted on a free end of each of the radial arms for holding the products, and suction means for sucking the products by a suction force at the second station and for releasing the suction force to deliver the products onto the second transport means at the third station, and
an elevating mechanism for elevating products transported to the second station from below to the holding means, wherein the suction means comprises a suction cup foe sucking products and a valve adapted to be pressed by products elevated by the elevating mechanism to selectively open a negative pressure supplying passage for supplying negative pressure to the suction cup.

5,622,026
WELDING AND CUTTING DEVICE FOR FILM-WRAPPED PACKAGING
Elio Pozzini, Milan; Giuseppe Fioravanti, Bosisio Parini, and Alessandro Ferrari, Cantù, all of Italy, assignors to Record S.p.A., Italy
Filed Mar. 20, 1995, Ser. No. 407,206
Claims priority, application Italy, Mar. 24, 1994, MI94A-0560
Int. Cl.[6] B65B *57/00*
U.S. Cl. 53—75 **10 Claims**



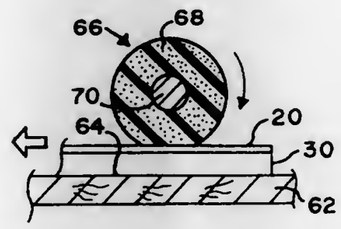
1. An adjustable welding and cutting device for a film-wrapped packaging machine, comprising:
a) means for advancing a film and a succession of objects to be wrapped with the film along a path;
b) a pair of movable plates located at opposite sides of the film;
c) a pair of welding and cutting means on the plates and movable from an initial position in which the welding and cutting means are spaced apart by a distance, to a final position in which the welding and cutting means are operative for welding and cutting the film therebetween; and
d) means for adjusting said distance, including (i) a pair of rocking levers each having first arms for supporting one of the plates, and second arms having opposite sides, said first and second arms of each rocking lever extending perpendicularly relative to each other and meeting at a junction, each rocking lever being mounted for pivoting movement about a pivot axis extending transversely of the path at the junction, and (ii) positioning means bearing against both sides of each second arm, for pivoting the rocking levers and, in turn, said one plate to a desired spacing relative to the other of the plates, said positioning means including an elongated stem having one end engaging one of said sides of the second arm of each lever; and a transmission for advancing the stem in one direction lengthwise thereof to pivot the respective lever in one circumferential direction about the pivot axis, and for retracting the stem in an opposite direction lengthwise thereof to pivot the respective lever in an opposite circumferential direction about the pivot axis.

5,622,027
COILING APPARATUS FOR FLEXIBLE PLANAR ARTICLES AND METHOD FOR THE COILING UP OF FLEXIBLE PLANAR ARTICLES
Samuel Staub, Oberdurnten, and Peter Hausmann, Baretswil, both of Switzerland, assignors to Ferag AG, Switzerland
Filed Oct. 19, 1994, Ser. No. 326,090
Claims priority, application Switzerland, Nov. 8, 1993, 03366/93
Int. Cl.[6] B65B *63/04*
U.S. Cl. 53—118 **41 Claims**



1. Coiling apparatus (**10**) for flexible planar articles (**44**), the apparatus comprising a frame (**12**), a winding core (**16**) which is rotatably journalled in said frame (**12**), a rotatably driveable drive shaft (**28**) for driving said winding core (**16**), means (**30**) for driving said drive shaft (**28**); a band reel (**26**) rotationally fixedly arranged on said drive shaft (**28**); a coiling band (**24**) extending from said band reel (**26**) to said winding core (**16**) and being connected to the latter, said coiling band (**24**) directs the flexible planar articles (**44**) substantially tangentially to the winding core and is wound together with the planar articles onto the winding core; a drive train (**38**, **40**, **42**, **14**) arranged between said drive shaft and said winding core (**16**) for transmitting the rotational movement of said drive shaft (**28**) to said winding core (**16**); said drive train including a spring (**18**) having first and second ends (**20**, **22**), said first and second ends being movable relative to one another during rotation of the winding core (**16**) and the band reel (**26**).

5,622,028
PHARMACEUTICAL UNIT DOSE PACKAGE SEALING APPARATUS AND METHOD
Ralph E. Harp, 109 Martin Dr., Wynne, Ark. 72396
Filed Jul. 25, 1995, Ser. No. 507,005
Int. Cl.[6] B65B *7/26;5/08*
U.S. Cl. 53—373.5 **4 Claims**



1. In combination, a pharmaceutical unit dose package sealing apparatus and a sealing tray for holding a unit dose package of pills

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while the package is sealed by said apparatus; the package comprising a plurality of blisters for holding the pills, said sealing tray having an upper side and comprising:

(a) a resilient compartmentalized portion having a plurality of outwardly-opening compartments open to said upper side, said plurality of compartments being spaced for receipt of said plurality of blisters, each said compartment being adapted for receiving one of the blisters when the package is placed against said sealing tray;

said sealing apparatus comprising:

(b) a base, said base having an upper surface portion for receipt of said sealing tray:

(c) roller means for comprising the package against said sealing tray when the package is placed against said sealing tray and interposed between said roller means and said upper surface portion of said base, said roller means having a longitudinal axis:

(d) mounting means for rotatably mounting said roller means to said base, said mounting means including a pair of pillow block bearings mounting said roller means for rotation about its longitudinal axis;

(e) urging means for pressing said roller means toward said base and against the package when the package is placed against said sealing tray and interposed between said roller means and said base; said urging means comprising at least a first and a second compression spring, at least one for each respective said pillow block bearing of said pair of pillow block bearings; and

(f) motor means for rotating said roller means about its longitudinal axis; said mounting means further including, for each respective said compression spring:

(g) a post extending upwardly from said base, said post having a distal end remote from said base; and

(h) entrapment means for compressively entrapping its respective said compression spring between said distal end of said post and its respective said pillow block bearing so that said compression spring is caused to urge said pillow block bearing away from said distal end of said post and toward said base.

5,622,029

METHOD USING SHEETS AND SHEET ROLLS OF WRAPPING MATERIAL HAVING INFORMATION SELECTABLE BY CHOICE BLOCKS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 68,482, May 28, 1993, Pat. No. 5,335,476, which is a continuation-in-part of Ser. No. 979,510, Nov. 19, 1992, abandoned, and Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 11, 1994, Ser. No. 241,112

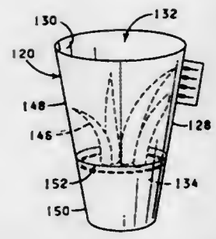
Int. Cl.[6] B65B *61/02*

U.S. Cl. 53—411 **15 Claims**

1. A method of wrapping a pot having a floral grouping disposed therein, the method comprising the steps of:

providing a sleeve having an upper end, a lower end, and an outer peripheral surface, the sleeve having a detachable label area extending from the outer peripheral surface, the label area having a plurality of choice blocks with an information area corresponding to each one of the choice blocks wherein at least one of the information areas is related to the floral grouping disposed in the pot;

disposing the sleeve about the pot such that the choice blocks on the label area are visible; and



selecting the choice block corresponding to the information area related to the floral grouping disposed in the pot.

5,622,030

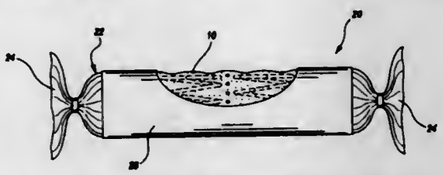
METHOD OF PACKAGING RESILIENTLY COMPRESSIBLE ARTICLES

C. Edward Steed, Alpharetta, and Ricky F. Gladney, Fairburn, both of Ga., assignors to Simmons Company, Atlanta, Ga.

Continuation of Ser. No. 416,065, Apr. 4, 1995, abandoned. This application Aug. 9, 1996, Ser. No. 694,803

Int. Cl.[6] B65B *13/20*

U.S. Cl. 53—436 **4 Claims**



1. A method of packaging a mattress assembly constructed of coil springs wherein each spring is contained within an individual pocket of fabric, comprising the steps of:

providing a tube of deformable material, said tube having a predetermined length;

inserting a mattress assembly constructed of pocketed coil springs into said tube, said mattress assembly having a length which is less than the length of said tube, thereby defining first and second tube ends of excess material;

sealing a first end of said tube;

evacuating air from said tube through said second end thereby deforming said tube around said mattress assembly and causing said mattress assembly to compress;

sealing said second end of said tube after evacuating said tube to a predetermined state;

inserting said evacuated tube into a containment sleeve which is dimensioned and configured to retain said compressed mattress assembly in a compressed state for shipment;

removing said evacuated tube from said containment sleeve; and

puncturing said evacuated tube to allow said mattress assembly in said tube to gradually return to an uncompressed state.

5,622,031

PACKAGING MACHINE WITH ROTATING PUSHER BAR

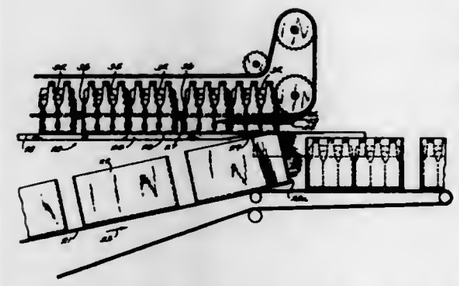
Michael Meives, Reedsville, Wis., assignor to Nigrelli Systems, Inc., Kiel, Wis.

Filed Oct. 23, 1995, Ser. No. 553,746

Int. Cl.[6] B65B *5/10;39/14*

U.S. Cl. 53—473 **8 Claims**

1. An apparatus for pushing individual units into a container, said container having a first end and each said unit having a front end and a back end wherein the individual units are moved on a first surface having an end, said apparatus including:



at least one pusher bar which contacts the back end of an individual unit and moves it along said surface,

means for rotationally actuating said pusher bar while in contact with the back end of a unit, so as to accelerate the downward movement of the individual unit when the back end of the unit passes the end of said first surface to fall from the first surface into the container.

5,622,032

PACKAGING MACHINE

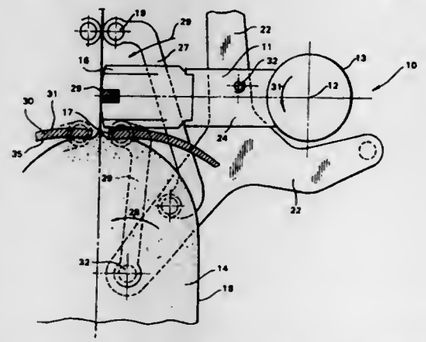
Alfred A. Ryan, Unit 17, 10 Ferngrove Place, Chester Hill, New South Wales 2162, Australia

Filed Feb. 7, 1995, Ser. No. 384,853

Claims priority, application Australia, Feb. 8, 1994, PM3746

Int. Cl.[6] B65B *9/06*

U.S. Cl. 53—551 **10 Claims**



2. A stripping and sealing assembly, for a rotary packaging apparatus in which tubular bag material is filled with a product, said stripping and sealing assembly comprising a pair of opposing sealing and stripping means located on opposite sides of said bag material after filling thereof with the product, said sealing and stripping means being constructed to cooperate to sealingly close portions of said bag material and strip same prior to sealing, a first arm means supporting one of said sealing and stripping means and a second arm means supporting the other sealing and stripping means, a pair of generally parallel rotatably driven shafts, from each of which there extends radially outwardly therefrom a respective one of the arm means, each sealing and stripping means including a sealing jaw and a stripper bar, the stripper bars of the first and second arm means cooperating to strip the bag material prior to the jaws sealingly engaging the bag material, and wherein the first and second arm means via said shafts are rotatably driven continuously through complete revolutions in synchronism in opposite directions about spaced parallel stationary axes extending generally transverse of a direction of movement of the bag material so that prior to sealing said bag material the pair of stripping and sealing means are moved along said bag material to cause the stripper bars to strip same, and wherein the assembly further comprises a support for each stripper bar pivotally mounting the stripper bar on its supporting arm means so as to provide for relative movement therebetween about a pivot axis, said assembly further comprising a pair of bag shields, each bag shield being secured to a respective one of the stripper bars and extending angularly therefrom generally along an arc having a radius extending from the pivot axis of the associated support, said shields extending away from each other in opposite directions from their respective stripper bars, when the stripper bars are engaged with the bag material.

5,622,033

TRANSVERSE SEALER FOR A BAG MAKER

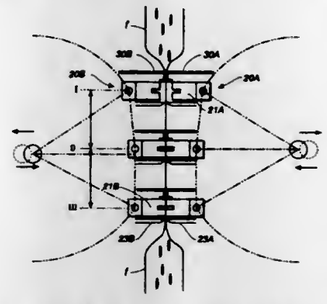
Masao Fukuda, Shiga, Japan, assignor to Ishida Co., Ltd., Kyoto, Japan

Filed Dec. 20, 1995, Ser. No. 575,512

Claims priority, application Japan, Dec. 23, 1994, 6-336096

Int. Cl.[6] B65B *9/20;51/30*

U.S. Cl. 53—551 **10 Claims**



1. A transverse sealer for a bag maker adapted to bend an elongated bag-making film into a tubular shape to cyclically form a bag and to simultaneously fill said bag with a batch of articles, said transverse sealer comprising:

a pair of seal jaws opposite each other across a path of said film, said seal jaws being adapted to move inwardly towards each other to seal said film in a transverse direction over a seal area and outwardly away from each other; and

a pair of shutters each disposed on one of said seal jaws and adapted to approach each other above said seal area to thereby prevent articles in a next batch from passing thereacross, said shutters normally protruding inwardly from said seal jaws and being inwardly biased, said shutters having inwardly facing surfaces each having protrusions and indentations alternately arranged in said transverse direction, said protrusions on one of said shutters each facing corresponding one of said indentations on the other of said shutters with a gap therebetween when said shutters contact each other.

5,622,034

CHOPPER APPARATUS FOR CANE STALK HARVESTER

Karl Dommert, Trussville, Ala., assignor to Cameco Industries, Inc., Thibodaux, La.

Filed Apr. 28, 1995, Ser. No. 430,597

Int. Cl.[6] F16D *43/21*

U.S. Cl. 56—11.7 **16 Claims**

1. A sugar cane harvester cutting knife and clutch assembly for chopping cane wholestalks into billets comprising:

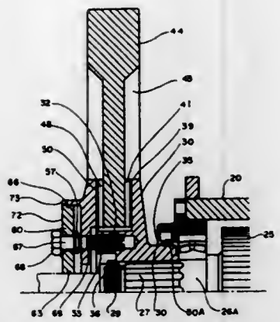
a) a harvester frame;

b) a plurality of chopper shafts;

c) a rotary flywheel rotatably supported upon the frame adjacent the chopper shafts;

d) a pair of hydraulic motors for rotating the pair of chopper shafts;

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e) gearing means forming a mechanical interface between the flywheel and the chopper shafts;

f) a plurality of knives mounted upon each of the chopper shafts for cutting cane wholestalks into billets;

g) a clutch assembly positioned adjacent the flywheel for clutching same, said clutch assembly comprising:

i) a pair of wear disks positioned on opposing sides of the flywheel;

ii) a pair of locking disks associated respectively with the pair of wear disks, each wear disk being sandwiched between the flywheel and a locking disk;

iii) a pair of annular members positioned on opposing sides of the pair of locking disks;

iv) one of the annular members comprising an annular pressure plate disk with a generally cylindrically shaped annular shoulder, each annular member having a plurality of radially and circumferentially spaced openings;

v) adjustment means, for controlling the compression load value applied by the wear disks to the flywheel, said adjustment means including spring means that applies pressure to the clutch wear disks, for locking the disks and flywheel together, said adjustment means including a environmentally sealed compartment that inhibits the travel of water, dirt, mud and pebbles to the spring means.

5,622,035

QUICK BLADE ATTACHMENT STRUCTURE FOR MOWERS

Masayoshi Kondo, Okazaki; Katsufumi Takeda, Anjo, and Hideki Okubo, Nishio, all of Japan, assignors to Makita Corporation, Aichi-pref., Japan

Filed Jun. 5, 1995, Ser. No. 461,954

Claims priority, application Japan, Jun. 7, 1994, 6-125439

Int. Cl.[6] A01D *34/82*

U.S. Cl. 56—12.7 **22 Claims**

1. A blade attachment structure for a mower, said blade attachment structure comprising

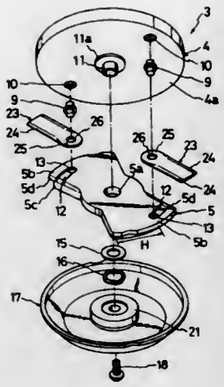
a rotating plate revolving integrally with a shaft projected from a motor housing,

a pivotally moving plate disposed on an opposite side of said rotating plate from a motor of said mower, said pivotally moving plate being coaxially aligned with said rotating plate to allow pivotal movement of said pivotally moving plate relative to said rotating plate,

at least one blade rotatably attached between said rotating plate and said pivotally moving plate and disposed to project in a radial direction therefrom,

pressing means mounted on at least one of said rotating plate and said pivotally moving plate for pressing one of said plates against the other plate,

at least one pin projecting from one of said plates to the other plate for rotatably fixing said at least one blade, and



at least one anti-slip off means formed on the other plate for receiving said at least one pin, said anti-slip off means being movable, through rotation of said rotating plate relative to said pivotally moving plate, between a first position, where said pin is received by said anti-slip off means to prevent the slip-off of said blade, and a second position, where said pin is released from said anti-slip off means to allow attachment or detachment of said blade.

5,622,036

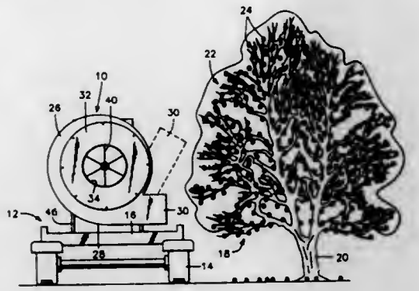
OSCILLATING BLOWER FOR REMOVING TREE FRUIT AND NUTS

Daryl G. Hill, Yakima, Wash., assignor to Orchard-Rite Ltd., Inc., Yakima, Wash.

Filed Jun. 6, 1995, Ser. No. 468,759

Int. Cl.[6] A01D *46/00*

U.S. Cl. 56—12.8 **16 Claims**



14. A blower for dislodging nuts, fruit and "mummys" from a tree comprising a generally cylindrical housing having a substantially straight tangential air discharge and an axial air inlet, a driven rotatable vaned impeller mounted in said housing for discharging high velocity air from said air discharge, a support structure supporting said housing for oscillating movement about an axis to cyclically impinge high velocity air onto a tree canopy in a substantially straight flow path from said tangential discharge for dislodging nuts, fruit and "mummys" from the tree.

5,622,037

DEVICE FOR PELLETIZING VEGETABLE MATERIAL

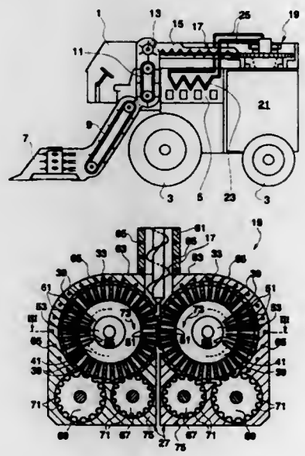
Franz Halmer, Welherstrasse 21, 8894 Igenhausen, Germany

Filed Aug. 3, 1994, Ser. No. 285,225

Claims priority, application Germany, Apr. 29, 1992, 42 14 111.7; Aug. 22, 1992, 42 27 928.3; Jan. 29, 1993, 9301258 U; Mar. 29, 1993, 9304636 U

Int. Cl.[6] A01F *29/00*

U.S. Cl. 56—16.4 D **45 Claims**



1. Device for pelletizing the vegetable material, comprising:

a first hollow roll and a second hollow roll mounted parallel to one another, said first hollow roll and second hollow roll being forcibly driven in opposite directions in relation to one another, each of said first hollow roll and said second hollow roll having separate and spaced webs, adjacent webs of each hollow roll defining a pressing channel therebetween, each pressing channel having an axial dimension substantially equal to an axial dimension of said adjacent webs at each radial position of said pressing channel and said adjacent webs, each pressing channel leading radially to a hollow roll interior with each pressing channel having a portion tapering radially in an inward direction, said hollow rolls having an intake side;

feed screw means for feeding material to said intake side wedge between a circumference of said hollow rolls, said webs each being formed elongated in a radial and an axial direction, said webs being individually connected at axial ends of said webs to flange bodies arranged coaxially and at spaced locations from one another;

heat means for heating said webs, said webs having axially parallel holes for connection to heating agent lines;

and a housing surrounding said first and second rolls, whereby rotation of said first and second rolls causes material fed to said intake via said feed screw to be compacted through said radial pressing channels, to be broken off in said interior of said hollow rolls and to be removed from said interior in an axial direction, said housing having heating agent channels connected to said heat means;

a stripper means positioned inside said first and second hollow rolls and for breaking off material from an inner radial end of said webs, said first and second roll defining an outlet opening for discharge of the material broken off by said stripper means.

5,622,038

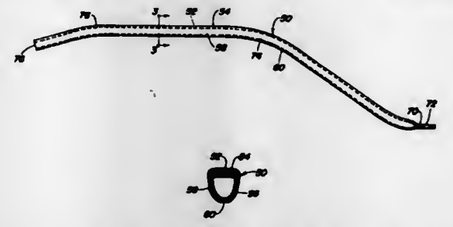
GRID BAR STRUCTURE FOR A COTTON HARVESTER ROW UNIT

Jeffrey S. Wigdahl, Ames, and Joel M. Schreiner, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 24, 1995, Ser. No. 547,253

Int. Cl.[6] A01D *46/08*

U.S. Cl. 56—28 **16 Claims**



1. In a cotton harvester row unit having upright picker drum structure and a row receiving area for receiving a row of cotton plants, grid structure interposed between the drum structure from the row receiving area, the grid structure comprising:

a plurality of fore-and-aft extending grid bars supported from the row unit, each of the grid bars comprising a tubular structure having a hollow interior; and

wherein the grid bars have a D-shaped cross section with a straight section and a rounded section connected to the straight section, and wherein the straight section has a thickness substantially greater than the rounded section,

wherein the tubular structure comprises wall structure having a crop contacting wall adapted for contacting the row of plants as the plants enter the row receiving area, and connecting walls defining with the crop contacting wall a generally closed, hollow interior portion, wherein the crop contacting wall includes wear extending structure increasing the wear life of the crop contacting wall.

5,622,039

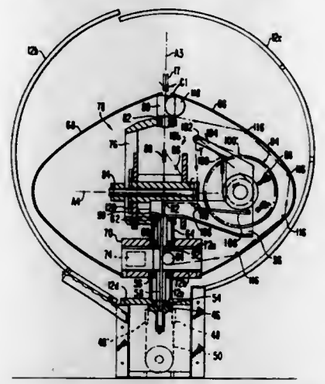
APPARATUS AND METHOD FOR THE MANUFACTURE OF UNIFORM IMPEDANCE COMMUNICATIONS CABLES FOR HIGH FREQUENCY USE

Walter Thompson, Toronto, Canada, assignor to Ceeco Machinery Manufacturing Limited, Concord, Canada

Continuation-in-part of Ser. No. 225,852, Apr. 8, 1994. This application Jun. 9, 1995, Ser. No. 434,021

Int. Cl.[6] D02G *3/36;* **D01H** *7/90*

U.S. Cl. 57—3 **2 Claims**



1. Apparatus for the manufacture of uniform impedance communication cables for high frequency use comprising a frame; rotating

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means arranged in a substantial balanced configuration for rotation about an axis relative to said frame, said rotating means including a rotating element offset from said axis which defines an envelope as said rotating element rotates about said axis; a cradle dimensioned to receive as few as a single reel mounted within said cradle, said as few as a single reel being wound with a total of at least two wires which are simultaneously unwound from said as few as a single reel; cradle fixing means for maintaining the position of said cradle substantially fixed about said axis relative to said frame during rotation of said rotating means; tape dispensing means arranged within said envelope for dispensing tape; and guide means for guiding said at least two wires and tape to said rotating means for twisting the wires about each other with a predetermined lay and winding the tape about the twisted wires to fix and maintain the spatial integrity of the twisted wires relative to each other, wherein a plurality of like apparatus are provided each including said rotating means; and further comprising take up means for receiving and winding a plurality of sets of double twisted wires generated by each of said apparatus, assembling means for assembling said plurality of sets of double twisted wires, said assembling means comprising means for applying tape about said plurality of sets of double twisted wires to form a composite cable, whereby desired electrical properties of the twisted wires is assured.

5,622,040

BEARING FOR AN OPEN-END SPINNING ROTOR

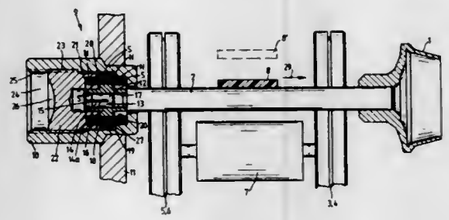
Maximilian Preutenborbeck, Aachen; Bert Schlömer, Heinsberg; Michael Pyra, Aachen, and Volker Helbig, Erkelenz, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Dec. 15, 1995, Ser. No. 574,455

Claims priority, application Germany, Dec. 21, 1994, 44 45 739.1; Nov. 11, 1995, 195 42 079.9

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—406 **18 Claims**



1. A magnetic bearing for an open-end spinning rotor having a shaft supported in a wedge-like gap formed between at least one pair of support rollers, the bearing comprising a housing for receiving the shaft, a pair of first magnets spaced from each other and disposed in the housing to extend radially relative to the shaft, a second magnet disposed on and radially extending from the shaft axially intermediate and at a spacing from the first magnets in the bearing housing, the first and second magnets having respective poles of the same magnetic orientation disposed to face and thereby repel one another, and a coupling means for connecting the shaft and the magnet disposed on the shaft, the coupling means being selectively releasable in response to an axial force exerted on the shaft.

5,622,041

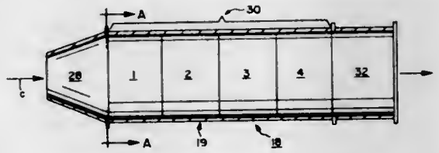
CATALYTIC COMBUSTION SYSTEM INCLUDING A SEPARATOR BODY

Jennifer S. Feeley, Clinton; James C. Fu, Plainsboro; Matthew P. Larkin, Cranbury, and Dianne O. Simone, Edison, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 24,707, Mar. 1, 1993, abandoned. This application May 25, 1994, Ser. No. 249,913

Int. Cl.[6] F02C *3/00;* **F23R** *3/40*

U.S. Cl. 60—39.02 **22 Claims**



1. A method comprising the steps of:
placing a separator body in a combustor comprising an upstream zone comprising a catalyst body and a downstream zone comprising a homogeneous reaction zone, the separator body being placed between the catalyst body and the homogeneous reaction zone, the separator body and the catalyst body comprising discrete bodies;
flowing a combustion gas mixture through the upstream zone to the downstream zone;
promoting combustion of the gas at the catalyst body;
homogeneously combusting the gas passing from the upstream zone in the homogeneous reaction zone; and
thermally shielding the catalyst body from the homogeneous reaction zone with the separator body.

5,622,042

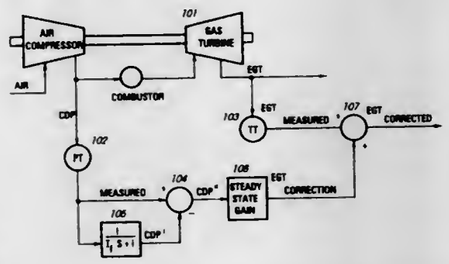
METHOD FOR PREDICTING AND USING THE EXHAUST GAS TEMPERATURES FOR CONTROL OF TWO AND THREE SHAFT GAS TURBINES

Saul Mirsky, and Naum Staroselsky, both of West Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Feb. 27, 1995, Ser. No. 395,599

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—39.03 **6 Claims**



1. A method of controlling a gas turbine with an exhaust gas temperature limit constraint comprising an air compressor, a combustor, and a gas generator or a high-pressure turbine, the method comprising the steps of:
(a) choosing a temperature set point at a temperature less than a maximum allowable limit;
(b) calculating a corrected exhaust gas temperature;
(c) adjusting a safety margin between the maximum allowable limit temperature and the chosen temperature set point, based on a first time-derivative of the corrected exhaust gas temperature; and

(d) changing the exhaust gas temperature in a direction toward the temperature set point if the corrected exhaust gas temperature is greater than the temperature set point.

5,622,043

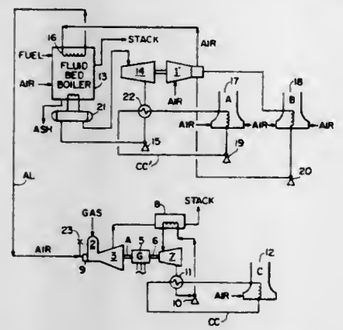
GAS AND STEAM ELECTRICAL POWER GENERATING SYSTEM

James J. Humphries, Jr., 67 Ledgeways, Wellesley Hills, Mass. 02181

Continuation-in-part of Ser. No. 49,072, Apr. 20, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,796

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.182 **16 Claims**



1. An electric power generation plant comprising,
a gas turbine subsystem free of a compressor,
a compressor subsystem with an air heater remote from said gas turbine subsystem having an inlet receiving air and an outlet furnishing heated compressed air after heating by said air heater,
and a compressed air line interlinking said outlet and said gas turbine subsystem,
wherein said gas turbine subsystem comprises,
a plenum connected to said compressed air line,
a burn chamber having a compressed air inlet connected to said plenum and a fuel inlet,
a gas expander connected to said burn chamber,
and an electrical generator connected to said gas expander,
and further comprising,
a steam generator having a heat inlet connected to said gas expander and a steam outlet,
a first steam turbine having a steam inlet connected to said steam outlet,
and a drive shaft connected to said electrical generator.

5,622,044

APPARATUS FOR AUGMENTING POWER PRODUCED FROM GAS TURBINES

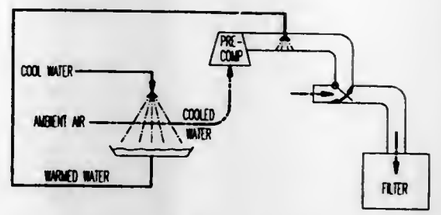
Lucien Y. Bronicki, Yavne; Yoel Gilon, Jerusalem; Joseph Sinai, Ramat Gan; Uriyel Fisher, Haifa, and Shlomo Budagzad, Reshon Lezeon, all of Israel, assignors to Ormat Industries Ltd., Israel

Continuation of Ser. No. 95,027, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 973,612, Nov. 9, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 586,424

Int. Cl.[6] F02C *7/143*

U.S. Cl. 60—39.182 **2 Claims**

1. Apparatus for retrofitting a combined cycle gas turbine system, and augmenting the power produced by the system which includes a main compressor having an inlet for receiving and compressing ambient air supplied to said inlet to produce compressed air, a combustor for heating the compressed air and producing hot gases, and a gas turbine responsive to said hot gases for driving said main compressor and supplying a load, and for producing hot exhaust gases, said apparatus comprising:
a) a main conduit for receiving and carrying ambient air;
b) a precompressor for receiving ambient air and producing precompressed air as an output;
c) means for selectively connecting said inlet to either the output of said precompressor or to said main conduit;
d) a direct contact heat exchanger for contacting and cooling air with cooler water for producing cooled air and warmed water;
e) means for supplying said cooled air to said precompressor;
f) a direct contact evaporative cooler for cooling the output of said precompressor with water; and
g means for supplying said warmed water to said evaporative cooler.



5,622,045

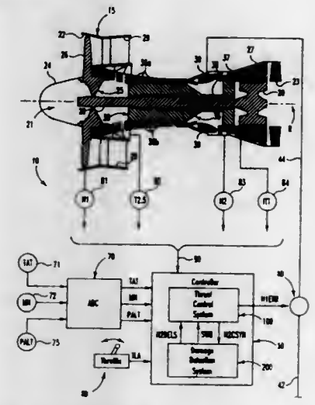
SYSTEM FOR DETECTING AND ACCOMMODATING GAS TURBINE ENGINE FAN DAMAGE

Matthew M. Weimer, Indianapolis, and Joseph A. Jaeger, Greenwood, both of Ind., assignors to Allison Engine Company, Inc., Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 473,720

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—204 **58 Claims**



1. A system for detecting gas turbine engine damage, comprising:
a gas turbine engine defining a working fluid pathway and including a first rotating member and a second rotating member, each of said first and second rotating members being configured to rotate in response to a working fluid flowing along said pathway;
a first sensor providing a first speed signal corresponding to rotational speed of said first rotating member;
a second sensor providing a second speed signal corresponding to rotational speed of said second rotating member; and

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a controller coupled to said first and second speed sensors, said controller including:

an expected speed signal determined from said first speed signal;

a damage error signal determined from comparison of said expected speed signal to said second speed signal;

a damage detection signal determined from comparison of said damage error signal and a threshold indicative of damage to said first rotating member;

said controller being responsive to said damage detection signal to activate a damage accommodation mode.

5,622,046

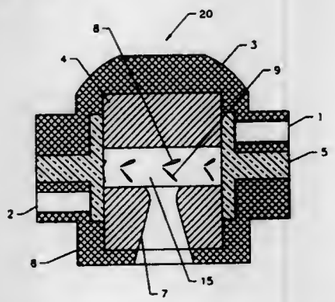
MULTIPLE IMPINGING STREAM VORTEX INJECTOR

Robert S. Michaels, Scottsboro, and Ben F. Wilson, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1995, Ser. No. 521,381

Int. Cl.[6] F02K *9/00*

U.S. Cl. 60—258 **1 Claim**



1. A multiple impinging stream vortex injector in combination with an engine assembly comprising:

(i) an injector body secured within an engine assembly which is comprised of a head closure, a face plate, an aft closure, and said injector body, said injector body, said head closure, said face plate, and said aft closure secured together to form an engine assembly having said injector body as a central, integral part of said engine assembly;

(ii) a combustion chamber and an exhaust nozzle with a throat portion extending in a perpendicular direction from said combustion chamber for discharging combustion gases, said combustion chamber and said nozzle and throat portion defined by said face plate and said injector body;

(iii) an oxidizer manifold inlet in communication with a plurality of oxidizer orifice inlets, each of said oxidizer inlets connected to a separate channel extending through said injector body and terminating with oxidizer injector orifice outlets in said combustion chamber, each of said oxidizer orifice outlets functioning to inject a liquid propellant oxidizer at an angle of injection to provide an impinging tangential velocity component with a liquid propellant fuel injected simultaneously at an angle of injection to provide an impinging tangential velocity component into said combustion chamber in a similar manner to achieve first stage mixing at the impingement point of said liquid propellant oxidizer and said liquid propellant fuel; and,

(iv) a fuel manifold inlet in communication with a plurality of fuel orifice inlets, each of said fuel inlets connected to a separate channel extending through said injector body and terminating with fuel injector orifice outlets in said combustion chamber, said fuel orifice outlets functioning to inject a liquid propellant fuel at an angle of injection to provide an impinging tangential velocity component with a liquid propellant oxidizer injected simultaneously at an angle of injection to provide an impinging tangential velocity component in said combustion chamber in a similar manner to achieve initial hypergolic combustion with the first stage of mixing at the impingement point of said liquid propellant oxidizer and said liquid propellant fuel and with complete mixing and combustion of the liquid propellant oxidizer and liquid propellant fuel occurring by a second stage vortex mixing created by said initial hypergolic combustion at said first stage of mixing at said impingement point.

5,622,047

METHOD AND APPARATUS FOR DETECTING SATURATION GAS AMOUNT ABSORBED BY CATALYTIC CONVERTER

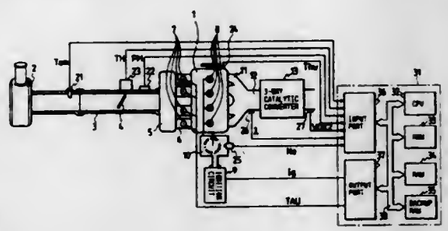
Yukihiro Yamashita, Kariya, Japan; Kenji Ikuta, Rolling Hills Estates, Calif., and Shigenori Isomura, Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 84,730, Jul. 1, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,599

Claims priority, application Japan, Jul. 3, 1992, 4-177229; Oct. 12, 1993, 5-253890

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **16 Claims**



1. An apparatus for detecting a saturation gas amount absorbed by a catalytic converter disposed in an exhaust system of an engine, comprising:

air-to-fuel ratio detecting means disposed in a region of the engine exhaust system downstream of the catalytic converter for monitoring exhaust gas, which has passed through the catalytic converter, to detect an air-to-fuel ratio of an air-fuel mixture causing the exhaust gas;

air-to-fuel ratio changing means for, in cases where the air-to-fuel ratio detected by the air-to-fuel ratio detecting means remains in a given range around a stoichiometric ratio during at least a predetermined time, changing an air-to-fuel ratio of an air-fuel mixture fed to the engine by a correction quantity in a given direction, and maintaining said changing-the air-to-fuel ratio during a correction time;

change increasing means for increasing at least one of the correction quantity and the correction time by the air-to-fuel ratio changing means to execute an air-to-fuel ratio changing process again in cases where the air-to-fuel ratio detected by the air-to-fuel ratio detecting means does not vary even when the air-to-fuel ratio changing means executes said changing air-to-fuel ratio; and

saturation gas amount calculating means for calculating a saturation gas amount absorbed by the catalytic converter on the basis of the correction quantity and the correction time in cases where the air-to-fuel ratio detected by the air-to-fuel ratio detecting means varies when the air-to-fuel ratio changing means executes said changing the air-to-fuel ratio.

5,622,048

CATALYST DETERIORATION RECOVERY DEVICE

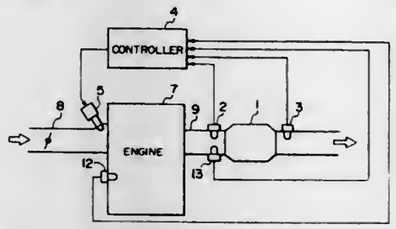
Takashi Aoyama, Zushi, and Tadaki Oota, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 14, 1995, Ser. No. 403,661

Claims priority, application Japan, Mar. 14, 1994, 6-042794

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—277 **11 Claims**



10. A purification system for an exhaust of an engine, said system comprising:

a sensor which detects a running condition of said engine;

a platinum catalyst unit connected to the exhaust of said engine;

a first oxygen sensor connected to the exhaust of said engine upstream of said platinum catalyst, said first sensor detecting a first oxygen level in the exhaust of said engine upstream of said platinum catalyst;

a second oxygen sensor connected to the exhaust of said engine downstream of said platinum catalyst, said second sensor detecting a second oxygen level in the exhaust of said engine downstream of said platinum catalyst; and

a controller for setting a range of said running condition, for determining if said running condition is within said range, for deriving a degree of oxidation (R_m) of said platinum catalyst from said first and second oxygen levels, and for determining a recovery treatment air-fuel ratio in accordance with said degree of oxidation (R_m), said recovery treatment air-fuel ratio being equal to or richer than a stoichiometric air-fuel ratio.

5,622,049

CONTROL SYSTEM WITH FUNCTION OF PROTECTING CATALYTIC CONVERTER FOR INTERNAL COMBUSTION ENGINES FOR AUTOMOTIVE VEHICLES

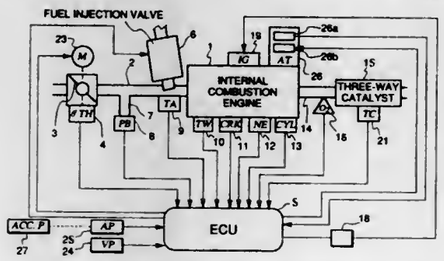
Toru Kitamura; Kazutomo Sawamura; Shigetaka Kuroda, and Akira Katoh, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,472

Claims priority, application Japan, Dec. 14, 1994, 6-333178

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—285 **14 Claims**



1. A control system for an internal combustion engine for an automotive vehicle, said engine having an intake system, intake air amount-regulating means associated with said intake system for regulating an amount of intake air to be supplied to said engine, an exhaust system, and a catalytic converter arranged in said exhaust system, said control system comprising:

temperature-determining means for determining whether said catalytic converter is in a predetermined high temperature condition;

intake air amount control means for controlling said intake air amount-regulating means to decrease said amount of intake air when it is determined by said temperature-determining means that said catalytic converter is in said predetermined high temperature condition;

fuel amount-increasing means for increasing an amount of fuel to be supplied to said engine when it is determined by said temperature-determining means that said catalytic converter is in said predetermined high temperature condition; and

priority-determining means for giving priority to one of said intake air amount control means and said fuel amount-increasing means, depending on operating conditions of said engine.

5,622,050

SYSTEM FOR CONTROLLING A HYDROSTATIC-MECHANICAL TRANSMISSION AT THE TIME OF VEHICLE ACCELERATION OR DECELERATION

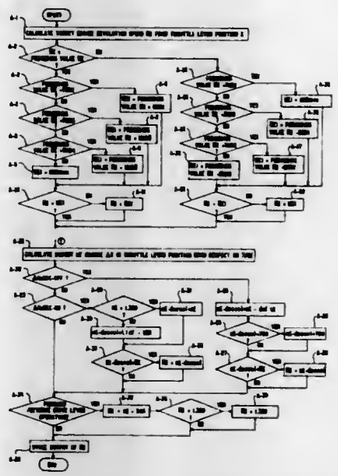
Tsutomu Ishino, Osaka; Ryoichi Maruyama, Kanagawa, and Takashi Noda, Osaka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,470

Claims priority, application Japan, Mar. 1, 1994, 6-031608

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—431 **5 Claims**



1. A system for controlling a hydrostatic-mechanical transmission at the time of vehicle acceleration or deceleration, the transmission being equipped with a mechanical transmission unit actuated through an input shaft connectable to a power source; a hydrostatic transmission unit which is connectable to the input shaft and comprises a pump and motor having their respective discharge controlling swash plates, art angle of at least either of the swash plates being variable; and a differential unit for actuating both the mechanical transmission unit and the hydrostatic transmission unit by connecting an output shaft thereto, the control system comprising:

(a) throttle position detecting means for detecting a position of a throttle in relation to the power source;

(b) target revolution speed computing means for computing a target revolution speed for the power source in accordance

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with the position of the throttle detected by the throttle position detecting means, limiting an amount of change in the target revolution speed with respect to time;

(c) target motor speed ratio setting means for setting a target motor speed ratio, which is a target value for a ratio of a revolution speed of the motor in the hydrostatic transmission unit to the revolution speed or the power source, in accordance with the target revolution speed computed by the target revolution speed computing means; and

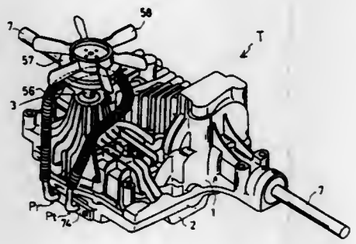
(d) swash plate angle controlling means for controlling the angle of at least either of the discharge controlling swash plates in accordance with the target motor speed ratio set by the target motor speed ratio setting means.

5,622,051

AXLE DRIVING APPARATUS WITH COOLING TUBING

Masaru Iida, and Kenichi Takada, both of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Hyogo-Ken, Japan

Filed Jun. 26, 1995, Ser. No. 494,734
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—456 **38 Claims**



1. An axle driving apparatus, comprising:
a housing;
an axle disposed in said housing;
a hydrostatic transmission disposed in said housing, including a hydraulic pump driven by a power input shaft and a hydraulic motor for inputting power from a prime mover to drive said axle;
oil disposed in said housing for operating said hydrostatic transmission and for lubricating said axle;
an input pulley provided on said power input shaft;
a fan provided on said power input shaft adjacent to said input pulley; and
cooling tubing disposed between said housing and said fan for said oil, wherein said oil in said housing is adapted to flow into said cooling tubing and to be cooled by said fan.

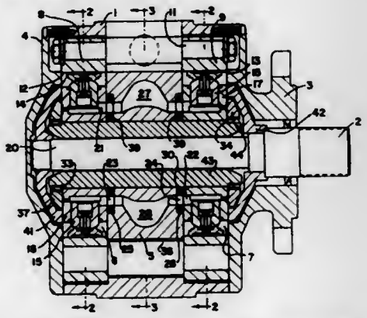
33. An axle driving apparatus, comprising:
a housing;
oil disposed in said housing;
an axle disposed in said housing;
a hydrostatic transmission disposed in said housing, including a hydraulic pump driven by a power input shaft and a hydraulic motor for inputting power from a prime mover to drive said axle;
a fan mounted on said power input shaft;
a cover disposed between said fan and said housing and fixed on said housing; and
an oil passage disposed in said cover for cooling said oil, wherein said oil in said housing is adapted to flow into said passage.

5,622,052

DOUBLE-FLOW HYDROSTATIC RADIAL PISTON ENGINE WITH AXIAL FLOW, THRUST COMPENSATION, AND SHAFT BEARING

Gerhard Fähnle, and Günther Nagel, both of Steinheim, Germany, assignors to J.M. Voith GmbH, Heidenheim, Germany

Filed Oct. 19, 1994, Ser. No. 325,809
Claims priority, application Germany, Oct. 19, 1993, 43 35 513.7
Int. Cl.[6] F16D *39/00;* **F01B** *13/06*
U.S. Cl. 60—487 **7 Claims**



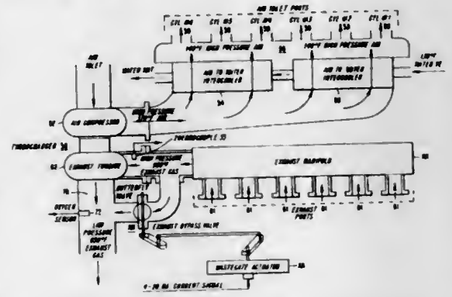
1. In a hydrostatic radial piston engine comprising two rotors supported by and readily rotatable on an axle, said rotors having a plurality of radial bores, wherein displacement elements disposed in said bores comprise a piston with a slide ring, each said displacement element sliding on an inside of a piston ring, the bores being connected via control slits with high-pressure/low-pressure transport channels opening on a side of the rotor to control the transport of a pressure medium,
the improvement wherein the axle is mounted in an intermediate bottom disposed between the rotors and comprising check plates disposed on ends of the axle, said check plates taking up axial forces produced by a pressure medium in the control slits of the rotors, said piston rings being supported in the intermediate bottom by a common connecting shaft.

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TURBOCHARGED NATURAL GAS ENGINE CONTROL SYSTEM

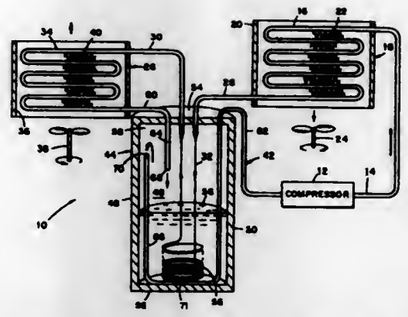
Paul D. Freen, Springfield, Ohio, assignor to Cooper Cameron Corporation, Houston, Tex.

Filed Sep. 30, 1994, Ser. No. 312,920
Int. Cl.[6] F02B *37/18;23/00*
U.S. Cl. 60—603 **5 Claims**



1. A method of controlling an internal combustion engine, said engine including a control system, means for determining an air flow rate and a fuel quality, and an exhaust turbine which drives an inlet air compressor, said method comprising the steps of:

determining an air flow rate;
sensing a fuel quality;
computing a maximum fuel flow limit based on the air flow rate and torque limit determined by the fuel quality;
limiting an amount of fuel delivered to the engine based on the maximum fuel flow limit;
directing a desired amount of exhaust gas to the exhaust turbine to supply a desired air flow rate to the engine.

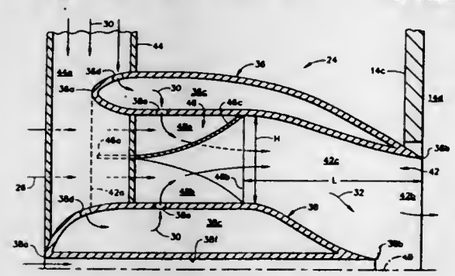


5,622,054

LOW NO_x LOBED MIXER FUEL INJECTOR

Walter J. Tingle, Danvers, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1995, Ser. No. 577,074
Int. Cl.[6] F02C *1/00*
U.S. Cl. 60—737 **10 Claims**



1. A fuel injector for injecting fuel and air into a gas turbine engine combustor comprising:
an annular outer shell having leading and trailing edges;
an annular inner shell having leading and trailing edges, and disposed coaxially with said outer shell and spaced radially inwardly therefrom to define a flow channel therebetween having an inlet disposed at said shell leading edges for receiving said air, and an outlet disposed at said shell trailing edges;
a strut extending radially outwardly from said inner and outer shells at said leading edges thereof and fixedly joined thereto;
an annular lobed mixer disposed coaxially in said channel, and including a leading edge at said channel inlet, a trailing edge spaced from said channel outlet to define a mixing nozzle, and a plurality of circumferentially spaced apart serpentine lobes increasing in radial height from said leading to trailing edges of said mixer, with said lobes defining with said outer and inner shells corresponding pluralities of outer and inner chutes for separately channeling respective portions of said inlet air as outer and inner air; and
means for injecting said fuel into said lobed mixer for forming a fuel and air mixture in said mixing nozzle for discharge through said channel outlet into said combustor.

5,622,055

LIQUID OVER-FEEDING REFRIGERATION SYSTEM AND METHOD WITH INTEGRATED ACCUMULATOR-EXPANDER-HEAT EXCHANGER

Viung C. Mei, Oak Ridge, and Fang C. Chen, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 22, 1995, Ser. No. 408,248
Int. Cl.[6] F25B *41/06*
U.S. Cl. 62—113 **17 Claims**

1. A refrigeration system comprising compressor means for compressing a vaporous refrigerant to an elevated pressure and an elevated temperature greater than ambient pressure and temperature, condensing means for condensing the compressed vaporous refrigerant to liquid refrigerant at substantially said elevated pressure and temperature, means for expanding the condensed liquid refrigerant to a substantially lower pressure than said elevated pressure, evaporator means for receiving and evaporating a major portion of the condensed liquid refrigerant after the expansion thereof to said substantially lower pressure, first conduit means connecting the compressor means to the condensing means, second conduit means connecting the condensing means to the evaporator means, third conduit means connecting the evaporator means to the compressor means, and housing means having a cavity therein containing a first portion of said second conduit means and a portion of said third conduit means and adapted to contain a pool of liquid refrigerant at a temperature lower than said substantially lower temperature, said portion of the third conduit means comprising first and second open-ended sections with said first section being adapted to receive and convey a mixture of liquid and vaporous refrigerant from the evaporator means into the cavity of said housing means for forming and replenishing the pool of liquid refrigerant therein and with said second section being adapted to receive and convey vaporous refrigerant from the cavity of said housing means to said compressor means, said first portion of said second conduit means defining said means for expanding the expanded liquid refrigerant and comprising elongated capillary tubing means essentially entirely containable within the pool of liquid refrigerant and adapted to receive and convey therethrough the condensed liquid refrigerant from the condensing means for the expansion thereof within said capillary tubing means to said substantially lower pressure, said condensed liquid refrigerant in the elongated capillary tubing means being disposed in a heat exchange relationship with said mixture of liquid and vaporous refrigerant and primarily with the liquid refrigerant in said pool of liquid refrigerant for cooling the condensed liquid refrigerant to a temperature of at least about 25° F. less than said elevated temperature and for converting liquid refrigerant in said pool to vaporous refrigerant for conveyance thereof along with vaporous refrigerant from said mixture to said compressor means through said second section of the third conduit means.

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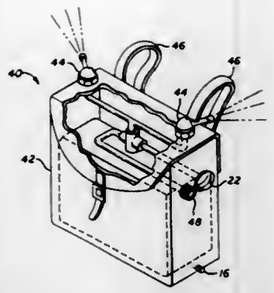
MISTING APPARATUS

Steven Utter, 419 W. Greentree, Chandler, Ariz. 85224

Continuation of Ser. No. 927,231, Aug. 7, 1992, abandoned. This application Nov. 9, 1995, Ser. No. 556,177
Int. Cl.[6] B05B *11/04*
U.S. Cl. 62—121 **1 Claim**

1. A method for emitting an atomized spray of a fluid to a localized area for evaporatively cooling the localized area, comprising the steps of:
providing a misting apparatus comprising a pressurizable fluid tank having an interior chamber, said interior chamber having first and second fluid openings, a first valve in fluid communication with said first opening for introducing fluid into said interior chamber, a pressurizable resilient fluid bladder disposed within said interior chamber, said resilient fluid bladder being in fluid flow communication with said first fluid opening, a second valve comprising a flow regulator valve coupled to said second fluid opening for controlling inflow and out-

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flow of fluid through said second fluid opening, and a spray nozzle coupled to said flow regulator valve, said spray nozzle having a fluid flow orifice of sufficient size to emit an atomized spray of fluid therefrom;

introducing a fluid through the flow regulator valve into said resilient fluid bladder at a pressure of about 50 p.s.i.;

introducing a pressurized fluid into said interior chamber at a pressure greater than about 50 p.s.i. such that said fluid impinges on said resilient fluid bladder;

releasing said pressurized fluid from said interior chamber through the flow regulator valve through said spray nozzle as a misted spray into the localized area, whereby the ambient temperature in the localized area is reduced by evaporative cooling.

5,622,057

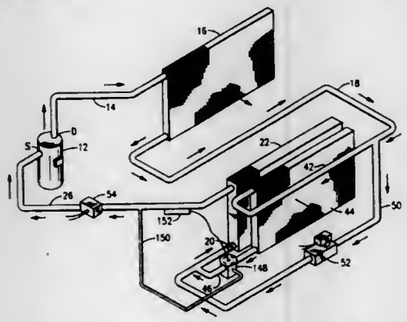
HIGH LATENT REFRIGERANT CONTROL CIRCUIT FOR AIR CONDITIONING SYSTEM

Ruddy C. Bussjager, Chittenango; James M. McKallip, Pompey, and Lester N. Miller, East Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 30, 1995, Ser. No. 520,896

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—173 **9 Claims**



1. Air conditioning apparatus with controlled latent cooling comprising a compressor having a suction side to which a working fluid is supplied as a vapor at low temperature and a discharge side from which the working fluid is discharged as a vapor at a high pressure and elevated temperature; a condenser heat exchanger supplied with said vapor at high pressure for exhausting heat from the working fluid and discharging the working fluid as a liquid at high pressure; an indoor evaporator coil supplied by a liquid line from said condenser heat exchanger with said working fluid at high pressure, including expansion valve means for reducing the pressure of said working fluid to liquid at said low pressure and heat exchanger means in which heat from a stream of indoor air is absorbed by said low pressure liquid such that said working fluid is converted to a low pressure vapor and said low pressure vapor is passed to the suction side of said compressor; and means for reducing the relative humidity of the indoor air leaving said indoor coil, including a sub-cooler heat exchanger having an inlet coupled to said condenser heat exchanger to receive said high pressure liquid and an outlet coupled to the expanding valve means of said indoor evaporator, said sub-cooler heat exchanger being positioned in the indoor air stream leaving said indoor evaporator heat exchanger means for subcooling said working fluid and raising the temperature of said leaving indoor air stream, and control means operative, when cooling and dehumidification are called for, to route the high pressure liquid working fluid first through said sub-cooler heat exchanger and then to said indoor evaporator coil, and when cooling-only is called for, to bypass the sub-cooler heat exchanger and route the high pressure liquid working fluid from said condenser heat exchanger directly to said evaporator coil; wherein said liquid line has a first branch coupled to the expansion valve means of said evaporator coil and a second branch coupled to the inlet of said sub-cooler heat exchanger, and a second liquid line couples the outlet of said sub-cooler heat exchanger to the expander valve means of said evaporator coil, said second liquid line including a flow restrictor device, and said control means including a liquid line solenoid valve interposed in said first branch and control circuit means coupled to said solenoid valve for opening said solenoid valve when cooling only is called for and closing said solenoid valve when cooling and dehumidification are called for; and wherein said control circuit includes a thermostat having a cooling lead that supplies a signal to actuate said compressor when a cooling setpoint temperature is reached; and a humidity control line coupled to said cooling lead including a humidistat in series with control lead means for actuating said liquid line solenoid valve.

5,622,058

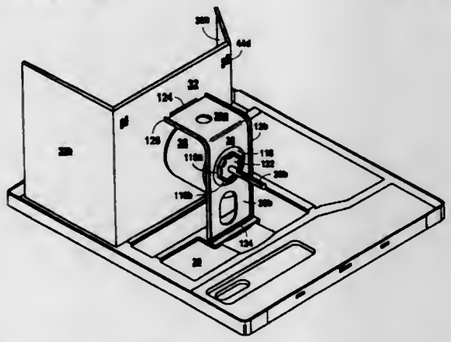
MODULAR ROOM AIR CONDITIONER

Rengaswamy Ramakrishnan; Eric H. Albrecht, both of San Antonio; Gerald C. Smith, Canyon Lake, and Roger D. Conatser, San Antonio, all of Tex., assignors to U.S. Natural Resources, Inc., San Antonio, Tex.

Filed Jun. 7, 1995, Ser. No. 475,484

Int. Cl.[6] F25D *19/00*

U.S. Cl. 62—295 **19 Claims**



1. An air conditioning unit comprising:

a generally rectangular base pan having upturned edges and a floor having a raised section, the base pan having mounted to an upper surface thereof a condenser, an evaporator, a compressor;

a bulkhead, a scroll, a motor having an output shaft, a motor mount bracket for engaging the base pan of the refrigeration assembly, a fan, a blower engaging the output shaft of the motor, a fan shroud, and an air plenum assembly;

resilient motor mount, including means engaging said bulkhead and said motor and means engaging said motor mount bracket and said motor to isolate the motor from the remaining elements of the air conditioner unit,

said resilient motor mount further including a polygonal-shaped cup and a polygonal-shaped resilient ring mounted to the motor.

5,622,059

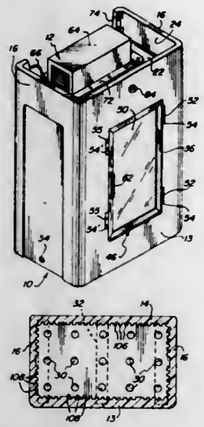
ICEBOX

Robert L. McClellan, 26 Stein Rd., Ellington, Conn. 06029

Filed Dec. 7, 1995, Ser. No. 568,784

Int. Cl.[6] F25D *19/02*

U.S. Cl. 62—448 **10 Claims**



1. A refrigerated cabinet system, comprising:

a cabinet providing an enclosure defined by thermal insulating sidewall and bottom wall structures integrally formed as a single piece and having surfaces of a synthetic resinous material, and by top wall structure substantially spanning said sidewall structure and disposed above said bottom wall structure at a level remote therefrom, said top wall structure also having surfaces of synthetic resinous material and lying in direct surface contact with said surfaces of said sidewall structure, said sidewall structure having a door opening providing access to said enclosure, and said top wall structure having an opening therethrough and being adapted to support a refrigeration unit thereupon; and

an integral cold-air refrigeration unit removably supported upon said top wall structure and extending through said top wall structure opening into operative communication with said enclosure, for producing a flow of cold air therewithin.

5,622,060

LIBR AQUEOUS SOLUTION INJECTION APPARATUS OF A FREEZER SYSTEM

In-seok Kang, Inchon, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed May 12, 1995, Ser. No. 438,949

Claims priority, application Rep. of Korea, May 13, 1994, 10513/1994

Int. Cl.[6] F25B *15/00*; B01D *47/16*

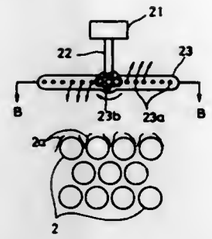
U.S. Cl. 62—485 **4 Claims**

1. A LiBr aqueous solution injection apparatus for heat exchange between a LiBr aqueous solution and cooling water which flows in horizontal heat transfer tubes in an absorber, comprising:

a main injection pipe for guiding a LiBr aqueous solution;

a sub-injection pipe coupled to one end of a lower portion of the main injection pipe;

a horizontal injection blade provided above the horizontal heat transfer tubes and rotatably connected to a circumferential portion of the sub-injection pipe;



a plurality of injection holes formed at opposing portions on each end of said injection blade;

through holes formed at a center portion of the injection blade; and

said injection blade being rotatable by a rotational torque produced by the LiBr aqueous solution discharging through the injection holes, so that the LiBr aqueous solution is uniformly injected onto upper surfaces of the horizontal heat transfer tubes to form a uniform thin layer thereon.

5,622,061

PIERCED EARRING ASSEMBLY

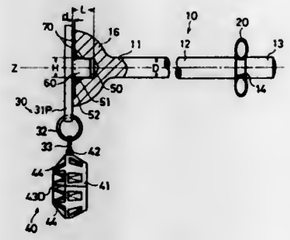
Hideo Sakata, Omiya, Japan, assignor to Universe Yamaki Co. Ltd., Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,154

Claims priority, application Japan, Feb. 6, 1995, 7-017652

Int. Cl.[6] A44C *7/00*

U.S. Cl. 63—12 **9 Claims**



1. A pierced earring assembly, comprising:

a post for insertion through the opening in a pierced earlobe, formed of a material selected from the group consisting of titanium, titanium alloy, and ceramics, said post having a longitudinal axis, a front end portion and a rear end portion, said axis extending in a direction from said front end portion toward said rear end portion, said post having an insertion hole at said front end portion, extending in a direction parallel to said longitudinal axis, and an annular groove at said rear end portion;

a holder having means for supporting an ornament piece, and an insertion axle, fixed to said supporting means and inserted in said insertion hole;

adhesive in said insertion hole fixing said insertion axle to said post; and

a stopper detachably mounted in said annular groove.

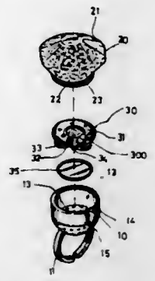
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5,622,062

RING WITH SOUND AND LIGHT PRODUCING MEANS

Lin Gong-Hwa, Chung Ho, Taiwan, assignor to Cute Item Enterprise Co., Ltd., Taipei Hsien, Taiwan

Filed Apr. 30, 1996, Ser. No. 640,402
Int. Cl.[6] A44C 9/00
U.S. Cl. 63—15 4 Claims



1. A ring comprising:

a ring base, said ring base comprising a top open chamber, a top coupling means, a bottom wall, a plurality of through holes through said bottom wall, and a circular band raised from said bottom wall on the outside for fastening to one's finger;

a cap having a bottom coupling means loosely coupled to the top coupling means of said ring base, and a light-permeable crown shaped like a gemstone; and

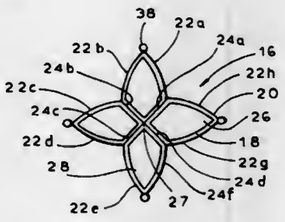
a circuit device mounted inside the top open chamber of said ring base, said circuit device comprising a sound producing circuit, a light producing circuit, a battery power supply circuit, and a switch, said switch being switched on to trigger said sound producing circuit and said light producing circuit to produce sound and light for a predetermined length of time each time when said cap is depressed.

5,622,063

STAR-SHAPED PRECIOUS STONE MOUNTING

Christopher Slowinski, Bellerose, N.Y., assignor to Christopher Designs Inc., New York, N.Y.

Filed Jul. 26, 1995, Ser. No. 506,727
Int. Cl.[6] A44C 17/02
U.S. Cl. 63—28 17 Claims



1. A jewelry piece comprising:

a mounting including a peripheral circumferential edge and a peripheral wall arranged in a star-shaped configuration along the edge and defining N stone compartments, where N is a positive integer greater than 2; and

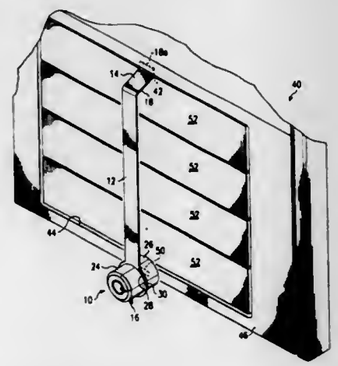
a plurality of N jewelry stones substantially filling the compartments defined by the peripheral wall, each of the stones having first and second mating surfaces and each of the first and second mating surfaces mating with corresponding mating surfaces of adjacent ones of said stones, the peripheral wall of the mounting defining a center of the mounting and the plurality of jewelry stones being so arranged that each of the stones extends from the center radially outwardly in a manner which simulates the appearance of a single, star-shaped stone, the mounting further including stone-partitioning walls extend inwardly from the peripheral wall to define the compartments, the stone-partitioning walls engaging and supporting the stones and being disposed below the stones in a manner such that the stone-partitioning walls are not visible.

5,622,064

COMPUTER ACCESS PORT LOCKING DEVICE AND METHOD

Steve Gluskoter, and Steve Sands, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 448,844, May 24, 1995, abandoned.
This application Oct. 10, 1996, Ser. No. 728,667
Int. Cl.[6] E05B 73/00
U.S. Cl. 70—14 15 Claims



1. A locking device for a computer having a housing with a computer device opening through which a plurality of computer devices may be removably inserted into the interior of the housing to an operating orientation in which the devices are accessible through the opening, the housing having a first pair of opposing portions partially bounding the opening and being spaced apart in a first direction, and a second pair of opposing portions partially bounding the opening and being spaced apart in a second direction generally transverse to the first direction, said locking device comprising:

an elongated locking member having first and second opposite end portions, and a width substantially less than the distance between the first pair of opposing housing portions, said first end portion including a transverse end section configured to extend into a first locking member slot provided in one of the second pair of opposing housing portions adjacent the computer device opening for movement relative thereto between first and second positions so that in the first position, the first end portion is securely engaged in said first locking member slot and in the second position, the first end portion may be readily disengaged from said first locking member slot; and

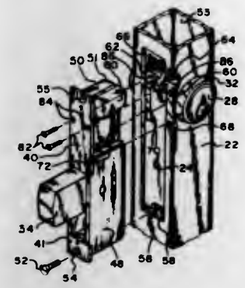
locking means for releasably anchoring said second end portion of said locking member configured to extend into a second locking member slot provided in the other one of the second pair of opposing housing portions so that in the first position, the second end portion is securely engaged in the second locking member slot and in the second position, the second portion is disengaged from said second locking member slot.

5,622,065

LOCKING MECHANISM

Anthony M. Persiano, 1809 Edgewood Pl., Clementon, N.J. 08021

Filed Nov. 6, 1995, Ser. No. 554,190
Int. Cl.[6] E05B 65/06
U.S. Cl. 70—139 23 Claims



7. A locking mechanism for use in a movably mounted door, the door comprising:

(i) a stile with an opening in a vertical face thereof adjacent a face of a frame in which the door is mounted, and

(ii) a lock actuating means to operate a cam member thereof rotatable in opposite directions in a vertical arc, the locking mechanism adapted for insertion into the opening in the stile, the locking mechanism comprising:

(A) a lock casing adapted for insertion in the opening in the stile and means to attach the casing in the stile, the casing comprising a front facing out of the opening in the stile when the casing is inserted into the opening in the stile,

(B) lock bolt moving alternatively through an opening in the front of the casing from a retracted position to a locking position wherein the bolt in the locking position extends outwardly from the front of the casing,

(C) an actuator member comprising:

(i) an upper section,

(ii) a lower section, and

(iii) engagement means on said lower section:

(a) to engage the lock bolt as the actuator is moved vertically moving the lock bolt back and forth between the locking position and the retracted position,

(b) as the actuator member is moved to an upper position to engage a bearing surface thereof against a first bearing surface of the lock bolt when the lock bolt is in the retracted position, and

(c) as the actuator member is moved to a lower position to engage the bearing surface thereof against a second bearing surface of the lock bolt when the lock bolt is in the locking position,

(D) translating means to engage the cam member and the upper portion of the actuator member and translate rotational movement of the cam member to vertical movement of the actuator member,

(E) holding means in the casing to hold the actuator member and limit it to freely slide only rectilinearly vertically downwardly and upwardly,

(F) disengagement means to allow disengagement of the translating means at ends of movement of the actuator member, and

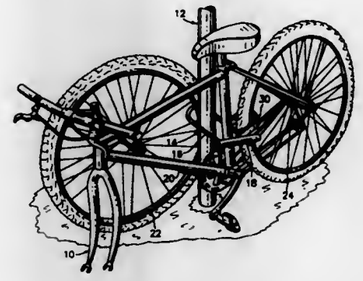
(G) latching means to prevent movement of the lock bolt when the lock bolt is in the retracted position and when the lock bolt is in the locking position.

5,622,066

BICYCLE LOCK EXTENSION LINK AND METHOD

Sean T. Shallis, 339 Bloomfield St., Apt. 2, Hoboken, N.J. 07030

Filed Jan. 17, 1995, Ser. No. 373,556
Int. Cl.[6] B62H 5/16; E05B 71/00
U.S. Cl. 70—233 1 Claim



1. A method for extending the ability of an existing bicycle lock to secure a bicycle to a post, the bicycle including a frame, a first wheel and a second wheel, the existing bicycle lock having a U-shaped shackle including longitudinal legs each having a length lone enough and being spaced apart laterally for enabling reception of the frame, the first wheel and the post between the legs, and a locking bridge for spanning the space between the legs to secure the frame and the first wheel to the post, the method comprising:

placing the second wheel within a generally U-shaped essentially rigid one-piece link having laterally spaced apart arms and a throat between the arms, the throat including an opening, each arm having a first end and a second end, the opening being located adjacent the first ends and the arms being joined adjacent the second ends and spaced apart at the opening a lateral distance adapted for reception of the second wheel within the throat, each arm extending longitudinally alongside the throat between the opening and the second end of the arm along a length adapted for reception of the second wheel within the throat such that the second wheel is placed within the throat when the frame, the first wheel and the post are received between the legs of the shackle; placing the frame of the bicycle, the first wheel and the post between the legs of the shackle;

passing one of the legs of the shackle through apertures located adjacent the first ends of the arms and aligned laterally with one another, the apertures having dimensions relative to corresponding dimensions of the one leg of the shackle for enabling passage of the one leg of the shackle through the apertures to span the opening and close the throat; and

spanning the space between the leas of the shackle with the looking bridge such that subsequent to placement of the second wheel within the throat, reception of the frame, the first wheel and the post between the legs of the shackle, passage of the one leg through the aligned apertures and spanning the space between the legs of the shackle with the locking bridge, the second wheel is secured to the shackle of the bicycle lock by the link and the bicycle is secured to the post by the shackle.

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5,622,067

USER-CODABLE MAGNETIC LOCK

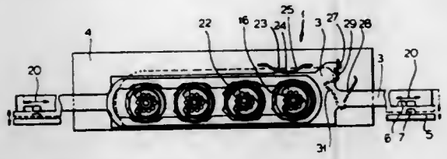
Karl-Heinz Waltz, Iserlohn, Germany, assignor to Sudhaus Schloss-und Beschlagtechnik GmbH & Co., Iserlohn, Germany

Filed Jan. 25, 1995, Ser. No. 377,923

Claims priority, application Germany, Jan. 27, 1994, 44 02 349.9

Int. Cl.[6] E05B 47/00

U.S. Cl. 70—276 11 Claims



1. A magnetically coded lock assembly comprising:

a lock having

a housing formed with a key slot;

a latch element movable in the housing between a locked and an unlocked position; and

at least one magnet wheel in the housing rotatable adjacent the slot about a wheel axis, provided with a magnet, operatively engageable with the latch element, and displaceable between a blocking position preventing the latch element from moving from the locked to the unlocked position and a freeing position not blocking such movement of the latch element; and

a retaining spring in the lock housing engaging the latch element and movable between a blocking position projecting into the slot and preventing movement of the latch element from either of the respective positions and a depressed position not projecting into the slot and permitting movement of the latch element between the respective positions, and

a key having

a key body fittable in the slot, dimensioned to engage the retaining spring to depress the retaining spring into the depressed position on insertion of the key fully into slot, and formed with at least one seat;

a respective disk rotatable in the seat about a disk axis through a plurality of angularly offset positions, each disk being closely juxtaposed with a respective one of the wheels when the key body is fitted in the slot; and

a magnet fixed in the disk.

5,622,068

METHOD AND MACHINE FOR PRODUCING DETAILS FROM A SHEET OF METAL

Anders Sjöberg, Ågatan 56, S-334 32, Anderstorp, Sweden

PCT No. PCT/SE93/00820, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/08740, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 11, 1993, Ser. No. 403,741

Claims priority, application Sweden, Oct. 12, 1992, 9202982

Int. Cl.[6] B21D 28/04;28/20

U.S. Cl. 72—14.8 20 Claims

1. A method of producing plate components from a flat sheet of metal having a thickness of from 0.1 to 20 mm using a press with at least first and second working tools, the plate being larger than at least three plate components; each plate component having a length along an x-axis of the press and a width along a y-axis of the press, and the plate having first and second longitudinal edges, substantially parallel to the x-axis and each other, and first and second transverse edges substantially parallel to the y-axis and each other; said method comprising the steps of automatically and substantially sequentially:

(a) feeding the plate into operative association with the press so that a first corner of the plate at the intersection of the first longitudinal and transverse edges is aligned with the first metal working tool;

(b) acting on the plate at the first corner with the first cutting tool to at least partially form or separate a metal component from the plate at the first corner and so that a continuous piece of scrap metal is formed; then

(c) incrementally moving the plate in the x-direction so that the first corner is advanced into operative association with the second metal working tool; then

(d) with the second cutting tool removing the scrap, with a maximum dimension along the x-axis of 30 mm, from the plate while forming a third longitudinal edge substantially parallel to the x-axis and a third transverse edge substantially parallel to the y-axis, forming a new first corner at the intersection of the first longitudinal edge and third transverse edge;

(e) repeating steps (a)–(d) to elongate the third longitudinal edge until all the metal components between the first and third longitudinal edges have been removed; then

(f) moving the metal plate in the y-direction the width of the next metal component to be formed and moving the metal plate in the x-direction approximately the length of the metal plate so that a new corner thereof is positioned approximately at the position of the first corner in step (a); and

(g) repeating steps (a)–(e), and step (f) if necessary, until all desired components have been formed from the metal plate.

5,622,069

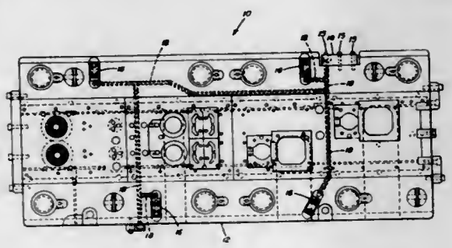
STAMPING DIE WITH ATTACHED PLC

Harry J. Walters, Pittsburgh, Pa., assignor to Oberg Industries, Inc., Freeport, Pa.

Filed Mar. 11, 1996, Ser. No. 613,353

Int. Cl.[6] B21D 37/00

U.S. Cl. 72—21.3 12 Claims



1. A stamping die for use in a punch press comprising:

a die body;

sensing devices positioned on said die body to detect malfunctions of said die when said punch press is in operation;

a programmable logic microcontroller secured to said die body;

connections between each of said sensing devices and said programmable logic microcontroller to transmit signals from said sensing devices to said programmable logic microcontroller; and

electrical connections from said programmable logic microcontroller to said punch press to stop said punch press upon receipt by said programmable logic microcontroller of a die malfunction signal from one of said sensing devices.

5,622,070

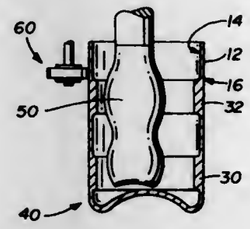
METHOD OF FORMING A CONTOURED CONTAINER

Joseph D. Bulso, Jr., Canton, Ohio, assignor to Redicon Corporation, Canton, Ohio

Filed Jun. 5, 1995, Ser. No. 461,154

Int. Cl.[6] B21D 51/26

U.S. Cl. 72—68 15 Claims



1. A method of forming a container having a contoured sidewall from a cup blank, the cup blank having a base and a sidewall having a first end adjacent the base and a second end adjacent the open end of the cup, the method comprising the steps of:

(a) engaging an ironing punch with the interior of the cup;

(b) passing the ironing punch and the cup through at least one ironing ring such that areas of extra material are formed in the sidewall of the ironed cup between the first end and the second end of the sidewall; and

(c) spin forming the ironed cup to shape said areas of extra material to provide a contoured sidewall.

5,622,071

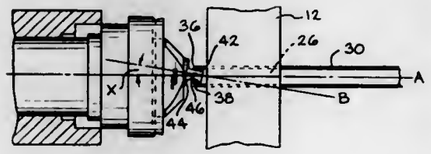
METHOD FOR FORMING A FLANGE ON A TUBE

Philip C. Van Riper, Holland, and Gene A. Ellerbrock, Columbus Grove, both of Ohio, assignors to Aeroquip Corporation, Maumee, Ohio

Filed Nov. 27, 1995, Ser. No. 562,734

Int. Cl.[6] B21D 19/04

U.S. Cl. 72—117 14 Claims



1. A method for forming a flange comprising the steps of:

(a) placing a tube having an inside diameter and a tube axis extending longitudinally therethrough on support means for supporting said tube, said tube having an edge defining an opening, said support means having a predetermined flange shape surface adjacent said edge;

(b) positioning a tip adjacent said edge, said tip having an insertion end, a tapered end and a center portion extending between said insertion and tapered ends, said insertion end having a diameter larger than said inside diameter of said tube, said center portion having a diameter smaller than said inside diameter of said tube, said tapered end having a diameter larger than said inside diameter of said tube, said tip having a tip axis extending longitudinally therethrough, said tip axis being at a predetermined angle with respect to said tube axis, said tip rotating along said tube and tip axes;

(c) inserting said rotating tip in said opening of said tube; and

(d) engaging said edge of said tube with said tip to cause said insertion end to expand said edge, said center portion to shape said edge and said tapered end to press said edge against said flange shape surface to form a flange on said tube.

5,622,072

LEVELLING MACHINE FOR LEVELLING SHEET METAL AND STRIP

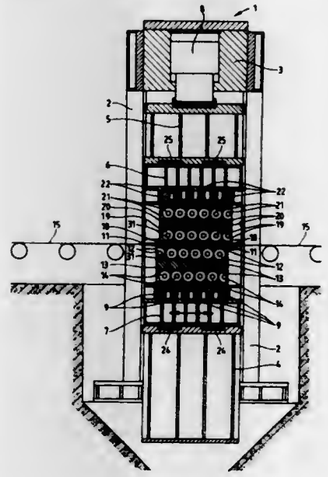
Willi Benz, Neuss, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Apr. 28, 1995, Ser. No. 430,733

Claims priority, application Germany, Apr. 29, 1994, 44 15 048.2

Int. Cl.[6] B21D 1/02

U.S. Cl. 72—163 4 Claims



1. A levelling machine for levelling sheet metal or strip travelling through the levelling machine in a travel direction, the levelling machine comprising upper levelling rolls and lower levelling rolls arranged offset relative to each other in the travel direction, the levelling rolls having a length, further comprising roll stands and back-up rolls mounted in the roll stands, the levelling rolls being supported over the length thereof by the back-up rolls, further comprising individually driven intermediate rolls mounted between the levelling rolls and the back-up rolls, such that the intermediate rolls drive the levelling rolls with the levelling rolls solely driven by the intermediate rolls wherein the levelling rolls and the intermediate rolls have diameters, and wherein the diameter of the levelling rolls is substantially smaller than the diameter of the intermediate rolls.

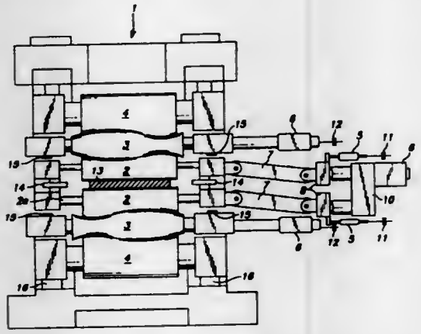
VOL 1197 ISS 4 APR 22 1997 UMI

5,622,073

SIX HIGH ROLLING MILL

Toshiki Hiruta; Kunio Kitamura, and Ikuo Yarita, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 961,934, Jan. 13, 1993, abandoned.
This application Oct. 12, 1994, Ser. No. 321,593
Claims priority, application Japan, May 21, 1991, 3-144152; May 16, 1991, 3-139428; May 16, 1991, 3-139431; Jul. 4, 1991, 3-189467; Jul. 4, 1991, 3-189468; Jul. 4, 1991, 3-189469; Jul. 4, 1991, 3-189470; Jan. 7, 1992, 4-000942
Int. Cl.[6] B21B 27/02
U.S. Cl. 72—247 9 Claims



1. A six-high rolling mill for rolling steel sheet and having a vertical and parallel rigidity comprising: a pair of upper and lower work rolls, each rotatably mounted about a parallel axis in a common plane and defining therebetween a nip for said steel sheet to be rolled therebetween, a pair of upper and lower intermediate rolls, each rotatably mounted about a barrel center extending along a parallel longitudinal axis within said common plane and respectively backing said upper and lower work rolls, and a pair of upper and lower backup rolls, each rotatably mounted about a parallel axis within said common plane and respectively backing said upper and lower intermediate rolls, said intermediate and said work rolls being adapted for shifting in axial directions thereof, wherein each of the intermediate rolls has a barrel length longer than that of each of the backup rolls such that a barrel end of each of the intermediate rolls extends beyond a barrel end of each of the backup rolls even after a maximum and minimum axial shifting of each of the intermediate rolls, each of said work rolls provided with a like cylindrical roll profile, the upper and lower intermediate rolls each provided with a like roll crown profile in point symmetry relationship, said roll crown profile defined by a third order equation, which said equation determines that the barrel length of each intermediate roll is to be 1.2–2.5 times longer than that of each backup roll, so that fish and continuous contact is maintained between said intermediate roll and said work and backup rolls so as to preserve mill rigidity, and to reduce sheet rolling forces interacting between said rolls, whereby a fluctuation of sheet crown and end thickness inaccuracies such as edge drop, meandering and ears are reduced,

wherein said third order equation of said lower intermediate roll is expressed as

$$y_1(x)=-a[\{x-(\delta+OF)\}/L]^3+b(x/L)$$

where y: is the generating line that defines the roll crown profile;
where a: is a coefficient of the third order;
where b: is a coefficient of the first order;
x: is a coordinate of the lower intermediate roll barrel center relative to the longitudinal axis of the lower intermediate roll being coincidental with the x axis of an x-y coordinate system, the center point being at x=0, y=0 of the coordinate system,
where L: is ½ of the barrel length of the intermediate roll measured along the x-coordinate;
where δ: is the axial shift amount of the intermediate roll along the longitudinal axis relative to the center point (0,0) of the coordinate system; and
where OF: is defined as the difference between the barrel length L and the length LB, which is half the backup roll barrel length; and
wherein the roll profile of the upper intermediate roll defined by a similar third order equation is in point symmetry relationship to the lower roll profile with respect to a point thereon and is expressed as

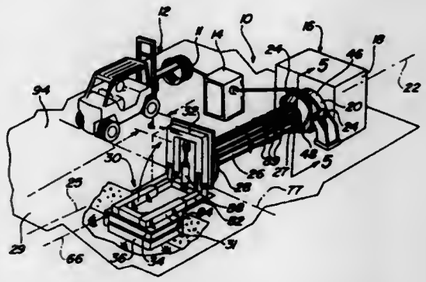
$$y_2(x)=-a[\{x+(\delta+OF)\}/L]^3+b(x/L).$$

5,622,074

SPLIT SIDEWINDER DRAW MACHINE ASSEMBLY

Floyd E. Cushman, Shelby Township, Mich., assignor to MNP Corporation, Utica, Mich.

Filed Jun. 12, 1995, Ser. No. 489,389
Int. Cl.[6] B21C 1/02
U.S. Cl. 72—289 19 Claims



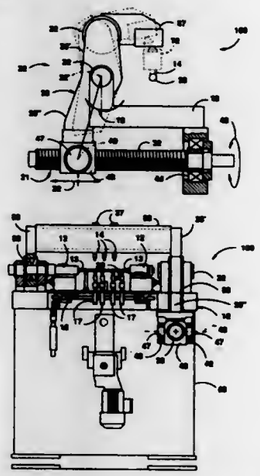
18. A draw and recoiling system for rod characterized by;
a capstan being rotatably mounted to a housing about a generally horizontal axis and having a peripheral surface extending to a distal end, said capstan constructed for receiving rod about its peripheral surface and wrapping said rod about said surface to form a plurality of coils of said rod;
said capstan having at least one drive member accessible at said distal end;
a rotatable turntable having an elongated frame section that has a distal end engageable with said capstan and operably engageable with said at least one drive member at said distal end of said capstan for rotation with said capstan about said generally horizontal axis and sized to axially receive said rod from about capstan as it axially slides off said distal end of said capstan as said capstan and said elongated frame section rotate;
said rotatable turntable being mounted on a platform that is operably constructed to move said distal end of said frame into and out of engagement with said capstan from a first position and reorient and adjust the position of said turntable to a second position along both an angular and longitudinal direction when it is disengaged from said capstan.

5,622,075

BENDING MACHINE

Manfred Deutschewitz, Solingen, and Manfred Mitze, Wetter, both of Germany, assignors to MAE Maschinen - und Apparatebau Gotzen GmbH & Co. KG, Germany

PCT No. PCT/DE93/00404, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO93/23184, PCT Pub. Date Nov. 25, 1993
PCT Filed May 4, 1993, Ser. No. 331,514
Claims priority, application Germany, May 13, 1992, 42 15 795.1
Int. Cl.[6] B21D 9/08
U.S. Cl. 72—387 20 Claims



1. Bend-straightening machine for workpieces having longitudinally opposite ends that are more long than wide, said machine including

workpiece seats and a machine table, said workpiece seats placed on and above said machine table to hold the ends of the workpiece so it can rotate,
at least two straightening bases that are at a distance from each other along the longitudinal direction of the workpiece, said two straightening bases support the workpiece placed on the machine table,
at least one straightening die that acts upon the workpiece between the straightening bases,
and a lever having two arm portions and a center portion therebetween, said lever being supported in the center portion in a drag bearing that is fixed to the machine, each said arm portion having a free end, swivel drive means for actuating said lever, said straightening die being fastened at the free end of one said arm portion to move in the arc of a circle during swiveling, said swivel drive means acting upon the free end of the other said arm portion in a direction transverse to said longitudinal direction,
said bend-straightening machine comprising said swivel drive means being an electric motor for driving a drive spindle that is placed under said machine table.

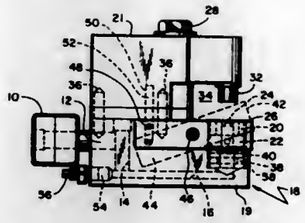
5,622,076

PORTABLE HYDRAULIC PUNCH

Robert E. Welty, 631 River Pl., Gadsden, Ala. 35901

Filed May 4, 1995, Ser. No. 434,602
Int. Cl.[6] B21J 7/28
U.S. Cl. 72—453.15 4 Claims

1. A portable, hydraulically operated punch-die unit f or fastening together sheet metal members without the use of separate fasteners when used in a hydraulic system having a two-stage high pressure hydraulic pump and a retractor valve capable of both supplying high pressure hydraulic fluid to the unit and generating a negative pressure in the unit, said unit comprising: a main body having an upper portion and a lower portion with an open space formed between said portions; a die supported by the upper portion and extending into the open space; an inlet formed in the main body for connecting the unit to a high pressure hydraulic pump; a cylinder formed in the lower portioo of the main body beneath the open space; a fluid passageway connecting the cylinder and the inlet; a piston movable in the cylinder; a punch connected to and movable with the piston; the cylinder, piston and punch being located so that the punch is in alignment with the die so that when the piston moves toward the die the punch will engage the die in proper alignment; a first high pressure seal around the piston and engageable with the cylinder; and a second U-cup vacuum seal around the piston downstream from the first high pressure seal and engageable with the cylinder; the second vacuum seal providing for retraction of the piston and thus the punch when a negative pressure is applied-to the piston through the passageway.

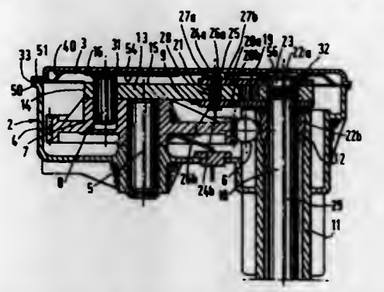


5,622,077

MOTORIZED REDUCTION GEAR UNIT COMPRISING A HOLLOW CASING HAVING A COVER PLATE, ESPECIALLY FOR A SCREEN WIPING APPARATUS

Pierre Blanchet, Lencloitre, and Stéphane Hommelet, Chatellerault, both of France, assignors to Valeo Systemes d'Essuyage, La Verriere, France

Filed Jun. 5, 1995, Ser. No. 462,846
Claims priority, application France, Jun. 6, 1994, 94 06978
Int. Cl.[6] F16H 21/40; B60S 1/24
U.S. Cl. 74—42 10 Claims

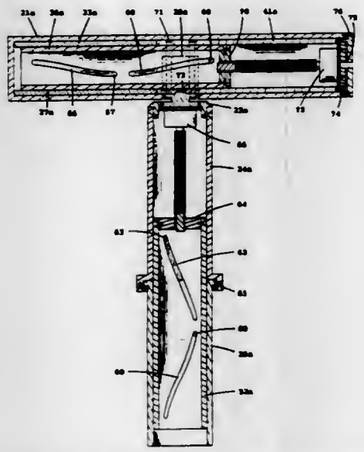


1. A motorized reduction gear unit comprising: a hollow casing; a cover plate closing the hollow casing; a first shaft carried by and within the hollow casing; a toothed wheel mounted on the first shaft for rotation about the first shaft; a gudgeon pin carried by the toothed wheel and defining an axis parallel to the first shaft but offset eccentrically from the first shaft; a connecting rod coupled to the said gudgeon pin; a pivot pin carried by the connecting rod; a crank having a first end articulated on the pivot pin and a second end remote from the pivot pin; and an output shaft carried by the casing and coupled to the second end of the crank, whereby to derive alternating rotary motion of the output shaft from continuous rotary motion of the toothed wheel, the toothed wheel, gud-

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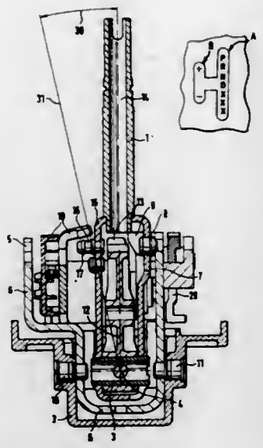
geon pin, connecting rod, pivot pin and crank being within the casing, wherein the cover plate has an inner surface facing towards the casing, and defines on the inner surface an engagement surface for abutting engagement of the first end of the crank associated with the pivot pin.

5,622,078
LINEAR/HELIX MOVEMENT SUPPORT/SOLAR TRACKER
Brad A. Mattson, 1805 Dogwood, North Las Vegas, Nev. 89030
Filed Aug. 21, 1995, Ser. No. 519,156
Int. Cl.[6] F16H *25/16;* **F24T** *2/38*
U.S. Cl. 74—89.15 **15 Claims**



1. A rotational support comprising:
a stationary cylinder firming the sole base of said support;
a rotational cylinder formed coaxial with said stationary cylinder about a first axis, the rotational cylinder axially abutting said stationary cylinder;
retaining means for preventing axial movement of said rotational cylinder relative to said stationary cylinder, the retaining means functioning solely between the stationary and rotational cylinders without any additional support;
an inner cylinder coaxial about the first axis, the inner cylinder extending axially between said stationary cylinder and said rotational cylinder, the inner cylinder engaging both the stationary and rotational cylinders;
wherein said inner cylinder, stationary cylinder and rotational cylinder have cam grooves and cam followers between the inner cylinder and the stationary and rotational cylinders, so that axial motion of the inner cylinder results in rotational motion of the rotational cylinder.

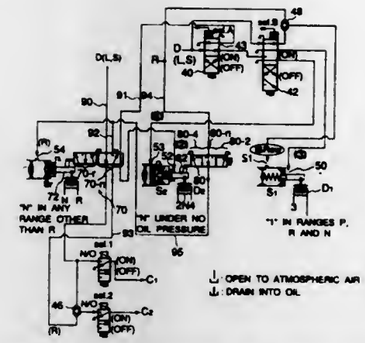
5,622,079
SELECTING DEVICE FOR AN AUTOMATIC TRANSMISSION OF A MOTOR VEHICLE
Norbert Woeste, Munich, and Josef Neuner, Raubling, both of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany
Filed Jul. 24, 1995, Ser. No. 506,165
Claims priority, application Germany, Jun. 8, 1995, 44 26 207.8
Int. Cl.[6] B60K *20/02;* **F16H** *59/04*
U.S. Cl. 74—335 **13 Claims**



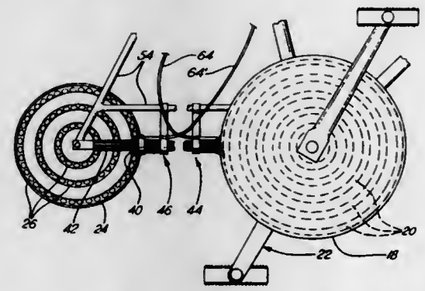
1. Selecting device for an automatic transmission of a motor vehicle which is selectively operable in an automatic operation mode and a manual step-by-step mode, comprising:
a vehicle fixed frame,
a manually movable selector lever,
a first shifting channel extending in a longitudinal direction and serving to guide movement of the selector lever between driving positions in an automatic operation mode of the transmission,
a second shifting channel extending parallel to the first shifting channel and serving to guide movement of the selector lever in a manual step-by-step operation mode of the transmission,
a first shaft supporting the selector lever for pivotal movement between respective operating positions in the first and second shifting channels and
a second shaft supporting the selector lever for pivotal movement between the first and second shifting channels,
wherein said second shaft is disposed in a fixed location in the vehicle fixed frame,
and wherein a restoring spring is provided to return the selector lever to a center neutral position in the second shifting channel, which center neutral position is disposed to facilitate subsequent movement of the selector lever from the second shifting channel to the first shifting channel.

5,622,080
SAFETY INTERLOCK FOR PREVENTING DOUBLE ENGAGEMENT OF FORWARD AND REVERSE DOG CLUTCHES AND SHAFT CLUTCH
Toshiharu Furukawa, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Nov. 9, 1995, Ser. No. 556,194
Claims priority, application Japan, Nov. 22, 1994, 6-287933
Int. Cl.[6] F16H *61/12;61/18*
U.S. Cl. 74—335 **3 Claims**

1. A hydraulic control system for an automatic transmission of multiple clutch type, having at least two power transmission shafts each of which transmits power from a driving source to an output, shaft clutches each of which eather activates or deactivates the power transmission of said corresponding power transmission shaft, a plurality of speed change gears which are mounted on each of the power transmission shafts, dog clutches which select any one of the speed change gears and render the selected gear for transmitting the power, respectively, and hydraulic actuators which bring selected ones of the shaft clutches and the dog clutches into engagement, so as to form any one of a plurality of speed stages, respectively; comprising:
a cut valve whose positions are shifted by interlocking with an operation of one of said dog clutches, and which controls supply of working oil to the hydraulic actuator corresponding to dog clutches other than said one of said clutches mounted on the same power transmission shaft on which said one of said dog clutches is mounted, so as to prohibit an engagement of said dog clutches other than said one of said clutches mounted on the same power transmission shaft, such that said one dog clutches has selected either one of the corresponding speed change gears and is in a state in which the selected gear is capable of transmitting said power.

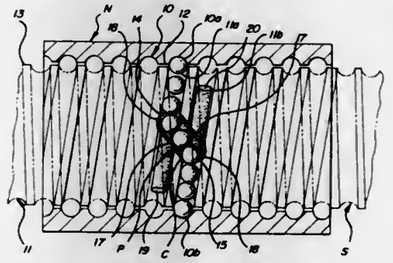


5,622,081
MULTIPLE SPEED SHAFT DRIVE FOR A BICYCLE
Thomas M. Clements, 34711 Jefferson, Apt. #3, Harrison Township, Mich. 48045
Filed Dec. 29, 1995, Ser. No. 580,944
Int. Cl.[6] F16H *3/08;* **B62M** *11/04*
U.S. Cl. 74—351 **20 Claims**



1. A multiple speed shaft drive for a bicycle, wherein the bicycle has a frame and a pedal crank rotatably connected to the frame, said multiple speed shaft drive comprising:
a drive assembly comprising:
a rear wheel hub rotatably connected with the frame of the bicycle;
a forward disk having a pluraility of forward ring gears formed thereon, said forward disk being connected to the pedal crank of the bicycle so as to rotate therewith about a forward disk axis, said plurality of forward ring gears being concentrically disposed with respect to said forward axis;
a rearward disk having a plurality of rearward ring gears formed thereon, said rearward disk being connected to said rear wheel hub so as to rotate therewith about a rearward disk axis, said plurality of rearward ring gears being concentrically disposed with respect to said rearward axis:
a forward drive shaft having splines;
a rearward drive shaft having splines;
a free wheel mechanism connecting said forward drive shaft to said rearward drive shaft;
a forward pinion gear slidably mounted in gearingly meshed relationship with respect to said splines of said forward drive shaft; and
a rearward pinion gear slidably mounted in gearingly meshed relationship with respect to said splines of said rearward drive shaft; and
a clutch assembly comprising:
forward pinion gear reciprocation mechanism means for moving said forward pinion gear into gearingly meshed engagement with a selected forward ring gear of said plurality of forward ring gears of said forward disk;
rearward pinion gear reciprocation mechanism means for moving said rearward pinion gear into gearingly meshed engagement with a selected rearward ring gear of said plurality of rearward ring gears of said rearward disk;
clutch mechanism means located at said rear wheel hub for disengaging said selected rearward ring gear of said rearward disk from gearingly meshed engagement with said rearward pinion gear; and
shift controller means for selectively actuating each of said forward pinion gear reciprocation means, said rearward pinion gear reciprocation means and said clutch mechanism means.

5,622,082
BALL NUT AND SCREW ASSEMBLIES WITH IMPROVED CROSSOVERS
Mitchell A. Machelski, Saginaw, Mich., assignor to Thomson Saginaw Ball Screw Company, Inc., Saginaw, Mich.
Filed Aug. 22, 1995, Ser. No. 517,741
Int. Cl.[6] F16H *25/22*
U.S. Cl. 74—459 **3 Claims**



1. A crossover button in combination with a ball nut and screw assembly comprising an axially extending screw with external lands defining a helicoidal groove having adjacent turns; a ball nut thereon with internal lands defining a complemental helicoidal groove with complemental turns, the helicoidal grooves of the screw and nut defining a raceway with substantially semi-circularly shaped groove surfaces in the screw and nut separated by an operating clearance between the nut and screw lands; and a train of abutting load bearing balls being received with an operating clearance within said raceway to ride on said groove surfaces, the nut having a radial bore extending through to said raceway, and the button comprising;
a) a generally Z-shaped body, having a section received within said bore, the body being provided with an axially diagonal, turn-bridging, ball crossover recirculation passage in its radially inner face which separates portions of a pair of adjacent turns into ball path portions and non-ball path portions external to said ball path portions, said passage having entrances for different turns communicating with said ball path portions;
b) said body having a pair of oppositely helically extending, integrated, normally non-load bearing legs projecting laterally in a direction away from said passage entrances adjacent opposite ends of said passage, said legs curving away from said body inwardly toward said screw in conformance with said screw groove when said body section is in place in said bore, said legs being of substantially elliptical cross-section with a major axis in the radial direction and being of a dimension to be received in and substantially fill, except for a

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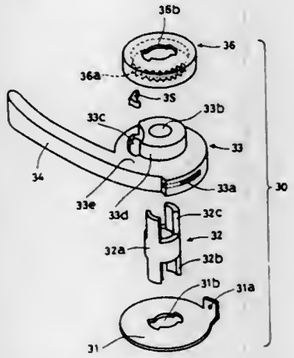
surrounding clearance, the combined volume of said adjacent non-ball path portions of both the nut and screw helicoidal grooves in which they are received to function to confront substantially the entire groove surfaces over a substantial portion of the extent of said legs to transmit load and prevent free-wheeling in the event of ball train failure; the clearance around the legs being slightly greater than the clearance around said balls.

5,622,083

GEAR SHIFTING MECHANISM

Kanji Kirimoto, Kaizuka, and Mitsuo Oka, Sakai, both of Japan, assignors to Shimano Inc., Osaka, Japan

Filed Feb. 2, 1996, Ser. No. 595,540
Int. Cl.[6] G05G *5/06*; B62K *23/06*; F16H *63/38*
U.S. Cl. 74—475 **8 Claims**



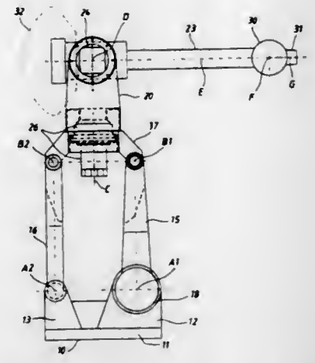
1. A gear shifting mechanism comprising:
a base member having a cable shield retaining portion;
a lever handle formed with a central aperture, a support portion and a pawl retaining recess;
a shaft member disposed in said central aperture, said shaft member fixed to said base member;
a gear member having a disk-like shape and a generally hollow interior having an inner circumferential surface with gear teeth formed thereon, said gear member fixed to said shaft member; and
a pawl member disposed in said pawl retaining recess for engagement with said gear teeth.

5,622,084

INDUSTRIAL ROBOT

Leif Telldén, Västerås, Sweden, assignor to ASEA Brown Boveri AB, Västerås, Sweden

Continuation of Ser. No. 194,476, Feb. 10, 1994. This application Feb. 28, 1996, Ser. No. 608,033
Claims priority, application Sweden, Apr. 30, 1993, 9301481; WIPO, Jan. 7, 1994, PCT/SE94/00008
Int. Cl.[6] B25T *9/04*; *18/00*
U.S. Cl. 74—490.03 **11 Claims**



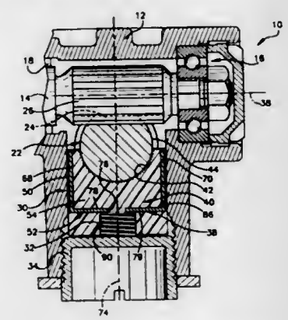
1. An industrial robot comprising, a pair of spaced apart lower robot arms upwardly extending from a robot stand, lower ends of said arms being respectively journalled in said stand for pivotal movement about a pair of parallel lower pivot axes, upper ends of said arms being rotatably interconnected by a yoke for rotating said lower robot arms respectively about a pair of upper pivot axes lying parallel to said lower pivot axes, said yoke interconnecting said robot arms together to form a four-bar linkage with said stand, a first driving unit for pivoting the linkage to effect maximum movement of said yoke in forward and rearward directions in a vertical plane, an upper robot arm supported by the linkage and being journalled for pivotal movement about a fifth pivot axis in the vertical plane, a second driving unit for pivoting said upper arm about said fifth axis between a maximum forward reach of said upper arm at the maximum forward direction of movement of said yoke, and a rearward reach of said upper arm rotated through 180° at any position of said yoke without the need to rotate said upper arm about a sixth pivot axis, said upper robot arm being mounted on a fixing member supported by said yoke, said fixing member being rotatably journalled for movement about said sixth pivot axis, and a third driving unit secured to the yoke and connected to the fixing member for rotation thereof about said sixth axis, said upper robot arm having an outer end portion including a wrist mechanism.

5,622,085

RACK AND PINION STEERING GEAR WITH IMPROVED YOKE

Michael J. Kostrzewa, Roseville, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Aug. 15, 1995, Ser. No. 515,513
Int. Cl.[6] B62D *5/22*; F16H *19/04*; F16C *27/02*
U.S. Cl. 74—498 **26 Claims**



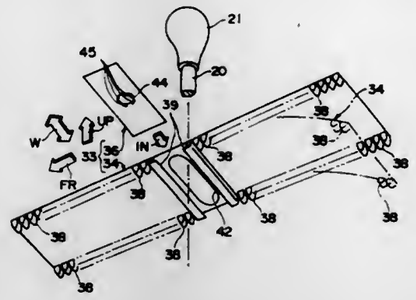
1. A rack and pinion steering gear comprising:
a housing;
a pinion gear rotatably mounted in said housing;
a rack bar movable relative to said housing, said rack bar having teeth in meshing engagement with said pinion gear; and
a yoke in said housing for supporting and guiding movement of said rack bar relative to said pinion gear, said yoke including a metal base and polymeric bearing material adherently molded onto said metal base, said polymeric bearing material having a bearing surface which is engaged by said rack bar.

5,622,086

SHIFT LEVER DEVICE AND SLIDE COVER STRUCTURE THEREFOR

Kenji Suzuki, and Hiroyasu Hasegawa, both of Aichi-ken, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Oct. 16, 1995, Ser. No. 543,471
Claims priority, application Japan, Oct. 19, 1994, 6-254015
Int. Cl.[6] B60K *1/00*; G05G *3/00*
U.S. Cl. 74—566 **20 Claims**



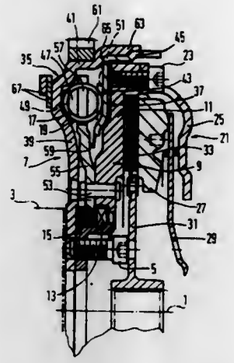
1. A slide cover structure for a shift lever device for covering an operation groove from an interior of a housing regardless of zigzag shifting operation of the shift lever, in which the shift lever movable in a first direction and a second direction orthogonal to the first direction along the operation groove is extended outward from the operation groove formed in the housing, and shifting operation is made by moving the shift lever in the first and second directions, comprising:
a first cover plate which is formed by a flexible member elongated in a first direction and opposes to said operation groove formed in the housing, said first cover plate having a first through hole, through which a shift lever passes, elongated in a second direction widthwise edge portions of said first cover plate orthogonal to the longitudinal direction of said first cover plate being supported by first supporting portions provided in the housing so that said first cover plate is slidably moved along a path required to be flexible in the first direction when the shift lever is moved in the first direction, and said first cover plate is capable of moving the shift lever along the elongated direction of the first through hole when the shift lever is moved in the second direction; and
a second cover plate which opposes to said first through hole of said first cover plate at the opposite side of said first cover plate with respect to an operation groove and which is provided so as to be elongated in the second direction, said second cover plate has a second through hole through which the shift lever passes, widthwise edge portions orthogonal to the longitudinal direction of said second cover plate are supported by second supporting portions formed in said first cover plate, said second cover plate is slidably moved in the second direction such that a longitudinal edge portions of said cover plate protrude outward from the widthwise edge portions of the first cover plate when the shift lever is moved in the second direction, and said second cover plate is moved together with said first cover plate in the first direction when the shift lever is moved in the first direction; wherein
a plurality of projections are provided so as to form protrusions and recesses in lines at the widthwise edge portions of the first cover plate along the longitudinal direction of the first cover plate at a surface of said first cover plate opposite the surface at which the operation groove is disposed to allow distal ends of said plurality of projections to contact the first supporting portions so that gaps between the first supporting portions and the first cover plate are maintained to allow said second cover plate to move in the second direction.

5,622,087

DUAL-MASS FLYWHEEL

Bernhard Schierling, Kürnach; Hilmar Göbel, Grafenrheinfeld; Georg Kraus, Bergrheinfeld, and Bernd Stockmann, Röthlein, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Division of Ser. No. 163,134, Dec. 7, 1993, Pat. No. 5,471,896. This application May 24, 1995, Ser. No. 449,421
Claims priority, application Germany, Dec. 10, 1992, 42 41 520.9; Nov. 18, 1993, 43 39 421.3
Int. Cl.[6] F16F *15/134*
U.S. Cl. 74—574 **13 Claims**



1. A dual-mass flywheel comprising a primary mass which is adapted to be fastened concentrically with an axis of rotation to a crankshaft of an internal-combustion engine, the primary mass having two formed sheet-metal parts of which formed sheet-metal parts a first formed sheet-metal part has the shape of a pan and has a base wall portion which extends in an essentially radial direction and is adapted to be attached to the crankshaft, and a peripheral flange portion which is joined to a radially outward end of the base wall portion and extends in an essentially axial direction away from the crankshaft and of which a second formed sheet-metal part is attached to the peripheral flange portion of the first formed sheet-metal part and has a base portion which extends in an essentially radial direction, which base portion, together with the first formed sheet-metal part, defines a cavity disposed concentrically with the axis of rotation in a radially outer region of the primary mass; a secondary mass which is mounted for rotation relative to the primary mass around the axis of rotation and is adapted to be attached to a friction clutch; a torsion-damping arrangement which couples the secondary mass in a rotationally elastic manner with the primary mass and includes springs arranged in the cavity; and a separate mass-ring which is located radially outwardly of the perimeter of the secondary mass and is rigidly attached by a common weldment to both of the two formed sheet-metal parts proximate to the cavity.

5,622,088

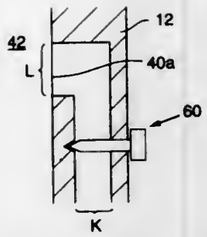
AUTOMATIC TRANSMISSION FOR RACING VEHICLE

Dennis Reid, 107 Rodeo Ct., Lafayette, Calif. 94523

Filed Sep. 26, 1994, Ser. No. 311,819
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **21 Claims**

1. An automatic transmission comprising:
a transmission housing;
a reverse gear piston in said housing movable in a first direction, said piston having a surface;
hydraulic means for supplying hydraulic fluid to a space between the surface and said housing to engage said piston, and for removing said hydraulic fluid from said space to disengage said piston; and

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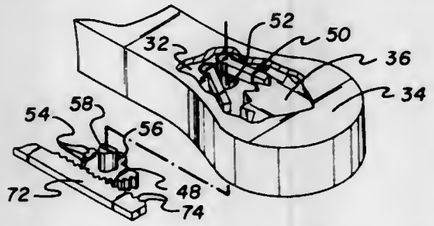
said hydraulic means include a passageway with a first portion having a substantially constant first cross-sectional area through said housing linked in a serial fashion with a second portion having a second cross-sectional area in said housing, said second portion is exposed to said space and said second cross-sectional area is greater than said first cross-sectional area.

5,622,089

RATCHET WRENCH WITH THUMB ACTIVATED DIRECTION CONTROL SWITCH

Robert W. Gifford, Sr., 1411 Kittanning Pike, Karns City, Pa. 16041

Filed Dec. 14, 1995, Ser. No. 572,036
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—62 **4 Claims**



1. A new and improved ratchet wrench with thumb activated direction control switch comprising, in combination:

a shaft formed in an elongated configuration with a generally circular shaped head, a generally oval shaped handle and a generally rectangular central region therebetween;

the head having an upper surface, a lower surface and a central wall therebetween, the head having an essentially hollow interior with an upper portion, a lower portion, an inboard section and an outboard section, the upper portion of the outboard section including a large circular gear rotatably mounted therein, the circular gear having a periphery including a plurality of gear teeth, a socket engagement block being coupled to the circular gear through the central wall and lower surface of the head, the block being formed in a generally rectangular configuration with a spring biased ball extending therein;

a ratchet assembly including first and second bevel arms and a half pinion, each bevel arm having an inner end pivotally coupled to the upper portion of the inboard section of the head, the bevel arms being angled outwardly with respect to each other, each bevel arm having an outer surface including a biasing spring coupled to the inboard section of the head, the biasing springs urging the arms toward each other, an aperture extending through the central wall between the bevel arms, the half pinion being formed in a generally semicircular configuration with a rounded perimeter including a plurality of gear teeth, the half pinion having a linear edge including a rounded projection and an upper surface including an upstanding biasing member, the biasing member being formed in a generally triangular configuration with rounded edges, the biasing member being positionable through the aperture in the central wall and pivotable therein, the rounded projection being pivotally coupled to the central wall in the lower portion of the head thereby allowing pivotal movement of the half pinion in the lower portion;

the upper surface of the handle including a rectangular bore extending therethrough, the bore having two sidewalls each including an elongated semicylindrical recess, the handle and central section including an elongated aperture extending therethrough, the elongated aperture being in communication with the rectangular bore, the aperture of the central section including two spaced semispherical indents; and

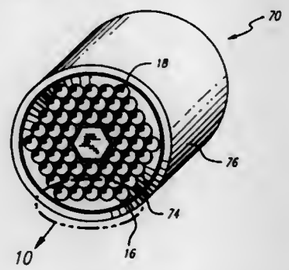
a switch formed in a generally rectangular configuration with a raised upper surface, the switch having a shorter length than the bore, the switch having two sidewalls each including elongated semicylindrical projections adapted to be slidably coupled within the recesses of the bore, the upper surface of the switch extending outside the bore, the switch having a lower surface including a planar rectangular shaped bar extending therefrom, the bar having a forward end including a rack with a plurality of teeth, the bar being positioned through the elongated aperture in the handle and central sections, the rack of the bar being positioned within the lower portion of the inboard section of the head with the teeth of the rack meshing with the gear teeth of the half pinion, the bar including a spring biased ball extending therefrom and adapted to be slidably positioned in a semispherical indent within the aperture, a user sliding the switch into a forward position to pivot the upstanding member of the half pinion against the first bevel arm thereby permitting tightening of a bolt in a clockwise direction, a user sliding the switch into a rearward position to pivot the upstanding member of the half pinion against the second bevel arm thereby permitting loosening of a bolt in a counter clockwise direction.

5,622,090

SCALLOPED INTERIOR SOCKET TOOL

Joel S. Marks, Los Angeles, Calif., assignor to WorkTools, Inc., Chatsworth, Calif.

Continuation-in-part of Ser. No. 544,314, Oct. 17, 1995. This application Apr. 16, 1996, Ser. No. 633,860
Int. Cl.[6] B25B *13/58*
U.S. Cl. 81—185 **15 Claims**



1. A self-forming socket comprising:

a housing assembly having an interior wall and a plurality of longitudinal openings;

a plurality of parallel pins, each having an elongate middle portion and an enlarged head end, said pins being slidable along respective said middle portions in respective ones of said openings, an outer ring of pins all in contact with said interior wall;

wherein said head ends are closely packed directly adjacent one another such that end forces thereagainst during transmission of torque to a fastener are transmitted outwardly through adjacent said pin head ends to said housing wall and not as significant bending forces to said elongate middle portion;

biasing means for biasing each of said head ends away from said respective openings; and

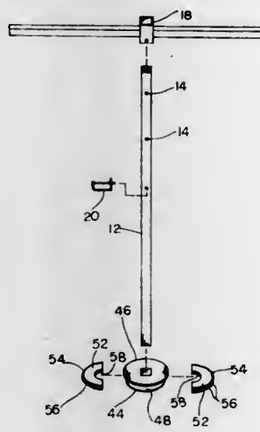
wherein said interior wall has a plurality of curved surfaces into each of which fits a separate one of said enlarged heads of the pins of said outer ring.

5,622,091

VALVED BOX ADJUSTING TOOL

James E. Crook, Mishawaka, and Joseph R. Zirille, Granger, both of Ind., assignors to T-Rex, Inc., Mishawaka, Ind.

Filed Aug. 1, 1995, Ser. No. 509,826
Int. Cl.[6] B25B *23/08*
U.S. Cl. 81—441 **7 Claims**



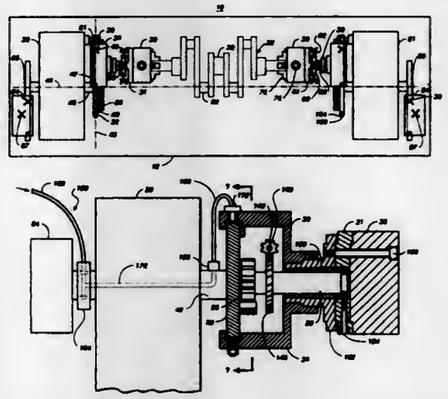
1. A tool for adjusting a valve box by rotating one of a pair of relatively rotatable members relative to the other member, said tool comprising a shaft, expandable engagement means for engaging the inner surface of one of said relatively rotatable members for rotating said one member relative to the other member to effect adjustment of the valve box by rotation of the shaft, and expanding means connecting the shaft and the engagement means and responsive to rotation of the shaft for expanding said expandable engagement means into gripping engagement with said one member, said engagement means including a pair of semi-circular engagement members, said engagement members having a serrated outer circumferential surface for engaging the inner surface of said one member, said engagement members further including a camming surface for engagement by said expanding means, said engagement means further including limiting means for limiting the vertical movement of said engagement members, said limiting means including a first plate and a second plate attached substantially perpendicular to said shaft in spaced apart parallel relationship, said plates defining a space therebetween, said engagement members being slidably mounted in said space between said plates for allowing said engagement members to move freely in a substantially horizontal direction, said space between said plates being greater than the thickness of the engagement members to permit the engagement members to tilt relative to the plates to thereby conform to variations in slope on the inner surface of said one member.

5,622,092

SYSTEM FOR SIMULTANEOUSLY SETTING STROKE ON A CRANKSHAFT LATHE

William R. Gleason, Los Osos, Calif., assignor to Sylvia Gleason, Monterey, Calif.

Continuation-in-part of Ser. No. 294,104, Aug. 22, 1994, Pat. No. 5,408,906. This application Mar. 20, 1995, Ser. No. 407,290
Int. Cl.[6] B23B *5/18;33/00*
U.S. Cl. 82—106 **9 Claims**



1. In a crankshaft lathe having a headstock, a tailstock and a holding chuck, headstock holding chuck back plate, tailstock chuck back plate, and a main spindle shaft operably connected to each of said headstock and said tailstock, a system for simultaneously setting the stroke position of a crankshaft comprising:

(a) headstock mini-shaft, said mini-shaft having a first end operably connected to the headstock holding chuck back plate and a second end;

(b) headstock rack and pinion gear means mounted on the second end of said headstock mini-shaft;

(c) tailstock mini-shaft, said minishaft having a first end operably connected to the tailstock holding chuck back plate and a second end;

(d) tailstock rack and pinion gear means mounted on the second end of said tailstock mini-shaft;

said headstock and tailstock rack and pinion means for simultaneously positioning the crankshaft from a zero loading position in which the main spindle shaft for the headstock and tailstock are in alignment with the crankshaft along the longitudinal axis of the crankshaft lathe to an offset position transverse to the longitudinal axis.

5,622,093

AUTOMOBILE WINDSHIELD REMOVAL APPARATUS AND METHOD

Mark R. Hutchins, Laconia, N.H., assignor to Equalizer Industries, Inc., Round Rock, Tex.

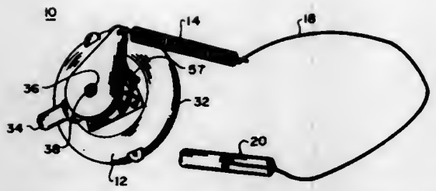
Filed Jan. 19, 1995, Ser. No. 375,546
Int. Cl.[6] B26B *3/00;* **B26D** *1/00*
U.S. Cl. 83—13 **5 Claims**

1. A method of cutting sealant material which seals a windshield to an automobile structure, the windshield having an inside surface and an outside surface, the method comprising the steps of:

(a) securing a suction cup assembly on one of said Surfaces of the windshield;

(b) inserting an end of a cutting wire through the sealant material so that the cutting wire traverses the sealant material between the windshield and automobile structure with one end of the cutting wire positioned on one side of the wind-

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shield and an other end of the cutting wire positioned on an opposite side of the windshield;

(c) attaching the end of the cutting wire positioned on the side of the windshield to which the suction cup assembly is secured to a spring connected to the suction cup assembly;

(d) applying a pulling force to the end of the cutting wire positioned on the side of the windshield opposite the side to which the suction cup assembly is secured to pull the cutting wire through the sealant material, the pulling force sufficient to stretch the spring connected between the cutting wire and the suction cup assembly;

(e) simultaneously while applying the pulling force, applying a sawing force with the cutting wire along one side of the sealant material adjacent to the cutting wire; and

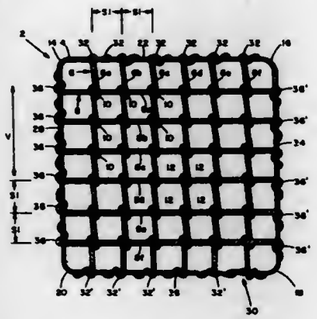
(f) releasing the pulling force on the cutting wire to allow the spring to pull the cutting wire back through the sealant material toward the suction cup assembly secured to the windshield.

5,622,094

HOLLOW BRAID NET AND METHOD MAKING

John Rexroad, 12 Jackson Rd., Killingworth, Conn. 06419

Filed Mar. 31, 1995, Ser. No. 414,185
Int. Cl.[6] D04C *1/00*
U.S. Cl. 87—12 **23 Claims**



1. A method of making a net comprising the steps of:

providing a border member defined by at least a first border section and a second border section each extending generally orthogonally to one another;

providing a plurality of weft members and connecting each of said weft members to one of said first and second border sections so as to dispose them in a first given direction;

providing a plurality of warp members and connecting each of said warp members to the other of said first and second border sections so as to dispose them in a second given direction;

crossing said weft and warp members with one another so as to lock the members against relative axial and twisting movement; and

providing each of said weft and warp members as a hollow braid member capable of being transversely pierced by the other such members; and

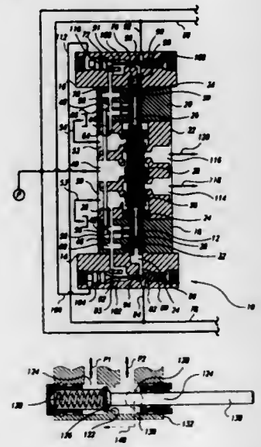
said weft and warp members crossing each other such that each of said weft member pierces the longitudinal extent of a warp member at points along the length of said warp member and each such weft member is caused to turn 180 degrees on itself after exhibiting said warp member and thereafter repierce said warp member transversely of its length so as to define laterally offset crossing points through said warp member each disposed in a single common plane of the net.

5,622,095

HYDRAULIC DRIVE AND CONTROL SYSTEM

Raymond K. Foster, P.O. Box 1,, Madras, Oreg. 97741

Filed Jun. 28, 1995, Ser. No. 495,949
Int. Cl.[6] F01L *15/00*; F15B *11/08*
U.S. Cl. 91—178 **15 Claims**



1. In a switching valve of a type having a two position control rod with a pilot chamber at each of its ends, the improvement comprising:

for each said pilot chamber:

a first passageway connected to a pressure line and communicating with said pilot chamber;

a second passageway connectable to return and having one end defined by an orifice;

a valve seat surrounding said orifice; and

a relief valve having a valve member biased into a closed position in which it is seated against said valve seat to close said orifice to close communication between said pilot chamber and said second passageway; said valve member having an open position in which said valve member is moved away from said orifice to connect said pilot chamber to return via said second passageway to allow shifting of the control rod;

said first passageway being in open communication with said pilot chamber when said valve member is in said closed position or said open position.

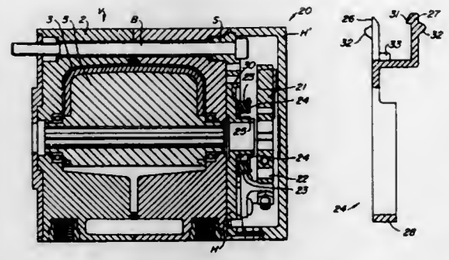
5,622,096

ROTATIONAL POSITION DETECTOR DEVICE FOR ROTARY ACTUATOR

Rune Granberg, Älvsjö, Sweden, assignor to AB Rexroth Mecman, Stockholm, Sweden

Filed Mar. 29, 1996, Ser. No. 626,260
Claims priority, application Sweden, Mar. 31, 1995, 9501187
Int. Cl.[6] F01B *31/12*
U.S. Cl. 92—5 R **11 Claims**

1. Rotational position detector device (**20**), which is fastenable to a rotary actuator (**1**) of the type comprising a rotary motor (**3,5**) inside a housing (**2**) and a rotary shaft extending therefrom, a



turning element (**21**) adapted to be rotationally fastened to the rotary shaft, said turning element being detectable by at least one position sensor (**23**), which is adapted to be adjustably fixed with respect to the housing (**2**), characterized in

a socket portion (**25**) which is rigidly connected to the housing and coaxial with said shaft,

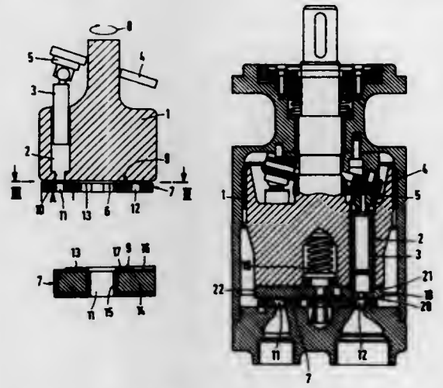
at least one sensor holder (**24**) which is rotatably attached to said socket portion and adjustably fixable in chosen angular positions by means of locking cooperation between a resilient engagement means (**26,27**) on the sensor holder and a surface (**30**) which is provided with engagement irregularities.

5,622,097

HYDRAULIC PISTON MACHINE

Lars Martensen, Sønderborg, and Ove T. Hansen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK94/00001, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/16218, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 3, 1994, Ser. No. 464,691
Claims priority, application Germany, Jan. 18, 1993, 43 01 133.0
Int. Cl.[6] F01B *13/04*
U.S. Cl. 92—57 **8 Claims**



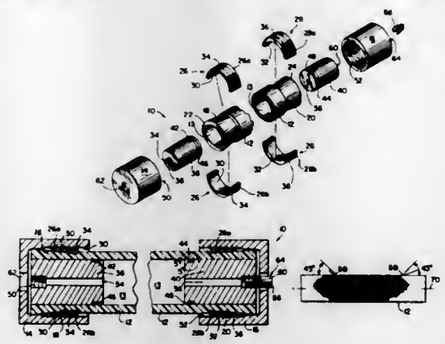
1. A hydraulic piston machine having a cylinder body and at least one cylinder with a piston movable therein, a control counter-plate which engages the cylinder body by way of a contact surface and, on relative movement between the cylinder body and the control counter-plate parallel to the contact surface, connects the cylinder in dependence upon its position with inlet and outlet channels respectively, at least one of the control counter-plate and the cylinder body being provided, at least proximate the contact surface, with a friction-reducing layer of plastic material, and in which the friction-reducing layer is in the form of an injection-moulded part.

5,622,098

HIGH PRESSURE CYLINDER WITH LOCKING END CAPS

Gregg J. Piper, Waukesha, Wis., assignor to Amalga Composites, Inc., West Allis, Wis.

Filed Mar. 8, 1996, Ser. No. 613,146
Int. Cl.[6] F01B *29/00*
U.S. Cl. 92—128 **17 Claims**



1. A pressure cylinder and end cap assembly comprising:

a pressure barrel having at least one tapered end, and an internal bore;

a split collar having an inner diameter tapered to engage the tapered end of the pressure barrel and a threaded outer diameter; and

an end cap having a threaded inner diameter engaging the threaded split collar.

17. A method of producing a light weight fluid pressure cylinder comprising the steps of:

tapering at least one end of a filament wound fiberglass reinforced epoxy resin barrel such that a largest end of the taper is at the end of the barrel;

tapering an inner diameter of a collar to substantially match the taper of the barrel;

threading an outer diameter of the collar;

splitting the collar in at least two sections for placement about the tapered end of the barrel;

threading an inner diameter of an end cap to substantially match the threaded outer diameter of the collar;

sealing an inner diameter of the barrel; and

engaging the threaded end cap to the threaded collar to form a sealed pressure cylinder.

5,622,099

BREWING HEAD OF AN ESPRESSO MAKER

Hans-Peter Frei, Oetwil am See, Switzerland, assignor to Eugster/Frismag AG, Romanshorn, Switzerland

Filed Jul. 30, 1996, Ser. No. 681,985
Claims priority, application European Pat. Off., Jul. 31, 1995, 95111981
Int. Cl.[6] A47J *31/34*
U.S. Cl. 99—287 **13 Claims**

1. A brewing head of an espresso coffee maker, comprising:

(A) a housing:

(B) a lower brewing head section fixedly attached to said housing, and including:

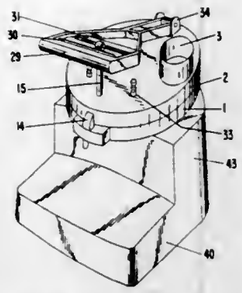
a pressure sealed brewing chamber;

a lifting piston forming a floor of said brewing chamber, and having apertures therethrough;

a water inlet located beneath the floor of said brewing chamber, said water inlet feeding hot water through the apertures and into said brewing chamber; and

means for moving said lifting piston to lift a cake of used ground coffee located thereon up to an upper edge of said brewing chamber after brewing the espresso; and

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(C) an upper brewing head section movable relative to said lower brewing head section, and having:

an upper brewing head housing;

a fill shaft located on said upper brewing head housing and being in communication with said brewing chamber when said upper brewing head section is moved to a fill position for supplying said brewing chamber with fresh ground coffee;

a brewing piston positioned over said brewing chamber when said upper brewing head section is moved to a brewing position, said brewing piston including an espresso coffee outlet in communication with said brewing chamber when said upper brewing head section is in the brewing position for dispensing brewed espresso;

means for plunging said brewing piston into said brewing chamber when said upper brewing head section is in the brewing position; and

a clearing element immovably secured to said upper brewing head housing, and laterally pushing the cake off from said lifting piston after the cake is moved to the upper edge of said brewing chamber by said lifting piston, so as to clear said brewing chamber of used ground coffee when said upper brewing head section is moved to a clearing position.

5,622,100

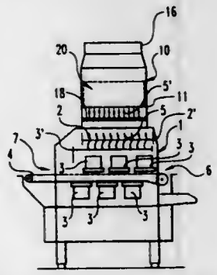
CATALYTIC ASSEMBLY FOR COOKING SMOKE ABATEMENT

Donald E. King, Louisville, Ky.; Walter Juda, Lexington, and Amiram Bar-Ilan, Brookline, both of Mass., assignors to Ayrking Corporation, Louisville, Ky.

Continuation of Ser. No. 590,868, Jan. 24, 1996, abandoned, which is a continuation of Ser. No. 453,992, May 30, 1995, abandoned, which is a continuation of Ser. No. 314,541, Sep. 28, 1994, abandoned, which is a continuation of Ser. No. 173,911, Dec. 23, 1993, abandoned, which is a continuation of Ser. No. 923,144, Jul. 31, 1992, abandoned. This application Jul. 9, 1996, Ser. No. 677,249

Int. Cl.[6] A47J *37/00;* **F24C** *15/20*

U.S. Cl. 99—386 **13 Claims**



1. A smoke abatement assembly for use with a cooking system having a housing and food heating elements contained within the housing, the heating elements defining a cooking area over which the food to be cooked is disposed, the smoke abatement assembly comprising:

a sealed housing defining an enclosure, said sealed housing having means for supporting said sealed housing on the cooking device such that said sealed housing substantially encloses the cooking area on at least two sides thereof;

a low-pressure flame arrestor;

first support means for supporting said flame arrestor within said sealed housing overlaying the cooking area;

a number of low-pressure oxidation catalysts; and

second support means for supporting said number of catalysts within said sealed housing overlaying said flame arrestor,

wherein, each of said flame arrestor and said number of catalysts defines a respective flow area, each said respective flow area being substantially equal to the cooking area of the cooking device, and

wherein each of said flame arrestor and said number of catalysts is supported by said first and second support means, respectively, with said respective flow areas substantially overlaying the cooking area for access to smoke rising from food being cooked on the cooking device, and said number of catalysts adapted to substantially uniformly back radiate heat generated by the heating elements toward the whole of the cooking area.

5,622,101

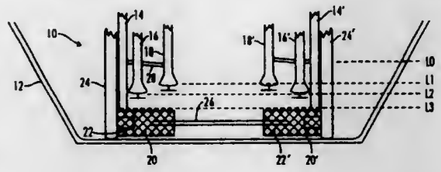
METHOD AND APPARATUS TO PRODUCE LOW FAT GROUND MEAT

Geoffrey Margolis, 12229 Falkirk La., Los Angeles, Calif. 90049

Division of Ser. No. 304,381, Sep. 9, 1994. This application Jun. 26, 1995, Ser. No. 494,342

Int. Cl.[6] A23B *5/00;* **A47J** *43/14*

U.S. Cl. 99—403 **15 Claims**



1. A system operable with a suction source for removing fat and excess liquids from a cooked meat product, comprising:

a cooking vessel operable with a heat source for cooking a meat product;

a plurality of suction tubes disposed at various predetermined levels in said vessel, wherein at least one of the tubes is disposed above the level of the meat product after cooking, said suction tubes adapted to be coupled to the suction source; and

means for adding water to the vessel.

5,622,102

Patent Not Issued For This Number

5,622,103

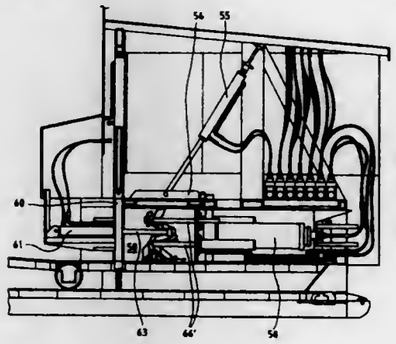
DISPOSAL ASSEMBLY FOR FLUID FILTRATION DEVICES

Evelio Acosta, 8505 NW. 74 St., Miami, Fla. 33166, and Lewis Goodman, 555 Reinante Ave., Coral Gables, Fla. 33156

Filed Feb. 28, 1995, Ser. No. 395,782

Int. Cl.[6] B30B *9/04;9/32*

U.S. Cl. 100—7 R **17 Claims**



1. A waste disposal assembly to be used for the simultaneous disposal of a plurality of fluid filtration devices, said waste disposal assembly comprising:

(a) a main disposal housing, said main disposal housing including a disposal storage area, a fluid storage area, and a processing area,

(b) said processing area including:

an exterior access wherethrough the plurality of fluid filtration devices are loaded into said processing area,

a lid member structured to cover said processing area subsequent to the loading of the plurality of fluid filtration devices therein,

a compactor face structured and disposed to compact the plurality of fluid filtration devices within said processing area against an opposing face of said processing area so as to squeeze fluid from the plurality of fluid filtration devices and form a compressed waste block from the plurality of fluid filtration devices,

separation means structured and disposed to break up said compressed waste block within said processing area,

an interior access structured and disposed to be opened to receive the broken up, compressed waste block therethrough for passage into said disposal storage area,

(c) said disposal storage area being structured to contain a substantial quantity of the broken up, compressed waste blocks for subsequent disposal thereof in an appropriate waste facility, and

(d) said fluid storage area being structured and disposed to receive the fluid squeezed from the plurality of fluid filtration devices and drained from the broken up, compressed waste blocks for subsequent disposal in an appropriate fluid waste facility.

5,622,104

CYLINDRICAL BALER HAVING HYDRAULIC CIRCUIT FOR CONTROLLING BALE DENSITY AND TAILGATE OPERATION

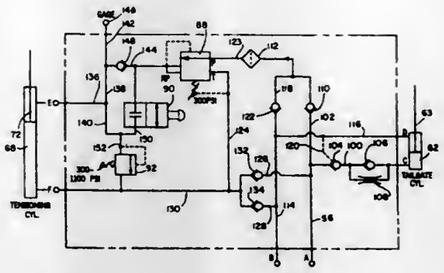
Kim P. Viesselmann, Grafton, Wis., and Steven J. Henderson, Madison, S. Dak., assignors to Gehl Company, West Bend, Wis.

Filed Aug. 28, 1995, Ser. No. 519,778

Int. Cl.[6] B30B *5/06;* **A01D** *39/00;* **A01F** *15/00*

U.S. Cl. 100—88 **22 Claims**

22. A cylindrical baler for processing cylindrical bales, said baler comprising:



a front section;

a rear discharge tailgate connected to said front section;

a plurality of guide and tensioning rollers in said front section and rear tailgate;

a plurality of belts supported on and extending around said rollers for defining an expandable bale forming chamber and providing variable bale density;

tensioning cylinder means for providing variable tension on said belts during bale formation;

pressurized fluid source means for supplying fluid to and returning fluid from said tensioning cylinder means; and

fluid circuit means including a singular, solenoid valve means connected to said tensioning cylinder means for controlling the pressure requirements of said tensioning cylinder means and said variable bale density during said bale formation.

5,622,105

HIGH-PRESSURE PRESS

Carl Bergman, Västerås, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

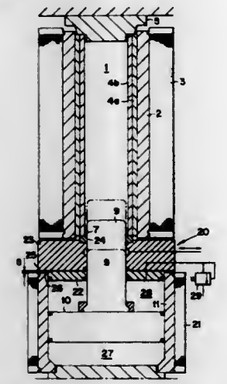
PCT No. PCT/SE94/00227, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO94/21370, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 525,556

Claims priority, application Sweden, Mar. 19, 1993, 9300915

Int. Cl.[6] B30B *1/32;15/28*

U.S. Cl. 100—245 **16 Claims**



1. A high-pressure press, comprising a first cylinder element, at least one second cylinder element pressed into the first cylinder element, a stationary part having a support surface, and a pair of end elements which together with the second cylinder element delimit a high-pressure chamber, one of the end elements forming a support for the second cylinder and being provided with a cylinder bore opening into the high-pressure chamber, the cylinder bore receiving a high-pressure piston that is movable in an axial direction, a sealing device disposed between the second cylinder

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element and the high pressure piston, the one end element including axially movable parts which are movable to a limited extent in the axial direction, the axially movable parts being loaded by hydraulic pressure in a direction towards the second cylinder element and the sealing device, said axially movable parts comprising a first movable part having a support surface which is positioned relative to the support surface on the stationary part so that forces acting in a direction from the high-pressure chamber on the axially movable parts are transmitted to the stationary part when the support surface on the first movable part makes contact with the support surface on the stationary part.

5,622,106

SELF-INKING EMBOSSING SYSTEM

Dignan H. Rayner, Clontarf, Australia, assignor to Hilglade Pty Ltd., Clontarf, Australia

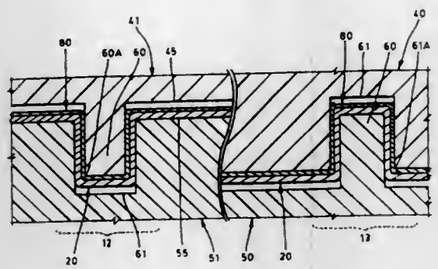
PCT No. PCT/AU93/00464, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/05501, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 9, 1993, Ser. No. 397,185

Claims priority, application Australia, Sep. 9, 1992, PL4593; May 19, 1993, PL8853

Int. Cl.[6] B31F *1/07*

U.S. Cl. 101—32 **25 Claims**



1. Apparatus for embossing at least one indicia into sheet material, comprising:

a first embossing plate having

at least one positive plate portion and at least one negative plate portion; and

a second embossing plate having a respective complementary negative plate portion and a respective complementary positive plate portion;

each positive plate portion having at least one ridge or protuberance;

each negative plate portion having a complementary recess or groove for each ridge or protuberance;

the height of each ridge or protuberance being equal to the depth of its complementary recess or groove;

said first and second plates being arranged such that, in use of the apparatus, when the plates are brought together, the distance between the top of a ridge or protuberance and the bottom of its complementary recess or groove is in range of 0.03– 0.1 mm greater than the thickness of the sheet material, or of the combined thickness of the sheet material and any ink applied to a positive plate portion or of the combined thickness of the sheet material and any ink ribbon interposed between one or both of the plates and the sheet material, and such that at least one portion of the indicia is positively embossed in the sheet material and at least one other portion of the indicia is simultaneously negatively embossed in the sheet material.

5,622,107

Patent Not Issued For This Number

5,622,108

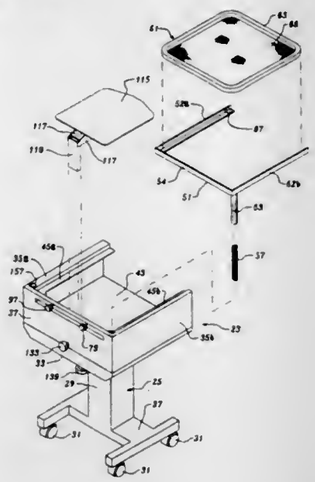
SCREEN PRINTING MACHINE

John R. Benedetto; William Gillespie, Jr., both of Everett; James W. Pomeroy, Seattle; Duke Goss, and Charles J. Pomeroy, both of Kirkland, all of Wash., assignors to Universal Screenprinting Systems, Inc., Everett, Wash.

Filed Jan. 30, 1996, Ser. No. 593,573

Int. Cl.[6] B41F *15/06*

U.S. Cl. 101—126 **21 Claims**



1. A screen printing machine for printing designs on suitable substrates, said screen printing machine comprising:

(a) an open top and open front cabinet that includes a bottom, a pair of side walls, and a back wall;

(b) a print screen comprising a frame and a layer of mesh affixed to the frame;

(c) a print screen receiving frame sized to receive said print screen and including a mechanism for forcing said print screen into a registration position in said print screen receiving frame;

(d) a rotational coupling for rotatably coupling said print screen receiving frame to said cabinet such that said print screen receiving frame and, thus, said print screen, lies in a horizontal plane;

(e) a screen registration mechanism for precisely positioning said print screen receiving frame in said cabinet near the upper edge of said pair of side walls;

(f) a platen for supporting a substrate suitable for receiving a screen print;

(g) a platen support and registration mechanism mounted in said cabinet for supporting and positioning said platen in said cabinet below said print screen receiving frame and, thus, below said print screen; and

(h) a heater mounted in said cabinet positionable to heat a substrate supported by said platen.

5,622,109

PROCESS FOR PRODUCING A HEAT SENSITIVE STENCIL SHEET

Shoichi Ikejima; Tetsu Yamanaka; Takeshi Koishihara; Kenichi Shibuya, and Satoshi Chonan, all of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Division of Ser. No. 296,128, Aug. 25, 1994, Pat. No. 5,498,464, which is a continuation of Ser. No. 134,177, Oct. 8, 1993, abandoned. This application Nov. 7, 1995, Ser. No. 554,816

Claims priority, application Japan, Oct. 9, 1992, 4-271647; Mar. 31, 1993, 5-73913; Apr. 12, 1993, 5-84597

Int. Cl.[6] B41N *1/24*

U.S. Cl. 101—128.21 **2 Claims**

1. A process for producing a heat-sensitive stencil sheet, which process comprises the steps of

providing a thermoplastic resin film and a substrate comprised of a screen cloth wholly or partially consisting of conjugate fibers having at least one exposed component comprised of a resin having an affinity with said thermoplastic resin and having a melting point lower than that of another component of said conjugate fibers and lower than that of the thermoplastic resin;

superposing said thermoplastic resin film on said substrate; and

heating under pressure the superposed film and substrate at the softening point or higher of the above exposed component of said conjugate fibers and at a temperature lower than the melting point of the other component of the conjugate fibers and lower than the melting point of said thermoplastic resin to adhere said screen cloth to said thermoplastic resin film and fix the intersections of the wefts and warps of said screen cloth.

5,622,110

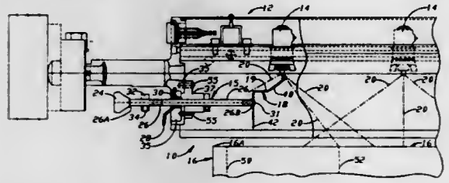
PRINTING PRESS WITH DAMPENING LIQUID SPRAY CONTROL APPARATUS AND METHOD

Thomas W. Orzechowski, Cicero, and Thaddeus A. Niemiro, Lisle, both of Ill., assignors to Goss graphic Systems, Inc., Westmont, Ill.

Continuation of Ser. No. 310,010, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 23,219, Feb. 25, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,243

Int. Cl.[6] B41F *7/26;7/30*

U.S. Cl. 101—148 **19 Claims**



1. In a printing press having a plate cylinder with a body extending between a pair of opposed ends for supporting a printing plate, a roller and an elongate spray bar assembly with a plurality of spaced nozzles for collectively spraying dampening liquid along the length of the roller, the improvement being a dampening liquid spray control apparatus, comprising:

a dampening liquid control assembly including a blocking member having an edge extending between a pair of opposite sides for blocking at least some of the sprayed dampening liquid from impinging at preselected locations upon the roller and a deflecting member with a deflecting surface spaced from the edge for diverting the sprayed dampening liquid onto preselected locations of the roller, with the deflecting member extending from and being connected to the blocking member; and

means for mounting the dampening liquid control apparatus intermediate at least one of the nozzles and the roller to selectively control a pattern of the sprayed dampening liquid upon the roller including means for adjustably mounting the dampening liquid control assembly for movement of both the blocking and deflecting members together relative to the plurality of spaced nozzles to different selected positions at which different amounts of the sprayed dampening liquid are blocked by the blocking member from impinging at different preselected locations upon the dampening roller and the deflecting member directs the sprayed dampening liquid onto different preselected locations on the roller, with the position of the nozzles remaining fixed.

5,622,111

FORM CYLINDER WITH PRINTING FOIL WIND CONTROL

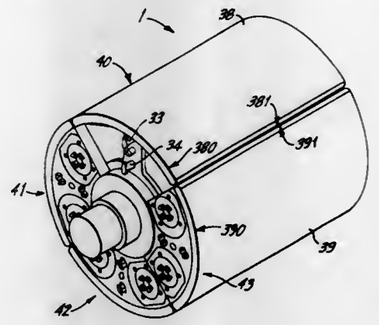
Xaver Bachmeir, Augsburg; Eckhard Tuschè , Bobingen, and Johannes Ruschkowski, Augsburg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Sep. 15, 1995, Ser. No. 528,953

Claims priority, application Germany, Sep. 15, 1994, 44 32 817.6

Int. Cl.[6] B41J *7/00*

U.S. Cl. 101—415.1 **21 Claims**



1. A form cylinder for use in a rotary printing machine having a side wall, comprising:

a tubular body having an outer surface and end faces defining an interior space;

a first driving device positioned outside said interior space;

at least one cassette positioned within said interior space so as to be axially removable from an end face of the body, including:

first and second winding rollers each including an axis and being mounted within said interior space for rotation about said axis; and

a printing foil extending between said first and second winding rollers and on said outer surface of said body; and

first means, at an end face of the tubular body, for selectively coupling said first and second winding rollers to said first driving device, said first coupling means being axially movable between a first coupled position in which said first and second winding rollers are engaged with and driven by said first driving device to wind said printing foil and a second uncoupled position in which said first and second winding rollers are not engaged with said first driving device.

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5,622,112

WASH-UP DEVICE FOR AN INKING UNIT OF A PRINTING PRESS

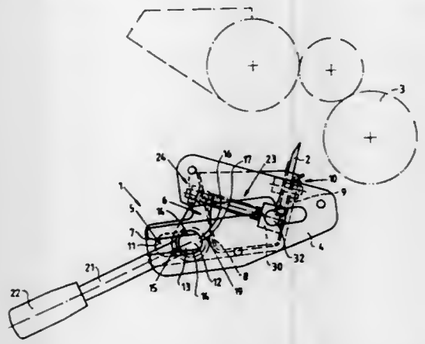
Hans-Jürgen Kusch, Neckargemünd, and Bernd Ruf, Welterstadt, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jun. 28, 1995, Ser. No. 495,859

Claims priority, application Germany, Jun. 28, 1994, 44 22 612.8

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—423 **12 Claims**



1. Wash-up device for an inking unit of a printing press, comprising guide bar brackets disposable on a frame of the printing press, said guide bar brackets having receiving slits and steps formed therein, an actuating shaft for the wash-up device insertably received in said receiving slits of said guide bar brackets, said actuating shaft having end zones and effecting a displacement of the wash-up device into engagement with a roller of an inking unit to be washed; said actuating shaft, when received in an inserted position in the guide bar bracket, being turnable out of an assumed angular position thereof, for effecting engagement of said end zones of said actuating shaft behind said steps formed in said guide bar brackets, so as to fix the wash-up device in an insert position, and a toggle lever arrangement attached to said actuating shaft for effecting, in response to said actuating shaft being further turned, engagement by the wash-up device with the roller of the inking unit to be washed.

5,622,113

GRIPPING SURFACE FOR CUTTING CYLINDERS IN A FOLDING MACHINE

Robert E. Hansen, Clarendon Hills, Ill., assignor to Goss Graphic Systems, Inc., Westmont, Ill.

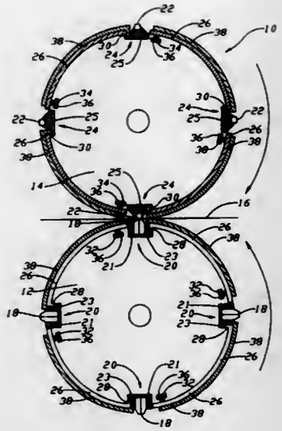
Filed Sep. 28, 1995, Ser. No. 535,503

Int. Cl.[6] B41F *1/28*

U.S. Cl. 101—483 **22 Claims**

18. A method of mounting a gripping surface on the outer circumferential surface of a cutting cylinder in a printing press, comprising the steps of:

inserting a first end of a mounting strip having a layer of gripping material disposed thereon into a first slot formed on the outer circumferential surface of the cylinder, wherein the layer gripping material corrugates ribbons passing through the folding section of the printing press and imparts a certain stiffness to the ribbons so that they exit the cutting cylinder in a straight configuration; and



inserting a second end of the mounting strip having a keeper tab mounted thereon into a second slot.

5,622,114

METHOD FOR ADJUSTING CONTACT BETWEEN TWO ROLLERS WHICH ARE ADJUSTABLE WITH RESPECT TO THEIR DISTANCE RELATIVE TO ONE ANOTHER

Peer Dilling, Friedberg, and Georg Riescher, Augsburg, both of Germany, assignors to Man Roland Druckmaschinen AG, Offenbach A.M., Germany

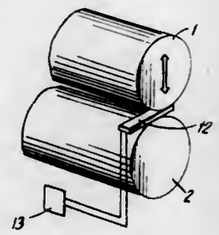
Division of Ser. No. 252,078, Jun. 1, 1994, Pat. No. 5,517,919.

This application Feb. 27, 1996, Ser. No. 606,753

Claims priority, application Germany, Jun. 1, 1993, 43 18 200.3

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—485 **1 Claim**



1. A method for adjusting contact between two rollers of a printing mechanism of a rotary printing press, which rollers are adjustable relative to one another, the method comprising the steps of: separating the rollers so that a gap exists therebetween; inserting a piezofilm of known thickness into the gap between the rollers at one end of the rollers; moving the rollers toward one another on the one end until the piezofilm transmits an output signal when the two rollers first make contact; separating the rollers; removing the piezofilm from the roller gap; inserting the piezofilm into the gap between the rollers at another end of the rollers; moving the rollers toward one another at the another end until the piezofilm transmits an output signal when the rollers first make contact; separating the rollers; removing the piezofilm from the roller gap; and finally adjusting the rollers toward one another on both ends by an amount corresponding to the piezofilm thickness.

5,622,115

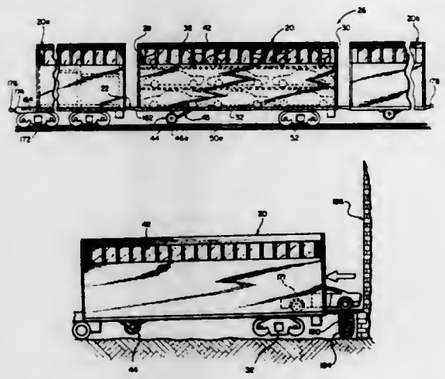
MODULAR ARTICULATED RAILCAR

Donald J. Ehrlich, Lafayette; Rodney P. Ehrlich, Monticello; Francis S. Smidler, and DeWayne B. Williams, both of Lafayette, all of Ind., assignors to Wabash National Corporation, Lafayette, Ind.

Filed Sep. 27, 1995, Ser. No. 534,275

Int. Cl.[6] B61D *17/00*

U.S. Cl. 105—3 **25 Claims**



1. An articulated train comprising: a plurality of railcars, each said railcar including a floor having a front end and a rear end, a bogie attached adjacent said rear end beneath said floor, and an extendable and retractable landing gear mounted adjacent said front end beneath said floor, said landing gear having means thereon for engagement with a railroad track when said landing gear is extended, said means selectively riding on a railroad rail and preventing lateral disengagement from said rail, each said railcar being coupled to an adjacent railcar by coupling structures such that said front end of said railcar is connected to a rear end of said adjacent railcar.

5,622,116

COIL TRANSPORT TRAILER

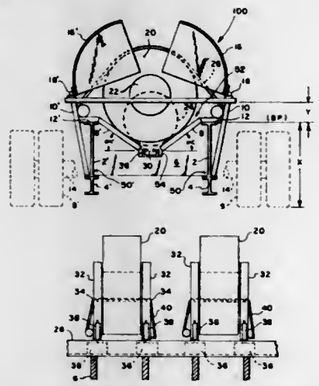
Jerry W. Carlton, 3829 Pioneer Trail, Mantua, Ohio 44255

Continuation of Ser. No. 18,315, Feb. 16, 1993, abandoned.

This application Nov. 21, 1995, Ser. No. 545,530

Int. Cl.[6] B60P *7/00*

U.S. Cl. 105—355 **20 Claims**



1. An improved over-the-road trailer for hauling a coil, having first and second spaced apart wheels and a central axle, the first wheel having a predetermined height, the second wheel having a predetermined height that is substantially equal to the predetermined height of the first wheel, and the central axle being located below the predetermined height of the first wheel and extending between the first wheel and the second wheel, wherein the improvement comprises:

a first longitudinally extending frame member having a portion located below the central axle, a second longitudinally extending frame member spaced apart from and substantially parallel to said first longitudinally extending frame member and having a portion located below the central axle, each of said first and second longitudinally extending frame members having a substantially horizontal surface defining a bed plane elevated above a road surface to a distance at least equal to the height of the first and second wheels, the bed plane being substantially parallel with the road surface;

a first cross member extending between and secured to said first and second frame members;

a first notch centrally positioned on said first cross member, said first notch being positioned below the height of the first and second wheels and having a predetermined width and a predetermined depth;

a second cross member extending between and secured to said first and second frame members, said second cross member being substantially parallel to said first cross member;

a second notch centrally positioned on said second cross member, said second notch being positioned below the height of the first and second wheels and having a predetermined width substantially equal to said predetermined width of said first notch, and having a predetermined depth substantially equal to said predetermined depth of said first notch, said second notch being substantially collinear with said first notch;

a first support member secured to said first frame member and extending angularly downward from said first frame member towards the central axle, said first support member being supported by said first and second cross members; and

a second support member secured to said second frame member and extending angularly downward from said second frame member towards the central axle, said second support member being supported by said first and second cross members, said first and second support members defining a longitudinal trough extending therebetween, said trough being located at least partially below the height of the first and second wheels, wherein a peripheral portion of the coil is engaged within said trough below said bed plane by said first and second support members.

5,622,117

HATCH COVER HAVING A REMOVABLE GASKET

William F. Burian, Downers Grove, and Brian Walker, Naperville, both of Ill., assignors to Salco Products, Inc., Romeoville, Ill.

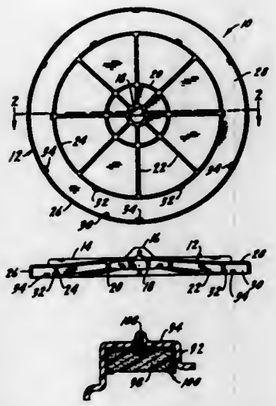
Filed Jun. 6, 1995, Ser. No. 468,054

Int. Cl.[6] B65D *51/00*

U.S. Cl. 105—377.07 **15 Claims**

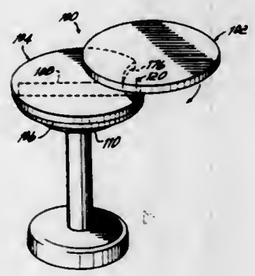
1. A hatch cover for a railroad car hatch, comprising a body member having an underside and adapted to overlie an upstanding loading nozzle of a railroad car hatch, the body member defining a gasket receiving pocket which is aligned with the upstanding nozzle when the cover is closed upon the hatch, a first set of individual, spaced-apart hooks on the underside of the body member outwardly of the upstanding nozzle when the cover is closed on a hatch, a second set of individual, spaced-apart hooks on the underside of the body member inwardly of the upstanding nozzle when the cover is closed on a hatch, each of said hooks including a leg portion and a clip integrally formed on the leg, the clips being spaced from the body member and extending toward the center of the pocket a distance sufficient to enable the clips to retain an otherwise unsecured gasket in the pocket while also allowing the

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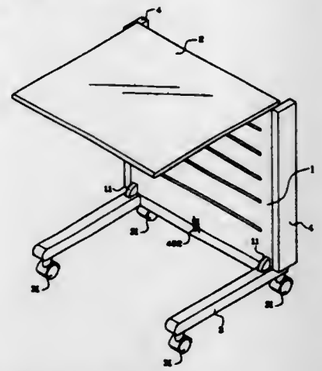
gasket to be flexed past the clips for installation in and removal from the pocket, the clips having a width which is small compared to the total extent of the pocket.

5,622,118
CONVERTIBLE SUPPORT APPARATUS
Thomas J. Rowan, 3360 Bishop St., 2nd Floor, Cincinnati, Ohio 45220
Continuation-in-part of Ser. No. 93,082, Jun. 16, 1993, Pat. No. 5,425,313. This application Jun. 20, 1995, Ser. No. 492,667
Int. Cl.[6] A47B *1/00*
U.S. Cl. 108—65 **25 Claims**



1. An expandable support apparatus comprising:
a base;
a stationary support connected to said base;
first and second movable support members having respective first and second upper support surfaces, said first movable support member being connected to said stationary support by a vertically, horizontally and rotationally movable pivot and said second movable support member being connected to said stationary support for horizontal movement along said stationary support, said first movable support member being rotatable from an unexpanded position overlying said second movable support to an expanded position adjacent said second movable support, said first and second support members being horizontally movable together toward a central portion of said base, and said first movable support further being movable downwardly in said expanded position to a position in which said first and second upper support surfaces are generally flush with each other.

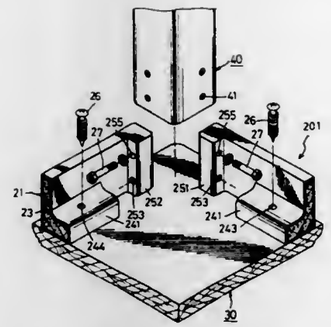
5,622,119
FOLDABLE COMPUTER TABLE
Chih-Hsin Hsieh, No. 54-1, Hong Dau, San Hsia Town, Taipei Hsien, Taiwan
Filed Aug. 23, 1995, Ser. No. 518,304
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—115 **4 Claims**



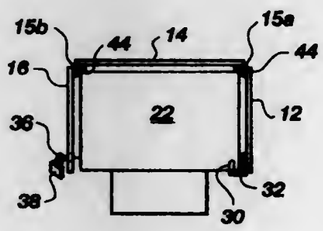
1. A foldable computer table comprising:
a) an L-shaped back board having a front face, a rear face, a lower front edge, an upper front edge and a pair of lateral sides;
b) a pair of side wall panels secured to the lateral sides of the back board, the side wall panels and the rear face of the back board collectively defining a back space, and each side wall panel including a top portion and a bottom portion;
c) a reverse L-shaped top board pivotally secured to the top portions of the side wall panels for pivotal movement between an extended position, wherein the top board extends horizontally from the upper front edge of the back board, and a folded position, wherein the top board is disposed in the back space adjacent the rear face of the back board;
d) a first holding means for maintaining the top board in its folded position;
e) a pair of legs pivotally connected to the bottom portions of the side wall panels for pivotal movement between an extended position, wherein the legs extend forwardly of the front face of the back board, and a folded position, wherein the legs are disposed within the back space;
f) a second holding means for maintaining the legs in the folded position; and
g) a third holding means at the lower front edge of the back board for maintaining the legs in the extended position.

5,622,120
COMPOSITE APRON FOR A TABLE
Don-Fong Yeh, 8F, No. 65, Sung-Chiang Rd., Chung-Shan Dist., Taipei City, Taiwan
Filed Feb. 29, 1996, Ser. No. 608,754
Int. Cl.[6] A47B *47/00*
U.S. Cl. 108—156 **3 Claims**

1. An apron for a table, the table including a horizontal table top and several vertical legs of a rectangular cross-section mounted on the table top, the apron being adapted to be fixed to a bottom surface of the table top between adjacent two of the legs, wherein the improvement comprises:
the apron including a generally U-shaped wooden shell and a molded core which is embedded in the shell, the shell and the core being hot pressed together, the shell having an elongated vertical main plate section with a vertical inward surface and a vertical outward surface, two vertical end plate sections respectively and perpendicularly projecting from two ends of the inward surface of the main plate section so that the main plate section and the end plate sections cooperatively form a U shape, and a horizontal plate section projecting perpendicularly from a middle portion of the inward surface of the main plate section, the end plate sections of the shell being adapted to respectively abut against and be secured to the adjacent two of the legs, the horizontal plate section being adapted to abut against and be secured to the bottom surface of the table top.

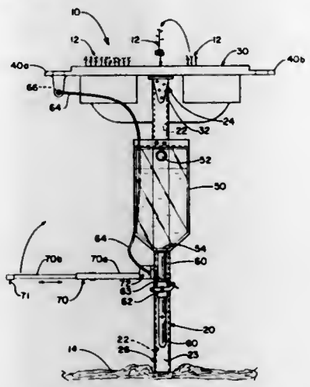


5,622,121
SECURITY COVER FOR JEWELRY CASE
John L. Holler, 30237 Sherri Lee Dr., Bulverde, Tex. 78163
Filed Mar. 9, 1995, Ser. No. 401,275
Int. Cl.[6] E06B *9/00*
U.S. Cl. 109—49.5 **14 Claims**



1. A protective cover for a finery case containing jewelry, precious metals or other finery, said finery case having a free edge and at least first, second and third walls forming first and second edge corners, said protective cover comprising:
a nontransparent cover means including a first sidewall hingedly attached to a second sidewall and a third sidewall hingedly attached to said second sidewall such that said first and third sidewalls are hingedly attached along two opposing edges of the second sidewall to form an at least three-sided nontransparent cover means for (i) placing onto the finery case in a seated position and for (ii) hingedly extending around the first and second edge corners of the finery case to thereby cover with said first, second and third sidewalls the first, second and third walls of said finery case forming said edge corners, respectively, so as to render said walls nontransparent, wherein the first and third sidewalls each have a free edge section; and
securing means for releasably securing the nontransparent cover means to the finery case in said seated position, said securing means comprising:
a three-sided, one-piece unitary U-shaped channel disposed along a free edge section of the first sidewall opposite the hinged portion of said first sidewall, said U-shaped channel being configured and dimensioned to interlock around the free edge of the finery case when the first, second and third sidewalls of the nontransparent cover member are covering the first, second and third walls of the finery case; and
locking means for locking a free edge section of the third sidewall of the nontransparent cover member to the finery case when the U-shaped channel is interlocked around the free edge of the finery case to thereby secure the nontransparent cover member over the first, second and third walls of said finery case.

5,622,122
GARDEN TOOL FOR PLANTING PLANTS
Newell Adair, 3558 Kline Rd., Rootstown, Ohio 44272
Filed Jan. 16, 1996, Ser. No. 585,881
Int. Cl.[6] A01C *11/00*
U.S. Cl. 111—106 **14 Claims**

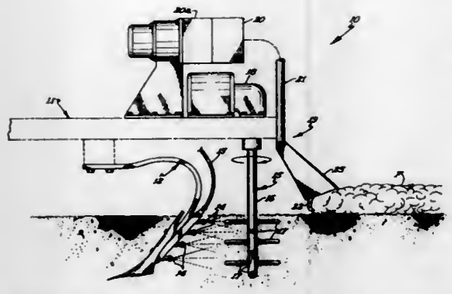


1. A garden tool apparatus for planting plants in cultivated soil, said garden tool comprising:
an elongated planting member having an upper end, a lower end, and a bore formed therethrough from said upper end to said lower end such that said upper end and said lower end of said member are open to said bore;
a plant carrying tray connected to said elongated planting member, adjacent to said open upper end; and,
a hand grip by which an operator of said garden tool may grasp and operate said garden tool.

5,622,123
PROCESS AND APPARATUS FOR KILLING SOIL PATHOGENS
A.H.J. Rajamannan, Minneapolis, Minn., assignor to Aqua Heat Technology, Inc., Minneapolis, Minn.
Filed Aug. 10, 1995, Ser. No. 513,206
Int. Cl.[6] A01C *7/08*
U.S. Cl. 111—120 **4 Claims**

1. A process for killing soil pathogens in a field for the purpose of improving agricultural production of the field, comprising the steps of,
providing a mobile supply of hot water under pressure, the hot water having a temperature within the range of 100° F. to 210° F.,
directing the hot water under pressure to a plurality of mobile discharge media, each discharge media having a plurality of vertically spaced apart discharge outlets located at varying depths below the surface of the field to be treated,
injecting the hot water from the outlets into the top layer of soil of the field at a pressure within the range of 50 psi to 30,000 psi as the mobile discharge media are moved through the field.

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stirring the soil immediately after injection of the hot water by subsurface rotary mixing media rotating about vertical axes for uniformly heating the soil;

producing a source of foaming material under pressure comprising water, air and a foaming compound,

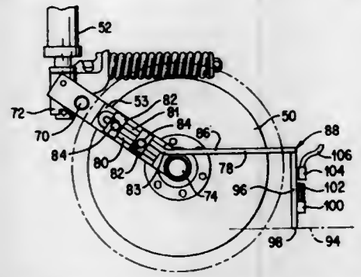
and applying a foam material to the surface of soil as an insulation to the top layer of soil immediately after injection of the hot water from the mobile discharge medial to prevent heat loss from the soil, whereby the pressurized hot water will penetrate the soil of the field being treated to continuously kill soil borne organisms including pathogenic organisms.

5,622,124

COULTER FERTILIZER TINE

David R. Smith, Fort Jennings, Ohio; Loren G. Arnold, Tucson, Ariz., and Kenneth L. Bellman, Ottawa, Ohio, assignors to Unverferth Manufacturing Co., Inc., Kalida, Ohio

Filed Feb. 12, 1996, Ser. No. 600,180
Int. Cl.[6] A01C *15/00*
U.S. Cl. 111—121 **21 Claims**



1. A coulter fertilizer applicator for use with a frame adapted to be moved over a top surface of soil to be tilled and fertilized, comprising:

a support post connected to a farm apparatus frame;

a linkage arm connected to said support post;

a coulter wheel having an axle mounted on said linkage arm, said coulter wheel for tilling engagement with soil over which the frame is moved to form a seedbed therein, the coulter wheel having a plane of rotation;

a fertilizer tine formed of a single spring element, said single spring element including a forward end mounted directly on said linkage arm between said coulter wheel and said support post and forwardly of said axle of said coulter wheel;

said single spring element including a free end disposed rearwardly and beyond said coulter wheel, said free end being disposed in said plane of rotation of said coulter wheel, said free end terminating substantially adjacent the top surface of said soil; and

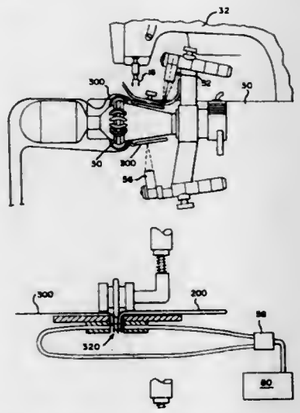
a fertilizer dispenser attached to said single spring element substantially adjacent said free end of said spring element for applying fertilizer to the seedbed.

5,622,125

AUTOMATIC COVERSTITCH ON CIRCULAR GARMENT BANDS

Maximilian Adamski, Jr., Tega Cay, S.C.; Stephen S. Ruderman, Matthews, N.C., and Robert L. Kosrow, Hoffman Estates, Ill., assignors to Union Special Corporation, Huntley, Ill.

Filed Sep. 23, 1994, Ser. No. 311,331
Int. Cl.[6] D05B *35/02;35/10*
U.S. Cl. 112—63 **15 Claims**



1. A sewing machine in combination with a workpiece control and advancing mechanism and processor that can automatically control the sewing machine and the components of the workpiece control and advancing mechanism, said sewing machine including stitch forming instruments for forming a coverstitch over an existing overedge stitch in a tubular workpiece that has a stitch line a predetermined distance from a marginal edge of the tubular workpiece, a frame, said sewing machine and said workpiece control and advancing mechanism mounted on said frame, said workpiece control and advancing mechanism maintaining and controlling the marginal edge of the tubular workpiece and maintaining said marginal edge a predetermined distance from said stitch line as the tubular workpiece advances toward said stitch forming instruments, said workpiece control and advancing mechanism comprising:

an edge guider sensor;

a front feeding edge guider for supporting the tubular workpieces at a location in advance of said stitch forming instruments and advancing the tubular workpiece in the direction of feed and in response to said edge guider sensor maintaining the tubular work pieces at a predetermined distance from the stitch line; and

a rear feed roller that supports said tubular workpieces at a location following said stitch forming instruments.

5,622,126

TUFTING MACHINE YARN FEED MECHANISM

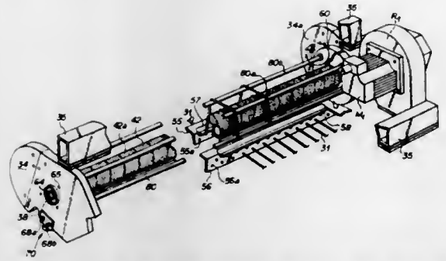
Roy T. Card, Chattanooga, Tenn., and Wilton Hall, Fort Oglethorpe, Ga., assignors to Card-Monroe Corporation, Chattanooga, Tenn.

Filed Jan. 23, 1995, Ser. No. 376,345
Int. Cl.[6] D05C *15/18*
U.S. Cl. 112—80.73 **16 Claims**

1. A yarn feed mechanism for feeding yarns to the needles of a tufting machine comprising:

(a) a frame assembly having yarns passing adjacent thereto;

(b) a yarn feed roll mounted for rotation on said frame assembly, said roll having an axis about which said roll is rotated and a yarn driving periphery;



(c) a movable yarn applying member carried by said frame and disposed adjacent to said roll, and means for moving said yarn applying member with respect to said roll from yarn receiving position in which intermediate portions of said yarns are received by said yarn applying member,to a yarn applying position in which said yarn applying member applies increments of said yarns against portions of said periphery of said roll sufficiently that the rotation of said roll drives said yarns toward said needle;

(d) said yarn applying member including a yarn control rod and rod support on said frame for supporting said rod in a position spaced from and about parallel to the axis of said roll, said yarns being looped partially around said rod and said rod being positionable for holding a portion of said yarns against only a part of said periphery;

(e) said support including a pair of opposed plates removable supporting said rod therebetween;

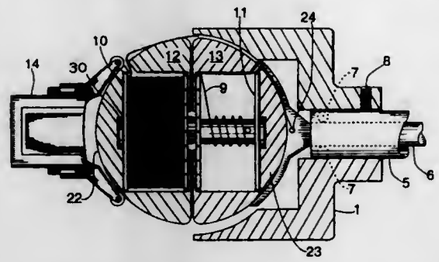
(f) said plates being concentrically mounted with respect to said roll for independant rotation with respect thereto and said rod being supported in spaced relationship to said roll for orbital movement with respect to said roll.

5,622,127

AUTOMATIC DUAL BOBBIN MECHANISM

Steven Chang, 382 Rte. 304, Bardonia, N.Y. 10954

Continuation-in-part of Ser. No. 271,853, Jul. 7, 1994, abandoned. This application Jun. 27, 1995, Ser. No. 495,790
Int. Cl.[6] D05B *59/00*
U.S. Cl. 112—279 **8 Claims**



1. A dual bobbin mechanism for use on a sewing machine which comprises:

two bobbins;

means for maintaining the two bobbins in a side-by-side configuration whereby both bobbins spin at the same time and speed, a first bobbin being located in a position defining a stitching-thread-supply position and a second bobbin being located in a position defining a thread-respooling position;

means for rotating the two bobbins to allow for repositioning of a full bobbin in the thread-respooling position to the stitching-thread-supply position and an empty bobbin in the stitching-thread-supply position to the thread-respooling position; and

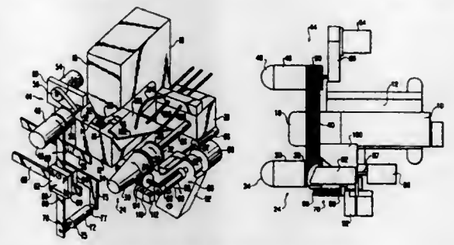
means for the automatic rethreading of the empty bobbin from an external thread source to begin respooling.

5,622,128

FABRIC TENSIONING SYSTEM AND SEPARATOR PLATE FOR AUTOMATED SEWING MACHINE

Johannes Sahl, Krems, Austria, assignor to Jet Sew Technologies, Inc., Bowling Green, Ky.

Filed Oct. 20, 1995, Ser. No. 546,265
Int. Cl.[6] D05B *27/10*
U.S. Cl. 112—470.29 **39 Claims**



1. Circular sewing machine apparatus, comprising:

a sewing head for attaching an elastic band to a tubular fabric body;

a first roller assembly located on one side of the sewing head for moving the elastic band and the tubular fabric body past the sewing head;

a second roller assembly located on the other side of the sewing head for bringing the elastic band and the tubular fabric body together prior to a band attaching operation at the sewing head; and

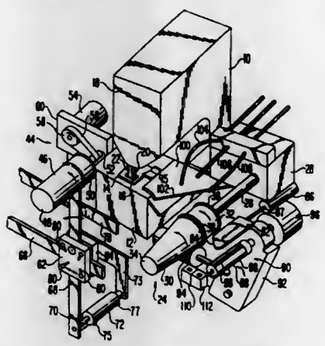
wherein said second roller assembly includes a split roller assembly comprising an outer free spinning roller section axially aligned with a relatively shorter inner free spinning roller section, said outer and inner roller section being free spinning independently of each other and wherein said inner roller section additionally includes means for receiving and retaining the elastic band thereon during said band attaching operation.

5,622,129

PNEUMATIC TENSIONING ARM FOR AUTOMATED SEWING MACHINE

Johannes Sahl, Krems, Austria, assignor to Jet Sew Technologies, Inc., Bowling Green, Ky.

Filed Oct. 20, 1995, Ser. No. 546,266
Int. Cl.[6] D05B *27/10*
U.S. Cl. 112—470.29 **20 Claims**



1. Circular sewing machine apparatus, comprising:

a sewing head for attaching an elastic band to a tubular fabric body;

a stationary feed roller assembly including an elongated outwardly extending roller assembly for supporting both said

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elastic band and said tubular fabric body and being located on one side of the sewing head for bringing the elastic band and the tubular fabric body together prior to a band attaching operation at the sewing head;

a movable drive and tensioning roller assembly located on the other side of the sewing head for moving the elastic band and the tubular fabric body past the sewing head; and

wherein said drive and tensioning roller assembly includes,

an elongated outwardly extending motor driven roller for supporting both said elastic band and said tubular fabric body,

first means for pre-positioning said drive and tensioning roller assembly to a fixed position relative to said sewing head and said feed roller assembly depending on the size of said tubular fabric body, prior to an elastic band and tubular fabric body loading operation, and

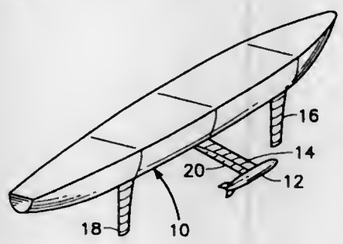
second means for tensioning by active pneumatic control both the elastic band and the tubular fabric body prior to said band attaching operation by movement of said drive and tensioning roller assembly away from a home position at said fixed position and thereafter returning to said home position under active pneumatic control following said attachment operation and prior to an unloading operation.

5,622,130

HEEL CONTROL SYSTEM FOR SAILING YACHTS AND SAILING YACHT HULL

Alberto A. Calderon, La Jolla, Calif.; Charles W. Robinson, Santa Fe, N.M.; William F. Burns, III, and Matthew B. Brown, both of San Diego, Calif., assignors to Dyna-Yacht, Inc., San Diego, Calif.

Filed May 22, 1995, Ser. No. 446,455
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—39.1 **27 Claims**



1. A sailing yacht comprising

a sailing hull with a longitudinal dimension, a bow and stern, port and starboard sides, and a mast with at least one sail, comprising:

a ballast,

an elongated strut having one end connected to said ballast for supporting the same,

means for mounting said strut to depend from said hull for supporting said ballast generally below said hull and for providing movement of said strut laterally relative to the hull for generating a gravitational righting force for countering heeling thereof under sail,

an adjustable flap,

means for mounting said flap to said strut for movement relative thereto about an axis in general alignment with said strut,

control means for moving said flap relative to said strut for providing hydrodynamic forces for generating a moment about said longitudinal axis a moment tending to hold said yacht at a desired angle of heel,

fore and aft foils mounted to depend from said hull and extending downwardly therefrom for controlling the leeway made by said yacht,

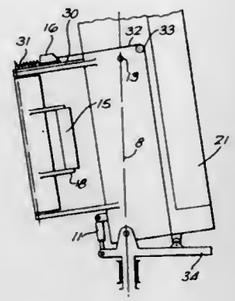
means for turning said foils for creating a yawing moment with respect to each other for steering said yacht.

5,622,131

COMPACT SELF-TRIMMING WINGSAIL

John G. Walker, Tipwell House, St Mellion, Cornwall, Great Britain

Continuation of Ser. No. 256,761, Jul. 22, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,044
Claims priority, application United Kingdom, Feb. 8, 1992, 9202703
Int. Cl.[6] B63H *5/06*
U.S. Cl. 114—102 **12 Claims**



1. A wingsail assembly comprising:

at least one thrust wing mounted for free rotation about an upright axis and defining by its free rotation a trimming circle;

a first control airfoil freely pivoted on a first boom extending upstream of said thrust wing, the first boom being of a length such that the first control airfoil is within said trimming circle;

a second control airfoil mounted downstream of the first control airfoil within said trimming circle and settable for controlling the angle of attack of the first control airfoil to the wind which in turn provides a turning moment for controlling the angle of attack of the thrust wing in all propulsive configurations; and

means for moving the thrust wing to bring the instantaneous center of pressure of the thrust wing at different angles of attack into closer proximity to said upright axis and reduce the turning moment required of the first control airfoil, and in which the first control airfoil is freely pivoted about an axis ahead of all combined center of pressure locations for the first and second control airfoils.

5,622,132

SHOCK-ABSORBING STEERING SYSTEM FOR PERSONAL WATERCRAFT

Albert Mardikian, Corona Del Mar, Calif., assignor to Mardikian 1991 Irrevocable Trust, Corona Del Mar, Calif.

Filed Dec. 29, 1995, Ser. No. 580,807
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—144 R **22 Claims**

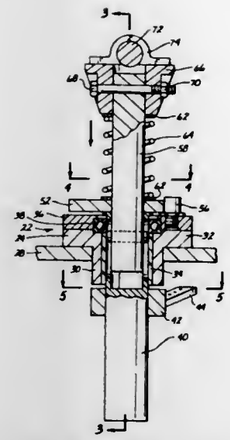
1. An improved steering assembly for a personal watercraft which includes a deck and a steering cable, the improved steering assembly comprising:

a first member adapted to be fixedly attached to the deck;

a steering shaft rotatably mounted to the first member and adapted to be attached to the steering cable;

handlebar means attached to the steering shaft and adapted to be gripped by a human operator of the personal watercraft and for turning the steering shaft, and

shock absorbing means interposed between the first member and the handlebar means, for absorbing at least a portion of the force generated between the handlebar means and the first



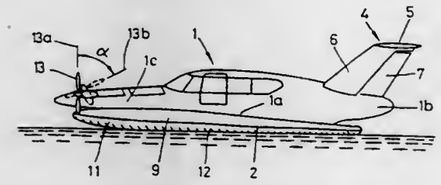
member, said shock absorbing means allowing the handlebar means to undergo up and down motion relative to the deck when the personal watercraft travels on water.

5,622,133

TRANSPORT FACILITY WITH DYNAMIC AIR CUSHION

Dmitry N. Sinitsyn; Vladislav G. Alyamovsky; Anatoly A. Antonov; Genrich L. Radovitsky; Vladimir V. Tomilin; Leonid O. Litinsky, and Vladimir V. Shmelev, all of N. Novgorod, Russian Federation, assignors to Seagull Decor Co., Ltd., Taipei, Taiwan

Filed Sep. 20, 1994, Ser. No. 308,940
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—272 **8 Claims**



1. A transport device with a dynamic cushion comprising:

a hull having a bow portion, a middle portion, and a stern portion;

a wing mounted within said middle portion of said hull and having opposing end cross-sections, a bow edge, and trailing-edge flaps for developing a lifting force;

an empennage disposed within said stern portion of said hull;

two skegs for containing an air cushion formed beneath said wing, each said skeg installed at said end cross-sections of said wing, respectively, and joined rigidly with said wing and made resilient on a side of said skegs facing a supporting surface beneath the device;

a hollow beam connected pivotally with and across said hull and provided for varying an angular position of said beam around its longitudinal axis which is perpendicular to a center line plane of said transport device;

means for developing propulsion and made in the form of two air propellers disposed on said pivotal beam, symmetrically with respect to said center line plane of said transport device, and in front of said bow edge of said wing such that a plane of disk of each of one of said air propellers is pivotal with respect to a vertical in a range from about 80° to about 0° in a counterclockwise direction as viewed from a left-hand side of said transport device;

shafts rotating said propellers fastened rigidly to said beam joined with said hull;

an engine connected by means of a mechanical transmission to said shafts for rotating said propellers; and

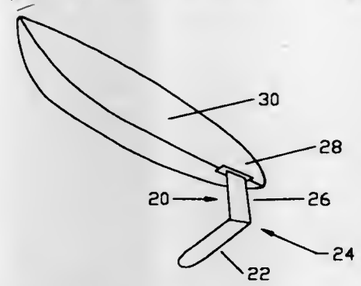
a mechanical transmission disposed inside said hull and in the cavity of said hollow beam.

5,622,134

LIFTING FIN

Kevin Kelsey, 11538 Riviera Pl NE, Seattle, Wash. 98125-5921

Filed Jul. 12, 1995, Ser. No. 501,414
Int. Cl.[6] B63B *1/24*
U.S. Cl. 114—274 **17 Claims**



1. A hydrofoil assembly mounted on a hull comprising:

(a) a substantially vertical hydrofoil

(b) a single sloped hydrofoil

(c) a hydrofoil hinging means for joining an upper end of said sloped hydrofoil to the bottom end of said vertical hydrofoil, said hinging means having a center line substantially parallel to the longitudinal axis of said vertical hydrofoil

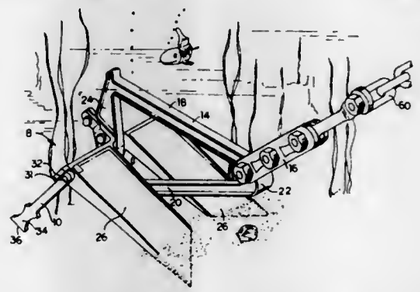
(d) a hinging stop means for limiting said hydrofoil hinging means so that said sloped hydrofoil assumes a maximum angle of 90 degrees to both sides of the vertical.

5,622,135

ANCHOR

William C. Eberline, Sr., 6378 Garfield, Cass City, Mich. 48726

Filed Oct. 10, 1995, Ser. No. 541,812
Int. Cl.[6] B63B *21/46*
U.S. Cl. 114—299 **13 Claims**



1. An anchor which comprises: at least one fluke, a track pivotally carried by said fluke adjacent one end of said fluke and extending toward the other end of said fluke, a stop which limits the pivoting of said track relative to said fluke, a slide carried by said track and constructed and arranged to connect a flexible anchor line to the anchor, a pair of fluke drivers candied by the anchor to pivot about an axis extending generally transversely to

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said track and located adjacent the one end of said fluke, another stop adjacent said fluke drivers to limit pivotal movement of said drivers relative to said fluke and each said fluke driver when bearing on said another stop extends substantially transversely of said fluke and projects outwardly of said fluke and said track with an end distal from said fluke disposed outwardly transversely beyond said track and when the distal ends of the fluke drivers and the other end of the fluke are received on a bed of a body of water the fluke is inclined by the drivers while bearing on said another stop at an acute included angle to the bed of about 20° to 45°.

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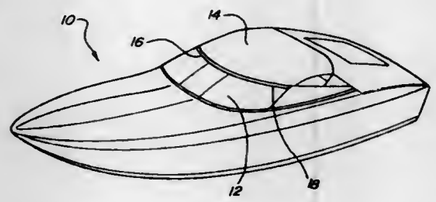
BOAT CANOPY MOUNTING SYSTEM

Alan P. Zirkelbach; Albert W. Zirkelbach, both of Bradenton, and Donald A. Zirkelbach, Sarasota, all of Fla., assignors to Aldon Industries, Inc., Bradenton, Fla.

Continuation of Ser. No. 213,992, Mar. 14, 1994, Pat. No. 5,425,327, which is a continuation of Ser. No. 914,247, Jul. 15, 1992, abandoned. This application Apr. 14, 1995, Ser. No. 422,154

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—361 **6 Claims**



1. A boat canopy retaining assembly for retaining a boat canopy to the windshield of a boat, the retaining assembly comprising:

a header for attachment to the top edge of a boat windshield, the header including a pair of legs extending therefrom, the legs being adapted to grip the boat windshield, the header having at least one channel with a restricted opening defined by a locking tab having a free end partially closing the channel, the locking tab has an inner wall which is inclined at an acute angle with respect to the longitudinal centerline of the header and which slopes away from the free end of the locking tab to define an internal cavity having a reduced diameter opening;

a resilient canopy locking member for attachment to a boat canopy, the canopy locking member including at least one resilient locking flange for insertion into the restricted opening, the locking flange having a body portion ending in a locking finger protruding outwardly from the body portion, the locking finger being angled with respect to the body portion at an acute included angle to mate with the inner wall of the locking tab and to extend into the cavity when the locking flange is inserted into the restricted opening;

whereby a boat canopy can be repeatedly connected to and disconnected from the windshield by forcing the locking flange into the channel of the header and the locking finger into the cavity by positioning the locking flange adjacent the channel and thereafter pressing against the locking member to force the flange into the channel and the locking finger into the cavity, the locking member being removable from the channel by pulling the locking member away from the header to disengage the flange from the channel and the locking finger from the cavity.

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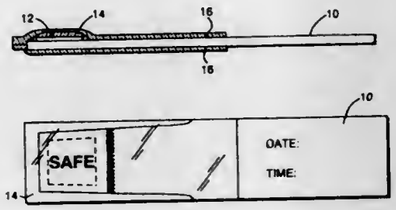
TEMPERATURE SENSORS

Elmer C. Lupton, Jr., Boston; Thomas E. Ford, Winchester, and Peter E. Ford, North Billerica, all of Mass., assignors to Trans World Services, Melrose, Mass.

Filed Mar. 24, 1994, Ser. No. 218,083

Int. Cl.[6] G01K *11/06;1/14*

U.S. Cl. 116—217 **14 Claims**



1. A temperature sensor device for use in testing cooked foods for recording when a predetermined safe cooking temperature has been reached, comprising, in combination:

a substantially non-porous elongate substrate having a colored patch formed adjacent at least one end thereof;

a particulate thermochromic material having a trigger temperature equal to said predetermined safe cooking temperature covering and visually obscuring said patch, and

a transparent sealable film covering and hermetically sealing said one end of said substrate including said thermochromic material, wherein said thermochromic material: (1) upon exposure to said predetermined safe cooking temperature, becomes sufficiently transparent so as to permit said colored patch to appear visible through the overlying thermochromic material, and (2) upon an abrading motion on the transparent sealable film, may be restored to a visually obscuring state, said device being further characterized by a response time not exceeding about ten seconds.

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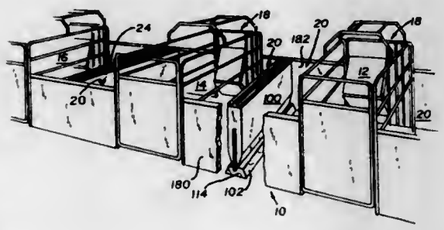
MULTI-CRATE PIG FARROWING FACILITY

Blair Underhill, P.O. Box 149, Delphi, Ind. 46923-0149

Filed Jan. 19, 1995, Ser. No. 375,480

Int. Cl.[6] A01K *5/00;1/02*

U.S. Cl. 119—51.5 **6 Claims**



6. A divider unit between adjacent creep areas of farrowing crates with built-in heater at and along the base of the divider unit and a source of food and drink for piglets incorporated within the divider unit whereby piglets in either or both of the adjacent creep areas may huddle against the heated base and also feed and drink from said source of food and drink incorporated into the divider unit.

5,622,139

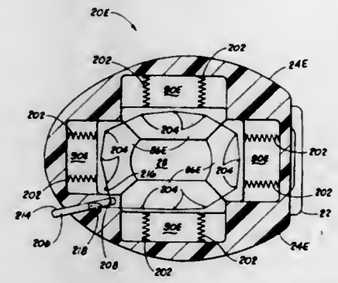
ADJUSTABLE COMMODE ASSEMBLY HAVING RETRACTABLE APERTURE REDUCING SHELVES

Jon K. Rymer, 2856 Dalewood Pl., Norman, Okla. 73071

Continuation-in-part of Ser. No. 212,204, Mar. 11, 1994, Pat. No. 5,458,089. This application Jun. 7, 1995, Ser. No. 472,953

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—162 **11 Claims**



1. An improved toilet seat for use by a human and a pet animal user, the toilet seat comprising:

a rim member having a central aperture;

shelf means adjustably mounted to the rim member and having a protracted and a retracted position for adjusting the size of the central aperture and for supporting the weight of the pet animal user when in the protracted position, the shelf means comprising:

at least one shelf segment adjustably mounted to the rim member so that the shelf segment is adjustable between the protracted position which reduces the size of the central aperture and which provides a platform capable of supporting pet animal users and the retracted position which leaves the central aperture substantially open; and

shelf adjustment means responsive to the weight of the human user for adjusting the shelf means from the protracted position to the retracted position, and wherein the shelf adjustment means comprises:

cable means for adjusting the shelf means from the protracted position to the retracted position when the toilet seat is used by the human user, the cable means comprising:

at least one roller assembly attached to the shelf means;

a cable engaging the roller assembly and having adjustable tension so that the shelf means can be adjusted between the protracted position and the retracted position;

handle means secured to the rim member and to the cable for adjusting the tension on the cable so that the shelf means can be adjusted between the protracted position and the retracted position;

handle locking means connected to the rim member for locking the handle in a position so that the shelf means is maintained in the protracted position; and

release means connected to the rim member and responsive to the weight of the user for releasing the handle from the locking means so that the shelf means is adjusted to the retracted position when the toilet seat is used by human users; and

biasing means for biasing the shelf segments to the retracted position.

5,622,140

PET LITTER BOX AND SCREENING APPARATUS

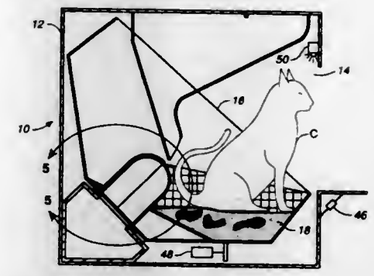
Dennis McIlnay-Moe, 1235 Riebli Rd., Santa Rosa, Calif. 95404

Filed Aug. 21, 1995, Ser. No. 517,476

Int. Cl.[6] A01K *1/035*

U.S. Cl. 119—166 **5 Claims**

1. A pet litter box and screening apparatus having litter screening and waste storage capabilities, said apparatus comprising:



an outer enclosure portion having an opening for ingress and egress by a cat or other animal;

an inner carrier portion rotationally mounted within said outer enclosure portion on a carrier support at a carrier hub, said carrier portion providing a litter accumulation area and including a radially-extending screen, said carrier hub including a shield member normally covering a port;

a waste storage container connected to said apparatus beneath said carrier hub port, wherein when said carrier portion is rotated about said carrier hub on its axis of rotation to move said screen through said litter accumulation area, agglomerated litter and fecal material is carried by said screen in the rotating carrier to a point above said carrier hub, and said shield member is rotated to a position to expose said port and enable the agglomerated litter and fecal material to fall into said waste storage container.

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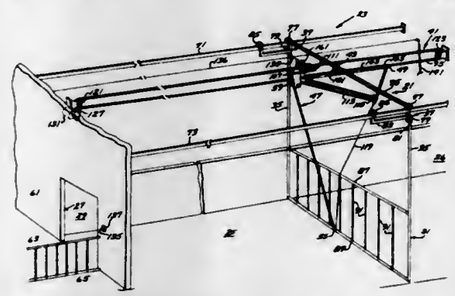
CROWD GATE APPARATUS

Steven D. Lareva, Paris, Mich., assignor to Vern Schooley, Long Beach, Calif.

Filed May 1, 1996, Ser. No. 640,502

Int. Cl.[6] A01K *1/02*

U.S. Cl. 119—843 **22 Claims**



1. Crowd gate apparatus mounted in a herding area to herd animals from an entry area to an exit area and comprising:

an overhead track device extending from said entrance area to said exit area;

a wheeled carriage on said track device, including a slide and a stop facing said entrance area;

an electrically conductive gate laterally spanning said herding area, having a front side facing said exit area and including suspension rods;

pivots suspending the respective said rods from said carriage;

an electrical lead extending along said track and slidably coupled with said gate for applying an electrical charge to said gate to apply a goading shock to animals in said herding area contacting said gate;

a drive including a pair of sprockets mounted at the opposite ends of said herding area, an endless chain over said sprockets and having a lower run slidably received in said slide to

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frictionally engage said slide to, when said run travels toward said entrance are to be functionally engaged by said run to draw said carriage toward said entrance, and a reversible drive motor coupled with one of said sprockets to drive said chain and draw said carriage back and forth on said track drive;

a pusher on said lower run and engaged to, when said run travels toward said exit area, engage said stop and push said gate therewith; and

a lifting device mounted over said herding area, coupled with said gate, and operable to, when said carriage approaches said entry area, draw the bottom of said gate upwardly.

5,622,142

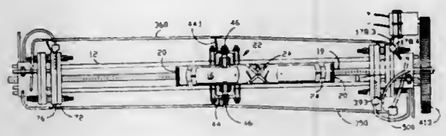
ROTATING PISTON ENGINE WITH VARIABLE EFFECTIVE COMPRESSION STROKE

Louis C. Strieber, 6800 West Gate Blvd. #139B316, Austin, Tex. 78745, and Edward M. Strieber, Jr., P.O. Box 203312, Austin, Tex. 78720-3312

Filed Aug. 8, 1995, Ser. No. 512,670

Int. Cl.[6] F02B *75/26*

U.S. Cl. 123—45 A **12 Claims**



1. An internal combustion engine for maximizing the effective distance the piston is driven during the power stroke to maximize the cooling of exhaust gases, maximizing the use of power produced by combustion, and maximizing the conversion of linear motion into rotary motion comprising, in combination:

a) a block and head arrangement having at least one cylinder with an end and a cylinder sidewall, with the cylinder having an axis with each direction on the axis defining a piston stroke;

b) a spinning and shuttling cylindrical piston in the cylinder, with the piston having at least a first crown, with the piston further having a piston sidewall being spaced from and in close relationship with the cylinder sidewall, with the piston being shuttleable on the axis in both axial directions and spinnable about the axis in the cylinder, with the piston having intake, compression, power, and exhaust strokes;

c) a cylinder head in the block and head arrangement and rigidly fixed to the end of the cylinder and being substantially in the form of a plate to provide for a compact block and head arrangement, with the cylinder head being exposed to the front disk shaped face of the piston crown, with the cylinder head being in dose relationship with the piston crown during the top of the intake and power strokes to contain explosion of fluid, with the cylinder head further comprising a first port for intake of air during the intake stroke, a second port for exhausting air during at least a portion of the compression stroke for regulating effective compression stroke length, a third port for optionally permitting air to be drawn in during the power stroke, and a fourth port for expelling exhaust during the exhaust stroke, with the ports of the cylinder head being spaced from the axis and offset radially from each other;

d) first and second closure means engaged with the cylinder head for regulating the size of the respective second and third ports in the cylinder head, with the first closure means comprising means for regulating the amount of fluid pushed by the piston out of the second port of the cylinder head during the compression stroke for varying the amount of pressure permitted to build in the cylinder for an effective compression stroke, with the second closure means comprising means for opening and closing the third port such that the third port is normally dosed and such that the third port is opened by the second closure means when the engine is to be used as a brake;

e) a manifold rigidly fixed to the cylinder head opposite of the cylinder, with the manifold being substantially in the form of a plate to further contribute to the compact block and head arrangement, with the manifold comprising an intake section with a first port for permitting fluid flow to the first port of the cylinder head during the intake stroke, a compression section with a second port being openable during at least a portion of the compression stroke for permitting the piston to push fluid from the cylinder during the compression stroke, with the second port being closeable whereupon pressure begins to build in the cylinder for an effective compression stroke, with the second port of the manifold communicable with the second port of the cylinder head, a power section with a third port which is openable during the power stroke and communicable with the third port of the cylinder head, and an exhaust section with a fourth port for permitting fluid flow from the fourth port of the cylinder head during the exhaust stroke, with the ports of the manifold being spaced from the axis and offset radially from each other;

f) a manifold plate on the manifold for sealing the manifold;

g) valve means sandwiched between the manifold and the cylinder head for opening and closing the ports by bringing the first, second, third, and fourth ports of the cylinder head into communication with the respective first, second, third, and fourth ports of the manifold, with the valve means being substantially in the form of a plate to further contribute to the compact block and head arrangement, with the valve means comprising a rotatable structure in close relationship with the piston crown at the top of the intake and power strokes, with the rotatable structure being at least partially exposed to fluid explosion causing the power stroke, with the rotatable structure having a periphery concentric with the axis, with the rotatable structure comprising a port opening, with the port opening communicating with the cylinder and with each of the ports of the cylinder head in turn and the rotatable structure closing off the other ports of the cylinder head when the port opening communicates with one of the ports of the cylinder head, with the port opening being rotatable in sequence from the first port of the cylinder head to the second port of the cylinder head to the third port of the cylinder head to the fourth port of the cylinder head and back to the first port of the cylinder head;

h) a power output shaft rotatably mounted to the block and head arrangement and trained to the spinning and shuttling piston such that both spinning and shuttling of the piston rotates the power output shaft, with the power output shaft being journaled to the manifold plate, with the power output shaft axially extending through the piston;

i) with a fuel explosion in the block and head arrangement driving the piston through a power stroke, with the block and head arrangement further comprising means for continuing to drive the piston past a point where energy from the fluid explosion alone is unable to drive the piston along the axis such that volume of exhaust gas in the cylinder is increased and thereby cooled prior to the piston being operated in an opposite direction for an exhaust stroke; and

j) piston spin means for forcing the piston to spin in one direction of rotation about the axis regardless of the axial direction of piston movement such that both spinning of each piston in the one rotation direction and shuttling of the piston drives the power output shaft, the piston spin means being between the piston and the cylinder, with the piston spin means comprising an endless track on the piston, with the endless track criss-crossing itself at least once to form an intersection, and with the track having at least one curved portion, a rider pivotable relative to the cylinder and comprising at least three guide pins for engaging the track, with the pins comprising a leading pin, a medial pin, and a trailing pin engaging the track in such sequence and crossing the intersection in such sequence, with the pins of the cylinder engaging the track in line with each other, and means for engaging the trailing pin with the track prior to the leading pin engaging the intersection to prevent the rider from pivoting as the rider crosses the intersection, with the means for engaging comprising means for disengaging the trailing pin from the track after the medial pin has crossed the intersection to permit the rider to travel on the curved portion of the track.

5,622,143

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Klaus Fuoss, Balingen; Wilhelm Hannibal, Hemer, and Michael Paul, Bad Friedrichshall, all of Germany, assignors to Audi AG, Germany

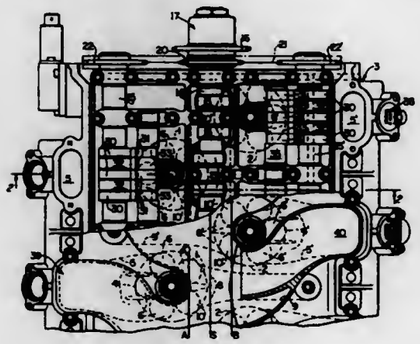
PCT No. PCT/EP94/04013, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO95/18290, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 2, 1994, Ser. No. 663,296

Claims priority, application Germany, Dec. 24, 1993, 43 44 501.2

Int. Cl.[6] F01L *1/04;1/26;1/344*

U.S. Cl. 123—54.4 **5 Claims**



1. A multi-cylinder internal combustion engine including cylinders (1,2) arranged in two rows, a first row of cylinders (1) being staggered relative to a second row of cylinders (2) and longitudinal center axes of cylinders of one of said two rows forming an angle with longitudinal center axes of cylinders of a second of said two rows;

a cylinder head (3) including for each cylinder at least one inlet valve (7, 7') and at least one outlet valve (11, 11'), an outlet camshaft (14) for actuating said outlet valves and a crankshaft for driving said outlet camshaft, said outlet valves of said cylinders being arranged in two rows (A, B) of outlet valves extending in a longitudinal direction of the engine; and wherein

said outlet valve rows (A,B) are situated on both sides of and near the plane of symmetry (S) extending between said cylinder rows and said inlet valves are situated externally of said outlet valves;

and including a common outlet camshaft for said two rows (A, B) of outlet valves, said common outlet camshaft being situated in said plane of symmetry (S), and an inlet camshaft (15, 15') for actuating said inlet valves (7, 7') for each said cylinder row, said inlet camshafts (15, 15') being situated externally of said outlet camshaft;

and including outlet openings (10, 10') on a combustion chamber side of each cylinder and Outlet channels (8, 8') for each cylinder extending from an outlet opening over an adjacent cylinder row to a cylinder head side of said adjacent cylinder row.

5,622,144

SYSTEM FOR OPERATING INTERNAL COMBUSTION ENGINE

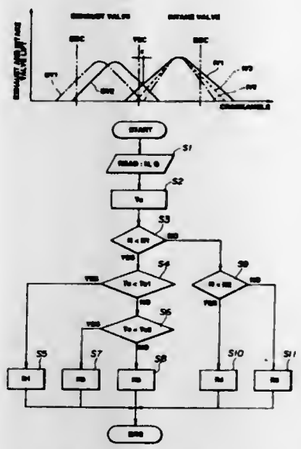
Makoto Nakamura, Zushi; Tetsuro Goto, Hatano, and Shinichi Takemura, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 2, 1995, Ser. No. 432,852

Claims priority, application Japan, May 2, 1994, 6-093190

Int. Cl.[6] F01L *13/00*

U.S. Cl. 123—90.15 **11 Claims**



1. A system for operating an internal combustion engine including an intake valve and an exhaust valve, the system comprising:

a crankangle sensor for generating an engine speed signal;

an intake airflow meter for generating an intake airflow rate signal;

an exhaust valve gear for the exhaust valve, said exhaust valve gear incorporating an exhaust variable valve timing mechanism;

an intake valve gear for the intake valve, said intake valve gear incorporating an intake variable valve timing mechanism;

a first hydraulic pressure control valve operatively connected with said intake variable valve timing mechanism;

a second hydraulic pressure control valve operatively connected with said exhaust variable valve timing mechanism; and

a controller electrically connected with said crankangle sensor and said intake airflow meter, said controller being operatively connected with said first and second hydraulic pressure control valves;

said controller being operatively to determine an engine speed data based on said engine speed signal and an intake airflow rate data based on said intake airflow rate signal to determine a fuel amount;

said controller being operatively to determine a low-speed and low-load operating range of the engine when said engine speed data is less than a first reference engine speed, and said fuel amount is less than a first reference fuel amount;

said controller being operatively to determine a low-speed and medium-load operating range of the engine when said engine speed data is less than said first reference engine speed, and said fuel amount is not less than said first reference fuel amount but is less than a second reference fuel amount;

said controller being operatively to determine a low-speed and high-load operating range of the engine when said engine speed data is less than said first reference engine speed, and said fuel amount is not less than said second reference fuel amount;

said controller being operatively to determine a medium-speed operating range of the engine when said engine speed data is not less than said first reference engine speed but is less than a second reference engine speed;

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said controller being operatively to determine a high-speed operating range of the engine when said engine speed data is not less than said second reference engine speed;

said controller being operatively responsive to said low-speed and low-load operating range of the engine and said low-speed and high-load operating range of the engine to control said second hydraulic pressure control valve for operating said exhaust variable valve timing mechanism to provide advanced opening and closing timings of the exhaust valve, and at the same time control said first hydraulic pressure control valve for operating said intake variable valve timing mechanism to decrease an opening duration of the intake valve to provide a retarded opening timing thereof and an advanced closing timing thereof to cause a reduced valve overlap between the intake and exhaust valves;

said controller being operatively responsive to said low-speed and medium-load operating range of the engine and said high-speed operating range of the engine to control said second hydraulic pressure control valve for operating said exhaust variable valve timing mechanism to provide a retarded opening timing of the exhaust valve immediately before a bottom dead center of an engine piston stroke and a retarded closing timing thereof, and at the same time control said first hydraulic pressure control valve for operating said intake variable valve timing mechanism to increase the opening duration of the intake valve to provide an advanced opening timing thereof and a retarded closing timing thereof to cause an increased valve overlap between the intake and exhaust valves, a peak of said valve overlap is positioned after a top dead center of the engine piston stroke, said peak of said valve overlap being a point during said valve overlap at which the lift of said intake valve and said exhaust valve is maximum; and

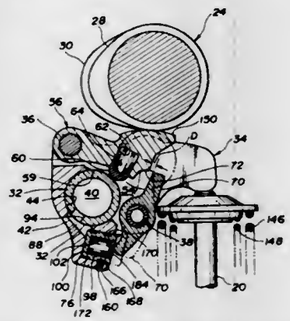
said controller being operatively responsive to said medium-speed operating range of the engine to control said second hydraulic pressure control valve for operating said exhaust variable valve timing mechanism to provide the advanced opening and closing timings of the exhaust valve, and at the same time control said first hydraulic pressure control valve for operating said intake variable valve timing mechanism to cause a medium opening duration of the intake valve between the reduced opening duration and the increased opening duration to cause an intermediate valve overlap between the intake and exhaust valves.

5,622,145

CYLINDER VALVE OPERATING APPARATUS

Seinosuke Hara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Dec. 19, 1995, Ser. No. 574,696
Claims priority, application Japan, Dec. 21, 1994, 6-318166
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.16 **11 Claims**



1. A cylinder valve operating apparatus comprising:

a camshaft with at least one set of cams, including a first cam and a second cam;

a rocker shaft having a latch release cam;

a rocker arm supported by said rocker shaft and driven by said first cam for rotatable motion about said rocker shaft, the rocker arm having a chamber;

a free cam follower supported by said rocker arm and driven by said second cam for rotatable motion relative to said rocker arm;

a lever supported by said rocker arm, said lever being movable to a locked position where said lever is in driving engagement with said free cam follower to provide a positive motion connection between said free cam follower and said rocker arm and to a released position where said lever is out of driving engagement with said free cam follower to provide relative motion of said free cam follower to said rocker arm;

a release spring for biasing said lever toward said released position;

a piston received in said chamber of said rocker arm, wherein the piston is adapted to move in a first direction tending to protrude out of said chamber in response to application of hydraulic fluid pressure in said chamber;

hydraulic means for controlling supply and discharge of hydraulic fluid to and from said chamber;

a latch operatively connected to said rocker arm, said latch having a cam follower finger adapted to cooperate with said latch release cam;

a cup positioned between said piston and said lever, wherein the piston is adapted to move said lever in said first direction toward said locked position against said release spring; and

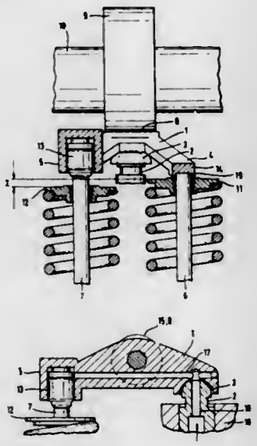
a motion assisting spring positioned between said piston and said lever to assist said piston in moving toward a second direction opposite to said first direction subsequent to the piston moving in said first direction.

5,622,146

FINGER LEVER FOR ACTUATING GAS EXCHANGE VALVES

Walter Speil, Ingolstadt, Germany, assignor to INA Walzlager Schaeffler KG, Germany

PCT No. PCT/EP94/01617, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/00750, PCT Pub. Date Jan. 5, 1995
PCT Filed May 19, 1994, Ser. No. 564,084
Claims priority, application Germany, Jun. 18, 1993, 43 20 195.4; Apr. 22, 1994, 44 14 028.2
Int. Cl.[6] F01L *1/18;1/24;1/26*
U.S. Cl. 123—90.22 **8 Claims**



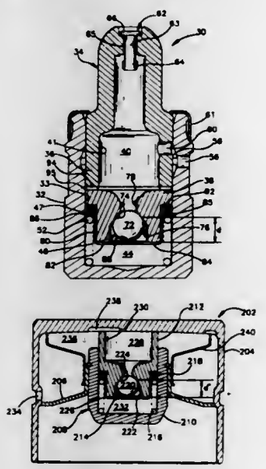
1. A finger lever (1) used together with a camshaft (10) for actuating gas exchange valves (6, 7) of an internal combustion engine, which finger lever for simultaneously actuating two gas exchange valves (6, 7), is configured as a forked finger lever (1) and is supported at one end on a support element (2, 2*a*) and bears at an opposite end against an end of a shaft of a gas exchange valve (6, 7), the support element (2, 2*a*) comprising a device for compensating valve clearance, characterized in that a clearance compensation element is arranged on at least one of the ends of the forked finger lever (1) facing the ends of shafts of the gas exchange valves (6, 7).

5,622,147

HYDRAULIC LASH ADJUSTER

Thomas C. Edelmayer, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1996, Ser. No. 613,273
Int. Cl.[6] F01L *1/16;1/24*
U.S. Cl. 123—90.35 **8 Claims**



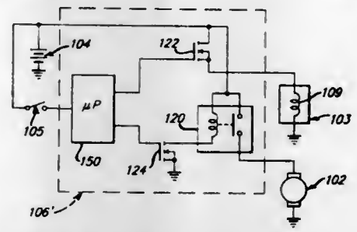
1. A hydraulic lash adjuster for an internal combustion engine comprising a body having a blind first bore formed therein; a plunger slidingly received within said first bore; a pressure chamber formed between the bottom of said first bore and said plunger; a fluid chamber within said plunger; a supply of hydraulic fluid within said fluid chamber; a valve opening in said plunger providing fluid communication between said fluid chamber and said pressure chamber; a check valve element for selectively opening or closing said valve opening in response to The pressure difference between said fluid chamber and said pressure chamber; spring means normally urging said plunger outward of said first bore; and seal means between said first bore and said plunger operable to prevent the flow of fluid therebetween; characterized by a second bore formed in the bottom of said plunger intersecting said valve opening, said check valve element being received completely within said second bore such that movement of said check valve element between an open and a closed position within said second bore is guided by the diameter of said bore; and means for retaining said check valve element completely within said second bore.

5,622,148

CONTROL FOR A MOTOR VEHICLE CRANKING SYSTEM

Xiaolin B. Xue, Novi; Charles M. Freitas, Chelsea; Mark A. Brantmeyer, Ypsilanti; Xingyi Xu, Canton, and John G. Bulick, Dexter, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1995, Ser. No. 567,014
Int. Cl.[6] F02N *11/08*
U.S. Cl. 123—179.25 **18 Claims**



1. A method for controlling a cranking system for a motor vehicle engine, said method comprising:

(a) from a time t_0 to a time t_2, providing a first current to an electrical coil of a solenoid to cause said solenoid to actuate, the actuation moving a cranking motor drive mechanism toward engagement with said engine;

(b) beginning at time t_2, providing a second current, greater than zero but less than said first current, to said electrical coil;

(c) beginning at a time t_1, providing a current to said cranking motor, wherein time t_1 is a predetermined amount of time after t_0;

wherein t_1 is selected to be a time at which said solenoid is fully actuated; and

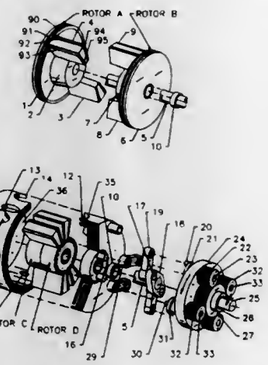
wherein t_1 is before t_2.

5,622,149

HIGH-POWER ROTARY ENGINE WITH VARAIABLE COMPRESSION RATIO

David B. Wittry, 1036 S. Madison Ave., Pasadena, Calif. 91106-4365

Continuation-in-part of Ser. No. 161,227, Dec. 2, 1993, Pat. No. 5,433,179. This application May 15, 1995, Ser. No. 442,486
Int. Cl.[6] F02B *53/00*
U.S. Cl. 123—245 **29 Claims**



1. An improved rotary engine comprising:

a) a housing having a cylindrical cavity with radially directed end walls, a cooling means, and inlet and outlet ports terminating in said cavity,

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b) two interdigitated rotors rotatably movable in said cylindrical cavity, each of said rotors having a hub, and two radial vanes, said vanes of the first of said rotors extending over the hub of the second of said rotors so that a seal is formed between the first said rotor and the second said rotor and between said rotors and said housing, whereby the cylindrical cavity is divided into four compartments,

c) a duct or passageway connecting a first of said compartments with a second of said compartments whereby gas can flow from the first said compartment to the second said compartment.

5,622,150

METHOD FOR INTRODUCING FUEL INTO A COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

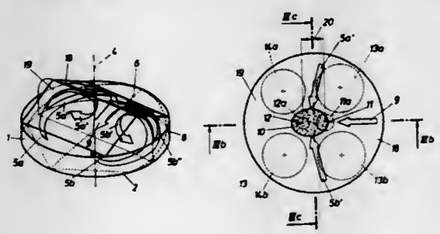
Günter K. Fraidl, Pirka; Walter Piock, Hitzendorf, and Hendrik P. Hazeu, Krumpendorf, all of Austria, assignors to AVL Gesellschaft Für Verbrennungskraftmaschinen Und Messtechnik M.B.H. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

Filed Mar. 30, 1995, Ser. No. 413,910

Claims priority, application Austria, Mar. 31, 1994, 692/94

Int. Cl.[6] F02M *35/10*; **F01L** *1/26*; **F02B** *31/00*

U.S. Cl. 123—307 **11 Claims**



1. Method for introducing fuel into a combustion chamber of a cylinder of an internal combustion engine wherein compressed gas is drawn from said combustion chamber during a compression phase of a working cycle, mixed with fuel in a mixing chamber of an injection valve, and injected into said combustion chamber together with fuel during a subsequent working cycle, including the following steps:

purposefully generating a complex air flow during said compression phase of said internal combustion engine, said complex air flow consisting of a first, second, and third main air stream, said first, second and third main air streams rotating about rotational axes normal to an axis of the cylinder and directed generally towards a center of combustion in an area of a top of said combustion chamber, said rotational axis of said first main stream being approximately normal to said rotational axes of said second and third streams forming a vortex pair rotating in opposite directions, and said first main stream being directed in the area of the top of the combustion chamber from an injection point towards an ignition point; and

injecting said fuel-air mixture into said first main stream in the direction of said ignition point, the injected fuel-air spray being laterally confined by said vortex pair and said mixing chamber being scavenged with compressed cylinder charge at the same time.

5,622,151

METHOD AND ARRANGEMENT FOR CONTROLLING AN ADJUSTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE IN A MOTOR VEHICLE

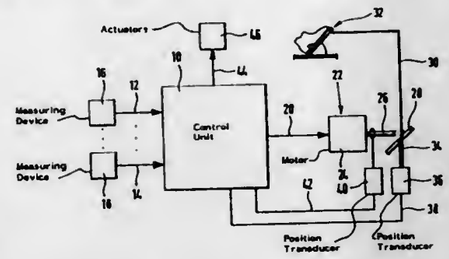
Eberhard Lang, Erligheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 21, 1994, Ser. No. 345,828

Claims priority, application Germany, Dec. 4, 1993, 43 41 391.9

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—339.15 **11 Claims**



1. A method for controlling an electrically actuable adjusting device for an internal combustion engine in motor vehicles, the method comprising the steps of:

operatively connecting said adjusting device to an output element for influencing engine power in at least one operating state and causing said adjusting device to adjust said output element;

generating a first piece of position data with respect to the position of the output element and a second piece of position data with respect to the position of the adjusting device;

determining stored values in at least one operating state which establish a mutually synchronous change of said first and second pieces of position data from pregiven movement sequences; and,

determining if the adjusting device is operatively connected to said output element based on said stored values.

5,622,152

PRESSURE STORAGE FUEL INJECTION SYSTEM

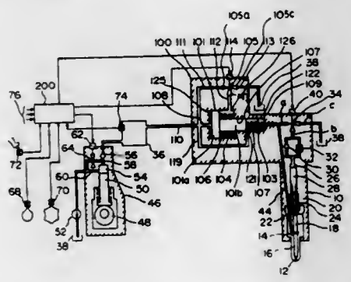
Akio Ishida, Kanagawa, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,104

Claims priority, application Japan, Jul. 8, 1994, 6-180648

Int. Cl.[6] F02M *45/04*

U.S. Cl. 123—446 **19 Claims**



1. A pressure storage fuel injection system comprising:

fuel feeding means for feeding fuel of a predetermined pressure;

a pressure storage for storing fuel fed out from the fuel feeding means in a pressurized state;

a fuel feeding line for feeding fuel from the pressure storage to a fuel pool provided in a fuel injection valve for fuel to be injected;

a fuel control line branching from the fuel feeding line and leading to a fuel chamber formed for needle valve on-off control in the fuel injection valve;

a first directional control valve provided for fuel injection control in the fuel control line, the first directional control valve being operable to apply a fuel pressure to the fuel chamber so as to close the needle valve in the fuel injection valve and cease application of the fuel pressure to the fuel chamber so as to open the needle valve;

a first cylinder chamber formed in the fuel feeding line;

a boosting piston provided in the first cylinder chamber and operable for reducing a volume of the first cylinder chamber so as to boost the fuel pressure on the downstream side of the first cylinder chamber;

a fuel supply circuit for supplying fuel from said pressure storage to said fuel feeding line and to the boosting piston;

a second directional control valve provided for operating the boosting piston in the fuel supply circuit and operable to on-off switch application of fuel pressure to the boosting piston, thus driving the boosting piston; and

a controller for providing control signals to the first directional control valve for the fuel injection control and the second directional control valve for operating the boosting piston to control the on-off control of the needle valve and operation of the boosting piston.

5,622,153

DEVICE FOR AND A METHOD OF DETECTING THE BACKWARD REVOLUTION OF A REVOLVING COMPONENT OF AN INTERNAL COMBUSTION ENGINE

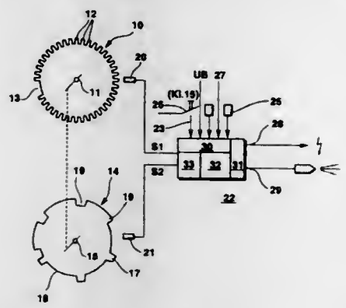
Karl Ott, Markgroeningen; Martin Person, Oberriexingen; Klaus Walter, Bietigheim-Bissingen, and Juergen Wuerth, Freiberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 5, 1995, Ser. No. 523,474

Claims priority, application Germany, Sep. 29, 1994, 44 34 833.9

Int. Cl.[6] F02D *41/06*; **F02P** *11/00*; **F02N** *11/10*

U.S. Cl. 123—476 **26 Claims**



9. A device for detecting a backward revolution of a revolving component of an internal combustion engine, comprising a sensor which senses a revolving component provided with at least one angular mark and produces an output signal in form of at least one pulse when the angular mark passes by; an evaluation device receiving the output signal of said sensor and further signals depending on an operating state of an internal combustion engine with time intervals between the pulses of the output signal of said sensor being determined in said evaluation device, said evaluation device assuming a backward revolution of the internal combustion engine has taken place; and means for suppressing outputting of at least one further injections and ignitions until resynchronization takes place after a prescribable time has passed, said evaluation device being formed so as to evaluate an actuation of a starter for detection of starting, said evaluation device outputting actuation signals for the starter and the actuation signals are assessed by said evaluation device in conjunction with the detection of stalling.

5,622,154

FUEL SYSTEM

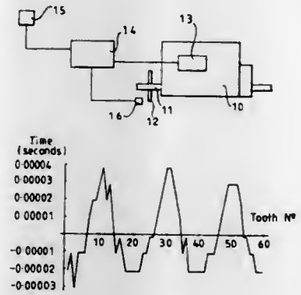
Jeremy S. Wrobel, Middlesex, England, assignor to Lucas Industries Public Company Limited, West Midlands, England

Filed Dec. 27, 1995, Ser. No. 579,004

Claims priority, application United Kingdom, Dec. 30, 1994, 9426394

Int. Cl.[6] F02M *51/00*; **G01L** *23/14*

U.S. Cl. 123—476 **6 Claims**



1. A fuel system for an internal combustion engine comprising a fuel pump, a controller for controlling the operation of the fuel pump so that fuel is delivered to the engine at the required time and in the desired quantity, means for supplying a demand signal to the controller, a wheel driven by the engine, a plurality of indicia on the wheel and positioned about the axis of rotation thereof, transducer means responsive to the passage of said indicia as the wheel rotates, means responsive to the signals generated by said transducer means for measuring the time intervals between the passage of the indicia past the transducer means, characterised by means for determining indicia spacing errors from the signals provided by said transducer means, said determining means first using a cross-correlation technique to separate from said signals the periodic component of the fluctuation in engine speed caused by the power strokes of the engine cylinders to produce normalised signals, and then calculating from said normalised signals the actual indicia spacing errors, the actual indicia spacing errors being utilised with the measured time intervals to provide an engine speed signal to the controller.

5,622,155

FUEL INJECTED INTERNAL COMBUSTION ENGINE

Nicholas J. Ellwood, Doubleview, and Raymond J. Hill, Warnbro, both of Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Western Australia, Australia

PCT No. PCT/AU94/00210, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/25742, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 22, 1994, Ser. No. 525,660

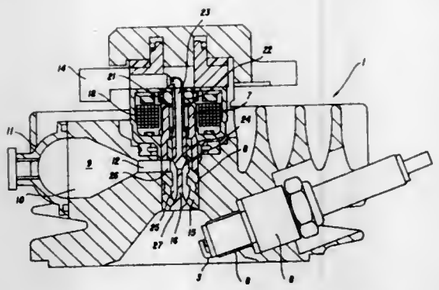
Claims priority, application Australia, Apr. 29, 1993, PL8534

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—531 **17 Claims**

1. An internal combustion engine having at least one combustion chamber, respective fuel injector means arranged to deliver fuel to each said combustion chamber, each fuel injector means including a nozzle chamber having a selectively openable nozzle operable to communicate the nozzle chamber with the combustion chamber,

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fuel metering means to meter fuel for delivery from the nozzle chamber to the combustion chamber, and gas chamber means arranged adjacent said combustion chamber laterally spaced from said nozzle chamber and in communication therewith to supply gas to the nozzle chamber, whereby the fuel is delivered from the nozzle chamber to the combustion chamber entrained in the gas.

5,622,156

VENTILATING ARRANGEMENT FOR THE CRANKCASE OF AN INTERNAL COMBUSTION ENGINE

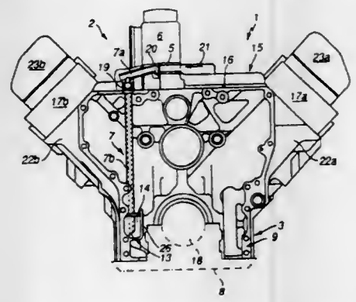
Eckart Rose, Stuttgart, and Walter Kerschbaum, Fellbach, both of Germany, assignors to Mercedes Benz AG, Stuttgart, Germany

Filed Mar. 12, 1996, Ser. No. 614,094

Claims priority, application Germany, Mar. 13, 1995, 19508967.7

Int. Cl.[6] F01M *13/04*

U.S. Cl. 123—573 **9 Claims**



1. A ventilating arrangement for an internal combustion engine having an engine block including a crankcase with a front wall, a timing gear chamber in front of said crankcase and an oil pan on the bottom thereof and also having an air intake pipe for supplying combustion air to said engine, said arrangement comprising a venting line for conducting venting gases from the engine crankcase to the air intake pipe, an oil separator arranged in said venting line, an oil return line for returning oil separated from said venting gases in said oil separator back to said oil pan, said oil return line being disposed on the outside of said engine block and crankcase front wall and extending on said front wall downwardly toward said oil pan, and an upwardly open oil pocket formed on the outside of said crankcase front wall above said oil pan, said oil return line having a bottom opening disposed in said oil pocket so as to provide a siphon therewith.

5,622,157

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE AND MANUFACTURING METHOD THEREOF

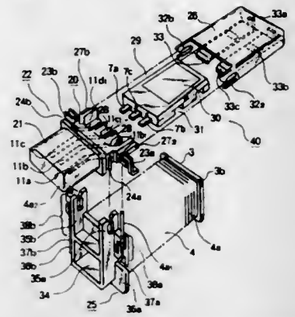
Shigemi Murata, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1996, Ser. No. 659,835

Claims priority, application Japan, Jun. 9, 1995, 7-143519

Int. Cl.[6] F02P *3/12*

U.S. Cl. 123—647 **10 Claims**



1. An ignition apparatus for an internal combustion engine comprising:

an ignition coil;

a power switch for intermittently feeding a primary current to said ignition coil;

a heat sink contacted with said power switch for radiating heat generated by said power switch;

an insulation case accommodating said ignition coil, said power switch and said heat sink;

wherein said power switch is elastically engaged with said heat sink.

5,622,158

FEEDBACK CONTROL SYSTEM FOR MARINE PROPULSION ENGINE

Masahiko Katoh; Kimihiro Nonaka, and Kazuhiro Nakamura, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

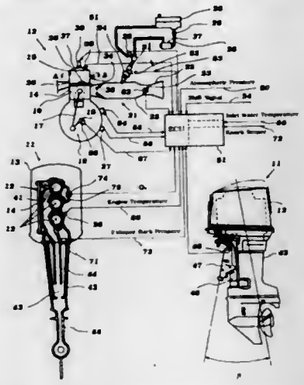
Filed Mar. 10, 1995, Ser. No. 402,193

Claims priority, application Japan, Mar. 10, 1994, 6-040065; Mar. 10, 1994, 6-040066; Mar. 10, 1994, 6-040067; Mar. 10, 1994, 6-040068

Int. Cl.[6] F02B *75/08*

U.S. Cl. 123—676 **29 Claims**

1. A fuel control method for a marine propulsion, internal



combustion engine comprised of a fuel supply device for supplying fuel to the engine for combustion, an exhaust port in the engine for discharging combustion products therefrom, an exhaust system for collecting exhaust gases from said engine exhaust port and having an exhaust outlet discharging said collected exhaust gases to the atmosphere at least in part below the level of water in which a vessel propelled by said engine is traveling at least under certain running conditions, and an air fuel ratio sensor for sensing an air fuel ratio supplied to the engine by said fuel supply device, said method comprising the steps of supplying fuel from said fuel supply device to said engine, detecting and reading an output from said air fuel ratio sensor, adjusting an amount of fuel supplied to said engine by said fuel supply device in response to said output of said air fuel ratio sensor to maintain a predetermined air fuel ratio, sensing a predetermined condition that will effect a back pressure in said exhaust system, and adjusting said fuel supplied from said fuel supply device in response to said sensed predetermined condition for compensating for variations in fuel supplied to said engine due to said exhaust back pressure.

5,622,160

GAS-POWERED GUNS OF THE REVOLVER TYPE

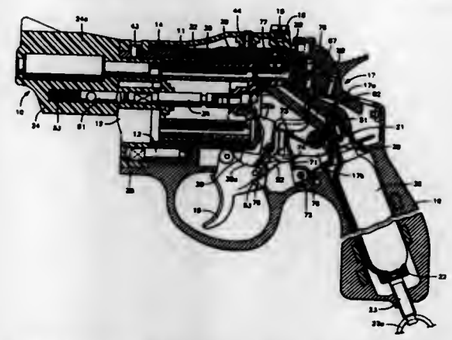
Francisco Casas Salva, Sant Boi de Llobregat, Spain, assignor to Industrias el Gamo, S.A., Sant Boi de Llobregat, Spain

Filed Sep. 27, 1995, Ser. No. 534,332

Claims priority, application Spain, Sep. 27, 1994, 9402083

Int. Cl.[6] F41B *11/06*

U.S. Cl. 124—76 **14 Claims**



1. Improvements in gas-powered guns of the revolver type, including a barrel, a revolving projectile loader by way of a revolver drum tiltable to one side into loading position associated with a support which is tiltable around a pin, a rearsight holder bearing a rearsight which is adjustably positioned by a setscrew, a striking hammer rotationally actuated by a trigger and a grip frame with handle plates housing a compressed gas cartridge having a nozzle which leans against a seal means said improvements comprising:

a casing of plastics material moulded on said barrel said casing having an upper expansion which positionally secures said rearsight holder at an end portion thereof which is distal from said rearsight;

a revolving projectile loader having a cylindrical configuration wherein the length predominates over the diameter, and being constituted by two pieces obtained by moulding, a first piece comprising a series of tubular elements provided to accommodate projectiles and to transfer them to said barrel, said tubular elements being integral with a discoidal portion, and a second piece constituting a casing and receiving in its inside the former one in a plug-in engagement;

a rearsight holder being provided with means for a quick assembly of said rearsight on said setscrew;

a hammer being formed by two halves detachably attached to each other, one of them being provided for striking a gas valve release means, and the other one acting as a support and means for hingedly connecting said hammer to a gun body;

grip frame handle plates having appendages moulded integrally therewith, said appendages being connectable to said grip frame to secure said grip frame handle plates to the grip frame.

5,622,159

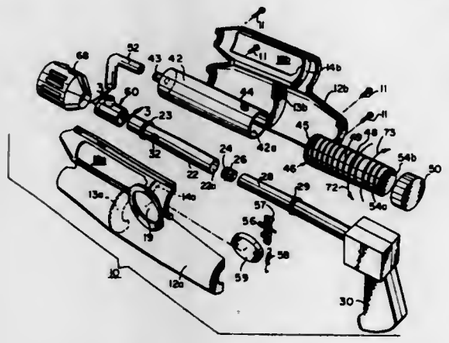
TOY WEAPON FIRING A SHAPELESS SEMI-SOLID CHARGE

Dexter C. T. Liu, Portsmouth, R.I., and Douglas Melville, Jr., Simsbury, Conn., assignors to LCD International, L.L.C., Newport, R.I.

Filed May 5, 1995, Ser. No. 435,643

Int. Cl.[6] F41B *11/00*

U.S. Cl. 124—66 **27 Claims**



1. A toy weapon for firing a charge of a shapeless, flowable, semi-solid material comprising:

a tube having an outlet exposed to atmosphere at one end, a portion of one end of the tube tapers down in internal cross-sectional diameter as the tube extends towards the outlet to define a constriction;

an extruder including a reservoir for a quantity of the shapeless, flowable, semi-solid material, the extruder being fluidly coupled to atmosphere through the tube;

a first piston mounted to reciprocate within the tubes; and

a first hand grip coupled with at least one of the extruder, the tube and the first piston; and

wherein the extruder is fluidly coupled to the tube between the outlet and the piston.

5,622,161

STOVE

Michael Stack, Cappagh, Ireland, assignor to Waterford Foundry (Inventions) Limited, Waterford, Ireland

Filed Feb. 7, 1996, Ser. No. 597,920

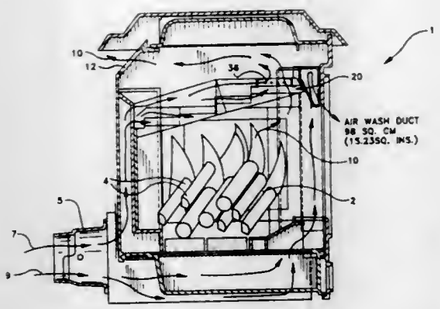
Claims priority, application Ireland, Feb. 8, 1995, S950101

Int. Cl.[6] F24C *1/14*

U.S. Cl. 126—77 **5 Claims**

1. A stove for the combustion of solid fuel, such as wood, comprising a fire box within the stove forming a combustion chamber for the fuel; a hollow hood having an upper surface and a lower surface extending over the combustion chamber; a primary air inlet and channel for providing a supply of air to the combustion chamber for primary combustion; a secondary air inlet and

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channel for providing a supply of air to the hollow hood; the hollow hood having a multiplicity of air exit apertures distributed across the lower surface of the hood to provide air for secondary combustion in the upper region of the fire box, and a flue gas exit orifice defined by a hole in both the lower surface and upper surface of the hood, the holes being connected by a wall or walls with a plurality of apertures being provided in the wall or walls of the orifice; whereby air is supplied to the flue gases exiting through the orifice thereby enabling secondary combustion to occur in the orifice.

5,622,162

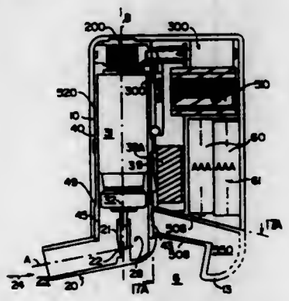
METHOD AND APPARATUS FOR RELEASING A CONTROLLED AMOUNT OF AEROSOL MEDICATION OVER A SELECTABLE TIME INTERVAL

Eric T. Johansson, Dublin; Carl Ritson, San Jose, and Reid M. Rubsamen, Berkeley, all of Calif., assignors to Aradigm Corporation, Hayward, Calif.

Continuation of Ser. No. 11,351, Jan. 29, 1993, Pat. No. 5,392,768, which is a continuation-in-part of Ser. No. 664,758, Mar. 5, 1991, Pat. No. 5,404,871. This application Feb. 16, 1995, Ser. No. 389,256

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.14 **2 Claims**



1. A hand held device for providing an aerosolized burst of a formulation, comprising:

a flow sensor for detecting the inspiratory flow of a patient;

a container having a formulation comprised of a drug and a carrier therein and a value normally biased closed, which valve may be opened when force is applied to a stem of the valve in a direction toward the container;

a drive element for applying force in a manner so as to open the valve;

a release actuator for actuating the drive element;

a programmable microprocessor which receives information from the sensor and forwards information to the release actuator in order to open the valve and release aerosolized formulation over a period of time of from between 10 and 1,000 msec wherein the amount of time is selectable along with relative time with respect to sensor determined flow rate and flow volume;

wherein the microprocessor is programmed to recursively determine a new delivery threshold for each successive detected inspiratory flow that fails to satisfy each provided delivery threshold.

5,622,163

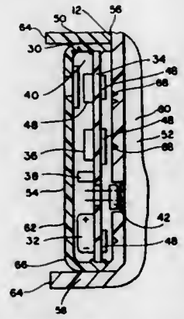
COUNTER FOR FLUID DISPENSERS

Warren R. Jewett, and Frederick A. Ebeling, both of Cary, N.C., assignors to IEP Group, Inc., Raleigh, N.C.

Continuation-in-part of Ser. No. 346,524, Nov. 29, 1994, Pat. No. 5,544,647. This application Nov. 22, 1995, Ser. No. 562,293

Int. Cl.[6] A62B *7/00*; A61M *11/00*

U.S. Cl. 128—200.23 **11 Claims**



1. A device for indicating the number of dispensations remaining in a container for holding and dispensing metered quantities of a fluid, which comprises;

a. a tubular housing, having

i. a first end;

ii. a second end;

iii. a tubular body joining the first and second ends; said tubular body together with the first and second ends defining a hollow chamber;

b. a flexible first closure, closing the first end;

c. a second closure closing the second end;

d. microelectronic means mounted in the chamber, for receiving a signal upon dispensations of a fluid from the container, calculating the number of dispensations remaining in the container and indicating the calculation upon determination of a pre-determined number of remaining dispensations;

e. means for signalling to the microelectronic means upon the occurrence of each dispensation, positioned proximal to the first end of the tubular housing; and

f. means on the tubular housing for mounting the device on a fluid container in a position where dispensation of a metered dose simultaneously activates the means for signalling.

5,622,164

AIR FLOW RECORDER, GENERATOR AND ANALYSIS SYSTEM FOR INHALATION DEVICE TESTING AND MODELING

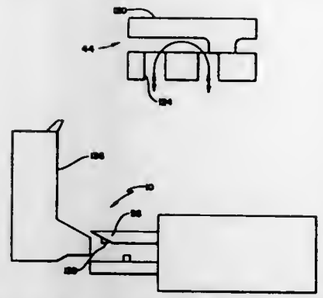
David Kilis, St. Paul, and Harold E. Stone, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 883,182, May 15, 1992, abandoned. This application Feb. 16, 1994, Ser. No. 197,365

Int. Cl.[6] G09B *23/28*; A61M *15/00*; A62B *7/00*; *9/00*

U.S. Cl. 128—200.24 **13 Claims**

1. An air flow device for use in recording, analyzing, replicating, and generating, breathing patterns, comprising:



a) piping structure for receipt and transfer of pressurized gas therethrough, the piping structure having a source connection for receiving a single constant pressure source of pressurized gas;

b) aspiration means connected to the piping structure for receiving pressurized gas from the source connection and for selectively creating an output pressurization comprising a positive pressure gas flow and a negative pressure gas flow at a proportional solenoid valve;

c) a balancing valve connected to the piping structure for controlling and calibrating the output pressurization of the aspiration means;

d) control means for controlling the aspiration means, the balancing valve, and a proportional solenoid valve; and

e) a proportional solenoid valve mechanically connected to the piping structure with pneumatic input and output connections and electronically connected to the control means with data input and output connections, the proportional solenoid valve providing patterned pneumatic flow between the aspiration means and a system model according to air flow commands received by the proportional solenoid valve from the control means.

5,622,165

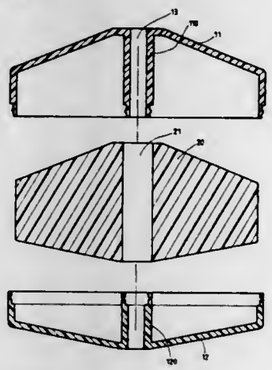
SNORKEL DIVING DEVICE

Chun-Ming Huang, P.O. Box 1032, Tainan, Taiwan

Filed Apr. 5, 1996, Ser. No. 628,775

Int. Cl.[6] B63C *11/16*

U.S. Cl. 128—201.11 **4 Claims**



1. A snorkel diving device comprising:

a floating disc having an upper casing, a lower casing coupling with said upper casing, and a waterproof inner disc disposed between said lower casing and said upper casing;

said inner disc having a center through hole;

said upper casing having an upper pipe protruding downward;

said lower casing having a lower pipe protruding upward;

said upper pipe and said lower pipe inserted in said center through hole to form a passage to receive a hard snorkel longitudinally;

an upper end of said hard snorkel above said disc and covered by a waterproof snorkel casing;

said waterproof snorkel casing which is generally in a cap shape having a plurality of gaskets therein;

a first nut passing through an upper end of a hose;

a lower end of said hard snorkel connecting said upper end of said hose;

said lower end of said hard snorkel having an external thread to engage with said first nut;

a three-way mouthpiece joint having a mouthpiece, an inhale orifice, an exhale orifice, and a branch pipe connecting said mouthpiece and said exhale orifice;

an inhale check valve disposed in said inhale orifice;

a valve pipe connecting said exhale orifice;

an exhale check valve disposed in said valve pipe;

a second nut passing through a lower end of said hose;

said inhale orifice connecting said lower end of said hose; and

said second nut engaging with an outer periphery of said inhale orifice.

5,622,166

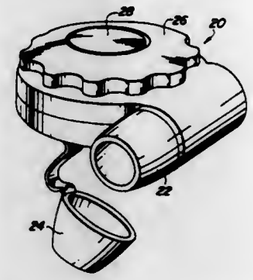
DRY POWDER INHALER DELIVERY SYSTEM

Robert F. Eisele, Laguna Niguel; Allan Cameron, Santa Monica; David Titzler, Newbury Park, and Leonard Porche, Simi Valley, all of Calif., assignors to Dura Pharmaceuticals, Inc., San Diego, Calif.

Filed Apr. 24, 1995, Ser. No. 428,960

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.12 **26 Claims**



1. A powder storage and delivery system for a dry powder inhaler, comprising:

a carrier;

a blister shell on the carrier;

a shear layer attached around the perimeter of the blister shell; and

a tab pivotably attached to the carrier and attached to the shear layer.

5,622,167

METHOD AND DEVICE FOR RELIEVING RESPIRATORY DISTRESS DURING PATIENT TRANSPORT

Mark L. Pinosky, 536 Overseer Retreat, Mount Pleasant, S.C. 29464

Filed May 10, 1996, Ser. No. 644,106

Int. Cl.[6] A61M *16/04*

U.S. Cl. 128—207.14 **13 Claims**

1. A means for relieving respiratory distress due to a blockage in an endotracheal tube using a hand held suction means, comprising the steps of:

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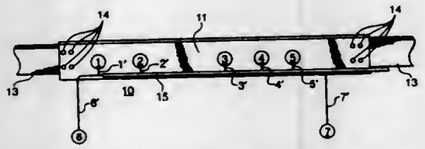
a. assembling a hand held suction device comprising a suction catheter and a suction means which is connected to said suction catheter, said suction means having suction generating means, wherein said suction generating means is held in a hand of a user and is manually operated and has no externally powered assistance;
b. inserting one end of said suction catheter into an endotracheal tube and into a patient;
c. creating a suction through said suction catheter by manually actuating said suction generating means; and
d. removing a blockage of said endotracheal tube.

5,622,168

CONDUCTIVE HYDROGELS AND PHYSIOLOGICAL ELECTRODES AND ELECTRODE ASSEMBLIES THEREFROM

Preston Keusch, New York, N.Y., and John L. Essmyer, 230 Columbus Ave., Hasbroucks Heights, N.J. 07604, assignors to John L. Essmyer, Hasbrouck Heights, N.J.

Continuation of Ser. No. 978,434, Nov. 18, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 400,273
Int. Cl.[6] A61B *5/04*; A61N *1/04*
U.S. Cl. 128—640 **57 Claims**



1. A highly conductive hydrophilic gel composition comprising (a) a uniform aqueous solution of a water-soluble polymer crosslinked by high-energy irradiation in the essential absence of a humectant and an amount of a water-soluble electrolyte effective to reduce the transverse electrical resistance of said aqueous solution to an impedance at 60 Hz less than about 1,000 ohm, and (b) a humectant added to the aqueous solution after the water-soluble polymer is crosslinked, in an amount within the concentration of about 2 to about 15 wt % which is effective to retard the drying of the conductive hydrophilic gel composition when it is exposed to the atmosphere while being used.

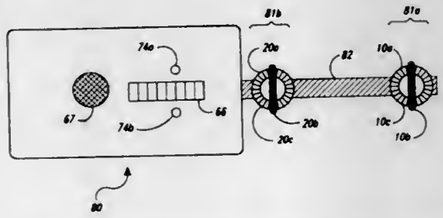
33. A physiological electrode adapted for providing electrical contact with a surface of a sentient creature and comprising:
a. means for interfacing with a surface of a sentient creature comprising a sheet of a conductive viscoelastic hydrophilic gel composition, wherein the hydrophilic gel composition is a homogeneous aqueous mixture, substantially free of unbound water, monomers and cross-linking agents, the hydrophilic gel composition comprising:
i. A uniform aqueous solution of a water-soluble polymer cross-linked by high energy irradiation in the essential absence of a humectant,
ii. a water-soluble electrolyte in an amount sufficient to reduce the transverse electrical impedance of said aqueous solution to an impedance at 60 Hz of less than about 1000 ohm,
iii. a humectant added to the hydrophilic gel composition after it is crosslinked, in an amount within a concentration of about 2 to about 15 wt %, which is sufficient to retard the drying of the conductive hydrophilic gel composition, to keep it soft and pliable when it is exposed to the atmosphere or being used, and
b. a conductive member including means for connecting the physiological electrode to an external electrical apparatus;
said means for interfacing with a surface of a sentient creature (a) connected electrically with the conductive member (b) and having a face adapted for interfacing electrically with the surface of the sentient creature to which it is affixed, which gel sheet is more cohesive than it is adhesive to the surface of the sentient creature and is mechanically connected more firmly to the conductive member (b) than it can be adhesively affixed to the surface of the sentient creature, thereby enabling concurrent removal of the conductive member (b) and the means for interfacing with a surface of a sentient creature (a) from the surface of the sentient creature after use without leaving a noticeable polymeric residue on the surface of the sentient creature.

5,622,169

APPARATUS AND METHOD FOR LOCATING A MEDICAL TUBE IN THE BODY OF A PATIENT

Robert N. Golden, Kirkland, and Fred E. Silverstein, Seattle, both of Wash., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 121,929, Sep. 14, 1993, Pat. No. 5,425,382. This application Sep. 14, 1994, Ser. No. 307,230
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—653.1 **25 Claims**



1. An apparatus for detecting the location of a magnet associated with a medical tube within the body of a patient, comprising:
means for sensing a first static magnetic field strength at a first distance from the magnet and providing a first sensor signal which is a function of the first static magnetic field strength;
means for sensing a second static magnetic field strength at a second distance from the magnet and providing a second sensor signal which is a function of the second static magnetic field strength, wherein the second distance is greater than the first distance;
means for receiving the first sensor signal and providing a first detection signal which is a function of the first sensor signal, wherein the means for receiving the first sensor signal and providing the first detection signal comprises a first amplifier for receiving the first sensor signal and providing a first amplified signal which is proportional to the first sensor signal, and a first integrator for receiving the first amplified signal and providing the first detection signal;
means for receiving the second sensor signal and providing a second detection signal which is a function of the second sensor signal, wherein the means for receiving the second sensor signal and providing the second detection signal comprises a second amplifier for receiving the second sensor signal and providing a second amplified signal which is proportional to the second sensor signal, and a second integrator for receiving the second amplified signal and providing the second detection signal;

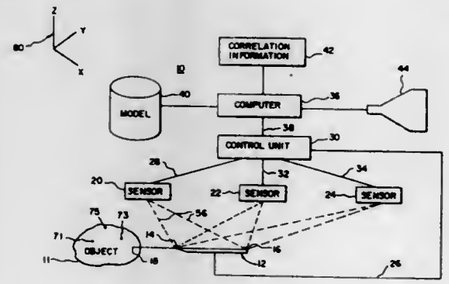
means for receiving the first and second detection signals and providing a differential signal which is a function of the difference between the first detection signal and the second detection signal; and
means for receiving and indicating a value for the differential signal.

5,622,170

APPARATUS FOR DETERMINING THE POSITION AND ORIENTATION OF AN INVASIVE PORTION OF A PROBE INSIDE A THREE-DIMENSIONAL BODY

Waldean A. Schulz, Boulder, Colo., assignor to Image Guided Technologies, Inc., Boulder, Colo.

Continuation of Ser. No. 52,042, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 909,097, Jul. 2, 1992, Pat. No. 5,383,454, which is a continuation-in-part of Ser. No. 600,753, Oct. 19, 1990, abandoned. This application Oct. 4, 1994, Ser. No. 317,805
Int. Cl.[6] A61B *17/00*
U.S. Cl. 128—653.1 **7 Claims**



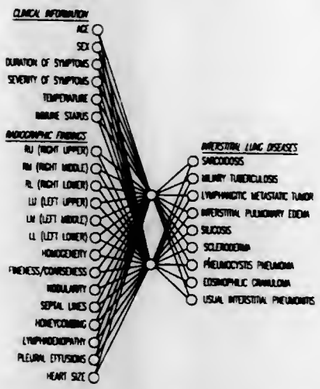
1. Apparatus for determining the position and orientation of an invasive portion of a probe inside a three-dimensional body, wherein the probe includes an external portion that remains outside the body, comprising:
means defining a coordinate system wherein the three dimensional body is adapted to be disposed within said coordination system;
means defining an electronically displayable model of said body;
a probe comprising a portion adapted to be external to said three dimensional body and an invasive portion adapted to be internal to said three dimensional body;
at least two probe light emitters mounted in spaced relationship on the external portion of the probe each for projecting a probe light ray;
at least three light sensors, in known locations within said defined coordinate system, remotely located from the probe for detecting at least two probe light rays;
means to cause probe light rays to pass between said probe light emitters and said at least three light sensors which are non-linear with respect to each other;
means to measure angles between said probe light beams to at least three of said light sensors; and
means coupled to said at least three light sensors for converting said angles to current locations of said probe light emitters and, from said locations, determining the position and orientation of the probe relative to said defined coordinate system and for deducing the position and orientation of the invasive portion of the probe by correlating the position and orientation of the probe relative to the defined coordinate system.

5,622,171

METHOD AND SYSTEM FOR DIFFERENTIAL DIAGNOSIS BASED ON CLINICAL AND RADIOLOGICAL INFORMATION USING ARTIFICIAL NEURAL NETWORKS

Naoki Asada, Kyoto, Japan, and Kunio Doi, Hinsdale, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 53,345, Apr. 28, 1993, Pat. No. 5,463,548, which is a continuation of Ser. No. 573,800, Aug. 28, 1990, abandoned. This application Apr. 14, 1995, Ser. No. 422,172
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—653.1 **26 Claims**



1. A method for differential diagnosis of a plurality of breast diseases, the method comprising the steps of:
selecting a plurality of clinical parameters defining characteristics of a subject;
selecting radiographic descriptors comprising predetermined features obtained from a radiographic breast image defining characteristics of breast diseases, said radiographic descriptors consisting essentially of each of the following twelve radiographic descriptors:
shape of density, size of density, margin of density, margin spiculation and pattern of density, presence of, number of, shape of, uniformity of, and distribution of microcalcifications, parenchymal distortion and skin thickening;
converting said plurality of clinical parameters and said radiographic descriptors into numerical expressions;
transforming each of said numerical expressions into a number in a predetermined range;
inputting said transformed numerical expressions into a neural network; and
diagnosing at least one of said plurality of breast diseases using said neural network in accordance with said input expressions.

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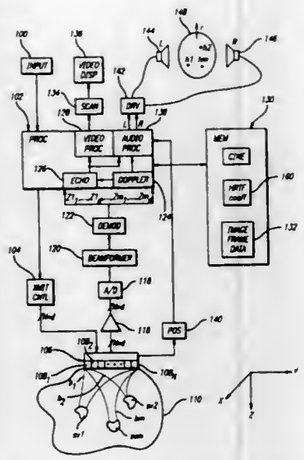
ACOUSTIC DISPLAY SYSTEM AND METHOD FOR ULTRASONIC IMAGING

Ming Li, Seattle, and Jin Kim, Issaquah, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 29, 1995, Ser. No. 536,509
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.1 **5 Claims**

2. An ultrasonic imaging system, comprising:
transducer means for scanning an interrogation region of a patient's body at a plurality of scanned sample volumes;
a beamformer forming a beam of returned signals from each respective scanned sample volume for each of a predetermined number of independent velocity directions;
a three-dimensional acoustic display system that includes:

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channel separation means for converting each beam into a plurality of channel signals;

filter selection means for selecting, for each channel signal, one of a plurality of predetermined head-related transfer function (HRTF) parameter sets according to a predetermined function of the position in the interrogation region of the corresponding scanned sample volume and of the respective independent velocity direction, each HRTF corresponding to left-ear and right-ear response functions to a calibration sound generated at a calibration point in a calibration space, which calibration point corresponds to a predetermined position in the interrogation region;

HRTF filter means for filtering each channel signal as a predetermined function of the corresponding HRTF parameter set;

signal combination means for combining the HRTF filtered channel signals into left and right audio output signals; and

speaker means including first and second speakers for applying the left and right audio output signals to the left and right ears of a user and for generating combined audio display signals, the user thereby hearing the combined audio display signals with non-colinear apparent points of origin.

5,622,173

COLOR FLOW DISPLAY WITH COMPENSATION FOR FLOW DIRECTION

Janice Bisson, Methuen, Mass., and Lois Scheffler, Derry, N.H., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1995, Ser. No. 576,653

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.01 **6 Claims**

1. An ultrasound imaging system, comprising:

display means for displaying an ultrasound image;

transducer means for transmitting an ultrasound beam which is steerable between positive and negative transmission angles, about an intermediate azimuth extending orthogonally from an emitting face of said transducer means;

user input means for providing steering signals to cause said transducer means to alter a direction angle of transmission of said ultrasound beam; processor means for controlling said display means to display an image of fluid flowing in a direction towards said transducer means with a first attribute and an image of fluid flowing in a direction away from said transducer means with a second attribute, said processor means responsive to a steering signal which causes said ultrasound beam to be moved from one side of said intermediate azimuth to another side of said intermediate azimuth, to automatically display said image of fluid flowing in a direction towards said transducer means with said second attribute and said image of fluid flowing in a direction away from said transducer means with said first attribute.

5,622,174

ULTRASONIC DIAGNOSIS APPARATUS AND IMAGE DISPLAYING SYSTEM

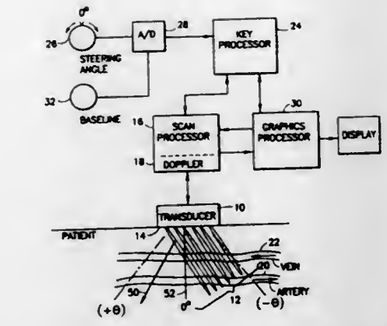
Nobuo Yamazaki, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

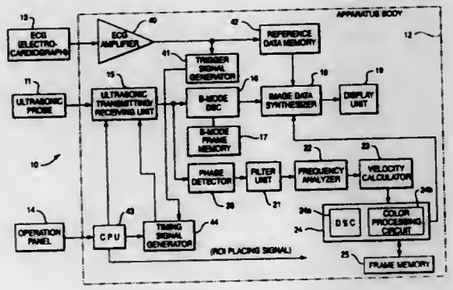
Filed Oct. 4, 1993, Ser. No. 130,834

Claims priority, application Japan, Oct. 2, 1992, 4-265052; Mar. 31, 1993, 5-074448; Apr. 1, 1993, 5-075965; Apr. 7, 1993, 5-080931

Int. Cl.[6] A61B *8/12*

U.S. Cl. 128—661.09 **60 Claims**





1. An ultrasonic diagnosis apparatus in which a tissue of an object being examined is imaged by means of ultrasonic beams, the object including the organ being in motion, the apparatus comprising:

means for ultrasonically scanning a cross section of the object by the ultrasonic beams to obtain ultrasonic echo signals reflected from the cross section, the cross section including at least a portion of the tissue;

means for obtaining Doppler shift frequencies from the ultrasonic echo signals;

means for calculating two-dimensionally mapped absolute velocities of movement of the tissue in the cross section on the basis of the Doppler shift frequencies, each of the absolute velocities having a vector quantity and representing a value in a moving direction of the organ at sampling points in the cross section, the absolute velocity calculating means comprising a means for substantially extracting echo signals of the tissue from the ultrasonic echo signals obtained by the scanning means; and

means for color-displaying data of the two-dimensionally mapped movement velocities.

5,622,175

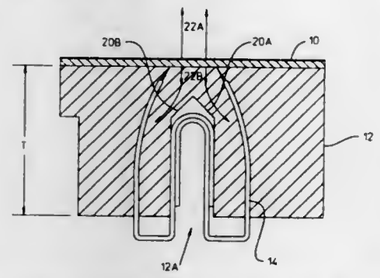
MINIATURIZATION OF A ROTATABLE SENSOR

Wojtek Sudol, Burlington, and Francis E. Gurrie, Ipswich, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 29, 1995, Ser. No. 536,034

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—662.03 **4 Claims**



1. A miniature rotatable sensor for transesophogeal imaging comprising:

a sensor having an acoustic face;

a layer of attenuating material, having a diameter, contacting the acoustic face;

a flexible circuit contacting the acoustic face and the layer of attenuating material, wherein the flexible circuit has edges that extend beyond the layer of attenuating material; and

the layer of attenuating material including a radial slot positioned along the diameter, the edges of the flexible circuit being positioned within the radial slot.

5,622,176

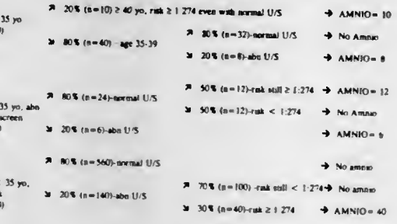
METHOD FOR DETERMINING THE RISK OF TRISOMY 21 IN THE SECOND TRIMESTER

Anthony M. Vintzileos, Bridgewater, N.J., and James F.X. Egan, Longmeadow, Mass., assignors to University Of Medicine & Dentistry of NJ, Newark, N.J.

Filed Jul. 26, 1995, Ser. No. 507,624

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—662.05 **9 Claims**



1. A method for the prenatal detection of trisomy 21 in the second trimester by fetal long bone biometry which comprises the steps of:

(a) measuring ultrasonically the biparietal diameter and the length of the femur, humerus, tibia, and fibula bones in fetuses of a patient population in the second trimester;

(b) performing amniocentesis on the patient population in step (a) to determine which fetuses are normal and which fetuses have trisomy 21;

(c) from the normal fetuses, deriving equations describing the predicted lengths of the femur, humerus, tibia, and fibula based on the biparietal diameter measurements;

(d) calculating a ratio of observed lengths to predicted lengths of the femur, humerus, tibia, and fibula for all fetuses;

(e) comparing the ratios calculated in step (d) for normal fetuses against the ratios calculated for fetuses having trisomy 21 and determining a threshold, as a percentile of these ratios, for abnormally short bone lengths in the fetuses having trisomy 21; and

(f) employing the threshold determined in step (e) to detect prenatally trisomy 21 by fetal long bone biometry.

5,622,177

ULTRASOUND IMAGING SYSTEM HAVING A REDUCED NUMBER OF LINES BETWEEN THE BASE UNIT AND THE PROBE

Fritz Breimesser, Nürnberg; Bernd Granz, Oberasbach; Ralph Oppelt, Uttenreuth, and Horst Siebold, Effeltrich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

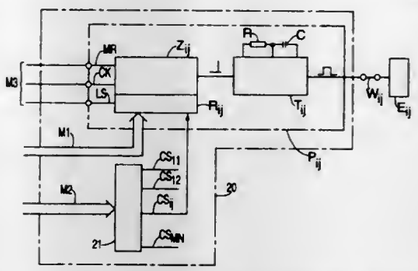
PCT No. PCT/DE94/00777, § 371 Date Dec. 26, 1995, § 102(e) Date Dec. 26, 1995, PCT Pub. No. WO95/02197, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 6, 1994, Ser. No. 569,189

Claims priority, application Germany, Jul. 8, 1993, 43 22 836.4

Int. Cl.[6] A61B *8/14*

U.S. Cl. 128—662.06 **13 Claims**



13. An ultrasound imaging system for transmitting, in a transmit mode, an ultrasonic beam at an object of which an image is to be formed, and for receiving, in a receive mode, the ultrasound reflected by the object, in an ultrasound imaging system, an imaging signal generating circuit comprising:

an array of transducers capable of transmitting the ultrasonic beam and receiving the ultrasound reflected by the object;

a control device electrically connected via separating filters, in the transmit mode, to each transducer in the array of transducers; the control device having a transmit pulser for each transducer and having an address decoder which is connected to each of the transmit pulsers, the address decoder and the transmit pulsers being electrically interconnected via a plurality of selector lines;

a multiplexer electrically connected via separating filters, in the receive mode, to each transducer in the array of transducers, wherein the multiplexer receives transducer signals representing the reflected ultrasound from the object;

a base unit having a demultiplexer, wherein the base unit provides phase-delayed driving of the transducers during the transmit mode and provides signal processing of the transducer signals received from the transducers during the receive mode;

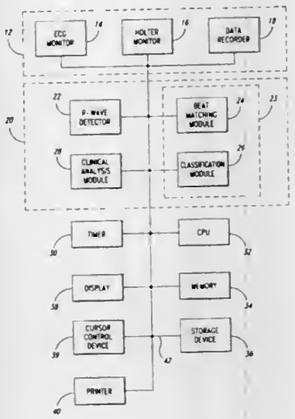
a plurality of starting-time lines electrically connecting the base unit to the transmit pulsers, wherein the starting-time lines transmit starting times for transmit pulses;

a plurality of signal lines electrically connecting the multiplexer and the demultiplexer, wherein the signal lines carry a group of transmitted multiplexed signals from the transducers; and

at least one address line electrically connecting the address decoder to the base unit.

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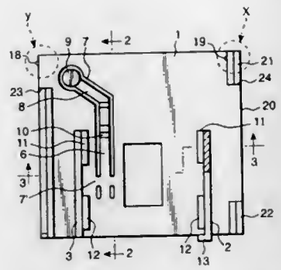
5,622,178
SYSTEM AND METHOD FOR DYNAMICALLY DISPLAYING CARDIAC INTERVAL DATA USING SCATTER-PLOTS
Jeffrey J. Gilham, Seattle, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.
Filed May 4, 1994, Ser. No. 237,669
Int. Cl.[6] A61B *5/0402;5/044;5/0452;5/0456*
U.S. Cl. 128—696 **77 Claims**



1. A system for the display of cardiac data, the system comprising:
an interval monitor to calculate first and second cardiac intervals from electrocardiograph data, said first interval corresponding to a period of time between first and second heartbeats, said second interval corresponding to a period of time between said second heartbeat and a third heartbeat;
a source analyzer to receive said eletrocardiograph data and determine therefrom a beat source for each of said heartbeats; and
a display having first and second axes each labeled with a plurality of indicators corresponding to time intervals for displaying said first and second intervals as a coordinate pair only if said source analyzer determines that said beat sources for said first, second, and third heartbeats match a set of selected heartbeat sources for said first, second, and third heartbeats, said first interval being displayed as a first coordinate in said coordinate pair using said plurality of indicators along said first axis, and said second interval being displayed as a second coordinate in said coordinate pair using said plurality of indicators along said second axis.

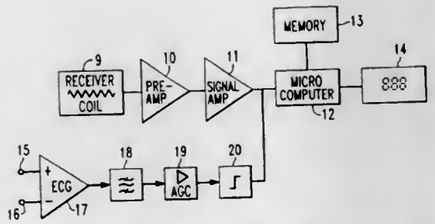
5,622,179
HOLDING PLATE FOR MEDICAL EQUIPMENT
Peter Pfandal, Harr, and Bernd Thurau, Hoslwang, both of Germany, assignors to PVB Medizintechnik GmbH, Kirchbeseeon/Eglharting, Germany
Filed May 25, 1994, Ser. No. 249,030
Claims priority, application Germany, May 28, 1993, 43 17 985.1
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—897 **29 Claims**

1. A holding plate for securing medical equipment thereto, wherein said medical equipment is attached to a fixing device that is adapted to be attached to the holding plate, said holding plate comprising:
a base having a main surface;



two parallel guide tracks located on said base, each of said guide tracks defining a guide track groove adapted to receive said fixing device responsive to said fixing device being inserted into said grooves;
a stop associated with said guide tracks adapted to engage one end of said fixing device responsive to said fixing device being inserted into said guide tracks; and
a spring attached to said base and having a catch stud located on a main surface of said spring, said catch stud adapted to engage another end of said fixing device responsive to said fixing device being inserted into said guide tracks, said catch stud and said stop being separated from one another by a distance corresponding to a length of said fixing device, wherein said spring is integral with said base and is positioned relative to said base such that, in a non-deflected state, said main surface of said spring is flush with said main surface of said base.

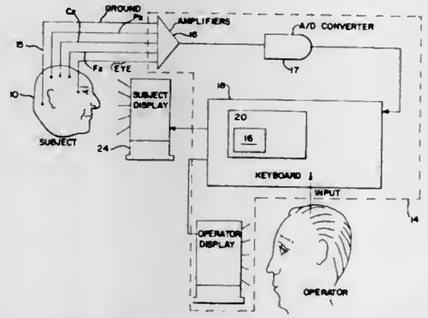
5,622,180
DEVICE FOR MEASURING HEARTBEAT RATE
Tapio Tammi, and Arto Pietilä, both of Oulu, Finland, assignors to Polar Electro Oy, Kempele, Finland
Filed Dec. 8, 1992, Ser. No. 986,684
Claims priority, application Finland, Dec. 9, 1991, 915776
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—706 **8 Claims**



1. A system for measuring a heartbeat rate of an individual, comprising a device having a casing for strapping to a wrist of the individual;
receiving means contained in the casing of the device for receiving heartbeat rate signals telemetrically transmitted from an area remote from the wrist of the individual to whose wrist the device is strapped;
first processing means contained in the casing of the device for processing the received telemetrically transmitted heartbeat rate signals;
sensor means mounted to the casing of the device for detecting heartbeat rate signal emanating from the individual to whose wrist the casing of the device is strapped when the sensor means engages the individual;
second signal processing means contained in the casing of the device for processing heartbeat rate signals sensed by the sensor means, the second signal processing means of the

device including a series connected filter, gain control circuit, and a pulse shaper, coupled to a third signal processing means;
the third signal processing means, contained in the casing of the device for receiving and processing the processed heartbeat rate signals from either one of the receiving means and the sensor means; and
display means contained in the casing of the device and having an input electrically connected to the third signal processing means for displaying either the third processed telemetrically received heartbeat rate signals or the sensed heartbeat rate signals.

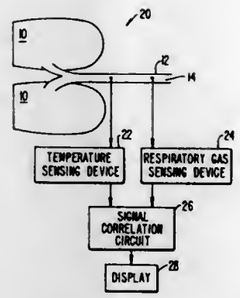
5,622,181
METHOD AND SYSTEM FOR DETECTION OF MEMORY DEFICIENCY MALINGERING UTILIZING BRAIN WAVES
J. Peter Rosenfeld, 975 Vernon Ave., Winnetka, Ill. 60093
Filed Nov. 15, 1994, Ser. No. 340,119
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—731 **26 Claims**



1. A method for memory malingering detection in a subject comprising:
presenting a series of trials to the subject wherein each trial includes display of a sample stimulus, followed by display of a test stimulus, wherein in some of the trials the test stimulus matches the sample stimulus and in others of the trials the test stimulus does not match the sample stimulus;
measuring brain waves of the subject at least during the display of some of the test stimuli to the subject;
receiving an indication from the subject with respect to at least some of the test stimuli whether the test stimulus matches or does not match the sample stimulus and;
detecting likelihood of memory malingering by the subject based upon the indication from the subject and the measured brain waves of the subject.

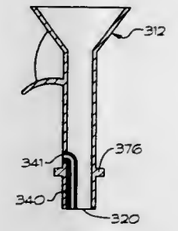
5,622,182
SYSTEM FOR MEASURING CORE BODY TEMPERATURE IN VIVO
Richard A. Jaffe, 786 Wildwood La., Palo Alto, Calif. 94303
Filed Jun. 27, 1994, Ser. No. 266,252
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—736 **17 Claims**

1. A system for enabling the measurement of core body temperature of a subject in vivo, comprising:
a temperature sensing device for sensing a temperature-related parameter of the subject and generating a first signal representative of said temperature-related parameter;
a respiratory gas sensing device for sensing a respiration-related parameter of the subject and generating a second signal representative of said respiration-related parameter; and



a signal correlation device connected to said temperature and said respiratory gas sensing devices for determining from said second signal an optimal time interval for measurement of a core body temperature of the subject and obtaining from said first signal a value for said core body temperature during said optimal time interval, wherein said temperature sensing device is a temperature-sensitive dye.

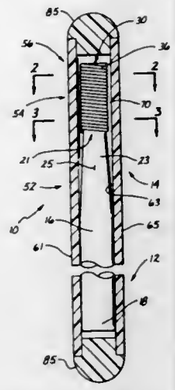
5,622,183
URINE SPECIMEN AND OTHER BODY FLUIDS COLLECTION DEVICE
James T. Hazard, 347 Kenwood Way, Louisville, Ky. 40215, and R. Vincent Kidd, III, 2101 Robin Ave., Hammond, La. 70401
Continuation-in-part of Ser. No. 149,549, Nov. 9, 1993, abandoned. This application Oct. 21, 1994, Ser. No. 327,112
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—761 **6 Claims**



1. A device for collecting urine samples comprising:
an elongated flexible tubular conduit having a funnel-shaped first opening at one end and a second opening at the opposite end, said conduit having air vent means therein, said conduit having holding means adjacent to said funnel-shaped first opening, said holding means being positioned to hold said funnel-shaped first opening in contacting relationship with a urethra when in a use position;
a sample collector having an opening therein;
a closure member disposed within said opening of said sample collector, said closure member having means to receive said opposite end of said tubular conduit therethrough, said means to receive said opposite end of said tubular conduit including sealing means when not in receipt of said opposite end therein; and,
said closure member comprising a detachable stopper and a body with an opening extending longitudinally therethrough, said body receiving said stopper in said opening.

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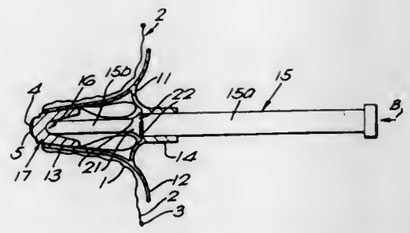
5,622,184
GUIDEWIRE AND METHOD OF MANUFACTURE
Mark P. Ashby, Laguna Niguel; Edward L. Olson, Lake Forest, and Carl B. Hadley, Torrance, all of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.
Filed Nov. 29, 1994, Ser. No. 346,789
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—772 16 Claims



1. A surgical guidewire having an axis extending between a proximal section and a distal section, comprising:
a core having a first end disposed in the proximal section of the guidewire and a second end disposed in the distal section of the guidewire;
a longitudinal spring disposed in the distal section circumferentially of the second end of the core;
a semirigid sheath having a tubular configuration and extending between a first end and a second end, the first end of the sheath being disposed circumferentially of the spring in the distal section; and
means for coupling the second end of the sheath to the core in a fixed relationship, while permitting portions of the first end of the sheath to be radially spaced from the spring to enhance the flexibility of the distal section of the guidewire;
said portions of the first end of the sheath being axially movable relative to the spring.

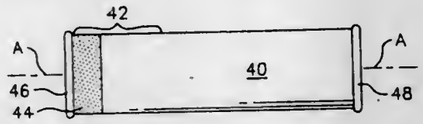
5,622,185
BARRIER DEVICE
Margaret P. Richardson, and Philip Richardson, both of Carmarthen, United Kingdom, assignors to Chartex International plc, United Kingdom
Continuation of Ser. No. 25,388, Mar. 2, 1993, abandoned, which is a continuation of Ser. No. 640,371, Feb. 28, 1991, Pat. No. 5,193,555. This application Jan. 23, 1995, Ser. No. 376,460
Claims priority, application United Kingdom, Jun. 29, 1988, 8815457; Jun. 29, 1988, 8815460; Nov. 21, 1988, 8827080
Int. Cl.[6] A61F 6/06
U.S. Cl. 128—842 7 Claims

1. A barrier device comprising:
a continuous, liquid-impermeable, flexible pouch having an open end, a closed end, and a diameter, said diameter being sufficiently large to permit movement of a penis within said pouch, said pouch forms a liquid barrier membrane having a penis-contacting surface and a vagina-contacting surface; and
a soft resilient insert for insertion in said pouch between the tip of said penis and said closed end, said insert includes:
a generally central portion-forming spacing member between said tip of said penis and said closed end and radially spaced from said central portion;



means for biasing said pouch in a vicinity of said closed end into contact with the walls of the vagina; and
a central depression in said soft resilient insert, said central depression receives said tip of said penis, wherein said soft resilient insert includes a central body portion and a plurality of radially outwardly projectiong spurs.

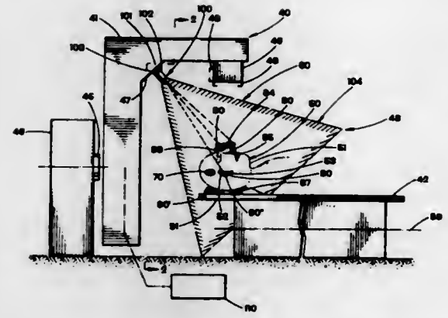
5,622,186
MALE ERECTION FACILITATION SHEATHS AND METHODS OF USE THEREOF
Alan N. Schwartz, 19211 - 93rd Place West, Edmonds, Wash. 98020
Continuation-in-part of Ser. No. 912,683, Jul. 13, 1992, Pat. No. 5,513,652. This application Mar. 4, 1996, Ser. No. 609,947
Int. Cl.[6] A61F 6/02
U.S. Cl. 128—842 23 Claims



10. A device for assisting in establishing and maintaining male erectile function comprising:
an elastic sheath open at both ends and adapted to fit onto a flaccid or partially flaccid penis; and
said sheath having a portion of different elasticity than the elasticity of other portions thereof, the length and arrangement of said sheath portion of different elasticity being based on the diameter of the penis to realize in the penis when erectile a selective constriction around and/or along selected portions thereof so as to not impede arterial blood flow to the penis but to impede venous blood flow from the penis and thereby maintain the penis in an erectile condition.

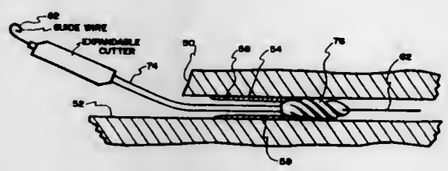
5,622,187
METHOD AND APPARATUS FOR PATIENT POSITIONING FOR RADIATION THERAPY
Mark P. Carol, Sewickley, Pa., assignor to Nomos Corporation, Sewickley, Pa.
Filed Sep. 30, 1994, Ser. No. 315,929
Int. Cl.[6] A61B 17/00
U.S. Cl. 128—897 25 Claims

1. Apparatus for treating a patient with radiation therapy treatment of a lesion within the patient's body comprising:
a linear accelerator, including a rotatable gantry, a treatment table, and a means for focusing a beam of radiation;
a means for immobilizing a portion of the patient with respect to the treatment table associated with the treatment table; and
a means for positioning the patient upon the treatment table, including:
a plurality of light emitting diodes, including means for mounting the plurality of light emitting diodes with respect to the patient;



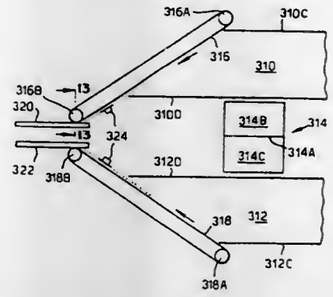
at least one camera for viewing the plurality of light emitting diodes; and
means for mounting the at least one camera to the gantry of the linear acceleration, whereby as the gantry rotates, the at least one camera rotates with the gantry and views the plurality of light emitting diodes from at least two different angular positions of the gantry with respect to the treatment table.

5,622,188
METHOD OF RESTORING REDUCED OR ABSENT BLOOD FLOW CAPACITY IN AN ARTERY
Mark Plaia, Tigard; Vincent A. Reger, Portland, and Gregory N. Nordgren, Wilsonville, all of Oreg., assignors to Endovascular Instruments, Inc., Vancouver, Wash.
Division of Ser. No. 73,002, Jun. 7, 1993, Pat. No. 5,571,169, which is a continuation-in-part of Ser. No. 56,224, May 4, 1993, abandoned, which is a continuation of Ser. No. 922,115, Jul. 28, 1992, Pat. No. 5,282,484, which is a continuation of Ser. No. 616,240, Nov. 20, 1990, abandoned, which is a division of Ser. No. 395,500, Aug. 18, 1989, abandoned. This application Mar. 13, 1995, Ser. No. 402,795
Int. Cl.[6] A61B 19/00
U.S. Cl. 128—898 5 Claims



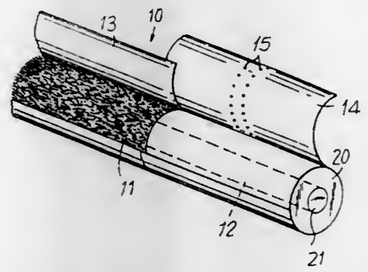
1. A method of restoring reduced or absent blood flow capacity to an artery in a patient, comprising the steps of:
accessing to the artery through a small man-made passageway;
initially loosening plaque from the artery by engaging the plaque with a dynamic disrupter;
removing plaque from within a segment of an artery at which the loosening step took place through the small man-made passageway;
placing a vascular graft into the artery through the small man-made passageway;
placing the graft at a location within and as an internal lining for the artery co-extensive at least in part with the segment, using another instrument;
causing the vascular graft to be contiguously adhered within said artery at said, location.

5,622,189
CIGARETTE MAKING MACHINE
John Dawson; Derek H. Dyett, and Tadeusz Truszkowski, all of Bucks, England, assignors to Molins PLC, High Wycombe, England
Continuation-in-part of Ser. No. 338,144, Nov. 9, 1994, Pat. No. 5,494,053. This application Jun. 6, 1995, Ser. No. 467,609
Claims priority, application United Kingdom, Nov. 10, 1993, 9323145; Dec. 22, 1994, 9425979
Int. Cl.[6] A24C 5/18
U.S. Cl. 131—84.1 20 Claims



1. A twin track cigarette making machine comprising two substantially horizontal shower channels through which tobacco is arranged to be showered onto two suction bands moving in converging directions in a substantially horizontal plane and presenting substantially vertical tobacco-receiving surfaces so as to form a cigarette filler stream on each of the suction bands, and including means for enclosing each of the filler streams in a continuous wrapper web to form two parallel cigarette rods.

5,622,190
CONCENTRIC SMOKING FILTER HAVING CELLULOSE ACETATE TOW PERIPHERY AND CARBON-PARTICLE-LOADED WEB FILTER CORE
Cynthia W. Arterbery, Midlothian; W. Timothy Callaham; Gus D. Keritsis, both of Richmond; Donald E. Laslie, Midlothian; Kenneth A. Newman, Prince George; Roger S. Slagle, and Morris F. White, Jr., both of Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 5,650, Jan. 19, 1993, Pat. No. 5,365,951, which is a continuation-in-part of Ser. No. 796,631, Nov. 22, 1991, which is a continuation-in-part of Ser. No. 571,878, Aug. 24, 1990, abandoned. This application Nov. 15, 1994, Ser. No. 339,530
Int. Cl.[6] A24D 3/02
U.S. Cl. 131—339 56 Claims



1. A smoking filter comprising:
a first filter plug having:
a central core of a web-like material, and

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a peripheral layer of a fibrous tow filter material surrounding said central core; wherein:

each of said central core and said peripheral layer has a resistance-to-draw, said central core having a resistance-to-draw of between about 200 mm W.G. and about 500 mm W.G. and said filter having a resistance-to-draw of between about 100 mm W.G. and about 230 mm W.G., said peripheral layer having a lower resistance-to-draw than said central core, to initially direct, when said filter is attached to a smoking article and said smoking article is smoked, a greater fraction of smoke through said peripheral layer than through said central core; said first filter plug further having: carbon distributed throughout said central core, said carbon having:

a moisture content between about 3% and about 20.5% of dry weight of the carbon, and

butane activity between about 19% and about 27%;

means for admitting ventilation air through said peripheral layer toward said central core, whereby smoke initially directed through said peripheral layer flows into said central core; whereby:

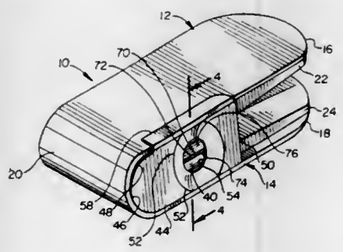
when said filter is attached to a smoking article and said smoking article is smoked, said filtered smoking article delivers smoke containing a particular level of total particulate matter, and the taste of said smoking article is a taste associated with smoke having a level of total particulate matter higher than said particular level.

5,622,191

NAIL CLIPPER

Thomas J. McMullen, Jr., Eden Prairie, and James Reichow, Minneapolis, both of Minn., assignors to Nail Nabber, Inc., Edina, Minn.

Filed Nov. 15, 1995, Ser. No. 559,793
Int. Cl.[6] A45D *29/18;* **B26B** *17/00*
U.S. Cl. 132—75.5 **26 Claims**



1. An improved nail clipper for trimming a nail disposed on a digit of a person, comprising a U-shaped body having a first and a second end, including first and second, spaced-apart longitudinal handles interconnected by a central arc portion between said handles proximate said first end, said handles being resiliently biased by said central arc portion into a partially extending, normal resting position whereby said central arc portion serves as a hinge means; and first and second blades, said blades being disposed in a facing relationship, the improvement comprising:

the first blade fixedly coupled to the first handle and having a cutting slot defined in the structure thereof; and

the second blade being operably pivotally coupled to the first handle, having actuation means for imparting pivotal motion thereto being operably coupled to the second handle, the first blade cutting slot and the second blade forming a shearing relationship therebetween,

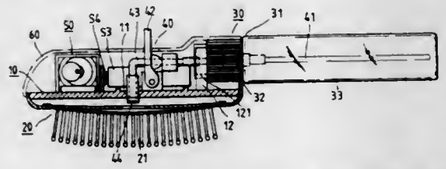
whereby a portion of the structure of the first blade presents a safety barrier acting to prevent the presentation of the flesh of the digit to the shearing effects of the first blade with respect to the second blade.

5,622,192

COMB HAVING SPRAYING AND MASSAGING DEVICES

Shih-Kuen Chlou, No. 584, Sec. 2, Chung-San Rd., Hwu-Llan Village, Yeong-Jing Shiang, Changhua Shiann, Taiwan

Filed Dec. 5, 1995, Ser. No. 567,703
Int. Cl.[6] A45D *24/22*
U.S. Cl. 132—112 **2 Claims**



1. A comb having spraying and massaging devices, which comprises:

a head portion provided with a through hole and a locating block having a receiving hole;

a combing portion fastened to an underside of said head portion and provided with a plurality of combing teeth and a hole corresponding in location to said through hole of said head portion;

a spraying device disposed in said head portion and composed of a handle having a socket and an elongated container for keeping therein hair spray, with said socket being secured in said receiving hole of said locating block of said head portion;

a pumping member comprising a pumping tube extending into said container of said spraying device, a dispensing bar opposite in location to a front end of said pumping tube, said front end of said pumping tube provided with a guide tube fastened thereto for transporting said hair spray contained in said container to a spray nozzle located in alignment with said through hole of said head portion and said hole of said combing portion;

a massaging device disposed in said head portion and composed of a motor having a shaft, an eccentric cam mounted on said shaft of said motor, and two batteries in communication with said motor by a power conducting means; and

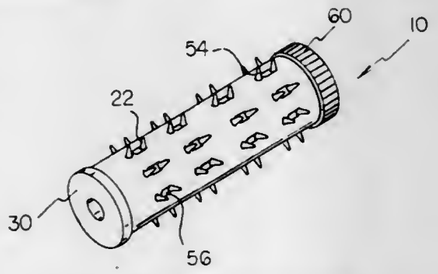
a housing fastened to an upper side of said head portion and provided with a power switch controlling the supply of power of said two batteries to said motor.

5,622,193

SELF HOLDING HAIR CURLER APPARATUS

Randall J. Pekarik, 201 Oakwood Dr., Geneva, Ill. 60132

Filed Nov. 29, 1995, Ser. No. 564,485
Int. Cl.[6] A45D *2/14*
U.S. Cl. 132—254 **7 Claims**



2. A self holding hair curler apparatus comprising:

a first structure having an interior threaded portion at a first end and an exterior surface area with a plurality of flexible spike-like projections;

a second structure having a interior tube therein with an end cap at one end being integral thereto, the second structure further having an exterior tube with an inner surface and a chamber being formed between the inner surface and the interior tube, the second structure having a plurality of rigid spike-like projections with adjacent slots along an outer surface thereof; and

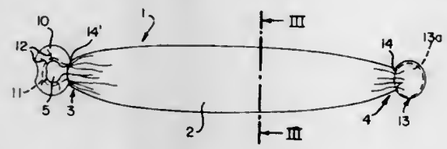
the second structure being capable of receiving therein the first structure within the chamber thereof, while the flexible spike-like projections extend through the slots for movement to pinch strands of hair positioned about the second structure.

5,622,194

HAIRBAND

Marie-Thérèse Ledda-Vengerder, Allonnes, France, assignor to Pippa Promotions B.V., Woudenberg, Netherlands

Filed Aug. 30, 1994, Ser. No. 298,143
Claims priority, application Germany, Mar. 4, 1994, 9403661 U; WIPO, Mar. 7, 1994, DM/028 958
Int. Cl.[6] A42C *5/02;* **A45D** *8/36*
U.S. Cl. 132—273 **11 Claims**



1. A hairband, comprising:

an elastic band having a first end and a second end, wherein said first end is attached to an elastic loop independent of said band;

said second end includes an engaging member having a wide portion and a narrow portion; and

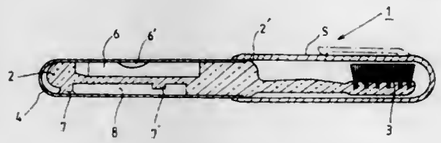
said elastic loop in a relaxed state has an opening with a diameter smaller than said wide portion of said engaging member.

5,622,195

TRAVELLING TOOTHBRUSH COMBINED WITH RAZOR

Jong C. Lee, 251-22, Bukahyun-dong, Seodaemun-ku, Seoul, Rep. of Korea

Filed Aug. 6, 1996, Ser. No. 692,976
Claims priority, application Rep. of Korea, Aug. 23, 1995, 1995-21940
Int. Cl.[6] A45D *27/24;* **A46B** *15/00*
U.S. Cl. 132—289 **3 Claims**



1. A travelling toothbrush combined with a razor head, comprising:

a. a handle and brush parts;

b. a first longitudinal recess formed on one side of said handle of the toothbrush and adapted for receiving a toothpaste tube therein;

c. a second longitudinal recess formed on the other side of said handle and adapted for receiving a disposable razor head therein, said second recess having means for holding said razor head inside the second recess;

d. a razor head mounting protrusion provided on a rear portion of the other side of said handle and adapted for mounting said razor head to said handle when using the toothbrush as a razor;

e. a handle case detachably fitted over said handle to cover the handle;

f. a cap detachably fitted over said brush part to protect the brush part, said cap being provided with a clip and forming a configuration of a fountain pen in cooperation with said handle case; and

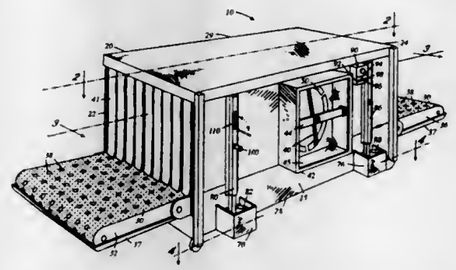
g. a razor head detachably mounted on said razor head mounting protrusion and within said second longitudinal recess, said razor head including a dovetail groove engageable with said razor head mounting protrusion.

5,622,196

APPARATUS FOR WASHING OBJECTS

Arthur J. Luongo, 212 White Rock Dr., Chapin, S.C. 29036

Filed Jan. 16, 1996, Ser. No. 587,373
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—72 **15 Claims**



14. Apparatus for washing objects, said apparatus comprising:

a frame;

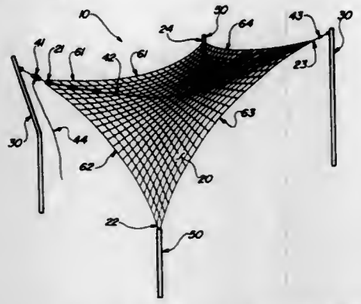
a housing carried by said frame, said housing having an entrance and an opposing exit, opposing sides, an interior and an exterior, and a circular cutout portion;

means carried by said frame for conveying said objects through said interior of said housing from said entrance to said exit, said conveying means having a rotatable entrance section extending beyond said entrance to said housing and a rotatable exit section extending beyond said exit to said housing, said entrance section and said exit section being substantially horizontal when in said operating position, said entrance section and said exit section being substantially vertical when in said storage position; and

at least one rotating sprayer carried a fixed distance from said exterior of said housing, said sprayer arm having a first end and an opposing second end, said first end having a first nozzle attached thereto, said first nozzle attached to said first end at a first angle, said second end having a second nozzle attached thereto, said second nozzle attached to said second end at a second angle, said first angle being offset with respect to said second angle so that said sprayer arm rotates as it sprays said fluid, said sprayer arm washing said objects by spraying fluid through said circular cutout portion in said housing as said objects are conveyed by said conveying means past said cutout portion, said at least one rotating sprayer arm expelling fluid into said interior of said housing at a pressure up to approximately 3000 psi.

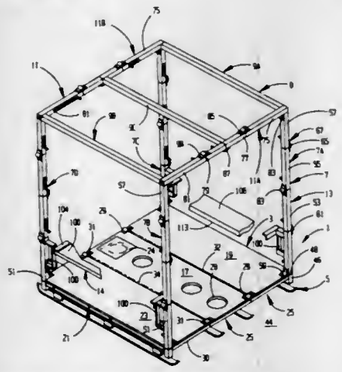
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5,622,197
CANOPY
Trevor Valaire, 25 Darling Street, Balmian, New South Wales, Australia
Filed Mar. 9, 1995, Ser. No. 411,962
Claims priority, application Australia, Mar. 9, 1994, PM4345
Int. Cl.[6] B63H *9/00;* **E04H** *15/32*
U.S. Cl. 135—90 **32 Claims**



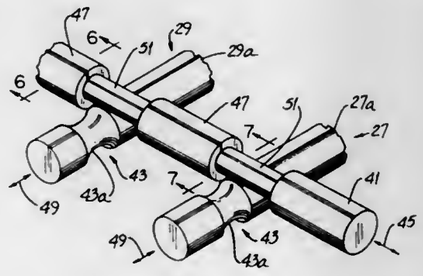
1. A canopy assembly comprising a canopy fabric having side portions bounded by a fabric edge, at least one pair of suspension points being provided at said fabric edge at opposed side portions of said fabric, at least one pair of supports, each support being connected to one of said suspension points and adapted to suspend said canopy fabric above the ground, furling means extending across said canopy fabric between said supports wherein said fabric is adapted to be simultaneously unfurled in opposed directions from said furling means such that in an erected condition said fabric extends from opposite sides of said furling means and a plurality of anchor points at said fabric edge and spaced from said suspension points, for tethering said fabric to the ground when said fabric is at least in part unfurled from said furling means.

5,622,198
PORTABLE COLLAPSIBLE SHELTER
Raymond A. Elsinger, 4987 Highway WS., P.O. Box 51, Woodland, Wis. 53099
Filed Jan. 5, 1996, Ser. No. 583,423
Int. Cl.[6] E04B *1/343*
U.S. Cl. 135—128 **18 Claims**



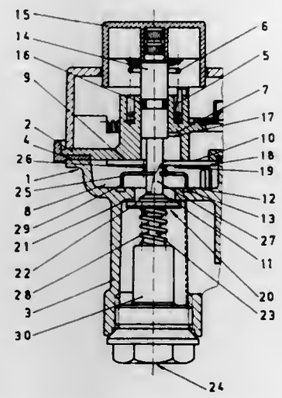
1. A portable collapsible shelter comprising:
a. a floor selectively foldable between erected and collapsed modes, wherein the floor comprises a horizontal middle section having opposite sides, and two side sections each rotatably joined along opposite sides of the middle section, the side sections being rotatable to selectively place the floor in the erected mode whereat the side sections are coplanar with the middle section and the collapsed mode whereat the side sections are vertically upright;
b. at least two pairs of corner posts, each corner post having a lowermost end pivotally connected to the floor and an uppermost end, each corner post being selectively foldable between erected and collapsed modes;
c. at least two braces, each brace having a first end pivotally connected to the uppermost end of a first corner post of a pair thereof and a second end pivotally connected to the uppermost end of the second corner post of the pair thereof, each brace being selectively foldable between erected and collapsed modes;
d. at least two elongated bars extending between the braces, each bar being rigidly fastened at one end thereof to one of the braces and at the other end thereof to the other brace, the bars cooperating with the corner posts and braces to form a frame that is selectively erectable and collapsible in response to the corner posts and the braces being in their respective erected and collapsed modes;
e. cover means for removably fitting over the frame when the frame is in the erected mode to cooperate with the floor to define an enclosed shelter; and
f. at least one locking rod between each of the floor side sections and the floor middle section, the locking rods being slidable within the floor side sections between an extended condition that keeps the floor in the erected mode and a retracted condition that enables the floor to be folded to the collapsed mode.

5,622,199
LOCKING APPARATUS AND METHOD FOR HYDRAULIC VALVE ASSEMBLY
Patrick J. Pieper, Carol Stream, Ill., assignor to Case Corporation, Racine, Wis.
Filed Dec. 21, 1995, Ser. No. 575,986
Int. Cl.[6] F16K *35/00*
U.S. Cl. 137—15 **14 Claims**



1. In a hydraulic valve assembly for a mobile machine, the assembly having first and second control spools, each mounted for movement between a neutral position and either of two output positions and each having a locking surface, a method for retaining the spools in their respective neutral positions including:
providing a lock member in the assembly and extending across the control spools;
positioning the spools at their said respective neutral positions;
axially moving the lock member to engage each spool locking surface and thereby lock the first and second control spools in their respective neutral positions; and
axially moving the lock member to disengage each spool locking surface while maintaining the lock member extending across at least one of the spools.

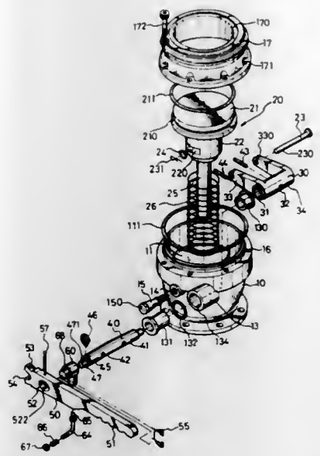
5,622,200
THERMO-ELECTRIC SAFETY IGNITER WITH REIGNITION LOCK
Klaus Schulze, Gernrode, Germany, assignor to Mertik Maxitrol GmbH & Co., KG, Germany
Filed Apr. 14, 1994, Ser. No. 227,719
Int. Cl.[6] F23D *14/72;* **F23Q** *9/12*
U.S. Cl. 137—66 **11 Claims**



1. A thermo-electric safety igniter for a gas valve adapted to be used with gas fired apparatus, said gas valve including a housing having an operating rod axially and rotatably movably supported therein, valve means controlled by said operating rod to selectively control main gas flow and pilot gas flow to said apparatus, said thermo-electric safety igniter comprising:
a first member non-rotatably supported on said operating rod for rotary movement therewith, said first member being freely axially movable with respect to said operating rod;
interlock means provided on said housing for cooperating with said first member to prevent rotation of said operating rod from a position in which said valve means prevents main gas flow and pilot gas flow when said first member is in a first position; and
releasing means supported in said housing, said release means being operative to move said first member from said first position to a second position in response to a predetermined condition whereby said operating rod may be rotated to move said valve means into a position allowing flow of said pilot gas.

5,622,201
BUCKET VALVE WITH REMOVABLE HANDLE
King Chang, No. 20, Hsi Wei St., San Chung City, Taipei Hsien, Taiwan
Filed Feb. 28, 1996, Ser. No. 608,412
Int. Cl.[6] F16K *1/12;35/02*
U.S. Cl. 137—219 **3 Claims**

1. A bucket valve assembly comprising:
a valve body;
a front end ring fixedly attached to said valve body;
a piston means slidably received within said valve body, said piston means having a transverse slot extending therethrough;
a coil spring disposed between said valve body and said piston means to urge said piston means in a direction to close said front end ring;
a knob attached to said valve body;
a drive shaft rotatably mounted to said valve body;
a crank arm having a central sleeve and a pair of fingers, said central sleeve being telescopically fastened to said drive shaft to be rotatable about a central axis of said drive shaft;

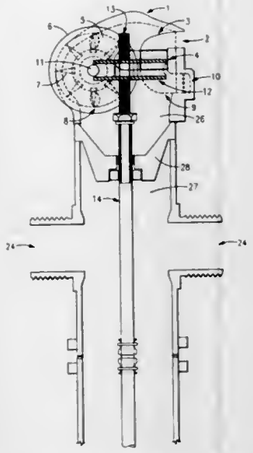


a pivot pin cross-linking said pair of fingers and passing through said piston means transverse slot with said pair of fingers disposed on opposite sides of said piston means;
an axle sleeve drivingly coupled to one end of said drive shaft;
a handle pivotably secured to said axle sleeve, said handle having a forked tip for selectively engaging said knob, said handle being pivotable to displace said forked tip away from said knob and being rotatable to thereby drive said axle sleeve, via said drive shaft, said crank arm and said pivot pin, to move said piston means in a direction toward and away from said front end ring; and
a spring biased latch slidably and removable engages said axle sleeve and being releasably engageable with said one end of said drive shaft to removably couple said axle sleeve to said drive shaft or locking said handle and said piston means in said selected valve positions.

5,622,202
TAMPER PROOF FIRE HYDRANT
Mitchell K. Etter, P.O. Box 330, and Leonard F. Gropper, III, P.O. Box 152, both of East Quogue, N.Y. 11942
Filed Mar. 22, 1994, Ser. No. 215,516
Int. Cl.[6] F16K *31/16;* **F16H** *47/00*
U.S. Cl. 137—272 **2 Claims**

1. A fire hydrant comprising a fire hydrant body and a drive means for operating a water main valve in response to fluid pressure applied from an external detachable portable pressurized fluid source wherein:
said drive means includes an impeller and a worm gear;
said fire hydrant body has a first opening and a second opening defined therein;
said impeller is rotatably mounted within the fire hydrant body and is operatively engaged with the worm gear so that rotation of the impeller will cause the worm gear to raise and lower a drive shaft located within the fire hydrant body;
said drive shaft is connected to a water main valve in such a manner so that the position of the drive shaft will determine whether the drive shaft is opened and closed;
said first opening is so positioned so that when pressurized fluid is applied to said first opening from an external source, the pressurized fluid will flow in through the first opening and cause the impeller to rotate in a first direction, thereby operating the worm gear so as to lower the drive shaft, the pressurized fluid will then exit said fire hydrant thru the second opening; and
said second opening is so positioned so that when pressurized fluid is applied to said second opening from an external

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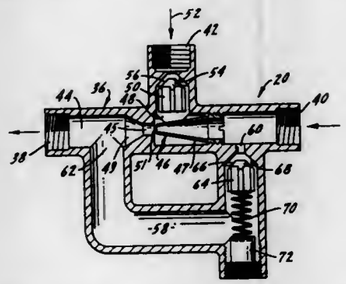


source, the pressurized fluid will flow in through the second opening and cause the impeller to rotate in a second direction, thereby operating the worm gear so as to raise the drive shaft, the pressurized fluid will then exit said fire hydrant through the first opening.

5,622,203
HOT WATER CIRCULATION APPARATUS WITH ADJUSTABLE VENTURI

John D. Givler, Avon Lake, and Erwin F. Mikol, Westlake, both of Ohio, assignors to Moen Incorporated, North Olmsted, Ohio

Filed Oct. 3, 1995, Ser. No. 538,586
Int. Cl.[6] F24H *1/00*
U.S. Cl. 137—337 **13 Claims**



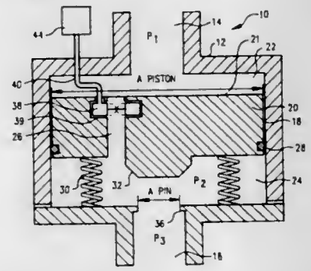
1. A dual mode water circulation apparatus for installation in a water supply line in a building upstream of a water heater to provide continuously heated water to one or more remote hot water faucets served by a common hot water pipe, the apparatus being connected in a water return loop that includes a portion of the water supply line that is downstream of the apparatus, the water heater, the common hot water pipe, and a return line from a remote faucet,

said apparatus including a housing having a first inlet for connection to the water return line, an outlet for connection to that portion of the water supply line that connects to the water heater, and a second inlet for connection to the water supply, a chamber in said housing with said inlets and outlet connecting to said chamber, a check valve between said first inlet and said chamber preventing flow from said apparatus outwardly from said first inlet, a venturi in said chamber to cause reduced pressure adjacent said first inlet to cause an increase in flow in said water return loop when water flows into said apparatus from said water supply pipe, and a variable capacity bypass connected about said venturi and between said second inlet and said outlet to control water pressure at said first inlet and thus the flow of water in said water return loop, said bypass including a water conduit connected between said second inlet and said outlet, a check valve in said conduit and yielding means urging said check valve toward a conduit closing position.

5,622,204
FLOW CONTROL VALVE HAVING FLOW ADJUSTABLE BY VARIABLE RING

Paul K. Skoglund, 2222 - 79th Ave., NE., Bellevue, Wash. 98004

Division of Ser. No. 224,477, Apr. 7, 1994, Pat. No. 5,487,405, which is a continuation-in-part of Ser. No. 69,459, Jun. 1, 1993, Pat. No. 5,301,713. This application Oct. 16, 1995, Ser. No. 543,385
Int. Cl.[6] F16K *17/30*
U.S. Cl. 137—501 **16 Claims**



1. A valve comprising:

a housing divided into a first chamber and a second chamber and having an inlet and an outlet defining a flow passage through said housing;

a piston mounted in a bore in said flow passage and cooperating with said outlet to alter the flow area through said outlet;

an orifice through said piston providing fluid flow from said inlet to said outlet;

spring means biasing said piston toward said inlet, said spring means providing a bias force that establishes a substantially constant pressure differential between said first chamber and said second chamber to enable substantially constant outlet flow at varied pressures; and

means having an alterable cross-sectional area encircling said orifice for altering fluid flow through said orifice.

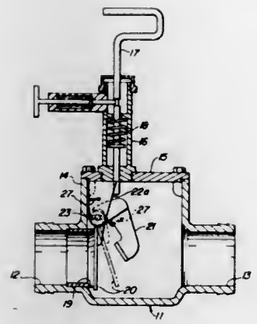
5,622,205
CHECK VALVE HAVING RESERVED MECHANICAL CLOSURE

Robert E. Petersen, R.R. 1 Box 202, 7784 New Liberty Rd., Walcott, Iowa 52773

Filed Sep. 14, 1995, Ser. No. 528,134
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—527.8 **3 Claims**

1. A fluid check valve having a housing with a valve chamber, an inlet for passing a flow of fluid in a normal direction, said inlet having a sealing surface facing into said valve chamber, a flap having a first pivot connected to said housing approximate said inlet, said flap normally being turned about said first pivot to an open position by flow of fluid in a normal direction through said valve and to a closed position by force of backup fluid in an opposite direction, an outer surface of said flap in said closed position being in tight contact with said sealing surface, an actuating mechanism having a rigid member, means for constantly urging said rigid member toward said flap, means for normally retaining said rigid member at a predetermined distance from said flap, means for releasing said rigid member, an arm connected to said flap for receiving impact from said released rigid member for applying force in addition to force applied by backup fluid, wherein the improvement comprises:

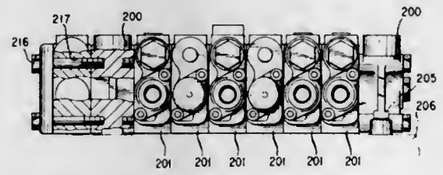
said arm being a striking arm having a second pivot connected to said valve housing at a point approximate said flap and substantially in the plane of the flap, said striking arm extending from said second pivot for a sufficient distance for striking said flap at a point to propel said flap to said closed position, said striking arm normally being positioned about said second pivot to provide a substantial gap between said striking arm and said flap, said striking arm having a portion spaced from said second pivot, said portion of said striking arm being struck by said rigid member upon release thereof for receiving momentum of said rigid member when released for rotating said arm in the direction to strike said flap whereby said momentum of said rigid member and momentum of said striking arm are combined and applied to said flap for ensuring tight closing of said flap against said sealing surface.



5,622,206
MULTIPLE VALVE UNIT FOR PRESSURIZED FLUID SUPPLY SYSTEM

Masamitsu Takeuchi; Kazunori Ikei; Tadao Karakama; Mitsumasa Akashi; Teruo Akiyama; Jun Maruyama, and Keisuke Taka, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 302,912, Sep. 19, 1994, Pat. No. 5,533,334. This application Nov. 3, 1995, Ser. No. 552,693
Claims priority, application Japan, Apr. 8, 1992, 4-29640 U; May 29, 1992, 4-161925; May 29, 1992, 4-161926
Int. Cl.[6] F15B *13/08*
U.S. Cl. 137—596 **16 Claims**



1. A multiple valve assembly comprising:

a plurality of valves each having a valve body;

each of said valve bodies comprising a spool bore provided therein;

a spool inserted in each of said spool bores;

each of said valve bodies further comprising an inlet port, a tank port, a pump passage, a main passage, a tank passage and a bolt receptacle hole extending through opposite sides of each of said valve bodies;

a first block and a second block each having a mounting hole, an inlet port and a tank port;

said first block comprising:

a first threaded hole on a first side surface of said first block, and a second threaded hole on a second side surface of said first block; and

a pump passage, a main passage and a tank passage extending between said first and second side surfaces of said first block;

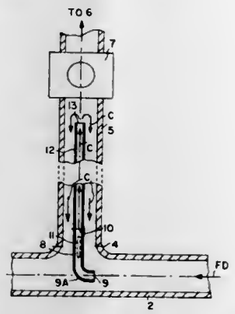
a stud bolt extending through said second block and through said bolt receptacle holes of said valve bodies, said stud bolt being engaged with said first threaded hole of said first block to fixedly couple together said first block, said plurality of valves and said second block; and

a cover mounted on said second side surface of said first block by a cover bolt which is engaged with said second threaded hole of said first block, said cover having a passage therein for communicating said pump passage of said first block with said main passage of said first block.

5,622,207
WATER SUPPLY SYSTEM WITH A PIPE FREEZE UP PREVENTION IN AN AIRCRAFT

Helge Frank, Hamburg, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Continuation of Ser. No. 381,727, Feb. 1, 1995, abandoned. This application Mar. 1, 1996, Ser. No. 609,415
Claims priority, application Germany, Feb. 2, 1994, 44 03 067.3
Int. Cl.[6] B64D *11/00*
U.S. Cl. 137—899.2 **15 Claims**



1. An aircraft comprising a water supply system including a main supply line (2) in said water supply system, at least one water tap (7), at least one tap line (5) having one end connected to said main supply line (2) and another end connected to said tap (7), a freeze-up preventing hose (12) in said tap line (5), said hose (5) having a circulator intake (9) toward said main supply line (2) for diverting a proportion of water in said main supply line into said hose, said hose further having a circulator outlet (13) toward said water tap (7), said hose forming a first water conduit (C) inside said hose and a second water conduit (C) inside said tap line around said hose for circulating water flow inside said tap line at least through a length of said tap line that could be exposed to freeze-up, said hose having at least said length.

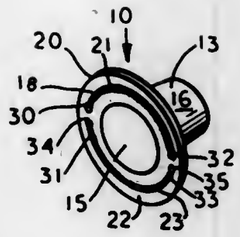
5,622,208
PORT PROTECTOR

Chris A. Vinson, Erie, Pa., assignor to Polymer Molding, Inc., Erie, Pa.

Filed Sep. 11, 1995, Ser. No. 526,754
Int. Cl.[6] F16L *55/10*
U.S. Cl. 138—89 **5 Claims**

1. A plug adapted to fill a port;

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said plug having a one piece body, a flange and a first handle each made of relatively thin flexible material;

said body tapering from a larger first end to a smaller second end said second end being closed;

said flange being integrally attached to said body at said first end;

said handle being integrally attached to and outwardly extending from said flange;

said handle being defined by a first arcuate opening extending entirely through said flange;

said arcuate opening being concentric to said body;

said first flexible handle being adapted to be bent upwardly to a position extending generally across said first end of said one piece body whereby said first flexible handle may be grasped by a hand to pull said plug out of said port.

5,622,209

PROCESS FOR THE SEALING AND INTERNAL REPAIR OF SYSTEMS OF LAID CONDUITS

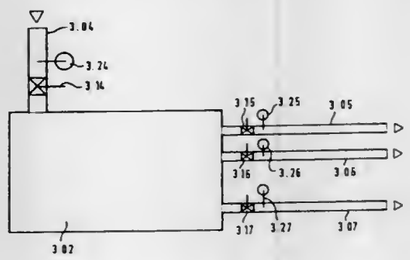
Werner Naf, Weingartenstrasse 2, CH-8820 Wadenswil, Switzerland

Division of Ser. No. 186,440, Jan. 25, 1994, Pat. No. 5,499,659, which is a division of Ser. No. 838,191, Mar. 3, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 456,645

Claims priority, application Switzerland, Jul. 3, 1990, 02 206/90; Oct. 3, 1990, 03 188/90

Int. Cl.[6] F16L *57/00*

U.S. Cl. 138—97 **17 Claims**



1. A process for the sealing and internal repair of at least one leak in a system of laid conduits, the process comprising the following steps:

(a) introducing a sealant into the conduit by means of water, the water cooperating with the sealant to seal the leak;

(b) emptying water from the conduit;

(c) blowing through the emptied conduit compressed air that is charged with particles of an abrasive substance; and

(d) then internally coating the conduit by introducing and blowing into it a solvent-free epoxy resin containing a hardener and fibers, the fibers being selected from the group consisting of cellulose fibers, glass fibers, and mixtures thereof.

5,622,210

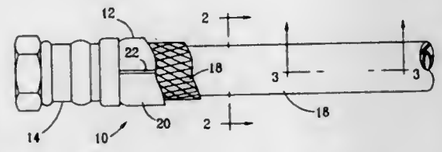
FLEXIBLE HOSE WITH COMPOSITE CORE

Chuck Crisman, Carson City; Russell Chudd, Reno, and Philip A. Mulvey, Carson City, all of Nev., assignors to LSP Products Group, Inc., Carson City, Nev.

Filed Jun. 12, 1995, Ser. No. 490,024

Int. Cl.[6] F16L *11/04*

U.S. Cl. 138—104 **26 Claims**



16. A connector hose assembly comprising a tubular core consisting essentially of a polyolefinic liner made of a material selected from the group consisting of low density polyethylene, linear low density polyethylene, high density polyethylene, copolymer polypropylene, homopolymer polypropylene, and mixtures thereof, a braided protective sheath surrounding the core; further comprising an extruded tubular liner coating made of a thermoplastic elastomer, the liner coating being disposed between the polyolefinic liner and the protective sheath, and at least one end fitting connected to the protective sheath.

5,622,211

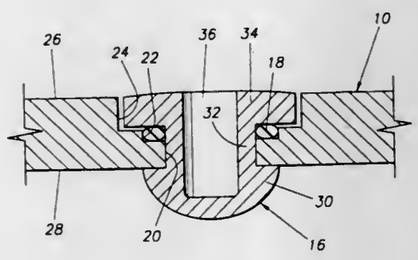
PREPERFORATED COILED TUBING

John R. Martin, Houston, and Martin B. Robertson, Jr., Bay City, both of Tex., assignors to Quality Tubing, Inc., Houston, Tex.

Division of Ser. No. 268,628, Jun. 30, 1994, Pat. No. 5,526,881. This application Jun. 7, 1995, Ser. No. 479,153

Int. Cl.[6] E21B *43/10*

U.S. Cl. 138—177 **6 Claims**



1. A length of tubing, comprising:

a wall having an inner surface and an outer surface;

a perforation adapted to selectively place the outer surface of the wall in fluid communication with the inner surface of the wall, said perforation comprising a hole having a first countersink and a second countersink, being concentric with and wider than said first countersink;

a sealing element placed in said first countersink; and

a plug inserted in said perforation, wherein a body of said plug substantially fills said hole and a head of said plug fits substantially within said second countersink, and wherein said sealing element and said plug cooperatively form a fluid-tight seal between the inner surface and the outer surface of the wall.

5,622,212

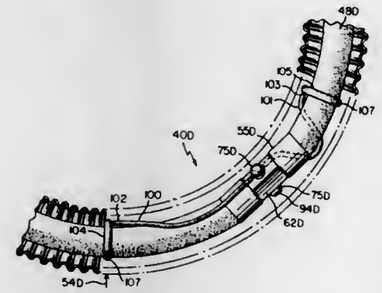
FUEL DISPENSING SYSTEM, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Jeffrey M. Berger, Springfield; Randy C. Foster, Strafford; Timothy J. Hampton, Willard; Jack S. Hargus, Marshfield; Richard L. Marsh, Springfield, all of Mo., and David A. Masseth, La Habra, Calif., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 304,994, Sep. 13, 1994, Pat. No. 5,456,296, which is a division of Ser. No. 151,093, Nov. 12, 1993, Pat. No. 5,361,810, which is a division of Ser. No. 962,537, Oct. 16, 1992, Pat. No. 5,305,806. This application Oct. 2, 1995, Ser. No. 514,041

Int. Cl.[6] B65B *3/18;* **B67D** *5/06*

U.S. Cl. 141—59 **15 Claims**



1. In a system comprising a liquid fuel source, a dispensing nozzle and a hose assembly having a first fluid passage therein for conveying said liquid fuel in one direction from said source to said nozzle that dispenses said liquid fuel into a container and a second fuel passage therein for returning the vapors of said liquid fuel from said container, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining said first fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining said second fluid passage therebetween, said system having a venturi section therein that tends to remove liquid from a normal drape area of said hose assembly when the same is being utilized to dispense said liquid fuel into said container, the improvement wherein said venturi section has inlet means that is positioned in said second fluid passage generally at the actual drape area of said hose assembly even when said actual drape area is disposed intermediate said normal drape area and said nozzle or is disposed intermediate said normal drape area and said source as well as when said actual drape area is disposed generally at said normal drape area, said inlet means comprising tube means interconnected to said venturi section, said tube means having a plurality of inlets respectively disposed in different axial positions in said second fluid passage along the length thereof, each of said inlets comprising an annular member that encircles said inner hose, said annular members being hollow and having passage means interconnected to the exterior thereof to permit passage of said liquid fuel into said inlet.

5,622,213

FLYING LOG TURNER

Monte J. McKelvie, Quesnel, Canada, assignor to Linden Welding & Fabricating Ltd., Quesnel, Canada

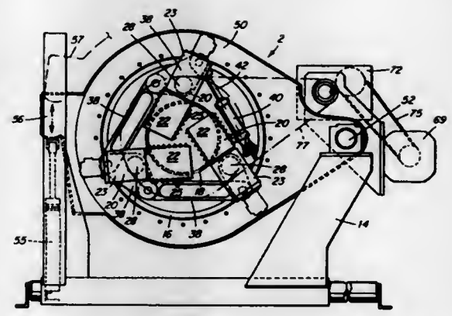
Filed Jul. 11, 1995, Ser. No. 499,883

Int. Cl.[6] B27B *31/00*

U.S. Cl. 144—246.2 **16 Claims**

1. Apparatus for rotating a log delivered by an infeed conveyor about its longitudinal axis for delivery to an outfeed conveyor comprising:

a main frame;



a rotatable housing mounted in the main frame having a passage therethrough to receive a log from the infeed conveyor;

log gripping members that are pivotable into the passage in a plane perpendicular to the passage to define an adjustable opening therebetween to receive logs of different dimensions, each log gripping member comprising an actuator and a spike roll mounted to the actuator for rotary motion, the spike rolls of the gripping members co-operating to engage and advance the log along its longitudinal axis through the passage to the outfeed conveyor, the log gripping members being mounted to the rotatable housing for movement with the housing; and

drive means to rotate the rotatable housing through a selected angle to rotate the longitudinal axis of the log held in the log gripping members.

5,622,214

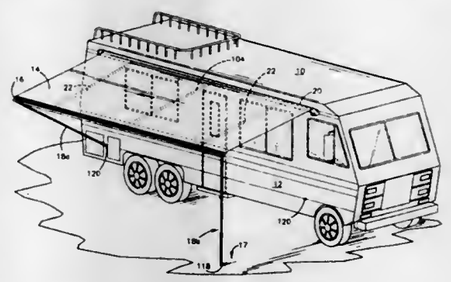
AWNING ASSEMBLY WITH STOWABLE SUPPORT ARMS

Gregory J. Baka, Corunna, and Dale G. Malott, Middlebury, both of Ind., assignors to The Dometic Corporation, LaGrange, Ind.

Filed Nov. 29, 1993, Ser. No. 159,083

Int. Cl.[6] E04F *10/06*

U.S. Cl. 160—71 **24 Claims**



1. An improved awning assembly, comprising:

an elongated roller tube extending generally horizontally along a generally vertical wall and rotatably mounted on the wall, the roller tube having a hole adapted for receiving a hook therein;

an awning having a first edge attached to the roller tube, said awning being rolled on the roller tube and adapted to be unrolled from the roller tube to an extended position;

a lead rail attached to a second edge of the awning;

a pair of rafter arms each being disposed between the wall and the lead rail so as to hold the lead rail a selected distance from the wall when the awning is extended; and

a pair of support arms pivotably attached to the lead rail and adapted to support the lead rail when the awning is extended;

wherein the improvement comprises:

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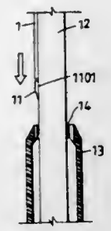
a removable third rafter arm insertable between the lead rail and the wall when the awning is extended, wherein the third rafter arm includes a hook on one end, said hook fitting in the hole of the roller tube; and a hollow end fitting on a slide, said slide being slidable in a channel of the lead rail.

5,622,215

HEAT INSULATING SHEET FOR CAR DOOR WINDOWS

Jack Llen, No. 30, Yen-Chi St., San-Min Dist., Kaohsiung, Taiwan

Filed Apr. 30, 1996, Ser. No. 640,034
Int. Cl.[6] B60J *1/20*
U.S. Cl. 160—370.21 **3 Claims**



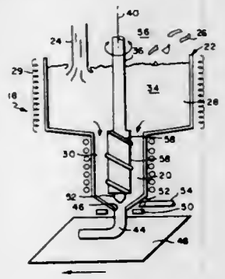
1. A heat insulating sheet for car door windows, comprising:
a beveled guide strip adapted for attaching to the window glass near its lower end, said beveled guide strip having a glued back side adapted for adhering to the window glass; and
a sheet body adapted for attaching to the window glass by means of static coupling and having a bottom end adapted for abutting against said beveled guide strip.

5,622,216

METHOD AND APPARATUS FOR METAL SOLID FREEFORM FABRICATION UTILIZING PARTIALLY SOLIDIFIED METAL SLURRY

Stuart B. Brown, 77C Mount Vernon St., Somerville, Mass. 02145

Filed Nov. 22, 1994, Ser. No. 343,118
Int. Cl.[6] B22C *9/08*
U.S. Cl. 164—71.1 **42 Claims**



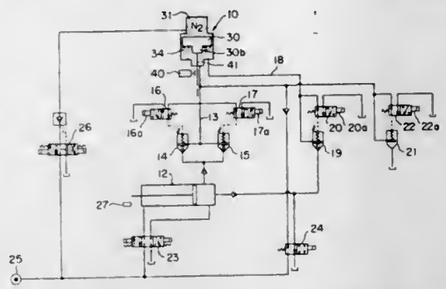
1. An apparatus for producing a component at least in part from partially solidified metal slurry, said apparatus comprising:
a source of said slurry;
a nozzle through which said slurry is dispensed;
a substrate upon which dispensed slurry is at least partially deposited, at least one of said substrate and said nozzle movable relative to the each other in at least two degrees of freedom; and
a controller for controlling relative movement between said nozzle and said substrate to produce the component.

5,622,217

INJECTION APPARATUS FOR A DIE CASTING MACHINE

Norihiro Iwamoto, Sagamihara, and Yutaka Nakamura, Zama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Sep. 14, 1995, Ser. No. 528,465
Claims priority, application Japan, Sep. 14, 1994, 6-220374
Int. Cl.[6] B22D *17/32*
U.S. Cl. 164—457 **3 Claims**



1. An injection apparatus for a die casting machine, comprising:
an injection cylinder for injecting a molten metal in a die cavity and operated by hydraulic oil;
a hydraulic circuit for controlling injection operation of the injection cylinder for low-speed injection, high-speed injection, and intensified-pressure operation such that the casting pressure is increased after a cavity is loaded with a molten metal; and
a piston-type accumulator for accumulating hydraulic oil to be fed into the injection cylinder through said hydraulic circuit, said accumulator including:
a piston having a pressure surface;
a small-diameter portion coaxially formed on the pressure surface side of the piston;
a hydraulic oil discharge passage having an inside diameter corresponding to the outside diameter of the small-diameter portion and coaxial with the piston; and
a passage for guiding intensified-pressure oil in a cylinder chamber of the accumulator, such that the pressure thereof is intensified by utilizing the ratio between the pressure area of the piston and the area of the small-diameter portion, whereby the oil is delivered to an intensified-pressure oil circuit through the guide passage.

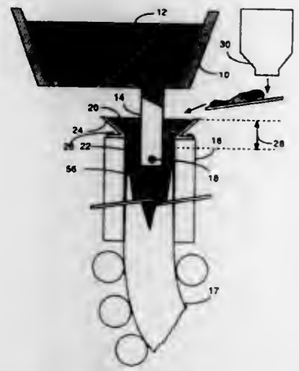
5,622,218

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF STEEL MATERIALS

Miguel A. Pedroza-Contreras, Monterrey, Mexico, assignor to Hylsa S.A. de C.V., San Nicolas de los Garza, Mexico

Filed May 15, 1995, Ser. No. 441,684
Int. Cl.[6] B22D *11/07*
U.S. Cl. 164—472 **11 Claims**

1. A method for continuous casting of a steel slab, comprising providing an oscillating casting mold with an upwardly extending top portion above the area of said mold where said steel is cast; pouring liquid steel into said mold through a submerged refractory nozzle; adding as needed a solid mold powder to the top portion of said casting mold with the portion of said mold powder in contact with said liquid steel melting and forming a layer of liquid slag above said liquid steel in said mold; said melted mold powder also serving to lubricate and reduce friction of said solidifying steel along its interface with said mold; said still-solid mold powder serving to cover and provide thermal insulation between the liquid phases of steel plus slag and the surrounding environment of the mold; maintaining on top of said liquid steel and slag a layer of solid mold powder with a thickness in the range of at least 6 to 8



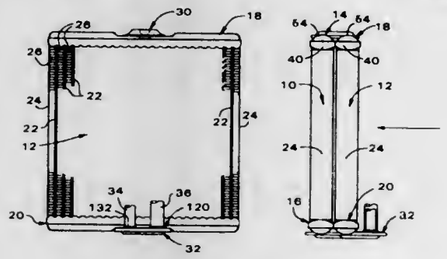
inches by mean of the upwardly extending top portion, sufficient to effectively thermally insulate the top portion of said mold to increase the surface quality of said continuously cast slab.

5,622,219

HIGH EFFICIENCY, SMALL VOLUME EVAPORATOR FOR A REFRIGERANT

Mark Voss, Franksville; Gregory Hughes, Milwaukee; Scot Alley, and Peter Kottal, both of Racine, all of Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Oct. 24, 1994, Ser. No. 328,034
Int. Cl.[6] F28F *9/26*
U.S. Cl. 165—144 **12 Claims**



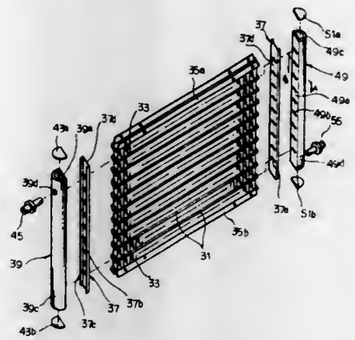
1. A parallel flow evaporator comprising:
a pair of identical heat exchange units;
each unit including a pair of identical, parallel spaced header and tank constructions, each having slots in one side thereof with the slots in one being aligned with the slots in the other; and a plurality of identical, flattened tubes extending in parallel between said header and tank constructions and having their ends received in aligned ones of the slots and bonded to the header and tank constructions of the corresponding unit; said header and tank constructions each having an identical, generally central flat surface on a side thereof remote from said slots, and identical, generally centrally located ports in said flat surfaces, said units being disposed in side by side relation with corresponding header and tank constructions being in contacting or almost contacting relation;
fins extending between adjacent tubes in said units;
an inlet/outlet fixture bonded to the flat surfaces of one pair of header and tank constructions defined by adjacent header and tank constructions of both said units and having an inlet port in fluid communication with one of said identical ports in said one pair of header and tank constructions and an outlet port in fluid communication with the other of said identical ports in said one pair of header and tank constructions; and
a cross-over fixture bonded to flat surfaces of the other pair of header and tank constructions defined by the remaining header and tank constructions of both said units, and having a first port in fluid communication with one of the identical ports in said other pair, a second port in fluid communication with the other of the identical ports in said other pair, and a fluid passage interconnecting said first and second ports.

5,622,220

HEAT EXCHANGER FOR AUTOMOBILE AIR CONDITIONING SYSTEM

Sang-Rok Park, Seoul, and Jai-Heung Yoo, Chungcheongnam-do, both of Rep. of Korea, assignors to Doowon Climate Control Co., Ltd., Chungcheongnam-do, Rep. of Korea

Division of Ser. No. 199,716, Feb. 22, 1994, Pat. No. 5,464,145. This application Jun. 7, 1995, Ser. No. 476,875
Claims priority, application Rep. of Korea, Mar. 5, 1993, 93-3355
Int. Cl.[6] F28D *1/02*
U.S. Cl. 165—153 **3 Claims**



1. A heat exchanger for an automobile air conditioning system comprising:
a plurality of refrigerant flowing tubes spaced out at regular intervals and being parallel to each other:
a plurality of corrugated fins sandwiched between said tubes in order for increasing a heat exchanging surface;
first and second header pipes vertically placed at opposite ends of said tubes and liquid-tightly brazed and jointed to said opposite ends of the tubes respectively such that they communicate with each other through said tubes, each of said first and second header pipes being a hollow solid body produced by an extrusion of an aluminum material with no longitudinal joint and having a flat section and a rounded section integrally extending from opposed sides of said flat section, said flat section including a plurality of apertures for receiving said tubes and being thicker than said rounded section;
top and bottom support beams not only brazed to an uppermost one and a lower most one of said corrugated fins respectively but also jointed at their opposite ends to the flat sections of said first and second header pipes respectively, said top and bottom support beams supporting said corrugated fins in their places, the brazing and liquid-tightly jointing of the opposite ends of the tubes to the first and second header pipes is facilitated by a pair of brazing metal plates wherein each of said brazing metal plates includes:
a flat section having a plurality of slits for receiving said tubes respectively;
a burr formed about each of said slits, a height of said burr being not less than a thickness of each flat section of said header pipes;
an opposed pair of side flanges provided on opposite sides of said brazing metal plate by vertically extending from said flat section of said brazing metal plate, said side flanges covering opposite side corners of a corresponding header pipe when said brazing metal plate is brought into engagement with the

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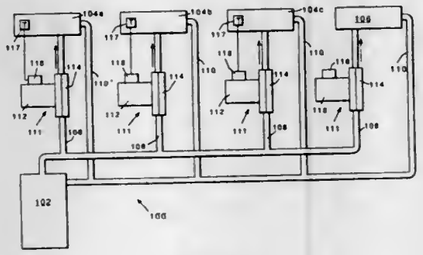
header pipe, wherein the brazing metal plates are an aluminum thin plates in order to liquid-tightly joint said tubes and support beams to said header pipes by being melted and forming brazing beads.

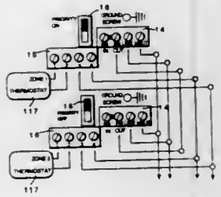
5,622,221

INTEGRATED ZONING CIRCULATOR WITH PRIORITY CONTROLLER

Richard A. Genga, Jr., East Greenwich; Hamid Pishdadian, Warwick, and Michael McCarthy, Cranston, all of R.I., assignors to Taco, Inc., Cranston, R.I.

Filed May 17, 1995, Ser. No. 443,112
Int. Cl.[6] F24F *3/00;3/08;5/00;11/00*
U.S. Cl. 165—208 **12 Claims**





1. An integrated zoning circulator associated with an individual zone of a hydronic heating or cooling system that includes a plurality of zones, each zone including a thermostat associated with the zoning circulator, the integrated zoning circulator comprising:

a wet-rotor circulator motor disposed within a motor housing, and;

a priority controller, for determining priority of operation for the integrated zoning circulator, said controller disposed within a controller housing integral with the motor housing said priority controller comprising:

a manual switch having a setting selectable by a user of the hydronic system for establishing the priority of operation for the zoning circulator relative to other zoning circulators in the system; and

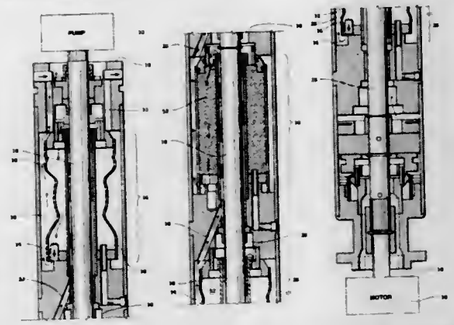
circuitry, connected to the zoning circulator and manual switch, adapted to operate the zoning circulator and to prevent simultaneous operation of zoning circulators in other zones that have manual switch settings of lower priority than the selected setting of the manual switch, when the thermostat, associated with the zone in which the integrated zoning circulator is disposed, calls for the zoning circulator in that zone to operate.

5,622,222

SCAVENGER SYSTEM AND ELECTRICAL SUBMERSIBLE PUMPS (ESP'S)

Brown L. Wilson, Tulsa; Leslie C. Reid, Coweta, both of Okla.; Paul M. Davis, and Terrance P. Comeau, both of Calgary, Canada, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 26, 1995, Ser. No. 534,068
Int. Cl.[6] E21B *43/38*
U.S. Cl. 166—105.4 **29 Claims**



1. A submersible pump for use in a corrosive environment, comprising:

a housing having a first end and a second end;

a motor, said motor located inside said housing and positioned near said first end of said housing, said motor substantially filled with a motor fluid;

a shaft having a first and a second end and extending interiorly of said housing, said first end of said shaft attached to said motor;

a pump, said pump located inside said housing and located near said second end of said housing, said pump affixed to said second end of said shaft; and

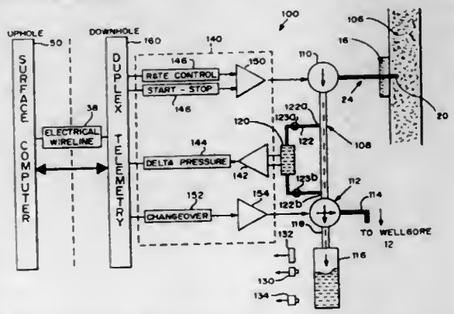
said housing including a scavenger chamber having a scavenger material therein, said chamber located for communication with said motor fluid.

5,622,223

APPARATUS AND METHOD FOR RETRIEVING FORMATION FLUID SAMPLES UTILIZING DIFFERENTIAL PRESSURE MEASUREMENTS

Rafael B. Vasquez, Katy, Tex., assignor to Haliburton Company, Houston, Tex.

Filed Sep. 1, 1995, Ser. No. 522,851
Int. Cl.[6] E21B *49/00;47/00*
U.S. Cl. 166—264 **20 Claims**



20. A method for determining bubble point pressure of a formation fluid in a wellbore, comprising the steps of:

(a) discharging the formation fluid from a zone of interest into a flow line;

(b) determining the pressure of the fluid in the flow line and pressure differential between two fixed points across the flow line;

(c) determining the density of the formation fluid from the differential pressure;

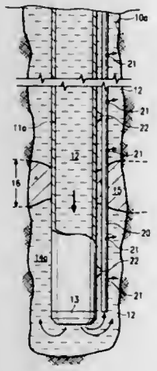
(d) changing the fluid flow rate into the flow line; and (e) repeating steps (b)–(d) a desired number of times, recording the pressure in the flow line and the differential pressure corresponding to each flow rate and determining therefrom the bubble point pressure of the fluid.

5,622,224

METHOD AND APPARATUS FOR CEMENTING WELL CASING USING ALTERNATE FLOW PATHS

Tommy J. Yates, Coppell, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 20, 1995, Ser. No. 493,223
Int. Cl.[6] E21B *33/14*
U.S. Cl. 166—285 **3 Claims**



2. A method for cementing a string of casing in a wellbore, said method comprising:

positioning the string of casing in said wellbore thereby forming an annulus between said casing and said wellbore;

flowing a cement slurry down through and out of the lower end of said casing and up through said annulus; and

flowing a portion of said cement slurry up through an alternate flowpath within said annulus to different levels within said annulus, wherein said alternate flowpath comprises:

a conduit positioned within said annulus and having an outlet at each of said different levels within said annulus.

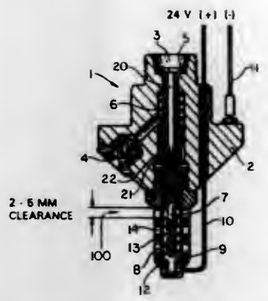
5,622,225

QUICK RESPONSE SPRINKLER HEAD

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI93/00164, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO93/21998, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 21, 1993, Ser. No. 318,816
Claims priority, application Finland, Apr. 23, 1992, 921806
Int. Cl.[6] A62C *37/14*
U.S. Cl. 169—61 **9 Claims**

1. Fire-fighting equipment comprising a release means (7) arranged to be activated at a predetermined release temperature, and an element (8) of memory metal immediately close to the release means (7) and arranged to change shape at a predetermined memory temperature to close an electric circuit (10-9-8-5-2-11) for



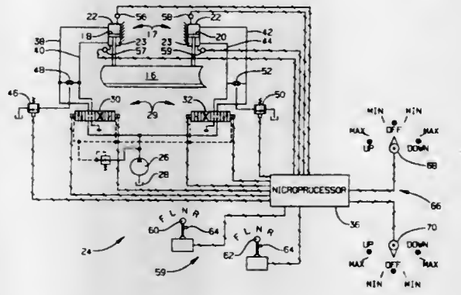
heating the memory metal element (8) and, thereby, the release means (7) to the release temperature, whereby to effect a fast release action.

5,622,226

METHOD FOR CONTROLLING BOUNCE OF A WORK IMPLEMENT

Dennis J. Hausman, Peoria; John J. Krone, Dunlap, and Michael I. Cline, Metamore, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 29, 1996, Ser. No. 593,023
Int. Cl.[6] A01C *5/00;* **A01B** *63/112*
U.S. Cl. 172—4.5 **12 Claims**



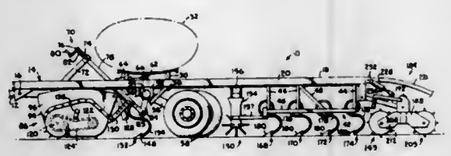
1. A method for controlling bounce of a work implement relative to a work surface subsequent to the initiation of a bounce, the work implement being attached to a machine having an electro-hydraulic system, the electro-hydraulic system includes a microprocessor, an actuator arrangement connected between the machine and the work implement, a source of pressurized fluid that receives fluid from a reservoir, an electro-hydraulic directional control valve arrangement disposed between the source of pressurized fluid and the actuator arrangement, and a control lever mechanism electrically connected to the microprocessor and operative to direct pressurized fluid to the actuator arrangement by controlling movement of the electro-hydraulic directional control valve arrangement, the method comprises the steps of:

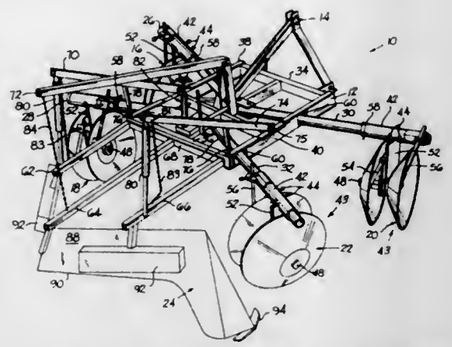
detecting the initiation of the bounce of the work member relative to the work surface by sensing the operating pressure in the actuator arrangement; and

altering the pressure level in the actuator arrangement to eliminate the bounce.

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5,622,227
MULTI-FUNCTIONED FARM IMPLEMENT FOR TREATING SOIL
Kevin G. McDonald, 3304 Jamestown Dr., Modesto, Calif. 95354
Filed Sep. 15, 1994, Ser. No. 306,685
Int. Cl.[6] A01B *49/02*
U.S. Cl. 172—146 10 Claims



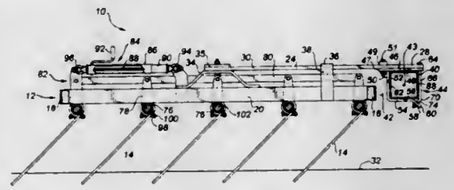


1. A farm implement comprising:
a frame;
a first shaft rotatably supported by said frame, said first shaft having a plurality of sets of elongated tines spaced at locations along its length, each set of tines having a plurality of tines spaced about the peripheral surface of said first shaft at the respective location of said set;
a second shaft rotatably supported by said frame and disposed behind said first shaft, said second shaft having a plurality of sets of elongated tines spaced at locations along its length, each set of tines having a plurality of tines spaced about the peripheral surface of said shaft at the respective location of said set;
a third shaft rotatably supported by said frame and disposed behind said second shaft, said third shaft having a plurality of longitudinal blades spaced about its periphery, each blade having a ground engaging edge for chopping debris and breaking soil clods;
first, second, third, and fourth rows of S-tines supported by said frame, said rows disposed one behind the other with said first row disposed behind said third shaft, each S-tine having a sweep disposed on a lower end thereof, and wherein said rows of S-tines are offset with respect to each other;
a fourth shaft rotatably supported by said frame and disposed behind said fourth row of S-tines, said fourth shaft having a plurality of longitudinal blades spaced about its periphery to mix and blend the soil with a rolling action;
a fifth shaft rotatably supported by said frame and disposed behind said fourth shaft, said fifth shaft having a plurality of longitudinal blades spaced about its periphery to mix and blend the soil with a rolling action; and
wherein a movable support structure to which said fourth shaft and said fifth shaft are connected is attached to said frame, and wherein at least one hydraulic cylinder is coupled to said movable structure and to said frame to apply variable force to said structure such that the force with which said blades of said fourth and fifth shafts engage the soil can be varied.

5,622,228
TOOL FOR MAKING RAISED BEDS
Thomas M. Baker, 142 Rock Hill La., Elizabethtown, Ky. 42701
Filed Jun. 23, 1995, Ser. No. 493,905
Int. Cl.[6] A01B *13/02*
U.S. Cl. 172—180 11 Claims

1. A tool for making raised beds in the earth, comprising:
a frame, defining a front, a back, and left and right sides;
a first forward disk mounted on said frame at an angle so as to throw earth to one side as the tool is pulled forward;
a second forward disk mounted on said frame, said first and second forward disks being mounted on the left and right sides of said tool, respectively;
a first rear disk mounted on said frame behind said first forward disk, said first rear disk being mounted at an angle so as to throw earth to the side opposite to the one side as said tool is pulled forward;
a second rear disk mounted on said frame, said first and second rear disks being mounted on the left and right sides of said tool, respectively, with said second rear disk being mounted behind said second forward disk;
with the respective first forward disk and first rear disk forming a first trough and the second forward disk and second rear disk forming a second trough as the tool is pulled forward; such that, after the tool passes over, the earth is formed in a pattern comprising:
a center mound formed behind the center of the tool;
a left mound to the left of the center mound; and
a right mound to the right of the center mound.

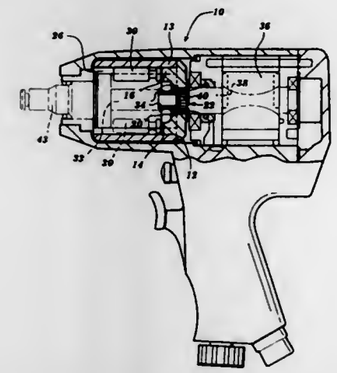
5,622,229
HARROW BAR ASSEMBLY
Wilfred J. Degelman, Raymore, Canada, assignor to Degelman Industries, Inc., Saskatchewan, Canada
Continuation of Ser. No. 164,952, Dec. 10, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,430
Int. Cl.[6] A01B *19/02;73/02*
U.S. Cl. 172—621 1 Claim



1. A harrow drawbar assembly, comprising in combination:
a drawbar having a longitudinal axis, the drawbar being mounted substantially horizontally and rotatable about a selected one of the longitudinal axis and an axis substantially parallel to the longitudinal axis;
a harrow frame including a plurality of pivotal linkages pivotally connecting a plurality of cross-members to the harrow frame, wherein the plurality of cross-members include a plurality of tines, the plurality of pivotal linkages allow the plurality of cross-members to pivot causing a shift in the position of the plurality of cross-members resulting in a change in force in which the plurality of tines engage the ground surface; and

at least one spring strap having a first end and a second end, the first end of the at least one spring strap being rigidly secured to the drawbar and the second end of the at least one spring strap being flexibly secured to the harrow frame, wherein the at least one spring strap exerts a vertical pressure on the harrow frame acting towards the ground surface and the at least one spring strap is resilient in response to counter-pressure from the ground surface, the vertical pressure being adjustable by selectively rotating the drawbar about the selected axis where the vertical pressure from the adjustment of the drawbar and the change in force in which the tines engage the ground surface are independent of each other.

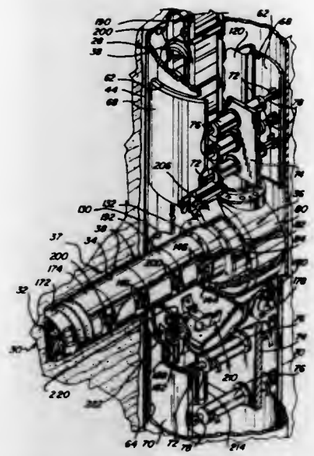
5,622,230
ROTARY IMPACT WRENCH CLUTCH IMPROVEMENT
David A. Giardino, Utica, and Peder P. Messina, III, Rome, both of N.Y., assignors to Chicago Pneumatic Tool Company, Utice, N.Y.
Filed Jun. 15, 1995, Ser. No. 490,920
Int. Cl.[6] B25D *15/00*
U.S. Cl. 173—93.5 12 Claims



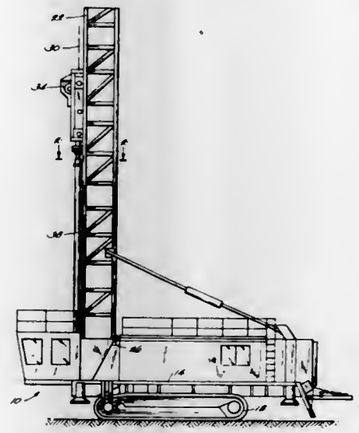
1. A rotary impact tool cage means for urging a cylindrical pin roller into engagement with an anvil which is disposed internally of said cage means, and comprising a hollow cylindrical member having at least one internal lognitutidnal groove, a first open end and a second open end, said cylindrical member including a spline-drivable, removably and press-fittable cap and the second open end, said cap featuring at least one eccentric element that is seatable within said at least onto internal longitudinal groove.

5,622,231
CUTTING HEAD
Michael C. Thompson, 520 S. Ridge St., Southern Pines, N.C. 28387
Continuation of Ser. No. 261,854, Jun. 16, 1994, Pat. No. 5,425,429. This application Jun. 19, 1995, Ser. No. 492,388
Int. Cl.[6] E21B *7/04*
U.S. Cl. 175—77 20 Claims

1. A cutting head for penetrating a surrounding medium to form a borehole within the medium, comprising:
a leading cutting edge; and
a manifold positioned within the cutting head to the rear of the cutting edge, said manifold defining at least one orifice adapted to direct high pressure fluid.



5,622,232
BLASTHOLE DRILL WITH DRILL-THROUGH PIPE RACK
H. Dewain Whisenhunt, Oak Creek, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.
Continuation-in-part of Ser. No. 270,154, Jul. 1, 1994, abandoned. This application Jul. 5, 1994, Ser. No. 270,959
Int. Cl.[6] E21B *19/14*
U.S. Cl. 175—85 17 Claims



1. A blasthole drill comprising
a frame supported for movement over the ground,
a mast supported by said frame for movement relative thereto between a substantially vertical position and a non-vertical position, said mast defining a drill hole axis,
a drill-through pipe rack mounted on said mast, said pipe rack including an upper arm having inner and outer ends, said inner end being connected to said mast for pivotal movement relative thereto, a lower arm having inner and outer ends, said inner end of said lower arm being connected to said mast for pivotal movement relative thereto about a generally horizontal

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inner axis, a rack member having upper and lower ends and a longitudinal axis generally parallel to said drill hole axis, said upper end of said rack member being connected to said outer end of said upper arm for relative pivotal movement and said lower end of said rack member being connected to said outer end of said lower arm for relative pivotal movement about a generally horizontal outer axis, and a gate mounted on said rack member, said gate having open and closed modes and being adapted to support the lower end of a drill pipe when said gate is in said closed mode, said upper and lower arms, said rack member and said mast defining a parallelogram structure such that said rack member is movable horizontally relative to said mast and between an extended position wherein a drill pipe supported by said gate is on said drill hole axis and a retracted position wherein said gate is spaced from a drill pipe on said drill hole axis, said gate permitting the drill pipe to move downwardly relative to said gate when said gate switches to said open mode and while said rack member is in said extended position, and said gate allowing movement of said rack member away from a drill pipe previously supported by said gate when said gate is in said open mode,

a mechanism for moving said upper and lower arms and said rack member so as to move said rack member between said extended and retracted positions, said lower arm extending generally horizontally when said rack member is in said extended position and said mast is in said vertical position and extending generally vertically when said rack member is in said retracted position and said mast is in said vertical position such that, when said mast is in said vertical position and said rack member moves from said extended position to said retracted position, said outer axis moves through a vertical plane including said inner axis,

a lower arm support which is mounted on said mast and which provides vertical and horizontal support for said lower arm when said rack member is in said extended position, said lower arm support including an upwardly facing surface that engages said lower arm when said rack member is in said extended position to provide vertical support for said lower arm, and including at least one generally vertical surface that engages said lower arm when said rack member is in said extended position to provide horizontal support for said lower arm, and

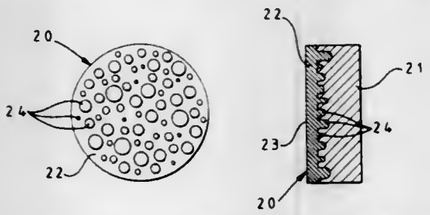
a rotary head moveable relative to said mast along said drill hole axis, said rotary head being selectively engageable with the upper end of a drill pipe supported by said pipe rack when said rack member is in said extended position.

5,622,233

ELEMENTS FACED WITH SUPERHARD MATERIALS

Nigel D. Griffin, Whitminster, England, assignor to Camco Drilling Group Limited, of Hycalog, Stonehouse, England

Filed Jun. 16, 1995, Ser. No. 491,061
Claims priority, application United Kingdom, Jun. 18, 1994, 9412247
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—432 **5 Claims**



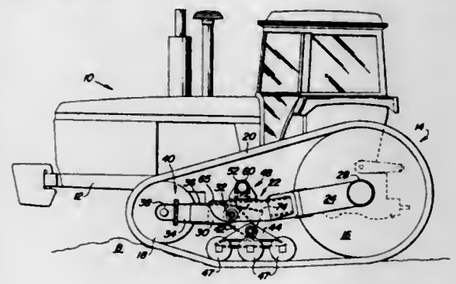
1. A preform element including a facing table of superhard material having a front face, a peripheral surface, and a rear surface bonded to a substrate which is less hard than the superhard material, the rear surface of the facing table being integrally formed with a plurality of protuberances of substantially circular shape which project into the substrate, said protuberances being spaced apart randomly across substantially the whole of the rear surface of the facing table, and wherein the protuberances differ in the depth to which they project into the substrate and the distribution of protuberances of different depths is also random across the facing table.

5,622,234

TRACK SUSPENSION SYSTEM AND TRACK GAUGE ADJUSTMENT ASSEMBLY

James A. Nagorcka, Tarrington, Australia, and Mervin P. Kizlyk, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 22, 1993, Ser. No. 172,693
Int. Cl.[6] B62D *55/04*
U.S. Cl. 180—9.5 **8 Claims**



1. A suspension system for a tracked vehicle, the tracked vehicle having a frame, with a main drive wheel axle housing, a main drive wheel and a idler wheel, a track extends around the main drive wheel and the idler, the suspension system comprising:

a first axial member being pivotally coupled to the main drive wheel axle housing, the first axial member extending from the main drive wheel towards the idler wheel, the first axial member being coupled to the frame of the vehicle by a pendulum assembly, the pendulum assembly is pivotally coupled to the frame and the first axial member, the pendulum assembly defining a vertical centerline;

a second axial member being pivotally coupled to the first axial member at an axial member pivot, the idler wheel is rotatively mounted to the second axial member, the second axial member extending from the idler wheel towards the main drive wheel, the second axial member being provided with a track roller extension;

a track roller frame pivotally mounted to the track roller extension of the second axial member at the track roller frame pivot, the track roller frame is provided with a plurality of track rollers which engage the track.

5,622,235

TRACKED VEHICLE

John T. Merritt, 305 Foxhorn Dr., Waterford, Wis.

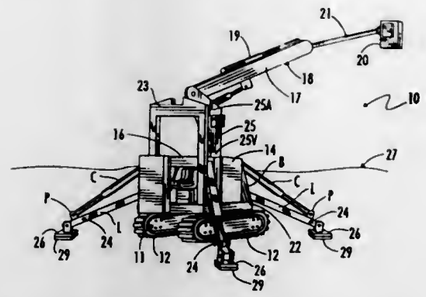
Continuation of Ser. No. 207,376, Mar. 7, 1994, Pat. No. 5,431,240, which is a continuation of Ser. No. 894,107, Jun. 5, 1992, abandoned. This application May 23, 1995, Ser. No. 447,822
Int. Cl.[6] B62D *55/00;55/24;* **B66C** *23/78*
U.S. Cl. 180—9.42 **3 Claims**

1. A compact industrial vehicle having a longitudinal axis, the vehicle comprising:

(a) a platform having tracks for propelling the platform;

(b) a turret attached to the platform;

(c) a boom extending from the turret;



(d) a tool rotatably attached to the boom for permitting 360 degrees of movement of the tool with respect to the platform;

(e) at least one stabilizing outrigger pivotally attached to the platform and operable between a rest position and an operable ground-engaging position; and

(f) an engine mounted with respect to the platform for supplying power to the tool, the outrigger, and the track,

and wherein:

the boom extends away from the turret in a first direction; and

the turret includes a substantially vertical portion and an angled portion at the top of the turret and extending away from the boom in a second direction opposite the first direction,

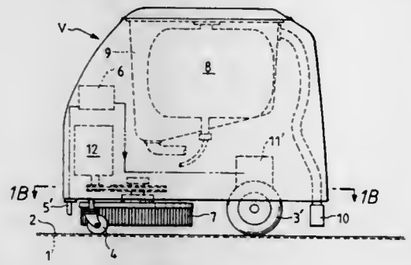
whereby at least a portion of the weight of the boom is counterbalanced.

5,622,236

GUIDANCE SYSTEM FOR SELF-ADVANCING VEHICLE

Yasuhiro Azumi, and Mitsuo Sado, both of Kanagawa, Japan, assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed May 22, 1995, Ser. No. 447,323
Claims priority, application Japan, Oct. 30, 1992, 4-314345
Int. Cl.[6] B62D *1/02*
U.S. Cl. 180—168 **7 Claims**



1. A guidance system for a self-advancing vehicle comprising

A. a guidance line on a surface over which the vehicle is to pass wherein the guidance line comprises a luminous material that emits light of a first wavelength when excited by light of a second wavelength from a light emitter means wherein the guidance line is drawn onto the surface using a composition selected from the group consisting of the luminous material dissolved or dispersed in a solvent and the luminous material dissolved or dispersed in a coating composition; and

B. at least one photosensor that is oriented to pass over the guidance line, the photosensor comprising the combination of

(1) the light emitter oriented to beam the light of the second wavelength onto the guidance line and working in cooperation with

(2) a light receiver oriented to detect the light of the first wavelength emitted from the guidance line when the light of the second wavelength is beamed onto the guidance line wherein the light receiver generates a first signal proportional to the amount of first wavelength light being received;

C. a control unit means for receiving the signal from the light receiver and, in response to the first signal, sending a second signal to

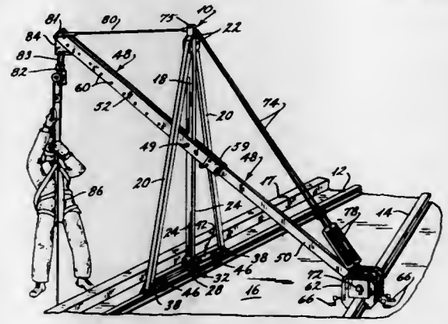
D. a steering means on the vehicle such that the second signal causes the steering means to orient the vehicle in such a mariner as to maintain the photosensor over the guidance line and thereby cause the vehicle to follow the guidance line as it advances.

5,622,237

PORTABLE HOIST SYSTEM

Steffen Moldow, Reston, Va., assignor to Rollgliss, Inc., Great Falls, Va.

Filed Oct. 30, 1995, Ser. No. 550,350
Int. Cl.[6] E04G *3/14*
U.S. Cl. 182—37 **20 Claims**



1. A portable hoist system for mounting to first and second rails, comprising:

a vertical support having a lower end and an upper end, a first clamping member disposed at the lower end, said first clamping member being detachably mountable to a first rail;

a boom connected to said vertical support, said boom having a lower end and an upper end, a second clamping member disposed at the lower end of said boom, said second clamping member being detachably mountable to a second rail, said boom extending upward from said second clamping member at an acute angle relative to the horizontal and approximately perpendicularly relative to the direction of the first and second rails; and

a hoist fastened to said boom.

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RETRACTABLE AND LOCKABLE LADDER STABILIZER

Richard M. Farmer, 432 Granville Ct., NE., Atlanta, Ga. 30328

Filed Sep. 12, 1995, Ser. No. 527,342
Int. Cl.[6] E06C *7/14*
U.S. Cl. 182—214 **17 Claims**

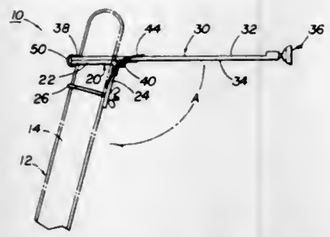
1. A device for stabilizing a ladder, the ladder having two longitudinally spaced apart ladder rails, a lower end and an upper end, the lower end of the ladder capable of resting on a ground surface and the upper end of ladder capable of resting against an upright surface, the device comprising:

a. an L-shaped member having a horizontally extending plate terminating in a downwardly depending section;

b. means for detachably securing the downwardly depending section to the upper end of the ladder;

c. a second plate, hingedly attached to the L-shaped member and having a top surface, an opposed bottom surface, a first edge

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and a second edge, the second plate being movable between an operative position, wherein the first edge is adapted to rest against the upright surface thereby preventing the ladder from tipping, and an inoperative position, whereby the bottom surface is parallel to the downwardly depending section of the L-shaped member, the horizontally extending plate of the L-shaped member disposed so as to stop movement of the first edge of the second plate, thereby preventing the second plate from extending above the operative position;

d. means for locking the second plate in the operative position; and means for maintaining the second plate in the inoperative position,unless the second plate is locked in the operative position.

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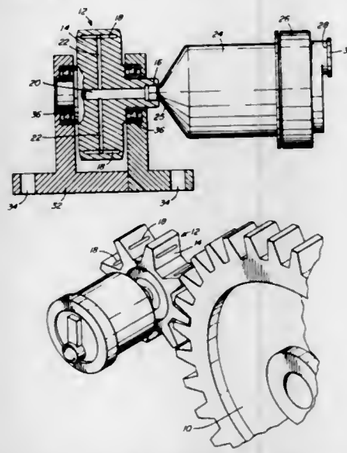
GEAR WHEEL LUBRICATOR

Anton Orlitzky, Delta, Canada, assignor to A.T.S. Electro-Lube Holdings Ltd., Delta, Canada

Filed Jul. 14, 1995, Ser. No. 502,506

Int. Cl.[6] F01M *9/00*

U.S. Cl. 184—6.12 **7 Claims**



1. Apparatus to lubricate a main component comprising:

an idler to contact said main component;

an inlet in said idler to receive lubricant;

at least one outlet in said idler at a point where the idler contacts the main component;

a passageway in said idler linking said inlet and said at least one outlet; and

a lubricant dispenser attached to said idler with an outlet of the dispenser communicating with the inlet of the idler gear, the dispenser comprising a chamber containing a lubricant with means to generate gas to develop pressure to force lubricant into said inlet, through said passageway, to said outlet whereby lubricant is applied tog and retained by, said main component.

5,622,240

COMPRESSED-AIR ACTUATED DISK BRAKE

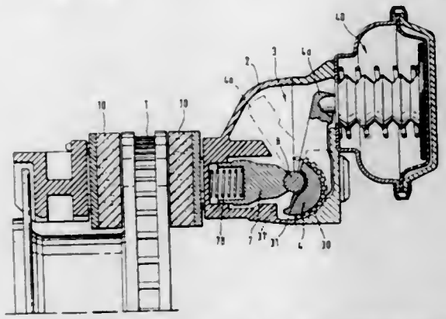
Michael Hartl, Munich, Germany, assignor to Knorr Bremse Systeme Fuer Nutzfahrzeuge, Munich, Germany

Filed Mar. 8, 1995, Ser. No. 400,884

Claims priority, application Germany, Sep. 8, 1992, 42 30 004.5; WIPO, Aug. 18, 1993, PCT/DE93/00751

Int. Cl.[6] F16D *65/16*

U.S. Cl. 188—72.6 **10 Claims**



1. In a compressed-air actuated disk brake comprising a caliper which reaches around a brake disk and an application device connected to the caliper on a first side of the brake disk;

the application device including a pivoting lever supported at a first end region to the caliper by an essentially semicircular pivot bearing so as to swivel about an axis of rotation parallel to the plane of the brake disk, a rotatably disposed eccentric connects the pivoting lever to a traverse member displaceable with respect to the brake disk and the caliper, and a second end region of the pivoting lever receiving a braking force input; the improvement comprising:

the pivoting lever having essentially a fork-shaped with two legs extending from the second end region of the pivoting arm and each leg terminating in a separate first end region;

each first end region engaging a respective separate semicircular pivot bearing and an eccentric;

an eccentric bearing for each eccentric; and

theoretical points of the introduction of force of the pivot bearings and the eccentric are essentially on the center line of the corresponding leg.

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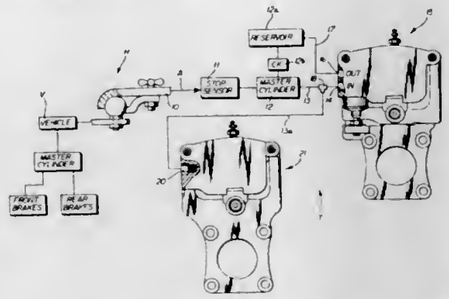
TRAILER BRAKE SYSTEM WITH MULTIPLE POINT CALIPER UNIT MOUNTING

Robert L. Null, 2868 State Rte. 378, Willow Wood, Ohio 45696

Filed Sep. 12, 1995, Ser. No. 527,244

Int. Cl.[6] B60T *7/20*

U.S. Cl. 188—73.42 **20 Claims**



1. A brake unit including a disc brake assembly having brake pads for mounting on the axle of a trailer or other towed vehicle

for stopping during forward movement and to provide release of the brake pads from firm braking engagement with a rotor upon backing comprising:

a stationary mounting bracket for attachment to the vehicle for supporting the disc brake assembly;

a hydraulic means for moving the pads into and out of engagement with the rotor in response to the presence and release of hydraulic pressure for forward braking and backing non-braking modes of vehicle operation, respectively;

a caliper unit including a housing for mounting said pads for relative movement toward and away from said rotor and into and out of engagement therewith;

said hydraulic means including a piston within a brake cylinder in said housing in operative engagement with at least one of said pads to provide relative movement;

said caliper unit further including a cradle with guide means for securely supporting said housing for axial movement in response to the relative movement of said pads during the braking mode;

pivot means for independently mounting said cradle on said bracket for pivoting movement of said caliper unit in response to the rotor movement upon backing,

whereby multiple point mounting of said housing on said cradle distributes the braking load and isolates axial movement of said housing from the pivotal movement of said caliper unit to provide efficient braking during forward movement and during release upon backing.

5,622,242

SHOCK ABSORBER, AND SHOCK ABSORBER, SUCH AS A MACPHERSON STRUT, WITH DECOMPRESSION STOP LIMIT BRACKET

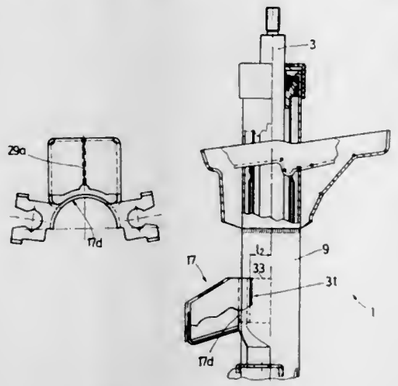
Günther Handke, Euerbach, and Andreas Zietsch, Röthlein, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jun. 22, 1994, Ser. No. 263,773

Claims priority, application Germany, Jun. 24, 1993, 43 21 036.8

Int. Cl.[6] B60G *15/00*

U.S. Cl. 188—322.11 **24 Claims**



1. A vibration damper comprising:

a first end and a second end;

an outer tube disposed between said first end and said second end;

said first end comprising means for connecting said vibration damper to a first body;

said second end comprising means for connecting said vibration damper to a second body;

said outer tube having an external surface;

said outer tube defining a circumference at said external surface;

a chamber defined within said outer tube;

said chamber containing a damping fluid;

a piston rod sealingly projecting into said chamber and being axially displaceable with respect to said outer tube;

a piston attached to said piston rod, said piston being disposed within said chamber to sealingly divide said chamber into first and second chambers;

means for permitting fluid communication between said first end second chambers;

said vibration damper defining a central longitudinal axis, the central longitudinal axis defining an axial direction of said vibration damper;

bracket means extending outwardly from said outer tube in a generally radial direction with respect to said longitudinal axis;

said bracket means having means for limiting axial displacement of at leas a portion of said vibration damper;

said means for limiting axial displacement comprising means for striking an external object to cease axial displacement of said at least a portion of said vibration damper;

said bracket means comprising:

a back portion disposed adjacent said external surface of said outer tube, said back portion extending over a portion of the circumference of said outer tube;

a pair of side portions extending radially outwardly from said external surface of said outer tube;

each of said pair of side portions being spaced apart from one another;

a front portion extending between said pair of side portions, said front portion being spaced apart from said back portion;

a single weld simultaneously and operatively connecting a portion of said front portion with:

said back portion; and

at least one of said side portions; to hold said portion of said front portion, said back portion and said at least one of said side portions in position with respect to one another;

said bracket means being configured to accept a load along a predetermined direction upon the striking of an external object to stop axial displacement of said at least a portion of said vibration damper; and

at least a substantial portion of said single weld being disposed to run in the direction of the load on the bracket means.

5,622,243

CORD WINDER FOR A VACUUM CLEANER

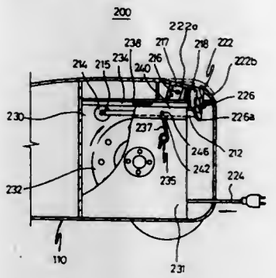
Sang-Bo Kang, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 27, 1995, Ser. No. 562,883

Claims priority, application Rep. of Korea, Nov. 26, 1994, 94-31373 U

Int. Cl.[6] H02G *11/02*; **B65H** *75/30*

U.S. Cl. 191—12.2 R **13 Claims**



1. A cord winder for a vacuum cleaner, the cord winder comprising:

a reel for winding a power cord on the reel by means of a first biasing force, the reel installed in a reel chamber defined in a

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canister of the vacuum cleaner, the reel chamber having a friction strip attached on an inner surface of a ceiling of the reel chamber;

a first means for cooperating with the friction strip at a first position, thereby preventing the reel from being rotated by the first biasing force;

a second means for guiding the first means, as the first means is moved horizontally;

a third means for applying a second biasing force to the first means so as to maintain the first means at the first position;

a fourth means for separating the first means from the first position while overcoming the second biasing force;

a button for operating the fourth means, the button constituting a rear upper end of the canister; and

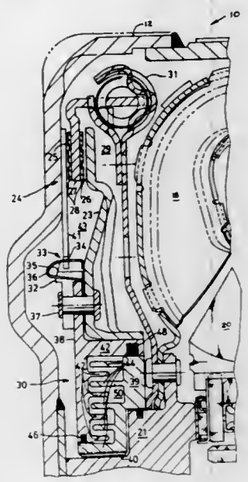
a fifth means for applying an upward third biasing force to the button.

5,622,244

TORQUE CONVERTER CLUTCH HAVING A PARALLEL VISCOUS DRIVE

James E. Hansen, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1995, Ser. No. 537,993
Int. Cl.[6] F16H *45/02*; **F16D** *47/06*
U.S. Cl. 192—3.25 **15 Claims**



1. A hydrodynamic torque converter having an input shell, a turbine and a bypass clutch, comprising:

a viscous coupling drivably engaged with said input shell and turbine, said coupling comprising an input member in continual driving engagement with said input shell; and

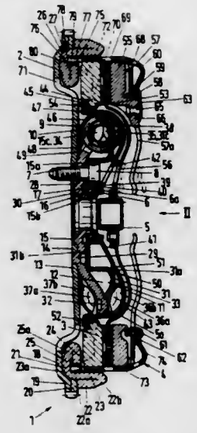
a friction clutch drivably engaged with said input shell and turbine, said friction clutch having a parallel driving relationship to said viscous coupling.

5,622,245

TORQUE TRANSMITTING APPARATUS

Wolfgang Reik, Bühl, and Johann Jäckel, Baden/Baden, both of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Buhl, Germany

Filed Jun. 20, 1994, Ser. No. 262,620
Claims priority, application Germany, Jun. 19, 1993, 43 20 381.7; Sep. 30, 1993, 43 33 460.1
Int. Cl.[6] F16D *13/71*;*13/60*
U.S. Cl. 192—55.1 **156 Claims**



1. Apparatus for transmitting torque comprising: first and second flywheels rotatable with as well as relative to each other about a common axis, said first flywheel being arranged to be rotated by a prime mover and said second flywheel being arranged to transmit torque to a transmission and comprising an annular component provided with a friction surface; and means for opposing rotation of said flywheels relative to each other including a slip clutch and a damper having energy storing elements in series with said slip clutch, interposed between said flywheels and acting in a direction circumferentially of said flywheels, said energy storing elements, one of said flywheels and said slip clutch being at least closely adjacent to a plane which is normal to said axis, said energy storing elements and said slip clutch and said annular component being disposed at different radial distances from said axis and being located at least substantially at the same distance from said plane.

5,622,246

MECHANISM FOR TRANSPORTING CONNECTED STEPS

Masao Kubota, 22-7, Narimasu 2-chome, Itabashi-ku Tokyo, 175, Japan

PCT No. PCT/JP94/01440, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO95/06612, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 31, 1994, Ser. No. 424,420
Claims priority, application Japan, Sep. 2, 1993, 5-252058; Aug. 15, 1994, 6-222348
Int. Cl.[6] B65G *17/00*; **B66B** *21/00*
U.S. Cl. 198—321 **9 Claims**

1. A continuous transport apparatus, comprising:

a plurality of unit step groups, each unit step group formed of a plurality of steps and having a front and a rear;

connecting mechanisms for connecting the plurality of steps in the unit step group;

a first stroke track having a terminal end;

first unit step running means for transferring unit step groups on the first stroke track such that the rear of each unit step group is in contact with the front of another unit step group and the front of each unit step group is in contact the rear of another unit step group;

a second stroke track aligned parallel to the first stroke track and having a starting end;

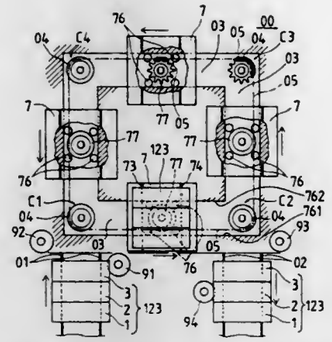
second unit step running means for transferring unit step groups on the second stroke track such that the rear of each unit step group is in contact with the front of another unit step group and the front of each unit step group is in contact the rear of another unit step group, the unit step groups being transferred on the first and second stroke tracks while being oriented to extend in a first direction, parallel to the first and second stroke tracks;

a circuit forming a looped connection between the terminal end of the first stroke track and the starting end of the second stroke track;

a carriage for transporting one unit step group of the plurality of unit step groups, on the circuit from the terminal end of the first stroke track to the starting end of the second stroke track, the carriage being oriented to extend in a second direction;

carriage driving means for circulating the carriage through the looped connection of the circuit while maintaining the orientation of the carriage in the second direction; and

unit step delivery means for delivering the unit step group from the terminal end of the first stroke track to the carriage and from the carriage to the starting the end of the second stroke track, the unit step delivery means delivering the unit step group while maintaining the orientation of the unit step group in the first direction.



5,622,247

PALLET CHANGER

Shigeru Yamada, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Japan

Filed Nov. 16, 1994, Ser. No. 341,064
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—346.1 **3 Claims**

1. A pallet changing apparatus comprising:

a machine tool table for machining a workpiece;

a pallet having a lower surface with a circular groove formed therein;

a pallet changer for placing said pallet on said machine tool table and for removing said pallet from said machine tool table;

a frame supporting said pallet changer;

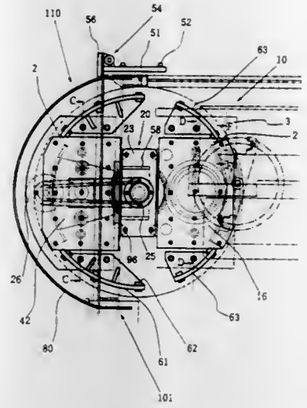
hinge means for swinging said pallet changer relative to said frame between an operative position adjacent said machine tool table and an inoperative position remote from said machine tool table;

fixing means for locking said pallet changer in said operative position;

a first plate member on said pallet changer and a second plate member on said machine tool table, each of said first and second plate members having circular edges and mating with said circular groove of said pallet;

rotating means for rotating said pallet between a first position wherein said pallet is mounted on said first plate member and a second position wherein said pallet is mounted on said second plate member; and

guide means for guiding said pallet during movement between said first and second positions.

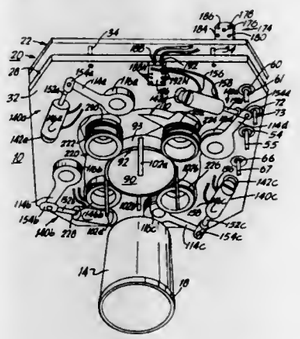


5,622,248

ADJUSTABLE CONTAINER FEEDING SYSTEM FOR PRINTING PRESSES

Fernando Villaverde, Sr., and Fernando Villaverde, Jr., both of Piscataway, N.J., assignors to F & L Machinery Design, Inc., Edison, N.J.

Filed Aug. 22, 1995, Ser. No. 517,703
Int. Cl.[6] B65G *47/22*;*33/06*
U.S. Cl. 198—493 **18 Claims**



1. An apparatus for engaging and feeding containers to a printing press, comprising:

a) a support frame having a plurality of shafts mounted thereon;

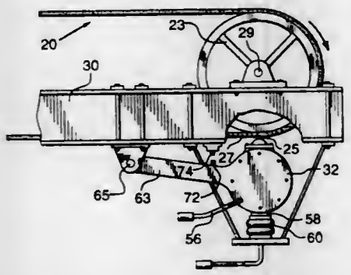
b) a plurality of worm members mounted on said shafts and each having spiral grooves for engaging a bead of a container, said worm members being movable between a first position for engaging said bead and a second position disengaged from said bead;

c) a feeder tube mounted on said support frame for setting and controlling the location of said first position of said worm members and for supplying said containers to said worm members;

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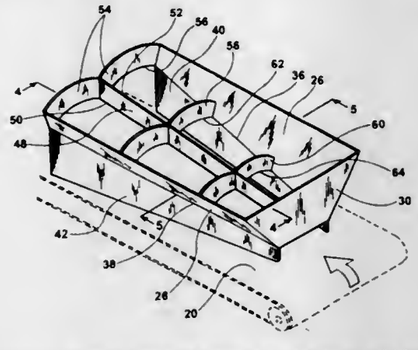
d) a plurality of worm block assemblies mounted within said support frame each including means for rotating one of said plurality of worm members while in said first position to simultaneously engage said bead to move said container forward relative to said feeder tube to the end of said spiral grooves;
e) means for injecting air at said container for transferring said container from the end of said spiral grooves to a mandrel for receiving said container for printing; and
f) means for moving said worm block assemblies between said first and second positions.

5,622,249
CONVEYOR BELT SCRAPER
Normand J. Morin, 143 A Gibson Street, Parry Sound, Canada
PCT No. PCT/CA93/00406, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/08875, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 13, 1993, Ser. No. 411,801
Claims priority, application United Kingdom, Oct. 13, 1992, 9221426
Int. Cl.[6] B65Q *45/12*
U.S. Cl. 198—499 **16 Claims**



1. Conveyor belt scraper apparatus, for use with a conveyor belt (**120**) which is travelling with respect to a fixed frame (**30**), characterised in that:
the apparatus is so structured as to be suitable for use with a conveyor belt which includes structural means such as pulleys to support the belt;
the apparatus includes a scraper blade (**25**), and the blade is arranged for direct scraping contact with the belt;
the apparatus includes a housing (**32**), and the blade is mounted in the housing;
the apparatus includes an operable actuator (**60**), for urging the housing and the belt towards each other with an actuation force;
the apparatus includes structural means connecting the actuator to the housing;
the apparatus includes a suspension means (**63**), which is suitable for mounting on the fixed frame;
the suspension means is effective to provide guided suspension travel movement relatively between the belt and the housing, in the direction towards and away from each other and is effective to enable the actuation force to be maintained between the housing and the belt during said suspension movement, whereby the distance of the housing from the belt varies, during operation, the variable distance being termed distance D;
the apparatus includes an operable adjuster (**76**), which is suitable for adjusting the position of the blade relative to the housing, in the direction towards the belt;
the apparatus includes a distance sensor, for sensing and signalling when the distance D between the housing and the belt becomes less than a predetermined datum distance D1;
the apparatus includes a means for operating the adjuster, which operates the adjuster automatically in response to the signal from the distance sensor that the housing has approached the belt closer than the predetermined datum distance D1;
the arrangement of the adjuster in the apparatus is such that the adjuster is effective, when operated, to move the blade out of the housing, towards the belt, a predetermined adjustment distance D2, thereby increasing the distance D of the housing from the belt by the predetermined distance D2.

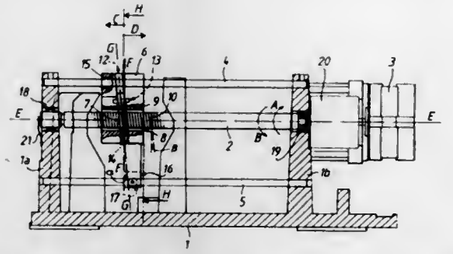
5,622,250
INTERFACE FOR DISCHARGING HOPPER CONTENTS ONTO FEEDER
Jerry R. Johanson, San Luis Obispo, Calif., assignor to J R Johanson, San Luis Obispo, Calif.
Filed Oct. 17, 1995, Ser. No. 543,925
Int. Cl.[6] B65G *47/18*
U.S. Cl. 198—550.01 **17 Claims**



1. In an interface between a feeder and a hopper, said hopper having a rectangular slot outlet that includes two spaced parallel longer edges and two spaced parallel shorter edges that lie in a horizontal plane, said interface having a pair of converging side plates converging downwardly respectively from the two spaced parallel longer edges of the rectangular slot and extending downwardly to an inclined lower edge the elevation of which above the loading surface of the feeder increases in the direction of travel of the loading surface, the inclined lower edges of the converging side plates defining an inclined plane sloping upwardly in the direction of travel of the loading surface of the feeder, said pair of converging side plates connected above the intake end of the feeder by a laterally-extending vertical plate that extends vertically downward from one of the two spaced parallel shorter edges, said pair of converging side plates connected above the discharge end of the feeder by a laterally-extending strike-off plate, the improvement comprising:
a vertical center plate inclined upwardly in the direction of travel of the loading surface of the feeder, located midway between the converging side plates, having a lower edge lying in said inclined plane and having an upper edge parallel to the lower edge.

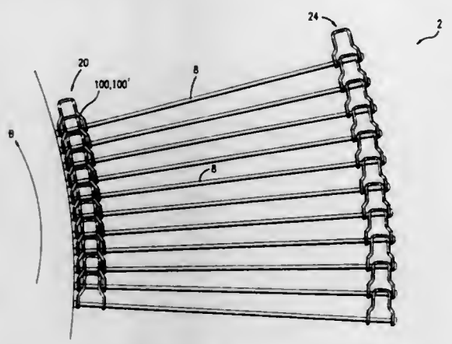
5,622,251
TRANSFER DEVICE FOR PERFORMING A LINEAR TRANSFER MOVEMENT
Matti Rantanen, Kirkkonummi, Finland, assignor to Orion-Yhtyma OY, Espoo, Finland
Filed Jan. 12, 1995, Ser. No. 371,792
Claims priority, application Finland, Jan. 14, 1994, 940204
Int. Cl.[6] B65G *25/08*
U.S. Cl. 198—747 **9 Claims**

1. A transfer device for performing a regular, linear transfer movement of an object, comprising a body which is provided with a threaded bar, an electric motor for driving the threaded bar, two guide bars, a slide and a follower attached to the slide, the slide being moved along the guide bars by the follower engaging the



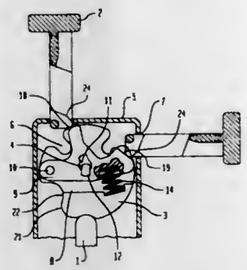
threaded bar, the follower transforming rotational movement of the threaded bar into a linear transfer movement, and the object to be transferred with the transfer device being attachable to the slide, wherein the slide comprises an opening through which the threaded bar is fitted to pass, and located at the opening is the follower, comprising a plate-like member having a tongue, fitted to follow a threaded groove of the threaded bar, wherein the tongue is disposed in an angle to a perpendicular plane of the longitudinal axis of the threaded bar, which equals an ascending angle of the threaded groove of the threaded bar.

5,622,252
REDUCED RADIUS CONVEYOR BELT
Jack R. Raum, Winchester, Va., assignor to Ashworth Bros., Inc., Fall River, Mass.
Filed Mar. 31, 1995, Ser. No. 414,500
Int. Cl.[6] B65G *21/18*
U.S. Cl. 198—778 **15 Claims**



1. A conveyor belt having a direction of travel, said belt comprising:
a plurality of pivotal transverse rods extending laterally across the belt and having inner and outer ends along inner and outer edges of the belt,
a plurality of connecting links disposed in a pair of spaced rows at the inner and outer ends of said rods, each of said connecting links having a pair of longitudinally spaced first openings extending laterally therethrough, said rods extending through said first openings to interconnect said connecting links in transverse rows;
each of said connecting links having a base portion and a pair of spaced legs rigidly connected to the outer ends of said base portion;
each of said legs having at least one stepped portion parallel to the direction of travel, said stepped portions on opposing legs being spaced apart a relatively narrow distance at said base portion and a relatively wide distance at the opposite end thereof, said stepped portions including a substantially straight segment at said narrower stepped portion, a substantially straight segment at said wider stepped portion, and an angled segment therebetween connecting said substantially straight segments;
said links being arranged in partially nested relation with narrower stepped portions of respective ones of said links being received in closely fitting sliding relation within the wider stepped portions of adjoining links;
the inner surfaces of said wider stepped portions having said substantial straight segment ahead of the adjoining outer surfaces of said narrower stepped portions and said adjoining outer surfaces having said substantially straight segment at said narrower stepped portion extending behind said inner surfaces when the belt is in normal portion for straight travel to permit said adjoining outer surfaces to slide forward within said inner surfaces when said inner connecting links collapse for curved travel; and
wherein said angled segment between said substantially straight segments of said stepped portion of said inner connecting links is greater in length than said angled segment between said substantially straight segments of said stepped portion of said outer connecting links;
wherein the shorter length of said outer angled segments maintains the direction of travel of said belt in a normal straight orientation by limiting the amount of lateral clearance between adjoining said connecting links; and
wherein the longer length of said inner angled segments allow adjoining said inner links to fully collapse in an alternate orientation to follow paths curved laterally to one side.

5,622,253
SAFETY SWITCH
Rolf Wecke, Bückeburg; Roland Mönnings, Porta Westfalica, and Ralph Hoppmann, Minden, all of Germany, assignors to Hans Bernstein Spezialfabrik für Schaltkontakte GmbH & Co., Porta Westfalica, Germany
Filed Oct. 2, 1995, Ser. No. 537,475
Claims priority, application Germany, Oct. 13, 1994, 44 36 579.9
Int. Cl.[6] H01H *27/00*
U.S. Cl. 200—43.07 **31 Claims**



1. A safety switch, comprising:
a housing receiving a reciprocating plunger for operating an element, said housing having two lateral access openings;
a switch wheel rotatably mounted on an axle within said housing;
an actuator selectively insertable in one of the access openings of said housing for rotation of said switch wheel; and
a locking means secured to said switch wheel and including a spring-loaded locking member arranged on each side of said switch wheel, said locking members having contact surfaces acted upon by said actuator for movement of said locking members in a substantially radial direction in relation to said axle between a locking position for inhibiting rotation of said switch wheel and a release position for allowing rotation of said switch wheel,
wherein said locking members are swingably mounted to said switch wheel about a pivot axis that is distal from a central

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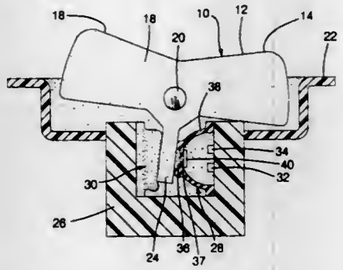
passage area of said axle, said locking members having a locking means in the passage area of said axle in form of a keyed bore with a circular passageway for said axle and a locking groove at least on one side of said circular passageway for cooperation with keyed surfaces formed on said axle.

5,622,254

TWO-POSITION LATCHING TWO DOME SWITCH

James S. Lee, Niles, Ohio, assignor to Packard Hughes Interconnect Company, Irvine, Calif.

Filed Apr. 18, 1996, Ser. No. 633,264
Int. Cl.[6] H01H *21/24*
U.S. Cl. 200—557 **6 Claims**



1. A two-position latching two dome switch comprising:
a switch control member body having a portion pivotally connected to a support for movement of the member from a first position to a second position;
first and second nonmetallic, flexible domes each having an electrically conductive element carried in the underside of the dome, said domes each being mounted on a support having first and second sets of spaced-apart conductive traces thereon, each of said domes being constructed and arranged to continually engage a portion of said switch control member;
whereby upon movement of said switch control member to a first position, said member collapses said first dome causing said conductive element under said first dome to engage a first set of spaced-apart conductive traces closing a circuit associated therewith and said second dome is completely extended and engages said member to latch said switch control member in said first position wherein said first dome is collapsed, and upon movement of said switch control member to said second position said member pivots to collapse said second dome causing said electrically conductive element under said second dome to engage a second set of spaced-apart electrical traces and close a circuit associated therewith and so that said first dome is fully extended and engages said member to latch said switch control member in said first position and wherein said second dome is collapsed.

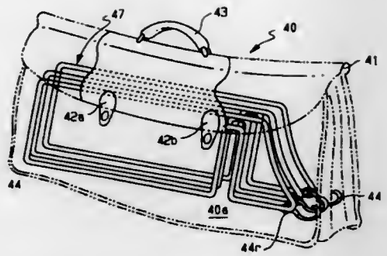
5,622,255

PORTFOLIO-STYLE GARMENT BAG

Gene J. Riccoboni, Carmel, N.Y., assignor to Ricco International, Brewster, N.Y.

Continuation-in-part of Ser. No. 153,394, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 57,100, May 3, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 397,505
Int. Cl.[6] B65D *85/18*
U.S. Cl. 206—279 **5 Claims**

1. A garment case comprising
(a) interior storage area in the case having longitudinal dimensions and width dimensions with the longitudinal dimensions being substantially greater than the width dimensions;



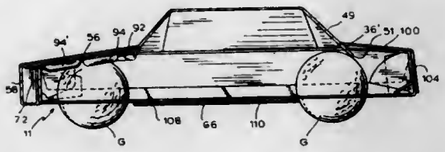
(b) at least one garment holding unit positioned in said storage area;
(c) each holding unit comprising at least two foldable sections which sections have longitudinal dimensions and width dimensions with the longitudinal dimensions being substantially greater than the width dimensions, which sections are foldably hinged together for foldable rotation about an axis lying in a section longitudinal dimension and each said foldable section adapted for receiving garments for hanging thereon and thereafter foldable about said axis for positioning in the case with the said axis parallel to a case longitudinal dimension;
(d) each said foldable section further including
i) upper right and left coat first garment support portions to support by hanging the upper shoulder portion of a coat, one on each foldable section;
ii) lower coat side second support portions, one on each section; and
iii) a further garment support portion for receiving an additional garment thereon which further garment support portion is intermediate to (1) the upper coat support portions and (2) the lower coat support portions; and
(e) the holding unit fold axis being located such that right and left coat garment supports turn toward one another when the foldable sections are folded.

5,622,256

AUTOMOBILE SHAPED GOLF BALL PACKAGE

Robert J. Tesar, Waxhaw, N.C., assignor to Rexam, Inc., Charlotte, N.C.

Filed Jun. 21, 1995, Ser. No. 493,006
Int. Cl.[6] B65D *85/00;73/00*
U.S. Cl. 206—315.9 **7 Claims**



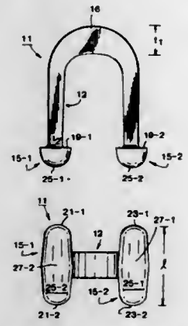
4. A package in the form of a toy vehicle comprising
(a) a cut, folded, scored, and glued paperboard blank formed into a sleeve structure generally having a chassis element and wheels;
(b) said chassis element having a plurality of circular openings formed therein;
(c) a plurality of balls removably housed with said sleeve structure in said openings and supporting said chassis element for rolling movement.

5,622,257

FASTENER FOR ATTACHING A BUTTON TO A GARMENT OR LIKE MATERIAL AND FASTENER CLIP INCLUDING ONE OR MORE OF SAID FASTENERS

Charles L. Deschenes, North Attleboro; Terence J. Jones, Bolton, both of Mass., and William J. Cooper, Woonsocket, R.I., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 989,201, Dec. 11, 1992, Pat. No. 5,383,260. This application Sep. 19, 1994, Ser. No. 309,010
Int. Cl.[6] B65D *85/24*
U.S. Cl. 206—345 **10 Claims**



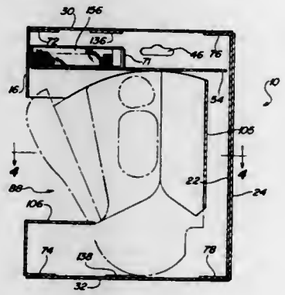
1. A fastener for attaching a button to a piece of fabric, the button having two or more holes, said fastener comprising a flexible filament, a first transverse bar at one end of said flexible filament, and a second transverse bar at the opposite end of said flexible filament, said flexible filament having a substantially uniform width over its length, a non-uniform thickness and a bent shape prior to use in connection with attaching the button to the piece of fabric, said first and second transverse bars being parallel to one another and perpendicular to said flexible filament, said flexible filament and said pair of transverse bars being appropriately dimensioned so that said pair of transverse bars may be inserted through a corresponding pair of holes in the button and then through the piece of fabric in such a way as to be retained by the underside of the piece of fabric, with said flexible filament extending between the pair of holes.

5,622,258

INTERACTIVE PACKAGING SYSTEM

Leonard R. Baublitz, 5440 Lineboro East, Millers, Md. 21107; Ronnie L. Jones, 5620 Thom Rd., Mebane, N.C. 27302, and Rodney D. Dixon, 1818 Woodhue Dr., Burlington, N.C. 27253

Continuation of Ser. No. 236,492, Apr. 29, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 617,536
Int. Cl.[6] A45C *11/26*
U.S. Cl. 206—349 **20 Claims**



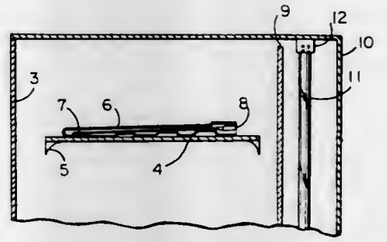
1. An interactive packaging system for a product comprising:
a front panel defining a first plane;
a back panel positioned in spaced parallel relationship with said front panel and defining a second plane;
first and second side panels extending between and at ends thereof interconnecting said front and back panels, said first and second side panels defining third and fourth planes intersecting said first and second planes;
first and second end closure means for closing opposite ends of said packaging system, said first and second end closure means defining fifth and sixth planes each of which intersects said first, second, third and fourth planes to define an encompassed volume;
a cutout portion extending across a portion of said front panel, back panel and across one of said first and second side panels intermediate the ends thereof, said cutout portion affording access to said product contained within said packaging system; and
means for supporting and retaining said product within said encompassed volume, said means for supporting and retaining said product coupled with either or both said front and back panels, such that said product is prohibited from removal through said cutout portion.

5,622,259

REDUCTION OF DISCOLORATION IN PLASTIC MATERIALS

Jonathan M. Church, Pfizer Inc. 235 E. 42nd St. 20th Floor, New York, N.Y. 10017-5755

Filed Jun. 7, 1995, Ser. No. 473,681
Int. Cl.[6] B65D *85/30;* **B29C** *71/04*
U.S. Cl. 206—363 **9 Claims**



1. A method for reducing discoloration in a discolored plastic material in which the discoloration was produced by sterilizing the plastic material with gamma radiation, which method comprises placing the material in a closed chamber containing at least one lamp which produces light having a wavelength within the range of 200 to 600 nm and exposing the material to said light for up to twenty four hours to reduce the discoloration in the plastic material until the material is substantially restored to its original appearance.

5,622,260

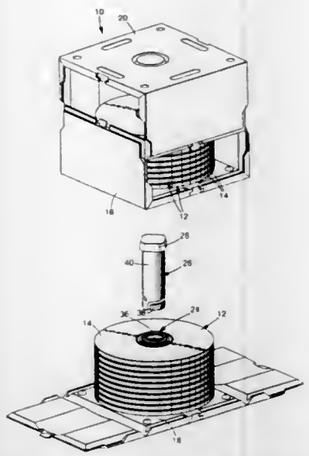
SUPPORT FOR TAPE PANCAKES

Davis W. Chamberlin, and Gerald J. Niles, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 915,119, Jul. 17, 1992, Pat. No. 5,284,246. This application Apr. 22, 1993, Ser. No. 52,129
Int. Cl.[6] B65D *85/62*
U.S. Cl. 206—394 **13 Claims**

11. A support for securing a plurality of stacked pancakes, wherein each pancake is mounted on a core and wherein each core has at least one axial channel, wherein the support comprises a head formed on at least one end of the support, wherein the head is polygonal and has a maximum outer diameter which includes at least one corner of the polygon that is greater than the inner

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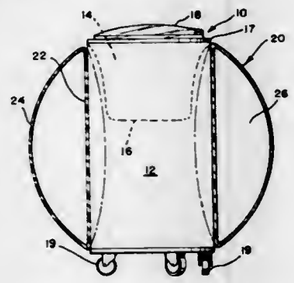
diameter of the pancake cores to contact and secure the articles, wherein when one corner aligns with the axial channel on the core the core can be placed over the head and onto the support and wherein after the core is placed on the support, rotation of the head to rotate the corner out of alignment with the axial channel wedges the core onto the support.

5,622,261

MERCHANDISING DISPLAY DEVICE HAVING INFLATABLE DECORATIVE COVERING

Stephen M. Mobley, Marietta; Ladd M. Orr, Clarkston, and J. David Robertson, Atlanta, all of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 19, 1995, Ser. No. 424,853
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—457 **12 Claims**



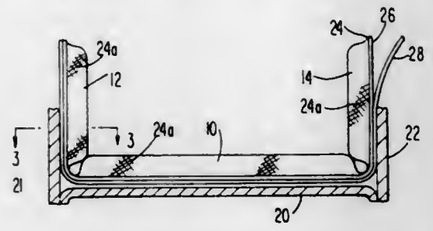
1. A merchandising display device comprising:
an upright tubular housing having a food-chilling compartment defined therein and an open top for permitting access to merchandise in said compartment;
a transparent closure for said open top of said housing; and
a removable decorative covering of a deflatably air-inflated sleeve structure disposed around said housing so as to cover at least a part of an outside surface of said housing without blocking said open top, said covering comprising an outer wall defining an outer perimeter of said sleeve structure, said covering being formed of air-impervious flexible sheet material such that said outer wall is bulged outwardly due to internal pressure of said covering to provide a contour different from the contour of said housing, wherein said covering comprises an extension extending upwardly to a position above said closure, said extension comprising a shade means for shading said open top.

5,622,262

HIGH PRESSURE AIR CUSHION FOR COMPUTER

Bernard D. Sadow, Chappaqua, N.Y., assignor to Outrigger, Inc., Chappaqua,, N.Y.

Continuation-in-part of Ser. No. 360,013, Dec. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 229,683, Apr. 19, 1994, abandoned. This application Feb. 2, 1995, Ser. No. 383,292
Int. Cl.[6] B65D *81/02;85/38*
U.S. Cl. 206—522 **6 Claims**



1. A support for use in the transportation of an article of electronic equipment, said support being comprised of:
plural inflatable cushion members;
each cushion member being receivable within a supporting structure;
said cushion members being comprised of plural inflatable bladders, and a reinforcement layer formed from a flexible material resistant to stretching of said flexible material enveloping said plural inflatable bladders, said flexible material being operative to limit the extent of expansion of said bladders when inflated by a pressurized gas, and in turn permit pressurization of said bladders to an elevated internal pressure;
said cushion members acting as a pneumatic spring operative to isolate a said article of electronic equipment from impact shocks when positioned within said support;
said support further including,
said cushion members being arranged in a continuous strip, at least one of said cushion members having opposite ends and being connected by a hinge at each of said opposite ends to at least one other cushion member;
whereby, said continuous strip of cushion members is convertible from a first condition in which said cushion members are arranged in face-to-face relation, to a condition in which said cushion members are arranged in a U-shaped configuration; and a said article of electronic equipment being receivable within said U-shaped configuration of cushion members.

6. An impact resistant support for a personal computer, said support being for incorporation into an article of luggage, and including:
a tubular sleeve formed from a material highly resistant to stretching in directions axially and transversely of said sleeve, said sleeve enclosing plural parallely arranged internal cavities;
a plurality of inflatable bladders of an expandable material positioned within said parallely arranged internal cavities of said sleeve, and extending longitudinally thereof; and,
means for inflating each said bladder while positioned within said sleeve;
whereby, each said bladder is constrained by said sleeve against expansion of each said bladder to a dimension larger than the internal dimension of the cavity of said sleeve associated therewith, and, each said bladder can be inflated to a pressure in excess of a pressure that would result in inflation of said respective bladders to a dimension in excess of the internal dimensions of the associated cavity of said sleeve;

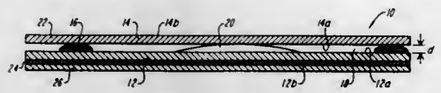
further including said inflatable bladders being arranged in continuous strip form, at least one of said bladders being connected by hinges to at least two adjacent bladders, whereby to permit hinging of said respective bladders relative to each other, and permit orientation of said sleeve and contained bladders into a U-shaped configuration.

5,622,263

SAMPLER PACKAGE AND METHOD OF MAKING THE SAME

Steven J. Greenland, Stratham, N.H., assignor to Webcraft Technologies, Inc., Horsham, Pa.

Filed May 1, 1995, Ser. No. 431,781
Int. Cl.[6] B65B *31/00*
U.S. Cl. 206—581 **16 Claims**



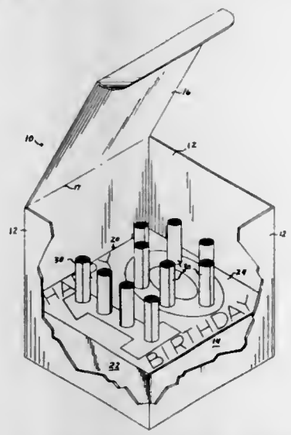
1. A sampler package for a free flowing product, said package comprising:
superimposed first and second flexible plies having confronting thermoplastic inner surfaces and oppositely facing outer surfaces; and
a thermoplastic wall surrounding an area between said confronting surfaces, said confronting surfaces being physically separated by and cooperating in a melt-bonded relationship with said wall to define a hermetically sealed chamber configured and dimensioned to contain said product.

5,622,264

GIFT BOX FOR MONETARY GIFTS

Moe (Maureen) Wetterlund, 19060 Pleasantview Rd., Eden Prairie, Minn. 55346

Continuation of Ser. No. 493,710, Jun. 22, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 585,382
Int. Cl.[6] B65D *85/08*
U.S. Cl. 206—765 **12 Claims**



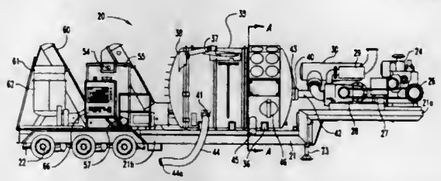
1. A gift box for containing a monetary gift, comprising:
an outer shell having a plurality of side walls, a top and a bottom together defining an interior cavity, the top and bottom being generally parallel to one another and spaced apart at least about two and five-eighths inches, the top being openable to permit access to the interior cavity;
a removable insert positionable within the interior cavity, the insert including a platform oriented generally parallel to the top and bottom and including support means for supporting the platform in a position spaced away from both the top and the bottom by a distance of at least about three-quarters of an inch, the insert including a plurality of perforations defining a plurality of circular punch-out discs having a diameter of between about one-quarter inch and about three-quarters inch; and
the platform including visibly perceptible indicia indicating a number corresponding to the age of an intended recipient, the number of punch-out discs in the platform corresponding to the number of U.S. paper currency bills required to give a monetary gift equal to the number represented by the visibly perceptible indicia;
whereby the corresponding number of currency bills may be individually rolled up and inserted through the platform in the regions defined by the perforations, thereby removing the circular punch-out discs, the platform retaining the bills in a generally vertical orientation.

5,622,265

ABRASIVE GRIT MATERIAL RECOVERY SYSTEM

John C. Drenter; Donald C. Allebach, Jr., both of Davenport, and Dieter A. Konitzer, Jr., Walcott, all of Iowa, assignors to PCT, Inc., Davenport, Iowa

Division of Ser. No. 215,280, Mar. 21, 1994, Pat. No. 5,520,288. This application Jun. 7, 1995, Ser. No. 482,445
Int. Cl.[6] B03C *1/00*
U.S. Cl. 209—221 **9 Claims**



1. A method useful in connection with the separation and recovery of abrasive grit material from blasting material containing waste material and contaminants, and abrasive grit material, comprising:
providing an air lock having a first gate at one end and a second gate at the other end, the air lock having an air lock chamber disposed between the first gate and the second gate;
from a chamber at sub-atmospheric pressure, transferring a first material selected from the group consisting of:
abrasive grit material separated from blasting material, waste material separated from blasting material, and blasting material
out of the chamber through the air lock by:
opening the first gate while the second gate is closed,
after said opening, putting some of the first material into the air lock chamber while at sub-atmospheric pressure and
after said putting, closing the first gate;
after said closing, increasing the air lock chamber pressure to pressure near that on the other side of said second gate and opening the second gate and removing the first material from the air lock chamber.

5,622,266

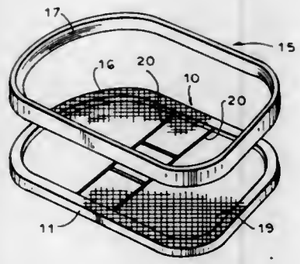
GARDEN SIEVE FOR WHEELBARROW

Thomas M. Curtis, 1385 York Ave., New York, N.Y. 10021

Filed Aug. 28, 1995, Ser. No. 520,052
Int. Cl.[6] B07B *1/00*
U.S. Cl. 209—235 **7 Claims**

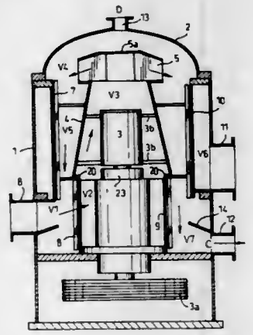
1. A garden sieve for a wheelbarrow pan of predetermined shape comprising:

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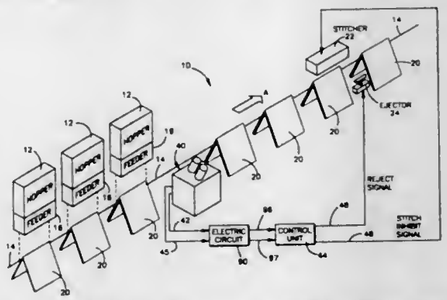
(a) a collar frame with an L-shaped flange congruent with the top edge of the wheelbarrow pan and adapted to fit loosely on said wheelbarrow pan to permit a limited horizontal movement of the collar in any direction;
(b) a sieve frame of sufficient size and strength to contain a unit volume of material to be sifted; and
(c) a wire screen mounted in said sieve frame.

5,622,267
METHOD AND PRESSURE SCREEN FOR SCREENING FIBRE SUSPENSION
Jouko Hautala, Tampere, Finland, assignor to Valmet Corporation, Helsinki, Finland
PCT No. PCT/FI94/00358, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/06159, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 18, 1994, Ser. No. 596,204
Claims priority, application Finland, Aug. 20, 1993, 933690
Int. Cl.[6] B07B *1/04*
U.S. Cl. 209—273 **15 Claims**



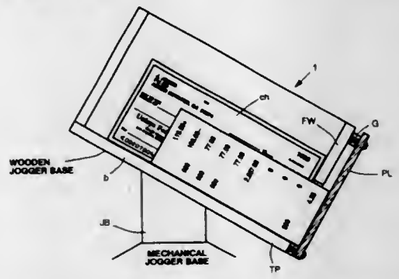
1. Method for screening fibre suspension at separate screening stages provided in a single pressure screen, wherein accept from the first screening stage is passed to the second screening stage, accept from the second screening stage and reject formed in the screening are removed from the pressure screen so that accept from the first screening stage is passed to the second screening stage through a conduit formed within a rotor of the screen, reject from the second screening stage is returned to the supply side of the first screening stage for rescreening, and reject is removed from the screen only from the first screening stage.

5,622,268
APPARATUS FOR CALIPERING A COLLATED ASSEMBLAGE
Charles J. Conner, Dayton; Douglas P. Loughman, Brookville, and David U. Johnson, Dayton, all of Ohio, assignors to Heidelberg Finishing Systems, Inc., Dayton, Ohio
Filed Nov. 30, 1994, Ser. No. 347,266
Int. Cl.[6] B07C *5/12*; **B65H** *7/02;39/00*
U.S. Cl. 209—603 **11 Claims**



1. An apparatus for use along a collating conveyor having collated assemblages thereon, said apparatus comprising:
means for forming a collated assemblage on the collating conveyor;
compressing means for compressing the collated assemblage;
sensing means for sensing the thickness of a compressed collated assemblage and for providing a first electrical signal which varies as a function of the thickness of the compressed collated assemblage; and
circuit means for (i) detecting a value of said first electrical signal corresponding to a maximum compressed condition of the collated assemblage, (ii) holding said value for at least a predetermined time period, and (iii) providing a second electrical signal indicative of whether said value of said first electrical signal is within a predetermined value range.

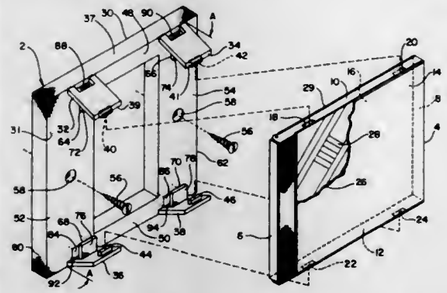
5,622,269
APPARATUS AND METHOD OF ITEM JOGGING WITH REGISTRATION-BARRIER CUTOUT TO PASS UNDER-HEIGHT ITEMS
Thomas A. Seymour, Orange Park; Edward A. Green, Jacksonville, and Richard Pralat, Deltona, all of Fla., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Nov. 29, 1995, Ser. No. 564,750
Int. Cl.[6] B07B *13/05*
U.S. Cl. 209—680 **18 Claims**



1. A method for jogging one or several bunches of standard-size documents of prescribed height mixed in with anomalous-size documents of lesser height, these standard-size documents to be shaken and tilted to register a forward edge of said standard-size documents against a prescribed first wall of a receptacle, this method comprising the steps of:

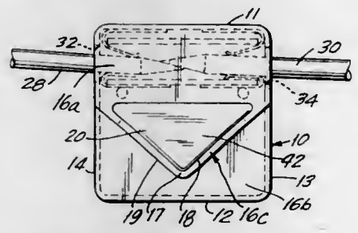
relieving said first wall to form a cutout to pass only said anomalous-size documents; providing a second wall in said receptacle spaced a prescribed protrusion-distance d_p forward of said first wall; and shaking all said documents so as to register only the forward edges of said anomalous-size documents against said second wall after passing through said first wall.

5,622,270
COMPACT DISK STORAGE AND DISPLAY SYSTEM
Marcelo Bezos, 2899 Collins Ave. #1417, Miami Beach, Fla. 33140-4419
Filed Oct. 4, 1994, Ser. No. 317,895
Int. Cl.[6] A47G *29/00*
U.S. Cl. 211—40 **37 Claims**



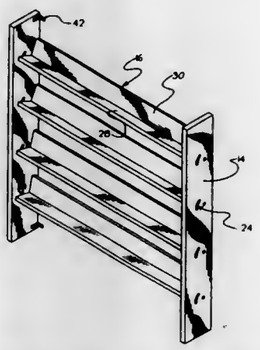
1. A storage and display system for a case, the case being characterized by a front face, a rear face having a hinged door and spaced apart therefrom, peripheral first and second edges spaced apart from each other and extending from the front face to the rear face, and a first slot means defined by the first edge and a second slot means defined by the second edge, the system comprising:
a first tab for removable insertion into the first slot means;
a second tab, spaced from the first tab, for removable insertion into the second slot means; and
support means for maintaining each of the first tab and the second tab in generally fixed spatial positions relative to each other, said first tab and said second tab having a surface area structured to be received in and mechanically interengaged with the first slot means and the second slot means respectively of the case when the case is positioned between said first tab and said second tab to cooperatively grip and support the case therebetween.

5,622,271
WALL HANGABLE DEVICE
Linda R. F. Isaacs, Far Rockaway, N.Y., assignor to Innovative Premiums Inc., Oceanside, N.Y.
Filed Sep. 19, 1995, Ser. No. 531,224
Int. Cl.[6] A47F *7/00*; **B43M** *17/00*
U.S. Cl. 211—69.8 **11 Claims**



1. A wall hangable device comprising,

5,622,272
ADJUSTABLE ANGLE WALL MOUNTED RACK
Nicholas L. Orlando, Jr., Box 491, Plattekill- Ardonia Rd., Wallkill, N.Y. 12589
Filed Feb. 2, 1995, Ser. No. 382,597
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—90 **5 Claims**



1. An adjustable angle wall mounted rack comprising:
a first vertical member securable to a wall surface;
a second vertical member securable to the wall surface;
a plurality of shelf means extending between the vertical members for receiving and supporting rectangular objects relative to the vertical members;
and,
a plurality of adjustment means for coupling each respectively opposed end of each of the shelf means to the respective vertical member and for permitting angular adjustment of the shelf means about a horizontal axis directed orthogonally through the vertical members such that upper rear edges of the rectangular objects can be positioned into abutting engagement with the wall surface,
wherein each of the shelf means comprises an elongated horizontal shelf member having a first longitudinal edge spaced from a second longitudinal edge; an elongated vertical shelf member having a first longitudinal edge spaced from a second longitudinal edge coupled at the first longitudinal edge thereof to the first longitudinal edge of the elongated horizontal shelf member, wherein the vertical shelf member is coupled to the horizontal shelf member such that the vertical shelf member projects substantially orthogonally therefrom, and
wherein the adjustment means comprises a pivot fastener directed through the respective vertical member which engages the shelf means proximal to a juncture of the elongated horizontal shelf member and the vertical shelf member to pivotally couple the shelf means relative thereto; the vertical members being shaped so as to define an arcuate slot
an enclosed body having a flat rear wall and two side walls, said side walls having a pair of aligned apertures,
a pair of flat resilient metal strips mounted in said body, each strip having a pair of bent back flanges at both ends thereof,
said resilient metal strips extending in parallel spaced relation to one another between said aligned apertures to form opposite sides of a passageway within said body for receiving at least one writing implement to be inserted through either or both of said apertures within said passageway from opposite sides of said body,
said flanges of one metal strip being bent back toward and extending proximate to the flanges of the other strip to form therewith a resilient clip at each end of the pair of said flat resilient metal strips for clamping and holding an end portion of said at least one writing implement inserted within said passageway.

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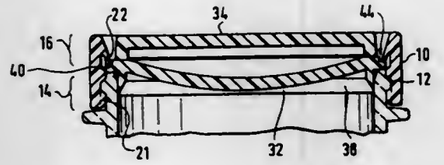
directed through the respective vertical member proximal to the pivot fastener, the arcuate slot being characterized as having a radius of curvature equal to a distance between the arcuate slot and the pivot fastener such that the arcuate slot is concentrically positioned relative to the pivot fastener; and a locking fastener directed through the arcuate slot and releasably engaged to the horizontal member.

5,622,273

RESEALABLE SNAP-FIT PLASTIC CLOSURE

Ronald L. Kelly, Chester, Va., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Sep. 15, 1995, Ser. No. 528,714
Int. Cl.[6] B65D *55/02*
U.S. Cl. 215—237 **15 Claims**



1. In a closure for sealing the mouth of a container, said closure comprising

an outer ring for durable installation on the container at its mouth, said ring having an opening substantially coextensive with said mouth,

a sealing assembly installed in said ring to seal the mouth, said assembly comprising

a plug having a sealing lip on its lower face and an annular overhang extending outwardly of the lip, and

a release lever connected to said plug, and movable between a closed position in which it lies against the plug, and an opening position in which it is out of contact with the plug to pry the plug out of the opening, the improvement wherein

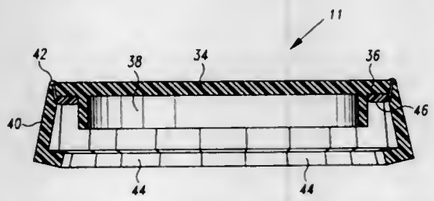
said ring has an internal flexible skirt having a free edge directed downwardly and inwardly so as to permit said plug to pass through the ring during assembly to seal the container, but to resist removal of the plug sufficiently to prevent it from being forced off the container by pressure within the container.

5,622,274

MOLDED CONTAINER CLOSURE

Stephen A. Bright, Troy, Ohio, assignor to Electra Form, Inc., Vandalia, Ohio

Filed Jun. 1, 1995, Ser. No. 456,773
Int. Cl.[6] B65D *41/24*
U.S. Cl. 215—246 **7 Claims**



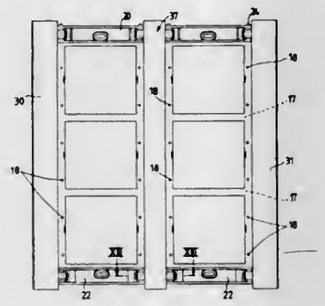
1. A closure for use on a container having an opening defined by a rim portion and a finish including a ledge situated below the rim portion, the closure including a central body portion sized to cover the container opening and including a peripheral portion for contacting the rim portion of the container, a plurality of tabs fixed unitarily to the peripheral portion, each tab including a tang for engaging the ledge of the container finish, each tab also including a longitudinally stressed portion between the tang and the rim portion reactive to an application of heat to cause shortening of the stressed portion of the tab.

5,622,275

SECTIONAL MODULAR VIDEO-INTERCOM CONTROL PANEL FOR SIMPLIFIED WIRING

Antonio Citterio, Carate Brianza, Italy, assignor to LT Terraneo S.p.A., Erba, Italy

Filed May 17, 1994, Ser. No. 243,825
Claims priority, application Italy, May 19, 1993, M1930415 U
Int. Cl.[6] B65D *73/02*
U.S. Cl. 220—4.02 **12 Claims**



1. A video-intercom control panel for simplified wiring, comprising:

a frame for housing video-intercom modules, said frame including at least two frontally opening bays for receiving and seating video-intercom modules having a given facial height and width;

at least two of said bays adjoining one another height-wise or width-wise of the frame and being facially separated by at least one respective integrally fixed crosspiece which is arranged to be broken away from the frame along provided preferential fracture lines, for thereby converting said at least two adjoining bays into a smaller number of at least one larger bay, each for receiving and seating a video-intercom module having at least one of a facial height and a facial width which is correspondingly larger than said given facial height and width;

said frame, coinciding with an intermediate location of at least one of said bays being provided with at least one pair of two perimetrically opposed mounting sites for a respective separate crosspiece, for dividing the respective bay into a plurality of smaller bays, each for receiving and securing a respective video-intercom module having at least one of a facial height and a facial width which is correspondingly smaller than said given height and width;

at least one cover element arranged for facially covering a corresponding portion of a front side of said frame around said bays; and

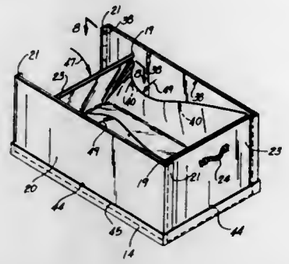
interfitting features on said front side of said frame and on each said cover element, for mounting each said cover element to said frame facially covering a corresponding portion of said front side of said frame.

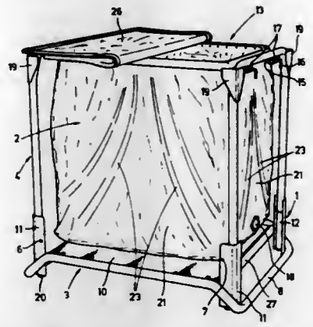
5,622,276

COLLAPSIBLE CONTAINER/COOLER APPARATUS

John M. Simmons, 292 Hwy. 90 #213, Bay St. Louis, Miss. 39520

Filed Jun. 1, 1995, Ser. No. 457,974
Int. Cl.[6] B65D *6/16*
U.S. Cl. 220—6 **18 Claims**





1. A portable, collapsible insulated container, comprising:

a) a floor portion;

b) four sidewalls, the sidewalls hingedly secured to the floor portion and movable from a first upright position defining a container space therein and foldable inwardly onto the floor portion to a second horizontal, collapsed storage position;

c) an insulated top portion positionable on the sidewalls when the sidewalls are in the upright position to define a closed container space for storing materials therein;

d) a continuous fluid impermeable liner removably attached to the container at intervals along two of the sidewalls, and permanently secured to two of the sidewalls, so that when the four sidewalls are folded inwardly, the two sidewalls having the impermeable liner permanently secured fold inwardly followed by the inward folding of the two sidewalls with the permeable liner removably attached;

e) insulation positioned between the impermeable liner and the four sidewalls and floor portion, so that when the sidewalls are in the upright position, and the top is positioned thereon, the container defines an insulated container space for storing refrigerated items therein.

5,622,277

COLLAPSIBLE CONTAINER FOR FLUID PRODUCTS

Maurice G. M. Van Glezen, Haarlem, and Harald Feijth, Utrecht, both of Netherlands, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

PCT No. PCT/NL95/00010, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO95/18754, PCT Pub. Date Jul. 13, 1995
PCT Filed Jan. 5, 1995, Ser. No. 666,585
Claims priority, application Netherlands, Jan. 7, 1994, 9400029
Int. Cl.[6] B65D *88/20*
U.S. Cl. 220—6 **9 Claims**

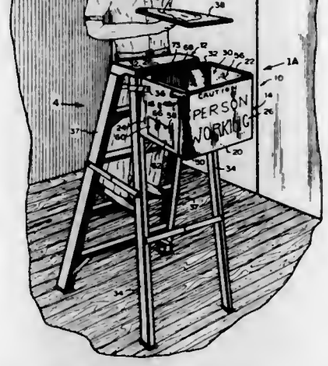
1. Container device for bulk goods or liquid, comprising a folding frame (1) as well as a flexible container (2) accommodated in the frame (1), which frame (1) comprises a base section (3) as well as at least two foldable side sections (4, 5) provided on opposite sides of the base section (3), which side sections (4, 5) are movable between a horizontal position and an upright position, and a top section (13) which is supported some distance above the base section (3) by the upright side sections (4, 5), the container (2) being fixed to the top section at its top edges (22), characterized in that the side walls (9) of the container (2) are each cut along a concave line at their top edge (22) and are each fixed to the top section (13) in such a way that the middle section of each wall has a lesser height than the sections located close to the corners of the container (2).

5,622,278

LADDER CADDY

Randy L. Fries, and Lori Meschen, both of 2121 Apricot Ct., Pittsburg, Calif. 94565

Filed Nov. 16, 1995, Ser. No. 558,396
Int. Cl.[6] B65D *25/04*
U.S. Cl. 220—480 **12 Claims**



1. A ladder caddy for a stepladder comprising:

a) a container for storing articles therein; said container including:

i) a bottom wall;

ii) a pair of side walls extending upwardly from said bottom wall;

iii) a front wall extending upwardly from said bottom wall;

iv) a rear wall extending upwardly from said bottom wall, so as to form an open top compartment therein;

v) a vertical partition positioned near said rear wall, so as to form a narrow rear storage chamber within said open top compartment of said container; and

vi) said rear wall having an opening therethrough to gain access into said narrow rear storage chamber; and

b) means for retaining said container in a removable manner to an upper back portion of the stepladder, so that a person standing on and about the stepladder can retrieve the articles from said container.

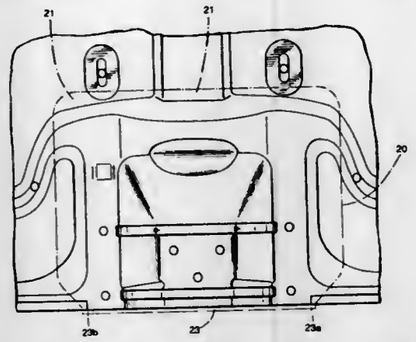
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5,622,279

PALLET CONTAINER FOR TRANSPORTATION AND STORAGE OF LIQUIDS

Udo Schutz, Bahnhofstrasse 25, D-56242 Selters, Germany

Filed Sep. 13, 1995, Ser. No. 527,844
Claims priority, application Germany, Sep. 14, 1994, 9414911 U
Int. Cl.[6] B61D *21/02*
U.S. Cl. 220—571 5 Claims



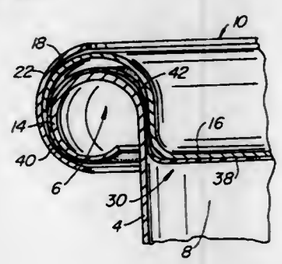
1. In a pallet container for transporting and storing liquids, comprising: an inner container made of one of plastic and sheet metal and having a sealable fill opening, a drain opening for connection to a drain fitting, a drain bottom, and an outer jacket designed as a lattice, said container standing in a pallet designed as a flat bottom tray made of sheet metal, the improvement wherein the bottom tray has in a drain area located under the drain fitting of the inner container a trough-shaped depression which opens outwardly, and which forms a center foot having a U-shaped cross-sectional profile, said bottom tray standing on the pallet via said center foot, other center feet, and corner feet, and said drain area being covered by a molded part which is resistant to corrosive liquids.

5,622,280

METHOD AND APPARATUS FOR SEALING AN OPEN HEAD DRUM

Harry Mays, and George Patton, both of Merced, Calif., assignors to North American Packaging Company, Merced, Calif.

Filed Jul. 6, 1995, Ser. No. 518,891
Int. Cl.[6] B65D *53/00*
U.S. Cl. 220—614 13 Claims



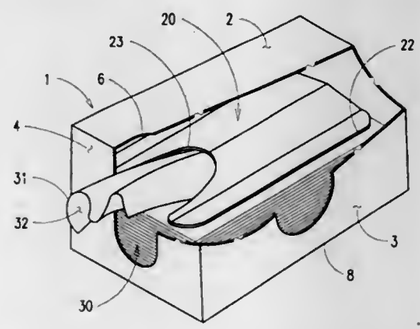
1. An open head drum with improved seal comprising:
a hollow tubular drum body;
an integrally attached circular end wall closing one end of the hollow tubular drum body;
the hollow tubular drum body defining an open end;
a lid seat defined in the hollow tubular drum body adjacent the open end for receiving a removable drum lid;
a removable drum lid having a first portion for closing the open end of the hollow tubular drum body and a second portion for co-acting with the lid seat in sealed relationship for closing the hollow tubular drum body; and
an endless sealing membrane continuously around the lid seat and the removable drum lid, the endless sealing membrane having a first annular portion attached to the lid seat, a second portion attached to the removable drum lid at a distance removed from the drum seat so as to define a planar spatial annulus between the drum seat along an annulus on the removable drum lid, and a flexible annular portion between the first and second portions, said flexible annular portion disposed immediately adjacent and over the planar spatial annulus between the drum seat and the removable drum lid whereby when separation of the removable lid from the seat occurs the endless sealing membrane at the flexible annular portion is substantially linearly disposed to prevent ingress of atmosphere interior of the drum.

5,622,281

DISPENSER FOR FOLDED SHEETS AND BULK PACKETS

Charles A. Annand, Truro, Canada, assignor to BFA Manufacturing Limited, Truro, Canada

Continuation-in-part of Ser. No. 237,863, May 4, 1994, abandoned. This application Jun. 8, 1995, Ser. No. 488,783
Claims priority, application Canada, Jun. 2, 1993, 2097527; Aug. 31, 1993, 2105246; Mar. 7, 1994, 2117110
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—48 16 Claims



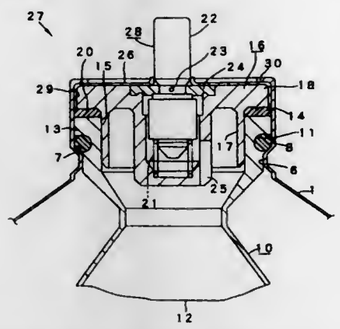
1. A container for dispensing tissues from a stack of folded individual tissues having reverse interleaved folds at opposite sides of said stack,
said container including opposite side panels joined at vertical corners to opposite end panels for containing said stack with the opposite sides of said stack disposed adjacent said opposite side panels and ends of said stack disposed adjacent said end panels, and
a control plate having bottom tissue engaging surface portions for resting on a top of said stack,
one of said end panels having a tissue removal slot disposed between corners at opposite ends of said one end panel and extending downwardly from an upper edge thereof for exposing a portion of one end of said stack,
whereby a top tissue of said stack is accessible for removal endwise from beneath said control plate, and due to friction resistance between said top tissue and an immediate subsequent tissue in said stack, said subsequent tissue in said stack, is drawn endwise by the removal of said top tissue to an accessible position projecting endwise partially from beneath said control plate and through said slot in said end panel.

5,622,282

DOUBLE-WALL AEROSOL CONTAINER

Iwao Yazawa, Tokyo; Toshiyuki Mitsui, Saitama-ken, and Kazunori Hoshino, Kanagawa-ken, all of Japan, assignors to Toyo Aerosol Industry Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,312
Claims priority, application Japan, Dec. 21, 1994, 6-318768
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—95 5 Claims



1. A double-wall aerosol container comprising:
a hollow jacket provided with a charging valve at a bottom of said jacket for charging a propellant into said jacket and also provided with an engagement ridge on an inner peripheral surface of said jacket at an end of said jacket opposite said charging valve, said jacket further including a first annular packing abuttingly engaging an upper side of said engagement ridge;
an inner bag having an open end, said inner bag being provided with a flange formed around said open end of said inner bag, said flange having a second annular packing provided on an upper end face thereof, wherein said inner bag is also provided with a storage section connected to said flange, at least said storage section being deformable by a pressure of the propellant charged in said jacket;
a housing including an inner frame inserted in said open end of said inner bag, and an annular rib protruding radially from said inner frame so as to abut said second annular packing on said upper end face of said flange of said inner bag, said housing also including an aerosol spray valve mechanism, said aerosol spray valve mechanism including a stem portion; and
a cover which is fastened to an upper end portion of said jacket for fixing and covering an upper surface of said housing, with said stem portion of said valve mechanism protruding from a center of said cover.

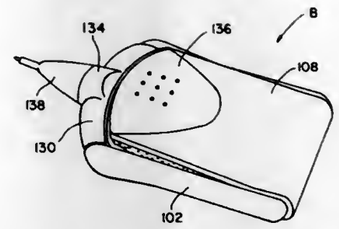
5,622,283

PAINT DISPENSING SYSTEM

Adam P. Morrison, Rockford, Ill., assignor to The Testor Corporation, Rockford, Ill.

Filed Jan. 31, 1995, Ser. No. 381,549
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—103 15 Claims

1. A paint pouch assembly for dispensing a fluid therefrom, the assembly comprising:
an elongated, bag-like pouch defined by facing sidewalls sealed to one another along their periphery to form an internal cavity; and
a fitting defining an outlet and having a first passage disposed substantially along a centerline of the pouch and a second passage disposed substantially perpendicular to the first passage, the second passage being interposed between the cavity and the first passage and terminating in an inlet within the cavity that is substantially parallel to the sidewalls whereby pressing a sidewall portion against the inlet shuts off fluid flow to the passages.

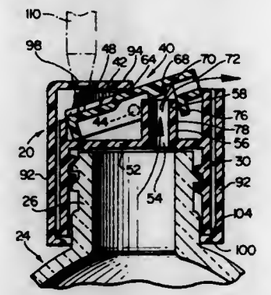


5,622,284

CHILD-RESISTANT, TOGGLE-ACTION CLOSURE

Craig Sawicki, 1469 Haise, Elk Grove Village, Ill. 60007

Filed Apr. 8, 1996, Ser. No. 627,990
Int. Cl.[6] B65D *47/08;55/02;* B67D *5/32*
U.S. Cl. 222—153.14 5 Claims



1. A container having a neck and a toggle-action dispensing cap,
means for securing said dispensing cap on said neck of said container,
said dispensing cap having a top wall formed with a product-dispensing through port communicating with an interior chamber of said container,
a pivotally-supported, toggle-acting actuator overlying said dispensing cap and defining a closure for said port of said dispensing cap, said actuator having a "press-to-open" section,
plug means carried by said actuator at an undersurface thereof for closing said port,
means pivotally supporting said actuator for pivotal movement selectively between a first position in which said plug means is disposed to seal said port in said dispensing cap, and a second position in which said port is not obstructed by said plug means and is exposed for delivery therethrough of material stored in and to be dispensed from said container,
an outer control cap coaxial with and sleevedly overlying said dispensing cap and rotatable axially with respect thereto,
said control cap including a generally-cylindrical, skirt-like sleeve encircling said dispensing cap and said neck of said container,
means lockingly securing said control cap against axial displacement with respect to said dispensing cap,
panel means defining a sector-like partial top wall bridgedly surmounting and normal to said skirt-like sleeve of said control cap and leaving a portion of said actuator exposed,
said panel means being formed with a restricted through opening for physically accessing said actuator therethrough,
said panel means constituting stop means to prevent downward physical displacement of said press-to-open section of said actuator when said section is visually exposed,

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said actuator being pivotal to establish an open position of said product dispensing port only when said panel of said control cap is rotated to overlie the depressible "press-to-open" portion of said actuator, and said press-to-open portion being then accessible only by means of a probe insertable through said opening in said sector-like panel to depress said press-to-open section and to effect a pivotally-open mode of said actuator.

5,622,285

TAPED CULINARY DISPENSING DEVICE

Ida J. S. M. Lee, 19 Lansdown Pl. Flat 14, Hove, East Sussex, Great Britain

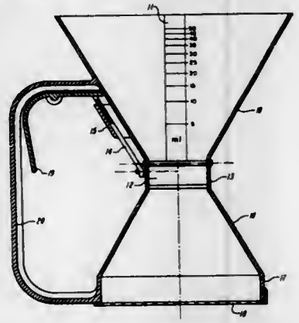
PCT No. PCT/GB95/01775, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO96/03884, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 28, 1995, Ser. No. 619,552

Claims priority, application United Kingdom, Jul. 29, 1994, 9415343

Int. Cl.[6] B67D *5/38*

U.S. Cl. 222—158 **16 Claims**



1. A dispensing device for dispensing topping material onto cakes or other products, the device comprising a container having a sidewall which tapers inwardly towards an opening in the base thereof, the base being provided with valve means which can be operated to dispense material from the container, wherein the valve means is arranged between the container and a dispensing outlet, the outlet comprising a perforated member.

5,622,286

MANUALLY ACTUATED DISPENSING UNIT FOR SPRAYING A LIQUID IN THE FORM OF DROPLETS IN A VIRTUALLY CONTINUOUS MANNER

Philippe Renault, Chaville, France, assignor to L'Oreal, Paris, France

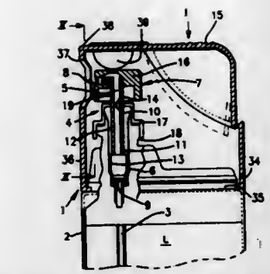
Filed Jan. 30, 1995, Ser. No. 380,660

Claims priority, application France, Jan. 28, 1994, 94 00988

Int. Cl.[6] B65D *88/54*

U.S. Cl. 222—321.2 **17 Claims**

1. In a unit (1, 101) for dispensing a liquid (L) capable of spraying this liquid (L) in the form of droplets in a virtually continuous manner, comprising a reservoir (2, 102) containing the liquid to be sprayed, this reservoir (2, 102) communicating with a feeder duct (3, 103) of a precompression pump (4, 104) provided with a delivery duct (5, 105) which communicates with a spraying nozzle (8, 108); means (7, 107) for actuating the pump (4, 104) and spraying this liquid (L), this pump (4, 104) comprising a cylindrical body (6, 106) joined to the said feeder duct (3, 103), and a cylindrical piston (10, 110) capable of sliding in a portion with a diameter ϕ of the body (6, 106) of the pump 4, 104) under the actuation of the actuating means (7, 107) against resillent restoring means (11, 111) along a stroke C; means (9, 109) for preventing the



return of the liquid into the feeder duct; and flexible closing means (12, 112; 13) provided for releasing a dispensing duct (14, 114) in the pump (4, 104) when the pressure P obtaining inside the body (6, 106) of the pump (4, 104) following the actuation of the actuating means (7, 107) exceeds a specified value, this pump (4, 104) having an efficiency R and delivering on each actuation, a dose D of liquid; wherein the stroke C of the piston (10, 110) is in the range of from 2 to 5 mm.

5,622,287

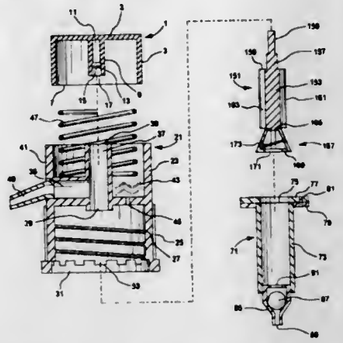
DOUBLE ACTION LIQUID DISPENSER

Kenneth P. Glynn, Flemington, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Continuation-in-part of Ser. No. 257,548, Jun. 9, 1994, Pat. No. 5,465,880. This application Aug. 7, 1995, Ser. No. 511,917

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—321.8 **18 Claims**



1. A continuous action liquid dispenser for dispensing liquid material therefrom, which comprises:

a) a main housing which is vertically elongated and hollow and has vertical walls and has an upper end with a housing outlet and a lower end with a housing inlet, said main housing being adapted to receive a pumping rod therein;

b) a pumping rod which is at least partially located within said main housing so as to be vertically reciprocally movable therein, said pumping rod having a predetermined shape, volume and displacement and having a first position and a second position within said main housing, said first position resulting from upward movement and establishing a minimum portion of volume of said rod within said main housing and permitting a predetermined maximum available volume within said main housing for liquid material, said second position resulting from downward movement and establishing a maximum portion of volume of said rod within said main housing and permitting a predetermined minimum available volume within said main housing for liquid material due to volume displacement by said pumping rod, and said pumping rod including thereon a valve seat and one way valve such

that said valve seat and one way valve both move together with the pumping rod when said pumping rod is moved, said one way valve permitting liquid material to pass therethrough in a relative direction toward said main housing outlet, but not toward said main housing inlet, both said valve seat and said one way valve being located on said pumping rod such that when said pumping rod is at least partially located within said main housing, said valve seat and said one way valve are also located within said main housing and such that said one way valve does not contact said main housing vertical walls when said pumping rod is located within said housing;

c) an inlet valve seat and valve connected to the inlet of said main housing and arranged so as to permit flow of fluid material into, but not out of, said main housing inlet;

d) a top housing connected to the upper end of said main housing and having a portion of said pumping rod pass therethrough for connection to, and for reciprocal movement with, an activator, said top housing establishing a liquid seal about said main housing and said pumping rod, said top housing having an attachment mechanism for attachment of said dispenser to a container;

e) an activator located above said top housing for reciprocation relative thereto, said activator being connected to said pumping rod for reciprocal movement therewith, said activator having a first position and a second position corresponding to said pumping rod first position and second position;

f) an outlet channel and liquid dispensing nozzle, said outlet channel having a lower end connected to said main housing outlet and having an upper end connected to said nozzle, said outlet channel and nozzle being located on one of said top housing and said activator; and,

g) a spring mechanism cooperatively located between said activator and said top housing and biasing said activator and pumping rod to their first position; such that when said main housing is connected to a container having liquid therein and said activator is reciprocated to prime, when said activator and therefore said pumping rod is then moved from said first position to said second position, liquid material in said main housing is displaced and the displaced liquid material passes through said pumping rod one way valve and seat and at least a portion thereof exits through said main housing outlet, outlet channel and nozzle for dispensing, and when said activator and therefore said pumping rod is then returned from said second position to said first position via return of said spring mechanism, liquid material in said main housing above said pumping rod one way valve and seat exits through said main housing outlet, outlet channel and nozzle for dispensing, and said pumping rod and closed one way valve and seat simultaneously also act to pump liquid material from said container to said main housing, thereby loading said main housing for a next reciprocal cycle, and thereby creating continuous action liquid dispensing on upstrokes and downstrokes of said pumping rod.

5,622,288

CARTRIDGE PLUNGER WITH SURFACE CLEANING SKIRT

David E. Boring, East Berlin, Pa., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jun. 12, 1995, Ser. No. 489,662

Int. Cl.[6] B65D *88/54*

U.S. Cl. 222—327 **15 Claims**

1. In a dispensing cartridge for paste-like material, an elongate tubular body having a hollow interior for containing the paste-like material, a forward discharge end and a following end, said tubular body having an inner surface defining said hollow interior, an outlet at said discharge end for selective discharge of contained material therethrough, a planter receivable within and axially slidable along said interior for selective forward movement toward said discharge end for engagement with and forward discharge of contained material through said outlet, said plunger including a peripheral skirt movable along said body inner surface in adjacent



relation thereto peripherally about said interior; the improvement comprising resiliently compressible ridge means on said plunger skirt projecting outward therefrom peripherally about said plunger, said ridge means being intimately engageable with said inner surface and being flexibly resilient to provide a wiping action against said inner surface, selected portions of said ridge means, at peripherally and axially spaced areas about said skirt, being of a greater rigidity than the remainder of said ridge means for accommodation within depressions as may occur in the interior surface, axially adjacent ones of said selected portions being peripherally offset from each other.

5,622,289

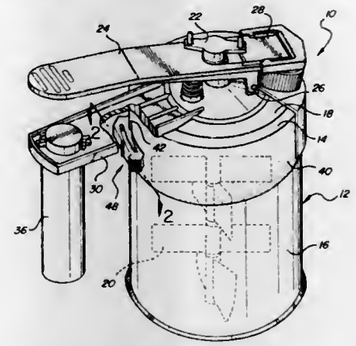
PAINT CAN COVER ASSEMBLY

John T. Dedoes, Brighton, Mich., assignor to Dedoes Industries, Inc., Walled Lake, Mich.

Filed Jul. 1, 1996, Ser. No. 673,955

Int. Cl.[6] A47G *19/00*

U.S. Cl. 222—472 **13 Claims**



1. A cover assembly for a paint can having a tubular cylindrical sidewall and an open top comprising:

a lid dimensioned to overlie the open top of the paint can, said lid having a spout,

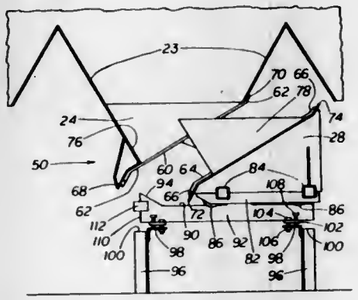
paint stirring means rotatably secured to said lid,

an annular skirt which depends downwardly from said lid and overlies a portion of the can sidewall when said lid is positioned on the top of the can, and

means for compressing said skirt against the can sidewall to thereby attach said lid to the can.

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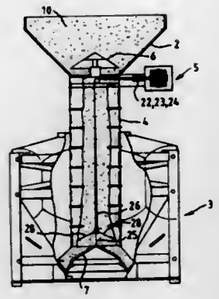
5,622,290
WATER-TIGHT FLOW CONTROLLER FOR A SHIP
Charles D. Pole, Goulais River, Canada, assignor to ULS Corporation, Toronto, Canada
Filed Apr. 14, 1995, Ser. No. 421,786
Claims priority, application United Kingdom, Apr. 19, 1994, 9407741
Int. Cl.[6] B65D *47/00*
U.S. Cl. 222—502 **15 Claims**



1. A flow controller located at the base of a hopper in a hold of a self-unloading ship to control the flow of particulate material from said hopper, said controller comprising a throat located in said base and a gate corresponding to said throat, said throat having an opening therein, said gate being sized and shaped to removably block said opening, said gate being movable relative to said throat between a closed position and an open position, a seal surrounding said opening and being located between said throat and said gate to seal said opening when said gate is in a closed position, said gate having a central surface to receive particulate material flowing from said throat when said gate is in an open position and to block said opening when said gate is in a closed position, said central surface being sloped to be self-cleaning when said gate is in an open position, said central surface providing a slope to said gate, said throat having a slope to correspond and mesh with said gate, said gate being in a closed position when said gate contacts said throat with said seal therebetween so that said opening is water-tight, said gate being in an open position when said gate moves from said closed position so that said opening is at least partially open.

5,622,291
MATERIAL TRANSFER APPARATUS WITH EXTENSIBLE CONDUIT
Ivan Semenenko, Gloucestershire, England, assignor to Matcon Limited, Gloucestershire, United Kingdom
Filed Jun. 6, 1995, Ser. No. 469,910
Claims priority, application United Kingdom, Jun. 7, 1994, 9411376
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—527 **20 Claims**

1. Apparatus for transferring material from one container to another, comprising:
an extensible conduit;
extension means mounted on a mounting portion of the apparatus to extend the conduit, said extension means including a pulley block, and an actuator for moving sheaves of the block towards and away from each other for adjusting positions of the conduit outlet and the outlet valve respective flexible connectors;
first flow control means, including an inlet valve disposed at an inlet of the conduit, to open and close the inlet; and
second flow control means, including an outlet valve disposed at an outlet of the conduit, to open and close the outlet;
the apparatus being such that the inlet valve is operated to pass material to the conduit from the one container, the conduit is extended, and then the outlet valve is operated to pass material from the conduit to the another container.

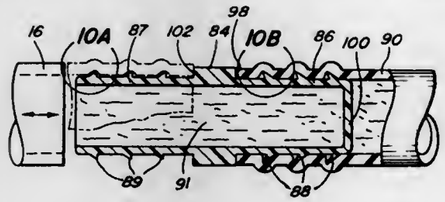


5,622,292
DETACHABLE STRAP FOR A PLASTIC YARD OF ALE
Peter Dorney, 159 Dalton Dr., Oviedo, Fla. 32765
Filed May 8, 1995, Ser. No. 438,046
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148.6 **1 Claim**



1. A combination drinking glass and supporting device comprising, in combination:
a drinking glass positionable in a generally vertical orientation, the drinking glass comprising a lower terminal closed end having a first diameter, an open upper terminal end having a second diameter and a central portion intermediate said upper and lower ends having a third diameter which is less than said first and second diameters;
a flexible support strap having first and second terminal ends which are positionable in a generally vertical orientation in front of a wearer and having a central area intermediate the first and second ends of the strap adapted to be positioned around the neck of the wearer; and
an intermediate strip positionable in a generally horizontal position and having first and second free ends and a central region therebetween, said strip further having an interior surface and an exterior surface, said first and second ends of the strap respectively attached to said interior and exterior surfaces of said central region of said strip such that said first and second ends of said strap are laterally spaced from one another, the strip further having a first pile-type fastener on the other of said surfaces on one of said surfaces at one of said ends thereof and a second pile-type fastener on the other of said ends thereof, said pile-type fasteners being movable between an inoperative separated orientation and an operative coupled orientation wherein the intermediate strip forms a loop sized to encircle said central portion of said glass between said upper and lower ends of said glass such that said glass is positioned in a substantially vertical position when supported on the wearer.

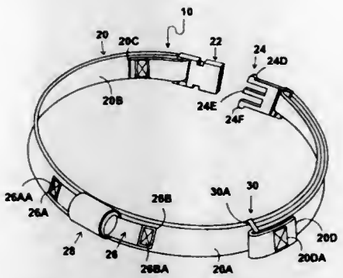
5,622,293
WEARABLE LIQUID CONTAINER
Michael LeFevre, 1006 Anita, Grosse Pointe Woods, Mich. 48236
Continuation-in-part of Ser. No. 234,161, Apr. 28, 1994, abandoned. This application Apr. 27, 1995, Ser. No. 429,542
Int. Cl.[6] A44C *25/00;* **B45F** *3/20;* **B65D** *35/08*
U.S. Cl. 224—148.2 **21 Claims**



1. A liquid container in the form of a ring and adapted to be worn by a person using the container comprising:
an elongated tubular member made from a suitable flexible material, said tubular member having a pair of end portions terminating in a pair of opposite facing annular end surfaces;
said tubular member being hollow throughout its length to form a single chamber for receiving a liquid;
one of said end portions of said tubular member forming a dispensing end through which the liquid is dispensed and the other of said end portions forming a receiving end;
a connecting member for connecting the dispensing and receiving ends of said tubular member, said connecting member comprising an elongated cylindrical body having a cylindrical center portion located between a pair of barbed barrel end portions;
said cylindrical center portion having an outer diameter generally equal to the outer diameter of said tubular member and also having a pair of annular surfaces which abut the annular end surfaces of said tubular member when said members are assembled to form a ring;
a plurality of individual barbed elements circumferentially disposed on each of said barrel end portions, said barbed elements being separate and axially spaced-apart on their respective said barrel end portions and having respective maximum outer transverse dimensions greater than respective inner diameters of said tubular end portions;
the barbed elements on one of said barrel end portions being longer than the barbed elements on the other of said barrel end portions, with the longer of said barbed elements being inserted into said receiving end of said tubular end portion until one of the annular surfaces on said cylindrical center portion abuts the opposing end surface on said receiving end and with the longer barbed elements tightly engaging the inner wall of said receiving end; and
the shorter barbed elements on the other barrel end portion being inserted into the dispensing end of said tubular member until the other of said annular surfaces on said cylindrical center portion abuts the end surface on said dispensing end of said tubular member to form a sliding connection between said shorter barbed elements and the inner wall of the dispensing end.

5,622,294
GOLF CART TOWING BELT
Robert Evans, Morris Plains, N.J., assignor to Robert E. Evans, Morris Plains, N.J.
Filed Jul. 24, 1995, Ser. No. 506,355
Int. Cl.[6] B62D *51/04;* **A45F** *3/14*
U.S. Cl. 224—184 **14 Claims**

1. A golf cart towing device for towing a hand pulled golf cart having a handle extending therefrom, said device comprising:

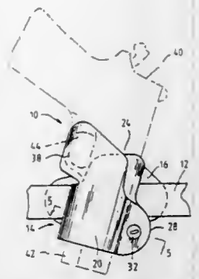


a) a belt adapted to be worn about the waist of a user having a belt outer surface, a belt inner surface, a belt first distal end, and a belt second distal end;
b) an adjusting ring having an adjusting ring inner post and an adjusting ring outer post, said adjusting ring inner post and said adjusting ting outer post defining an adjusting ting slot therebetween throughwhich said belt passes so that said belt can be quickly adjusted to accommodate for different sized waists;
c) a buckle female portion containing a vertically disposed buckle female portion slot through which said belt first distal end passes;
d) a buckle male portion having a buckle male portion body containing a buckle male portion inner slot, a buckle male portion outer slot, and a buckle male portion partition separating said buckle male portion inner slot from said buckle male portion outer slot, said belt second distal end passing through said buckle male portion inner slot, around said buckle male portion partition, through said buckle male portion outer slot, around said adjusting ring outer post where it is secured therearound;
e) a tube horizontally positioned at said belt outer surface intermediate said belt first distal end and said belt second distal end and movable therefrom, said tube removably receiving the handle of a golf cart; and
f) said tube being positioned at said belt outer surface by an elastic strip having an elastic strip first distal end and an elastic strip second distal end, said elastic strip passing freely through said robe with said elastic strip first distal end and said elastic strip second distal end attached to said belt outer surface so that said tube can move readily with respect to said belt without imparting a force to said belt, said elastic strip preventing a force encountered by said golf cart due to the many variations in terrain encountered by the golf cart during its towing by said user from being transmitted to the user.

5,622,295
HOLSTER FOR HANDGUNS OR THE LIKE
Albert W. Hellweg, 84 Terrara Road, Vermont, Victoria, 3133, Australia, and Kerby C. Smith, 42827 Bean Gulch Ranch Rd., Coarsegold, Calif. 93614
Continuation-in-part of Ser. No. 187,842, Jan. 28, 1994, Pat. No. 5,419,472. This application Jun. 7, 1995, Ser. No. 486,315
Int. Cl.[6] F41C *33/00*
U.S. Cl. 224—193 **6 Claims**

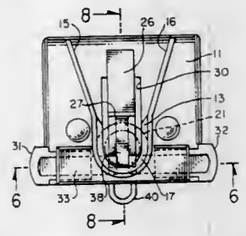
1. A holster for a handgun, the handgun having a handle, a trigger and a barrel extending from the handle, the barrel having an underside facing the handle, an upper side facing away from the handle and an end portion terminating in a muzzle end, said holster comprising:
a holster body configured to wrap around the underside of the barrel of the gun and terminating in opposing end portions both extending beyond the upper side of the barrel thereby defining an open top and an open bottom wherein the holster body is sized such that the muzzle end of the gun is capable of projecting through said open bottom and the handle extends above said open top when the gun is fully inserted into said

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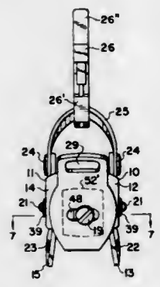
holster, each of said end portions of said holster body having a bend such that each of said end portions terminate in substantially parallel but spaced apart ends spaced from the upper side of the barrel and defining an open side therebetween, said holster body being formed from a surface material surrounding a reinforcing, said reinforcing providing a spring-like pressure force between said spaced apart ends, there being provided at least one adjustable tension device passing between said spaced apart ends and across said open side to retain said spaced apart ends in a spaced relationship whereby said end portions provide pressure on the handgun when the handgun is fully inserted into said holster.

5,622,296
RELEASABLE SWIVEL HOLDER FOR PERSONAL ARTICLES
Ilkka Pirhonen, 2308 Sawtelle Blvd., Los Angeles, Calif. 90064, and Taisto Korjansalo, 08150 Lohja, Finland
Filed Dec. 6, 1995, Ser. No. 568,394
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—197 **8 Claims**



1. A releasable swivel holder for an article of personal use comprising:
a stud means adapted to be carried on the article;
a base member having an open receptacle for insertably receiving said stud means;
a resilient catch means movably carried on said base member adapted to selectively retain and release said stud means within said receptacle;
said catch means cooperating with said base member to permit pivoting of said stud means within said receptacle when said stud means is retained within said receptacle;
a latch means movably carried on said base member for releasing said catch means from retaining said stud means;
said catch means includes an elongated leaf spring integrally carried on said base member and having a catch disposed midway between its opposite ends and being selectably movable into and out of retaining engagement with said stud means;
said stud means includes a circular disk and said receptacle is partially circular to accept said circular disk;
said base member includes a slot accommodating said catch means leaf spring and said catch is yieldably disposed in said receptacle;
said latch means includes a pair of latch elements having sloping tips arranged in opposing and opposite spaced-apart relationship; and
said leaf spring terminating in a wedge element disposed between said pair of latch element sloping tips whereby actuating said latch elements together engages said sloping tips on opposite sides of said wedge element to forcibly urge said leaf spring to disengage said catch from said disk.

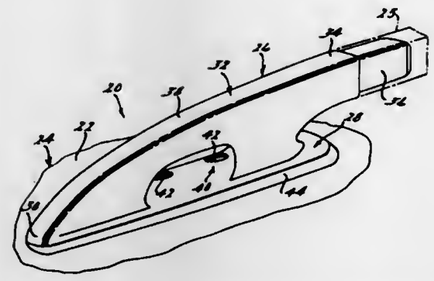
5,622,297
ADJUSTABLE HANDGUN HOLSTER
William H. Rogers, and Norman E. Clifton, Jr., both of Jacksonville, Fla., assignors to Safariland Ltd., Inc., Ontario, Calif.
Filed Jul. 28, 1995, Ser. No. 508,634
Int. Cl.[6] F41C *33/02*
U.S. Cl. 224—243 **21 Claims**



1. An adjustable handgun holster comprising two opposing barrel support members adapted to lie along opposite sides of a handgun barrel from its muzzle to its trigger guard, each support member having a forward portion and a rearward portion, means for joining together said forward and rearward portion of each said support member for adjusting the length of said support members, one said support member adjacent said forward portion including a muzzle stop adapted to extend transversely across a muzzle end of a handgun, an elongated coil spring attached at each end to said rearward portions, respectively, and adapted to bias a handgun forwardly against said muzzle stop, an upwardly extending eye means attached to both said rearward portions and adapted to receive a strap connecting said holster to a body harness supporting said holster, and a downwardly extending eye means in one said rearward portion adapted to receive a strap therethrough for connecting said holster to a portion of a wearer's clothing below said holster.

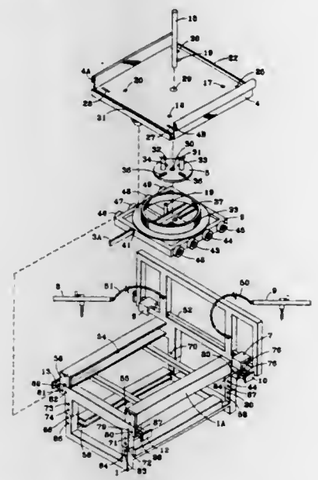
5,622,298
ONE-PIECE END SUPPORT AND METHOD OF FORMING THEREOF
John S. Cucheran, Lake Orion, and Jeffrey M. Aftanas, Sterling Heights, both of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.
Filed Jun. 30, 1995, Ser. No. 497,208
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—326 **9 Claims**

1. A method for forming an aerodynamic one-piece end support for a vehicle article carrier securable to an outer body surface of a vehicle and adapted to support an elongated support member vertically above said outer body vehicle surface, said method comprising the steps of:
urging first and second molding tools toward each other;
once said molding tools are positioned in abutting relation, injectin a quantity of molten plastic through at least one, of said tools and injecting a gas through at least one of said tools



to urge said molten plastic against an inner surface of each one of said molding tools;
said molding tools having an interior area forming an aerodynamically shaped main body portion, said main body portion including an end portion, a central portion and a neck portion, with said end portion, said central portion and said neck portion forming a gradually aerodynamically curving profile and said central portion including an inaccessible cavity forming a hollowed out potion, a bottom portion integrally formed with said main body portion, said main body portion and said bottom portion forming a single, integrally formed component which may be directly secured to said outer body vehicle surface;
waiting for a length of time after injecting said molten plastic and said gas for said molten plastic to cool; and
urging said molding tools away from each other to remove said one-piece end support.

5,622,299
SNOWMOBILE CARRYING UNIT
Randy M. Berard, P.O. Box 2039, South Burlington, Vt. 05407
Filed Jun. 16, 1995, Ser. No. 490,936
Int. Cl.[6] B65G *67/02*
U.S. Cl. 224—403 **4 Claims**



1. A snowmobile carrying unit, comprising;
a. a four armed rectangular shaped carrying frame unit;
b. a plurality of vertically positioned holes in each of said four arms which said four arms all point vertically upwards when said carrying frame unit is placed within the loadbed portion of a pickup truck with each of said four arms located one each at each of the four corners of said carrying frame unit;
c. a first ramp receiving channel affixed at a bottom side of said first ramp receiving channel to a first lateral side of said carrying frame unit with a top side of said first ramp receiving channel joined to a first external lateral side of said first ramp receiving channel in turn joined to said bottom side;
d. a second ramp receiving channel affixed at a bottom side of said second raton receiving channel to a second lateral side of said carrying frame unit with a top side of said second ramp receiving channel joined to a second external lateral side of said second ramp receiving channel in turn joined to said bottom side of said second ramp receiving channel with said first ramp receiving channel lying parallel to said second ramp receiving channel;
e. a four legged support frame unit with all four legs pointing vertically downward and atop of which there is affixed a rectangular shaped protective frame unit, the lie of which said protective frame unit is parallel to the backside of the cab portion of said pickup truck and perpendicular to the lie of said support frame unit when each of said four legs which are all hollow receive respectively one each of said four arms when said carrying unit is placed within the loadbed portion of said pickup truck;
f. a first rectangular shaped dollywheel receiving channel with a top side of said first dollywheel receiving channel joined to an external lateral side of said first dollywheel receiving channel with said external lateral side joined to a bottom side of said first dollywheel receiving channel which said bottom side extends from the left back edge of and left lateralmost edge of a posterior element of said support frame unit to the back side of an anterior element of said support frame unit;
g. a second rectangular shaped dollywheel receiving channel with a top side of said second dollywheel channel joined to an external lateral side of said second dollywheel receiving channel with said external lateral side of said second dollywheel receiving channel joined to a bottom side of said second dollywheel receiving channel which said bottom side extends from the right back edge of and right lateralmost edge of the posterior element of said support frame unit to the back side of the anterior element of said support frame unit with said second dollywheel receiving channel lying parallel to said first dollywheel receiving channel;
h. a plurality of vertically positioned holes in each of said four legs all of which line up with all of said vertically positioned holes in each of said four arms when said four legs receive said four arms when said four legged frame unit is vertically adjusted to one of a plurality of heights above the floor of the said loadbed portion of said pickup truck;
i. a plurality of pin means for insertion into one of said vertically positioned holes in each of said four legs and into a corresponding one of said vertically positioned holes in each of said four arms when said four legs receive said four arms and serving to stabilize said vertical adjustment to said one of a plurality of heights;
j. a plurality of horizontally positioned holes in each of said four legs positioned above and perpendicular to said vertically positioned holes in each of said four legs;
k. plunger unit holes laterally located one each in each of said four legs;
l. four plunger units each one of which is received by one each of said holes laterally located;
m. a plurality of horizontally positioned plunger holes in each of said plunger units each of which said horizontally positioned plunger holes line up with a corresponding one of said horizontally positioned leg holes when said four plungers units are received one each respectively by one of said holes laterally located. with said support frame unit horizontally adjusted via said received four plunger units to the breadth of the distance between the sidewalls of said loadbed portion of said pickup truck;
n. a plurality of pin means for insertion one each into one of said horizontally positioned holes in each of said four legs and into a corresponding one of said horizontally positioned plunger holes in each of said plunger units and serving to horizontally

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stabilize said support frame unit snug to the sidewalls of said loadbed portion of said pickup truck;

o. a first detachable stopplate affixed to the posterior edges of said first dollywheel receiving channel;

p. a second detachable stopplate affixed to the posterior edges of said second dollywheel receiving channel;

q. a rectangular shaped dolly unit with a plurality of first dollywheels on one side of said dolly unit receivable by said first dollywheel receiving channel and with a plurality of second dollywheels on a second side of said dolly unit receivable by said second dollywheel receiving channel;

r. a circular element affixed flush to the top side of said dolly unit, the external diameter of which said circular element equals in length the length of the longest side of said dolly unit;

s. a hollow cylindrical element with an internal diameter equal to the internal diameter of said hollow circular element and affixed to the top side of said hollow circular element;

t. a four legged perpendicular cross brace structure affixed one leg per sidewall to each of four inner sidewalls of said dolly unit;

u. a vertical dolly hole located adjacent the intersection point of said legs of said cross brace structure;

v. a slot hole in the posterior side of said dolly unit;

w. an elongated rectangular shaped locking and handle lever with a notch cut into its bottom side for receipt of a handle end of said lever by the bottom edge of said hole in said posterior side of said dolly unit;

x. a connecting arm pivotably connected at a first end to said rectangular shaped lever;

y. a vertically positioned locking rod shaft pivotably connected to said connecting arm;

z. one end of a spring element attached to a second end of said connecting arm;

aa. a second end of said spring element attached to the anteriormost leg of said cross brace structure anterior to said intersection point of said legs of said cross brace structure;

bb. a vertical shaft hole located adjacent said intersection point of said legs of said cross brace structure on the side of said intersection point opposite the location of said vertical dolly hole;

cc. a circular shaped plate characterized by the presence of a plate center hole and four equivalent laterally located slotted rod holes each positioned at an angle of 90° with reference to any two adjacent ones of said located rod holes;

dd. a rectangular shaped carriage platform unit with width slightly greater than two times the width of a garden variety recreational snowmobile, with two lateral sides having height above a flat floor level of said platform unit, the apices of which said two lateral sides curl outwardly and then downwardly resulting in clearances along the whole of the lengths of said two lateral sides as between the ends of said curled apices and the bodies of said two lateral sides, and with a centrally positioned carriage platform unit center hole;

ee. a pair of plate legs affixed to the top side of said circular shaped plate each of said plate legs being equidistant from the center of said center hole and each of said plate legs being affixed to a bottom side of said carriage platform unit each equidistant from the center of said platform center hole;

ff. four platform wheels each rotatably attached to said bottom side of said carriage platform unit and each of said platform wheels attached at right angles to each adjacently attached one of said platform wheels with each said platform wheel rotatable through an angle of at least 180°;

gg. a center shaft insertable simultaneously through said carriage platform unit center hole, said plate center hole and said vertical dolly hole so as to hold said carriage platform unit via said platform wheels upon said circular element to said dolly unit held via said first dollywheels within said first dollywheel receiving channel and said second dollywheels within said second dollywheel receiving channel when said first stopplate is affixed to posterior edges of said first dollywheel receiving channel and said second stopplate is affixed to posterior edges of said second dollywheel receiving channel;

hh. a rotatable swivel lock handle affixed to a rotatable connecting rod which is affixed to said protective frame unit and which said connecting rod has affixed to it, a left platform retainer in the shape of a letter L, the bottom leg of which said left platform retainer in a locked position points vertically downward and an identical right platform retainer, the bottom leg of which said right platform retainer in a locked position points vertically downwards;

ii. a right leading edge slit located in said carriage platform just posterior to the leading edge of said carriage platform;

jj. a left leading edge slit located in said carriage platform just posterior to the leading edge of said carriage platform;

kk. a right trailing edge slit located in said carriage platform just anterior to the trailing edge of said carriage platform;

ll. a left trailing edge slit located in said carriage platform just anterior to the trailing edge of said platform;

mm. a first upwardly directed L shaped lip rim spanning the length of said leading edge of said carriage unit and welded at the top side of the horizontal leg of said first lip rim to the bottom side of said carriage unit just posterior to said leading edge;

nn. a second upwardly directed L shaped lip rim spanning the length of the trailing edge of said carriage unit and welded at the top side of the horizontal leg of said second lip rim to the bottom side of said carriage unit just anterior to said trailing edge;

oo. said right leading edge slit and said left leading edge slit being respectively amenable to receipt of said right rotatable platform retainer and said left rotatable platform retainer when said retainers are rotated down to the locked position;

pp. said right trailing edge slit and said left trailing edge slit being respectively amenable to receipt of said right rotatable platform retainer and said left rotatable platform retainer when said retainers are rotated down to the locked position;

qq. a foldable two piece rectangularly shaped ramp with width slightly greater than the width of a garden variety recreational snowmobile with a lip extending at an angle from one end of a first portion of said ramp and amenable to receipt by either said first lip rim or said second lip rim with foldability accomplished by way of a hinge lying parallel to the end of said first portion of said ramp from which said lip extends and likewise parallel to the end of a second portion of said ramp, with said first portion and said second portion joined at said hinge and with said first portion having length roughly twice the length of said second portion;

rr. the distance from said first lateral side of said first ramp receiving channel to said second lateral side of said second ramp receiving channel being slightly in excess of the width of said ramp.

5,622,300

ROLL PACK

Lawrence L. Robinson, 3512 133rd St. SW., Lynnwood, Wash. 98037

Continuation-in-part of Ser. No. 345,138, Nov. 28, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,523

Int. Cl.[6] A47C *17/64*

U.S. Cl. 224—575 **16 Claims**

1. A roll pack, comprising:

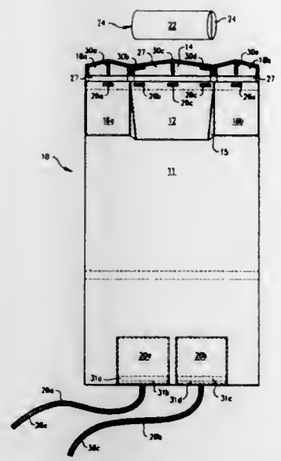
a sheet of material, said material having a first edge and a second edge positioned apart from said first edge;

at least a first storage pocket, positioned proximate said first edge;

at least a first enclosure, positioned proximate said second edge and having an access opening facing said second edge;

at least a first strap, having a first end attached to said sheet within said at least first enclosure and an opposite free end;

wherein said at least first enclosure is used to enclose said at least first strap when said at least first strap is in a non-use position; and



wherein said at least first strap is secured around said sheet of material when said sheet is rolled up.

5,622,301

CONCEALED BELT-MOUNTED VALUABLES HOLDER

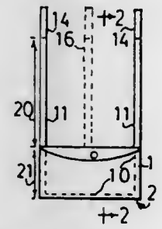
Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

PCT No. PCT/US94/04972, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/27464, PCT Pub. Date Dec. 8, 1994

Continuation-in-part of Ser. No. 69,746, Jun. 1, 1993, Pat. No. 5,337,936. This PCT application May 11, 1994, Ser. No. 424,515

Int. Cl.[6] B65D *37/00*

U.S. Cl. 224—587 **8 Claims**



1. A holder for valuables mounted on a horizontal belt of a user's trousers or skirt, said holder comprising:

a back panel;

a front panel secured at a lower edge and two side edges thereof to said back panel to form a thin flat container body having a horizontal width that is greater than a vertical height thereof and providing at least one compartment open at an upper edge, said vertical height being the distance between said upper and lower edges and said horizontal width being the distance between said side edges;

a closure means removably closing said upper edge;

an elongate strip of material having a vertical extent, said strip having a first end secured to said back panel at an upper portion thereof and extending vertical upward therefrom, and said strip having a second end terminating in a loop, said loop extending along said vertical extent and defining an aperture disposed transverse to said vertical extent for passing therethrough a horizontal belt, said strip having a distance between said loop and said back panel greater than said vertical height of said container body to thereby permit facile movement of said container body, without bending thereof, between a concealed position underneath said trousers or skirt and an accessible position outside said trousers or skirt while said loop is engaged by said belt on said trousers or skirt.

5,622,302

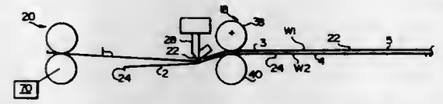
APPARATUS AND METHODS FOR BURSTING INTERSTACKED LONGITUDINALLY OFFSET FORM SETS FROM CONTINUOUS WEBS

Robert S. Ring, Rochester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 123,971, Sep. 21, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,627

Int. Cl.[6] B26F *3/02*

U.S. Cl. 225—4 **5 Claims**



1. A method for bursting interstacked longitudinally offset form sets from continuous webs thereof, comprising the steps of:

feeding the interstacked form sets between a first pair of normally spaced apart rollers mounted for rotation at a predetermined speed such that at least one roller is normally spaced from engagement with the webs between the first pair of rollers substantially throughout the entire rotation of said one roller;

alternately feeding leading portions of the interstacked form sets through the nip of a second pair of rollers downstream from said first pair of rollers;

continuously rotating said second pair of rollers at a speed corresponding to the speed of rotation of said first pair of rollers to advance the form sets through said second pair of rollers;

disposing a breaker blade between said first pair of rollers and said second pair of rollers;

intermittently moving said one roller of said first pair of rollers into and out of engagement with the continuous webs of interstacked form sets between the rollers of said first pair thereof such that said one roller engages the webs between the first pair for rollers for only a short interval of rotation of said one roller; and

periodically increasing the speed of rotation of said second pair of rollers to a speed in excess of the speed of rotation of said first pair of rollers when said one roller of said first pair thereof lies in engagement with the continuous webs of interstacked form sets to create sufficient web tension between said first pair of rollers and said second pair of rollers during said short interval of rotation of said one roller to enable bursting of the webs into individual forms.

5,622,303

METHOD AND DEVICE FOR SOLDERING WORKPIECES

Rainer Wörthmann, Mittelstrasse 6, 67134 Birkenheide, Germany

Filed Apr. 27, 1995, Ser. No. 429,715

Int. Cl.[6] H05K *3/34;* **B23K** *3/06*

U.S. Cl. 228—37 **4 Claims**

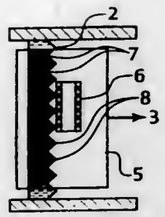
1. A device for soldering circuit boards having electrical components mounted on the top side of said boards, comprising:

at least one soldering nozzle;

a plurality of bores arranged on each soldering nozzle;

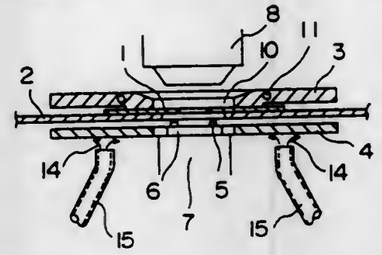
means for conveying liquid solder through said nozzle bores so as to create a solder wave directed onto the underside of said circuit board, said solder wave having a break edge that is created when the liquid solder breaks connection with the workpiece; and

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means for conveying the workpiece along a path such that the solder wave contacts the underside of the workpiece perpendicular to the path of conveyance, said bores being arranged in a pattern comprised of a plurality of triangles on each soldering nozzle, wherein the triangle points are directed in the direction of conveyance of the workpiece, so that the break edge on said solder wave follows the shape of the bore pattern.

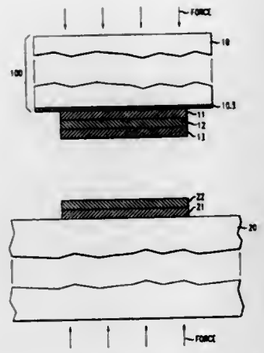
5,622,304
TAPE BONDING APPARATUS
Koji Sato, Akishimi, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Mar. 21, 1996, Ser. No. 590,560
Claims priority, application Japan, Mar. 22, 1995, 7-087676
Int. Cl.[6] H01L *21/603*
U.S. Cl. 228—44.7 **8 Claims**



1. A tape bonding apparatus comprising a tape clamping mechanism which clamps a tab tape with an upper clamper and a lower clamper, a stage which is provided under said tape clamping mechanism so as to carry thereon semiconductor pellets that are bonded to leads of said tab tape, and a bonding tool which is provided above said clamper mechanism so as to be move up and down, said tape bonding apparatus further comprising a cooling means for cooling said upper clamper and lower clamper.

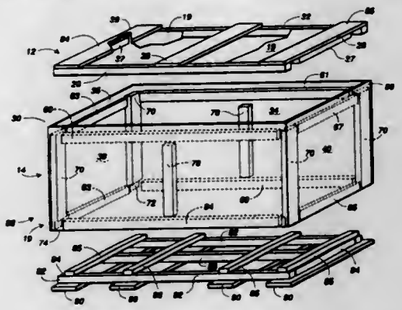
5,622,305
BONDING SCHEME USING GROUP VB METALLIC LAYER
Donald D. Bacon, Somerset; Cheng-Hsuan Chen, New Providence; Ho S. Chen, Lebanon; Avishay Katz, Westfield, and King L. Tai, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 10, 1995, Ser. No. 438,296
Int. Cl.[6] B23K *31/02;1/20*
U.S. Cl. 228—123.1 **21 Claims**

1. A method for bonding a device to a support substrate comprising the steps of:
a. coating said device with one or more bonding layers,
b. coating said support substrate with a barrier layer,
c. coating said barrier layer with a bonding layer comprising a solder layer.



d. placing said device and said support substrate together with the said bonding layers in mutual contact, and
e. heating said bonding layers to bond the device to said support substrate the invention characterized in that:
1. at least part of said support substrate comprises a non-metallic material,
2. the said barrier layer is formed directly on said support substrate,
3. the said barrier layer comprises a group VB metal layer, and
4. the solder layer is deposited in situ on the said barrier layer directly after deposition of the said barrier layer.

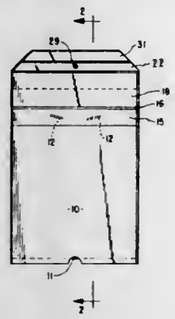
5,622,306
TUBULAR CORRUGATED PAPERBOARD SHIPPING CONTAINER WITH A PAIR OF ATTACHING STRIPS
John M. Grigsby, Sr., Marietta, Ga., assignor to North American Container Corp., Mabelton, Ga.
Filed Nov. 9, 1995, Ser. No. 555,385
Int. Cl.[6] B65D *8/04*
U.S. Cl. 229—23 C **24 Claims**



1. A cleat-reinforced tubular corrugated paperboard shipping container, comprising:
a base frame suitable for supporting an article to be packed, said base frame including at least a pair of spaced-apart elongate members that extend substantially a length of said base frame;
a tubular corrugated paperboard body defining inner wall surfaces and corresponding outer wall surfaces, said corrugated paperboard body comprising a wall forming blank of paperboard scored to provide a series of main panels foldably joined together at a plurality of corners and dimensioned for mating engagement with said base frame such that at least one of said main panels extends the length of said base frame;
a plurality of reinforcement cleats aligned substantially parallel with the scores with at least one of the cleats adjacent each

one of said corners and fixedly secured to one of said inner wall surfaces of said main panels;
a top frame dimensioned for receipt by said corrugated paperboard body;
a pair of spaced-apart, parallel attaching strips fixedly secured to each of at least two panels of said corrugated paperboard body, one of each said pair of attaching strips positioned on said respective panel for alignment with one of said pair of members, the other one of each said pair of attaching strips positioned on said respective panel for alignment with said top frame; and
means for securing said attaching strips to said members and to said top frame;
whereby attachment of said corrugated paperboard body to said base frame and said top frame provides a connection that ensures against component separation.

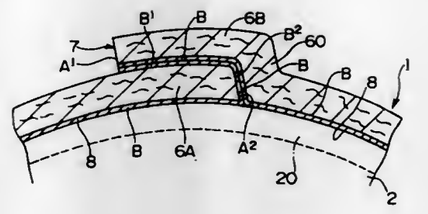
5,622,307
RAINPROOF INFORMATION-HOLDING ENVELOPE
Michael T. Wosje, 1100 Second Ave., Sioux Falls, S. Dak. 57105
Filed Aug. 10, 1995, Ser. No. 513,352
Int. Cl.[6] B65D *27/00;85/48*
U.S. Cl. 229—74 **5 Claims**



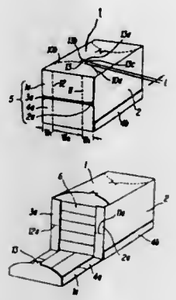
1. For use with an object to be sold, an envelope device for dispensing informational material, said envelope device comprising a lower, partially enclosed envelope adapted to receive a bundle of information sheets, said lower envelope having front and rear walls, means in connection with at least one of said walls adapted to hold said sheets releasably within said envelope, holding means formed above said envelope adapted to hold said envelope securely to said object to be sold and means to protect the interior of said lower envelope including weather protection flaps formed on said device above said lower envelope to protect said means to hold the sheets from precipitation damage.

5,622,308
PAPER CONTAINER FOR FLUID SUBSTANCES, AND INSIDE LID THEREFOR
Shinobu Ito, Funabashi; Keisuke Kaiho, and Kunihiko Ozaki, both of Tokyo, all of Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1995, Ser. No. 430,740
Int. Cl.[6] B65D *5/40*
U.S. Cl. 229—198.2 **17 Claims**

1. A paper container for fluid substances, comprising:
a tapered trunk portion formed by rolling a sheet comprising a layer having barrier ability applied onto a surface of cardboard, in a state in which the layer is disposed inside, and by joining longitudinal-directional ends of the sheet with each other; and
a bottom member formed from a disk-shaped sheet comprising a layer having barrier ability applied onto a surface of cardboard, a lower end portion of said trunk portion and a peripheral portion of said bottom member being engaged and jointed with each other in such a manner that the respective layers face each other,
wherein a first end portion for forming a joint portion of said trunk portion has an extending film which surrounds an end surface of the cardboard and reaches an external surface of the cardboard, and
a second end portion of the joint portion has a stepped portion which bends outside from an end-surface position of the first end portion and which extends along an external surface of the first end portion, an inner film of the second end portion being directly or indirectly joined with the extending film of the first end portion.



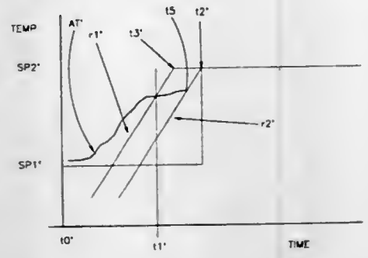
5,622,309
CARTON FOR PACKAGING CUT SHEETS OF PAPER
Junko Matsuda; Kazuhide Suzuki; Haruo Muramatsu, and Taiji Ohashi, all of Tokyo, Japan, assignors to Fuji Xerox Office Supply Co., Ltd., Tokyo, Japan
Filed Sep. 11, 1995, Ser. No. 526,693
Claims priority, application Japan, Dec. 13, 1994, 6-308579
Int. Cl.[6] B65D *5/54*
U.S. Cl. 229—243 **8 Claims**



1. A carton for packaging cut sheets of paper which is a rectangular parallelepiped, comprising,
an outer flap on an opening face;
an inner flap located inside said outer flap;
a pair of opening face cut lines along a pair of opposite sides of said inner flap;
a trigger cut line on a face of the carton adjacent to said outer flap;
wherein said inner flap is bonded to said outer flap only in an area between said pair of opening face cut lines so that when a part of said trigger cut line is torn it is followed by tearing of said pair of opening face cut lines to form an opened face, and so that said outer flap is not peeled off from the area between said pair of opening face cut lines.

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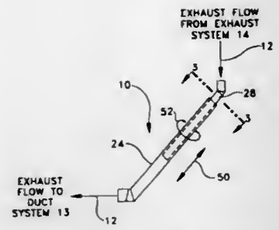
5,622,310
ADAPTIVE RECOVERY CONTROL SCHEME FOR CONVENTIONAL AND HEAT PUMP SYSTEMS
Jeffrey R. Meyer, 3217 E. 25 St., Minneapolis, Minn. 55406
Filed Jul. 21, 1995, Ser. No. 505,505
Int. Cl.[6] F23N *5/20*; **G05D** *23/00*
U.S. Cl. 236—46 R **3 Claims**



2. A temperature control device for controlling the operation of an HVAC plant such that a desired temperature is maintained, comprising:
a user interface having a first microprocessor, first read only memory and a temperature sensor connected to the first microprocessor, the first microprocessor controlling the operation of the user interface, the first read only memory storing time and temperature pairs for control of the HVAC plant entered by a user through the data entry means, the first microprocessor producing a time until temperature signal based upon the time and temperature pairs and the current time, the temperature sensor producing a temperature signal representative of space temperature; and
a subbase electrically connected to the user interface and having a second microprocessor having internal memory and second read only memory, said second read only memory storing an adaptive recovery process used by the second microprocessor for achieving a desired temperature by a desired time, the second microprocessor receiving the time until temperature change signal and creating, a main ramp, an auxiliary ramp and comparing the temperature signal to the main ramp and the auxiliary ramp, the memory further storing a table of system states and events and process flags, the microprocessor internal memory storing a current state from the system states and current status of process flags, the microprocessor causing a desired state to occur and setting/clearing of a process flag according to a state-event pair from the table on the occurrence of one of the events.

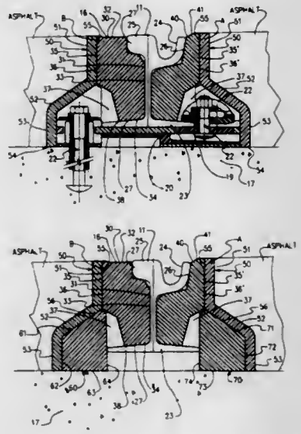
5,622,311
APPARATUS AND METHOD FOR TRANSFERRING EXHAUST FROM A TRACTOR UNIT TO A TRAILER UNIT
H. Ronald Huston, Co. Durham, and Jerry F. Smith, Cleveland, both of England, assignors to Caterpillar Inc., Peoria, Ill.
Filed Apr. 23, 1996, Ser. No. 636,374
Int. Cl.[6] B60H *1/02*
U.S. Cl. 237—12.3 C **17 Claims**

1. An apparatus for transferring exhaust from a tractor unit through an exhaust system of said tractor unit to a trailer unit through a duct system of said trailer unit, comprising:
a first conduit having a first passageway extending therethrough and being in fluid communication with one of said duct system and said exhaust system;
a second conduit having a second passageway extending therethrough and being in fluid communication with the other of said duct system and said exhaust system, a portion of said second conduit being positioned within the first passageway of said first conduit; and



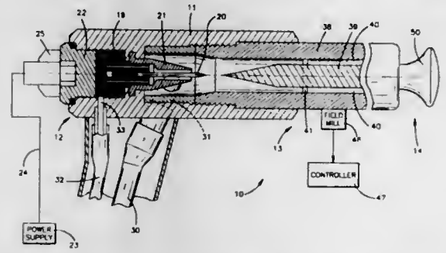
wherein said first conduit is movable in an axial and rotational direction with respect to said second conduit when the tractor unit is coupled to the trailer unit.

5,622,312
RAIL TRACK SURFACE STRUCTURE
John K. Martin, 419 Oakside Circle SW, Calgary, Alberta, Canada
Filed Sep. 26, 1995, Ser. No. 534,235
Int. Cl.[6] E01B *26/00*
U.S. Cl. 238—2 **8 Claims**



1. A rail track surface structure insert assembly for use in the space defined between a track rail and an adjacent road surface, wherein said rail is secured to a rail bed by rail clips, and comprises a rail head, rail base and an intermediate web connecting said rail head and the rail base and having a gauge side and a field side, said insert assembly comprising, in combination:
a longitudinally extending first rail insert member having a top surface, a bottom surface, a rail-engaging side surface and an opposite side surface, said top surface adapted to lie in the general plane of the top surface of said rail head; said bottom surface sealingly registering with the upper surface of the base of said rail; said rail engaging side surface contoured to sealingly register on a major portion thereof with said web of said rail and on a minor portion thereof to sealingly register with the side of the head of said rail; said opposite side surface including a generally vertical planar surface when the first rail insert member is installed in registering contact with said rail;
a longitudinally extending second insert member having a top surface, a bottom surface, a road surface-engaging side surface and an opposite side surface, said top surface adapted to lie in said general plane of the top surface of said rail head when installed in registering contact with said first rail insert member; said bottom surface sealingly registering with the underlying rail bed; said road surface-engaging side surface adapted to fixedly and sealingly register with said adjacent road surface; and said opposite side surface including a vertical planar surface adapted to sealingly register with said vertical planar surface of said first rail insert member, thereby to provide a slip plane to accommodate relative movement of said first rail insert member with said second insert member consequent on the vertical flexing movement of said first rail insert member and said adjacent track rail in fixed registration therewith.

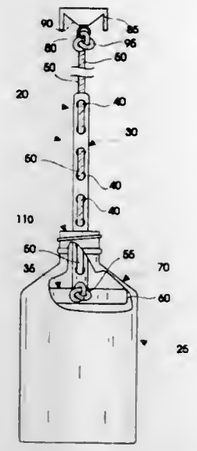
5,622,313
TRIBOELECTRIC POWDER SPRAY GUN WITH INTERNAL DISCHARGE ELECTRODE AND METHOD OF POWDER COATING
Harry J. Lader, Lakewood; William R. Rehman, Vermillion, and James W. Messerly, Stow, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio
Filed Mar. 3, 1995, Ser. No. 398,376
Int. Cl.[6] B05B *5/047*
U.S. Cl. 239—3 **11 Claims**



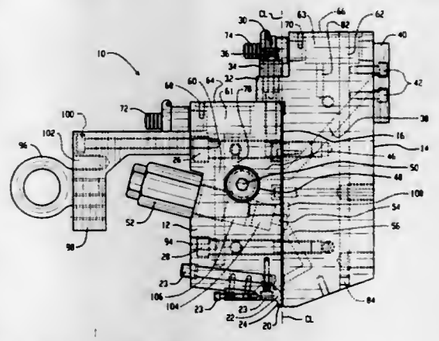
3. The method of electrostatic spraying of powder material, comprising the steps of:
flowing the powder material through a spray gun;
triboelectrically charging the powder material to a first polarity in the spray gun by impacting the powder material within the gun with contact surfaces , while leaving the contact surfaces with a second polarity, the second polarity being opposite to the first polarity;
treating the contact surfaces with a corona of the first polarity; and
eliminating a necessity for a ground path for the contact surfaces.

5,622,314
GAME SCENT DIFFUSION DEVICE
Donald J. Eason, 687 Patosa Trail, Pocahontas, Ark. 72455
Filed Mar. 27, 1995, Ser. No. 411,109
Int. Cl.[6] A24F *25/00*
U.S. Cl. 239—47 **8 Claims**

1. A game scent diffusion device comprising:
a bottle for containing liquid scent, said bottle having a relatively narrow mouth and a cap adapted to be disposed over said mouth;
an inverted generally "T" shaped wick receptive member adapted to be disposed within said bottle, said member comprising:
an elongated flexible body portion comprising an upper end and a lower end;
a flexible crossbar portion extending generally perpendicularly from the lower end of said body portion, said crossbar portion having opposite ends, said ends adapted to be springingly, temporarily bent toward one another to facilitate insertion of said member into said bottle, said ends, once said member is inserted, contacting a relatively narrow neck of said bottle when said member is partially withdrawn from said bottle; and,
a plurality of wick receptive orifice defined along said body;
an absorptive wick woven through said orifices, said wick extending from said body to be externally secured to suspend said bottle with said member partially withdrawn from said bottle; and,
an eyelet disposed within said cap to anchor a bitter end of said wick to facilitate suspension of said device.



5,622,315
ADJUSTABLE SLOT GOATING DIE
John J. Keane, Alpharetta, and Charles H. Scholl, Duluth, both of Ga., assignors to Nordson Corporation, Westlake, Ohio
Filed Mar. 14, 1995, Ser. No. 404,167
Int. Cl.[6] B05B *1/04*; **B29C** *47/14*
U.S. Cl. 239—134 **15 Claims**



1. A slot coating die (**10**), comprising:
an upper die half (**12**) and a lower die half (**14**) attached together, each die half (**12**, **14**) extending along an axis (**18**) and having a front and a back, said front of said upper die half including a movable lip insert (**22**) extending substantially the entire width thereof, said movable lid insert being adjustable along substantially the entire length thereof, toward and away from said front of said upper die half in a direction generally perpendicular to said axis;
at least one flow passage at least partially defined by said upper and lower die halves (**12**, **14**) through which hot melt material is introducible; and

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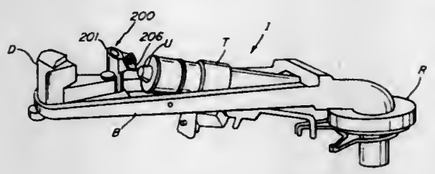
at least one adjustable die opening (20) communicating with said flow passage near the fronts of the die halves, through which hot melt material introduced into the flow passage may exit the die, a thickness of said at least one adjustable die opening being defined at least partially by said lower die half and said movable lip insert and being adjustable independently of said movable lip insert.

5,622,316

SELF-ADJUSTING JET BREAKER FOR IMPACT SPRINKLERS

Arno Drechsel, Via Castel Mareccio 4, 39100 Bolzano, Italy

Continuation of Ser. No. 167,986, Dec. 23, 1993, abandoned. This application Aug. 4, 1995, Ser. No. 511,322
Claims priority, application Italy, Jun. 27, 1991, VI91A0105
Int. Cl.[6] B05B *3/02*
U.S. Cl. 239—230 **18 Claims**



1. An impact sprinkler with a removable self-adjusting jet breaker device, the impact sprinkler comprising:

a water spout having a fixed end that connects to a pressurized water pipe by means of a rotatable joint with a first rotation axis and having a second end;

a nozzle arranged at the second end of said spout for generating a water jet;

a swingable arm with a longitudinal axis mounted for oscillation about a second axis substantially perpendicular to said first rotation axis;

a water deflector, mounted to said swingable arm at a first transverse distance from said second axis, that cyclically interacts with the water jet, said water deflector deflecting the water jet to thereby cause oscillation of said arm from a starting position and breaking up the water jet to cause said swingable arm to move back toward the starting position, wherein said water deflector extends to a maximum height, measured from the longitudinal axis, equal to a first value;

a jet breaker device removably mounted to said swingable arm at a second transverse distance from said second axis, wherein said second distance is less than said first distance;

wherein said jet breaker device has at least one first active surface longitudinally spaced from said water deflector to interact with said water jet between successive oscillations of said swingable arm;

wherein said first active surface forms an inclination angle with respect to said longitudinal axis such that said first active surface is substantially tangent to the water jet when said first active surface starts to interact with the water jet;

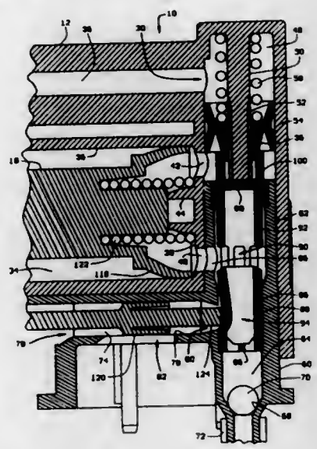
wherein said first active surface extends to a maximum height measured from said longitudinal axis, equal to a second value that is greater than said first value so that said first active surface interacts with the water jet after the water jet no longer interacts with said water deflector during oscillation of the swingable arm.

5,622,317

PRESSURE BUILDUP TRIGGER SPRAYER

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Filed Dec. 12, 1994, Ser. No. 363,512
Int. Cl.[6] B05B *9/043*
U.S. Cl. 239—333 **13 Claims**



1. A sprayer comprising:

a sprayer housing;

means for attaching the sprayer housing to a liquid container;

a pump chamber in the sprayer housing;

a pump piston mounted in the pump chamber for reciprocating movement of the pump piston between a charge position of the pump piston in the pump chamber and a discharge position of the pump piston in the pump chamber;

means on the sprayer housing for manually reciprocating the pump piston between the charge and discharge positions;

means for venting air from the pump chamber in response to the pump piston being moved to the discharge position in the pump chamber when priming the pump chamber;

the pump chamber has at least one wall and the wall has an inlet opening therethrough, and the means for venting air from the pump chamber causes the air to exit the pump chamber through the inlet opening in response to the pump piston being moved to the discharge position in the pump chamber;

a liquid passage extends through the sprayer housing and communicates with the inlet opening in the pump chamber wall, the liquid passage conveys liquid from a liquid container to which the sprayer housing has been attached, through the liquid passage to the inlet opening and into the pump chamber in response to the pump piston being moved from the discharge position in the pump chamber to the charge position;

the means for venting air from the pump chamber includes an exit port in the liquid passage that communicates the liquid passage with the liquid container when the sprayer housing is attached to the liquid container, a valve element closing over the exit port and means for displacing the valve element from the exit port thereby opening the exit port in response to the pump piston being moved to the discharge position, and for returning the valve element over the exit port thereby closing the exit port in response to the pump piston being moved to the charge position;

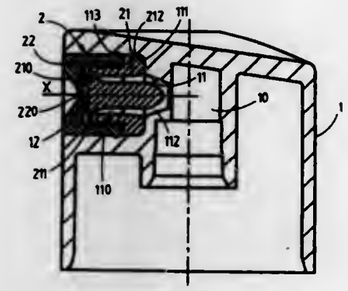
the valve element is a resilient sleeve press-fit into the liquid passage in a position where the sleeve closes over the exit port, and the means for displacing the valve element from the exit port and for returning the valve element over the exit port engages against and compresses the resilient sleeve causing it to be displaced from the exit port and disengages from the resilient sleeve allowing it to return to its position over the exit port, respectively.

5,622,318

SPRAY NOZZLE FOR AN AEROSOL DISPENSER

Jean-Louis Bougamont, Eu; Pierre DuMont, Houdain, and Hervé Lompech, Criel sur Mer, all of France, assignors to Sofab, Le Treport, France

Filed Nov. 1, 1994, Ser. No. 332,948
Claims priority, application France, Nov. 3, 1993, 93 13055
Int. Cl.[6] B05B *1/34*
U.S. Cl. 239—490 **7 Claims**



1. A spray device for mounting on a fluid dispenser connected to a tank; the spray device comprising

a head having an expansion chamber into which an outlet orifice of said fluid dispenser opens into, said expansion chamber communicating with a nozzle via at least one outlet duct having an inner wall; wherein said nozzle includes an inner element which is at least partially received in the at least one outlet duct and which comprises a core having a front face and a back end, and a peripheral sleeve having a front portion disposed coaxially therewith and defining between them a dispensing enclosure inside the at least one outlet duct, said core and peripheral sleeve being interconnected by at least one transverse fin which is elastically deformable to enable said core to move relative to said peripheral sleeve, and which nozzle further includes an outer element having a back face in contact with said inner element so as to define between their respective contacting surfaces a network of swirl-inducing channels communicating the at least one outlet duct and a spray orifice formed as part of the outer element;

wherein the inner wall of the at least one outlet duct further includes a corresponding recess formed therein: said corresponding recess includes an inside surface; and

wherein said peripheral sleeve further includes a cylindrical front portion, which extends to a radial annular shoulder bearing against the inside surface of said corresponding recess.

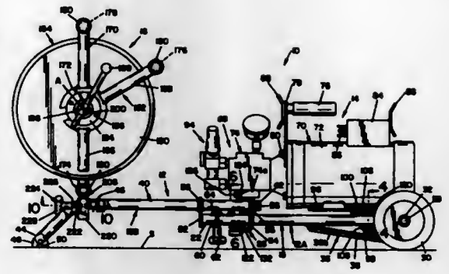
5,622,319

PORTABLE WATER JETTER APPARATUS

Larry F. Babb, Grafton, and Kenneth S. Kriedeman, Olmsted Township, both of Ohio, assignors to Emerson Electric Company, St. Louis, Mo.

Filed Mar. 3, 1995, Ser. No. 398,350
Int. Cl.[6] B05B *15/06*
U.S. Cl. 239—722 **48 Claims**

1. Water jetting apparatus comprising a cart having longitudinally opposite ends and laterally spaced apart sides, wheel means at one of said opposite ends, handle means at the other of said opposite ends, said spaced apart sides including longitudinally extending side member means, longitudinally spaced apart first, second and third support member means each extending laterally between said side member means, a water jetter unit, means including first latch means for removably attaching said jetter unit to said first and second support member means, jetter hose reel means, and means including second latch means for removably attaching said hose reel means to said third support member means.

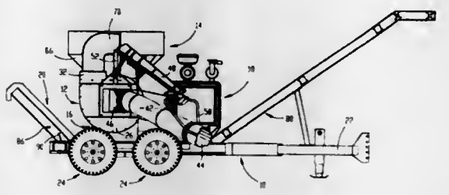


5,622,320

FOILAGE COMPACTOR APPARATUS

John Hubbard, Walkerton, and Douglas Foster, Chesterfield, both of Va., assignors to Old Dominion Brush Company, Richmond, Va.

Filed Mar. 26, 1996, Ser. No. 622,599
Int. Cl.[6] B02C *21/02;23/08*
U.S. Cl. 241—56 **10 Claims**



1. A foliage compactor apparatus comprising:

a frame;

an impeller assembly supported on the frame and including an enclosure having an inlet and an outlet, and an impeller supported for rotation within the enclosure to produce suction at the inlet and positive pressure at the outlet;

an elongated hose including an outlet connected to the inlet of the impeller assembly and an opposed inlet to which foliage to be compacted is drawn by the suction of the impeller assembly; and

a cyclone separator and a thresher operatively coupled together for passage of said foliage to be compacted in serial order first through said cyclone separator and then through said thresher for compaction of the foliage to be processed,

said cyclone separator supported on the frame and presenting an upper inlet connected to the outlet of the impeller assembly so that air and said foliage to be compacted under positive pressure are introduced into the cyclone separator by the impeller assembly prior to passage of said foliage to be compacted through said thresher, the cyclone separator including an outlet disposed lower than the inlet, and an exhaust vent located higher than the outlet for exhausting air from the apparatus;

said thresher supported on the frame at the outlet of the cyclone separator for receiving said foliage to be compacted only after passage thereof through the cyclone separator for compacting foliage falling through the cyclone separator and into and through the thresher.

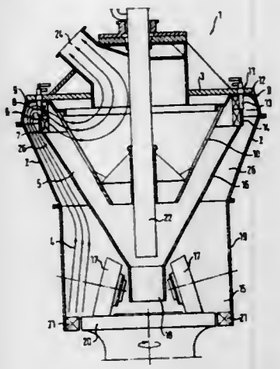
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MILL CLASSIFIER

Horst Brundiek, Kaarst; Michael Keyssner, Duesseldorf, and Reinhard Koschorek, Bochum, all of Germany, assignors to Loesche GmbH, Dusseldorf, Germany

Filed Jun. 30, 1995, Ser. No. 496,885
Claims priority, application Germany, Jul. 6, 1994, 44 23 815.0
Int. Cl.[6] B02C *23/22*
U.S. Cl. 241—79.1 **12 Claims**



1. A roller mill classifier, comprising a static classifier, a dynamic classifier, and an annular classifying zone formed between said two classifiers and a deflecting device through which a fluid-grinding material flow rises and is directed through an angle greater than 120° to form a downward flow, the static classifier comprising a radially outwardly positioned guide apparatus with at least one lower guide blade ring and an upper guide blade ring, the dynamic classifier comprising a ledge rotor, wherein the lower guide blade ring and the upper guide blade ring comprise shafts arranged coaxially with one another, and wherein the deflecting device is disposed above the ledge rotor in an area adjacent to the upper guide blade ring, wherein the deflected fluid-grinding material flow forms the downward flow by action of gravity wherein the guide blade rings adjustable independently of one another and wherein a radial or tangential adjustment can be carried out individually or simultaneously for guide blades of a guide blade ring.

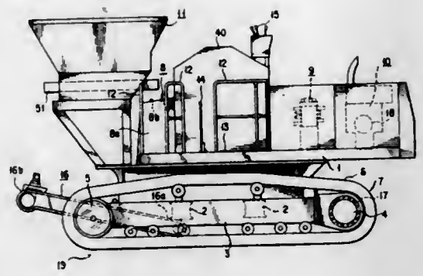
5,622,322

SELF-PROPELLED CRUSHING MACHINE

Yukio Tamura, and Yasutaka Nishida, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP93/01312, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/06561, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 14, 1993, Ser. No. 387,895
Claims priority, application Japan, Sep. 14, 1992, 4-070014 U
Int. Cl.[6] B02C *13/286*
U.S. Cl. 241—101.74 **6 Claims**

1. A self-propelled crushing machine comprising:
- a vehicular chassis having a self-propelling traveling device and having first and second ends in a longitudinal direction;
- a crusher provided at a longitudinally intermediate position of said vehicular chassis;
- an operator's platform located at a first lateral side of said crusher;
- a hopper located at a position longitudinally shifted from said crusher toward said first end of said vehicular chassis, said hopper cooperating with said crusher for feeding objects to be crushed;



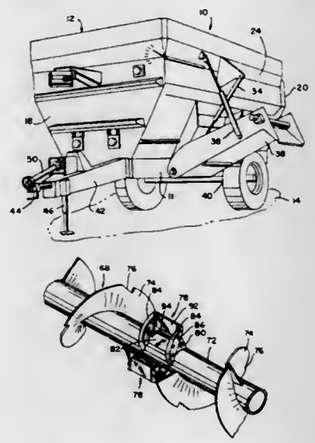
- a driving power source located at a position longitudinally shifted from said crusher toward said second end of said vehicular chassis;
- a motor powered by said driving power source for driving said crusher, said motor being located at a second lateral side of said crusher opposite to the first lateral side at which said operator's platform is located; and
- bottom plate means incorporated in said hopper and located between said hopper and said crusher, said bottom plate means being reciprocally movable in horizontal direction relative to a charge inlet of said crusher for feeding a substantially constant amount of the objects to be crushed.

5,622,323

HAY PROCESSING SYSTEM FOR A MIXER FEEDER

Kurt A. Krueger, Mayville, and Fred G. Kuhn, West Bend, both of Wis., assignors to Gehl Company, West Bend, Wis.

Filed Aug. 10, 1995, Ser. No. 513,319
Int. Cl.[6] B02C *19/22;21/02*
U.S. Cl. 241—101.76 **27 Claims**



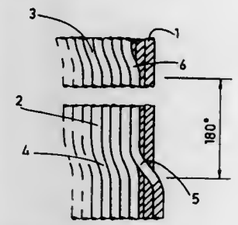
10. A mixing and feeding apparatus for processing long-stemmed and livestock feed material, the apparatus comprising:
- a receptacle having upright front and rear walls and side walls defining a mixing chamber for blending the feed material, one of said side walls having a discharge door generally aligned with a mid portion of said mixing chamber, said receptacle also having a scalloped bottom wall defining a pair of side-by-side troughs;
- an auger arrangement disposed in said receptacle to blend the feed material in the mixing chamber, said auger arrangement including first and second lower augers having longitudinal shafts located in said bottom wall, one of said lower augers in each of said troughs; and
- a combined knife and resiliently biased paddle arrangement mounted on said longitudinal shafts of said first and second lower augers in said mid portion of said mixing chamber.

5,622,324

SPOOL HAVING A FILAMENT WOUND ONTO A BOBBIN AND METHOD FOR MANUFACTURING SAME

Ehud Dekel, Nofit, Israel, assignor to State of Israel, Ministry of Defence, Rafael Armaments Development Authority, Haifa, Israel

Filed Jul. 18, 1995, Ser. No. 503,850
Claims priority, application Israel, Jul. 21, 1994, 110395
Int. Cl.[6] B65H *55/04;54/00*
U.S. Cl. 242—178 **8 Claims**



1. A spool consisting of a filament wound onto a bobbin in alternating odd and even layers, comprising:
- a first layer wound in a helical pattern;
- a transition from each odd layer to an immediately following even layer, the transition formed at a predetermined transition angle;
- a plurality of layers wound on a helical base pattern, each layer, except the first layer, including two cross-over lines, wherein at each even layer a first cross-over line starts at a transition point from a preceding layer, and a second cross-over line starts 180° apart from the first cross-over line; and wherein at each odd layer, except the first layer, the cross-over lines cross over in the same direction and lie over those of the preceding, even layer.

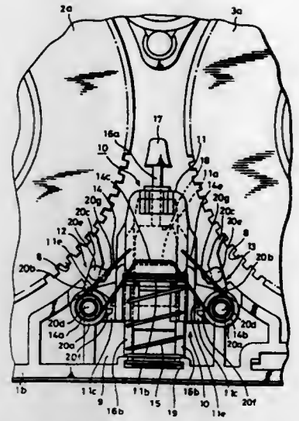
5,622,325

REEL LOCK MECHANISM FOR LOCKING TAPE REELS IN A TAPE CASSETTE

Osamu Taguchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,780
Claims priority, application Japan, Jul. 15, 1994, 6-164312
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—343 **5 Claims**

1. A reel lock mechanism for a tape cassette comprising:
- a reel lock body which can be moved in the front and back direction with respect to a pair of tape reels on which end portions of a magnetic tape are wound;
- a pair of reel lock ratchets supported on said reel lock body so as to be rotatable about supporting shafts and having ratchet portions formed at tip ends thereof; and
- a ratchet opening spring including two coil portions supported on shaft portions of said pair of reel lock ratchets, a coupling arm coupling together said two coil portions at one of the ends of said coil portions and ratchet opening arms extending from the other ends of said two coil portions and biasing said ratchet portions toward said pair of reels under spring force so that said ratchet portions become meshed with ratchet wheels formed around outer peripheral portions of said tape reels, wherein said pair of reel lock ratchets include ratchet-side stoppers and said reel lock body includes body-side stoppers which can be engaged with said ratchet-side stoppers under said biasing of said ratchet portions by said spring force, said supporting shafts about which said reel lock ratchets are rotatable are a pair of rotary shafts provided on said reel lock body separate from said reel lock ratchets, said pair of reel lock ratchets include spring engagement ribs, said pair of ratchet opening arms are respectively engaged with said pair of spring engagement ribs, and said shaft portions of said pair of reel lock ratchets have said two coil portions of said ratchet opening spring separately supported thereon.

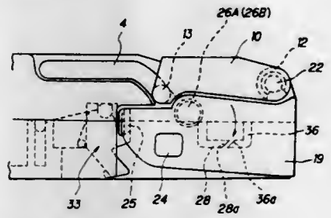


5,622,326

DUSTPROOFING RIB STRUCTURE OF TAPE CASSETTE WITH LID

Osamu Taguchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,730
Claims priority, application Japan, Oct. 11, 1994, 6-245220
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—344 **6 Claims**



1. A tape cassette comprising:
- a tape cassette case including upper and lower halves having a tape exposing portion at a front end and housing a pair of reels on which is wound a tape having transparent portions at a beginning and an end thereof;
- a lid mounted on the front of the case pivotally about a shaft portion between a closed position wherein said lid covers the tape exposing portion and an open position wherein said lid exposes the tape exposing portion;
- a pair of lid side portions provided at the ends of the lid;
- a locking projection mounted on a lid side portion to the rear of the shaft portion for locking the lid in the closed position with a lid locking member;
- said case having an opening in the vicinity of the shaft portion for guiding light from a light source for tape position detection to the outside; and

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a dustproofing rib disposed between the area of the case around the opening and the respective lid side portion,

wherein the dustproofing rib includes a first rib part integrally formed on the case and a second rib part integrally formed on the respective lid side portion and said first and second rib parts do not physically engage one another when said respective lid side plate is moved with respect to said case.

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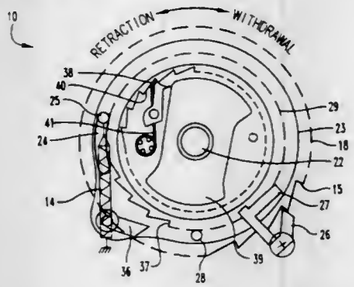
EMERGENCY LOCKING SEAT BELT RETRACTOR

Robert B. Heath, Brighton, Australia; James R. Chinni, Indianapolis, Ind.; Steven H. Wallen, Noblesville, Ind., and James R. Anthony, Carmel, Ind., assignors to Indiana Mills and Manufacturing, Inc., Westfield, Ind.

Filed Aug. 29, 1995, Ser. No. 521,301

Int. Cl.[6] B60R *22/36*

U.S. Cl. 242—383.4 **25 Claims**



1. An emergency locking seatbelt retractor, comprising:

a spool shaft;

first and second spool side flanges coupled to the spool shaft, the first and second spool side flanges having a spool diameter;

a plurality of ratchet teeth circumferentially disposed about the first and second spool side flanges;

a lock bar operative to selectively engage the ratchet teeth, thereby preventing rotation of the spool shaft in a first direction;

a quantity of webbing material fixedly attached to the spool shaft and wound therearound in a retracted position;

means for initiating engagement of the lock bar with the ratchet teeth; and

means to isolate the means for initiating from withdrawal forces applied to the lock bar once the lock bar has engaged the ratchet teeth.

5,622,328

PAPER WINDER FOR WINDING A LENGTH OF WASTE PAPER FROM A PAPER CUP MAKING MACHINE

Michael Norley, 823 Lincoln Ave., West Chester, Pa. 19380

Continuation of Ser. No. 122,916, Sep. 16, 1993, abandoned. This application Jun. 27, 1995, Ser. No. 495,220

Int. Cl.[6] B65H *23/198*

U.S. Cl. 242—413.5 **2 Claims**

1. A paper winder for winding a length of waste paper from a paper cup making machine for making cups for soft drinks, comprising

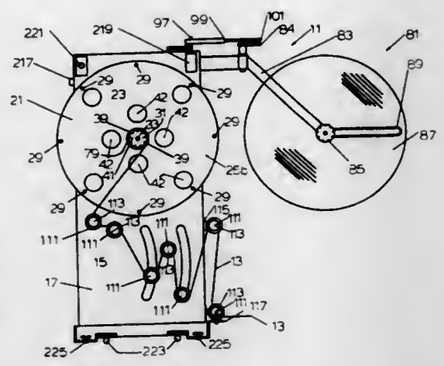
a frame having a front face portion and a rear face portion,

a spool rotatably mounted on the front face portion of the frame,

motor means connected to the spool for rotating the spool,

rotatable cover means mounted on the frame for holding the waste paper against the spool during winding of the waste paper,

a plurality of free-wheeling idler rollers mounted on shafts extending from the front face portion of the frame,



a first pulley mounted on the rear face portion of the frame,

a second pulley mounted on the rear face portion of the frame,

a first shaft mounted on the frame and extending from the rear face portion of the frame,

a first arm member having a first end portion and a second end portion, the first arm member being rotatably mounted on the first shaft at the first end portion of the first arm member,

a second arm member having a first end portion and a second end portion, the second arm member being rotatably mounted on the first shaft at the first end portion of the second arm member,

the second end portion of the second arm member being farther away from the first shaft then the second end portion of the first arm member is from the first shaft,

a first slot formed in the frame,

a second slot formed in the frame,

a second shaft mounted on the first arm member and extending through the first slot, the first slot being shaped to permit some vertical movement of the first arm member,

a free-wheeling idler roller rotatably mounted on the second shaft on the front face portion side of the frame,

a third shaft mounted on the second arm member and extending through the second slot, the second slot being shaped to permit some vertical movement of the second arm member,

a free-wheeling idler roller rotatably mounted on the third shaft on the front face portion side of the frame,

a first chain having a first end portion and a second end portion, the first end portion of the first chain being attached to the first arm member, the first chain extending over the first pulley and being connected at its second end portion to a first weight,

a second chain having a first end portion and a second end portion, the first end portion of the second chain being attached to the second arm member, the second chain extending over the second pulley and being connected at its second end portion to a second weight,

a rheostat mounted on the rear face portion of the frame, the rheostat having a rheostat shaft having a pulley fixedly mounted thereon, the rheostat being connected to the motor means to control the motor speed and therefore the speed of rotation of the spool,

a cord having a first end portion and a second end portion, the first end portion of the cord being attached to the first arm member, the cord extending around the pulley mounted on the rheostat shaft, and

a third weight attached to the second end of the cord,

wherein vertical movement of the first arm member causes the cord to rotate the pulley fixedly mounted on the rheostat shaft which changes the output of the rheostat to increase or decrease the motor speed of the motor means depending on which direction the cord is rotating the pulley mounted on the rheostat shaft.

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TERMINAL BAND FEEDING DEVICE HAVING EFFICIENT PARTITIONING TAPE DISPOSAL WHICH LIMITS TENSION IN THE TERMINAL BAND

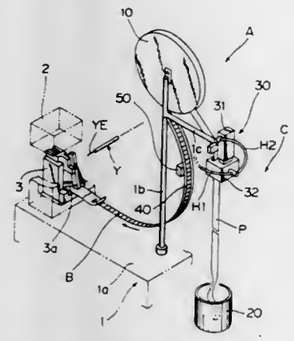
Tomoya Tominaga, and Kazuhiro Shinoda, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jun. 3, 1994, Ser. No. 253,316

Claims priority, application Japan, Jun. 11, 1993, 5-031461 U

Int. Cl.[6] B65H *77/00;23/18*

U.S. Cl. 242—418.1 **10 Claims**



1. In combination, a terminal band feeding apparatus and a continuous terminal crimping machine,

said terminal band feeding apparatus feeding, to a terminal crimping position of the continuous terminal crimping machine, a long terminal band having a plurality of terminal blanks at regular spatial intervals,

the terminal band feeding apparatus comprising:

a feeding reel on which the terminal band and a tape are spirally wound in lamination, said tape being disposed along one surface of said terminal band;

support means for rotatably supporting said feeding reel;

tape feeding means for successively pulling out said tape, by a predetermined amount, from said feeding reel such that said terminal band is fed to successively feed said terminal blanks to the terminal crimping position and such that the pulled tape hangs down under its own weight to be received in a disposal container; and

control means for controlling the operation of said tape feeding means, wherein a portion of said terminal band which has been reeled out from said feeding reel and which is located between said feeding reel and said terminal crimping position is maintained in a predetermined relaxed state; and

tension detecting means adapted to supply a signal when a predetermined tension is applied to the portion of said terminal band which has been reeled out from said feeding reel,

said control means being adapted to activate said tape feeding means to feed a predetermined amount of said tape in response to said signal from said tension detecting means, and wherein

the portion of said terminal band which is located between said feeding reel and said terminal crimping position is arranged in an arcuate manner;

an arcuate guide surface is disposed opposite to an inner surface of said terminal band portion arranged in said arcuate manner, a predetermined distance being formed between said arcuate guide surface and said inner surface of said terminal band portion; and

said tension detecting means is adapted to detect a condition in which said terminal band portion essentially contacts said arcuate guide surface; and

wherein the tape feeding means includes:

a stationary portion secured to a stand;

a movable portion movable relative to said stationary portion;

a clamping mechanism disposed at said movable portion for releasably clamping the tape;

reciprocatingly moving means for reciprocatingly moving said movable portion vertically between an upper position and a lower position, said reciprocatingly moving means moving said movable portion from said upper position to said lower position when said clamping mechanism clamps the tape, the tape being fed downwardly, and said moving means moving said movable portion from said lower position to said upper position when said clamping mechanism does not clamp the tape, the tape thereby hanging to prevent the tape from returning in a direction opposite to the feed direction thereof; and

drive means for driving said clamping mechanism.

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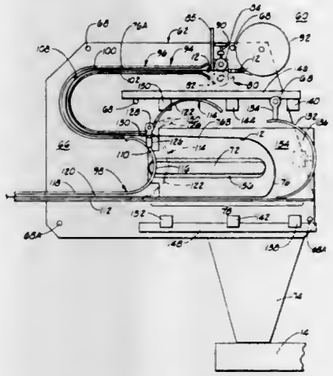
SELF-ADJUSTING FEED STOCK ACCUMULATOR SYSTEM

Roger F. Sharp, Otis Orchard; Terry M. Frost, Spokane, and Don W. Graham, Green Acres, all of Wash., assignors to ASC Machine Tools, Inc., Spokane, Wash.

Continuation-in-part of Ser. No. 239,603, May 9, 1994, abandoned, and a continuation-in-part of Ser. No. 74,958, Jun. 10, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,173

Int. Cl.[6] B65H *23/192*

U.S. Cl. 242—418.1 **8 Claims**



1. A system for regulating the feed rate of a feed stock and for providing a supply of the feed stock to processing equipment, the system comprising:

accumulator means having an accumulator line area;

feed means for feeding feed stock into the accumulator line area to form a line of feed stock; and

control means for detecting the presence or absence of the feed stock line at set points in the accumulator line area and for controlling the feed rate of the feed means so that the feed stock line in the accumulator line area is maintained between a preselected minimum and a preselected maximum and to thereby provide a constant supply of the feed stock for the processing equipment, the control means comprising:

a pair of set point detectors for detecting the presence or absence of the feed stock line at the set points in the accumulator line area; and

means for adjusting the rate at which the feed means delivers the feed stock into the accumulator line area at a base feed rate determined in response to the detected extent of the feed stock line in the accumulator line area so that the length of the feed stock line is maintained between the pair

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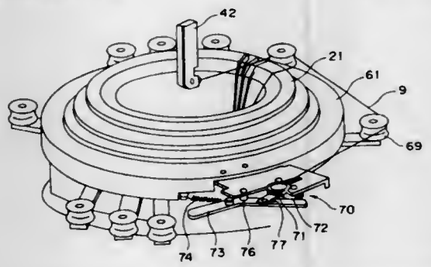
of set point detectors so that the feed stock line is maintained between the preselected minimum and maximum in the accumulator area, the base feed rate increasingly adjusted to a higher value or to a lower value in each of a series of successive excursions of the feed stock line from between the preselected minimum in the accumulator area.

5,622,331

METHOD AND APPARATUS FOR WINDING A WIRE ON A WORK PIECE

Takao Kosaka, Saitama; Satoshi Tomihara, Kanagawa, and Hisahiro Tanaka, Chiba, all of Japan, assignors to Sony Corporation, Japan

Filed May 24, 1995, Ser. No. 449,553
Claims priority, application Japan, Jun. 6, 1994, 6-145823
Int. Cl.[6] H01F *41/08*
U.S. Cl. 242—437.3 **20 Claims**



1. A winding apparatus for winding a wire fed from a winding feeding source onto a work piece, comprising:
a work receiving base on which the work piece is supported;
a nozzle unit to which the wire is fed from the winding feeding source, said nozzle being operatively connected with servo means for moving said nozzle up and down with respect to said work receiving base;
a guide mechanism which is movable toward and away from said work receiving base for grasping the wire from said nozzle unit and for drawing the wire to the work piece supported on said work receiving base;
a wire clamp for clamping the wire that has been guided by said guide mechanism to the work piece; and
rotary means for rotating the work receiving base,
wherein after the wire has been clamped by said wire clamp, the wire is wound on the work piece by vertical movement of said nozzle unit, a holding operation of said guide mechanism and a rotational operation of said rotary means.

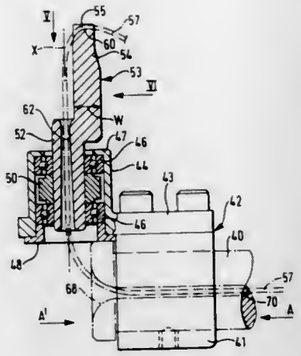
5,622,332

APPARATUS FOR AND METHOD OF WINDING LAYERS OF WIRE ON A ROTOR OR STATOR OF A ROTARY ELECTRIC GENERATOR OR MOTOR

Christopher T. Bennitt, Hemel Hempstead; John Rich, Linslade, and Geoffrey A. Rogers, Berkhamsted, all of United Kingdom, assignors to Lucas Industries plc, Great Britain

Filed May 10, 1995, Ser. No. 437,954
Claims priority, application United Kingdom, May 18, 1994, 9409870
Int. Cl.[6] B65H *18/00*
U.S. Cl. 242—439 **26 Claims**

1. An apparatus for winding layers of wire on a pole of a rotor or stator of a rotary electric generator or motor, the apparatus comprising:
a needle mounting member movable substantially axially of said rotor or stator, and
an elongate needle rotatably mounted on said mounting member and extending transversely thereto,



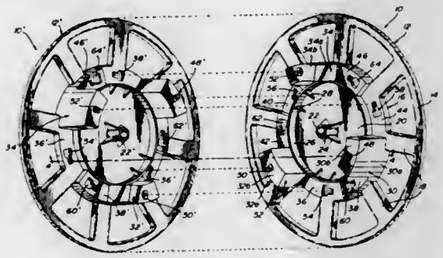
said needle having a longitudinal axis transverse to the direction of movement of said mounting member and about which the needle rotates, the needle having an outlet path for wire to one side of said longitudinal axis of said needle.

5,622,333

ADJUSTABLE WIRE REEL

Michel Jacques, St-Damien-de-Buckland, Canada, assignor to IPL Inc., St-Damien-de-Beliechasse, Canada

Filed Jan. 3, 1996, Ser. No. 582,273
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—578.2 **8 Claims**



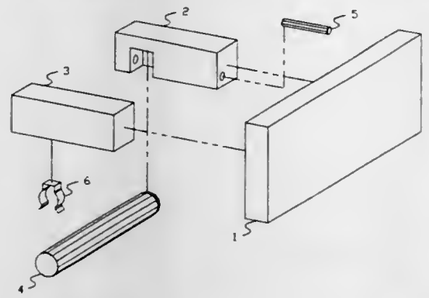
1. An adjustable wire reel comprising a pair of identical opposite reel members interlocked with one another; said reel members having respective flange portions spaced from one another to define a winding receiving spacing therebetween and respective hub portions engaged to one another; each said hub portion defining an inner side displaying a series of circumferentially spaced barrel sections, each said barrel section having a winding receiving face and an axially outer face contacting part of the inner side of the opposite reel member; means on said outer face of said barrel section cooperating with means on said inner side of the opposite reel member for lockingly engaging said reel members to one another to thereby define a first spacing between said flange portions; said inner side of each reel member having axially stepped surfaces each having said means cooperating with said means of said outer face of said barrel section of the opposite reel member for lockingly engaging said reel members to one another to thereby define different spacings between said flange portions whereby said wire reel is adjustable in width.

5,622,334

DISPENSER FOR ROLLED MATERIAL

Brian T. Welter, 235 Lamont Pkwy., Bartlett, Ill. 60103, and Curtis M. Ginter, 625 N. Walnut La., Schaumburg, Ill. 60194

Filed Sep. 11, 1995, Ser. No. 526,202
Int. Cl.[6] B65H *19/00*
U.S. Cl. 242—598.2 **1 Claim**



1. A dispenser for rolled sheet material having a hollow center, said dispenser comprising:
a base having first and second opposed ends;
a first side arm extending generally perpendicularly from said base and mounted at said first opposed end of said base, a second side arm extending generally perpendicularly from said base and mounted at said second opposed end of said base;
a roll holding arm having first and second opposed ends supported by and extending between said side arms and generally parallel to said base;
first means for securing said first end of said roll holding arm, said first means secured in said first side arm generally perpendicular to said base and extending through said first end of said roll holding arm to allow said roll holding arm to pivot in a plane parallel to said base;
second means for releasably securing said second end of said roll holding arm, said second means secured in said second side arm.

5,622,335

TAIL PIECE FOR A PROJECTILE HAVING FINS EACH INCLUDING A RECESS

Christian Trouillot, Sainte Thorette; Yves Millet, Fussy, and François Beauvais, Bourges, all of France, assignors to Giat Industries, Versailles, France

Filed Jun. 23, 1995, Ser. No. 493,968
Claims priority, application France, Jun. 28, 1994, 94 07952
Int. Cl.[6] F42B *10/06*
U.S. Cl. 244—3.24 **22 Claims**



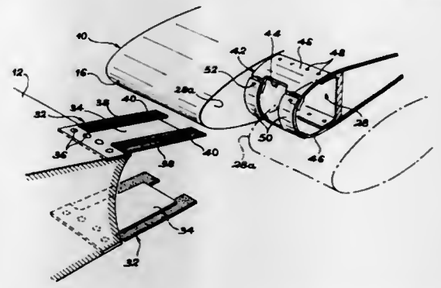
1. A tail piece for a projectile, comprising:
at least three fins coupled to the projectile, each fin including at least one recess having a side delimited by a corresponding external fin support surface of the projectile, wherein the at least one recess extends radially to a height selected to reduce Magnus strain, said Magnus strain being generated by an aerodynamic flow appearing on a body of the projectile when the projectile is in its trajectory at a certain range of obliquity; and
at least one fastening foot for coupling each of the at least three fins to the projectile.

5,622,336

DEVICE FOR THE PROTECTION OF A CONTROL SURFACE HINGE PARTICULARLY FOR AN AIRCRAFT

Jean L. Chavanne, La Salvetat Saint Gilles, and Daniel Bonenfant, Aussonne, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Apr. 14, 1995, Ser. No. 421,985
Claims priority, application France, Apr. 18, 1994, 94 04594
Int. Cl.[6] B64C *1/00*
U.S. Cl. 244—129.1 **9 Claims**



1. In a craft movable in a fluid comprising a craft structure and an assembly comprising:
a control surface having a leading edge wherein:
at least one notch is formed in the leading edge; the at least one notch having lateral edges;
a hinge located in the at least one notch, the hinge enabling the control surface to be articulated to the craft structure; and
a device for protecting the hinge; said device including at least one cover plate; the at least one cover plate being adapted to be fixed only to the craft structure and partly covering the at least one notch; wherein:
two calibrated clearances are defined between lateral edges of the at least one cover plate and the lateral edges of the at least one notch; and
the at least one cover plate comprises:
two breakable lateral bands formed between the lateral edges of the at least one cover plate and reduced resistance lateral zones located in a vicinity of the lateral edges of the at least one cover plate and extending substantially parallel to the lateral edges of the at least one cover plate, whereby the two breakable lateral bands are adapted to be broken when subjected to a force exceeding a given value.

5,622,337

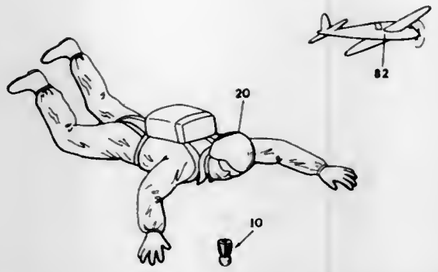
METHOD AND REFERENCE POINT APPARATUS FOR TRAINING FREE FALL PARACHUTISTS

Peter J. Unruh, 4900 N. Taylor Rd., Eloy, Ariz. 85231

Filed Jun. 8, 1995, Ser. No. 488,604
Int. Cl.[6] B64D *23/00*
U.S. Cl. 244—142 **3 Claims**

3. A reference point device for use during skydiving; said reference point device comprising:
a housing weighted and shaped such that when tossed from a high altitude aircraft said housing falls and achieves a terminal velocity substantially equal to that achieved by a free falling human being while skydiving,
and wherein said terminal velocity is achieved by said housing at substantially the same rate as a free falling human being after starting to fall, the weight and shape of said housing being such as to provide for a relative stable vertical fall,

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whereby said housing during falling remains in close proximity to a free falling human being to serve as a reference point;

stored deployable deceleration means connected to said housing for decelerating said housing after achieving terminal velocity for bringing said housing to a soft landing; and,

means for deploying said deployable deceleration means prior to said housing landing and after said housing has achieved terminal velocity

wherein said deployable deceleration means connected to said housing is a parachute stored in said housing

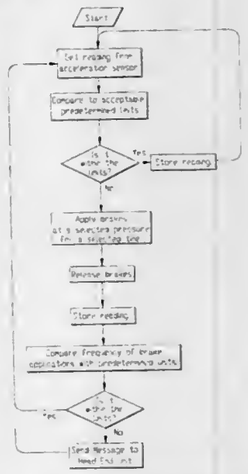
and wherein said means for deploying said parachute includes an electric motor, a battery connected to said motor for powering said motor, a rod connected at a first end thereof eccentrically to a plate connected to a shaft of said motor, a second end of said rod connected to means retaining said parachute within said housing, and means for actuating said motor; whereby upon actuation of said motor, said rod is moved away from said means retaining said parachute and said parachute is deployed.

5,622,338

TRUCK HUNTING DETECTION AND ABATEMENT APPARATUS USING SELECTIVE BRAKE APPLICATION

Douglas D. Klink, Weatherby Lake, Mo., assignor to Technical Services and Marketing Inc., Kansas City, Mo.

Filed Jul. 2, 1996, Ser. No. 674,503
Int. Cl.[6] B61L *23/00*
U.S. Cl. 246—169 R **18 Claims**



I. In a rail car having a truck for traveling on a rail and having brakes for braking the car, a rail car brake control apparatus comprising:

a brake controller operable for selectively applying the brakes of the rail car; and

sensor means coupled with said brake controller for measuring acceleration of the rail car in a direction transverse to the rail,

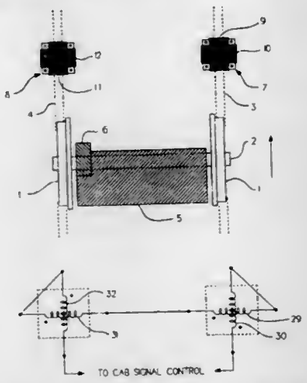
said brake controller including control means responsive to said sensor means for determining whether said acceleration exceeds a predetermined acceleration limit, and for selectively applying the brakes if said acceleration exceeds said limit.

5,622,339

PLATE ANTENNA METHOD USING INTEGRAL NOISE MITIGATION FOR RAILWAY CAB SIGNAL

Ronald R. Capan, Pittsburgh, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 275,991, Jul. 15, 1994, Pat. No. 5,501,416, and Ser. No. 393,115, Feb. 21, 1995, Pat. No. 5,501,417. This application Feb. 21, 1995, Ser. No. 391,134
Int. Cl.[6] B61L *15/00*
U.S. Cl. 246—194 **22 Claims**



I. An antenna for inductively receiving a cab signal on-board a railway vehicle supported on rails from a track circuit current in the rails, said antenna comprising:

at least one core of magnetically conducting material in a plate form;

a cab signal coil mounted on one of said at least one core with said cab signal coil having a first axis of sensitivity;

a noise sensing coil mounted on one of said at least one core with said noise sensing coil having a second axis of sensitivity;

said first axis of sensitivity of said cab signal coil being at an angular displacement from said second axis of sensitivity of said noise sensing coil, and said coils positioned so as to be exposed to generally the same electromagnetic force;

at least a portion of said cab signal coil for positioning above such rails for inductively receiving said cab signal from said track circuit current in said rail; and

at least a portion of said noise sensing coil positioned above at least a portion of said cab signal coil.

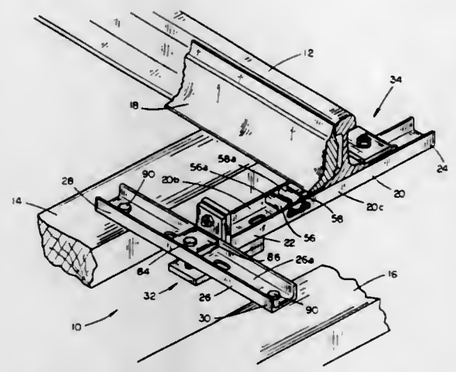
5,622,340

RAIL SWITCH POINT ASSIST APPARATUS

Charles W. Turner, Omaha, Nebr., and Michael K. Flaherty, Palatine, Ill., assignors to Double T Railroad Products, Omaha, Nebr.

Continuation of Ser. No. 254,924, Jun. 7, 1994, Pat. No. 5,482,231. This application Dec. 4, 1995, Ser. No. 566,835
Int. Cl.[6] E01B *7/00*
U.S. Cl. 246—415 R **2 Claims**

1. A rail switch point assist apparatus, comprising:



an elongated main member having an inward and an outward end;

means connected to the outward end of said main member for removably, adjustably connecting the main member to a railroad track running rail;

said means for connecting said main member to said running rail including a bracket pivotally and slidably mounted on said main member;

a first generally cylindrical roller rotatably mounted on its rotational axis to said main member, said first roller located intermediate the ends of the main member with its rotational axis oriented generally perpendicularly thereto, said first roller having a roller surface for operably bearing a moving switch point;

an elongated support member connected to the inward end of said main member and oriented generally perpendicular thereto; and

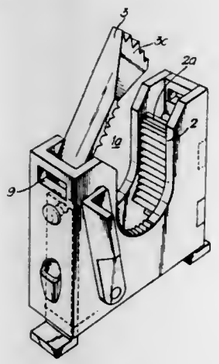
means for selectively vertically adjusting said roller relative to the support member.

5,622,341

FIXING DEVICE FOR SECURING CONDUITS TO SUPPORT STRUCTURES

Nils A. Stana, Egersund, Norway, assignor to Ing. Finn Christensen A.S., Oslo, Norway

PCT No. PCT/NO93/00130, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/04861, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 24, 1993, Ser. No. 387,865
Claims priority, application Norway, Aug. 25, 1992, 923316; Apr. 20, 1993, 931454
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—74.1 **19 Claims**



1. A device for securing an elongate article to a support structure which has at least two apertures having a given spacing from one another,

said device comprising:

a U-shaped jaw;

a ratchet arm pivotally supported at one end thereof to said jaw for movement between an open position, in which the U-shaped jaw is open for insertion and removal of an elongate article, and a closed position, in which the U-shaped jaw is obstructed by the ratchet arm so as to prevent insertion and removal of an elongate article;

a series of locking means provided on said jaw;

said ratchet arm at an opposite end thereof from said one end including a feature arranged for selective releasable snap engagement with respective ones of said locking means, for retaining an elongate article in said jaw despite variation, within a range, in transverse dimension of the elongate article;

said jaw further including at least two attaching hook members, and means actuable for moving said hook members relatively towards and away from one another between one position in which the hook members can be inserted and removed from respective apertures of the support structure, and another position in which the hook members if already received in said apertures, cannot be removed therefrom;

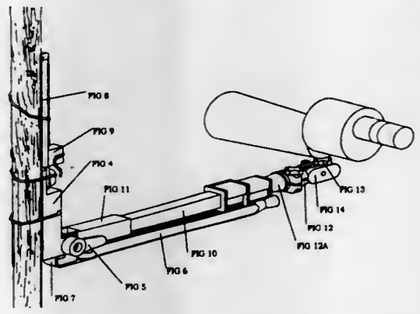
said jaw further including structure arranged to prevent the hook members from being moved from said other position to said one position, while said hooks are received in said apertures, unless said jaw is open.

5,622,342

VERSATILE APPARATUS FOR SUPPORTING CAMERAS, SPOTTING SCOPES AND OTHER DEVICES

James E. Mills, 13805 Shady Shores Dr., Tampa, Fla. 33613-4141

Filed Oct. 26, 1994, Ser. No. 329,484
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—126 **27 Claims**



1. A support apparatus for optical devices, comprising:

a central hub member, which fixedly or removably receives a collateral support attachment member on one end, and has means to rotatably interconnect with an arm hub member on the opposing end;

said arm hub member rotatably interconnects with said central hub member, thereby forming a central rotational axis about which said central hub member, and said arm hub member can rotate in relation to one another;

said arm hub member fixedly or removably receives an arm member;

said arm member has an optical device attachment means;

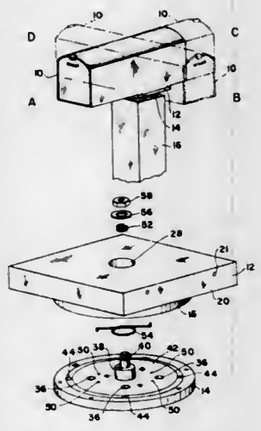
tightening means for allowing or restricting rotation of said arm hub member and said central hub member about said central rotational axis;

binding means for attaching to objects, and clenching means for securing said binding means; and

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fixed or removable plural elongated legs, said plural elongated legs enabling said support apparatus to be free standing.

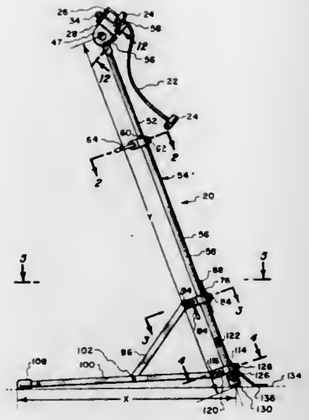
5,622,343
MAIL BOX MOUNTING DEVICE
Arthur D. Morton, 7350 Eagle Mills Rd., Waite Hill, Ohio 44094
Filed Apr. 12, 1995, Ser. No. 420,475
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—131 **2 Claims**



1. A mail box mounting device, comprising:
a) a lower body having mounting means such that said lower body can be mounted on a support structure, and wherein said lower body has a top surface;
b) an upper body rotatably engaged to said lower body such that said upper body can be rotated without rotating said lower body and having fastening means such that a mail box can be fastened thereto, and wherein said upper body has a top portion and a bottom portion and a cylindrical opening extending therethrough such that said cylindrical opening is formed to have three different diameters in series, an upper diameter, a middle diameter and a lower diameter whereby said middle diameter is formed by a stop;
c) a cylindrical collar terminating in a threaded stud extending upwardly from said lower body such that said threaded stud inserts into said cylindrical opening of said upper body;
d) first spring means mounted on said threaded stud; and
e) a nut mounted on said threaded stud after said threaded stud inserts in said cylindrical opening in said upper body whereby as said nut is tightened said bottom portion of said upper body is forced into contact with said top surface of said lower body compressing said first spring means against said stop wherein said first spring means tends to force apart said upper body from said lower body thereby reducing the friction between said upper body and said lower body.

5,622,344
COLLAPSIBLE TRIPOD STAND
John D. Gracie, 7013 Pomelo Dr., West Hills, Calif. 90317
Filed Jan. 31, 1995, Ser. No. 381,416
Int. Cl.[6] F16M *11/38*
U.S. Cl. 248—171 **7 Claims**

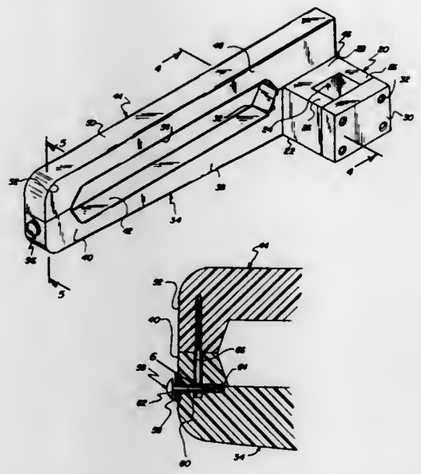
1. A collapsible tripod stand having three legs to be located on a supporting surface comprising:
a main supporting member having a sidewall extending between an upper end and a lower end, equipment connecting means



mounted on said upper end adapted for connection with and to support a piece of equipment, said lower end adapted to rest against the supporting surface;
a first leg of said three legs comprising an elongated member having a first inner end and a first outer end, a second leg of said three legs comprising an elongated member having a second inner end and a second outer end, said first outer end and said second outer end being pivotally mounted on a lower clamp band which is mounted on said main supporting member at said lower end, both said first leg and said second leg being pivotable on said lower clamp band between an extended position and a collapsed position, both said first leg and said second leg being located transverse to said main supporting member when in said extended position with said first outer end being spaced from said second outer end, said first and second legs being angularly disposed relative to each other when in said extended position, said main supporting member and said first leg and said second leg combining to form said three legs of said tripod stand;
a middle clamp band mounted on said main supporting member, said middle clamp band comprising a single unit, said middle clamp band being movable on said main supporting member between a plurality of positions, said middle clamp band being fixable on said main supporting member at any one of said positions; and
a first link pivotally connecting said first leg to said middle clamp band, a second link pivotally connecting said second leg to said middle clamp band, said first link being pivotally connected to said first leg, said second link being pivotally connected to said second leg, movement of said middle clamp band between said plurality of positions will cause said first leg and said second leg to be located either in a selected said extended position or in said collapsed position, said collapsed position locates said first leg and said second leg substantially parallel to and against said main supporting member with said first outer end and said second outer end being located between said lower clamp band and said equipment connecting means.

5,622,345
CHAIR CARRIER CLAMPS
Mark A. Hopkins, 4708 NE 138th Ct., Vancouver, Wash. 98682
Continuation of Ser. No. 260,263, Jun. 14, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,283
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—230.5 **7 Claims**

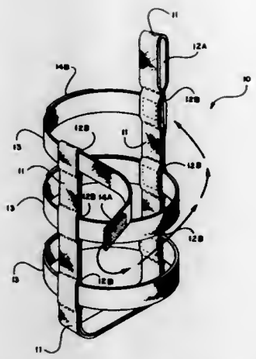
1. A new chair carrier clamp comprising:
a mounting means for mounting to a vertical support;



a lower clamp arm projecting from said mounting means, said lower clamp arm having a lower arm channel extending there along, said lower clamp arm being reversibly mounted to said mounting means;
an upper clamp arm pivotally mounted to said lower clamp arm, said upper clamp arm having an upper arm channel extending there along, the upper clamp arm being pivotally mounted to said lower clamp arm such that when the upper clamp arm is pivoted into engagement with the lower clamp arm, the lower arm channel and the upper arm channel are positioned in a facing relationship so as to receive an elongated object therebetween; and,
latch means for releasable coupling said upper clamp arm to said lower clamp arm, said latch means comprising a sealing bearing mounted to a lower distal member, said bearing slidably mounting a latch member having a latch member aperture within a horizontal bore of the lower distal member, a button coupled to the latch member and positioned exteriorly of the lower distal member, a return spring positioned within said horizontal bore and engaged to said latch member, with the lower distal member having a vertical bore which intersects the horizontal bore, a latch stud coupled to an upper distal member of the upper clamp arm and configured to project into the vertical bore of the lower clamp arm when the arms are positioned together, the latch stud including a detent notch formed therein which removably captures a portion of the latch member when the latch stud is positioned through the latch member aperture in the latch member, said latch stud further including a tapered tip which causes an orthogonal translation of the latch member in a first direction relative to the latch stud as the latch stud is projected through the latch member, whereby the return spring causes an orthogonal translation of the latch member in a second direction relative to the latch stud to engage the latch member into the detent notch.

5,622,346
COLLAPSIBLE CONTAINER HOLDER
David J. Story, Jr., 5027 Heritage Valley Dr., Douglasville, Ga. 30135
Filed Aug. 29, 1994, Ser. No. 297,137
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—311.2 **20 Claims**

1. A collapsible container holder, comprising a first flexible elongated member having a proximal end and a distal end whereby the first elongated member is abuttingly disposed about the container,

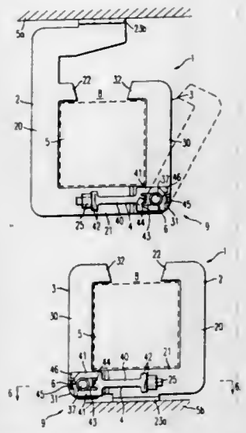


the first elongated member having a first aperture adjacently spaced from the proximal end,
the first elongated member having a second aperture oppositely spaced from the first aperture and adjacently spaced from the distal end,
a second flexible elongated member having a first end adjacently spaced from the first aperture, the first end connectively disposed to the first elongated member,
the second elongated member having a second end oppositely spaced from the first end,
the second elongated member being spaced from the first elongated at substantially a right angle to the first member,
the second elongated member traversing the second aperture whereby the second elongated member being abuttingly disposed about the container,
the second elongated member traverses the first aperture, the second end of the second member being juxtaposed with and selectively spaced from the first end of the member and detachably secured thereto, and
attachment means adjacently spaced from and connectively secured to the proximal end, for coupling the first member with an external support.

5,622,347
SUSPENSION MEMBER FOR ELECTRICAL TRUNKING
Daniel Nourry, Dijon, France, assignor to Schneider Electric SA, Boulogne Billancourt, France
Filed May 26, 1995, Ser. No. 451,807
Claims priority, application France, Jun. 2, 1994, 94 06864
Int. Cl.[6] A47G *1/10*
U.S. Cl. 248—316.5 **8 Claims**

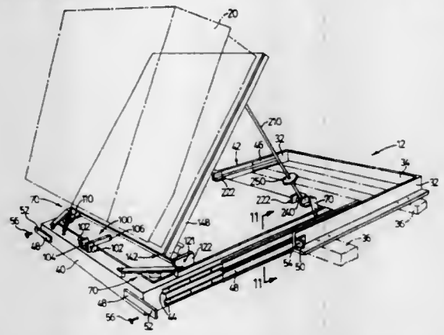
1. A suspension member for suspending prefabricated electrical trunking, comprising:
a fixed clamp including a fixing member for fixing the suspension member to a part to which the suspension member is to be connected;
a pivoting clamp pivoted to the fixed clamp at a pivot joint so as to pivot between an open position and a clamping position in which said fixed and pivoting clamps clamp an electrical trunking held in said suspension member, wherein a free end of said pivoting clamp opposite said pivot joint is spaced from said fixed clamp when said pivoting clamp is in the clamping position such that a free space is formed through which elements may be added to or removed from the electrical trunking when said pivoting clamp is in the clamping position; and

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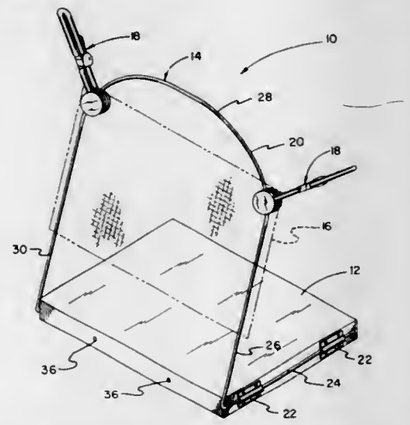
a locking coupling formed adjacent said pivot joint for locking said pivoting clamp in said clamping position.

5,622,348
PROJECTOR MOUNTING AND ALIGNMENT DEVICE
Paul M. Stechly, Mississauga, Canada, assignor to Applied Electronics Limited, Mississauga, Canada
Filed Aug. 14, 1995, Ser. No. 514,552
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—371 **9 Claims**



1. A projector mounting and alignment device comprising:
a support frame;
a base member slidably connected to said support frame and longitudinally movable with respect thereto in a first plane between a retracted position and an extended position;
a pivot plate pivotally connected to said base member and pivotally movable relative to said base member about a first pivot axis generally perpendicular to said first plane;
a hinge member hingedly connected to said pivot plate and tiltable with respect to said pivot plate about a hinge axis generally parallel to said first plane and generally orthogonal to said first pivot axis;
a projector mounting plate pivotally connected toward a first end thereof to said hinge member and pivotal with respect to said hinge member about a second pivot axis generally orthogonal to said hinge axis and tiltable with said hinge member about said hinge axis;
a connector for connecting said base member to said support frame when said base member is in said retracted position;
a pivot plate adjuster acting between said base member and said pivot plate to position said pivot plate relative to said base member about said first pivot axis; and,
a projector mounting plate adjuster acting between said pivot plate and said projector mounting plate to position said projector mounting plate relative to said pivot plate about said hinge axis and to position said projector mounting plate relative to said hinge member about said second pivot axis.

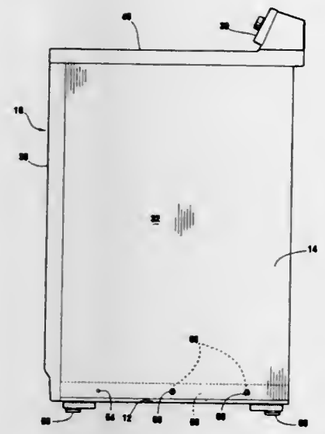
5,622,349
CANVAS HOLDER
Lorraine K. Rider, 1828 Old FFA Rd., Fort Pierce, Fla. 34945
Filed Dec. 9, 1994, Ser. No. 352,917
Int. Cl.[6] A47B *7/04*
U.S. Cl. 248—452 **1 Claim**



1. A canvas and holder system comprising:
a canvas with a periphery and a central extent for the performance of needlework thereon;
a base plate positionable upon a support surface with a plurality of gripping feet secured to a bottom surface thereof;
a first support means formed of a wire coupled to the base plate and extending upwardly therefrom at an oblique angle relative to the base plate supporting the canvas, wherein the wire frame is formed of a plastic coated wire; and
clip means removably coupled to the first support means for securing a section of the canvas relative to the first support means, wherein the clip means comprises a first clamp leg of substantially elongated configuration; a second clamp leg coupled to the first clamp leg by an integral bend extending therebetween, the second clamp leg being oriented so as to extend into a substantially spaced and parallel orientation relative to the first clamp leg and including an integral detent notch formed therein; a U-shaped coupler positioned within the integral detent notch of the second clamp, the U-shaped coupler including a pair of spaced plates which extend over the first clamp leg; a cam pivotally mounted between the plates of the U-shaped coupler so as to capture the first clamp leg between the cam and the second clamp leg, a lever extending from the cam; a first clamp pad coupled to a distal end of the first clamp leg; and a second clamp pad coupled to distal end of the second clamp leg.

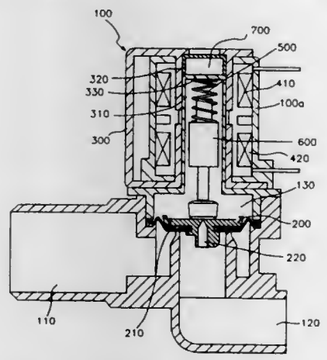
5,622,350
APPLIANCE WITH LOAD SHARING LEGS
Evan R. Vande Haar, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa
Filed Jun. 6, 1994, Ser. No. 254,155
Int. Cl.[6] F16M *1/00*
U.S. Cl. 248—677 **23 Claims**

11. A washing machine comprising:



a flexible base having a front edge, a rear edge, and opposite side edges defining four corners of the base, and having a flange extending substantially vertically from each of the edges;
a leg extending downwardly from the base adjacent each corner thereof;
a cabinet mounted upon the base and having a front wall, a back wall, opposite side walls, and a top wall;
first, second, and third fasteners extending through three of the walls of the cabinet and through the flange of the base along three corresponding edges thereof so as to connect the cabinet to the base while maintaining the flexibility of the base, whereby the weight of the appliance will cause the base to flex and conform to an uneven floor such that each of the legs engage the floor to evenly distribute the weight thereon.

5,622,351
WATER-SUPPLY VALVE OF A WASHING MACHINE
Jinsoo Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 23, 1994, Ser. No. 363,346
Claims priority, application Rep. of Korea, May 31, 1994, 94-12588; May 31, 1994, 94-12597
Int. Cl.[6] F16K *31/08*
U.S. Cl. 251—30.03 **10 Claims**

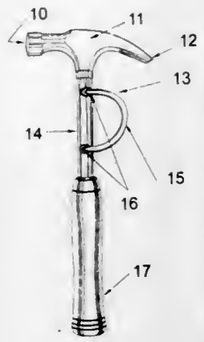


1. A water-supply valve of a washing machine comprising:
a valve body including a first chamber defined in a middle part thereof, a second chamber defined over the first chamber, and a reservoir defined beneath the first chamber and connected to the first chamber;
a water-introducing tube connected to the reservoir to introduce water thereinto;
a water-supply tube having a first end connected to the reservoir, and a second end connected to a washing tub of the washing machine;
an actuator rod movable up and down in the first chamber and the reservoir;
a diaphragm disposed movably up and down in the reservoir according to the upward and downward movements of the actuator, the diaphragm having a water-inflow port and a water-exhaust port, the water-inflow port interconnecting the water-introducing tube and the reservoir, and the water-exhaust port interconnecting the water supply tube and the reservoir, and when the actuator rod is at its lowermost position, the diaphragm being in close contact with a lower bottom surface of the reservoir by the actuator rod and the water-exhaust port of the diaphragm being blocked off by the actuator rod;
a first means for applying an upward force to the actuator rod when an electric current is applied to it, the first means enclosing an upper part of the first chamber in a cylindrical wall defining the first chamber;
a second means for applying a downward force to the actuator rod when an electric current is applied to it, the second means enclosing a lower part of the first chamber in the cylindrical wall;
a third means disposed in the second chamber for applying an upward attractive force, which varies as the actuator rod (moves up or down) reciprocates, to the actuator rod regardless of whether an electric current is applied to the water-supply valve; and
a fourth means disposed on an upper wall-surface of the first chamber for applying a downward biasing force, which varies as the actuator rod reciprocates, to the actuator rod regardless of whether an electric current is applied to the water-supply valve, the downward biasing force of the fourth means being different from the upward attractive force of the third means when the actuator rod is in at least one of a lowermost position and an uppermost position,
wherein water is supplied from the water-introducing tube into the water-supply tube when the actuator rod is elevated by the first means against the downward biasing force of the fourth means and retained at the uppermost position by the upward attractive force of the third means, even in case that the electric current to the first means is interrupted, while water supply is blocked off when the actuator rod is returned to the lowermost position by the second means and retained thereat by the downward biasing force of the fourth means, even in case that the electric current to the second means is interrupted.

5,622,352
CONNECTED ARCH NAIL PULLER FOR CLAW HAMMER
Phillip L. Swindoll, 143 Due West Dr., Mt. Juliet, Tenn. 37122
Filed Mar. 25, 1996, Ser. No. 622,435
Int. Cl.[6] B25C *11/00*; **B66F** *15/00*
U.S. Cl. 254—26 E **1 Claim**

1. A hammer comprising, in combination:
an elongated handle with a first gripping end for being held by a user, a second operational end for driving and removing a nail or spike, a third operational portion comprising an arch for pulling and removing a nail or spike;
the second operational end comprising a head having a nail driving side with a flat anvil surface and a nail or spike removal side with a claw having a V-shaped slot positionable under a head of the nail or spike to be removed;
the third operational portion comprising an arch having two ends, each being connected to and intermediate of the handle;

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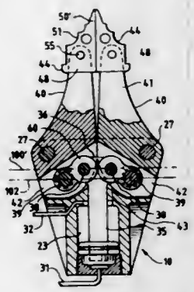
the arch having a teardrop shaped notch positioned on a backside thereof for removing the nail or spike.

5,622,353

HIGH POWERED RESCUE TOOL

Alan J. Painter, Bolingbrook, Ill., and Patrick J. Slepekis, Sturgeon Bay, Wis., assignors to Amkus, Inc., Lisle, Ill.

Filed May 30, 1995, Ser. No. 451,660
Int. Cl.[6] B66F *3/24*
U.S. Cl. 254—93 R **12 Claims**



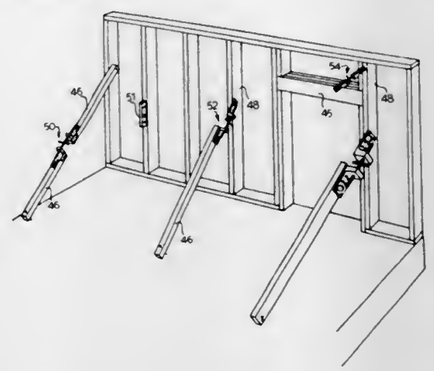
1. A rescue tool comprising a housing, a pair of spreader arms each having a working portion and a driven portion wherein the driven portion of each spreader arm touches the driven portion of the other spreader arm, the spreader arms each having a pivot point located between the working portion and the driven portion, a pair of links each having first and second ends, each of the first and second ends having a pivot point, a drive means reciprocally moveable between retracted and extended positions along an axis of movement, first pivotal coupling means for coupling the driven portion of each of the spreader arms to the first end of the associated link, second pivotal coupling means for coupling the second end of the links to the drive means, third pivotal coupling means for coupling each of the spreader arms at their pivot points to the housing, the second pivotal coupling means being always located between the first pivotal coupling means and the working portion of each spreader arm when measured along the axis of movement.

5,622,354

POST PLUMBING DEVICE

Brian Chagnot, 630 Lee Dr., Coraopolis, Pa. 15108

Filed Dec. 14, 1995, Ser. No. 572,083
Int. Cl.[6] B66F *11/00*
U.S. Cl. 254—100 **12 Claims**



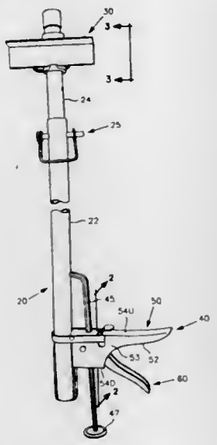
1. A post plumbing device comprising:
a. a pair of brackets, each bracket comprised of
i. a base having a top, a bottom and four sides extending between the bottom and the top;
ii. a side flange extending from one side away from and substantially perpendicular to the bottom;
iii. a top flange attached to the top and having a threaded bore passing through the top flange, along an axis substantially parallel to the base;
iv. a plurality of holes in at least one of the base and the side flange to receive nails or screws; and
b. a threaded rod connected to the threaded bore of each bracket.

5,622,355

LIFTING AND SUPPORTING APPARATUS

John G. Kopp, 2006 Via Vina, San Clemente, Calif. 92673

Filed Sep. 15, 1995, Ser. No. 528,834
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—106 **6 Claims**



1. A lifting and supporting apparatus comprising:

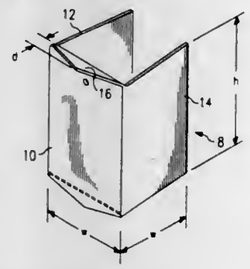
an elongate, structural, vertically oriented, tube having, at one end thereof, a means for resting an object, and, at the other end thereof, a means for lifting the tube vertically;
the lifting means including an elongate rod positioned adjacent to, and in parallel with the elongate tube, and slidably engaged within a drive means, the drive means interconnecting the tube and the rod and providing means for moving the rod downwardly with respect to the tube thereby raising the object resting means, the moving means including:
a lever contained and pivotally secured within the drive means so as to pivot around the elongated rod:
an elongate washer engaged with the elongate rod;
and a bias means positioned so that when the lever is actuated, the lever pivots into contact with the washer pushing it downwardly compressing the bias means, the washer moving into contact with the rod, forcing the rod downwardly with respect to the drive means and tube.

5,622,356

POST PROTECTOR

James F. Duggan, 3541 Pebble Beach Dr., Farmers Branch, Tex. 75234

Filed Jul. 14, 1995, Ser. No. 502,823
Int. Cl.[6] E04H *17/00*
U.S. Cl. 256—1 **15 Claims**



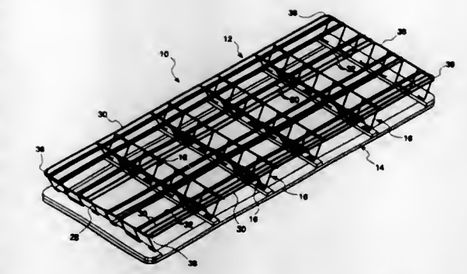
1. A fence post protector for protecting a rectangular fence post comprising:
a three-paneled device, wherein each panel of the device is sized to fit a side of the rectangular fence post, said device comprising:
a rectangular front panel;
a rectangular second panel and a rectangular third panel attached to opposite edges of said front panel such that said second panel and said third panel are inwardly biased for exerting spring pressure against opposite sides of the rectangular fence post;
a pointed piece removably attached to a bottom edge of the front panel by perforations between said pointed piece and the bottom edge of the front panel, wherein the perforations allow the pointed piece to be easily removed from the bottom edge of the front panel by tearing or cutting along the perforations; and
a flange attached to a top edge of the front panel for exerting downward pressure on the post protector.

5,622,357

FOUNDATION UNIT AND METHOD OF MAKING THE SAME

Martin Schulz, Jr., and David Warner, both of Brenham, Tex., assignors to Steadley Company, Carthage, Mo.

Filed Mar. 5, 1996, Ser. No. 611,246
Int. Cl.[6] F16F *3/00*; **A47C** *25/00*
U.S. Cl. 267—103 **16 Claims**



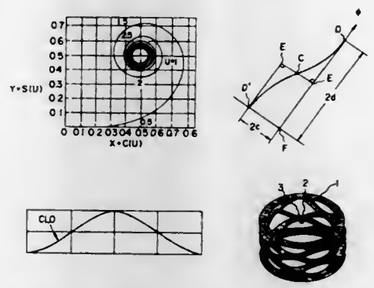
1. In a foundation unit having a flat grid top bearing structure, the foundation unit being of determined depth and generally rectangular in shape, the foundation unit further having a bottom substructure and support means intermediate the top bearing structure and the bottom substructure for maintaining the determined depth, the improvement comprising
a. said support means comprising a plurality of parallel rows of support members located between opposite lateral side edges of the top bearing structure, each of said rows of support members being composed of at least one generally flat wire support, each wire support having a top attachment segment and a bottom attachment segment,
b. selected rows of said support members being arranged in pairs, with the bottom attachment segments of the wire support of each pair being located substantially adjacent one another and the top attachment segments of the wire supports of each pair being spaced from one another such that the wire supports of each pair form a generally V-shaped configuration, and
c. said grid wire top bearing structure comprising a plurality of spaced longitudinal grid wires and a plurality of spaced lateral grid wires, said longitudinal grid wires being oriented in two vertically spaced planes to form a series of attachment spaces, said top attachment segments being pivotally secured in respective ones of said attachment spaces such that said foundation unit can be selectively relaxed.

5,622,358

WAVE SPRING

Syoichi Komura, and Hiroyuki Toyofuku, both of Kyoto, Japan, assignors to Suncall Corporation, Kyoto-fu, Japan

Filed Mar. 18, 1994, Ser. No. 214,573
Claims priority, application Japan, Mar. 29, 1993, 5-070347
Int. Cl.[6] F16F *1/10*
U.S. Cl. 267—166 **2 Claims**



1. A wave spring comprising a plurality of circumferential spring elements each of which comprises a wave shape having ridge and root sections;
wherein said ridge and root sections of adjacent vertical spring elements are positioned opposite each other;
and wherein said spring elements comprise continuously formed wave portions of substantially flat cross section having said

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ridge and root sections; said ridge and root sections having the shape of a section of a clothoid curve; and

wherein the relation between a load imposed on said wave spring and a deflection produced in said wave spring by the imposition of said load is substantially linear.

5,622,359

SHEET FINISHING APPARATUS

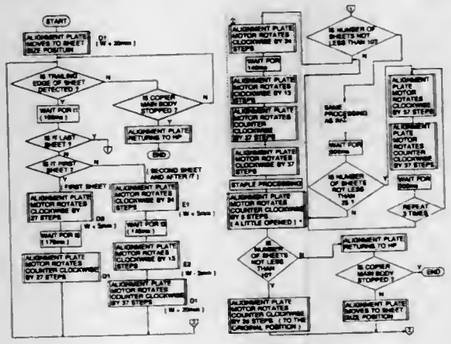
Minoru Kawano, Hachioji; Hirohiko Okabe, Tokorozawa, and Kimitaka Yanai, Okegawa, all of Japan, assignors to Konica Corporation, Japan

Filed Dec. 7, 1995, Ser. No. 568,675

Claims priority, application Japan, Dec. 14, 1994, 6-310758

Int. Cl.[6] B65H 39/00

U.S. Cl. 270—58.12 6 Claims



1. A sheet finishing apparatus for finishing sheets ejected from an image forming apparatus, comprising:

(a) conveyance means for receiving sheets ejected from the image forming apparatus and for conveying the sheets;

(b) a stacker disposed obliquely for receiving and for stacking the sheets conveyed from the conveyance means;

(c) a sheet stopper provided adjacent to a lower end of the stacker, for stopping the sheets in an advancing direction of the sheets;

(d) a movable alignment means provided in at least one side edge position of the sheets for oscillating in a width direction perpendicular to the advancing direction of the sheets to align;

(e) drive means for driving the movable alignment means;

(f) a stapler for stapling the sheets stacked on the stacker and aligned by the alignment means; and

(g) controller for controlling the drive means such that the movable alignment means is moved to a first position to receive the sheets, at which the movable alignment means is located outside one edge of the width direction of the sheets by a predetermined distance, when the sheets are conveyed onto the stacker from the conveyance means; the movable alignment means is moved to a second position to align the width direction of a first sheet of a plurality of successive sheets, at which the movable alignment means is located closer to the one edge of the sheets than the first position, when the first sheet advances on the stacker toward the sheet stopper; and the movable alignment means is moved to a third position to push the one edge of the sheets for alignment after a second and later sheets collide with the sheet stopper.

5,622,360

FEEDER STATION FOR COLLATING APPARATUS

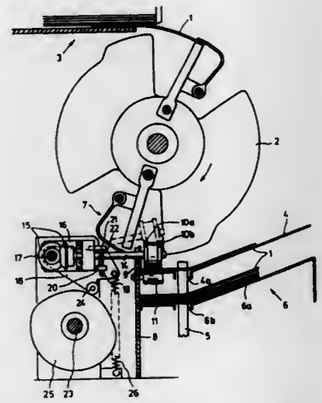
Horst Rathert, Minden, and Joachim Schroder, Mellinghausen, both of Germany, assignors to Kolbus GmbH & Co. KG, Rahden, Germany

Filed Nov. 18, 1994, Ser. No. 341,769

Claims priority, application Germany, Nov. 18, 1993, 43 39 300.4; Oct. 19, 1994, 44 37 327.9

Int. Cl.[6] B65H 5/22;39/02

U.S. Cl. 271—3.2 20 Claims



1. In a sheet feeder station for a collating apparatus, the collating apparatus including a conveyor having at least a first moving pusher element, the conveyor defining a transport channel which extends through the feeder station, the pusher element cooperating with the transport channel to define a transport direction for sheets deposited in the transport channel, the feeder station including a receiving table and gripper means for engaging and subsequently extracting individual sheets from a stack of sheets and depositing such engaged sheets on the receiving table, the sheets subsequently being contacted by the at least first pusher element of the conveyor and being swept thereby from the receiving table into the conveyor defined transport channel and subsequently moved along the channel, the gripper means engaging a sheet within a region of predetermined length which extends in a first direction which is generally parallel to the direction of sheet movement along the conveyor defined transport channel, the gripper means moving in a transfer zone which extends in a second direction which is generally transverse to the first direction during the transfer of an engaged sheet from a stack to the receiving table, the improvement comprising:

means for imparting movement to sheets deposited on the receiving table prior to contact thereof by the first pusher element of the conveyor, said movement imparting means including:

rotatable accelerating means having a sheet contacting portion within the transfer zone for imparting movement to sheets contacted thereby, said accelerating means being positioned to contact a first side of a sheet supported on the receiving table; and

support roller means for cooperating with said accelerating means, said support roller means contacting a sheet to be accelerated on the second opposite side thereof in registration with said accelerating means, the sheet being captured between said accelerating means and said support roller means and being caused to move along the receiving table in the transport direction, whereby the sheet is transferred directly from the gripper means into contact with said imparting means.

5,622,361

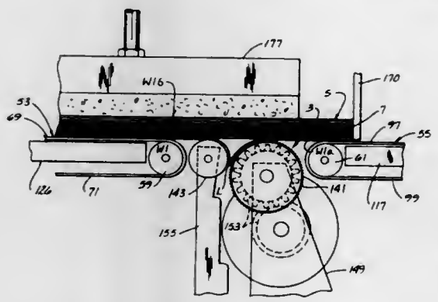
METHOD OF AND APPARATUS FOR SEPARATING AND FEEDING WORKPIECES OF LIMP MATERIAL FROM A STACK THEREOF

William R. Cole, Jr., Shelbyville, Tenn., assignor to Ark, Inc., Shelbyville, Tenn.

Filed Apr. 27, 1995, Ser. No. 428,491

Int. Cl.[6] B65H 3/42

U.S. Cl. 271—16 18 Claims



1. The method of separating the bottom workpiece from a stack of workpieces of limp material comprising:

supporting the stack at the bottom thereof on a support with a gap in the support for exposing a portion of the bottom surface of the bottom workpiece extending completely across the bottom workpiece;

moving the support in cycles in each of which the gap is moved in one direction constituting a rearward direction from a first position through a stroke in said one direction to a second position and then moved in the opposite direction constituting a forward direction through a stroke in said opposite direction back to said first position;

the stack being held against movement while the support moves thereunder;

the gap when in its said first position being located adjacent one end of the stack constituting its forward end and the stroke in said one direction constituting a rearward stroke and the stroke in said opposite direction constitutes a forward stroke relative to the stack, said first position thus constituting a forward position, and wherein the portion of the bottom workpiece exposed in the gap is moved in the rearward direction out from under the next workpiece to form a loop;

the gap having a dwell in its said forward position at the end of its stroke in said forward direction;

moving the portion of the bottom workpiece exposed in the gap while the gap dwells in its said forward position to form the loop in the bottom workpiece, the loop extending down into the gap,

pinching the loop on opposite sides of the loop to grip the loop and pulling it down while the gap moves in said rearward direction in the course of its stroke in said rearward direction, the portion of the support on that side of the gap in said forward direction passing between the bottom workpiece and the next workpiece above to peel the bottom workpiece down away from the next workpiece above, and

releasing the grip on said loop to release said bottom workpiece for being carried away.

5,622,362

PLATE MATERIAL SEPARATING APPARATUS

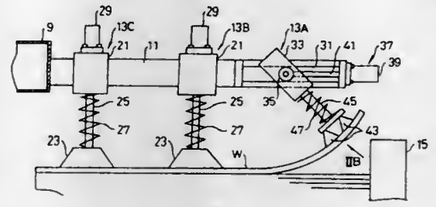
Takuma Shiiki, and Yasutaka Yamaguchi, both of Kanagawa, Japan, assignors to Amada Company, Limited, Kanagawa, Japan

Filed Aug. 19, 1994, Ser. No. 293,205

Claims priority, application Japan, Aug. 19, 1993, 5-45218 U; Jun. 6, 1994, 6-123457

Int. Cl.[6] B65H 3/40

U.S. Cl. 271—91 9 Claims



1. A plate material separating apparatus for separating plate materials each having an end surface, comprising:

a horizontal beam movable up and down in a vertical direction;

a plurality of vacuum hanger members fixedly arranged at regular intervals on both sides of said horizontal beam so as to extend in a horizontal direction;

a plurality of support vacuum pad devices attached to each of said vacuum hanger members at regular intervals in a direction perpendicular to the end surface of the plate material;

a plurality of pivotal take-up vacuum pad means each attached to an end of each of said vacuum hanger members so as to be located near the end surface of the plate material; and

a plurality of driving means each associated with each of said pivotal take-up vacuum pad means, for pivoting said pivotal take-up vacuum pad means to bend the plate material only at and along the end surface thereof so that air can be introduced between an uppermost plate material and a second plate material.

5,622,363

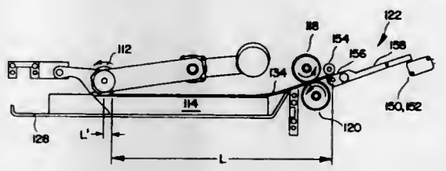
SHEET FEEDER SYSTEM AND METHOD

Cherilyn M. Beaudreau, Satellite beach; David C. Balley, Cocoa Beach; Jon E. Holmes, West Melbourne; Richard K. Krebs, Jr., Melbourne; Roland D. McCollum, and William I. Stewart, both of Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Nov. 23, 1994, Ser. No. 346,262

Int. Cl.[6] B65H 3/52;7/12

U.S. Cl. 271—110 32 Claims



1. A system for providing a sheet from a stack of sheets into a sheet path, said system comprising:

a feed roller for compelling sheets from the top of the stack of sheets into the sheet path between first and second rollers, said feed roller rotating forward to compel sheets into the sheet path, backward to return sheets to the stack of sheets, and not rotating to pressurally engage the stack of sheets;

first motor means for rotating said first and second rollers in the same direction to urge sheets from said feed roller forwardly along the sheet path, said first roller for urging a sheet in

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contact therewith forwardly along the sheet path, said second roller for urging a sheet in contact therewith backward to the stack of sheets;

clutch means for separately disengaging said first and second rollers from said first motor means; and

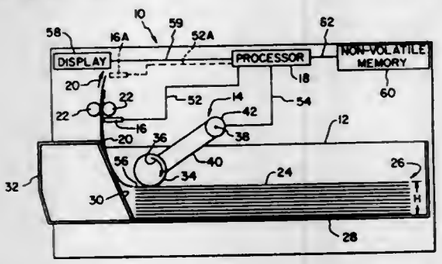
control means for rotating said feed roller backwards and disengaging said second roller from said first motor means to return a sheet in contact with said feed roller to the top of the stack of sheets in the event more than one sheet is compelled into the sheet path by said feed roller, and for rotating said feed roller backwards and disengaging said first roller from said first motor means to return sheets in contact with said first and second rollers to the top of the stack of sheets in the event more than one sheet is urged along the sheet path by said first and second rollers.

5,622,364

APPARATUS AND METHOD OF DETERMINING A MEDIA LEVEL IN A SUPPLY TRAY

Todd A. Dutton; Scott S. Williams, and Phillip B. Wright, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Mar. 27, 1996, Ser. No. 624,772
Int. Cl.[6] B65H *7/02;3/06*
U.S. Cl. 271—117 **28 Claims**



1. An apparatus including a supply tray having a base upon which a plurality of media sheets is supported, said apparatus defining a media path through which the media sheets travel, said apparatus comprising:

a sheet picker assembly including a movable sheet picker, said picker configured to move a picked sheet into the media path;

a sensor disposed in association with the media path at a sensor location, said sensor adapted to detect a sheet traveling through the media path and provide an output signal; and

a processor coupled to each of said picker assembly and said sensor, wherein said processor controls movement of said movable picker and receives said sensor output signal, and wherein said processor determines a relative position of an uppermost sheet of a remainder of the plurality of media sheets with respect to the base of the supply tray, based upon an initial actuation of said sheet picker to pick said picked sheet and a sensing of said picked sheet arriving at said sensor.

5,622,365

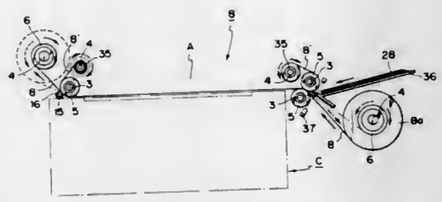
SHEET FEEDING METHOD AND APPARATUS

Yoshio Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 31,310, Mar. 15, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,962
Claims priority, application Japan, Mar. 16, 1992, 4-89263; Mar. 24, 1992, 4-96003
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—264 **23 Claims**

1. A sheet original feeding apparatus comprising:

a pair of spaced core members;



frame means for rotatably holding said core members;

an elongated sheet having each end connected to one of said core members, and wound around one of said core members, and adapted to hold a sheet original therein;

rotary convey means disposed between said core members and a predetermined position and adapted to nip and convey said elongated sheet and the sheet original on said elongated sheet;

drive means for reversibly driving said rotary convey means and said core members; and

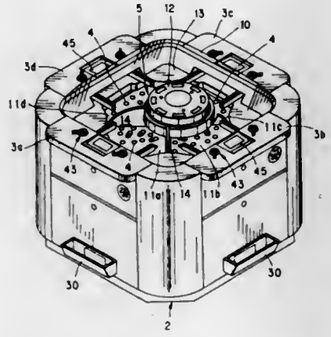
control means for controlling said drive means to unwind said elongated sheet, thereby stopping the sheet original at a predetermined position.

5,622,366

MEDAL PUSHER GAME MACHINE

Haruo Inoue, Tokyo, Japan, assignor to Eagle Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 667,786
Int. Cl.[6] A63F *7/00*
U.S. Cl. 273—138.2 **11 Claims**



1. A medal pusher game machine wherein a medal pusher is rotated on a horizontal play field and a circumferential surface of said medal pusher pushes a medal entered by a player toward the final edge of the play field to drop each medal placed on the play field away from the final edge of the play field, said medal pusher game machine comprising:

a plurality of partition plates disposed radially relative to the play field and projecting above the play field, for partitioning the play field into a plurality of play areas around the medal pusher; and

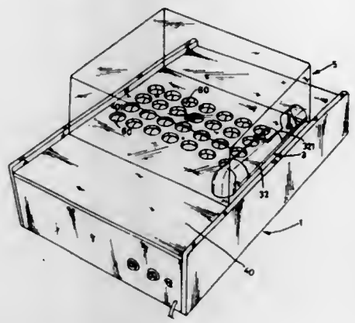
a partition plate moving mechanism for allowing said partition plates to move in accordance with rotation of said medal pusher, to avoid hindering the rotation of the medal pusher.

5,622,367

BINGO GAME MACHINE

Chyi-Sheng Hwang, No. 18, Lane 47, Sec. 2, Tsu Chiang Rd., Sanchung City, Taipei Hsien, Taiwan

Filed Oct. 20, 1995, Ser. No. 547,726
Int. Cl.[6] A63F *3/06*
U.S. Cl. 273—144 A **1 Claim**



1. A bingo game machine comprising:

a casing having a ball chamber, and a plurality of hollow light balls put in said ball chamber, said ball chamber having rows of ball holes respectively marked with a specific marking for letting said balls pass, and two parallel sliding grooves bilaterally disposed at a bottom side;

a transparent covering covered on the top cover of said ball chamber over the ball holes of said top cover of said ball chamber;

a ball outlet conduit having a ball inlet inserted into said ball chamber, and a ball outlet extended out of the top cover of said ball chamber and disposed in the space defined between the top cover of said ball chamber of said transparent covering;

a blower mounted inside said casing and controlled to blow air into said ball chamber, causing said balls to bounce in said ball chamber and to move through said ball outlet conduit to the ball holes of the top cover of said ball chamber;

a sliding plate reciprocated in the sliding grooves of the top cover of said ball chamber, said sliding plate having rows of ball holes corresponding to the rows of ball holes of the top cover of said ball chamber;

a reciprocating mechanism controlled to reciprocate said sliding plate between a first position in which the ball holes of said sliding plate are respectively aligned with the ball holes of the top cover of said ball chamber for letting the balls pass, and a second position in which the ball holes of said sliding plate are not aligned with the ball holes of the top cover of said ball chamber so that the balls can be stopped in the ball holes of the top cover of said ball chamber;

a plurality of electric eyes respectively mounted between the top cover of said ball chamber and said sliding plate to detect the presence of a ball in each ball hole of the top cover of said ball chamber;

a micro switch mounted on said ball outlet conduit near the ball inlet of said ball outlet conduit for counting the number of balls passing from said ball chamber into said ball outlet conduit;

an electromagnetic valve mounted on said ball outlet conduit and driven to control the passage of the ball inlet of said ball outlet conduit; and

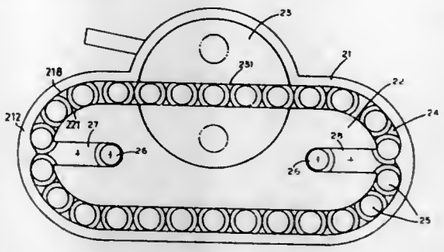
a control circuit for controlling the operation of said blower, said reciprocating mechanism, said electric eyes, said micro switch, and said electromagnetic valve.

5,622,368

PUZZLE DISC

Chiu-Huang Chang, P. O. Box 82-144, Taipei, Taiwan

Filed Feb. 13, 1996, Ser. No. 600,734
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—153 S **1 Claim**



1. A puzzle disc comprising:

a body portion having a vertical wall around a circumference thereof and a flange extending inwardly from an upper edge of said vertical wall;

a cover having a leg depending downwardly from a circumference thereof and a flange extending outwardly from an upper edge of said leg, and two open slots extending inwardly from said circumference of said cover, said cover being fitted in a central portion of said body portion thereby forming a track having a neck portion between said cover and said body portion, said slots having same width as said neck portion;

a circular member rotatably arranged in said body portion and having a center aligned with a center line of said track, said circular member being formed with a passage across a diameter thereof; and

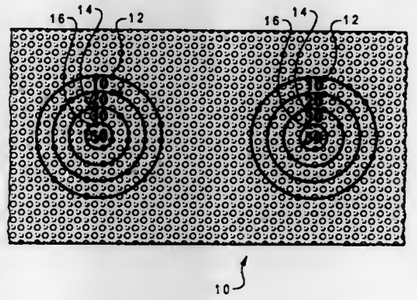
a plurality of movable elements fitted in said track and being cylindrical in shape, said movable element having a lower portion with a diameter larger than said neck portion and an upper end concentric with said lower portion and having a diameter smaller than said lower portion and said neck portion.

5,622,369

RESILIENT TOSS GAME TARGET

James F. Rogers, P.O. Box 723, Dallas, Tex. 75221-0723

Filed May 29, 1996, Ser. No. 654,633
Int. Cl.[6] F41J *1/00;* **A63B** *67/00*
U.S. Cl. 273—398 **14 Claims**



1. A game target comprising:

a generally planar surface having a plurality of cup-shaped concave receptacles;

a plurality of resilient dome-shaped protrusions surrounding each of said cup-shaped concave receptacles such that a game piece which strikes a resilient dome-shaped protrusion will be reflected; and

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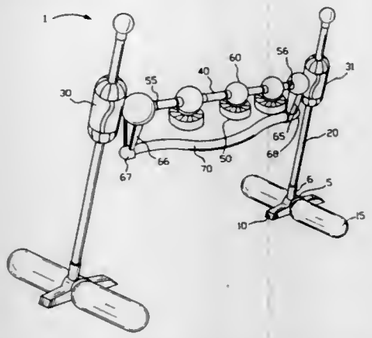
target indicia associated with at least one of said plurality of cup-shaped concave receptacles.

5,622,370

WATER LIMBO BAR AMUSEMENT DEVICE

Bruce M. D'Andrade, 3 Ten Eyck Rd., Readington Township, Hunterdon County, N.J. 08870

Filed Jun. 28, 1996, Ser. No. 672,934
Int. Cl.[6] A63B *71/04;1/00*
U.S. Cl. 273—449 20 Claims



1. A water limbo bar amusement device, which comprises:
a) means for supporting a pair of vertical support poles;
b) means for frictionally connecting a height adjustment mechanism to said pair of vertical support poles;
c) means for connecting a water distribution and spraying unit to said height adjustment mechanism;
d) means for rotatably connecting a limbo bar to said water distribution and spraying unit;
e) said means for rotatably connecting having means for twistably triggering a slidably connected valve body which actuates a mechanism for releasing pressurized water from a chamber to said water distribution and spraying unit;
f) a release housing positioned at one end of said water distribution and spraying unit; and
g) said release housing, comprising:
1) means for inletting pressurized water into said chamber;
2) an exit port for channeling said pressurized water from said chamber to said water distribution and spraying unit;
3) first means for biasing said slidably connected valve body such that a second pressure valve is sealably closed against said exit port;
4) a valve pin slidably maintained with respect to said slidably connected valve body and with a first pressure valve;
5) said mechanism for releasing pressurized water being defined within said release housing and connected to said valve body and said valve pin, comprising:
i) an inner chamber defined by said first pressure valve, and said second pressure valve;
ii) said second pressure valve being slidable within said inner chamber to isolate said inner chamber from said chamber, said inner chamber containing a quantity of water;
iii) second means within said inner chamber for biasing said second pressure valve into sealing engagement with said exit port and for biasing said first pressure valve into sealing engagement with an inner chamber outlet corresponding to a position of said valve pin;
iv) said first pressure valve being openable by actuation of said limbo bar,

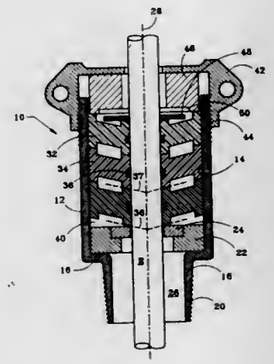
whereby upon twisting of said limbo bar, said twistable trigger moves said slidably connected valve body away from said exit port, presses said valve pin and opens said first pressure valve, allowing said pressurized water to exit said inner chamber and causing a pressure decrease within said inner chamber, said pressure decrease being sufficient to overcome said first biasing means and said second biasing means by drawing said second pressure valve away from said exit port and causing formation of an inner seal with a pair of o-rings so as to channel said pressurized water through said exit port to said water distribution and spraying unit.

5,622,371

STUFFING BOX WITH IMPROVED PACKING RINGS AND METHOD

Lawrence F. Angelo, 27281 Paula La., Conroe, Tex. 77385; J. William Heathcott, 3817 Pecan Valley Dr., Missouri City, Tex. 77459, and Stephen L. Witte, Sr., 26 Bending Branch Pl., The Woodlands, Tex. 77381

Filed Jan. 11, 1996, Ser. No. 584,114
Int. Cl.[6] F16J *15/24*
U.S. Cl. 277—1 62 Claims



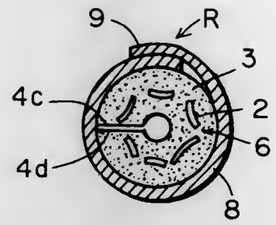
1. A stuffing box for sealing engagement with a rod member movable with respect to and passing through the stuffing box to seal fluid within the stuffing box, the stuffing box comprising:
a stuffing box body having a cylindrical interior surface defining a central stuffing box axis;
a plurality of axially spaced packing rings, each of the packing rings comprising an annular compressible carrier formed from a first selected material and an annular plastic dynamic seal supported within an annular interior cavity extending radially inward to a radially inward surface of the compressible carrier, each compressible carrier including a tapered upper surface, a tapered lower surface, and a radially outer surface for sealing engagement with the cylindrical interior surface of the stuffing box body, and each annular plastic dynamic seal including a radially interior surface for sealing engagement with the rod member; and
a gland member axially movable relative to the stuffing box body for adjustably varying an axially compressive force on the plurality of packing rings, the gland member having a packing ring engaging surface for exerting the axially compressive force on the plurality of packing rings and thereby generating a radial inwardly directed biasing force on each plastic dynamic seal through the respective compressible carrier for sealing engagement of the plastic dynamic seal with the rod member.

5,622,372

METAL SEAL RING AND A METHOD OF PRODUCING THE SAME

Katsuhide Fujisawa; Masakatsu Takahashi, and Shuji Hoshino, all of Yamato, Japan, assignors to Nippon Reinz Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1995, Ser. No. 544,154
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—235 R 6 Claims



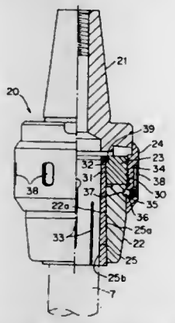
1. A metal seal ring comprising:
a metal closed ring made of a metal plate, said metal closed ring being circular in cross section and hollow, and
a ring of a composite gasket material having a reinforcing core material therein and filling said metal closed ring, and
wherein said ring of said composite gasket material comprises a rectangular strip of said composite gasket material, said rectangular strip having longitudinal ends and fringes connecting said longitudinal ends, and said reinforcing core material is bent into a ring with the longitudinal ends of said bent rectangular strip joined to each other; and said bent rectangular strip is rolled into a cylindrical shape with both fringes of said bent rectangular strip butt-joined to each other.

5,622,373

CHUCKING DEVICE

Tetsuro Tagami, 1976-1, Yanokuchi, Inagi-shi, Tokyo-to, Japan

PCT No. PCT/JP94/01451, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995
PCT Filed Sep. 2, 1994, Ser. No. 424,431
Claims priority, application Japan, Sep. 7, 1993, 5-222511
Int. Cl.[6] B23B *31/20*
U.S. Cl. 279—52 10 Claims



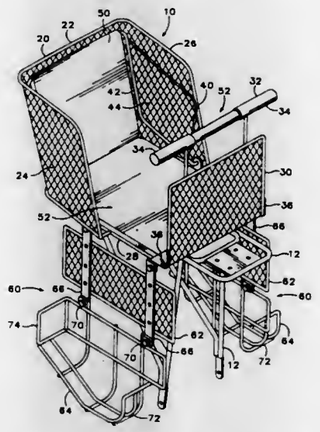
1. A chucking device comprising a holder capable of being fitted in a rotation spindle of a machine tool; a chucking barrel including on a connection surface side a plurality of axially extending projections located in an equally spaced relationship as viewed in the circumferential direction, a plurality of opening portions each formed between adjacent projections and a tapered hole formed therein; an axially displaceable, hollow, annular driving member having a plurality of radially extending, circumferentially spaced, tooth-like projections fitted into said opening portions of said chucking barrel and having a plurality of male threads formed on an outer peripheral surface thereof; a tightening ring having a plurality of female threads threadably engageable with said male threads of said driving annular member formed on an inner hole surface thereof, said tightening ring being rotatably held on an outer peripheral surface of said chucking barrel; and a press-fitting member fixedly secured to said driving annular member and adapted to be fitted into said tapered hole of said chucking barrel.

5,622,374

CHILD CARRIER FOR A BICYCLE

Robert W. Rudeen, and Thomas Schmidt, both of Eugene, Oreg., assignors to Family Trends, Inc., Eugene, Oreg.

Filed May 1, 1995, Ser. No. 432,214
Int. Cl.[6] B62J *1/06;9/00*
U.S. Cl. 280—202 13 Claims



1. A carrier for mounting onto a bicycle, comprising:
(a) a backrest having a rear panel and contiguous side panels;
(b) a bottom panel;
(c) two footrest supports fixedly connected to the bottom panel along opposing lateral sides thereof, the supports including a leg guard portion for preventing a child's leg from contacting a rear wheel of the bicycle and wherein the leg guard portion is fixedly located relative to the backrest and bottom panel and further including footrests adjustably connected to the supports; and
(d) a convertible element pivotally attached to a portion of the carrier, the convertible element including side elements, wherein the convertible element has a first position proximate the backrest, thereby defining two leg openings substantially aligned with the footrests, and a second position wherein the side elements block the leg openings.

5,622,375

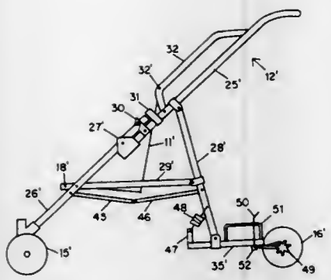
PUSH-CHAIR

Albert T. Fairclough, 49 Blunden Road, Cove, Farnborough, Hants, Great Britain

PCT No. PCT/GB94/00138, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO94/16929, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 25, 1994, Ser. No. 307,703
Int. Cl.[6] B62B *9/00*
U.S. Cl. 280—642 6 Claims

1. A push-chair for transporting a first child and a second child, comprising:

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a frame to which is attached front and rear wheels and a seat for the first child;

a platform on which the second child can stand disposed at a lower rear position on the frame and including a substantially unobstructed trailing edge, the rear wheels being mounted adjacent the trailing edge of the platform; and

means for mounting the seat to the frame at a position substantially forward of the platform;

wherein a substantially unobstructed space is formed above the platform and behind the seat, and whereby the second child can step onto and off the platform.

5,622,376

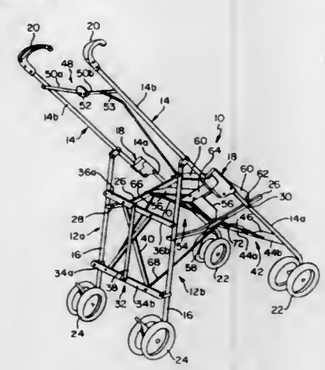
STROLLER WITH FOLDING MECHANISM FOR COMPACT COLLAPSING ARRANGEMENT

Louis Shamie, 175 Liberty St., Brooklyn, N.Y. 11212

Filed Feb. 27, 1995, Ser. No. 395,416

Int. Cl.[6] B62B *7/06*

U.S. Cl. 280—642 **24 Claims**



1. A stroller comprising:

a pair of side frames, each said side frame including:

a main side tube comprised of:

an upper tube portion, and

a lower tube portion pivotally mounted at an upper end thereof to a lower end of said upper tube portion,

a releasable locking pivot assembly for pivotally connecting a lower end of the upper tube portion to an upper end of the lower tube portion,

a rear side tube pivotally connected to the upper tube portion, and

a support rod pivotally connected at one end thereof to the rear side tube and at an opposite end thereof to the lower tube portion;

a rear articulated spreader bar means for connecting together said rear side tubes of said pair of side frames, said rear articulated spreader bar means including a pair of rear pivoting spreader bars, each pivotally connected at one end thereof to a respective said rear side tube and at an opposite end thereof to the other rear pivoting spreader bar; and

actuating rod means pivotally connected between at least one said support rod and said rear articulated spreader bar means, whereby folding of said upper tube portions relative to said lower tube portions in a lengthwise direction of said stroller causes articulation of said rear articulated spreader bar means which results in contraction of said stroller in a widthwise direction thereof.

5,622,377

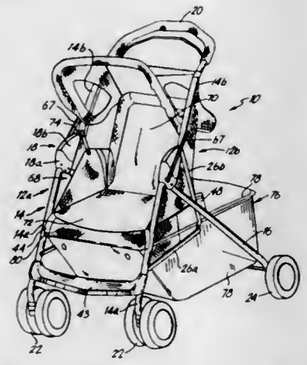
STROLLER WITH FOLDING MECHANISM FOR FOLDING STROLLER ENTIRELY WHILE UPRIGHT

Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238

Filed Jun. 6, 1995, Ser. No. 465,786

Int. Cl.[6] B62B *7/06*

U.S. Cl. 280—642 **19 Claims**



1. A stroller comprising:

a pair of side frames, each said side frame including:

a main side tube comprised of:

an upper tube portion, and

a lower tube portion,

a releasable locking pivot assembly for releasably locking the lower end of the upper tube portion to the upper end of the lower tube portion such that said upper tube portion and said lower tube portion are substantially in alignment with each other in an open configuration of said stroller and such that the lower end of the upper tube portion and the upper end of the lower tube portion are disengaged from each other in a configuration other than said open configuration, said releasable locking pivot assembly including:

a lower locking member fixed to an upper end of a respective said lower tube portion, and

an upper locking member slidably mounted on a lower end of a respective said upper tube portion;

a rear side tube pivotally connected at a forward end to said lower locking member, and

a double pivot bar pivotally connected at one end thereof to a lower end portion of the upper tube portion and at an opposite end thereof to the lower locking member to provide a double pivoting connection therebetween;

rear wheels connected to lower ends of said rear side tubes;

front wheels connected to lower ends of said lower tube portions, said front wheels and said rear wheels being in a spaced apart configuration in an open position of said stroller;

means for connecting together said pair of side frames; and

each said side frame further includes linkage means for connecting together the lower tube portion, the upper tube portion and the rear side tube of the respective side frame such that during pivoting of said upper tube portion upwardly and forwardly to a position extending substantially parallel to said rear side tube to close said stroller from said open position, said rear wheels and said front wheels remain in said spaced apart configuration prior to pivoting of said lower tube portion to a fully folded position extending substantially parallel to both said upper tube portion and said rear side tube.

5,622,378

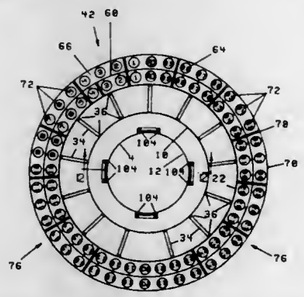
DEVICE AND METHOD FOR ADJUSTING CAMBER AND/OR TOE

Richard D. Schlosser, Loveland; Gabriel Dragnea, and Robert M. Allman, both of Longmont, all of Colo., assignors to Specialty Products Company, Longmont, Colo.

Continuation-in-part of Ser. No. 911,464, Jul. 10, 1992, abandoned. This application Apr. 28, 1993, Ser. No. 54,411

Int. Cl.[6] B62D *17/00*

U.S. Cl. 280—661 **41 Claims**



1. A device for adjusting camber and/or toe of a wheel comprising:

a first tapered annular shim;

a second tapered annular shim;

joining means for joining said first and second tapered annular shims together and for permitting relative rotational movement therebetween;

said first tapered annular shim comprises a first tapered ring and a second tapered ring spaced from said first tapered ring and a plurality of spaced apart radially extending spokes integral with said first and second tapered rings and holding said first and second tapered rings in a spaced apart relationship;

said second tapered annular shim comprises a first tapered ring and a second ring having at least a tapered portion spaced from said first tapered ring and a plurality of spaced apart radially extending spokes integral with said first tapered ring and said at least a tapered portion of said second ring and holding said first tapered ring and said second ring in a spaced apart relationship; and

said second ring of said second tapered annular shim having a non-tapered portion integral with said at least a tapered portion and extending radially outwardly therefrom.

5,622,379

AIR BAG DEVICE FOR VEHICLES

Kyojiro Suzuki, Kariya, and Minoru Fujioka, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 29, 1996, Ser. No. 608,735

Claims priority, application Japan, Mar. 2, 1995, 7-070943; Dec. 19, 1995, 7-349341

Int. Cl.[6] B60R *21/20*

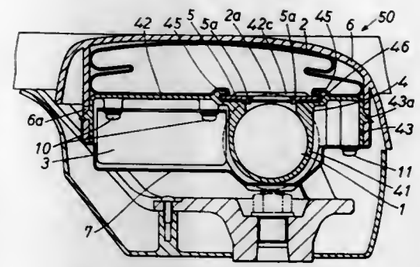
U.S. Cl. 280—728.2 **14 Claims**

1. An air bag device for vehicles comprising:

a bag having an opening and held folded;

means for generating a collision signal upon detection of a vehicle collision;

means formed in a tubular shape for generating a gas in response to the collision signal;



a casing formed with a container portion for supporting the gas generating means therein, a first opening for discharging the gas therethrough and an engagement portion for engaging with the opening of the bag around the first opening;

a retainer member coupled to the bag and being operatively associated with the engagement portion of the casing for retaining the opening of the bag to the engagement portion of the casing; and

first and second restriction portions formed on axial ends for the gas generating means for restricting movement of the retainer member in an axial direction of the gas generating means.

5,622,380

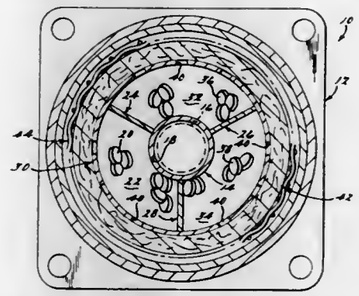
VARIABLE NONAZIDE GAS GENERATOR HAVING MULTIPLE PROPELLANT CHAMBERS

Paresh S. Khandhadia, Troy, and Rickey L. Stratton, Pontiac, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Sep. 21, 1995, Ser. No. 531,945

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **4 Claims**



1. A gas generator having a variable output gas generation rate comprising:

a housing having a plurality of apertures spaced therein;

a first propellant chamber located within said housing and arranged to be in fluid communication with said plurality of apertures;

at least a second propellant chamber and third propellant chamber located within said housing and arranged to be in fluid communication with said plurality of apertures, wherein said first and said at least second and third propellant chambers are respectively separated by a solid barrier element which prohibits direct fluid communication between the propellant chambers;

a first nonazide propellant charge positioned within said first chamber having a predetermined burn temperature;

at least a second nonazide propellant charge and third nonazide propellant charge respectively positioned within said second and third chambers; and

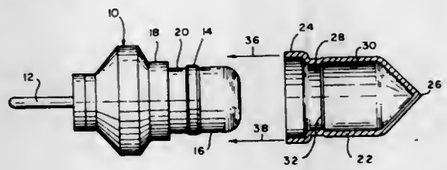
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an igniter positioned within said housing for supplying a flame front to only said first propellant chamber, wherein the ignition of said first charge by said flame front produces heat energy which subsequently conductively ignites said at least second and third nonazide propellant charges.

5,622,381
INTEGRAL PROJECTILE SQUID FOR AIR BAG INFLATORS

G. Dean Mossi, Roy; Mark B. Woodbury, North Salt Lake, and Alan D. Kendrick, Hooper, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jun. 7, 1996, Ser. No. 660,646
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **12 Claims**



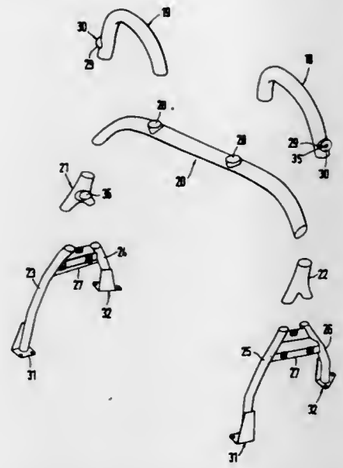
1. An integral projectile squib for an air bag inflator comprising,
a squib comprising a body having a first end and a second end with electrical energizing terminals extending from said first end and a first tubular portion at said second end, said body having a second tubular portion adjacent said first tubular portion, said tubular portions being axially aligned, with said second tubular portion having a larger circumference than said first tubular portion,
a locking ring rigidly attached in encircling relation to the circumference of said first tubular portion of said squib at a position that is closer to said second tubular portion than to the second end of the body of said squib,
a caplike cover having an inner wall with an open end and a closed end, said caplike cover being attachable to said squib to cover said first tubular portion and a portion of said second tubular portion and having a collar-like vessel edge at the open end that is sized to snugly cover a portion of said second tubular portion when said caplike cover is positioned in attached relation to said squib, said caplike cover having a locking feature on said inner wall that cooperates with said locking ring on said first tubular portion to retain said caplike cover in locked attachment to said squib until said squib is initiated by the application of an electrical signal to said terminals to cause an explosion and the production of a gas that ruptures said first tubular portion of said squib to force said caplike cover off said squib and launch said caplike cover as a projectile.

5,622,382
ROLLOVER BAR FOR A MOTOR VEHICLE

Siegfried Zepnik, Niefern-Oeschelbronn; Bodo Homann, Heimsheim, and Uwe Henn, Wimsheim, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Continuation of Ser. No. 413,764, Mar. 30, 1995. This application Aug. 1, 1996, Ser. No. 686,863
Claims priority, application Germany, Apr. 8, 1994, 44 12 108.3
Int. Cl.[6] B60R *21/13*
U.S. Cl. 280—756 **15 Claims**

1. Rollover bar assembly for a motor vehicle, comprising:
a plurality of tubular frame parts connected together, including tubular frame parts having lower ends adapted to be fastened in use to stationary vehicle body structure,

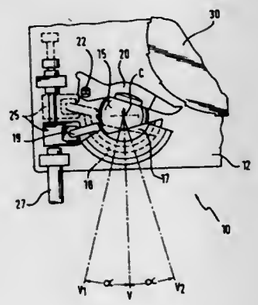


wherein at least one of the tubular frame parts exhibits a varying cross-sectional configuration along its length including a minimum tubular internal cross-sectional dimension section and at least one further larger internal cross-sectional dimension section having greater component strength and torsional strength than said minimum cross-sectional dimension section, said at least one further larger internal cross-sectional dimension section being formed by internal high pressure forming of said at least one tubular frame part.

5,622,383
SENSOR FOR A SAFETY BELT RETRACTOR

Thomas Kielwein, Eschach, and Rainer Bareiss, Alfdorf, both of Germany, assignors to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Jan. 5, 1996, Ser. No. 583,316
Claims priority, application Germany, Jan. 12, 1995, 95 00 722.0
Int. Cl.[6] B60R *22/42*
U.S. Cl. 280—806 **6 Claims**

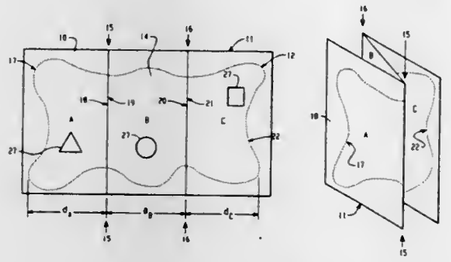


1. A sensor for vehicle-sensitive triggering of a locking mechanism on a safety belt retractor mounted in the back of a vehicle seat, comprising a ball seat which has a trough for accommodation of a sensor ball and a pivotally mounted sensor lever resting on said sensor ball, said ball seat being mounted so as to pivot about an axis which extends through the center of said sensor ball.

5,622,384
FOLDABLE DIE CUT CARDS

Sterling E. L. Bradley, N. Olmsted, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Filed Nov. 17, 1994, Ser. No. 341,415
Int. Cl.[6] B42D *15/02*
U.S. Cl. 281—2 **13 Claims**

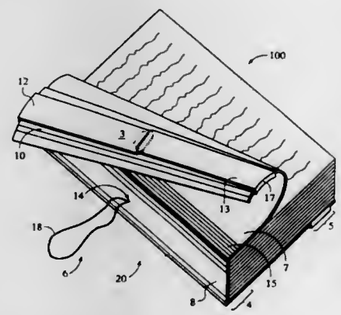


1. A foldable card cut from a single sheet of paper stock, the card comprising at least three panels connected along substantially parallel fold lines, two of the at least three panels being end panels, each panel having a substantially non-linear peripheral edge profile, each end panel having a free peripheral edge not connected along a fold line, each panel being foldable substantially flush against adjacent panels, wherein the peripheral edge profile of each panel is substantially similar, and wherein the free peripheral edge of each end panel extends laterally beyond the fold line connecting each end panel and the adjacent panel.

5,622,385
WRAPAROUND COVER FOR A PAPERBACK BOOK

Christopher S. Yeh, 1454 Princeton St., No. 4, Santa Monica, Calif. 90404

Continuation of Ser. No. 325,773, Oct. 17, 1994, Pat. No. 5,474,332. This application Jun. 7, 1995, Ser. No. 477,353
Int. Cl.[6] B42D *3/04*
U.S. Cl. 281—19.1 **5 Claims**

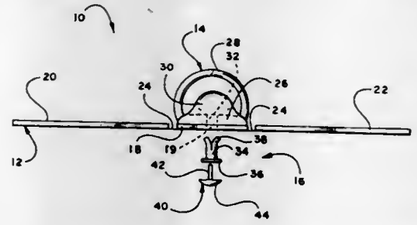


1. A wrap-around cover for a book comprising:
a sheet of semi-rigid material; the sheet including:
a cover portion;
a plurality of vertically scored lines on the cover portion for accommodating varying widths and thicknesses of the book; and
holding means coupled to the cover portion for securing the sheet to the book.

5,622,386
BINDER APPARATUS WITH REMOVABLE OUTER COVER

Roy Young, Vernoo, Ind., assignor to Rock-Tenn Company, Norcross, Ga.

Filed Mar. 14, 1995, Ser. No. 403,465
Int. Cl.[6] B42F *13/00*; B23P *11/00*
U.S. Cl. 281—36 **4 Claims**

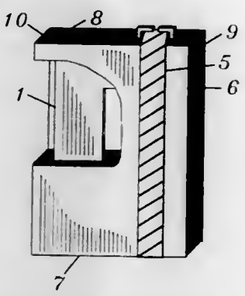


1. A binder apparatus having a replaceable outer cover, comprising:
a recyclable outer cover including a spine, a front panel, and a back panel;
a ring binder mechanism; and
a removable rivet assembly inserted through corresponding apertures in said spine and said ring binder mechanism;
wherein said removable rivet assembly includes a sleeve and a pin for insertion into said sleeve, and wherein said pin holds arms on said sleeve against said ring binder mechanism thereby connecting said ring binder mechanism to said spine.

5,622,387
BOOKMARK

Griffin Ordway, 662 Matagual Dr., Vista, Calif. 92083

Filed Mar. 15, 1995, Ser. No. 404,593
Int. Cl.[6] B42D *9/00*
U.S. Cl. 281—42 **13 Claims**

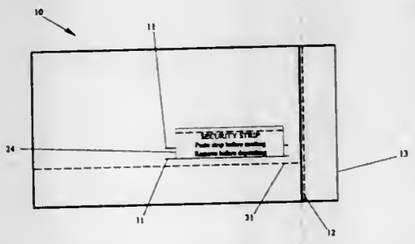


1. A bookmark for insertion into a book comprising:
a. a body adapted for extending downward along the binding of said book,
b. an arm extending outward from the body attached on one side thereof to the top of the body having a pair of brackets comprising a base at one end and a tip at the other spaced apart and attached at the base of said brackets to the top of said arm and disposed opposite said base portion, said brackets spaced apart a distance less than the width of the elastic loop at the tip of said brackets and spaced apart at the base of said brackets a distance greater that the distance between said tips
c. means for releasably engaging the covers of the book and for biasing said body against said binding attached to said arm through said brackets and spaced apart from said body which comprises an elastic loop attached to said arm adapted for

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encircling the covers of the book and biasing said covers closed about said body.

5,622,388
POSTCARD RANK CHECK
Isabelo S. Alcordo, 613 E. Summit St., Wachula, Fla. 33873
Continuation-in-part of Ser. No. 409,159, Mar. 23, 1995, abandoned. This application Jul. 10, 1995, Ser. No. 500,051
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—58 **2 Claims**



1. A post card bank check security system for sending any reasonable amount of money by mail comprising:

a sheet of card stock having a face side and a reverse side and a first and second perforation means for separating portions of said card stock into a first, a second, and a third severable part, and a pair of slits, cut through said card stock at a prescribed location of a space allotted for printing of magnetic ink character encoding numbers,

an image of a check printed on said face side of said first severable part, said image including a plurality of check information items, said check information items including, the check number, the addressee's name and address, instructions to bank with reference to addressee, the amount of the check, the address of the financial institution, the account number, the date of the check and period of validity of the check, a notice limiting negotiability of the check, payor's signature and date, a space for the payor to record details of a check,

a strip of paper stock having a concealing end and an adhesive end, said strip being inserted within said pair of slits, wrapped over said account number on said face side and adhered to said reverse side to said concealing end and thereby creating a secure cover to conceal said account number during processing through the postal system,

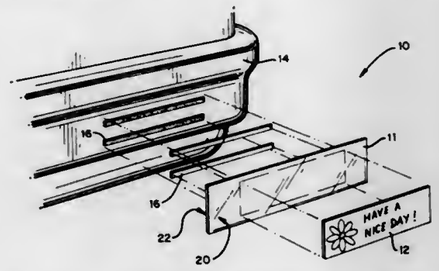
an image of a post card printed on said reverse side of said first severable part of said post card, said image including a notice signifying space for payor's name and address, a note to caution payor, a space for addressee's name and address, and a space for addressee's endorsement,

an image of a check record printed on said face side of said second severable part, including a space for payor to record details of the check, and a space for updating account information,

an image of instructions printed on said face side of said third severable part including instructions for removing said third severable part, and a notice pertaining to negotiability of the check, and,

an image of instructions printed on said reverse side of said third severable part including instructions to payor for using said reverse side.

5,622,389
BUMPER DEVICE AND METHOD
Joseph L. Courtney, 225 Canvasback Dr., Bloomingdale, Ga. 31302
Filed Feb. 9, 1996, Ser. No. 599,164
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 **7 Claims**

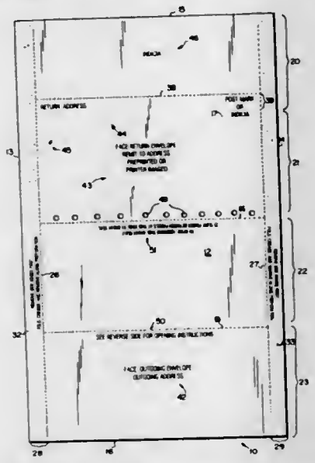


1. A bumper device for use in adhering a bumper sticker to the bumper of an automobile or other essentially flat surface, comprising:

a deformable mounting sheet capable of being shaped to match the shape of said bumper sticker, said sheet having a rear face; and

means for securing said mounting sheet to said bumper, said securing means including at least one pair of mating Velcro strips, one of said pair of Velcro strips being attached to said rear face of said mounting sheet and the other of said pair of Velcro strips being attached to said bumper.

5,622,390
TWO WAY SELF MAILER FROM ONE PLY OF PAPER
Richard A. Jenkins, Lindenhurst, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Sep. 27, 1995, Ser. No. 533,993
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—116 **20 Claims**



10. A mailer type business form intermediate comprising:

a sheet of paper having first and second opposite parallel longitudinal edges; first and second opposite end edges; a first face adapted to provide the majority of the interior of a mailer when constructed from the sheet; and a second face adapted to provide the exterior of the mailer when constructed;

first, second and third fold lines formed in said sheet perpendicular to said longitudinal edges, and dividing said sheet into, in sequence, first, second, third and fourth panels, said first panel being defined by said first end edge and said first fold line, and said fourth panel by said second end edge and said third fold line;

first and second longitudinal lines of weakness formed in said sheet parallel to and adjacent, but spaced from, said longitudinal edges to define first and second tear strips;

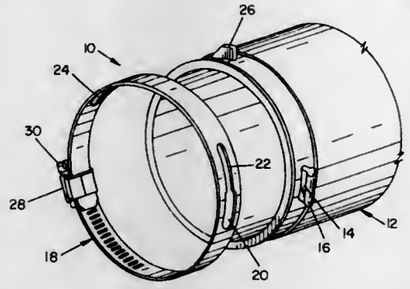
first and second adhesive patterns disposed on said tear strips to hold said sheet into a mailer when folded about said fold line;

third adhesive patterns disposed on said first face of at least one of said second and third panels for joining said second and third panels together adjacent said first and second longitudinal lines of weakness and adjacent said second fold line for forming a reply envelope when said sheet is folded about said fold lines;

reply address indicia imaged on said second face of said second panel, said indicia upright when said first end edge is at the top of said intermediate; and

outgoing address indicia imaged on said second face of said fourth panel, said outgoing address indicia being upright and readable when said first end edge is at the top of said intermediate.

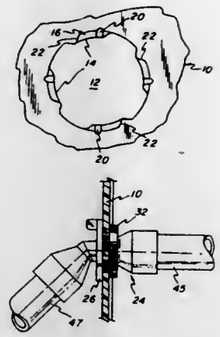
5,622,391
HOSE/CLAMP ASSEMBLY
Donald R. Belik, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 16, 1996, Ser. No. 586,034
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—23 **3 Claims**



2. A hose/clamp combination comprising a hose having a protrusion thereon, said protrusion having a stem portion proximate said hose and a head portion distal therefrom; and a hose clamp having a first slot of sufficient size to receive said head portion of said protrusion and a second slot as a continuation of the first slot which is narrower than said head portion of the protrusion to receive the stem portion of the protrusion.

5,622,392
PANEL MOUNTED FEED THROUGH CONNECTOR ASSEMBLY
Frederick C. Gochenouer, Mechanicsburg, Ohio, assignor to Q,JMC, Inc., Urbana, Ohio
Filed Jun. 16, 1995, Ser. No. 491,165
Int. Cl.[6] F16L *37/00*
U.S. Cl. 285—137.1 **5 Claims**

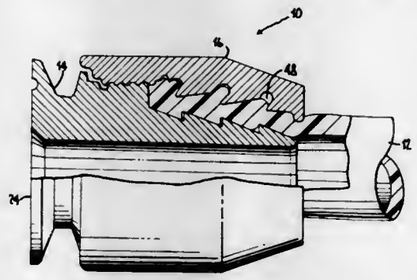
1. A panel mounted feed through connector assembly particularly adapted to be mounted on a panel or wall structure of a motor vehicle such as on the fire wall of a tractor or truck, providing for the support and coupling of the ends of a plurality of flexible pneumatic pressure lines for the vehicle's air brakes, comprising:



a rigid plate having a plurality of apertures, each of said apertures having a plurality of circumferentially-spaced inwardly projecting flanges with each of said inwardly projecting flanges having a circumferentially extending mating surface and having a thickness less than that of said rigid plate and having a detent recess with a thickness less than said mating surface, and said inwardly projecting flange having a stop surface defining an end of said inwardly projecting flange; and

a feed through connector with an internally disposed cavity for conduction therethrough of pneumatic pressure with receiving means at each remote end for receiving an end of a said flexible pneumatic pressure line, and said feed through connector formed with a generally tubular sleeve, said tubular sleeve having a wall flange extending radially outward from a first end of said tubular sleeve and a plurality of tabs extending radially outward from a second end of said tubular sleeve, said plurality of tabs having a radius less than said wall flange with the inner distance between said plurality of tabs and said wall flange approximately equal to the thickness of said inwardly projecting flanges and each of said tabs having a raised detent to cooperate with said detent recesses for removably interlocking said feed through connector with said plate.

5,622,393
RE-USABLE FITTING FOR FLEXIBLE HOSES
Robert J. Elbich, Fogelsville, Pa., and Norman B. Cooling, Bridgewater, N.J., assignors to Pure Fit Incorporated, Pa.
Filed Jun. 30, 1995, Ser. No. 497,706
Int. Cl.[6] F16L *33/22*
U.S. Cl. 285—245 **16 Claims**



1. A fitting for flexible hose of a given diameter and wall thickness, the fitting comprising:

a body partly formed as a hollow nipple that extends from a base to a head;

a nut tightenable on the nipple, the nipple carrying external thread in part, and a series of external ribs in other pans between the thread and the head,

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wherein said ribs define progressively smaller rings in the direction from the thread to the head, the nipple tapering at the ribs to flare an end portion of the flexible hose when engaged over the head and ribs, the nut having an elongated hole that extends between an enlarged end and a reduced end and which is formed with internal thread in part and a series of internal ribs in other parts between the thread and the reduced end,

wherein said internal ribs are formed over a taper generally complementary to the nipple and define progressively smaller apertures in the direction from the internal thread to the reduced end,

wherein tightening the nut on the nipple drives the internal ribs into an alignment with the external ribs such that complementary pairs of the internal and external ribs compress the hose in a series of axially spaced constrictions, for mechanically engaging and sealing the fitting and the hose

wherein each of the internal ribs comprises a pair of sidewalls disposed at an angle to each other, the sidewalls extending inwardly from respective sidewall bases on the inner surface of the nut and in the direction the nut advances when tightened, the sidewalls terminating in an acutely angled edge, the edge being oriented to point substantially in the direction the nut advances when tightened, thereby reducing frictional resistance to tightening of the nut; and

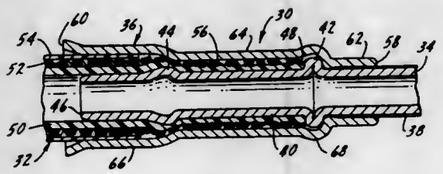
annular troughs defined within the hole of the nut and extending radially outwardly from the bases of the sidewalls, the troughs having substantially semi-circular cross sections and substantially smooth walls, thereby forming enlarged regions with a pouch-shaped cross section within the nut, the enlarged regions sized so that, when the nut is manually tightened, a sufficient amount of hose material is retained in the enlarged regions to resist separation of the fitting from the hose under normal operating conditions.

5,622,394

CORROSION-RESISTANT JOINT

Dennis C. Soles, Rochester Hills, and Raymond R. Brauckmiller, Mount Clemens, both of Mich., assignors to Bundy Corporation, Warren, Mich.

Filed Mar. 15, 1995, Ser. No. 404,517
Int. Cl.[6] F16L *33/20;33/24*
U.S. Cl. 285—256 **20 Claims**



1. A corrosion-resistant joint comprising:

a flexible hose having an interior plastic lining surrounded by a metal reinforcement layer, wherein a body portion of said hose is coated with a first exterior plastic layer;

a metal tube having a body portion which is coated with a second exterior plastic layer and a stem portion which is uncoated, wherein said stem portion is partially received in a confronting end of said hose; and

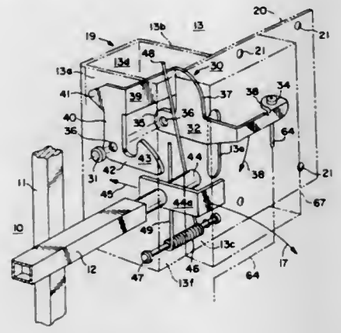
a metal ferrule crimped around said body portion of said tube at a location axially spaced from said confronting end of said hose to define a first plastic-to-metal seal, and crimped around said body portion of said hose to define a second plastic-to-metal seal.

5,622,395

RELEASABLE MOUNTING SYSTEM

Jerry P. Shine, 10451 Isleworth Ave., San Diego, Calif. 92126, and Richard W. Harrington, P.O. Box 192, Butte Falls, Oreg. 97522

Filed Mar. 31, 1995, Ser. No. 414,186
Int. Cl.[6] E05C *19/10*
U.S. Cl. 292—125 **22 Claims**



1. A releasable mounting system for retaining a protective cover over an opening in a wall of a structure comprising:

a latch pin adapted to be rigid connected to the protective cover, the cover being positioned over the opening when the latch pin is in a latched position,

a housing assembly comprising a mounting portion having appropriate fastening means adapted for rigid attachment to a wall, and an integrally formed enclosure portion having four walls and at least one opening therein for receiving the latch pin,

release means pivotally mounted inside the housing assembly comprising a latch member, wherein the latch member includes:

i.) a lever segment having a horizontal portion comprising a laterally projecting grommet for receiving a first coupling means connecting the latch member to the remote actuating means, a hub having a through-hole for receiving a second coupling means for pivotal positioning of the latch member in the housing assembly, and a vertical portion configured to provide clearance from a first wall of the housing assembly,

ii.) a catch segment comprising a vertical portion having, at one end, a rearwardly extending stop nose configured to rest against a third wall of the housing assembly for permitting correct positioning of the latch member and, at an opposite end of the vertical portion, a through-hole for receiving the second coupling means for pivotal positioning of the latch member in the housing assembly, and a horizontal portion comprising a centrally located U-shaped channel for receiving and nestingly engaging the latch pin, and a free end configured to form an upwardly curving cam for slidingly engaging and guiding the latch pin into the U-shaped channel and for retaining the latch pin therein so that the latch pin may not be withdrawn from the latched position, and

iii.) a central bridge member connecting adjacent sides of the lever segment and the catch segment defining the latch member;

separation biasing means adapted for movement of the latch member from a release position to a cocked position and for movement of the latch pin away from the housing assembly when the latch member is in a release position, and

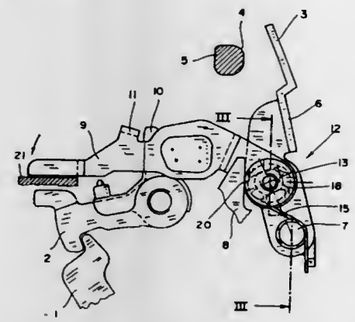
remote actuating means connected to the latch member for activation of the release means driving the latch pin out of and away from the housing assembly to an unlatched position.

5,622,396

AUTOMOBILE DOOR LOCK

Franz Neumann, Wuppertal, Germany, assignor to BOMORO Bocklenberg & Motte GmbH & Co. KG, Wuppertal, Germany

Filed Jan. 27, 1995, Ser. No. 379,762
Claims priority, application Germany, Jan. 27, 1994, 44 02 507.6; Mar. 2, 1994, 44 06 870.0
Int. Cl.[6] E05C *3/04*
U.S. Cl. 292—202 **16 Claims**



1. Automobile door lock having a lock mechanism with a plurality of levers and lock elements, including a ratchet and a pawl, an outer actuating lever having an end for cooperating with an outer door handle, and with a clutch lever cooperating with the outer actuating lever on the one hand and with the pawl on the other hand; wherein a lock connection assembly having a retaining bolt and a bias spring is provided between the outer actuating lever and the clutch lever, the outer actuating lever being prestressed in a direction toward an operating position by the bias spring; wherein the automobile door lock is installed in a vehicle door with the outer actuating lever in a delivery end position in which the outer actuating lever is held against the force of the bias spring and is firmly connected with the clutch lever by the retaining bolt being in a tightened condition rendering the bias spring ineffective; and wherein the retaining bolt is loosenable for rendering the bias spring effective and for enabling the outer actuating lever to be displaced solely under the action of said bias spring into its operational position, the retaining bolt being re-tightenable in said operational position for firmly interconnecting the outer actuating lever and the clutch lever for movement together.

5,622,397

DOOR SECURITY DEVICE

Brian J. Rice, and Richard J. Bagan, both of Columbia City, Ind., assignors to Richard J. Bagan, Inc., Columbia City, Ind.

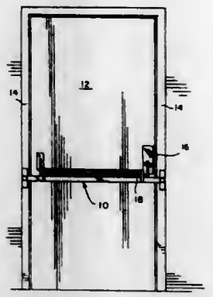
Continuation-in-part of Ser. No. 127,301, Sep. 24, 1993, Pat. No. 5,496,081, which is a continuation-in-part of Ser. No. 45,363, Apr. 8, 1993, Pat. No. 5,364,140. This application Sep. 8, 1995, Ser. No. 525,392
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—259 R **46 Claims**

1. A security device, comprising:

a support bar having first and second ends;

at least one blocking means disposed between the ends of the support bar;

attaching means mounted to the support bar for removably securing the support bar in position adjacent a structure; and



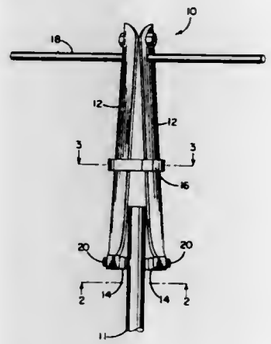
an actuator connected to the attaching means and operable to actuate the attaching means to secure the support bar adjacent the structure.

5,622,398

PIN GRIPPING DEVICE

William Duchaine, Jr., 1630 Bucklin, LaSalle, Ill. 61301

Filed Oct. 5, 1995, Ser. No. 539,404
Int. Cl.[6] B65G *7/12*
U.S. Cl. 294—16 **13 Claims**



1. A gripping device for gripping a cylindrical pin comprising:

a pair of gripping jaws having interior surfaces, the gripping jaws disposed in opposing relation and defining a space between the interior surfaces to receive and engage a cylindrical pin;

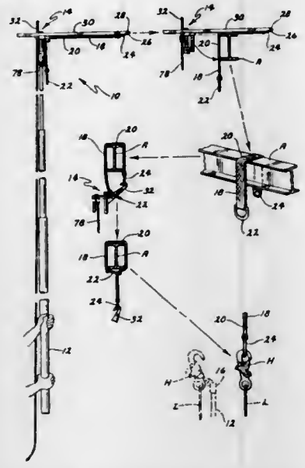
a pair of levers disposed in angled relation, each lever carrying one of the gripping jaws near a first end of the lever, the levers being further disposed to pivot in angular relation so as to vary the space between the interior surfaces of the gripping jaws and thus grip cylindrical pins of varying sizes, the levers being lengths of angle iron disposed to present an irregular outer surface having angled surface projections on opposite sides of the cylindrical pin;

a locking ring surrounding the angled levers for biasing each lever toward the other in order to engage the cylindrical pin, the locking ring having an inner surface which conforms to the angled surface projections of the levers to firmly lock the levers to allow application of torque to the cylindrical pin;

a handle attached to the levers for applying a force to the angled levers and thus to the cylindrical pin engaged by the gripping jaws.

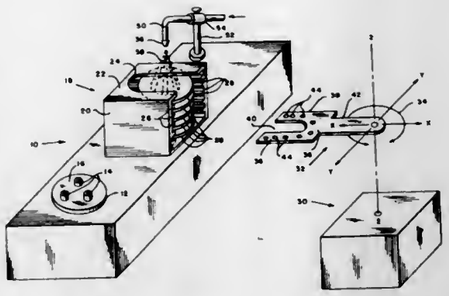
VOL 1197 ISS 4 APR 22 1997 UMI

5,622,399
REMOTE TIE-OFF ADAPTOR AND SNAP HOOK ATTACHMENT DEVICE
James R. Albright, Lake City, Minn., assignor to D B Industries, Inc., Red Wing, Minn.
Filed Oct. 16, 1995, Ser. No. 543,296
Int. Cl.[6] B25J 1/00
U.S. Cl. 294—24 13 Claims



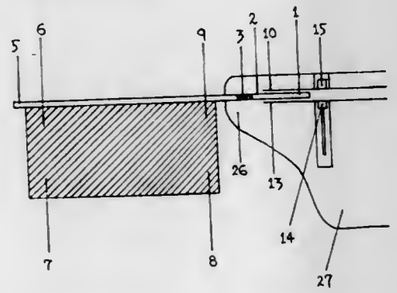
1. A remote tie-off adaptor positioner and snap hook attachment device for attaching and detaching a snap hook to and from the remote tie-off adaptor, the tie-off adaptor having a first loop and a second loop connected by a sturdy, flexible segment, and the snap hook having a gate lever and a gate latch, the device comprising:
a detachable, extensible pole member having a distal end;
a tie-off adaptor positioning assembly releasably engageable with said distal end of said extensible pole member for positioning a tie-off adaptor in a remote location;
a strap arm on said tie-off adaptor positioning assembly for positioning the tie-off adaptor;
a strap rod pivotally attached to said tie-off adaptor positioning assembly for supporting the tie-off adaptor while it is being positioned by said strap arm of said tie-off adaptor positioning assembly;
a snap hook attachment assembly releasably engageable with said distal end of said extensible pole member for engaging a snap hook to and disengaging a snap hook from a remote location; and
remote operating means for remotely operating said tie-off adaptor positioning assembly.

5,622,400
APPARATUS AND METHOD FOR HANDLING SEMICONDUCTOR WAFERS
Gregory George, Colchester, Vt., assignor to Karl Suss America, Inc., Waterbury Center, Vt.
Filed Jun. 7, 1995, Ser. No. 487,434
Int. Cl.[6] B25J 15/06; B65H 5/08
U.S. Cl. 294—64.1 7 Claims



1. In an apparatus for transferring thin semiconductor wafers from one location to another including means for supporting a wafer, a transfer instrumentality adapted to be placed beneath a wafer, said transfer instrumentality including a wafer supporting portion and means for applying a vacuum to the upper surface of said wafer supporting portion of said instrumentality to firmly secure the lower surface of said wafer to the upper surface of said wafer supporting portion of said transfer instrumentality, and wherein said wafer is extremely thin and flexible and is warped sufficiently out of planar configuration so that it is impossible to establish a vacuum between said upper surface of said wafer supporting portion of said transfer instrumentality and said lower surface of said wafer sufficient to secure said lower surface of said wafer to said upper surface of said wafer supporting portion of said transfer instrumentality, the improvement comprising means for applying a positive gaseous medium pressure to the upper surface of said wafer while said wafer is on said wafer supporting portion of said transfer instrumentality to cause said wafer to flex downwardly in those areas where it is flexed upwardly sufficiently far to prevent the vacuum from being established between said upper surface of said wafer supporting portion of said transfer instrumentality and said lower surface of the wafer, thereby permitting a sufficient vacuum to be established between said lower surface of said wafer and said upper surface of said wafer supporting portion of said transfer instrumentality to cause said wafer to be firmly secured thereto.

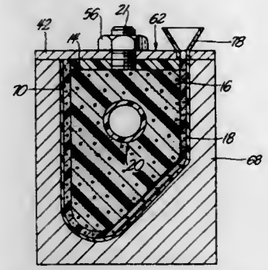
5,622,401
CLIPPED-ON CENTER VISOR FOR CARS
Angela Y. C. Ip, 95-345 Lanikuhana Ave., Mililani, Hi. 96789
Continuation-in-part of Ser. No. 374,845, Jan. 18, 1995, abandoned. This application Dec. 15, 1995, Ser. No. 573,574
Int. Cl.[6] B60J 3/02
U.S. Cl. 296—97.6 4 Claims



1. A device to provide car drivers with protection from glare around a rear mirror area comprising:
a sheet of opaque material;
a tubular support arm of three sections, said three sections further characterized hy:
(a) a first section being an anchor when the arm is extended,
(b) a second section of flexible spiral coil.
(c) a third section to which said sheet of opaque material is fixedly connected and entirely supposed, and wherein said second section is connected in between and has a smaller length than said first and third sections;
a cylindrical housing unit with an opening at a bottom, in which said support arm is placed; and

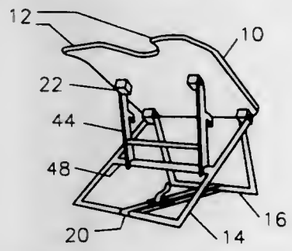
a means by which said housing unit is clipped onto a visor of a car.

5,622,402
PANEL WITH INTEGRAL ENERGY ABSORBER AND AIR DUCT
James R. Pritchard, Somersworth, N.H.; Mary K. Marshall, York, Me.; Brian R. Hatter, Highland, Mich., and Wayne D. LaRoche, Farmington, N.H., assignors to Davidson Textron Inc., Dover, N.H.
Continuation of Ser. No. 424,183, Apr. 19, 1995, abandoned. This application Aug. 27, 1996, Ser. No. 703,836
Int. Cl.[6] B62D 25/14; B50H 1/26; B60R 21/045
U.S. Cl. 296—191 5 Claims



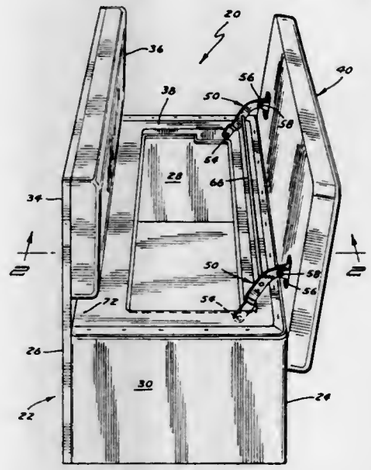
1. An interior energy absorbing panel for an air-treated vehicle passenger compartment comprising a thermoplastic skin, a thermoplastic retainer, a thermoplastic air duct, and an energy absorbing rigid polyurethane foam core having a square wave energy management characteristic; said core extending about and self-bonded directly to said air duct and also self-bonded directly to said retainer and bonded at least indirectly to said skin.

5,622,403
MULTI-FUNCTION CANOE CHAIR
Raymond M. Gonda, 10 Cardinal Woods, South Burlington, Vt. 05403
Filed Jun. 7, 1995, Ser. No. 477,992
Int. Cl.[6] A47C 9/00
U.S. Cl. 297—19 6 Claims



1. A multi-function/positioned chair for a watercraft which can be adjusted as between sitting, kneeling and portaging positions, comprising
a seat which contains a front, rear, top and bottom sections;
a portaging support means on the front section of said seat for supporting the seat when used as a portage yoke; and
a supporting framework pivotally connected to said seat, said supporting framework comprising a first and second leg member pivotally attached at the rear of said seat, characterized in that said first and second leg members are substantially disposed in use in the form of an inverted V, and a third leg member also pivotally attached to said seat, characterized in that said third leg member contains means for engaging with said second leg member to support said seat for sitting, kneeling and portaging, and
wherein the portaging support means on the front section of said seat for supporting the seat comprises a cut-out section of sufficient size for portaging said watercraft.

5,622,404
COMBINATION SEAT AND STORAGE SYSTEM
Robert J. Menne, Forest Lake, Minn., assignor to Premier Marine, Inc., Wyoming, Minn.
Continuation of Ser. No. 143,183, Oct. 26, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 548,026
Int. Cl.[6] A47C 7/62
U.S. Cl. 297—188.1 18 Claims



1. A combined seating and storage system comprising:
a. a storage container having at least a front wall, a rear wall, a left side wall, a right side wall, and an open top;
b. a lid having a front edge, a rear edge, an undersurface, and a seating surface when in a horizontal position atop said storage container and closing said open top of said storage container; and,
c. a double pivot hinge connecting said lid to said storage container, said double pivot hinge comprising:
(1) a first horizontal pivot pin affixed to the inside surface of one of said side walls of said storage container near said front wall of said storage container;
(2) a second horizontal pivot pin affixed to said undersurface of said lid between said front and rear edges of said lid; and,
(3) a one-piece connecting arm having a first end pivotally connected to said first pivot pin and a second end pivotally connected to said second pivot pin, whereby said lid can be moved from a closed horizontal position in which it closes said open top of said storage container to an open vertical position in front of said front wall of said storage container.

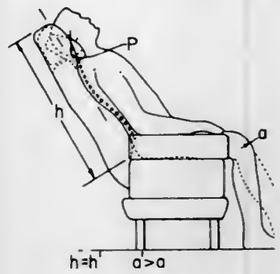
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5,622,405

FLIP-UP HEADREST

Hector M. Pitencel, Salta 828, 1° 'D' (7600) Mar del Plata, Buenos Aires, Argentina

Continuation-in-part of Ser. No. 227,244, Apr. 13, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,558
Int. Cl.[6] A47C 7/38
U.S. Cl. 297—283.4 10 Claims



1. A dual-aspect headrest especially suitable for use on a vehicle having a seatback for supporting a user of the vehicle, which headrest comprises:

(a) a support body having (i) a front face and (ii) a rear face having an anatomical cavity therein for supporting the head of a user of the vehicle, said body having in an upper edge thereof a non-deformable neck support having the shape of a semicircle and having an inner part, said neck support being open toward said rear face, and intersecting said anatomical cavity, and having a rigid inner core incorporated in the internal structure of the body, and a spongy material covering said core;

(b) pivoting means pivotally connected to said body for pivoting said body around a horizontal axis and allowing the body to be flipped over the seatback between a first position at which the front face faces the head of a user and a second position at which the rear face faces the head of a user, so that the anatomical cavity and the neck support are positioned to receive, respectively, the head and neck of a user; and

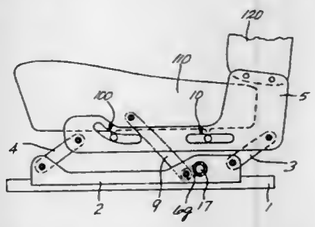
(c) linking means for linking said body to said seatback, said linking means being connected to said pivoting means.

5,622,406

SEAT CUSHION ADJUSTMENT FOR VEHICLE SEATS

Reinhard Meschkat, Ahorn; Hans Rampel, Ahorn-Schorkendorf, and Thomas Rodde, Coburg, all of Germany, assignors to Brose Fahzeugteile GmbH & Co. KG, Coburg, Germany

Filed Jul. 23, 1993, Ser. No. 96,556
Claims priority, application Germany, Jul. 24, 1992, 42 24 458.7
Int. Cl.[6] B60N 2/00
U.S. Cl. 297—318 15 Claims



1. A seat cushion adjustment device for a vehicle seat having a seat cushion, the vehicle seat cushion adjustment device comprising:

first adjustment means for effecting a main adjustment of the vehicle seat within a defined adjustment area;

second adjustment means coupled to said first adjustment means for adjusting the seat cushion in dependence on the main adjustment of the vehicle seat by action of the first adjustment means, whereby said first and second adjustment means define a development curve of the seat cushion adjustment; and

separate adjustment means independent of the first and second adjustment means comprising:

a mechanical gear element; and

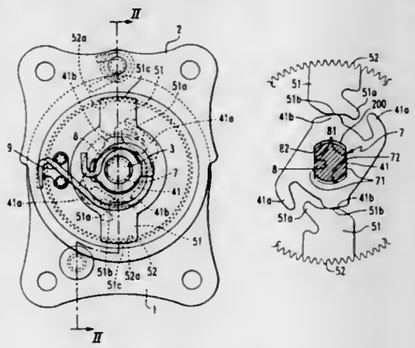
a coupling lever that is coupled between the mechanical gear element and the seat cushion, whereby maximum adjustment positions of the seat cushion are associated with maximum adjustment positions of said main adjustment of the vehicle seat to avoid exceeding predetermined outer adjustment range limits of the seat cushion adjustment, whereby the development curve of the seat cushion adjustment is fixed steplessly within the restricted adjustment area by adjustment of the separate adjusting means.

5,622,407

SEAT APPARATUS

Yukifumi Yamada, Toyota; Hiroyuki Okazaki, Anjo, and Yoshihiro Hirate, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 18, 1994, Ser. No. 343,964
Claims priority, application Japan, Nov. 19, 1993, 5-290490; Mar. 18, 1994, 6-049134
Int. Cl.[6] B60N 2/02
U.S. Cl. 297—366 4 Claims



1. A seat apparatus comprising:

a lower arm for attaching a seat cushion;

an upper arm for attaching a seat-back;

a shaft passing through the lower arm and the upper arm, said shaft being rotatably disposed in the lower arm and fixed to the upper arm for unitary rotation therewith, the shaft having a connecting portion with a pair of opposed parallel flat surfaces defining a first width of the connecting portion in cross section and a pair of opposed arcuate surfaces connecting the parallel flat surfaces at opposite ends defining a second width in cross-section substantially transverse to the first width;

a locking mechanism disposed between the lower arm and the upper arm, the locking mechanism including pawl means having one or more pawls movable into and out of meshing engagement with a ratchet; and

a cam having an aperture mounted on the connecting portion of the shaft, the aperture having a first width defined by a pair of opposed flat peripheral surfaces and a second width substantially transverse to the first width defined by a pair of opposed arcuate peripheral surfaces joining opposite ends of the flat peripheral surfaces, said second width of the aperture being

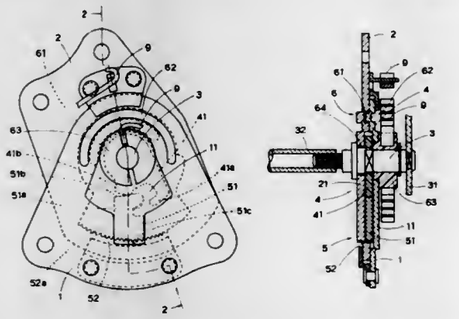
greater than the second width of the connecting portion of the shaft to define a clearance between the respective opposed arcuate surfaces of the shaft and the aperture, the first width of the aperture being dimensioned to slidably engage the opposing flat surfaces of the shaft to permit sliding movement of the cam relative to the shaft in the direction of the second widths, said cam having an outer surface configured to engage the pawl means for moving all of the one or more pawls of the pawl means into meshing engagement with the ratchet upon rotation of the shaft in one direction, and for moving all of the one or more pawls of the pawl means along said axis out of meshing engagement with the ratchet upon rotation of the cam in the opposite direction, the configured outer surface of the cam and the aperture being oriented relative to one another to permit a direction of sliding movement of the cam relative to the shaft corresponding to the direction of movement of all of the one or more pawls of the pawl means being pressed by the cam upon rotation of the cam.

5,622,408

SEAT RECLINING APPARATUS FOR A VEHICLE

Yukifumi Yamada, Toyota, and Hiroyuki Okazaki, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Nov. 16, 1994, Ser. No. 341,984
Claims priority, application Japan, Nov. 19, 1993, 5-290489
Int. Cl.[6] B60N 2/20;2/22
U.S. Cl. 297—367 12 Claims



1. A seat reclining apparatus for use in a vehicle having a seat cushion and a seat back pivotally hinged thereto, comprising:

a lower arm adapted to be secured to said seat cushion;

an upper arm adapted to be secured to said seat back;

a rotating shaft for mounting thereon said upper arm and said lower arm rotatably about said rotating shaft, said upper arm and said lower arm being rotatable relative to each other;

a control handle rigidly secured to said rotating shaft for rotation thereof;

a locking mechanism provided between said lower arm and said upper arm for restraining the relative rotation between said lower arm and said upper arm, said locking mechanism having a pawl guided in a radial direction from said rotating shaft and slidably supported between said lower arm and said upper arm, and a ratchet provided on one of said lower arm and said upper arm to be meshed with said pawl in response to sliding movement of said pawl;

an unlocking mechanism responsive to the rotation of the shaft for moving said pawl away from said ratchet to allow said lower arm and said upper arm to rotate relative to each other; and

a load sustaining mechanism provided between said lower arm and said upper arm for sustaining a reaction force which is caused to be applied to said rotating shaft when said locking mechanism restrains the relative rotation between said lower arm and said upper arm.

5,622,409

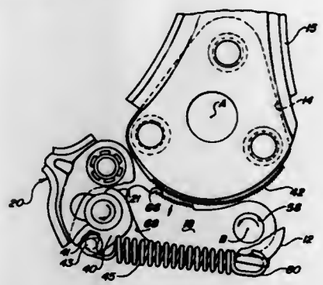
Patent Not Issued For This Number

5,622,410

SEAT RECLINER FOR REDUCING CHUCKING

David L. Robinson, Sterling Heights, Mich., assignor to Fisher Dynamics Corporation, St. Clair Shores, Mich.

Continuation of Ser. No. 327,117, Oct. 21, 1994, abandoned. This application Mar. 28, 1996, Ser. No. 623,465
Int. Cl.[6] B60N 2/02
U.S. Cl. 297—367 4 Claims



1. A pivot mechanism for reducing chucking, comprising

a quadrant adapted to be coupled with a seat back, said quadrant being pivotally mounted about a pivot and having a set of teeth;

pawl means having a set of teeth engaging said quadrant teeth for releasably locking said quadrant in position, said pawl means pivotally mounted about a pivot and moving from a first position engaging said quadrant to a second position disengaging said quadrant enabling movement of said quadrant, said pawl means moving, due to gravitational force, from said first to said second position and said pawl means including a cam surface;

an engagement means pivotally mounted on a pivot, said engagement means biased in a first position contacting said pawl means cam surface at a contact point and exerting a locking force on said pawl means when said pawl means is in its first position and in a second position enabling rotation of said pawl means to its second position and when said pawl means is in its first position, quadrant pivot center, pawl means pivot center and said contact point are substantially positioned at vertices of an equilateral triangle, and said locking force against said pawl means is positioned such that said pawl means is urged toward said quadrant, reducing the distance between the quadrant center of rotation, pawl means center of rotation and a pitch arc defined by said pawl means teeth, causing said pawl means teeth and quadrant teeth to more firmly mesh.

5,622,411

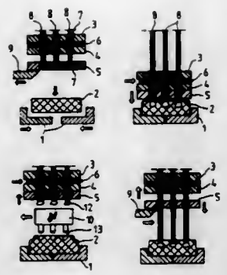
PROCESS FOR JOINING BRISTLE BUNDLES TO A PLASTIC BRISTLE CARRIER AND APPARATUS FOR THE SAME

Georg Weihrauch, Wald-Michelbach/Odw, Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Wald-Michelbach/Odw, Germany

Filed Aug. 21, 1991, Ser. No. 748,016
Claims priority, application Germany, Aug. 28, 1990, 40 27 108.0
Int. Cl.[6] A46D 3/04
U.S. Cl. 300—21 18 Claims

1. A process for joining bristle bundles to a plastic bristle carrier, the process comprising the steps of melting bristles of each bundle

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at fastening-side ends thereof so as to form a thickened portion at the fastening side ends of the bristle bundles, pressing the bristle bundles with the thickened portions into holes provided in a bristle receiving area of the bristle carrier accompanied by thermal forming, sealing a periphery of the bristle receiving area and between the bristle bundles, pressing and displacing rising material due to the pressing of the bristle bundles so as to compress the rising material in the sealed periphery of the bristle area so as to obtain a planar surface over the bristle receiving area.

5,622,412

QUICK RELEASE APPARATUS FOR A BICYCLE

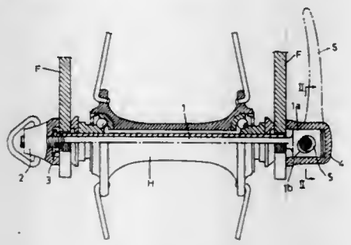
Takuro Yamane, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

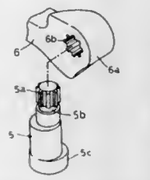
Filed Dec. 13, 1994, Ser. No. 357,595

Claims priority, application Japan, Dec. 17, 1993, 5-067408 U

Int. Cl.[6] B60B *37/00*

U.S. Cl. 301—124.2 **14 Claims**





1. A quick release apparatus for a bicycle for pulling and fixing a drawbar having a cam follower formed at one end thereof, said apparatus comprising:

a housing for substantially contacting a bicycle frame;

a rotary cam supported in said housing to be rotatable about an axis substantially perpendicular to said drawbar, said rotary cam being rotatable to contact said cam follower to pull said drawbar toward said housing;

a cam lever for rotating said rotary cam; and

coupling means provided between said rotary cam and said cam lever and at one side of said housing, said coupling means including:

a first coupling for restraining a relative rotation between said rotary cam and said cam lever;

a second coupling for restraining a relative movement in a direction of said axis between said rotary cam and said cam lever; and

a control shank formed integral with said rotary cam and extending outwardly of said housing; and

wherein said rotary cam includes a large diameter portion formed on an end thereof remote from said control shank to prevent said rotary cam from falling off said drawbar.

5,622,413

VALVE UTILIZING SHAPE MEMORY ALLOYS AND AN ANTI-LOCK BRAKE SYSTEM WITH THE VALVE

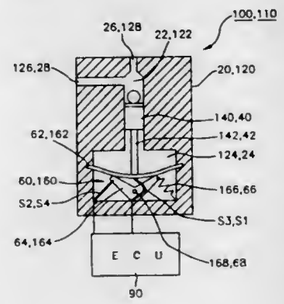
Sang K. Kim; PahngRoc Oh, and Hong J. Lee, all of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 17, 1995, Ser. No. 516,083

Claims priority, application Rep. of Korea, Aug. 17, 1994, 94-20227; Aug. 17, 1994, 94-20228

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—119.2 **10 Claims**



1. A valve comprising:

an electronic control unit for generating a first control current;

a housing having a first bore with a first inlet for introducing fluid from a fluid supply source and a first outlet for discharging the fluid to an operating object in an upper portion thereof, and a compartment in a lower portion thereof;

a first valve spool for closing the first inlet at a first position thereof, opening the first inlet at a second position thereof, and reciprocating between the first position and second position of said first valve spool;

biasing means for applying a biasing force upon said first valve spool; and

actuating means utilizing shape memory alloy wires for moving said first valve spool from the first position of said first valve spool to the second position of said first valve spool or from the second position of said first valve spool to the first position of said first valve spool by means of the first control current supplied from said electronic control unit, and opening or closing the first bore,

wherein said biasing means is a plate spring installed at an inner sidewall of the compartment for applying an upward biasing force by a snap-through buckling to maintain said first valve spool to the first position of said first valve spool when said valve spool is placed on the first position of said first valve spool, and applying a downward biasing force by the snap-through buckling to maintain said first valve spool to the second position of said first valve spool when said valve spool is placed on the second position of said first valve spool.

5,622,414

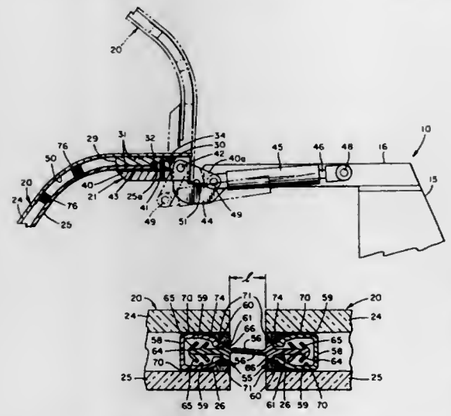
REFRIGERATOR DISPLAY CABINET WITH THERMALLY INSULATED PIVOTABLE ALL GLASS FRONT WINDOW PANEL

Paul J. Artwohl, Flossmoor, and Andrew G. Menke, Orland Park, both of Ill., assignors to Ardco, Inc., Chicago, Ill.

Filed Jun. 7, 1993, Ser. No. 73,124

Int. Cl.[6] A47F *3/04*

U.S. Cl. 312—116 **26 Claims**



1. A refrigerator display case comprising a cabinet for containing refrigerated items, said cabinet having a front opening, a plurality of window panels disposed in side-by-side relation, means supporting said panels for pivotal movement about a horizontal axis between a lowered position closing said cabinet opening and a raised position for permitting access to the interior of said cabinet through said opening, said panels each having an outer glass pane and inner glass pane, said glass panes of each panel being disposed in side-by-side relation with a spacer interposed therebetween for maintaining said glass panes in parallel relation with an air space therebetween, said spacer of each panel including a pair of side spacer members disposed between said glass panes adjacent opposite peripheral sides of the glass panes and upper and lower spacer members disposed between the glass panes adjacent upper and lower peripheral ends thereof, said upper spacer member being in the form of a pivot bar disposed partially between said outer and inner glass panes, said pivot bar having at least one hinge mounting section disposed below said outer glass pane but extending beyond the upper peripheral end of said inner glass pane so as to define an exposed mounting surface, and said panel supporting means including at least one hinge assembly for each panel, and said hinge assembly having a pivotally mounted hinge plate secured to said exposed mounting surface of said pivot bar hinge mounting section, including a side sealing member secured to at least one side spacer member of each window panel with a sealing portion extending outwardly from between the glass panes beyond side peripheral edges of the glass panes of the panel for side-by-side sealing engagement with the side sealing member of an adjacent panel when said panels are in the closed position.

5,622,415

PORTABLE WARDROBE FRAME

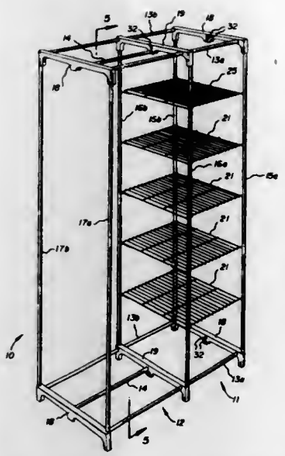
Donald H. Felsenthal, 5999 Wood Trail Rd., Memphis, Tenn. 38119, and Robert J. Rivers, Box 506, Hwy. 11, Marion, Ark. 72364

Filed Nov. 27, 1995, Ser. No. 563,143

Int. Cl.[6] A47B *47/00*

U.S. Cl. 312—265.4 **26 Claims**

15. In an array of stacked horizontal shelves having front and back corners and supported at the back corners in removable engagement with two spaced-apart poles at the rear of said shelves and two spaced-apart poles at the front of said shelves, said poles supporting said shelves at preselected stacked intervals, the improvement which comprises a series of transversely disposed holes along the length of said two rear poles, a series of obliquely disposed holes along the length of each of said two front poles, an upwardly extending prong at each of the back corners of said shelves and a downwardly extending prong at each of the front corners of said shelves, whereby said upwardly extending prongs fit into said transversely disposed holes and said downwardly extending prongs fit into said obliquely disposed holes.



5,622,416

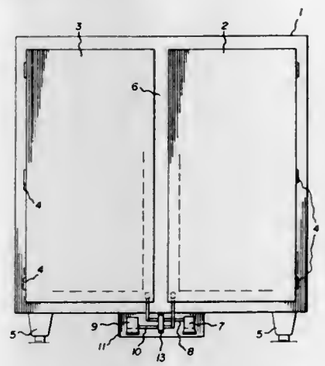
FOOT PEDAL DOOR OPENER DEVICE FOR A TWO-DOOR REACH-IN CABINET

Jerry Rainey, Tyrone, and Emory Taylor, Canton, both of Ga., assignors to Hoshizaki America Inc., Peachtree City, Ga.

Filed May 15, 1995, Ser. No. 441,594

Int. Cl.[6] A47B *95/00*

U.S. Cl. 312—319.9 **22 Claims**



1. A foot pedal door opener device for a commercial cabinet having side-by-side doors, said device comprising:

a cabinet housing having at least a left side door and a right side door;

a right side foot pedal for opening the left side door of the cabinet housing, said right side foot pedal being pivotably attached to a first pivot point on the cabinet housing;

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a left side foot pedal for opening the right side door of the cabinet housing, said left side foot pedal being pivotably attached to a second pivot point on the cabinet housing which is adjacent said first pivot point;

a first actuator member fixedly attached to said right side foot pedal, said first actuator member being disposed to engage said left side door when said right side foot pedal is actuated, thereby opening the left side door;

a second actuator member fixedly attached to said left side foot pedal, said second actuator member for engaging said right side door when said left side foot pedal is actuated, thereby opening the right side door;

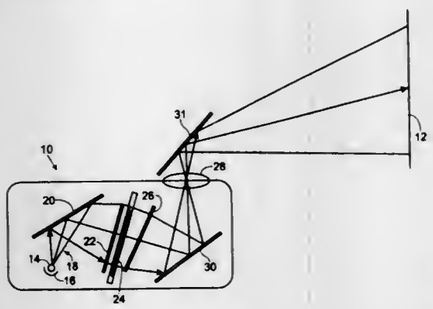
wherein said first actuator member extends from said right side foot pedal toward said left side foot pedal, and said second actuator member extends from said left side foot pedal toward said right side foot pedal, such that a portion of the actuator members are in an overlapping, non-interfering relationship.

5,622,417

INVERTIBLE AND ORTHOSCOPIC LIQUID CRYSTAL DISPLAY PROJECTOR

Arlie R. Conner, Tualatin, and David K. Booth, Tigard, both of Oreg., assignors to Lightware, Inc., Beaverton, Oreg.

Filed Nov. 1, 1995, Ser. No. 559,594
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—69 **14 Claims**



1. In a LCD projector having a light source that illuminates a LCD having an optical center substantially aligned with an illumination optical axis extending from the light source, the LCD panel providing display information that is projected toward a display screen to form a display image, the display image being projected at an elevation angle in an elevation direction toward the display screen, the improvement comprising:

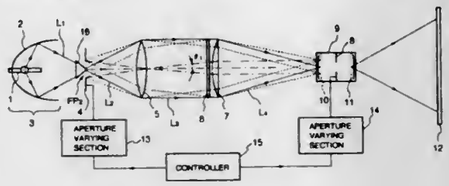
a field lens positioned to receive the display information from the LCD panel and form a display object corresponding to the display image, the field lens having an optical center offset from the optical center of the LCD panel in the elevation direction to define a projection optical axis that extends toward the display screen, the field lens being tilted about a tilt axis transverse to the projection optical axis and the elevation direction to cooperate with the offset of the field lens optical center to form an orthoscopic display image.

5,622,418

PROJECTION DISPLAY DEVICE

Akira Daijogo; Hiroshi Kida, and Shinsuke Shikama, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 24, 1995, Ser. No. 409,822
Claims priority, application Japan, Mar. 29, 1994, 6-059082; Oct. 13, 1994, 6-248090; Oct. 14, 1994, 6-249460; Dec. 13, 1994, 6-309107
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—97 **9 Claims**



1. A projection display device comprising:

a lamp for emitting white light;

a concave mirror for collecting the light emitted by said lamp;

a first diaphragm having an aperture through which the light emitted by said lamp passes and disposed in the vicinity of a focal point of the light collected by said concave mirror;

a collimation lens for rendering parallel the light passing through the aperture of said first diaphragm;

a scattering-type liquid crystal light valve for forming a transmitting-state region that transmits the light rendered parallel by said collimation lens and a scattering-state region that scatters the light rendered parallel by said collimation lens, thereby forming image on said liquid crystal light valve;

a field lens for converging the light rendered parallel by said collimation lens;

a projection lens having an entrance pupil disposed in the vicinity of a focal point of the light converged by said field lens, and magnifying and projecting the image on said liquid crystal light valve onto a screen;

a second diaphragm having an aperture and provided in said projection lens;

a first means for varying the aperture diameter of said first diaphragm; and

a second means for varying the aperture diameter of said second diaphragm, thereby varying the diameter of an entrance pupil of said projection lens.

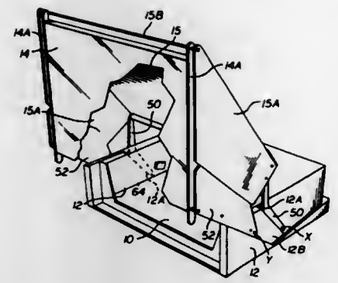
5,622,419

PORTABLE COLLAPSIBLE DISPLAY AND PROJECTION APPARATUS

Ron G. Holder, Laguna Niguel; John F. Forkner, South Laguna; Dick F. McClure, Jr., Sunset Beach, and Greg M. Rhoads, Irvine, all of Calif., assignors to Prolux Corporation, San Juan Capistrano, Calif.

Filed Jan. 3, 1995, Ser. No. 368,277
Int. Cl.[6] G03B *21/30*
U.S. Cl. 353—119 **9 Claims**

1. A collapsible display apparatus comprising: a base having first and second side walls mounted on opposite sides thereof; a translucent planar viewing screen; first linkage mechanisms pivotally coupled to each of said first and second side walls and pivotally coupled to each end of the bottom edge of said viewing screen; second linkage mechanisms pivotally coupled to each of said side walls at a point displaced from each of said first linkage mechanisms; a planar mirror member pivotally coupled to the top of said viewing screen and to each of said second linkage mechanisms with its reflective surface in facing relationship with the rear side of said screen; said screen and said mirror member being angularly movable from a viewing position in which said screen is supported in an upright position above said base and said mirror is supported



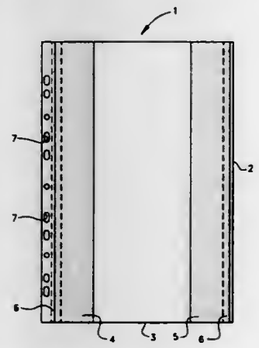
in an inclined position diverging downwardly from the top of said screen with its reflective surface facing the rear side of said screen, to a collapsed mode in which said screen is folded down over the top edges of said side walls and said mirror is folded down over the rear side of said screen with its reflective surface facing said screen and with its rear surface forming a protective cover for said screen.

5,622,420

STORAGE AND PROJECTION POCKET FOR OVERHEAD TRANSPARENCIES

Raymond Bengtsson, Täby, Sweden, assignor to Plastus Kreativ AB, Upplands Väsby, Sweden

PCT No. PCT/SE93/00823, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/09406, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 11, 1993, Ser. No. 416,800
Claims priority, application Sweden, Oct. 14, 1992, 9203019
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—120 **9 Claims**



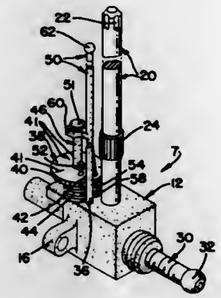
1. An overhead transparency storage and presentation pocket having widths that are smaller than the width of a light aperture on a standard overhead projector, said pocket comprising a transparent supportive film and a transparent cover film mounted on said supportive film, wherein at least one outwardly foldable, and light-permeable flap is disposed along at least one of the longitudinally extending edges of said pocket so as to form a coloured border outside an overhead transparency when said pocket is in a fold-out position.

5,622,421

VEHICLE HEADLAMP ASSEMBLY WITH CALIBRATION RESTRICTOR

Richard E. Turley, Jr., Anderson; David R. Mc Mahan, Noblesville, both of Ind., and William W. Froehner, Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1995, Ser. No. 578,315
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—66 **4 Claims**



1. In combination with a headlamp assembly having a lamp unit mounted on a fixed portion of a vehicle and supporting a light source, a first adjustment device and a second adjustment device located between the fixed portion of the vehicle and the lamp unit for adjusting the lamp unit in a vertical plane and in a horizontal plane, respectively, for aiming a light beam emitted by the light source, one of the adjustment devices comprising:

a housing generally secured to a fixed portion of the vehicle, the housing having an aim pointer;

a driven member mounted by the housing and extendable therefrom to set a distance between the fixed portion of the vehicle and the lamp unit;

a driver member rotatably mounted to the housing wherein rotation of the drive member determines the extension of the driven member from the housing;

a position indicator being spring biased to a first position for adjustable movement relative to the housing, and the position indicator having a zero ("0") marking therewith so that upon establishing the desired aim position of the lamp unit by rotating the driver member, the position indicator is located with the zero ("0") marking in line with the aim pointer; and

a restrictor retaining the position indicator in a second position to prevent movement of the position indicator zero ("0") marking from the aim pointer when the lamp unit is initially being adjusted.

5,622,422

FLASHING SNORKEL AND SCUBA DEVICE

Nicholas A. Rodgers, c/o: Shaw & Co. SJO 892, P.O. Box 025216, Miami, Fla. 33102

Continuation-in-part of Ser. No. 234,110, Apr. 28, 1994, which is a continuation-in-part of Ser. No. 72,390, Jun. 7, 1993, Pat. No. 5,330,282. This application May 11, 1995, Ser. No. 439,375
Int. Cl.[6] F21V *25/00*
U.S. Cl. 362—158 **21 Claims**

1. Underwater light assembly for swimmers comprising:

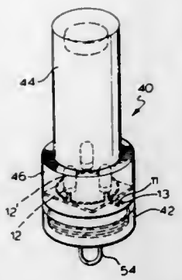
a body having:

a power source;

a circuit including circuit timing means for timing a flash interval;

a motion responsive switch responsive to movement of said body to perform alternate transitions between connected and disconnected states where it respectively connects and does not connect said battery to said circuit;

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at least one light source having ON and OFF states, said circuit being responsive to the switch transition from disconnected to connected states connect said light to said circuit causing it to turn on, then disconnect it, after said flash interval determined by said circuit timing means;

a portion of said body between said source and the body's exterior being adapted to transmit light from said light source, from said body.

5,622,423

HAND-CARRIED TRAFFIC CONTROL LIGHT

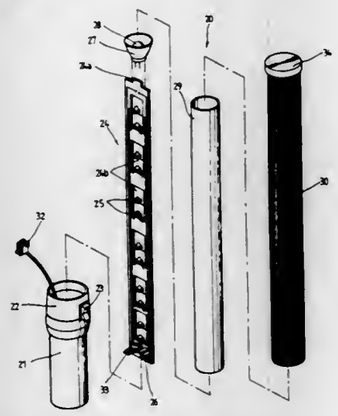
Hang-bok Lee, 340-88 Shindang-dong, Chung-ku, Seoul, Rep. of Korea

Filed Apr. 30, 1996, Ser. No. 640,021

Claims priority, application Rep. of Korea, Oct. 9, 1995, 95-28142

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—186 **1 Claim**



1. A hand-carried traffic control light comprising:

a cylindrical handle receiving batteries;

a switch cap threaded into said handle, said switch cap having a multistage switch on its outer wall;

a longitudinal LED carrier formed of a printed circuit board and electrically coupled to a connector of said switch cap thereby being connected to said switch, said LED carrier having a plurality of openings;

a circuit unit provided in said LED carrier and connected to both the batteries and the switch;

a plurality of LEDs mounted to said openings of the LED carrier respectively to be electrically connected to said circuit unit thereby being selectively applied with electric power of the batteries in accordance with a switching motion of said switch;

a holding protrusion provided on a top of said LED carrier;

a reflector and a flashing bulb held on said holding protrusion and connected to said circuit unit, said bulb being selectively applied with electric power of the batteries in accordance with the switching motion of the switch;

a color reflecting tube surrounding said LED carrier;

an external tube surrounding said color reflecting tube; and

a transparent cap fitted over a top of said external tube to protect both the reflector and the bulb.

5,622,424

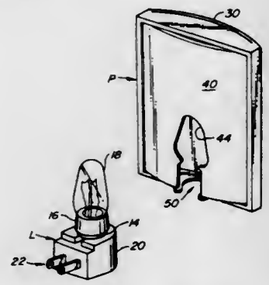
DECORATIVE NIGHT LIGHT WITH REPLACEABLE PHOTO HOLDER

Floyd W. Brady, 560 Hidden Valley Rd., Soquel, Calif. 94073

Filed Jan. 23, 1996, Ser. No. 590,229

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—226 **3 Claims**



1. A picture holder for bayonet connection to a standard right angle wall plug mounted night light having a plug comprising in combination:

an opaque frame having a transparent convex outwardly exposed arcuate front wall connected to a defined frame periphery including a top, two sides, and a bottom of the opaque frame;

the opaque frame defining a slot in the opaque frame permitting insertion and removal of pictures to be displayed;

a backing secured to the opaque frame having an arcuate profile opposite and complimentary to the transparent convex outwardly exposed arcuate front wall of the opaque frame to form an enclosed interior to the opaque frame;

the backing defining a profile intimately surrounding the night light to which the opaque frame mounts whereby the opaque frame with picture mounted can be inserted and secured to the right angle wall plug mounted night light with a first portion of a bulb of the night light exposed to the enclosed interior of the opaque frame and a second portion of the night light is exposed to a wall of a wall mount plug immediately behind the frame; and,

the frame including at the bottom thereof the bayonet connection fitting to the night light.

5,622,425

MINIATURE LIGHT SET

Te H. Lin, 5F, No. 38, Lane 1050, Ming-Hoo Rd., HsinChu City, Taiwan

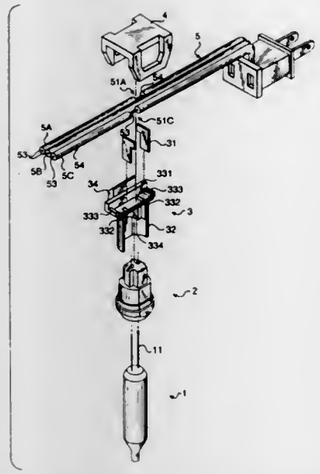
PCT No. PCT/US94/00673, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/16480, PCT Pub. Date Jul. 21, 1994

Continuation-in-part of Ser. No. 3,454, Jan. 12, 1993, Pat. No. 5,339,232. This PCT application Jan. 12, 1994, Ser. No. 481,471

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—249 **39 Claims**

1. A light set comprising



a cord having at least two wires, each wire comprised of a conductor and an insulation surrounding said conductor, two portions of said wires wherein in each said portion a part of said insulation is missing so as to expose said conductor;

a plurality of lampholders having two ends, each lampholder comprised of:

a longitudinal wireway at one end to receive a section of at least one wire of said cord,

a housing to receive a lamp at the other end, and

two conductor pieces located in said wireway, each said conductor piece having a first end portion extending into said housing and in electrical contact with a lamp when a lamp is received by said lampholder, and a second end portion accessible from said wireway, said exposed conductors in said wire portions being located in said wireway so as to make physical contact with said conductor pieces; and

means for urging said conductor pieces and said exposed conductors into physical contact with each other.

5,622,426

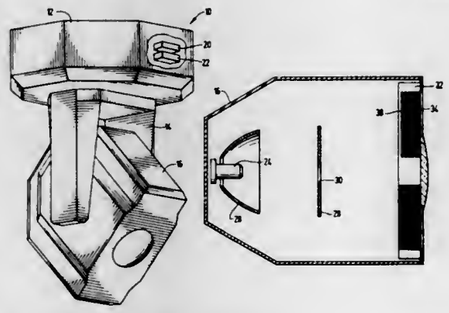
WASH LIGHT AND METHOD

Richard J. Romano, 2478 Peacock La., Corona, Calif. 91720, and Robert A. Fry, 22265 Tiburon St., Laguna Hills, Calif. 92653

Continuation-in-part of Ser. No. 350,094, Nov. 29, 1994, abandoned, and Ser. No. 383,892, Feb. 6, 1995, abandoned. This application May 1, 1995, Ser. No. 431,855

Int. Cl.[6] F21P *3/00*

U.S. Cl. 362—281 **8 Claims**



1. A compact wash light comprising:

a housing having a stationary portion, a yoke portion and an element enclosure portion;

a high-powered halide discharge light source mounted within said enclosure portion of said housing for providing light;

an elliptical reflector mounted within said enclosure portion of said housing for focusing said light and forming a light beam which defines an optical path;

a light barrier having a fixed size aperture mounted downstream of said light source on said optical path and within said enclosure portion of said housing;

an elongated compact frame mounted downstream of said light source and said light barrier on said optical path and within said enclosure portion of said housing for altering light from said light source;

a plurality of dichroic filters, a dowser in the form of a panel and a plurality of diffusion panels in close proximity to one another mounted to said frame and slidable relative thereto; and

an output lens mounted within said enclosure portion of said housing.

5,622,427

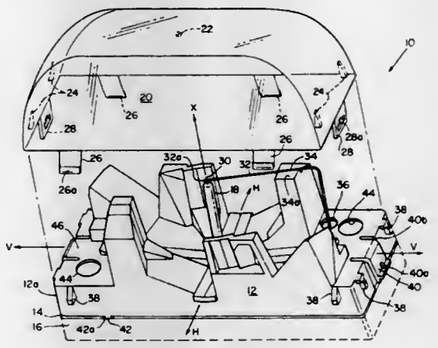
EMERGENCY STROBE LIGHT

Thomas M. Lemons, Marblehead, and Lawrence J. Feroli, West Townsend, both of Mass., assignors to Simplex Time Recorder Company, Gardner, Mass.

Continuation of Ser. No. 116,715, Sep. 3, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 537,413

Int. Cl.[6] F21V *7/00*

U.S. Cl. 362—300 **35 Claims**



1. An emergency strobe light comprising;

a base;

a bulb extending outwardly from the base along an axis; and

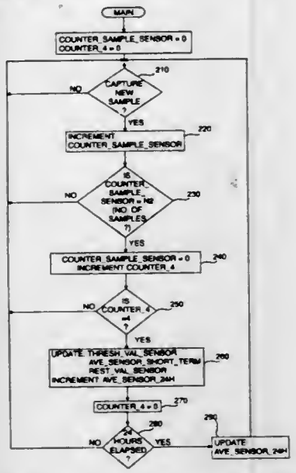
reflector means, comprising reflectors on the base, for directing light output from the bulb in a first beam concentrated substantially along a first orthogonal plane and in a second beam concentrated substantially along a second orthogonal plane, the orthogonal planes being substantially orthogonal to each other and intersecting along the axis of the bulb, the reflector means limiting at least 70% of the light output to the first and second beams.

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5,622,428
METHOD AND APPARATUS FOR DETERMINATION OF A CRITERION OF ACTIVITY OF A RATE MODULATION PARAMETER SENSOR IN AN ACTIVE IMPLANTABLE MEDICAL DEVICE

Jean-Luc Bonnet, Vanves, France, assignor to Ela Medical S.A., Montrouge, France

Filed Dec. 27, 1995, Ser. No. 578,967
Claims priority, application France, Dec. 30, 1994, 94 15912
Int. Cl.[6] G06F *15/00*
U.S. Cl. 128—630 **27 Claims**



1. A process for determining a criterion of activity of a sensor for measuring a parameter serving to control at least one function in an active implantable medical device, comprising the steps of:

a) acquiring successive samples of a representative value of the parameter from a signal collected by the sensor;

b) calculating over a first interval of time a first average value (AVE_SENSOR_SHORT_TERM) of the activity of the sensor from the samples acquired during said first time interval;

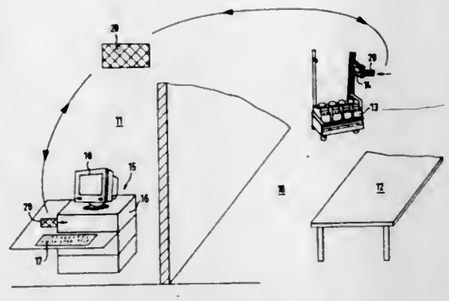
c) calculating over a second interval of time, the second time interval being greater than the first, a second average value (AVE_SENSOR_24H) of the activity of the sensor from the samples acquired during said second time interval; and

d) determining a criterion of activity of the sensor based on a comparison of the first average value and the second average value.

5,622,429
MEDICAL APPARATUS FOR TRANSFERRING DATA BETWEEN A DATA MONITORING UNIT AND A REMOTE DATA ANALYSIS UNIT VIA A CONTACTLESS MEMORY CARD

Werner Heinze, Finning, Germany, assignor to Jostra Medizintechnik GmbH & Co. KG., Hirrlingen, Germany

Filed Jan. 21, 1994, Ser. No. 184,971
Claims priority, application Germany, Jan. 21, 1993, 43 01 524.7
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—200.08 **7 Claims**



1. A medical apparatus for an operating room, said medical apparatus comprising electrically-powered means (13) for generating data regarding operation steps in the operating room and for at least one of controlling and performing said operation steps in the operating room, data monitoring means (14) for monitoring and collecting said data generated by said electrically-powered means (13), said data monitoring means (14) being located in the operating room during the performing of the operation steps; data analysis means (15) for analyzing said data collected and monitored by said data monitoring means (14), said data analysis means (15) being separate from said data monitoring means (14) and located in another room different from said operating room, wherein said data analysis means (15) includes at least one microprocessor with data storage means, at least one display device and at least one keyboard input device; and means for transferring data between said data monitoring means (14) and said data analysis means (15), said means for transferring data solely consisting of at least one portable and removable memory card (20) so that connecting cables for said data transfer electrically connecting the data analysis means (15) with the data monitoring means (14) are eliminated;

wherein said data monitoring means includes means for releasible electrical connection of said at least one portable and removable memory card (20) with said data monitoring means (14) to receive said data from said data monitoring means (14) and said data analysis means (15) includes means for releasible electrical connection of said at least one portable and removable memory card (20) with said data analysis means (15) to transfer said data to said data analysis means;

wherein said at least one portable and removable memory card (20) has no external electrical contacts so that transfer of said data between said data monitoring means (14) and said data analysis means (15) is contactless and said data analysis means (15) comprises a personal computer (16) with a receiving slot device in which said at least one portable and removable memory card (20) is insertable after removal from said data monitoring means (15).

5,622,430
METHOD OF TESTING THE HEAT INSULATION ACTION OF BODIES ESPECIALLY OF HEAT INSULATION BODIES

Hans D. Pletka, Freigericht; Ulrich Reichau, Mainaschaff, and Michael Schmidt, Hanau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Continuation-in-part of Ser. No. 334,341, Nov. 2, 1994, abandoned. This application Mar. 14, 1995, Ser. No. 404,089
Claims priority, application Germany, Nov. 5, 1993, 43 37 840.4
Int. Cl.[6] G01N *25/00;25/18*
U.S. Cl. 374—45 **1 Claim**

1. A method of testing heat insulation shaped bodies for purposes of evaluation comprising

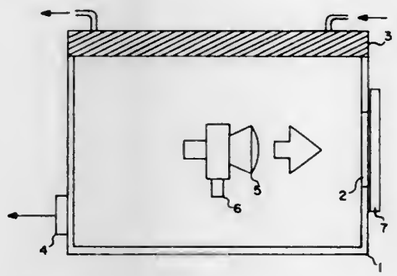
placing a shaped heat insulation body having a surface in a measuring space, measuring the initial temperature of said heat insulation body under ambient conditions prior to heating;

subjecting said shaped heat insulation body to thermal radiation for contactless heating of said surface for a sufficient period of time to heat at least said surface of said body to an elevated temperature;

removing said radiation from said body and measuring the initial temperature decrease of the surface with a contactless temperature measurement means to obtain a temperature/time profile of said surface; calculating the thermal conduction coefficient lk l as follows:

$$|k| = \frac{1}{t} \ln \frac{\theta(t) - \theta_u}{\theta_o}$$

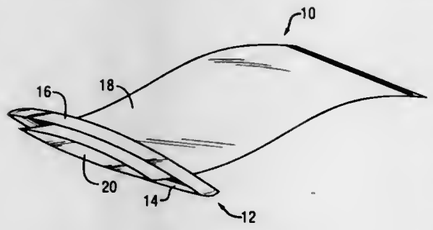
and comparing lk l with a standard thermal conduction coefficient, wherein (t) is time, θ_o is the temperature of the surface of said body after heating, θ_u is the temperature of the surroundings, and $\theta(t)$ the surface temperature at time (t), whereby said heat insulation shaped body is evaluated.



5,622,431
EXTERNAL ZIPPER CLIP FOR A BAG

Steven H. Simonsen, Neenah, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Filed Jun. 26, 1995, Ser. No. 494,454
Int. Cl.[6] B65D *33/16*
U.S. Cl. 383—63 **12 Claims**



1. A reclosable bag arrangement, comprising:

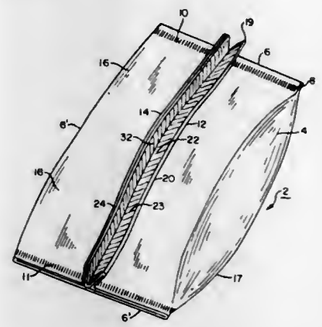
a bag having first and second opposing films; and

an external zipper clip including first and second opposing closure profiles adapted to releasably engage each other, each of the first and second closure profiles having opposing ends, the opposing ends of the first closure profile being permanently attached to the respective opposing ends of the second closure profile to form an opening between the first and second opposing closure profiles, the first and second opposing films extending through the opening in the zipper clip between the first and second closure profiles, the zipper clip closing the bag in response to interlocking the first and second closure profiles by applying pressure to said first and second closure profiles with the first and second films interposed therebetween, the zipper clip not being permanently attached to the bag such that the zipper clip is separable from the bag in response to disengaging the first and second profiles.

5,622,432
BAG WITH OPENING TABS

William Zicker, 41 A2 Sandra Clr., Westfield, N.J. 07090

Filed Aug. 3, 1995, Ser. No. 510,851
Int. Cl.[6] B65D *30/10;33/22*
U.S. Cl. 383—210 **17 Claims**



1. A container comprising:

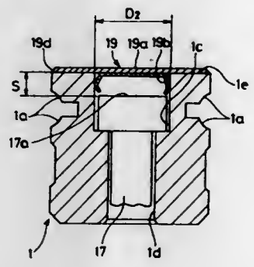
a cylindrical member having opposing juxtaposed flexible panels of substantially the same dimensions, the panels being bonded together at at least one end to form a seal, said member having opposing edges each extending in a direction transverse the seal; and

a pair of finger gripping tabs in adjacent relationship on one of said panels between said edges at said at least one end, said tabs and opposing member edges each being arranged for finger gripping by a pair of corresponding fingers such that a force applied by pulling in opposing directions one of said tabs and one of said opposing edges with the other of said tabs therebetween breaks the seal and opens the at least one end wherein said tabs are in sufficiently closely spaced position on the one panel side such that the tabs form an approximate V-shaped channel therebetween forming a root wherein a side of each tab is joined at the root.

5,622,433
TOP COVER ALONG WITH A TRACK RAIL UNIT AND GUIDE UNIT ON WHICH IT IS EQUIPPED

Osamu Suzuki; Kengo Hidano, and Takaaki Hagiya, all of Kanagawa, Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1996, Ser. No. 604,845
Claims priority, application Japan, Mar. 7, 1995, 7-097420
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 **14 Claims**



1. A top cover composed of a body portion extending along the lengthwise direction of a track rail that covers insertion holes formed in said track rail for insertion of fastening members for

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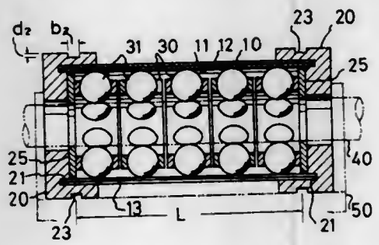
fixing on a prescribed base, and an engaging portion that engages with said insertion holes to mount said body portion on said track rail.

5,622,434

LINEAR BEARING STRUCTURE

Shigeo Takahashi, 1-21-16 Soshigaya, Setagaya-ku 157, Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 636,794
Claims priority, application Japan, Jun. 28, 1995, 7-184726
Int. Cl.[6] F16C *29/04*
U.S. Cl. 384—49 **7 Claims**



1. A linear bearing structure comprising:
a bearing bush having ends and a slit having a predetermined width and extending along the axis of said bush over the entire length thereof so that said bush can be circumferentially elastically compressed by a magnitude corresponding to the width of said slit, said bush including an outer metal cylinder and an inner cylindrical lining layer formed by a material having a small coefficient of friction and a small coefficient of wear;
a plurality of annular ball retainers axially arranged inside said bush, each of said annular ball retainers circumferentially holding a plurality of bearing balls spaced from each other and contacting the inner peripheral surface of said cylindrical lining layer; and
a pair of annular endpieces respectively removably secured to the ends of said bush to confine said annular ball retainers therein, each of said endpieces having at the inner side thereof an annular groove of a predetermined width and depth, being coaxial with said bush and having a diameter smaller than that of said bush so that by compressing said bush into the annular grooves of said endpieces at the ends of said bush, said bush and said endpieces can be elastically fitted together.

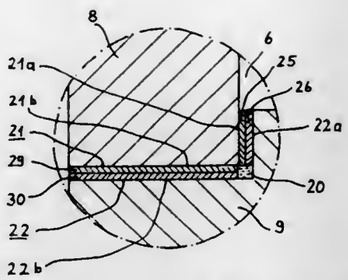
5,622,435

PLAIN BEARING HAVING A BEARING GAP FILLED WITH LIQUID METAL

Bernhard Hiller, Buckenhof; Edwin Gemmel; Roland Koeppel, both of Erlangen, and Wolfgang Kuehnel, Rudolstadt, all of Germany, assignors to Siemens Aktiengeselischaft, Munich, Germany

Filed Mar. 19, 1996, Ser. No. 617,567
Claims priority, application Germany, Mar. 20, 1995, 19 510 067.0
Int. Cl.[6] F16C *32/06;* **H01J** *35/10*
U.S. Cl. 384—100 **8 Claims**

1. In a plain bearing having a bearing gap filled with liquid metal and having two relatively movable plain bearing parts each having a surface contiguous to said liquid metal and said surfaces being disposed adjacent each other and forming a gap placing said bearing gap in communication with a surrounding environment, the improvement comprising:
a layer disposed on at least one of said surfaces in an area of said at least one of said surfaces contiguous with said liquid metal,



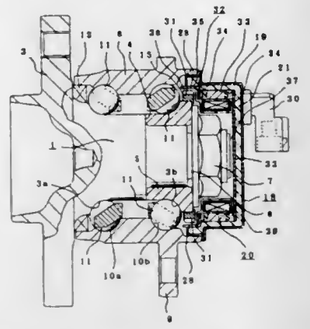
said layer comprising a material effective as a wetting agent for said liquid metal.

5,622,436

ROLLING BEARING UNIT FITTED WITH A ROTATIONAL SPEED DETECTION UNIT

Kouichi Morita; Hideo Ouchi, and Junshi Sakamoto, all of Fujisawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 513,030
Claims priority, application Japan, Aug. 11, 1994, 6-189276; Dec. 8, 1994, 6-305053; Jan. 30, 1995, 7-12969; Feb. 17, 1995, 7-29560; May 31, 1995, 7-133601
Int. Cl.[6] F16C *19/08*
U.S. Cl. 384—448 **15 Claims**



1. A rolling bearing unit fitted with a rotational speed detection unit comprising:
a stationary outer ring having an inner peripheral face formed with a double row outer ring raceway thereon and an inner end opening,
a rotatable inner ring assembly having an outer peripheral face provided opposite to the inner peripheral face of the stationary outer ring and formed with a double row inner ring raceway thereon,
a plurality of rolling bodies provided so as to be freely rotatable between the outer ring raceway and the inner ring raceway,
an annular tone wheel made from a magnetic material, fixed to an end portion of the inner ring assembly, and having a surface portion formed with a rotating cutout section for detection with a plurality of cutouts evenly spaced with a pitch in a circumferential direction,
a cover fixed to the inner end opening of the outer ring and containing a synthetic resin therein, and
an annular sensor comprising an annular coil, an annular permanent magnet and at least one annular stator and embedded in the synthetic resin retained in the cover so as to be faced to the rotating cutout section of the tone wheel, wherein the coil of the sensor is located radially inward than the rotating cutout section of the tone wheel.

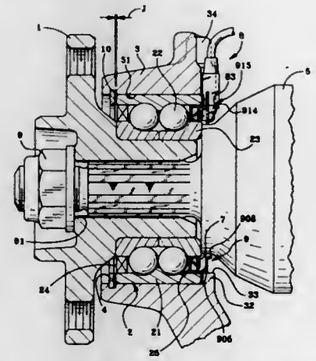
a seal carrier positioned radially inward of the support shell, the seal carrier having an inner face and an outer face, the bearing cover characterized by:
a fluid tight interface joining the support shell and the seal carrier so that the support shell and seal carrier define a fluid tight outer wall; and
a heatshield joined to the seal carrier by a fluid tight joint, the heatshield also being joined to the outer end of the support shell by an expansion joint to accommodate differential thermal response between the outer wall and the heatshield, the outer wall and the heatshield defining a stagnant insulating air cavity for thermally shielding the bearing compartment from the surrounding local environment.

5,622,437

DEVICE FOR FIXING A SENSOR TO A ROLLING-ELEMENT BEARING

Denis Alff, Le Pont de Claix, France, assignor to The Torrington Company, Torrington, Conn.

Filed Feb. 29, 1996, Ser. No. 608,832
Claims priority, application France, Oct. 20, 1995, 95 12339
Int. Cl.[6] F16C *19/08*
U.S. Cl. 384—448 **14 Claims**



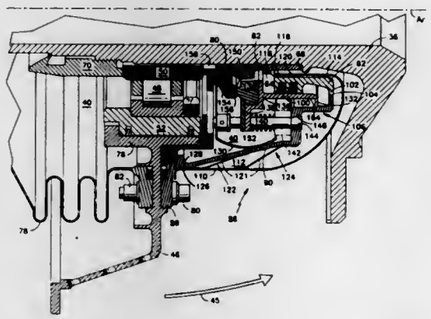
1. A device for fixing a sensor for detecting a coding element linked to a movable ring of a bearing, the movable ring being separated from a fixed ring of the bearing by rolling elements, axial movement of the fixed ring being limited by axial stop means, the device comprising:
a support member adapted for mounting of the sensor, the support member being positioned between the fixed ring and the axial stop means;
elastic means on the support member for biasing the support member away from the axial stop means to maintain a constant gap between the coding element and the sensor.

5,622,438

FIRE RESISTANT BEARING COMPARTMENT COVER

Martin J. Walsh, Farmington, and Karl J. Yaeger, Coventry, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 12, 1995, Ser. No. 501,406
Int. Cl.[6] F16C *33/72;* **F01D** *25/24;* **F16J** *15/16*
U.S. Cl. 384—624 **6 Claims**



1. A fire resistant bearing cover for enclosing at least a portion of a bearing compartment in a gas turbine engine, including
an axially extending support shell having a radially diverging outer end and a radially converging inner end,

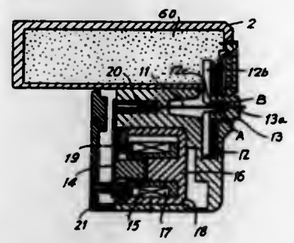
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5,622,439

INK-SUPPLY TANK FOR A DOT MATRIX PRINTER

Takashi Suzuki; Masanao Matsuzawa, and Yoshinori Miyazawa, all of Shiojiri, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 405,280, Mar. 14, 1995, Pat. No. 5,560,720, which is a continuation of Ser. No. 150,676, Nov. 10, 1993, Pat. No. 5,421,658, which is a continuation of Ser. No. 962,959, Oct. 16, 1992, Pat. No. 5,328,279, which is a continuation of Ser. No. 612,010, Nov. 9, 1990, Pat. No. 5,156,471, which is a continuation of Ser. No. 401,539, Aug. 31, 1989, Pat. No. 4,969,759, which is a continuation of Ser. No. 161,216, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 35,251, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 873,871, Jun. 12, 1986, abandoned, which is a continuation of Ser. No. 659,816, Oct. 11, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 465,630
Claims priority, application Japan, Oct. 13, 1983, 58-191529; Nov. 29, 1983, 58-224892; May 22, 1984, 59-102841; May 22, 1984, 59-102842; May 22, 1984, 59-102843
Int. Cl.[6] B41J *2/305*
U.S. Cl. 400—124.1 **212 Claims**



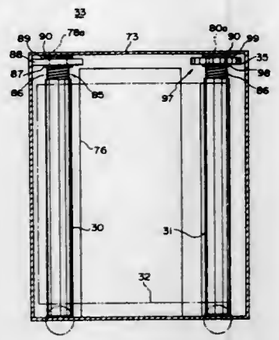
1. A dot matrix printer comprising:
an ink-supply tank having a first wall and a second wall extending substantially in a perpendicular direction to said first wall, said first wall having a length as viewed in a direction therealong extending from said second wall;
an ink absorbing member formed of a porous material mounted within the ink-supply tank;
a printing mechanism for applying ink from said ink absorbing member to effect dot matrix printing; and
an ink receiving and transmitting member comprising an elongated member, said elongated member extending from said first wall into the interior of said tank at a position between the midpoint of said length of said first wall and said second wall, said elongated member being formed with an opening at the distal end thereof and with a passage extending longitudinally therealong from said opening along the length of said elongated member to permit ink to flow from said opening toward said printing mechanism, at least a portion of said elongated member defining at least said opening and a portion of said passage being defined by a non-porous material, said elongated member engaging a portion of said ink absorbing member at least in the region of said ink absorbing member facing said opening.

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5,622,440
INK FILM CASSETTE HAVING A TORQUE APPLYING DEVICE THEREIN

Junichi Yamamoto, Hadano; Chiharu Imaseki, Yokohama; Hideaki Shimizu, Inagi, and Atsuhiko Shimoyama, Machida, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 12, 1995, Ser. No. 489,593
Claims priority, application Japan, Jun. 14, 1994, 6-132305
Int. Cl.[6] B41J *32/00*
U.S. Cl. 400—234 **15 Claims**

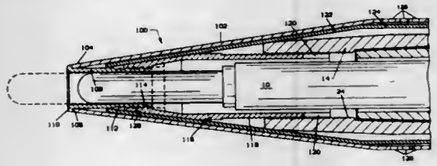


1. An ink film cassette which is detachably attached to a thermal transfer recording device, comprising:
- a supply reel winding an ink film therearound;
- a take-up reel which rolls up the ink film fed out from said supply reel;
- a frame accommodating said supply reel and said take-up reel; and
- a torque apply means provided between said supply reel and said frame so as to apply torque to said supply reel.

5,622,441
WRITING INSTRUMENT HOUSING

Raymond E. Lambert, Sr., 7 Heron La., P.O. Box 334, Catamet, Mass. 02534

Filed Jun. 19, 1995, Ser. No. 492,246
Int. Cl.[6] B43K *7/00;7/12*
U.S. Cl. 401—209 **6 Claims**

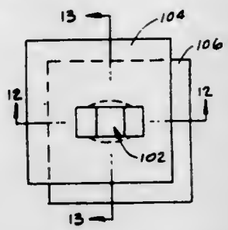


1. A writing instrument housing comprising an elongated, cylindrical outer shell having a tapered open end,
- a retraction/protraction mechanism received within the outer shell, the mechanism having an end facing the tapered end formed with an internal thread,
- a tip member fitting within the open end of the outer shell, the tip member being generally cylindrical having a longitudinally extending bore extending between first outer and second inner ends and having the first outer end formed with a radially extending cylindrical flange forming a recessed cylindrical seat contiguous with the distal portion of the first outer end, the tapered end of the outer shell received on the seat so that the tapered end is essentially flush with the outer perimeter of the radially extending cylindrical flange at the first outer end of the tip member and with the entire tip member, except for the flange, received within the outer shell, the tip member having an external thread at the second inner end of the tip member, and
- a cylindrical intermediate bushing element having an internal thread at one end of the bushing element for threaded engagement with the external thread of the tip member and an external thread on an opposite end of the intermediate element for threaded engagement with the internal thread of the mechanism so that the tip member is locked into place with the outer shell received in the cylindrical seat.

5,622,442
APPARATUS AND METHOD FOR FORMING A CLINCH JOINT

Louis C. Schleicher, Warren, Mich., assignor to Tech-Line Engineering Co., Warren, Mich.

Division of Ser. No. 188,391, Jan. 27, 1994, Pat. No. 5,490,310, which is a division of Ser. No. 989,982, Dec. 11, 1992, Pat. No. 5,315,743, which is a continuation of Ser. No. 526,066, May 18, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,753
Int. Cl.[6] F16B *5/07;* **B21D** *39/00*
U.S. Cl. 403—282 **4 Claims**

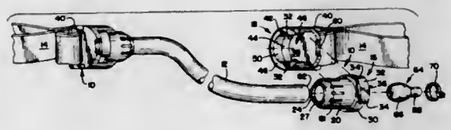


1. A lance-type clinch joint formed using a punch and die and a plurality of overlapping sheets of deformable material, said joint comprising two parallel of non-intersecting slits which form cords of a circle cut through the overlapping sheets to define a central spot connected to the remainder of the sheets by a plurality of webs, said central spot having been squeezed together in a direction substantially perpendicular to the sheets to plastically deform the central spot radially outwardly, and said overlapping sheets having been squeezed together in a direction substantially perpendicular to the overlapping sheets in a local region adjacent the nonintersecting slits to plastically deform the sheets radially inwardly thereby securely fastening the plurality of sheets together;
- wherein the local regions adjacent slits which are squeezed together are each generally bounded by the circle and one of the slits to define a chordal shape indentation thereby minimizing the stress in the sheets in the region of the termination of the slits while achieving sufficient plastic deformation to form a strong joint.

5,622,443
COUPLINGS

David L. Lampert, Monticello, and Cary Hamilton, Sadorus, both of Ill., assignors to Dancing Angels, Inc., Monticello, Ill.

Filed Oct. 18, 1995, Ser. No. 544,462
Int. Cl.[6] F16B *7/04*
U.S. Cl. 403—294 **17 Claims**

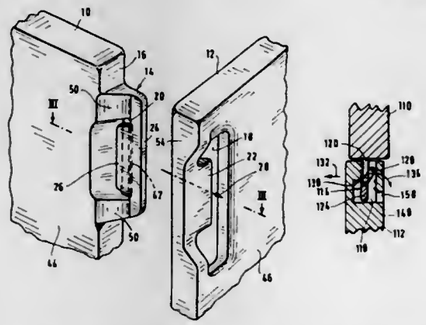


1. A coupling for coupling two objects together comprising:
- a first element adapted to have one of the two objects attached thereto, said first element comprising a shaft having a given cross-sectional dimension, and a shoulder extending from said shaft such that said shoulder together with said shaft have a cross-sectional dimension greater than said given cross-sectional dimension of said shaft;
- a second element adapted to have the other of the two objects attached thereto, said second element comprising a sidewall having first and second openings and defining a cavity for receiving said first element therein by insertion of said shaft and shoulder of said first element through said first opening with said shaft extending from said second opening, said sidewall having a shoulder overlying said shoulder on said first element when said first element is inserted in said cavity to prevent removal of said first element through said second opening, a portion of said first opening being defined by said shoulder of said second element, said portion having a width somewhat smaller than said given cross-sectional dimension of said shaft and wherein at least one of said elements includes a flexible portion so that as said first element is inserted into said cavity, the flexible portion flexes to permit passage of said shaft past said portion of said first opening defined by said shoulder of said second element; and
- a cam on said first element cooperating with said second element when at least one of said elements is rotated to cause said first element to be discharged from said cavity to separate said first element from said second element.

5,622,444
CONNECTING ARRANGEMENT

Oddbjörn Grönnevik, Nesbru, Norway, assignor to Krupp Kautex Maschinenbau GmbH, Bonn, Germany

Filed Jun. 1, 1995, Ser. No. 456,591
Claims priority, application Germany, Jun. 3, 1994, 44 19 371.8
Int. Cl.[6] B25G *3/00*
U.S. Cl. 403—316 **18 Claims**

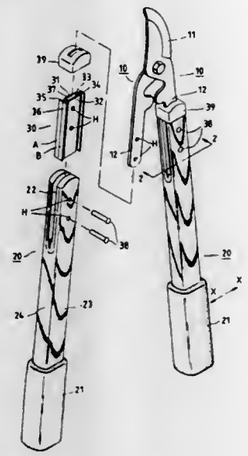


1. A connecting arrangement on first and second parts which are to be connected together, comprising: on the first part, an extension at a region which in the connected position of the parts is towards the second part; and on the second part, at a region which in said connected position is towards the first part, an opening into which the extension on the first part is engaged in said connected position of the parts, the opening having a boundary wall; an aperture in the extension; a projection disposed in the opening in the second, part and adapted to engage into the aperture in the extension on the first part in said connected position of the parts; an arresting tongue in the region of the aperture in the extension, the extension and the arresting tongue being insertable into the opening, upon movement of the first part toward the second part, and the arresting tongue being pivotable by the projection from a first, inserted position, upon movement of the first part relative to the second part in a direction transverse to a direction of insertion of the extension into the opening, to a second, securing position in which the arresting tongue is displaced and bears against a region of the boundary wall of the opening in the second part to secure the parts in the connected position.

5,622,445
DEVICE FOR CONNECTING WOODEN HANDLE AND BLADE OF A GARDENING TOOL

Fu-Chi Gou, No. 20, Lane 363, Fu-Chien Rd., Fu-Shin Hsian, Chang-Hua Hsien, Taiwan

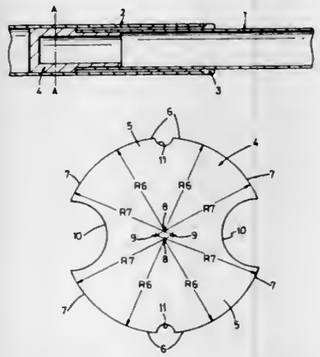
Filed Oct. 11, 1995, Ser. No. 540,954
Int. Cl.[6] B25G *3/26*
U.S. Cl. 403—375 **10 Claims**



1. In a gardening tool of the type having:
- two blades (**10**) wherein each of the blades includes a cutting portion and a generally flat tang (**12**);
- a pivot for allowing said two blades to pivot with respect to each other:
- a handle (**20**) having side faces and two end faces for attaching said each blade thereto, said handle including a slot (**22**) extending from one of said end faces and terminating at a location remote from another of said end faces and also extending from one of said side faces to another of said side faces to define a bifurcated end of the handle, wherein:
- the improvement comprising:
  - a connection member (**30**, **40**) including inner frame means for receiving the tang therewithin and being disposed within the slot of the handle and outer frame pieces adjoining the inner frame means for securely embracing only the side faces of the handle having the slot thereon; and
  - at least one transverse fastener (**38**) extending through said handle, tang, and connection member to securely fasten the tang to the handle;
  - whereby the connection member is adapted to transfer forces between the tang and the handle.

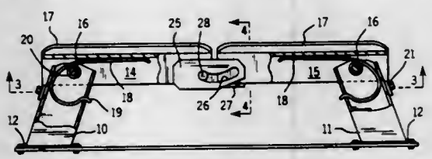
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5,622,446
LOCKABLE TELESCOPING MEMBERS
George H. Hibberd, Sheffield, England, assignor to James Neill Holdings Limited, Sheffield, England
Filed Jul. 6, 1995, Ser. No. 499,105
Claims priority, application United Kingdom, Jul. 7, 1994, 9413689
Int. Cl.[6] B25G 3/00; F16B 7/10
U.S. Cl. 403—377 1 Claim



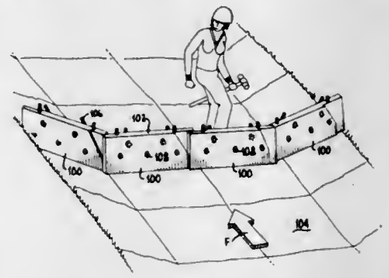
1. Lockable telescopic members comprising an outer tube of generally oval cross-section, a circular inner member able to be slidably and rotatably located within the outer tube, and a locking member located on the inner member, said locking member having opposed, curved lobes on radii struck from spaced centres to provide a distance between dead centre positions of each lobe less than a major axis of the outer tube and greater than a minor axis of the outer tube, and to provide a minor axial width of the lobe less than a minor axial dimension of the outer tube, the peripheral extent of each lobe being such that outer extremities of the lobes lie in close, but spaced, relationship to an inner surface of the outer tube when the axial line between the respective dead centres of each lobe is in alignment with the major axis of the outer tube, a connecting surface between extremities of the lobe to each side of the member being indented, to ensure that the sides of the member do not foul on the inner surface of the outer tube, and there being a sleeve provided having an oval outer profile to match that of the outer tube and having a circular bore corresponding to the outer diameter of the circular inner member, and whereby the sleeve is a push fit in one end of the outer tube and the inner member is a sliding fit in the sleeve.

5,622,447
SELF-LEVELING BOAT HULL SUPPORT
Oscar A. Fournier, 1859 Shore Dr. South, #208, St. Petersburg, Fla. 33707
Continuation-in-part of Ser. No. 370,069, Jan. 9, 1995, abandoned. This application Sep. 8, 1995, Ser. No. 525,934
Int. Cl.[6] B63C 5/04
U.S. Cl. 405—7 11 Claims



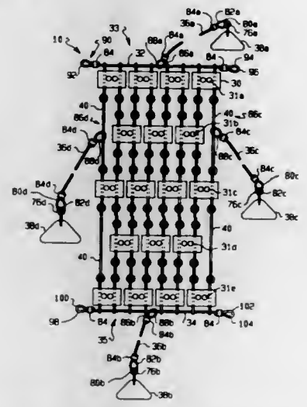
1. A boat hull support, comprising:
a pair of hull support members each pivotally mounted intermediate its ends to a respective upright and having adjacent inner ends;
a cam attached to the inner end of one of the hull support members; and
a cam follower attached to the inner end of the other hull support member and engaging the cam,
the cam having a cam surface developed to translate movement of one hull support member about its respective upright resulting from a load on the one hull support member into equal and opposite movement of the other hull support member about its respective upright.

5,622,448
PANEL DITCH CHECK FOR TEMPORARY EROSION AND SEDIMENT CONTROL
Michael R. Baum, Springfield, and Leo R. Baum, Pleasant Hope, both of Mo., assignors to Panel Products, Inc., Springfield, Mo.
Filed Nov. 13, 1995, Ser. No. 555,906
Int. Cl.[6] E02B 7/04
U.S. Cl. 405—15 17 Claims



1. A panel ditch check for temporary installation in a ditch or swale that occasionally carries stormwater run-off, the panel comprising:
a body substantially of a polymer or resinous moldable material;
the body, when oriented in a given upright position, having upper and lower edges extending between spaced left and right edges, as well as having a generally planar front surface to orient to face an upstream direction of the ditch or swale, and a rear surface spaced from the front surface;
wherein the body is formed with a series of water-conducting passages which extend through the front and rear surfaces thereof, and which are arranged to permit water to pass-through the panel at various elevations between the upper and lower edges;
said passages being sized and configured to regulate the pass-through of storm water run-off such that, when the panel is temporarily installed in the ditch or swale as generally oriented in the given upright position, the panel partly dams up and slackens the rate of the stormwater run-off in the ditch or swale, and thereby promotes the accumulation of sediment before the front surface thereof, and thus provides temporary erosion and sediment control;
wherein the panel body is further configured to include a brace portion on the rear surface thereof, to stabilize the panel body on a bottom of the ditch or swale in the given upright position; and
wherein the panel body is further configured with means for achieving anchoring the panel body into a bottom of the ditch or swale via an anchor stake.

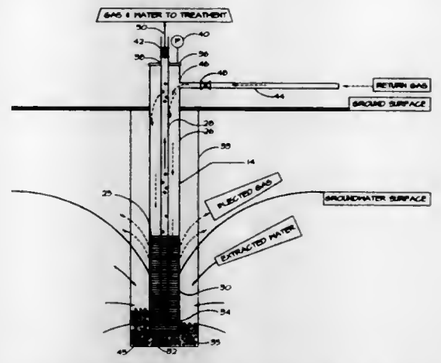
5,622,449
METHOD AND APPARATUS TO CONTROL BEACH AND SAND DUNE EROSION
Albert J. Essay, Jr., 403 Highwood Clr., Jupiter, Fla. 33458
Filed Nov. 7, 1995, Ser. No. 554,471
Int. Cl.[6] E02B 3/12
U.S. Cl. 405—19 12 Claims



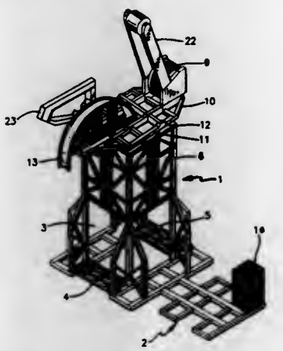
1. A mat assembly to prevent beach and sand erosion, the mat assembly having a top or dune side and a bottom or water level side, comprising:
a plurality of blocks, the blocks being arranged adjacent to each other lengthwise to form a plurality of latitudinal rows;
at least two rods extending longitudinally from each block, the rods having a rod first end and a rod second end, the rod first end extending from the block toward the mat top side, and the rod second end extending from the block toward the mat bottom side, the rod first end having an extension, the rod second end having a loop with a loop passageway, the rod extensions of one row communicating with the loop passageways of an adjacent row so that the blocks are flexibly connected;
a first mat cable extending through the rod extensions at the top row;
a second mat cable extending through the rod loop passageways at the bottom row;
at least one anchor being attached to the mat assembly, the anchor being buried in the sand or soil.

5,622,450
PRESSURE EXTRACTION PROCESS FOR REMOVING SOIL AND GROUNDWATER CONTAMINANTS
Richard P. Grant, Jr., 141 Gleneagle, Rockford, Mich. 49341
Filed Mar. 24, 1995, Ser. No. 410,225
Int. Cl.[6] E21B 36/00
U.S. Cl. 405—128 24 Claims

1. A process for removal of underground contaminants from a soil area that includes a vadose zone above a groundwater unit having a normal groundwater surface, comprising:
providing an extraction well that extends downwardly below the normal groundwater surface, the well including an exterior pipe with fluid permeable openings therein at a lower portion that extends below the normal groundwater surface;
providing an interior pipe inside the exterior pipe, the interior pipe having an inlet opening below the normal groundwater surface;
maintaining gas flow from the exterior pipe into the inlet of the interior pipe and then upwardly and out of the well;
maintaining a gas pressure in the exterior pipe that is sufficient to cause gas to flow outwardly through the exterior pipe openings into the soil in the vadose zone as it may be expanded by the operation of the process, the gas pressure in the exterior pipe being sufficiently low that liquid flows from the groundwater unit into the exterior pipe to the inlet of the interior pipe and is then conveyed by the flowing gas out of the well through the interior pipe;
the exterior pipe having gas permeable openings at an upper portion of the pipe spaced above the openings in the lower portion, with the openings in the upper and lower portions of the pipe being isolated from each other, the gas being introduced into the lower portion of the exterior pipe, the pressure in the upper portion of the pipe being maintained at a sufficiently lower level than the pressure in the lower portion that gas injected into the underground soil through the lower portion openings in induced to pass into the upper portion of the exterior pipe through the openings in the upper portion, the gas in the upper portion of the exterior pipe thereafter being conveyed from the well through an outlet in the upper portion of the exterior pipe.



5,622,451
COMBINED APPARATUS FOR HANDLING MODULES AND TOOLS AND LAYING OF ELONGATED FLEXIBLE ARTICLES FROM A VESSEL SUPPORTED ON A BODY OF WATER
Ange Lupi, Marseille, and Jean P. Branchut, Croix Chapeau, both of France, assignors to Stolt Comex Seaway AS, Stavanger, Norway
Filed Jul. 24, 1995, Ser. No. 506,204
Claims priority, applicatioo Norway, Dec. 16, 1994, 944896
Int. Cl.[6] F16L 1/00
U.S. Cl. 405—158 9 Claims



1. A combined apparatus for handling modules and tools and laying of elongated flexible articles from a vessel supported on a body of water, including a vertical passage through the vessel and

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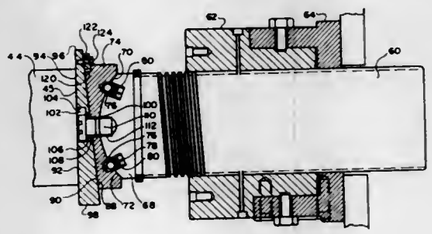
a frame structure supported above the vertical passage, guide means on said frame structure for guiding said elongated flexible articles from above and down through the frame structure and the vertical passage, tensioner means supported in said frame structure for applying tension in said elongated flexible article, means for storing of modules and/or tools on board said vessel, means for bodily moving said modules/tools from the storing means and towards said frame structure, means in said frame structure for allowing transportation of said modules/tools into said frame structure to a position below said tensioner means and above said vertical passage, and means on said frame structure for supporting and lowering said modules/tools down through said vertical passage.

5,622,452

JACK-UP RIG WITH IMPROVED RACK CHOCK ASSEMBLY

Jerome L. Goldman, 935 Gravier St., Suite 2100, New Orleans, La. 70112

Filed Sep. 21, 1995, Ser. No. 531,513
Int. Cl.[6] E02B *17/06*
U.S. Cl. 405—198 **22 Claims**



1. A jack-up rig unit for offshore use, comprising:
a floatable hull supportable by at least one leg above a water line;
a means carried by said hull for rigidly locking with at least one leg of said hull, said locking means comprising a rack chock assembly laterally movable into an out of engagement with respect to said at least one leg; and
a means carried by said rack chock assembly for breaking locked engagement between said at least one leg and said hull.

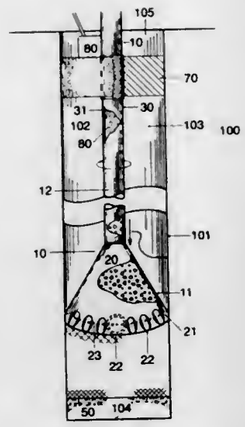
5,622,453

METHOD AND APPARATUS FOR IN-DENSIFICATION OF GEOMATERIALS FOR SEALING APPLICATIONS

Ray E. Finley, and David H. Zeuch, both of Albuquerque, N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 27, 1995, Ser. No. 430,043
Int. Cl.[6] E21B *33/16*; E02D *5/46*
U.S. Cl. 405—240 **15 Claims**

10. A method for forming improved seals in boreholes and cylindrical shafts formed in host rock comprising the steps of:
a) providing the selected geologic horizon of the borehole/shaft with a cured concrete base member;
b) simultaneously introducing a feedstock into said borehole/shaft and subjecting said introduced feedstock to both compressive and shear stresses such that the borehole/shaft becomes filled with the stress-treated feedstock.

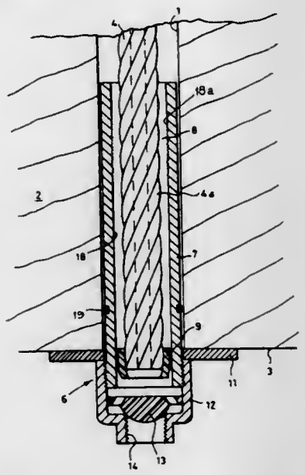


5,622,454

ANCHOR BOLT FOR STABILIZING ROCK STRATA AND METHOD OF INSTALLING

Peter S. Ashmore, and John M. Walton, both of Doncaster, United Kingdom, assignors to Bridon PLC, United Kingdom

PCT No. PCT/GB94/02031, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO95/08695, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 19, 1994, Ser. No. 446,597
Claims priority, application United Kingdom, Sep. 20, 1993, 9319414
Int. Cl.[6] E21D *20/02*;*21/00*
U.S. Cl. 405—259.5 **12 Claims**



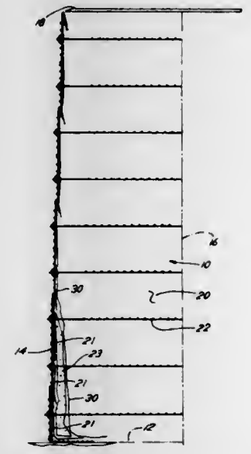
11. A method of installing a roof bolt, comprising boring a hole into a body of rock from a rock face; inserting an elongate member into the hole; inserting a termination partly into the hole so that a portion of the termination surrounds an end portion of the elongate member, a thrust plate connected to the termination being arranged to bear on the rock face; and injecting a settable anchorage medium into the hole so that the anchorage medium penetrates between the end portion of the elongate member and the surrounding portion of the termination.

5,622,455

EARTHEN WORK WITH WIRE MESH FACING

Peter L. Anderson, North Reading, Mass.; Michael J. Cowell, Leesburg, and Dan J. Hotek, Front Royal, both of Va., assignors to Societe Civile des Brevets Henri Vidal, Paris, France

Continuation-in-part of Ser. No. 472,885, Jun. 7, 1995, Ser. No. 466,806, Jun. 6, 1995, Pat. No. 5,494,379, and Ser. No. 382,985, Feb. 3, 1995, which is a continuation-in-part of Ser. No. 108,933, Aug. 18, 1993, Pat. No. 5,487,623, and Ser. No. 137,585, Oct. 15, 1993, Pat. No. 5,474,405, which is a continuation-in-part of Ser. No. 40,904, Mar. 31, 1993, Pat. No. 5,507,599, and Ser. No. 108,933, which is a continuation-in-part of Ser. No. 40,904, said Ser. No. 466,806is a continuation-in-part of Ser. No. 156,053, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 114,098, Aug. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,045
Int. Cl.[6] E02D *5/00*;*29/02*
U.S. Cl. 405—262 **49 Claims**



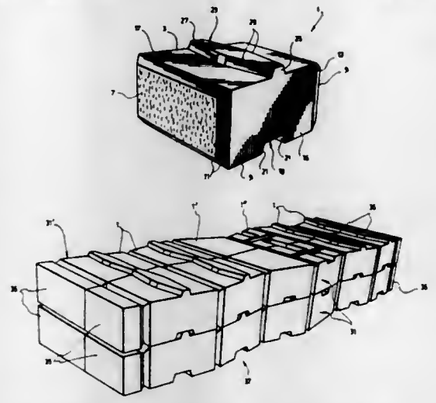
1. A wall construction having a wire mesh facing, said construction comprising, in combination:
a granular, compactable fill defining a three dimensional earthen work bulk form having a generally planar front face extending upwardly from a datum plane;
said earthen work bulk form including a plurality of earth stabilizing members dispersed throughout the bulk form, said stabilizing members extending generally horizontally from the front face into the bulk form, at least some of said stabilizing members comprising first and second tensile members extending from the front face into the bulk form, said first and second tensile members including loops at the end of said members adjacent the front face and further including a wire connector fitted through the loops on the outside of the front face;
a plurality of generally vertical planar wire mesh panels on the front face, said panels defining vertical courses of connected panels, having generally horizontal side edges and vertical side edges, the vertical side edges being generally aligned and the horizontal side edges of adjacent panels being offset; and
means for connecting the tensile members to the panel members.

5,622,456

RETAINING WALL BLOCKS

Angelo Risi, and Antonio Risi, both of Richmond Hill, Canada, assignors to Rothbury Investments Ltd., Thornhill, Canada

Filed Mar. 23, 1995, Ser. No. 408,785
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—284 **16 Claims**



15. A multiple retaining wall block unit comprising at least two blocks, each of said blocks comprising:
top and bottom surfaces that are flat and parallel to each other, each of said top and bottom surfaces being trapezoidal in shape and symmetrical with respect to a vertical plane;
front and rear surfaces that are transversal to said vertical plane and substantially parallel to each other, said front and rear surfaces having bevelled edges;
left-hand side and right-hand side surfaces that are flat and extend at given angles that are opposite to each other with respect to said vertical plane, respectively, and
a groove of given depth and width that extends into the bottom surface perpendicularly to the vertical plane at middle distance from said front and rear surfaces between the left-hand side and right-hand side surfaces, said groove having tapering sidewalls;
said at least two blocks being integrally connected to each other in line with the front or rear surface of each of said blocks extending flat against the front or rear surface of every adjacent block, respectively,
whereby the bevelled edges of said front and rear surfaces make it possible for each of said blocks to be easily slitted and cut off from the remaining blocks.

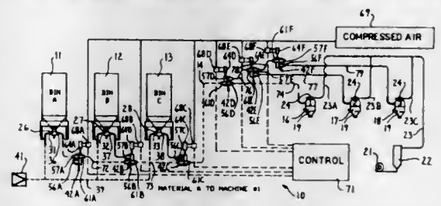
5,622,457

PNEUMATIC MATERIAL HANDLING SYSTEM

Charles W. Thiele, Kalamazoo, Mich., assignor to Motan, Inc., Plainwell, Mich.

Filed Jun. 2, 1994, Ser. No. 253,085
Int. Cl.[6] B65G *53/56*
U.S. Cl. 406—1 **8 Claims**

1. In a pneumatic material handling system which includes a conduit arrangement for conveying dry, solid particulate product to



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a selected one of plural destinations from a selected one of at least two separate upstanding dry, solid particulate product supply containers each having a product outlet opening located at a lower end thereof and delivering the dry, solid particulate product thereof to a gas and product opening for conveyance of gas and the product thereof to said selected one of said plural destinations, the system having first means defining a gas inlet opening and second means for joining the gas and the product from the selected one of the two separate product supply containers for delivery to a respective one of said gas and product openings, said gas inlet opening and the respective one of said gas and product openings being connected to said conduit arrangement so that a gas stream traveling at a sufficient velocity through said conduit arrangement will be sufficient to pick up and entrain the dry, solid particulate product in the gas stream, said conduit arrangement including a gas pumping means for pulling the gas stream into said gas inlet opening and through said conduit arrangement, said gas pumping means being connected to said conduit arrangement adjacent a gas outlet end thereof so as to create a less than atmospheric pressure inside said conduit arrangement and effecting a drawing of the gas into said conduit arrangement through said gas inlet opening, the improvement comprising at least first and second identically constructed valves connected into said conduit arrangement intermediate each said gas and product opening and said selected one of said plural destinations, each said first and second identically constructed valves comprising:

a base plate having at least first and second separate through passageways extending therethrough,

a movable plate slidably mounted on said base plate and movable between first and second positions relative to said base plate, said movable plate having a third through passageway extending therethrough and being axially aligned with said first through passageway in said first position of said movable plate and with said second through passageway in said second position of said movable plate,

said base plate and said movable plate each having mutually opposed and slidably engaged flat surfaces,

means for facilitating a sealingly drawing together of said mutually opposed and slidably engaged flat surfaces in response to said less than atmospheric pressure inside said conduit arrangements, and

a drive means for moving said movable plate between said first and second positions;

first connecting means for connecting each said gas and product opening to a respective one of said first through passageways on said first and second identically constructed valves;

second connecting means for connecting said second through passageway on said first valve to said third through passageway on said second valve; and

third connecting means for connecting said third through passageway on said first valve to said conduit arrangement leading to said selected one of said plural destinations;

whereby a positioning of said movable plate of said first and second valves in a selected one of said first and second positions will effect a selecting of the dry, solid particulate product supply container from which dry, solid particulate product thereof is to be introduced to the respective one of said gas and product openings, be picked up and entrained in the gas stream thereat, and conveyed to said selected one of said plural destinations.

5,622,458

AIR LIFT PUMP FOR WET PARTICULATES

Stephen D. Ward, Lewisburg, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

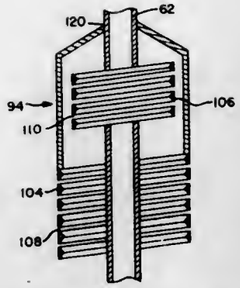
Continuation-in-part of Ser. No. 138,395, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 913,290, Jul. 14, 1992, Pat. No. 5,277,829. This application Jul. 21, 1994, Ser. No. 278,508

Int. Cl.[6] B65G *53/52*

U.S. Cl. 406—194 **11 Claims**

3. An air injector for an air lift system having a transport tube, the transport tube having a lower intake end, an upper discharge end, and an air injection section intermediate the intake and discharge ends, the air injector comprising:

air supply means for supplying a flow of compressed air;



housing means for housing the transport tube air injection section, said housing means being in fluid communication with said air supply means; and

air jet means for converting said flow of compressed air into a jet of air, said air jet means being mounted in the transport tube air injection section, said air jet means comprising first means for defining at least one slot, said first means having an outer surface and a substantially triangular-shaped cross section wherein said outer surface defines a base of a triangle thereof whereby said slot has a substantially trapezoid-shaped cross section;

wherein said flow of compressed air is delivered to said housing means by said air supply means for injection into the transport tube through said slot.

5,622,459

TOOL FOR MANUFACTURING CROWN WHEELS

Augustinus F. H. Basstein, Prinsenbeek; Gustaaf A. Ultenbogaart, Overveen, and Anne L. Sijtstra, Rotterdam, all of Netherlands, assignors to Crown Gear B.V., Netherlands

PCT No. PCT/NL94/00028, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/17945, PCT Pub. Date Aug. 18, 1994

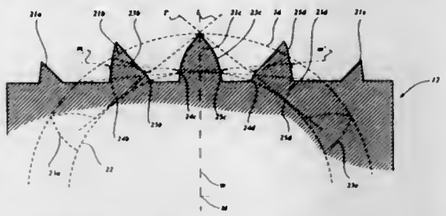
PCT Filed Feb. 3, 1994, Ser. No. 464,840

Claims priority, application Netherlands, Feb. 4, 1993, 9300226

Int. Cl.[6] B23F *5/27*

U.S. Cl. 407—23 **6 Claims**

1. A tool for manufacturing crown wheels by means of a



machining process, said tool comprising:

a disc having an axis of rotation and being rotatable about said axis, said disc having a circumference and a profile extending over the circumference of said disc; and

a plurality of machining elements disposed on the circumference of said disc, said machining elements having cutting edges which form substantially helical ribs on the circumference of said disc, wherein said ribs define said profile and correspond to cutting teeth for forming teeth in said crown wheel, and wherein said profile is based on an involute toothed pinion geometry which is characteristic of the crown wheel to be manufactured by said tool, said pinion geometry including a base circle and an addendum circle, and wherein at least a portion of at least one of said machining elements lies outside a surface of revolution formed by rotation of the addendum

circle about the axis of rotation of said tool, and wherein said portion performs a premachining operation when manufacturing a crown wheel with said tool.

5,622,460

CHIP CUTTING TOOL WITH ACUTELY ANGLED POCKET SIDE WALLS

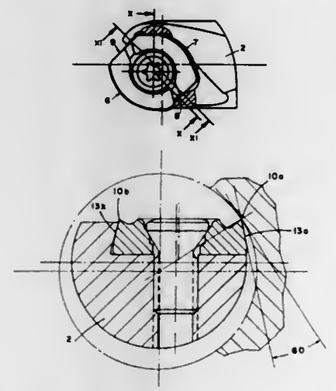
Amir Satran, Kfar Vradim, and Yuri Men, Haifa, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel

Filed Dec. 21, 1994, Ser. No. 360,522

Claims priority, application Israel, Dec. 21, 1993, 108115

Int. Cl.[6] B23C *5/14*

U.S. Cl. 407—42 **20 Claims**



1. A chip cutting tool for rotary machining operations comprising:

a tool holder formed with an insert retaining pocket adjacent a leading end thereof, said pocket comprising a base and side walls, a first side wall sloping towards the pocket base forming a first acute angle, with said pocket base said tool holder having a longitudinal axis of rotation, said axis laying on a reference plane perpendicular to a height direction of said pocket;

a cutting insert having

top and base surfaces,

opposite first and second major side surfaces,

opposite first and second minor side surfaces,

a relief flank surface formed on an upper portion of said first major side surface, at least a portion of said relief flank surface directed towards said insert base surface and forming a first internal acute angle therewith,

a cutting edge defined between said relief flank surface and said top surface, said cutting edge comprising leading and trailing sections, at least a portion of the second major side surface being substantially co-directional with said trailing portion and having an upper region directed towards the insert base at an angle substantially equal to said first acute angle, the second major surface and at least one minor side surface converging in a direction away from the cutting edge; and

champing means for releasably clamping said insert in said pocket, wherein

the cutting edge leading section is oriented substantially radially relative to the longitudinal axis,

the cutting edge trailing section is disposed above the reference plane and is substantially co-directional with the longitudinal axis, being spaced radially outward therefrom,

said upper region of tile second major side surface abuts said first pocket side wall, and

the at least one minor side surface abuts a second of said pocket side walls.

5,622,461

DRILL AND CUTTING INSERT THEREFOR

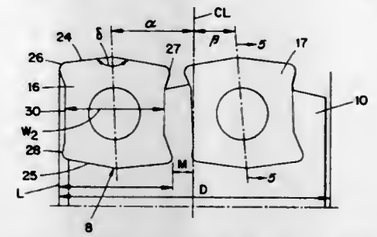
Tommy Tukala, and Åke Sjölander, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed May 9, 1995, Ser. No. 437,307

Claims priority, application Sweden, May 9, 1994, 9401598

Int. Cl.[6] B23B *51/00*

U.S. Cl. 408—224 **6 Claims**



1. A drill comprising a drill shank and at least two radially inner and outer polygonal cutting inserts mounted thereon; the drill shank having at least two generally axial chip flutes and at least two cutting insert sites receiving the outer and inner cutting inserts, respectively; the cutting inserts being of identical shape; an active cutting edge of the outer insert projecting laterally outwardly to define a diameter of a bore to be cut; an active cutting edge of the inner cutting insert arranged radially inside of an outer periphery of the drill shank; each insert including side faces interconnected by end faces; each of the active cutting edges of the inserts being defined by an intersection of one or the side faces and one of the end faces; each of those side faces being broken in the middle so that each cutting edge forms an internal obtuse first angle at the break; a longitudinal axis of the radially outer insert being inclined at an acute second angle in relation to the longitudinal axis of the drill as viewed in a radial direction perpendicular to the active cutting edge of the outer insert; each insert having a rhombic basic shape and arranged such that the second angle is smaller than an acute third angle of inclination formed between a longitudinal axis of the radially inner insert relative to the drill axis.

5,622,462

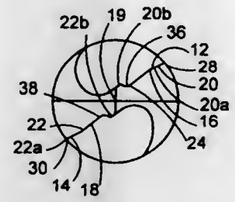
TWIST DRILL BIT

Ved Gakhar; David T. Brutscher, and Wilfred M. McCord, Jr., all of Louisville, Ky., assignors to Credo Tool Company, Woodburn, Oreg.

Filed Apr. 11, 1995, Ser. No. 420,053

Int. Cl.[6] B23B *51/02*

U.S. Cl. 408—230 **4 Claims**



1. A drill comprising:

a pair of spiral cutting blades having opposed outer edges with inwardly extending cutting edges joined together at an angle to form a starting tip;

said pair of spiral cutting blades define a pair of longitudinally extending spiral flutes therebetween;

each of said cutting edges having an inner edge segment and an outer edge segment with a gullet disposed between said inner edge segment and said outer edge segment, said inner edge

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segment and said outer edge segment of each said cutting edge being in axial alignment; and,

said gullet having an arcuate inner wall and an angularly disposed linearly extending outer wall, said inner wall terminating at one end with said inner edge segment and said outer wall at an opposite end, said outer wall connecting said inner wall to said outer edge segment.

5,622,463

CEILING TILE CUTTING TABLE

Vincent M. Testa, 56 Newburyport Turnpike, Ipswich, Mass. 01938

Filed Dec. 22, 1994, Ser. No. 361,573
Int. Cl.[6] B23C *3/12*
U.S. Cl. 409—131 **18 Claims**



1. A cutting table arrangement for accurately cutting ceiling tiles, comprising:

an adjustable planar tabular element having an upper and a lower surface and having parallel front and back edges and parallel side edges;

a pair of supports for attaching a front edge of said table to a scaffold, at a slight angle with respect to the horizontal;

a tool support arranged adjacent one of said side edges to slidably support a cutting tool thereon; and

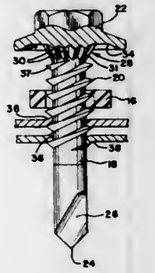
an arrangement of legs and a pair of attachable wheel supports which are securable to said legs for conversion of said table from a scaffold table to a mobile table.

5,622,464

SCREW WITH INCREASED DRIVING RESISTANCE AT PROPER DEPTH

Michael C. Dill, Elk Grove Village; James W. McElderry, Schaumburg, and Juergen O. Rathgeber, Arlington Heights, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Aug. 22, 1995, Ser. No. 517,981
Int. Cl.[6] F16B *23/00*
U.S. Cl. 411—399 **23 Claims**



1. In combination, a screw and a washer, comprising:

a washer for providing a seal with respect to a member with which said washer is to be operatively associated when said washer is mounted upon such a member;

a screw having an elongated shank having a head end and a tip end; a head having a flange defining a recess which retains said washer, said head being disposed at said head end of said elongated shank for engagement with a driving tool; said shank having an enlarged section adjacent to said recess; and a thread extending along a substantial portion of said elongated shank; and

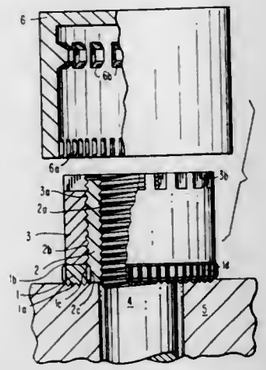
substantially uniform impeding means disposed equiangularly upon said enlarged section of said elongated shank for engaging a surface of a member into which said screw is to be driven and thereby increasing the driving resistance of said screw such that said screw is able to be fully driven into the member to an appropriate depth without adversely affecting said washer whereby the sealing integrity of said washer with respect to the member is preserved.

5,622,465

LOCK NUT

J. K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07540

Filed Apr. 26, 1996, Ser. No. 638,635
Int. Cl.[6] F16B *37/08;27/00*
U.S. Cl. 411—432 **8 Claims**



1. A lock nut to connect a joint having a threaded connector, comprising a first nut member which is engagable with the threaded connector and is axially displaceable; a second nut member which is engagable with said first nut member and is rotatable about an axis; a third nut member which is non-rotatably but axially displaceably connected with said first nut member and has one substantially smooth surface over which said second nut member moves during rotation and another substantially rough surface which is embedable into a surface of the joint; and locking means to achieve non-rotatability between said nut members, so that when said second nut member is rotated about the axis against said smooth surface of said third nut member, said first nut member is displaced axially to apply a load to the the threaded connector, while the rough surface of said third nut member embeds into the surface of the joint, and when the lock nut is sufficiently tightened, the locking means eliminates rotation of said second nut member.

5,622,466

MOTOR VEHICLE PARKING INSTALLATION

Eride Rossato, Via Galilei, 20, 30035 Mirano, Italy

Continuation of Ser. No. 365,739, Dec. 29, 1994, abandoned.
This application Mar. 18, 1996, Ser. No. 620,744
Claims priority, application Italy, Jul. 10, 1992, 92A000127
Int. Cl.[6] E04H *6/06*
U.S. Cl. 414—228 **7 Claims**

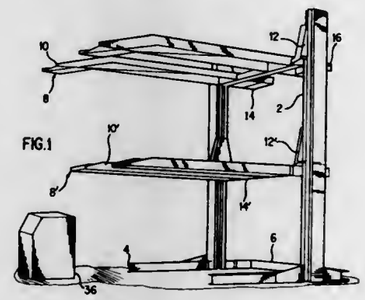


FIG.1

1. A multiple vehicle parking installation comprising:

a central unit for controlling the operation of said installation;

a pair of vertical columns;

a plurality of horizontal platforms, each suitable for accommodating individual vehicles, each of said plurality of platforms being provided with means for vertically sliding along said pair of vertical columns;

mechanical locking means, each comprising first elements mounted on said pair of vertical columns at predetermined distances and second elements mounted on each of said plurality of platforms and cooperating with said first elements to releasably lock, when engaged, a corresponding one of said plurality of platforms to said pair of vertical columns and to allow, when disengaged, the resting of said one of said plurality of platforms on an underlying one of said plurality of platforms, thereby forming a stack of superimposed platforms, said stack having a lowest platform, and

carriage means incorporated in said lowest platform of said plurality of horizontal platforms, vertically slidable along each of said pair of columns, controlled by said central unit and moving all of said plurality of horizontal platforms forming said stack of platforms.

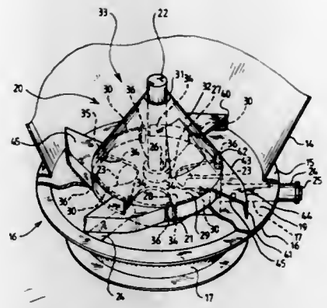
5,622,467

DISCHARGE MEANS FOR A SILO

John K. Pethullis, Holgate, N.Y., assignor to Portasilo Limited, United Kingdom

Filed Jun. 26, 1995, Ser. No. 494,515
Claims priority, application United Kingdom, Jul. 5, 1994, 9413552; Jun. 5, 1995, 9511302
Int. Cl.[6] B65G *65/30*
U.S. Cl. 414—304 **16 Claims**

1. A discharge means for a silo comprising an entry chamber adapted to be in communication with the silo interior and having a directing member mounted in the entry chamber, for rotary movement about a vertical axis to direct flowable material in the entry chamber through a discharge passage in a bottom wall of the chamber, the directing member comprising at least one arm having an outer end which projects radially further from the axis of rotation of the rotary member than does the inner part whereby on rotation of the rotary member the arm is adapted to engage flowable material in the chamber and to direct the flowable material in a path which has a radially inward component towards the discharge passage in the bottom wall, the rotary member having a generally upwardly extending wall having at least one opening therein associated with the or each arm so that the flowable material is directed by the associated arm through the or each associated opening, the or each opening in the upwardly extending wall of the rotary member being provided with a closure member so as to control discharge through the or each opening.

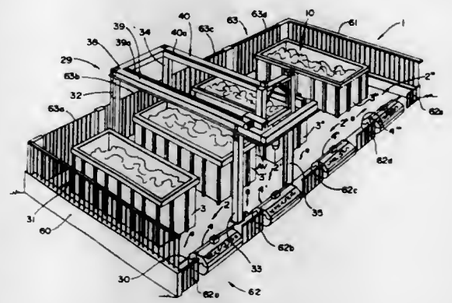


5,622,468

DISPOSAL FACILITY FOR LOADING OBJECTS INTO A CONTAINER

Michel Viollet, Chavanod, France, assignor to Robin S.A., Meaux Cedex, France

PCT No. PCT/FR93/01049, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO94/10076, PCT Pub. Date May 11, 1994
PCT Filed Oct. 27, 1993, Ser. No. 424,392
Claims priority, application France, Oct. 30, 1992, 92/13261
Int. Cl.[6] B65G *65/32*
U.S. Cl. 414—422 **12 Claims**



1. A disposal facility for loading objects stored in a bin into a container, said disposal facility comprising:

a plurality of storage subassemblies, each of said plurality of storage subassemblies comprising a container and a bin;

a movable gantry, positionable above a selected one of said storage subassemblies, comprising a horizontal upper structure;

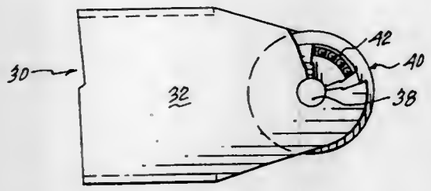
a carriage for traversing said horizontal upper structure;

a gripping assembly, carried by said carriage and movable relative to said horizontal upper structure, comprising connection means and activation means;

said activation means comprising means for raising a selected bin, associated with said selected storage subassembly, from the rest position; means for moving said selected bin; means for retracting a bottom portion of said selected bin; means for closing said bottom portion of said selected bin; and means for restoring said selected bin to said rest position.

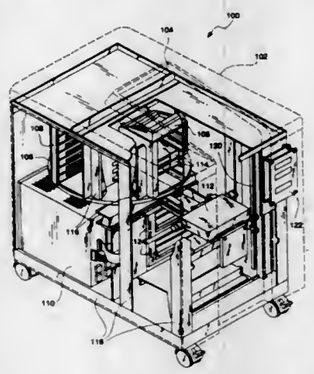
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5,622,469
BLADE FOR FORK LIFT TRUCK
Heinz Weber, 64 Gables Court, Beaconsfield, Quebec, Canada
Filed Mar. 20, 1995, Ser. No. 405,756
Int. Cl.[6] B66F 9/12
U.S. Cl. 414—785 **7 Claims**



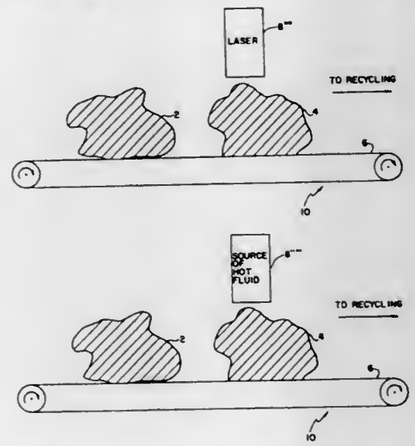
5. In a fork lift truck having a pair of horizontally extending blades each having a distal end, the improvement wherein each of said blades includes a plurality of vertically extending shafts mounted on said blade adjacent said distal end, and a rotatable member entrained about said shafts and being rotatable thereabout, said rotatable member being mounted to at least partially protrude beyond said distal end of said blade.

5,622,470
METHOD AND APPARATUS FOR ADAPTIVE CARTRIDGE RETRIEVAL AND INSERTION IN A STORAGE LIBRARY SUBSYSTEM
Robert J. Schaefer, Boulder; Thomas P. Jackson, Broomfield; Stephen W. Graeber, Louisville, and Richard E. Sills, Longmont, all of Colo., assignors to Breece Hill Technologies, Inc., Boulder, Colo.
Filed Apr. 28, 1995, Ser. No. 430,586
Int. Cl.[6] B65G 1/12
U.S. Cl. 414—786 **21 Claims**



19. A method for adapting the alignment of a robotic gripper hand, controllably operable for manipulating storage media cartridges, within a storage library subsystem having a rotary carousel with a removeable magazine comprising the steps of:
- detecting a failure in motion of said robotic gripper hand within said storage library subsystem due to misalignment of said robotic gripper hand with a slot in a moveable magazine in said storage library subsystem;
- repetitively adjusting the alignment of said robotic gripper hand, in response to detection of said failure in motion, to eliminate said failure in motion due to misalignment of said robotic gripper hand with a slot in a moveable magazine in said storage library/subsystem;
- storing, responsive to the adjusting step, adjustment values indicative of adjustments to said alignment of said robotic gripper hand; and
- applying said adjustment values to subsequent motion of said robotic gripper hand to adapt said subsequent motion to eliminate said misalignment.

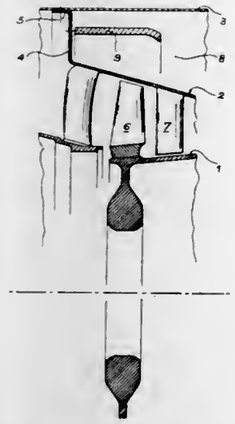
5,622,471
METHOD AND APPARATUS FOR OPENING AND EMPTYING BAGS CONTAINING RECYCLABLE MATERIALS
Edward J. Sommer, Jr., Nashville, and Ronald A. Quaries, Nolensville, both of Tenn., assignors to National Recovery Technologies, Inc., Nashville, Tenn.
Continuation of Ser. No. 104,273, Aug. 12, 1993, Pat. No. 5,419,670, which is a continuation of Ser. No. 790,188, Nov. 8, 1991, abandoned. This application May 24, 1995, Ser. No. 449,836
Int. Cl.[6] B65G 47/34
U.S. Cl. 414—786 **2 Claims**



1. A method of opening a sequence of bags having a non-uniform external contour and containing recyclable waste materials, said method comprising the steps of:
- (a) providing a source of heat sufficient to melt said bags having said non-uniform external contour without mechanically contacting said bags; and
- (b) conveying said sequence of bags having said non-uniform external contour past said source of heat to open said bags having said non-uniform external contour to expose said recyclable waste materials;
- wherein said source of heat is spaced apart from said bags and includes a laser directed at said bags.

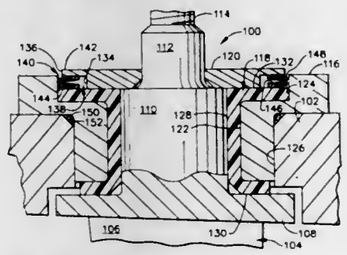
5,622,472
PROTECTIVE SHIELD FOR A TURBO-ENGINE
Pierre A. Glowacki, Ste Adresse, France, assignor to Societe Hispano-Suiza, Saint Cloud Cedex, France
Filed Dec. 13, 1995, Ser. No. 571,729
Claims priority, application France, Dec. 21, 1994, 94 15382
Int. Cl.[6] F01D 21/00
U.S. Cl. 415—9 **4 Claims**

1. A shield arrangement for protecting an outer fairing of a turbo-engine, the fairing surrounding the shield, the shield surrounding a stator envelope and the stator envelope surrounding a rotor driving blades, the shield being separated from the fairing



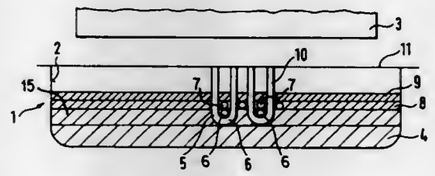
and from the stator envelope, wherein the shield is deformable upon impact of one the blades being broken off the rotor, and the shield is connected to a part of the turbo-engine by fastening members having a breaking strength less than a tearing strength of the shield.

5,622,473
VARIABLE STATOR VANE ASSEMBLY
Stephen R. Payling, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Nov. 17, 1995, Ser. No. 560,059
Int. Cl.[6] F04D 15/00
U.S. Cl. 415—160 **9 Claims**



1. A variable stator vane assembly for a gas turbine engine, the engine including a compressor housed within a compressor casing, an air foil opening formed in the casing, said variable stator vane assembly comprising:
- a metal jacket having a first substantially cylindrical shaped portion and a second substantially cylindrical shaped portion, said first portion sized to be at least partially inserted within the air foil opening and at least a portion of an outer surface of said first substantially cylindrical shaped portion sized to be in substantial surface to surface contact with the compressor casing;
- a bushing having a central portion and first and second end portions, at least a portion of an outer surface of said bushing sized to be in substantial surface to surface contact with an inner surface of said metal jacket;
- an air foil assembly comprising an air foil and a substantially cylindrical portion having a foil platform at a first end thereof, said air foil extending from said foil platform, a spindle extending from a second end of said cylindrical portion, at least a portion of said cylindrical portion located within said bushing and rotatable relative to said bushing;
- a spacer secured to said spindle, said spacer including a substantially cylindrical portion having a first diameter and a flange portion having a second diameter, said first diameter being less than said second diameter, said cylindrical portion and said flange portion of said spacer cooperating with said second end portion of said bushing to establish an annulus; and
- a spring loaded seal positioned within said annulus, said seal having a substantially u-shaped compressed configuration in which respective legs of said seal are pressed against surfaces of said spacer flange portion and said bushing second end portion.

5,622,474
BLADE TIP SEAL INSERT
Klemens Werner, Munich; Paul Lottes, Groebenzell; Hans-Juergen Schmuhl, Woerthsee; Lothar Reisinger; Gerhard Wydra, both of Dachau, and Dietrich Schulte, Puchheim, all of Germany, assignors to MTU Motoren- Und Turbinen-Union Muenchen GmbH, Munich, Germany
Filed Sep. 14, 1995, Ser. No. 528,053
Claims priority, application Germany, Sep. 14, 1994, 44 32 685.8
Int. Cl.[6] F01D 11/12
U.S. Cl. 415—173.1 **4 Claims**

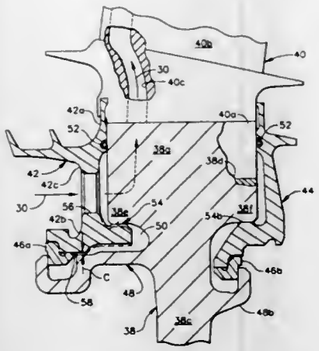


1. A run-on lining for a housing of a turbo-engine having a turbo-rotor with moving blades, comprising:
- a ring-type carpet arranged on an inner circumference of the housing opposite the moving blades;
- wherein said ring-type carpet comprises a carrier holding ceramic fibers having free fiber ends which project out of said carrier radially inward, said carrier being an SiC fabric mat having fabric strands crossing one another at right angles forming nodal points; and
- wherein said ceramic fibers are wound around said fabric strands at said nodal points so as to form an apex of said ceramic fibers.

5,622,475
DOUBLE RABBET ROTOR BLADE RETENTION ASSEMBLY
Denis R. Hayner, Newburyport, and Peter J. Rock, Byfield, both of Mass., assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 298,019, Aug. 30, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 581,824
Int. Cl.[6] F01D 5/30
U.S. Cl. 416—220 R **10 Claims**

1. A gas turbine engine rotor assembly comprising: a rotor disk including:
- a radially outer rim having a plurality of circumferentially spaced apart, axially extending dovetail slots;
- a radially inner hub;
- an annular web extending between said rim and hub; and
- an annular axial extension extending from said web and spaced radially below a corner of said rim to define a face cavity therebetween;
- a plurality of rotor blades each having a dovetail and an airfoil, with said blade dovetails being complementary to and axially

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disposed in respective ones of said dovetail slots for radially retaining said blades in said disk;

an annular blade retention plate including:

a radially outer rim abutting said disk rim and blade dovetails for axially retaining said blades in said disk;

a radially inner hub disposed at least in part in said face cavity;

a web extending radially between said plate rim and hub; and

said plate hub having a radially outwardly facing outer rabbet disposed in abutting contact with said rim corner, and a radially inwardly facing inner rabbet spaced radially above said axial extension for maintaining abutting contact therewith upon differential radial contraction between said retention plate and disk which separates said outer rabbet from said rim corner; and

means for axially locking said retention plate to said axial extension and permitting radial movement therebetween.

5,622,476

AXIAL FIXING ARRANGEMENT FOR ROTOR BLADES OF A TURBOMACHINE

Danielle C. R. Adde, Cesson; Jean-Louis Charbonnel, Boissise le Roi; Philippe F. P. Gougeon, Fontainebleau, and Gérard G. Miraucourt, Brie Comte Robert, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA" , Paris, France

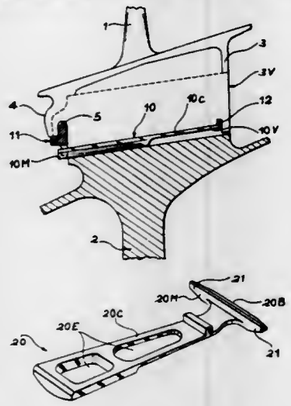
Filed Dec. 14, 1995, Ser. No. 572,045

Claims priority, application France, Dec. 14, 1994, 94 15044

Int. Cl.[6] F01D *5/32*

U.S. Cl. 416—221 **4 Claims**

1. A fixing arrangement axially fixing a blade in position on a



rotor disk of a turbomachine rotor, said blade having a root received in a radially interlocking manner in an axial groove in a periphery of said rotor disk, said fixing arrangement comprising:

a first undercut projection on an upstream face of said blade root,

a pair of second undercut projections on an upstream face of said rotor disk on opposite sides of said first undercut projection,

a plate engaged behind said first and second undercut projections and against said upstream faces of said blade root and said rotor disk, said plate preventing axial movement of said blade, and

a flexible locking wedge inserted between said blade root and a bottom of said axial groove such that an upstream end of said locking wedge is disposed adjacent said plate to hold said plate in position, said flexible locking wedge having a retaining hook and said blade root having a groove in which said retaining hook is received to retain said locking wedge in position, and said flexible locking wedge permitting one of insertion and withdrawal of the locking wedge when one of fitting and removing of said blade is respectively accomplished.

5,622,477

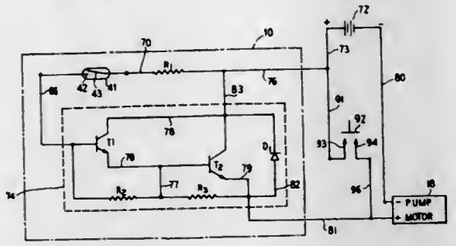
SWITCH FOR BILGE AND SUMP/PUMP WITH AUTOMATIC FLOAT CONTROL

Stephen R. Orth, Chicago; Burton L. Siegal, Skokie, and Roman Buch, Libertyville, all of Ill., assignors to Johnson Pumps Of America, Inc., Schiller Park, Ill.

Filed Aug. 15, 1995, Ser. No. 515,144

Int. Cl.[6] F04B *49/04*

U.S. Cl. 417—40 **3 Claims**



1. A control for a pump motor comprising: a float switch including a reed switch, and a means for actuating said switch;

a battery with its negative terminal connected to a negative terminal of said pump motor, current limiting resistor with one one terminal connected to a positive terminal of said battery and with its other terminal connected to one of two contacts of said reed switch;

a transistor switching circuit connected between a positive terminal of said pump motor and said positive terminal of said battery and actuated by said reed switch to energize said pump motor;

wherein said transistor switching circuit is a Darlington type comprising first and second transistors with a base of said first transistor connected to another terminal of said reed switch and a collector of said first transistor connected to a collector of said second transistor and to said positive terminal of said battery, an emitter of said first transistor connected to a base of said second transistor, and an emitter of said second transistor connected to said positive terminal of said pump motor; and

a normally open manual pump motor start switch connected between said positive terminal of said pump motor and said positive terminal of said battery.

5,622,478

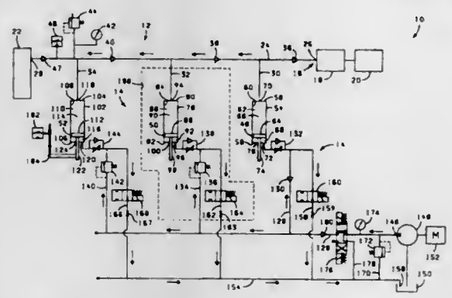
METHOD FOR HYDRAULIC GAS COMPRESSOR

Alvin B. Elliott, and Angella D. Elliott, both of 301 E. Prospect St., Ponca City, Okla. 74601

Division of Ser. No. 309,273, Sep. 20, 1994, which is a continuation-in-part of Ser. No. 258,813, Jun. 13, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,016

Int. Cl.[6] F04B *41/06*; **F15B** *13/07*

U.S. Cl. 417—53 **6 Claims**



1. A method of compressing gas, comprising the steps of:

connecting a storage tank to an interior cavity of a first hydraulic cylinder, to an interior cavity of at least one second hydraulic cylinder, and to an interior cavity of a third hydraulic cylinder;

connecting the interior cavities of the first, second and third hydraulic cylinders to a gas source supplying a gas;

introducing gas into the interior cavities of the first, second and third hydraulic cylinders and the storage tank;

introducing hydraulic fluid into the interior cavity of the first hydraulic cylinder to compress the gas contained therein and pushing the gas from the interior cavity of the first hydraulic cylinder into the interior cavities of the second and third hydraulic cylinders and into the storage tank, while preventing gas from passing from the interior cavity of the first hydraulic cylinder to the gas source;

introducing hydraulic fluid into the interior cavity of the second hydraulic cylinder to compress the gas contained therein and pushing the gas from the interior cavity of the second hydraulic cylinder into the interior cavity of the third hydraulic cylinder and into the storage tank, while preventing gas from passing from the interior cavity of the second hydraulic cylinder to the interior cavity of the first hydraulic cylinder and to the gas source;

introducing hydraulic fluid into the interior cavity of the third hydraulic cylinder to compress the gas contained therein and pushing the gas from the interior cavity of the third hydraulic cylinder into the storage tank, while preventing gas from passing from the interior cavity of the third hydraulic cylinder to the interior cavities of the first and second hydraulic cylinders and to the gas source; and

draining the hydraulic fluid from the interior cavities of the first, second and third hydraulic cylinders while preventing gas in the storage tank from passing to the interior cavities of the first, second and third hydraulic cylinders and to the gas source.

5,622,479

COMPOSITE DEVICE FOR A FLUID SYSTEM OF A VEHICLE

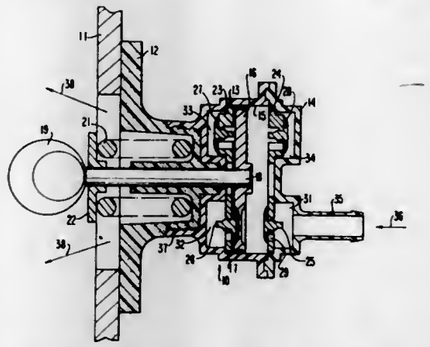
Stephen R. Earle, Pudsey, Great Britain, assignor to WABCO Automotive UK Limited, United Kingdom

Filed Feb. 14, 1995, Ser. No. 389,702

Claims priority, application United Kingdom, Feb. 15, 1994, 9402828

Int. Cl.[6] F04B *53/16*

U.S. Cl. 417—231 **9 Claims**



1. A device for a fluid system of a vehicle, the device comprising first and second members, the first member being mounted on at least one of a chassis, body and engine of a vehicle to provide a substrate, and the second member defining at least part of a leak tight fluid chamber of the device, wherein the first member is formed of a material which remains rigid and resists creep when exposed to heat and vibration associated with mounting of the device on at least one of a chassis, body and engine of a vehicle, and the second member is of a thermoplastic material suitable for welding to ensure leaktightness of the fluid chamber, said second member being interlocked with said first member during molding of the second member.

5,622,480

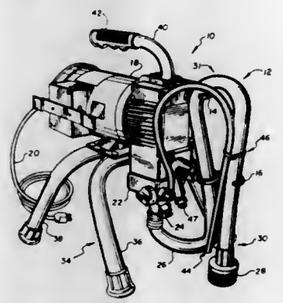
SUCTION SET RETAINER

Warren J. Walsh, Buffalo, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Aug. 22, 1995, Ser. No. 517,919

Int. Cl.[6] F04B *53/00*

U.S. Cl. 417—234 **18 Claims**



1. Apparatus for retaining a flexible suction hose to a portable paint pump comprising:

a) an elongated flexible suction hose having a proximal end connected to an inlet of a portable paint pump and a distal end remote from the pump and free to move with respect to the pump; and

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b) intermediate projecting means having an aperture received around a handle of the pump for releasably securing an intermediate portion of the flexible suction hose to the portable paint pump

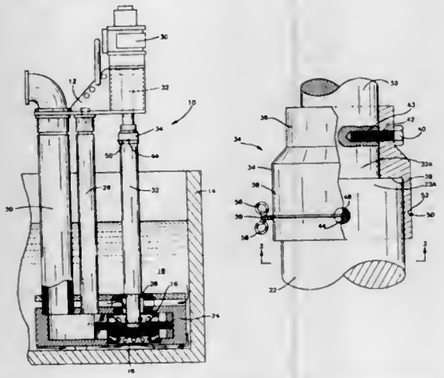
such that at least the intermediate portion of the elongated flexible suction hose is restrained from moving away from the portable paint pump when the intermediate projecting means is engaged with the intermediate portion of the flexible suction hose.

5,622,481

SHAFT COUPLING FOR A MOLTEN METAL PUMP

Bruno H. Thut, 16755 Park Circle Dr., Chagrin Falls, Ohio 44023

Filed Nov. 10, 1994, Ser. No. 336,987
Int. Cl.[6] F16D *9/06*
U.S. Cl. 417—319 **13 Claims**



1. Apparatus for pumping molten metal, the apparatus comprising:

a) a submergible pump housing;

b) a rotatable impeller disposed within the pump housing;

c) an impeller shaft having a first and second end, the first end coupled to the impeller and extending through an opening in the pump housing;

d) a motor-driven rotating drive shaft;

e) a coupling member engaging an end of the drive shaft and the second end of the impeller shaft; and

f) a shear pin extending between the coupling member and one of said drive shafts and said impeller shafts.

5,622,482

PUMP USING SHAPE MEMORY ALLOYS

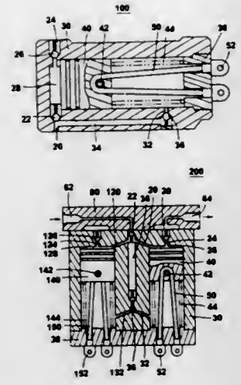
Hong-Jae Lee, Seoul, Rep. of Korea, assignor to Daewood Electronics, Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 30, 1995, Ser. No. 550,354
Claims priority, application Rep. of Korea, Oct. 31, 1994, 94-28159
Int. Cl.[6] F04B *17/03*
U.S. Cl. 417—321 **9 Claims**

1. A pump comprising:

a body having a cylinder formed on one side thereof with an intake port for introducing a fluid, an exhaust port for externally discharging the fluid introduced into the cylinder, a drain port formed on a lower portion of the cylinder for discharging the fluid introduced to the lower portion of the cylinder, and a drain flow passage for connecting the drain port to intake port, said body having a lower portion opened;

a piston mounted to be able to slide within the cylinder, permitting the fluid to flow into the cylinder while moving from a first position to a second position, and discharging the fluid



introduced in the cylinder via the exhaust port while moving from the second position to the first position;

an end cap mounted with a pair of electric terminals and coupled to the lower portion of said body to tightly close the cylinder of said body;

a biasing means installed between a lower end of said piston and an upper end of said end cap for exerting a biasing force to maintain said piston at the first position and for moving said piston from the second position to the first position; and

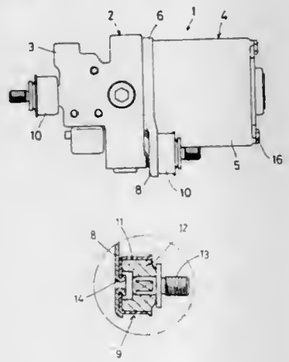
a shape memory alloy member suspended to an outer circumference of a connecting pin penetrating through a lower portion of said piston and connected to the electric terminals of said end cap for moving said piston from the first position to the second position while overcoming the biasing force of said biasing means when a electric power is supplied via the electric terminals.

5,622,483

MOTOR END COVER LOCATED RESILIENT MOUNT FOR A MOTOR PUMP UNIT

Seiji Nokubo, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 12, 1995, Ser. No. 501,574
Claims priority, application Japan, Jul. 13, 1994, 6-161042
Int. Cl.[6] F04B *53/16*
U.S. Cl. 417—363 **2 Claims**



1. A brake fluid pressure controller for use in a motor vehicle, comprising:

a hydraulic unit having a housing and a pump mounted in said housing;

a motor coupled to said housing for driving said pump, said motor comprising a yoke and an end cover at one end of said yoke, and said end cover comprising a support portion formed thereon; and

a shock-absorbing rubber mount for mounting said hydraulic unit and said motor to a vehicle body, said rubber mount being supported on said, support portion formed on said end cover;

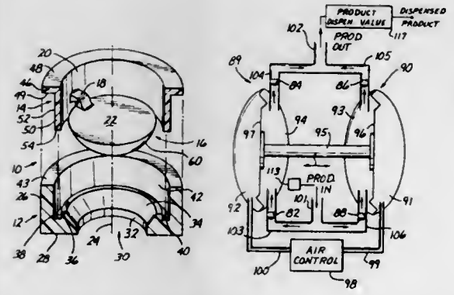
wherein said motor has a rear end cover and is coupled to said housing by bolts that extend through said rear end cover of said motor.

5,622,484

VALVE ARRANGEMENT FOR A CONDIMENT DISPENSING SYSTEM

Christopher J. Taylor-McCune, Mission Viejo; Brian J. Kurth, Anaheim, and Lloyd D. Golobay, Huntington Beach, all of Calif., assignors to Carr-Griff, Inc., Santa Ana, Calif.

Division of Ser. No. 112,617, Aug. 26, 1993, Pat. No. 5,364,244. This application Nov. 10, 1994, Ser. No. 337,353
Int. Cl.[6] F04B *53/10*
U.S. Cl. 417—393 **18 Claims**



1. A system for dispensing a condiment comprising:

a condiment reservoir containing a supply of condiment to be dispensed;

a pump sub-system including a pump inlet in communication with said condiment reservoir, a pump outlet and a pump assembly for pumping condiment from said condiment reservoir through said pump inlet and through said pump outlet; and

a valved conduit in communication with said pump outlet and structured to allow condiment from said pump outlet to flow therethrough, as desired, each of said pump inlet and said pump outlet including a valve comprising:

a valve seat element having a longitudinal axis, defining a through opening and including a seating surface which defines a portion of said through opening;

a valve body element positioned in said pump inlet or said pump outlet and operatively coupled to said valve seat element and located at least partially in said through opening, said valve body element including an inwardly facing interior sidewall; and

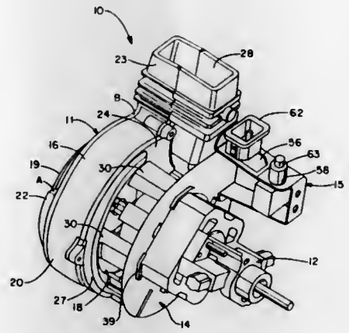
a valve element secured to said valve body element at said inwardly facing interior sidewall and being movable relative to said valve body element, said valve element including a sealing surface which is curved in at least one plane including the longitudinal axis of said valve seat element and is adapted to contact said seating surface to prevent condiment flow through said through opening.

5,622,485

HIGH PERFORMANCE EFFICIENCY DIRTY AIR MOTOR/FAN SYSTEM

Timothy J. Stewart, Akron, Ohio, assignor to Ametek, Inc., Kent, Ohio

Filed Jul. 27, 1995, Ser. No. 508,224
Int. Cl.[6] F04B *35/04*
U.S. Cl. 417—423.2 **13 Claims**



1. In a motor/fan assembly for a vacuum cleaner or the like, the motor/fan assembly having a rotating fan member mounted in a housing and a motor engaged with said rotating fan, the improvement comprising:

an end bracket portion of the housing, said end bracket portion having a volute expansion chamber;

a shroud/baffle unit interposed between the motor and said end bracket, and surrounding the motor; and

a component strap mounted to said shroud/baffle unit and said end bracket for carrying a variety of plurality cleaner components.

5,622,486

RADIALLY-VALVE COMPRESSOR WITH ADJUSTABLE CLEARANCE

Thomas E. McDuffie, Henderson, and Paul H. Bergthold, Longview, both of Tex., assignors to J-W Operating Company, Dallas, Tex.

Filed Jul. 19, 1996, Ser. No. 684,065
Int. Cl.[6] F04B *39/10*
U.S. Cl. 417—536 **10 Claims**

1. A gas compressor comprising:

a cylinder;

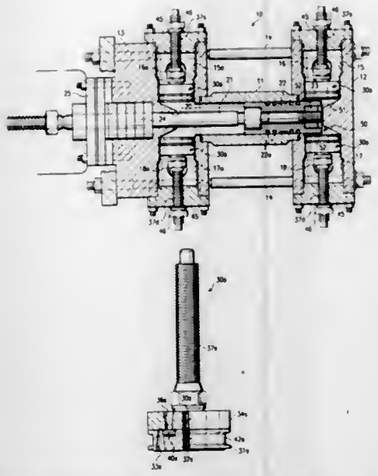
a first head having a center bore therethrough mounted on one end of said cylinder and a second head mounted on the other end of said cylinder; each of said heads having a radial inlet bore and a radial outlet bore whose respective longitudinal axes lie perpendicular to the longitudinal axis of said cylinder;

a piston rod slidably mounted through said center bore in said first head;

a piston mounted on one end of said piston rod and positioned for reciprocating movement within said cylinder, said piston defining a first compression chamber within said cylinder between one side of said piston and said first head and one which is in fluid communication with said radial inlet and outlet bores in said first head and a second compression chamber within said cylinder between the other side of said piston and said second head and one which is in fluid communication with said radial inlet and outlet bores within said second head; and

a valve slidably mounted in each of said radial bores;

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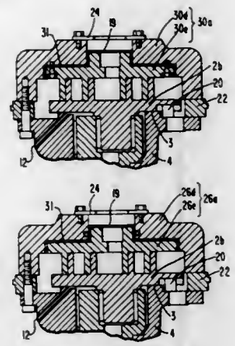
means for adjusting the position of at least one of said valves within its respective bore to thereby adjust the fixed clearance within its respective compression chamber.

5,622,487

SCROLL COMPRESSOR HAVING A SEPARATE STATIONARY WRAP ELEMENT SECURED TO A FRAME

Hiroyuki Fukuhara; Sadayuki Yamada, both of Ōtsu, and Shigeru Muramatsu, Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 334,326, Nov. 2, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 477,626
Claims priority, application Japan, Nov. 2, 1993, 5-274115
Int. Cl.[6] F04C *18/04;29/04*
U.S. Cl. 418—55.2 **8 Claims**



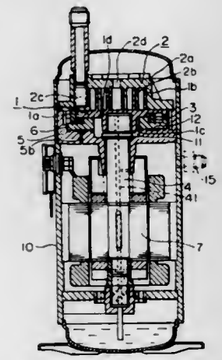
1. A scroll compressor comprising:
a closed container;
a compression mechanism accommodated in said closed container and comprising a stationary scroll and an orbiting scroll, said stationary scroll comprising a frame and a separate wrap element secured to said frame, said orbiting scroll having a shaft and a wrap element allowed to undergo circular translation with respect to said wrap element of said stationary scroll;
a thrust bearing supporting said orbiting scroll;
a crankshaft having an eccentric bearing in engagement with said shaft of said orbiting scroll, said crankshaft being operably coupled to said orbiting scroll;
an electric motor comprising a rotor mounted on said crankshaft and a stator mounted inside said closed container;
an oil reservoir defined inside said closed container; and
an insulation material interposed between said frame and said wrap element of said stationary scroll.

5,622,488

SCROLL TYPE FLUID MACHINE HAVING FIRST AND SECOND FRAME MEMBERS TO INCREASE AIR TIGHTNESS

Kenji Tojo; Hideyuki Ueda; Takao Mizuno, and Takeshi Hida, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,333
Claims priority, application Japan, Sep. 20, 1994, 6-224766
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.5 **5 Claims**



1. A scroll type fluid machine, comprising a fixed scroll member and an orbiting scroll member each having an end plate and a scroll wrap portion standing perpendicular to said end plate, wherein said orbiting scroll member is connected to a driver through a main shaft, and said above components are housed in a hermetic case, said scroll type fluid machine further comprising a first frame member positioned on the opposite side of said orbiting scroll member to the wrap portion side thereof, rotatably supporting said main shaft and fixed to said hermetic case, and a second frame member provided between said first frame member and said orbiting scroll member to be given a gas pressure for pressing said orbiting scroll member toward said fixed scroll member, and an orbiting scroll rear chamber provided as an airtight space, to which pressure in a compression chamber defined by said fixed scroll member and said orbiting scroll member in the middle of compression is led, on the inner periphery of said second frame member to press said orbiting scroll member toward said fixed scroll member.

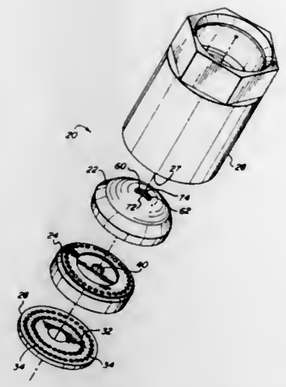
5,622,489

FUEL ATOMIZER AND APPARATUS AND METHOD FOR REDUCING NOX

Richard J. Monro, 102 Ramapoo Rd., Ridgefield, Conn. 06877

Filed Apr. 13, 1995, Ser. No. 421,836
Int. Cl.[6] F23C *7/00*
U.S. Cl. 431—187 **11 Claims**

1. An apparatus for the reduction of NOx generated in a boiler from the burning of liquid fuel applied at high pressure, comprising:
means for generating a stream of fuel having a high spin around a discharge axis;
a fuel tip in the path of said spinning fuel stream, said fuel tip having a through bore aligned with the spinning fuel stream and extending from an inlet port to an outlet port;



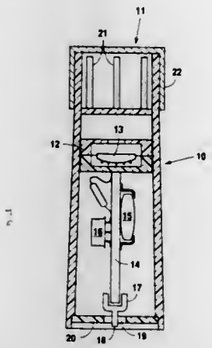
said fuel tip having an end surface which has an outwardly extending domed shape and surrounds the discharge axis;
said end surface further having an oblong slot formed therein which intersects the outlet port of the through bore;
said oblong slot being bounded by a discharge wall;
said discharge wall intersecting said end surface along oppositely located spaced apart edges which are axially inclined at a desired angle with respect to a projection of the discharge axis on the discharge wall, so as to enable spinning fuel to preferentially spill over lower portions of the edges with velocity components capable of forming spaced apart fuel rich zones separated by a fuel lean zone.

5,622,490

CANDLE HOLDER

Chak Y. Cheog, 15th Floor, Flats B&D, E Wah Factory Building 56-60 Wong Chuk Hang Road, Aberdeen, Hong Kong

Filed Jun. 7, 1995, Ser. No. 472,524
Claims priority, application United Kingdom, Mar. 7, 1995, 9504546
Int. Cl.[6] F23D *3/16*
U.S. Cl. 431—288 **4 Claims**



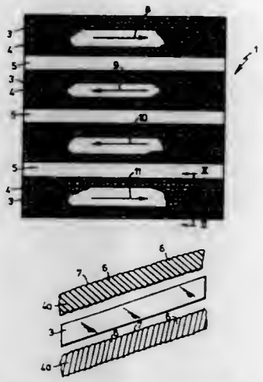
1. A musical candle holder comprising a cylindrical plastics body having cup-shaped opening at one end to receive and releasably fit around a base of a candle; and an interchangeable melody chip, electrically connectable to a loudspeaker, a printed circuit board, a battery, and an externally accessible manually operable electrical switch, all mounted inside said body on a removable cylindrical plug frictionally fit inside said body.

5,622,491

GAS BURNER HAVING A PACK OF STACKED METAL PLATES AT THE COMBUSTION CHAMBER INLET

Arie Van Belle, Am Gouda, Netherlands, assignor to Flameco-Eclipse, B.V., Gouda, Netherlands

Filed Mar. 9, 1993, Ser. No. 28,157
Claims priority, application Netherlands, Mar. 12, 1992, 92 00460
Int. Cl.[6] F23D *14/02;14/62;14/70*
U.S. Cl. 431—328 **9 Claims**



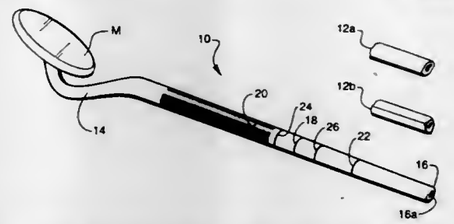
1. Gas burner provided with a connection for supplying a mixture of combustible gas and combustion air, a combustion chamber, and a burner pack located between said connection and said combustion chamber and providing an inlet to said combustion chamber, said burner pack comprising a plurality of stacks of plates; each stack including at least one metal plate which is deformed transversely to its flat plane, and at least one flat metal plate on both sides of each deformed plate; which stacks of burner plates are with their main surfaces substantially parallel to the flow direction of the gas/air mixture, wherein per stack the flow direction of the gas/air mixture from the flow channels bound by said deformed plate and said flat plates is the same, and wherein the deformed plates are corrugated, said burner pack having a flat flame side, each stack (**2***a*–**2***d*) of burner plates (**3**; **4***a*–**4***c*) comprising two or more deformed plates (**4***a*–**4***c*) and the longitudinal centerlines of the corrugations (**6**) in the plates (**4***a*–**4***c*) of at least two adjacent stacks (**2***a*–**2***b*; **2***c*–**2***d*) enclose an angle with each other and with the flame side.

5,622,492

DENTAL MIRROR HANDLE

Bradley A. Eli, Carlsbad, Calif., assignor to Jake & Shainas, Inc., Carlsbad, Calif.

Filed Apr. 10, 1995, Ser. No. 419,398
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—3 **24 Claims**



1. A dental instrument handle for diagnosing temporomandibular joint disorders (TMDs) to which a dental instrument may be attached at one end, comprising:

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a butt end, said butt end opposite the dental instrument end, said butt end adapted for engaging a first incisal edge of first anterior teeth by defining an incisal groove or notch;

an incisal edge distance indicator attached to the handle, said distance indicator at a fixed distance from said butt end, said fixed distance for measuring a second incisal edge of second anterior teeth oppositely opposed said first anterior teeth, said fixed distance indicative of temporomandibular joint function.

5,622,493

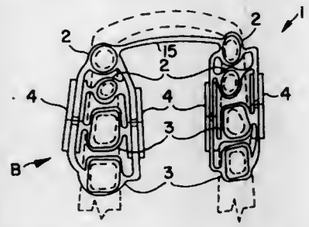
MANDIBULAR DISTRATION DEVICE FOR USE IN MANDIBULAR DISTRACTION OSTEOGENESIS

Yan Razdolsky, 600 Lake Cook Rd., Suite 150, Buffalo Grove, Ill. 60089, and Patrick J. Driscoll, 203 E. Olive, Prospect Heights, Ill. 60070

Continuation-in-part of Ser. No. 222,579, Apr. 4, 1994. This application Feb. 22, 1996, Ser. No. 606,039

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—7 **23 Claims**



1. A mandibular distraction device, comprising:

first and second sets of tooth engagement members adapted to be attached to mandibular teeth of respective opposite lateral sides of the mandible, wherein each of said first and second sets of tooth engagement members has opposite sides;

a first pair of expander assemblies attached to said opposite sides of said first set of tooth engagement members, said first pair of expander assemblies comprising at least one expandable screw device; and

a second pair of expander assemblies attached to said opposite sides of said second set of tooth engagement members, said second pair of expander assemblies also comprising at least one expandable screw device.

5,622,494

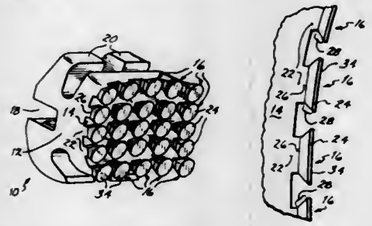
PLASTIC ORTHODONTIC APPLIANCE HAVING A MECHANICAL BONDING BASE AND METHOD OF MAKING SAME

Craig A. Andreiko, Alto Loma, and David L. Ludwig, San Juan Capistrano, both of Calif., assignors to Ormco Corporation, Glendora, Calif.

Filed Feb. 21, 1995, Ser. No. 391,663

Int. Cl.[6] A61C *7/14*

U.S. Cl. 433—9 **16 Claims**



1. An orthodontic appliance, comprising:

a plastic orthodontic appliance having an appliance base and projecting structure extending outwardly from said appliance base,

said projecting structure having an inner extremity integrally connected to said appliance base, an outer extremity, an intermediate section between said inner and outer extremities which has a lateral surface disposed generally orthogonally relative to said base and has a substantially uniform cross-section along substantially its entire length, thereby providing an intermediate section which is free of an increasing cross-sectional taper in a direction away from said appliance base, said projecting structure being fabricated substantially of plastic and free of one or more metal and/or ceramic structural reinforcing inserts,

the cross-sectional area of said outer extremity being greater than the cross-sectional area of the intermediate section, thereby forming undercuts in said projecting structure to facilitate mechanically bonding said orthodontic appliance to a tooth surface with an adhesive.

5,622,495

DEVICE FOR CORRECTING TEETH IRREGULARITIES

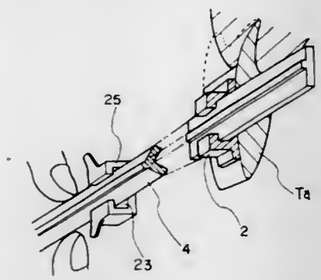
Kunio Chikami, 211-1, Minamikuma, Kochi-shi, Kochi-ken, and Hiroshi Komori, Saitama-ken, both of Japan, assignors to Kunio Chikami, Kochi, Japan

Division of Ser. No. 115,055, Sep. 2, 1993, Pat. No. 5,474,447, which is a continuation-in-part of Ser. No. 886,564, May 21, 1992, Pat. No. 5,271,733, which is a continuation-in-part of Ser. No. 678,422, Apr. 1, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,343

Claims priority, application Japan, Apr. 3, 1990, 2-89661; Mar. 30, 1991, 3-067330; Mar. 26, 1992, 4-068483; Mar. 26, 1993, 4-068482

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—22 **1 Claim**



1. A device for correcting teeth irregularities comprising:

a bracket on which is a slit having a T-shaped section;

a wire to be inserted into said slit and engaged with said bracket;

a supplementary device for a sliding operation along said wire, said supplementary device comprising:

a wire engaging slit having substantially the same shape as said bracket slit; and

at least one protrusion for engaging said bracket.

5,622,496

TECHNIQUE FOR REPAIRING TEETH

Richard Champagne, 88 Holly Dr., Eatontown, N.J. 07724

Filed Apr. 25, 1996, Ser. No. 637,834

Int. Cl.[6] A61C *5/04*

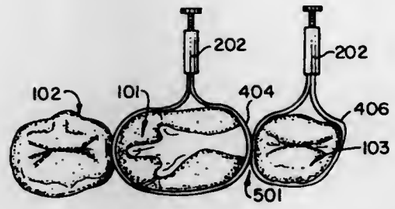
U.S. Cl. 433—39 **12 Claims**

1. A method of repairing tooth damage comprising the steps of:

a) placing a double matrix band including two single matrix bands in an interproximal spacing between a tooth to be repaired and an adjacent tooth said two single matrix bands being connected to each other in the interproximal spacing;

b) tightening a first single matrix band about said adjacent tooth; and

c) tightening a second single matrix band about said tooth to be repaired.



5,622,497

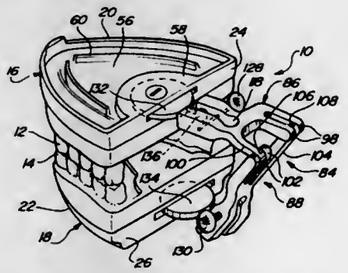
TRAY MODELING SYSTEM AND ARTICULATOR FOR PRODUCING A DENTAL MODEL

Kyung-Rok Cho, 22720 Woodward Ave., #104, Ferndale, Mich. 48220

Filed Aug. 15, 1995, Ser. No. 515,535

Int. Cl.[6] A61C *19/00;9/00;11/00*

U.S. Cl. 433—60 **3 Claims**



1. An improved tray system and articulator for use with a conventional dental impression for creating a dental model of the patient's mouth, comprising:

at least one tray having a first substantially planar face, a second substantially planar face separated from said first planar face by a predetermined thickness, and at least one side;

said first substantially planar face including a flat peripheral outer portion and an elevated and central plateau portion which is bounded by said flat outer portion;

a channel shaped recess formed through said thickness of said at least one tray and extending around said peripheral outer portion, first and second oppositely facing walls defining said recess and having rows of ridges placed thereon;

at least one insert corresponding in outline to that of said recess, said at least one insert including a narrow and elongated body portion having inner and outer rows of ridges which interengage with said rows of ridges on said oppositely facing walls to secure said insert within said recess, said insert further including a keyed upper portion extending from said body portion and projecting above a surface of said peripheral outer portion;

wherein a base layer of stone is adapted to be applied over said outer portion of said tray and surround said keyed upper portion of said insert;

wherein the dental impression corresponds in shape to said peripheral outer portion and is bonded to said base layer of stone; said at least one tray including a first tray and a second tray, said articulator providing means for positioning and means for securing said first tray holding a first dental impression in a spaced and opposing fashion relative to said second tray holding a second dental impression to recreate a dental model;

said means for positioning and means for securing including a first member having a first end and a second end and a second member having a first end and a second end;

a first connecting plate interconnecting said first end of said first member to said first tray and a second connecting plate interconnecting said first end of said second member to said second tray, said second end of said first member hingedly connecting to said second end of said second member about a common axis;

a first pair of locating guide fingers and a first receiving finger which is spaced a distance from said first pair of guide fingers, said first pair of guide fingers and said first receiving finger extending from a body of said first articulator member toward said second end;

a second pair of locating guide fingers and a second receiving finger which is spaced a distance from said second guide fingers, said second pair of guide fingers and said second receiving finger extending from a body of said second articulator member toward said second end; and

said receiving finger of said first articulator member hingedly securing between said pair of locating guide fingers of said second articulator member and said receiving finger of said second articulator member hingedly securing between said pair of locating guide fingers of said first articulator member.

5,622,498

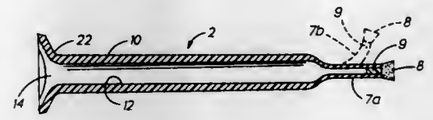
METHOD FOR THE TREATMENT OF PERIODONTAL DISEASE BY SUSTAINED DELIVERY OF A THERAPEUTIC AGENT TO THE PERIODONTAL POCKET, COMPOSITION OF MATTER THEREFOR AND APPARATUS FOR THE ADMINISTRATION THEREOF

Nancy S. Brizzolara, Congers; Michael G. Lanzilotti, Pearl River, and James R. Lawter, Goshen, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 593,125, Oct. 5, 1990, Pat. No. 5,236,355, which is a division of Ser. No. 289,076, Dec. 22, 1988, abandoned. This application Jan. 22, 1993, Ser. No. 7,753

Int. Cl.[6] A61C *17/02;5/04;* **A61M** *5/00*

U.S. Cl. 433—80 **31 Claims**



1. Apparatus for dispensing an oral composition for alleviating dental diseases by local administration of a therapeutic agent to the periodontal pocket of a patient in need of such treatment, said apparatus comprising:

(1) a container having barrel means ending in a hollow delivery tip outlet means adapted to fit the periodontal pocket between the patient's gum and teeth;

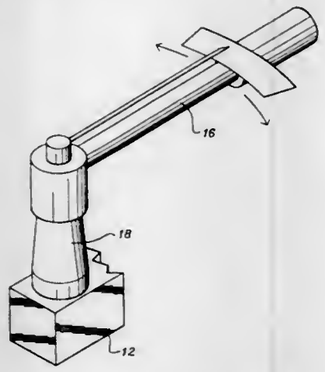
(2) plunger means to translate an externally applied force onto dry therapeutic agent containing microparticles contained within the outlet means so as to dispense them through said outlet means tip into said periodontal pocket said plunger means comprising a rod with a solid tip which is partially inserted into said outlet means; and in said outlet means,

(3) said dry microparticles comprising:

(i) an effective amount of at least one therapeutic agent dispersed in a dry matrix comprising a biocompatible and biodegradable polymer.

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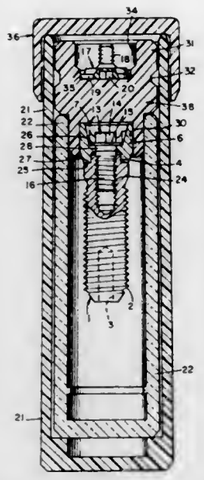
5,622,499
METHOD OF MANUFACTURING A DENTAL ABUTMENT
William E. Simmons, 1225 Broken Sound Pkwy. NW., Boca Raton, Fla. 33487
Filed Apr. 10, 1995, Ser. No. 420,971
Int. Cl.[6] A61C *13/12;13/225;8/00*
U.S. Cl. 433—172 **3 Claims**



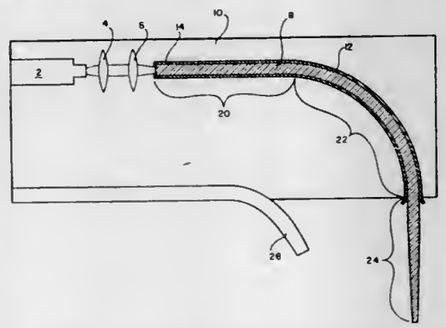
1. Method of manufacturing a dental abutment to assure a desired in situ alignment of the dental abutment with a dental implant, the method comprising the steps of:
(a) providing a workpiece having therein a threaded recess corresponding to the length, diameter, pitch and material density of a coupling surface of the dental implant to be used in a dental procedure said recess having a mouth;
(b) rotating into said recess a coupling surface of said dental abutment to be secured in situ to said dental implant said abutment having a non-threaded surface;
(c) tightening said coupling surface of said dental abutment into said recess to a torque in the range of about 25 to about 35 newtons per centimeter; and
(d) providing a surface of radial reference upon, and common to, both said non-threaded area of said abutment and a location, proximal to said mouth of said recess of said workpiece,
whereby a desired degree of rotation and alignment of said abutment relative to said implant will be assured upon mutual alignment in situ of said surface radial of reference of said abutment and a dental implant provided with a reference corresponding to said radial reference of said workpiece.

5,622,500
INSERTION TOOL/HEALING COLLAR/ABUTMENT
Gerald A. Niznick, Las Vegas, Nev., assignor to Core-Vent Corporation, Las Vegas, Nev.
Filed Feb. 24, 1994, Ser. No. 201,534
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 **15 Claims**

1. A healing collar joined to, and seated on an endosseous dental implant, said implant having an internal, threaded passage, and an external, multi-sided projection around the opening to said passage at the top of said implant, said implant being adapted for insertion with said collar into an opening in the jawbone of a person, said collar including:
a cylindrical-shaped external surface of a size and shape sufficient to form an opening in the mucosal tissue atop a passage formed in the jawbone of a patient to receive said implant;
a first cavity at one end of said healing collar, said cavity having the same number of sides as said projection atop said implant, and having a size and shape adapted to fit over said multi-sided projection atop said implant;
at the other end of said healing collar, an opening leading to a second, internal cavity having a plurality of sides, said internal cavity being adapted to engage a tool suitable for inserting said implant into said passage between said first and said second cavities, and inside said collar, an inwardly-projecting flange having an upper surface for engaging the head of a screw, and a lower surface for seating on the top of said implant; and
a screw member that includes a head member joined to a threaded shank that has a size and shape sufficient to pass through said healing collar and engage the threads in said internal, threaded passage inside said implant, with said head member seating itself on said upper annular flange surface, leaving sufficient space for insertion of said tool into said cavity.

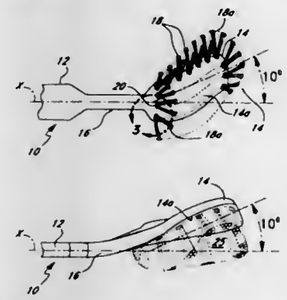


5,622,501
DESTROYING BACTERIA ON PHYSIOLOGIC TISSUE
Guy Levy, Tustin, Calif., assignor to Endo Technic Corporation, San Clemente, Calif.
Division of Ser. No. 615,789, Nov. 20, 1990, Pat. No. 5,092,773, which is a continuation-in-part of Ser. No. 299,472, Jan. 19, 1989, Pat. No. 5,020,995, and Ser. No. 351,203, May 15, 1989, Pat. No. 5,194,005, which is a continuation-in-part of Ser. No. 335,245, Apr. 10, 1989, abandoned. This application Oct. 30, 1991, Ser. No. 784,976
Claims priority, application France, Dec. 21, 1988, 88 17549
Int. Cl.[6] A61C *5/00*
U.S. Cl. 433—215 **1 Claim**



1. A method of destroying bacteria on physiologic tissue in the mouth comprising: staining the bacteria to cause the bacteria to have a dark coloration; and exposing the stained bacteria to laser radiation at a wavelength and energy level sufficient to vaporize the bacteria, and at an energy level selected so that the physiologic tissue on which the bacteria are present is not affected by the laser radiation.

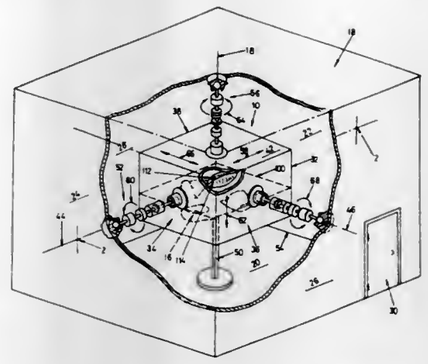
5,622,502
TOOTH BRUSH WITH HELICAL BRISTLES AND METHOD
David B. Wilkes, and Lucille Wilkes, both of 3101 East, 3300 North, Twin Falls, Id. 83301
Filed Nov. 22, 1994, Ser. No. 343,624
Int. Cl.[6] A61C *17/00;* **A46B** *9/04*
U.S. Cl. 433—216 **11 Claims**



1. A tooth brush including
an elongated handle with an elongated head that is sized to fit into the mouth of an individual while this individual is brushing their teeth, said head having a generally rectangular configuration which is twisted into a helical shape and further wherein the head is bent relative to the handle whereby the longitudinal axis of the head defines an acute angle relative to the longitudinal axis of the handle,
said head having two sides, with a plurality of bristles extending outward from only one side of the head, said bristles having terminal ends which rub against teeth during brushing,
said terminal ends lying along a common surface in the shape of a helix, with a substantial number of said bristles making contact with the teeth at an angle of about 45° during brushing.

5,622,503
ARRANGEMENT AND METHOD OF SIMULATING VERTIGO TO TRAIN PILOT OVERCOMING VERTIGO
Genquan Feng, P.O. Box 1796, New York, N.Y. 10185-0016
Continuation-in-part of Ser. No. 851,532, Mar. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 552,003, Jul. 13, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 82,936
Int. Cl.[6] B09B *9/36*
U.S. Cl. 434—36 **20 Claims**

1. An arrangement for simulating vertigo in on-ground training of pilots to overcome in-flight vertigo, comprising:
an opaque enclosure surrounding a pilot, said enclosure including front and rear wall portions spaced apart of each other along a first axis, a pair of side wall portions spaced apart of each other along a second axis generally perpendicular to the first axis, and a top wall portion above the front and rear and side wall portions along a third axis generally perpendicular to both the first and second axes;
a trainer means positioned in said enclosure, said trainer means having a seat on which the pilot is seated, a light-transmissive canopy above the pilot, and an opaque cover overlying part of the canopy, while the remaining part of the canopy remains light transmissive;

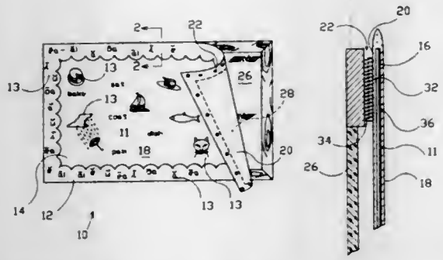


an artificial environment scene on said wall portions surrounding the trainer means and having a horizon line extending across the front, rear and side wall portions within the enclosure; and
moving means for effecting relative movement between the horizon line of the enclosure and the pilot relative to at least one of the axes to impart a false illusion of position to the pilot; wherein said moving means being controlled by a controller according to a training procedure, said training procedure being randomly generated for controlling said movement of said enclosure by said controller.
13. A method of simulating vertigo in on-ground training of pilots to overcome in-flight vertigo, comprising the steps of:
surrounding a pilot with an opaque enclosure, said enclosure having front and rear wall portions spaced apart of each other along a first axis, a pair of side wall portions spaced apart of each other along a second axis generally perpendicular to the first axis, and a top wall portion above the front and rear and side wall portions along a third axis generally perpendicular to both the first and second axes;
positioning a trainer means in said enclosure, said trainer means having a seat on which the pilot is seated, a light-transmissive canopy above the pilot, and an opaque cover overlying part of the canopy, while the remaining part of the canopy remains light transmissive;
providing an artificial environment scene on said wall portions surrounding the trainer means and having a horizon line extending across the front, rear and side wall portions within the enclosure; and
providing effecting relative movement between the horizon line of the enclosure and the pilot relative to at least one of the axes to impart a false illusion of position to the pilot by a moving means; wherein said moving means being controlled by a controller according to a training procedure, said training procedure being randomly generated for controlling said movement of said enclosure by said controller.

5,622,504
REUSABLE BULLETIN BOARD DISPLAY
Wilma J. Hance, Knoxville, Tenn., assignor to Jamie H. Tarziers, Fairhope, Ala.
Filed Apr. 20, 1995, Ser. No. 425,797
Int. Cl.[6] G09B *29/00*
U.S. Cl. 434—430 **9 Claims**

1. A reusable bulletin board display, for use in educational purposes, which is removably mountable on a conventional bulletin board or other similar surface, said reusable bulletin board display comprising:
a substrate consisting of a front side and a back side, said substrate being fabricated from a durable and flexible material to permit disposal of said bulletin board display within a cylindrical storage device, said back side of said substrate defining a plurality of indicators;

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a laminate secured to and covering a substantial portion of said substrate; and

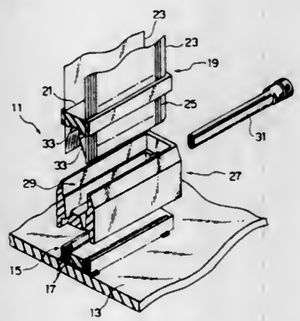
a plurality of attachment devices disposed about a perimeter of said substrate for reusably attaching said reusable bulletin board display to the front side of the conventional bulletin board.

5,622,505

MULTI-ROW CONNECTOR COMPRISING FLEXIBLE CONTACT SHEETS WITH INSULATING RESILIENT PIECES

Osamu Hashiguchi; Kazuomi Sato, and Yoshiaki Ichimura, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Japan

Filed Oct. 23, 1995, Ser. No. 546,585
Claims priority, application Japan, Oct. 21, 1994, 6-256598
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—67 **11 Claims**



1. An electrical connector for electrically connecting a flexible printed circuit board to a connecting object, said flexible printed circuit board comprising a flexible insulator sheet with front and rear surfaces and a sheet end and a conductor pattern extending on said front surface to said sheet end, which comprises:

an insulating resilient piece having an end portion and an extension portion extending in a different direction from said end portion, said insulating resilient piece being attached to the rear surface of said flexible printed circuit board so that said end portion is arranged to the sheet end of said flexible printed circuit board and said extension portion extending away from the rear surface of said flexible printed circuit board;

a connecting member for being electrically and mechanically connected to said connecting object, said connecting member comprising an insulator block and a contact supported in said insulator block, said contact having a terminal end connected to said connecting object and a contact portion, said connecting member having a receiving hole for loosely receiving said end portion of said insulating resilient piece and said sheet end of said flexible printed circuit board together, said contact portion exposed in said receiving hole; and

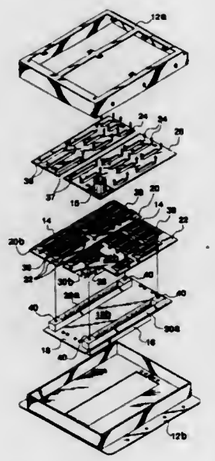
an actuating member for pressing said extension portion of said insulating resilient piece towards the rear surface of said flexible printed circuit board when said end portion of said insulating resilient piece and said sheet end of said flexible printed circuit board are received together in said receiving hole, whereby said conductor pattern of said flexible printed circuit board is pressed onto and is brought into contact with said contact portion.

5,622,506

AVIONIC CONNECTOR INTERFACE DISTRIBUTION UNIT

James F. Hornig; Richard A. Lyon, both of Austin; James W. Sheffield, Round Rock, all of Tex.; Joseph R. Steinman, Mechanicsburg, Pa.; Steven M. Bryer, Needham; Jeffrey D. Beaton, Billerica, both of Mass.; Randolph M. Layton, Bolingbrook; Gregory J. Bassett, Lockport, both of Ill., and Donna E. Haas, Austin, Tex., assignors to GTE Airfone Incorporated, Oak Brook, Ill.

Filed Nov. 10, 1994, Ser. No. 337,290
Int. Cl.[6] H05K *7/06*
U.S. Cl. 439—74 **15 Claims**



1. An avionic connector interface distribution unit for interfacing a central controller with a plurality of avionic devices, comprising:

a mother printed wiring board including first and second planar surfaces;

first and second daughter printed wiring boards, each of said daughter boards including first and second planar surfaces, said first and second daughter boards being generally co-planar and adjacent to each other and being generally parallel to said mother board, said first surfaces of said daughter boards facing said second surface of said mother board;

first and second parallel headers, said first header being mounted between said second surface of said mother board and said first surface of said first daughter board, said second header being mounted between said second surface of said mother board and said first surface of said second daughter board;

a large avionic connector mounted to said first surface of said mother board; and

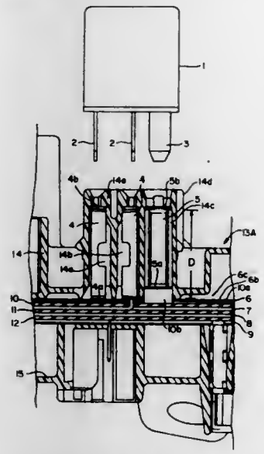
a plurality of miniature connectors mounted to said second surfaces of said daughter boards.

5,622,507

ELECTRICAL CONNECTION BOX

Koji Kasai, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Sep. 13, 1995, Ser. No. 528,216
Claims priority, application Japan, Nov. 16, 1994, 6-282153
Int. Cl.[6] H01R *9/24*
U.S. Cl. 439—76.2 **2 Claims**



1. An electrical connection box including a casing in which a bus bar constituting an internal circuit of the electrical connection box and formed by an electrically conductive metal plate is provided through an insulating plate and on an outer face of which a connective portion having a relay electrically connected to a tab of the bus bar through a plurality of relay terminals is provided;

wherein the relay includes a plurality of terminals having an identical length but different widths, respectively, while the relay terminals have different lengths for the terminals of the relay, respectively;

the electrical connection box comprising:

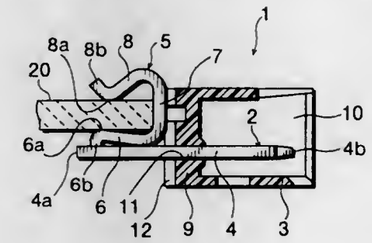
a pillar portion for engaging a lower end of a shorter one of the relay terminals, which is projected from an upper face of the insulating plate such that an upper end of the shorter one of the relay terminals substantially coincides with an upper end of a longer one of the relay terminals.

5,622,508

ELECTRICAL CONNECTOR AND THERMAL PRINTHEAD USING THE SAME

Takaya Nagahata, and Tokihiko Kishimoto, both of Ukyo-ku, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 23, 1994, Ser. No. 200,484
Claims priority, application Japan, Feb. 24, 1993, 5-035457
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—79 **18 Claims**



1. An electrical connector for a circuit board comprising:

a single connector housing having a pin retaining wall which is provided with a plurality of insertion holes and having a shroud extending from said pin retaining wall for receiving a mating connector;

a plurality of terminal pins each having a stem portion for insertion into the single connector housing through a corresponding one of the insertion holes;

wherein each of the terminal pins includes a clip portion arranged outside the single connector housing; and

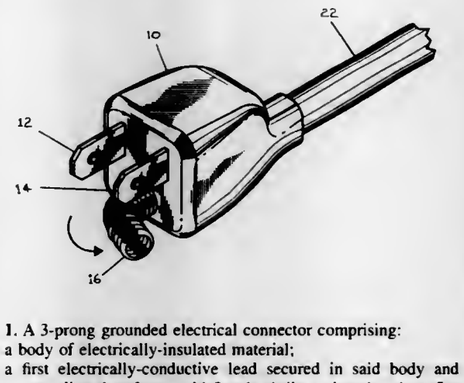
wherein the clip portion includes an opposed pair of legs extending from a connecting web away from the pin retaining wall of the single connector housing, the opposed pair of legs approaching each other in a direction away from the connecting web but being elastically openable for engagement with the circuit board.

5,622,509

3-PRONG ELECTRICAL CONNECTOR

Ralph D. Smythe, 2708 Hwy. MN, Cottage Grove, Wis. 53527, and Tony T. Brechtl, 9 Woodglen Ct., Madison, Wis. 53716

Filed Jan. 31, 1996, Ser. No. 595,027
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—106 **17 Claims**



1. A 3-prong grounded electrical connector comprising:

a body of electrically-insulated material;

a first electrically-conductive lead secured in said body and extending therefrom, said first lead dimensioned and configured to operationally engage a hot conductor of a 3-conductor electrical cord;

a second electrically-conductive lead secured in said body and extending therefrom, said second lead dimensioned and configured to operationally engage a neutral conductor of the 3-conductor cord; and

an electrically-conductive grounding prong secured in said body and extending therefrom, said grounding prong dimensioned and configured to operationally engage a ground conductor of the 3-conductor cord, and further wherein where said grounding prong extends from said body said grounding prong is a coil spring.

5,622,510

PC CARD ELECTRICAL CONNECTOR

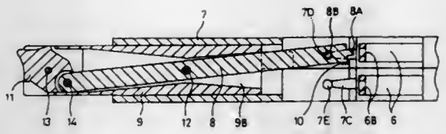
Mitsuo Ishida, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,822
Claims priority, application Japan, Jun. 29, 1994, 6-168646
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—160 **7 Claims**

1. A PC card electrical connector comprising:

a housing having at least upper and lower storage cavities for accepting PC cards one for each storage cavity;

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at least upper and lower movable plates disposed near said upper and lower storage cavities, respectively, and each having at least one abutment member for abutment with a portion of said PC cards;

at least upper and lower eject levers rotatably supported by said housing in planes parallel to said PC cards and coupled at one end to said movable plates;

at least upper and lower intermediate bars coupled to the other end of said upper and lower eject levers, respectively, and movable along sides of said storage cavities; and

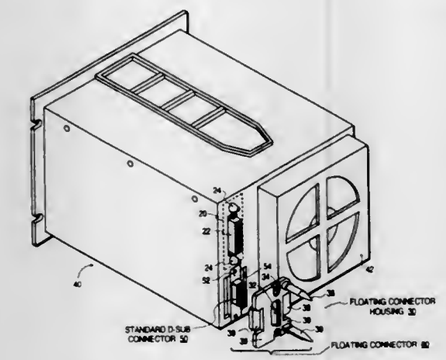
ejector means for selectively engaging one of said upper and lower intermediate bars, said ejector means including a single eject bar having an end switchable so that another end is selectively engaged with one of said intermediate bars to eject a desired PC card with ease and few errors.

5,622,511

FLOATING CONNECTOR HOUSING

Brian S. Jarrett, Cornelius, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 11, 1995, Ser. No. 570,540
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—248 **21 Claims**



1. A floating connector housing comprising:

an attachment area for attaching a first connector thereto;

two or more flanges for engaging a first surface of a plate of a device, the two or more flanges cooperating with a locking surface of the floating connector housing, said locking surface engaging an opposing second surface of the plate to lock the floating connector housing to the plate by sandwiching the plate between the flanges and the locking surface, the two or more flanges allowing the floating connector housing to have limited movement within a plane of the plate; and

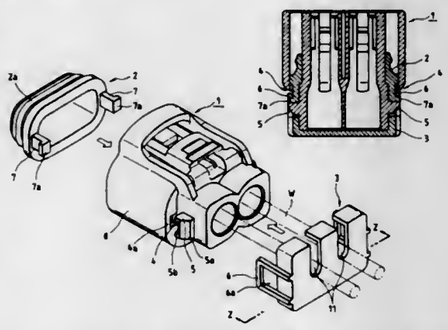
one or more alignment pins extending forwardly in a coupling direction for aligning the floating connector housing with a second connector to allow the first connector to couple to the second connector.

5,622,512

APPARATUS FOR FORMING WATERPROOF CONNECTION

Yoshinori Uchida, and Toshiro Maejima, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 430,448
Claims priority, application Japan, Apr. 15, 1994, 6-77544
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—271 **16 Claims**



1. An apparatus for forming a waterproof connection, the apparatus comprising:

a first connector housing for receiving wires, the first connector housing defining through-holes;

a second connector housing for connecting with the first connector housing;

a packing unit insertable in the first connector housing for providing a waterproof seal between an engaging surface of the first connector housing and an engaging surface of the second connector housing;

projection parts included respectively on opposite side portions of one end of the packing unit, wherein each of the projection parts includes an outwardly extending retaining portion for engaging the first connector housing, and wherein each of the retaining portions project through respective through-holes;

a rear holder attachable to a rear end of the first connector housing for retaining the packing unit;

lock portions disposed respectively on opposite side portions of one end of the rear holder; and

lock pawls, for respectively retaining the lock portions, disposed adjacent to outlets of the through-holes defined by the first connector housing, respectively.

5,622,513

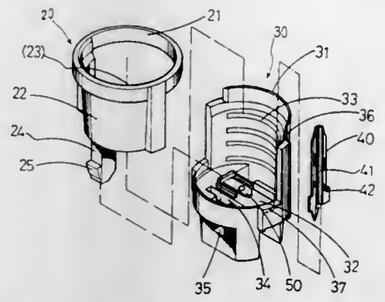
LAMP SOCKET

Yuan-Peng Kuang, No. 78, Tung-Nan St., Hsin Chu City, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,361
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—340 **3 Claims**

1. A lamp socket comprising a socket body having a spiral groove for mounting a base of a conventional lamp bulb, a center metal contact plate and a side metal contact plate respectively fastened to said socket body for connection to a respective conductor of an electric wire, wherein said socket body comprises:

a right half portion, said right half portion comprising a base, which holds said center metal contact plate, a right half circularly arched upright wall raised from said base, a longitudinal locating groove on said right half circularly arched upright wall of said right half portion which receives said side metal contact plate, a rectangular slot on said base at an inner side, a retaining hole on said base at an outer side in communication with said rectangular slot, and a side metal contact slot disposed through said base which holds said side metal contact plate in said longitudinal locating groove; and



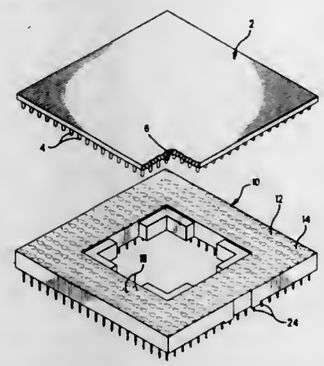
a left half portion abutted to said right half portion, said left half portion comprising a horizontal locating ring hooked on outside of said right half circularly arched upright wall of said right half portion, a left half circularly arched upright wall extended downwardly from a bottom part of said horizontal locating ring and engaged on said base of said right half portion and abutted to said right half circularly arched upright wall of said right half portion, a downward locating rod extended downwardly from a bottom edge of said left half circularly arched upright wall inserted into said rectangular slot of said base of said right half protion, and a hook extended from said downward locating rod and hooked in said retaining hole of said base of said right half portion.

5,622,514

COVERLESS PIN GRID ARRAY SOCKET

James E. Crompton, III, Pfafftown, and Randy A. Smith, Belews Creek, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 30, 1995, Ser. No. 497,271
Int. Cl.[6] H01R *13/625*
U.S. Cl. 439—342 **13 Claims**



1. An electrical socket for an electronic package having an array of pins extending in a common direction from a bottom face of said package, at least some of said pins each having a respective cross-sectional enlargement extending outwardly therefrom at a respective predetermined distance from said bottom face, the socket comprising:

a housing having a wall defining a package mounting surface, an array of openings in the wall corresponding to the array of pins, said openings providing access to a corresponding array of electrical contacts in the housing, said openings including respective entranceways each dimensioned to permit free passage of an associated said pin to an interior of the housing, and respective channels extending laterally from said entranceways in respective directions selected to permit movement of said pins into electrical mating engagement with said contacts when said package is moved along a selected path over said mounting surface;

wherein said entranceways of said openings which are associated with said at least some pins are dimensioned to permit passage of said enlargements into said interior, and said channels of said openings which are associated with said at least some pins are dimensioned narrower than their respective said enlargements, each of said narrower channels extending for a respective depth dimension from said mounting surface to a respective oppositely facing locking surface, each said depth dimension being less than said predetermined distance of an associated said pin such that said enlargements are trapped beneath said locking surfaces when said pins are disposed in said channels; and

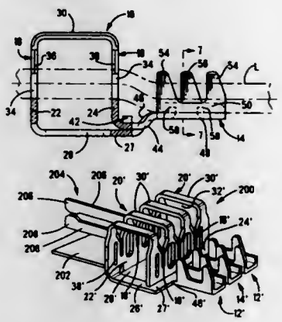
wherein said package is secured to said socket by inserting said pins into said entranceways and moving said package transversely over said mounting surface until said pins are electrically engage with said contacts and said enlargements are disposed beneath said locking surfaces.

5,622,515

GROUNDING ELECTRICAL LEADS

Gheorghe Hotea, Griesheim, and Harald M. Lutsch, Dietzenbach, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 14, 1994, Ser. No. 338,078
Claims priority, application United Kingdom, Nov. 23, 1993, 9324064
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—398 **17 Claims**



1. An electrical terminal set comprising a set of terminals where each terminal includes two spaced pairs of spring beams defining a pair of aligned slots for receiving a common electrical lead, and a strain relief ferrule aligned with the lead receiving slot, wherein the spring beams of each pair of beams are defined by a pair of juxtaposed loops, the loops of all of the terminals of the terminal set being connected together by a front wall and a rear wall with one end of each loop being connected to the front wall and the other end of each loop being connected to the rear wall, whereby a cage-like structure is formed, and the lead strain relief ferrules project beyond the same wall.

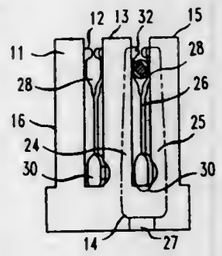
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5,622,516

INSULATION DISPLACEMENT TERMINAL WITH TWO-WIRE INSERTION CAPABILITY

William C. Baggett, Duluth, Ga.; Golam M. Choudhury, Warren; Michael G. German, Secaucus, both of N.J.; Dianne W. Gilland, Lawrenceville, Ga.; Andrew Schwartz, Morris Township, Morris County; Jeremia P. Starace, Nutley, both of N.J., and Wayne D. Larsen, Indianapolis, Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 17, 1995, Ser. No. 442,903
Int. Cl.[6] H01R 4/24
U.S. Cl. 439—408 24 Claims



1. A device for making an electrical connection to an insulated wire having a metallic conductor contained therein, said device comprising:

an essentially flat terminal element of electrically conductive material, said terminal element including:

a solid base region;

first and second arm sections extending upwardly from said base region, said arm sections having essentially equal and opposite geometries and defining a centralized slot in said terminal element, said slot being open at a top region thereof and having a width less than said metallic conductor of said insulated wire, wherein said arm sections include sharpened inside edges adapted to cut through insulation of said wire inserted in said slot to establish an electrical connection; and

an opening, defined by said arm sections, in said base region of said terminal element adjoining said slot, said opening having a width greater than said width of said slot, wherein said opening adjoining said slot enables said sharpened edges of said arm sections to torsionally deflect upon a predetermined normal force being exerted by insertion of said wire into said slot; and

a housing, including:

a base

a plurality of vertical walls, extending from said base, adapted to retain said terminal element therebetween, wherein each of said vertical walls includes a region of a diminished thickness that facilitates said torsional displacement of said arm sections of said terminal element.

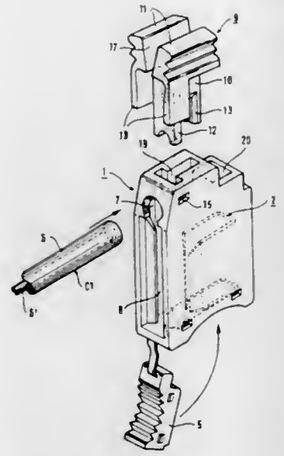
5,622,517

ELECTRICAL CONNECTION MODULE CONTAINING A CONNECTOR PART OF THE TYPE HAVING A WIRE-RETAINING SLOT PROVIDED WITH AN INSULATION-DISPLACEMENT INLET

Jean-Paul Heng, Lyons; Ariel Ruiz, Villeurbanne, and Luc Doutaz, Lyons, all of France, assignors to Entrelec S.A., Villeurbanne, France

Filed Jul. 3, 1995, Ser. No. 497,944
Claims priority, application France, Jul. 4, 1994, 94 08210
Int. Cl.[6] H01R 4/24
U.S. Cl. 439—417 9 Claims

1. A connection module including an insulating housing inside which a conductive connector part is held stationary, which connector part has a wire-retaining slot provided within insulation-displacement inlet for at least one electrical wire conductive core,



the housing having a wire-insertion opening provided with a first portion via which a wire to be connected can be inserted to a penetration position relative to the insulation-displacement inlet of the slot, prior to pushing the core of the wire transversely into the slot, and a second portion for retaining, by nipping, the covering of any suitable wire whose core is retained by being nipped in the slot into which it has been pushed, the module further including an auxiliary part provided with a wire-pusher element mounted to slide in the housing along the slot and/or the opening between a first position in which it is possible to insert a wire between the pusher element and the insulation-displacement inlet of the slot, and a second position in which the core of a wire pushed into the slot and the corresponding covering of the wire pushed into the opening are retained therein by being nipped, said module including an auxiliary part that is provided with an operating element which projects from the housing, which is held in at least the second position by co-operation between catch-type holding means carried by it and complementary holding means in the housing, and which includes external operating means disposed on the operating element so as to act on at least some of the holding means, thereby releasing said auxiliary part when it is held in the second position so as to enable it to be returned to the first position, wherein said operating means of said auxiliary part are formed by two portions of the operating element, which portions carry the catch-type holding means provided on the auxiliary part, and are separated by a gap and are elastically deformable by clamping from the outside so as to close said gap, so that they can be elastically deformed from a rest state in which the holding means on the auxiliary part co-operate with the complementary means in the housing so as to hold the auxiliary part in the second position, once said second position has been reached by the auxiliary part, to a deformed state in which the catch-type holding means is disengaged from the complementary holding means carried by the housing, thereby enabling the auxiliary part to be slid back to its first position.

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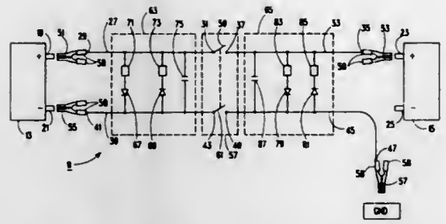
BOOSTER CABLE SYSTEM

Arion A. Kalpaxis, 61-17 68th Ave., Ridgewood, N.Y. 11385

Filed Nov. 22, 1995, Ser. No. 561,815
Int. Cl.[6] H01R 11/00
U.S. Cl. 439—504 10 Claims

1. A booster cable system for use in starting an automotive vehicle having a discharged battery with a charged battery, each battery having a positive terminal and a negative terminal, said booster cable system comprising:

a. a first electrical cable having a first end for connection to the positive terminal of the charged battery and a second end;



b. a second electrical cable having a first end for connection to the positive terminal of the discharged battery and a second end;

c. a third electrical cable having a first end for connection to the negative terminal of the charged battery and a second end;

d. a fourth electrical cable having a first end for connection to either the negative terminal of the discharged battery or a ground in the vehicle having the discharged battery, said fourth electrical cable also having a second end;

e. each electrical cable being insulated;

f. an electrical switch coupled to said four electrical cables, said electrical switch having an open position and a closed position, said electrical switch, when closed, electrically connecting the second end of said first electrical cable to the second end of said second electrical cable and electrically connecting the second end of said third electrical cable to the second end of said fourth electrical cable; and

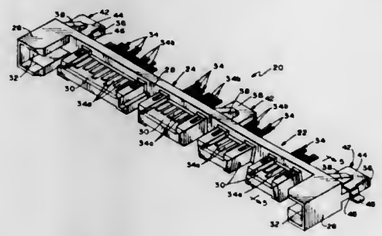
g. an electrical clip on the first end of each one of said first, second, third and fourth electrical cables for removably securing the first end of each electrical cable at its intended location.

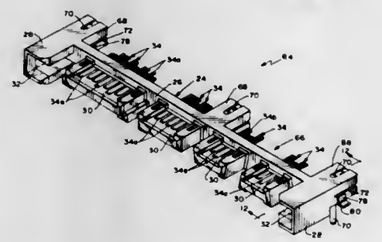
5,622,519

RETENTION SYSTEM FOR ELECTRICAL CONNECTORS ON PRINTED CIRCUIT BOARDS

Craig Bixler, Elmhurst; Michael O'Sullivan, Willowbrook, and David R. Schmidgall, Streamwood, all of Ill., assignors to MOLEX Incorporated, Lisle, Ill.

Filed Apr. 28, 1995, Ser. No. 430,983
Int. Cl.[6] H01R 13/00
U.S. Cl. 439—570 18 Claims





1. A retention system for an electrical connector mountable to a substrate such as a printed circuit board, comprising:

a dielectric housing having terminal receiving cavities therein, a plurality of terminals mounted in said cavities, the housing being adapted for mounting on a surface of the board with the terminals establishing electrical connection to appropriate circuit traces on the board, and the housing including an elongated body portion and at least one rearwardly projecting mounting portion projecting generally parallel to the board in proximity to said surface, said mounting portion including a gusset joining the mounting portion with the elongated body portion, said gusset including a groove;

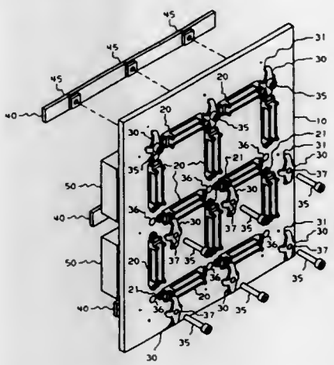
a generally U-shaped hold-down clip mounted on the mounting portion of the housing and having a bight portion spanning proximal ends of a pair of leg portions, the leg portions being configured for depending generally along opposite sides of said mounting portion of the housing with end portions of the leg portions for mounting to said printed circuit board, said bight portion engaging the groove of the gusset to retain the clip on the housing.

5,622,520

HIGH-DENSITY BOARD CONNECTOR ATTACHMENT

Peter L. Dutka, Wappingers Falls; Jeffrey J. Hare, Staatsburg; Norton J. Tomassetti, Kingston; William J. Tkazyik, and Wade H. White, both of Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 624,670, Apr. 2, 1996, abandoned. This application May 31, 1996, Ser. No. 657,921
Int. Cl.[6] H01R 13/73
U.S. Cl. 439—573 11 Claims



1. A printed circuit board assembly comprising:

a printed circuit board having at least one layer of wiring for interconnection of electronic components disposed thereon;

a rectangular array of rows and columns of surface mount connectors disposed on said board in electrical connection to said wiring, at least three of said connectors meeting at some intersections of said rows and columns;

connector holders disposed at at least some intersections of said rows and columns, each connector holder for retaining all the ends of said connectors, which meet at a corresponding said intersection, in fixed positions with respect to said board; and

fastening means for affixedly mounting said connector holders to said board.

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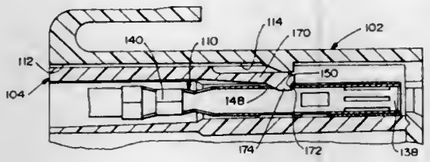
ELECTRICAL CONNECTOR WITH TERMINAL POSITION ASSURANCE DEVICE THAT FACILITATES FULLY INSERTING A TERMINAL

Scott P. Marceau, Plainfield, and Kenneth T. Stead, Aurora, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 314,981, Sep. 29, 1994, Pat. No. 5,522,740. This application Nov. 2, 1995, Ser. No. 552,323

Int. Cl.[6] H01R *13/432*

U.S. Cl. 439—595 **10 Claims**



1. An electrical connector, comprising:

a housing having a forward mating end and a rearward terminating end and a terminal-receiving cavity extending in a direction between the ends;

a terminal insertable into the cavity from the rearward terminating end of the housing;

a TPA device selectively engageable with the housing in two positions, preloaded and fully loaded, at said terminating end of the housing with a terminal retention portion in locking engagement with the terminal;

complementary interengaging abutment means between the terminal and the TPA device for moving the terminal from at least one incomplete position of insertion to a fully inserted position in response to moving the TPA device from the preloaded position to the fully loaded position thereof; and

complementary interengaging holding means between the TPA device and the housing for holding the TPA device in either of said preloaded and fully loaded positions and allowing the TPA device to be readily removed from the housing along with the terminal, said complementary interengaging holding means comprises a flexible latch arm cantilevered from each of two opposite sides of the TPA device and releasably engageable with complementary latch means on the housing, said latch arms being conjointly pinchable inwardly by an operator to effect removal of the TPA device and terminal from the housing.

5,622,522

SHIELDED ELECTRICAL CONNECTOR

Haw-Chan Tan, Diamond Bar, Calif., and Chin T. Lai, Tao-Yuan Hsien, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Aug. 11, 1995, Ser. No. 514,492

Int. Cl.[6] H01R *13/648*

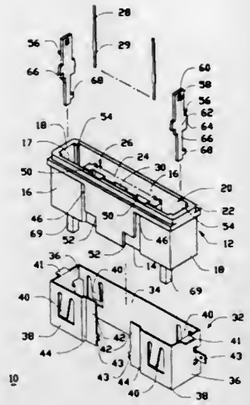
U.S. Cl. 439—607 **19 Claims**

1. An I/O input/output connector within an I/O card for engagement with a complementary cable connector, comprising:

an insulative housing comprising a plurality of walls defining a cavity therein;

a board horizontally extending in said cavity;

a plurality of contacts disposed on said board;



a shield generally surrounding most portions of the housing with some portions of said shield penetrating at least a first wall of the housing to invade an interior of the housing and to be adapted to communicate with the cavity.

5,622,523

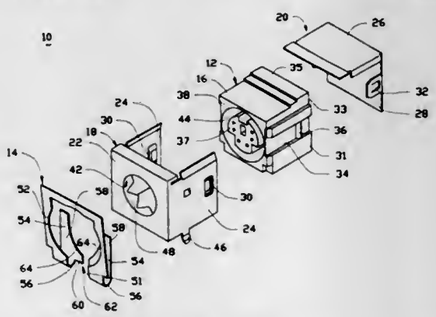
GROUNDING DEVICE FOR USE WITH SHIELDED DIN CONNECTOR

Ko-Chien Kan, Taipei, Taiwan, and Qisheng Zheng, Kun-Shan, China, assignors to Hon Hai Precision Ind, Co., Ltd., Taiwan

Filed Oct. 31, 1995, Ser. No. 550,786

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—607 **13 Claims**



1. A DIN connector assembly comprising:

an insulative bousing including a front surface and a mating portion extending rearward from said front surface;

a plurality of contacts positioned within said mating portion;

shield means adapted to be attached to the housing and including at least one front face for covering at least said front surface of the housing, said shield means including an opening in alignment with said mating portion;

a grounding device including a grounding plate and engagement means wherein said engagement means is sandwiched between the front surface of the housing and the front face of said shield means for restraining movement of said grounding with regard to the housing in a front-to-end direction; and

restriction means formed on said shield means for latchably retaining said grounding device in position with regard to said shield means for restraining movement of said grounding device with regard to the housing in a vertical direction; wherein

said engagement means of the grounding device includes a pair of engagement tangs integrally extending rearward from a bottom edge of the grounding plane, and each of said engagement tangs includes a bight section directly projecting from the grounding plate and a vertical section projecting from said bight section; and

a horizontal extension further extends from the corresponding vertical section of each of said engagement tangs for engagement with the restriction means of said shield means whereby the horizontal extension of one of said engagement tangs incorporates the horizontal extension of the other of said engagement tangs to define therebetween a gap having a smaller dimension than a horizontal portion of said restriction means.

5,622,524

FILTER PLUG

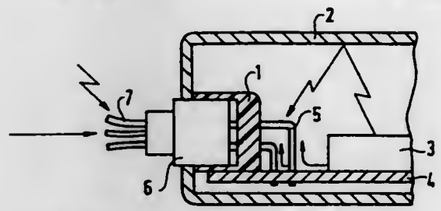
Josef Dirmeyer, Bodenwöhr, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 6, 1996, Ser. No. 597,242

Claims priority, application Germany, Aug. 6, 1993, 43 26 486.7

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 **4 Claims**



1. A filter plug, comprising:

a plug body being made of a compound material having a mixture of insulator and ferrite material; and

a number of parallel plug pins being disposed in a set pattern and being surrounded by said plug body.

5,622,525

METHOD OF POLISHING A SURFACE OF COPPER OR AN ALLOY COMPRISING MAINLY COPPER

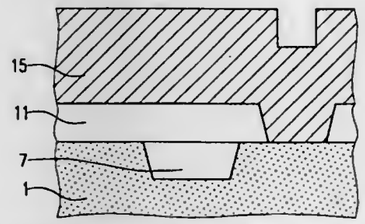
Jan Haisma; Peter W. De Haas; Dirk K. G. De Boer, all of Eindhoven; Waltherus W. Van den Hoogenhof, Almelo, and Lambertus Postma, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1994, Ser. No. 213,768

Claims priority, application Belgium, Jul. 12, 1993, 09300716

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **12 Claims**



1. A method of polishing a surface of copper or an alloy comprising mainly copper, comprising the steps of moving a polishing means and said surface with respect to each other while exerting a polishing pressure of between 400 and 600 g/cm^2 on said surface with said polishing means for obtaining a polished surface, the polishing means comprising a composition comprising a colloidal suspension of SiO_2 particles having an average particle size of between 20 and 50 nm in an alkali solution, demineralised water and a chemical activator, and the polishing means also comprising an absorbent polishing base having a hardness in the range between Shore A hardness 40 and Shore D hardness 90, characterized in that 60 to 100 units by volume of demineralized water and 25 to 50 units by volume of chemical activator are used for every 100 units by volume of colloidal suspension.

5,622,526

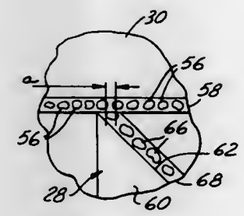
APPARATUS FOR TRUEING CBN ABRASIVE BELTS AND GRINDING WHEELS

James D. Phillips, Posen, Mich., assignor to J. D. Phillips Corporation, Alpena, Mich.

Filed Mar. 28, 1994, Ser. No. 218,427

Int. Cl.[6] B24B *7/00*

U.S. Cl. 451—72 **6 Claims**



1. A method of trueing an abrasive surface of a grinder comprising:

providing a rotating trueing wheel formed with a frusto-conical peripheral surface which is disposed at an acute angle to the axis of rotation of the trueing wheel and which has first and second side edges with the first side edge being of greater diameter than the second side edge and with a plurality of diamond particles distributed in a single layer over the entirety of said peripheral surface,

initially holding the first side edge only of the peripheral surface of the rotating trueing wheel in engagement with the abrasive surface of the grinder while maintaining the rotating trueing wheel oriented such that the remainder of the peripheral surface of the rotating trueing wheel is disposed at an acute angle to the abrasive surface of the grinder and out of contact therewith to confine the trueing of the abrasive surface to a relatively small area of contact by the diamond particles along the first side edge of the peripheral surface, and

continuing such engagement and the trueing of the abrasive surface while maintaining the rotating trueing wheel at the same orientation so that as the first side edge wears away trueing will continue to be confined to a relatively small area of contact by diamond particles progressively farther and farther from said first side edge.

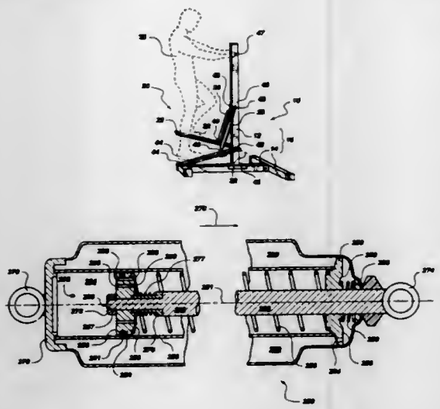
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5,622,527

INDEPENDENT ACTION STEPPER

Scott R. Watterson, River Heights; Brad Ellis, and William T. Dalebout, both of Logan, all of Utah, assignors to Proform Fitness Products, Inc., and ICON Health & Fitness, Inc., Logan, Utah

Division of Ser. No. 827,283, Jan. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 706,756, May 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,554, Jan. 29, 1991, Pat. No. 5,135,216, and Ser. No. 644,456, Jan. 23, 1991, Pat. No. 5,062,627, said Ser. No. 827,283is a continuation-in-part of Ser. No. 517,439, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 258,994, Oct. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 861,050, May 8, 1986, Pat. No. 4,796,881.
This application Mar. 23, 1994, Ser. No. 217,292
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—53 7 Claims



3. Apparatus for performing stepping exercises, said apparatus comprising:

a frame means for supporting said apparatus;

a first and a second treadle each pivotally attached to said frame means and operable between an unweighted position and a weighted position by the weighting and unweighting of a user's foot thereon;

a first shock absorber each interconnected between a respective said and a second treadle and said frame means, and including

a hollow cylinder with a hydraulic fluid and a moveable piston therewithin, and

orifice means permitting flow of said hydraulic fluid from one side of said piston to the opposite side thereof, and constructed to regulate said flow to have a greater flow rate when a said treadle goes from said weighted position to said unweighted position, and a lower said flow rate when a said treadle goes from said unweighted position to said weighted position; and

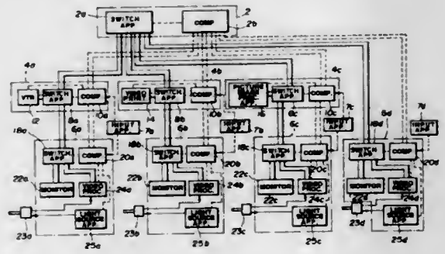
first and second spring means each operably positioned within respective said hollow cylinder to bias a said treadle to said unweighted position.

5,622,528

ENDOSCOPE EXAMINATION SYSTEM FOR PROCESSING ENDOSCOPE PICTURE IMAGE

Masahiko Hamano, Hachioji; Yasuyuki Kaneko, Yokohama; Atsushi Amano, Hachioji; Kazufumi Takamizawa, Chōfu; Hideyuki Shoji, Hachioji; Toshiaki Nishikori, Sagamihara; Mutsumi Ōshima, Hachioji, and Ken-ya Inomata, Mitaka, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 121,464, Sep. 16, 1993, abandoned, which is a continuation of Ser. No. 824,288, Jan. 23, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 347,223
Claims priority, application Japan, Jan. 25, 1991, 3-007635
Int. Cl.[6] A61B *1/045*
U.S. Cl. 600—118 5 Claims



1. An endoscope examination system comprising:

a plurality of endoscope systems including at least an endoscope body which is inserted into a cavity to obtain a picture image within the cavity as an electric signal, light-source means for supplying illuminating light to an endoscope in order to illuminate the interior of said cavity, a video processing means for processing a picture image signal from said endoscope to convert the picture image signal to a signal which is adequate for monitor observation, and a monitoring means for displaying the processed signal;

a switching means electrically connected to said plurality of endoscope systems, for enabling said picture image signal to be transmitted from any one of said endoscope systems to another of the remaining said endoscope systems;

a plurality of recording/processing means each provided within one of said endoscope systems for recording or processing said endoscope picture image, wherein each said recording/processing means performs a different function for each said endoscope system; and

control means electrically connected to said plurality of endoscope systems and said switching means for sending out an operation control signal to said plurality of endoscope systems and said switching means and enabling any one of said endoscope systems to control the recording/processing means of another one of said endoscope systems.

5,622,529

FLAT CERVICAL COLLAR HAVING A UNITARY CHIN SUPPORT

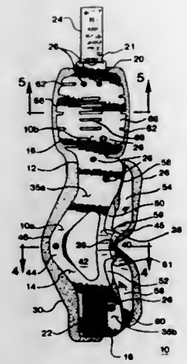
Salvatore Calabrese, 2109 Porter St., Philadelphia, Pa. 19145

Filed Jun. 8, 1994, Ser. No. 255,360
Int. Cl.[6] A61F *5/01*
U.S. Cl. 602—18 51 Claims

37. A cervical collar comprising:

a main body portion fabricated from a substantially incompressible plastic material, the main body portion comprising a front body section having a first substantially flat shape and being bendable into a second substantially tubular shape;

the front body section having a central portion, a laterally extending first side portion and an opposed laterally extending second side portion;



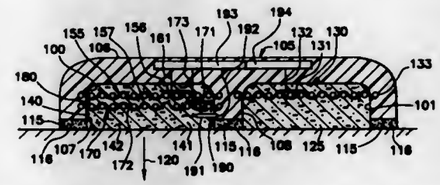
the central portion having a medial central portion and an upper central portion, the upper central portion extending transversely from the medial central portion and being unitary with the medial central portion, the medial central portion having an outwardly curved configuration extending in an arc transversely and outwardly beyond the outward extent of the first and second side portions when the main body portion is in the substantially flat shape, the upper central portion defining an upwardly facing concave chin support.

5,622,530

METHOD AND APPARATUS FOR CONTROLLED ENVIRONMENT ELECTROTRANSPORT

Joseph B. Phipps, Plymouth, Minn., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 173,149, Dec. 22, 1993, Pat. No. 5,443,442, which is a continuation of Ser. No. 831,804, Feb. 5, 1992, abandoned, which is a division of Ser. No. 502,232, Mar. 30, 1990, Pat. No. 5,125,894. This application May 26, 1995, Ser. No. 451,119
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 19 Claims



1. A method of conducting an iontophoresis process involving iontophoretic delivery of a target ion from an active electrode reservoir having an extraneous ion concentration; said method including a step of:

(a) maintaining a constant delivery rate of target ion throughout the iontophoresis process, by generating a selected extraneous ion concentration.

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5,622,531

POLYURETHANE FIBER-CONTAINING TEXTILE PRODUCT IMPROVED IN SWEAT ABSORPTION/EXHALATION PROPERTIES, AND PRODUCTION THEREOF

Masaru Yamada, Aichi-ken; Kiyokazu Shuku, Nara-ken, and Toshio Hagihara, Kawachinagano, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki; Okamoto Corporation, Nara-ken, and Consumer Product End-Use Research Institute Co., Ltd., Osaka, all of Japan

Filed Oct. 13, 1995, Ser. No. 542,877
Claims priority, application Japan, Aug. 10, 1995, 7-204361
Int. Cl.[6] D06M *10/08;* D02G *3/36*
U.S. Cl. 8—115.66 13 Claims

1. Polyurethane fibers or a textile product comprising polyurethane fibers on which a water-soluble wool protein is adsorbed.

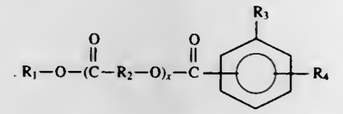
5,622,532

POLYLACTONE AROMATIC ESTERS AND FUEL COMPOSITIONS CONTAINING THE SAME

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Jun. 20, 1996, Ser. No. 667,060
Int. Cl.[6] C10L *1/18;1/22*
U.S. Cl. 44—389 29 Claims

1. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel fuel range and an effective deposit-controlling amount of a fuel-soluble compound of the formula:



wherein R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render the compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;

R_2 is an alkylene group of about 2 to 5 carbon atoms;

R_3 and R_4 are each independently hydrogen, hydroxy, nitro, amino, N-alkylamino having 1 to 6 carbon atoms in the alkyl group, or N,N-dialkylamino having 1 to 6 carbon atoms in each alkyl group, provided that R_3 and R_4 may not both be hydrogen;

and x is an integer from 1 to 25.

5,622,533

VINYLAMINE COPOLYMER COAGULANTS FOR USE IN COAL REFUSE DEWATERING

Anthony G. Sommese, Aurora, and Krishnan J. Pillai, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 13, 1995, Ser. No. 572,271
Int. Cl.[6] C10L *5/00*
U.S. Cl. 44—620 8 Claims

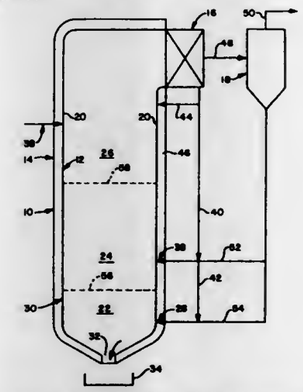
1. A method for thickening and dewatering coal tailing aqueous slurries in a twin belt press process, the method consisting essentially of the step of adding to the slurry a coagulant composition including a vinylamine copolymer including from about 1 to about 99 mole percent vinylamine and from about 1 to about 99 mole percent of at least one monomer selected from the group consisting of vinylformamide, vinyl acetate, vinyl alcohol, vinyl pyrrolidone and the esters, amides and salts of acrylic acid and methacrylic acid wherein the coagulant composition is added to the slurry in a concentration from about 0.1 to about 200 parts per million; and dewatering the coagulated slurry on a twin belt press.

5,622,534

HIGH PERFORMANCE, MULTI-STAGE, PRESSURIZED, AIRBLOWN, ENTRAINED FLOW COAL GASIFIER SYSTEM

Herbert E. Andrus, Jr., Granby, Conn., assignor to Combustion Engioeering, Inc., Windsor, Conn.

Continuation of Ser. No. 999,511, Dec. 30, 1992, abandoned.
This application Nov. 9, 1994, Ser. No. 336,604
Int. Cl.[6] C10J *3/76*
U.S. Cl. 48—77 1 Claim



1. In a method of operating a high performance, multi-stage, pressurized, airblown, entrained flow gasifier system that is operative for gasifying coal to produce a product gas therefrom including the steps of providing a first vessel having embodied therein a first stage, a second stage and a third stage, injecting char into the first stage of the first vessel, injecting air into the first stage of the first vessel, effecting the combustion of the char and the air within the first stage of the first vessel thereby producing slag, injecting char into the second stage of the first vessel, effecting the gasification of the char within the second stage of the first vessel to produce a product gas therefrom, injecting coal into the third stage of the first vessel, effecting the devolatilization of the coal within the third stage of the first vessel to produce char therefrom, discharging the slag from the first vessel, discharging the product gas with the char entrained therewithin from the first vessel, providing a second vessel in surrounding relation to the first vessel such that an annulus is formed between the first vessel and the second vessel, and filling the annulus so that the pressure therewithin is greater than the pressure within the first vessel such that if a leak occurs within the first vessel the direction of flow will be from the annulus into the first vessel, the improvement comprising the steps of:

a. providing a heat exchanger having water flowing therein in juxtaposed relation to the first vessel downstream thereof and connected in fluid flow relation therewith for receiving directly from the first vessel the product gas having char entrained therewithin;

b. effecting within the heat exchanger as a consequence of a heat exchange between the product gas having char entrained therewithin and the water flowing in the heat exchanger the production of the steam required for the operation of the high performance, multi-stage, pressurized, airblown, entrained flow gasifier system and the cooling of the product gas having char entrained therewithin;

c. discharging to the annulus from the heat exchanger a first portion of the steam produced in the heat exchanger solely sufficient to fill the annulus with steam at a pressure greater than the pressure within the first vessel;

d. providing a separator device downstream of the heat exchanger and connected in fluid flow relation therewith for receiving therefrom the product gas having char entrained therewithin after the product gas having char entrained therewithin has been cooled in the heat exchanger;

e. effecting the separation of the char from the product gas within the separator device;

f. discharging the product gas from the separator device;

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g. discharging the char from the separator device into the remaining portion of the steam being discharged from the heat exchanger such that the remaining portion of the steam from the heat exchanger solely constitutes all of the steam that is required for purposes of effecting therewith the transport of the char separated in the separator device to the first stage of the first vessel for injection thereinto and to the second stage of the first vessel for injection thereinto;

b. injecting limestone/dolomite into the third stage of the first vessel for reaction with any sulfur that may be present in the first vessel to form sulfur compounds for subsequent discharge along with the product gas from the first vessel; and

i. supporting a slag baffle within the second stage of the first vessel so as to block off the central portion of the first vessel thereby causing any slag falling from the second stage into the first stage of the first vessel to fall outwardly of the central portion thereof.

5,622,535

ABRASIVE ARTICLE COMPRISING POLYMERIC COMPOSITIONS AND ABRASIVE GRAIN

Richard L. Bradshaw, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 76,896, Jun. 15, 1993, Pat. No. 5,446,085. This application May 4, 1995, Ser. No. 433,816

Int. Cl.[6] C09K *3/14*; **B24D** *3/30*

U.S. Cl. 51—298 **19 Claims**

1. An abrasive article comprising:

A) an inorganic filler having absorption sites selected from the group consisting of unhydrated oxide sites, hydrated oxide sites and mixtures thereof, wherein said inorganic filler comprises abrasive grains; and

B) a binder component wherein said binder component comprises

1) a glassy polymer having a glass transition temperature of at least about 60° C., and having polar groups that interact with said adsorption sites on the surface of said filler to thereby remain in contact with and to encapsulate said filler; and

2) a rubbery polymer having polar groups and being compatible with said glassy polymer wherein the relative amounts of B) 1) and B) 2) are about 50% to about 80% by weight of B) 1) and correspondingly about 20% to about 50% by weight of B) 2) based upon the total weight of B) 1) and B) 2) in the composition; and wherein said glassy polymer and said rubbery polymer are chlorine free;

and wherein the relative amounts of A) and B) are about 35% to about 60% of A) and correspondingly 65% to about 40% by volume of B) based upon the total volume of A) and B) in the composition, said article being obtained by forming a premix of said inorganic filler said glassy polymer and an organic diluent, which contains a volatile polar organic solvent wherein said premix contains about 2 to about 20% by weight of said glassy polymer, and about 20 to about 50% by weight of said filler; and admixing said premix and said rubbery polymer; and providing in the composition a high boiling secondary diluent in an amount to provide a blend of diluent of about 70 to about 90% by weight of said volatile polar organic solvent and correspondingly about 10 to about 30% by weight of said secondary diluent; and wherein said high boiling diluent is a non solvent tier said glassy polymer; and thereby causing said glassy polymer to adsorb onto said inorganic filler and interact with adsorption sites on said filler to thereby encapsulate said filler, and to intertwine said rubbery particle within the matrix of said glassy polymer.

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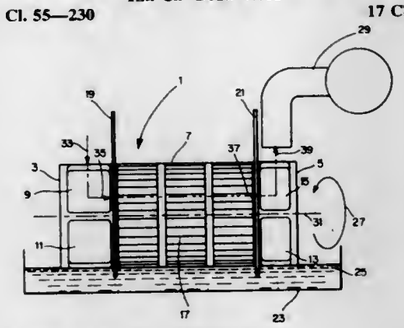
SCRUBBER FOR WASTE GASES

William J. Carr, 1298 Ballard Ct., San Jose, Calif. 95132

Filed Jan. 4, 1995, Ser. No. 368,702

Int. Cl.[6] B01D *47/02*

U.S. Cl. 55—230 **17 Claims**



1. A waste gas scrubber comprising:

a) means defining a pool of liquid,

b) an atomizer comprising a hollow, generally cylindrical member, the atomizer defining a generally cylindrical interior region and an exterior region, the atomizer being mounted for rotation such that a portion of the atomizer is submerged in the pool,

c) means for directing waste gas to be scrubbed from the exterior region through the interior region and back to the exterior region, wherein the waste gas and liquid are free to occupy substantially the entire interior region, and

d) means for rotating the atomizer.

5,622,537

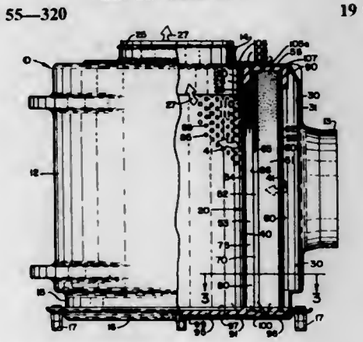
FILTRATION ARRANGEMENT

Brad E. Kahlbaugh, Roseville; Susan B. Reinhart, Minneapolis; Denis J. Dudrey, Bloomington, and John T. Herman, Dellwood, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 62,268, May 17, 1993, Pat. No. 5,423,892, which is a division of Ser. No. 897,861, Jun. 12, 1992, Pat. No. 5,238,474, which is a continuation-in-part of Ser. No. 759,445, Sep. 13, 1991, abandoned, which is a division of Ser. No. 601,242, Oct. 19, 1990, Pat. No. 5,082,476. This application Apr. 6, 1995, Ser. No. 417,830

Int. Cl.[6] B01D *46/10*

U.S. Cl. 55—320 **19 Claims**



1. An air filter construction comprising:

(a) a cylindrical inner filter having an outer portion;

(i) said cylindrical inner filter including first and second end caps having filter media extending therebetween; at least a portion of said filter media extending between said first and second end caps being embedded in said first and second end caps;

(b) an outer region of filter media positioned around said cylindrical inner filter outer portion and upstream from said cylindrical inner filter;

(i) said outer region of filter media including depth media which is removable from, and replaceable in, said air filter construction; and

(c) said air filter construction including at least first and second layers of depth media therein; said filter construction including a gradient in ability to trap particles, between said first and second layers of depth media.

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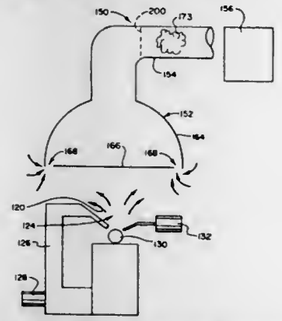
SOURCE CAPTURE SYTEM FOR AN AIR CLEANING SYSTEM

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Helical Dynamics, Inc., Golden Valley, Minn.

Filed Mar. 28, 1995, Ser. No. 413,202

Int. Cl.[6] B01D *45/04*

U.S. Cl. 55—383 **32 Claims**



1. A source capture system for capturing contaminated air from an industrial process comprising:

capture means for continuously capturing a contaminated air volume having a mist/vapor component that is emitted during operation of the industrial process, the capture means having a structure with a capture opening oriented toward a source of the contaminated air volume within the industrial process; and

mixing means operably coupled to the capture means for mixing the contaminated air volume with an ambient air volume to produce a mixed air volume in which the mist/vapor component of the mixed air volume is generally prevented from exhibiting aerosol bulk motion characteristics of a cloud, said mixing means effecting a reduction in temperature in said contaminated air volume and inducing a turbulent condition therein promoting a reduced concentration thereof in combination with said ambient air volume.

5,622,539

PROCESS AND DEVICE FOR SUPPORTING AND TRANSFERRING GLASS SHEETS IN A SHAPING STATION

Jean-Luc Lesage, Margny les Compiegne; Jean-Marc Petitcollin; Jean-Pierre Douche, both of Thourotte, and Pascal Tinelli, Compiegne, all of France, assignors to Saint-Gobain Vitrage International, Courbevole, France

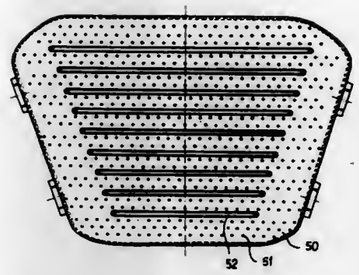
Continuation of Ser. No. 88,529, Jul. 9, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 341,886

Claims priority, application France, Jul. 9, 1992, 92 08482

Int. Cl.[6] C03B *23/03;35/24;23/023*

U.S. Cl. 65—106 **13 Claims**

1. In a bending station for shaping heated glass sheets and including means for moving the glass sheets therein and an annular mold member, a device for supporting a central part of stationary glass sheets in the bending station, said device comprising a pressure box surrounded by said annular mold member and generating a gas cushion smaller than the glass sheet and comprising:



a plurality of individual compartments which are elongate in a direction transverse to a direction of travel of the glass sheets, said compartments having a width in the direction of glass sheet travel which is smaller than a height of the glass sheet in the direction of glass sheet travel;

means for supplying said compartments with hot gas having a temperature of at least 600° C.;

means for providing the gas supplied to said compartments with at least two pressure distribution levels;

an upper plate forming an upper wall of said compartments and having a homogeneous distribution of substantially circular gas supply orifices and gas discharge slots in a central region thereof, and through which gas in said compartments may be supplied to, and discharged from, the gas cushion; and

gas discharge sleeves defining walls of said compartments, said gas discharge sleeves being connected to said gas discharge slots and extending into said pressure box.

5,622,540

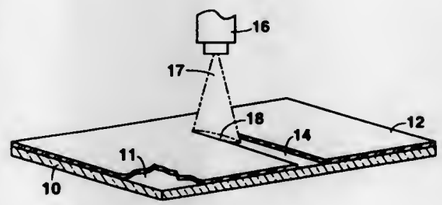
METHOD FOR BREAKING A GLASS SHEET

Harrie J. Stevens, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 19, 1994, Ser. No. 308,276

Int. Cl.[6] G03B *21/02*

U.S. Cl. 65—112 **9 Claims**



1. A method for manufacturing flat glass sheets comprising the steps of:

providing a flat glass sheet having two major surfaces;

covering at least one of said major surfaces with a protective layer of organic material; and

sweeping a laser over said glass sheet in a single pass to:

selectively remove a portion of said protective layer, thereby forming, on said at least one major surface, a covered region and a non-covered region; and

form a crack in the glass sheet along a desired line of separation in said non-covered region.

174-421 O.G.-97-9: QL3

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5,622,541

GLASS FEEDERS

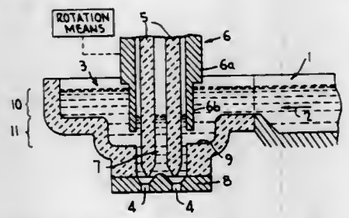
George M. Stanley, Dunstable, United Kingdom, assignor to BH-F (Engineering) Limited, England

Continuation of Ser. No. 146,200, Nov. 17, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 429,112

Claims priority, application United Kingdom, May 17, 1991, 9110807

Int. Cl.[6] C03B *5/18;5/26;7/08*

U.S. Cl. 65—180 6 Claims



1. A dispensing basin for molten glass at the discharge end of a forehearth of a glass-making furnace wherein the dispensing basin has a base and side walls; said basin has a lower portion of horizontal cross-sectional area which is substantially less than a horizontal cross-sectional area of an upper portion thereof; said basin includes at least one discharge outlet in said base, at least one reciprocatable plunger which extends into the upper portion and the lower portion of the dispensing basin and which cooperates respectively with said at least one discharge outlet to form successive gobs of molten glass at each of said at least one discharge outlet, and a rotatable sleeve member present in the upper portion and lower portion of said basin and surrounding respectively each of said at least one reciprocatable plunger; said basin includes a first horizontal annular shoulder surrounding said at least one discharge outlet; and wherein spacing between said sleeve member and said first horizontal annular shoulder serves to meter the flow of molten glass; the improvement comprising providing a second annular shoulder in said basin above said first annular shoulder, said second annular shoulder being located such that said second annular shoulder is substantially at half the depth of molten glass which is present in the basin during use of the basin for dispensing molten glass, whereby to provide surrounding a lower portion of the sleeve member, an annular space through which molten glass flows from said upper portion of the basin to said spacing between said sleeve member and said first horizontal annular shoulder.

5,622,542

PARTICLE-STABILIZED METAL FOAM AND ITS PRODUCTION

Martin Thomas, Kingston; Doug Kenny, Inverary, and Harry Sang, Kingston, all of Canada, assignors to Alcan International Limited, Montreal, Canada

PCT No. PCT/CA94/00027, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/17218, PCT Pub. Date Aug. 4, 1994

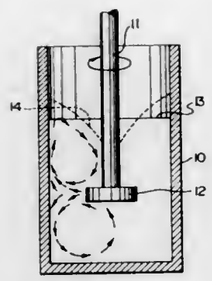
PCT Filed Jan. 21, 1994, Ser. No. 492,019

Claims priority, application Canada, Jan. 21, 1993, 2087791

Int. Cl.[6] B22D *27/00*

U.S. Cl. 75—415 18 Claims

11. A process for producing a foamed metal product wherein gaseous bubbles are retained within a mass of molten metal during the foaming, comprising the steps of heating a matrix metal above a liquidus temperature of the metal to form a liquid metal matrix, adding to said liquid matrix metal stabilizer particles wherein said stabilizer particles consist of a mixture of particles with a specific surface area as measured by nitrogen BET methods of at least 2.0 m^2/g, mixing the liquid matrix metal and stabilizer particles under a covering gas until the stabilizer particles are dispersed within the liquid matrix metal and small gas bubbles are entrained and stabilized by the particles to thereby form a precursor composite for a



particle-stabilized foam, then introducing a gas into said precursor composite in molten form to form a particle-stabilized metal foam, and removing said foam.

5,622,543

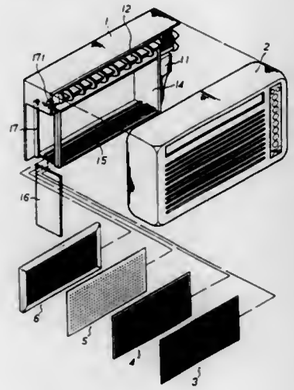
RECTILINEAR TURBULENT FLOW TYPE AIR PURIFIER

Chen-Ho Yang, No. 12, Lane 780, Cheng Kung Road, Hsi Hu Zhen, Chang Hua City, Taiwan

Filed Sep. 20, 1995, Ser. No. 530,621

Int. Cl.[6] B03C *3/011;3/155*

U.S. Cl. 96—58 2 Claims



1. An air purifier comprised of a housing, a front cover, a front wire gauze filter, an anion generating pin board, a dust collector, and an active carbon filter, wherein: said housing comprises a plurality of parallel tracks horizontally disposed at different elevations for mounting said front wire gauze filter, said anion generating pin board, said dust collector, and said active carbon filter, a plurality of arched metal springs fixedly fastened to said parallel tracks for connecting power supply to said anion generating pin board and said dust collector, a vertical side track for mounting a side cover to stop said front wire gauze filter, said anion generating pin board, said dust collector, and said active carbon filter in said parallel tracks, a micro switch for ON/OFF power supply, said micro switch being triggered to turn on power supply when said side cover is installed, or to turn off power supply when said side cover is removed from said vertical side track; said dust collector has a plurality of equally spaced round holes over the whole area thereof, and is controlled to produce positive ions; said anion generating pin board has a plurality of triangular projecting plates perpendicularly raised from one side thereof and respectively aimed at the center of every four adjacent round holes of said dust collector, and is controlled to produce negative ions.

5,622,544

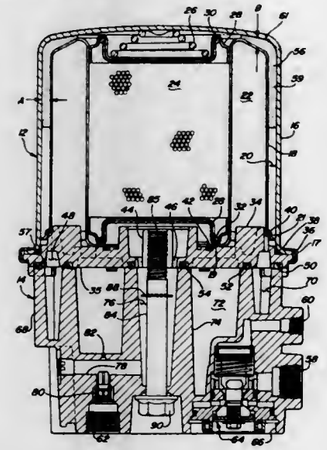
AIR DRYER CARTRIDGE WITH FILTER RETAINER

Dennis R. Shamine, Lorain, and Larry E. Dienes, North Ridgeville, both of Ohio, assignors to AlliedSignal Truck Brake Systems Company, Elyria, Ohio

Filed Jul. 5, 1995, Ser. No. 498,175

Int. Cl.[6] B01D *53/00*

U.S. Cl. 96—134 7 Claims



1. A desiccant cartridge for an air dryer for removing water from air flowing in a compressed air supply system and adapted to be mounted to a mounting surface of an air dryer body assembly, comprising:

a load plate forming a mounting surface adapted to mate with said body assembly mounting surface, said load plate forming passageways communicating with said body assembly,

a cup-shaped outer shell having an open end defining a perimeter edge engaging said load plate,

an inner sleeve disposed within said outer shell having at least one end flange engaging said load plate, said outer shell and said inner sleeve defining a radial clearance space and an end clearance space for air flow through said cartridge,

a desiccant material disposed in said inner sleeve, and

a filter element disposed between said outer shell and said inner sleeve in at least a portion of said end clearance space wherein said filter element, said outer shell and said inner sleeve cooperate to form a compression zone and a non-compression zone, said filter element being at least partially compressed in said compression zone between said outer shell and said inner sleeve thereby exerting a force urging said inner sleeve into engagement with said load plate and said filter being substantially uncompressed in said non-compression zone.

5,622,545

SEPARATOR FOR REMOVING GASES FROM WATER

Angelo L. Mazzei, Bakersfield, and Steven D. Ford, Clovis, both of Calif., assignors to Claude Laval Corporation, Fresno, Calif.

Filed Apr. 21, 1995, Ser. No. 425,112

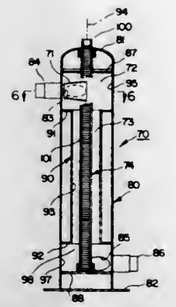
Int. Cl.[6] B01D *19/00*

U.S. Cl. 96—210 8 Claims

1. A separator for removing gases from a flowing liquid stream, comprising:

a housing having a central axis, a water inlet port, a water outlet port, and a gas release port;

an axially-extending upper inner wall defining an outer boundary of an injection section, said inlet port opening tangentially into said inner wall;



an axially-extending lower inner wall defining a collector section, said outlet port opening tangentially into said collector section, said ports being aligned in the same rotational sense relative to the central axis;

a vortex tube having an axially extending cylindrical wall extending only between said injector section and said collector section, all of said walls having a respective diameter, the diameter of the vortex tube wall being the smallest of the three diameters;

a separator tube having an axially extending internal cylindrical wall and an external cylindrical wall, said outer cylindrical wall having a diameter which is smaller than the diameter of the inner wall of the vortex tube so as to form an annular axially extending vortex section between said injector section and said collector section, a plurality of separator perforations extending between said walls of the separator tube, said inner wall of the separator tube forming a conduit in communication with said gas release port; and

nozzle means in fluid communication with said water inlet port reducing the cross-section of an incoming stream of water and directing said stream tangentially onto said inner wall of the injection section, said nozzle means comprising structure inside said injector chambers, contiguous with the inner walls of the injection section, and including a flat plate whose plane is parallel to said central axis.

5,622,546

MOULD-RESISTANT EMULSION PAINTS

Hans-Ludwig Elbe, Wuppertal; Wilfried Paulus; Heinrich Schrage, both of Krefeld; Martin Kugler, Leichlingen, and Franz Kunisch, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP94/02627, § 371 Date Feb. 14, 1996, § 102(e) Date Feb. 14, 1996, PCT Pub. No. WO95/06091, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 8, 1994, Ser. No. 596,163

Claims priority, application Germany, Aug. 20, 1993, 43 28 074.9

Int. Cl.[6] A01N *43/10;* C07D *333/50*

U.S. Cl. 106—18.33 1 Claim

1. An emulsion paint comprising a fungicidally effective amount of N-cyclohexyl-benzothiophene-2-carboxamide S,S-dioxide.

5,622,547

VEHICLE SYSTEM FOR THICK FILM INKS

Anthony R. Maslowski, Harleysville, Pa.; David J. Nabatian, Wayne, N.J., and Orville W. Brown, Landsdale, Pa., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Aug. 14, 1995, Ser. No. 515,087

Int. Cl.[6] C09D *11/06;11/08*

U.S. Cl. 106—20 B 5 Claims

1. In 100 parts by weight of a thick film ink consisting of 40–95 parts of conductive, resistive, or insulating powder dispersed in

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60–5 parts of an organic vehicle of resins, solvent, and additives, an improved vehicle system comprising by weight 1–40% resins and 99–60% solvent in which 1–90% by weight of the solvent is an ester of tall oil fatty acid having a viscosity below 200 mPa.s.

5,622,548

DUPLICATING INKS FOR DIGITAL DUPLICATORS

Wan K. Zou, Northbrook, and Clement N. Onyenemezu, Schiller Park, both of Ill., assignors to MICAP Technology Corp., Niles, Ill.

Continuation-in-part of Ser. No. 444,402, May 19, 1995, abandoned. This application Feb. 13, 1996, Ser. No. 600,703

Int. Cl.[6] C09D *11/02;11/06;11/08*

U.S. Cl. 106—20 C **59 Claims**

1. An encapsulated colorant comprising a colorant having a particle size of from about 0.01 microns to about 25 microns, an oil component, an adhesion promoter, and at least one binder resin selected from the group consisting of a hydrocarbon modified rosin ester and a phenol modified hydrocarbon resin.

5,622,549

INK FOR INK JET RECORDING AND INK JET RECORDING PROCESS

Toshitake Yui; Eisuke Hiraoka; Yoshiro Yamashita; Yasuharu Endo, and Ken Hashimoto, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 624,911

Claims priority, application Japan, Apr. 4, 1995, 7-101644

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **8 Claims**

1. An ink for ink jet recording, which comprises water, a colorant and 2,2-thiodiethanol having a purity of not less than 96% by weight and an electrical conductivity of from not less than 5.0×10^{-4} S/m to not more than 5.0×10^{-2} S/m as determined in the form of 10 wt % aqueous solution.

5,622,550

YELLOW INK COMPOSITION FOR INK-JET PRINTING AND IMAGE RECORDING METHOD USING THE SAME

Akiko Konishi, Yokohama; Kiyofumi Nagai, Machida, and Masayuki Koyano, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 29, 1996, Ser. No. 654,632

Claims priority, application Japan, May 30, 1995, 7-155116

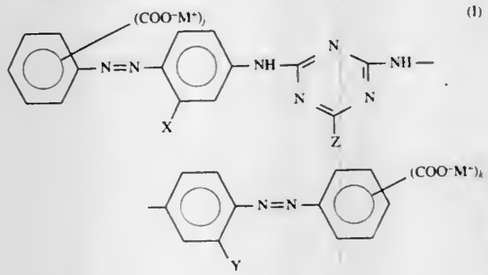
Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 K **31 Claims**

1. A yellow ink composition for ink jet printing comprising an aqueous solution which comprises:

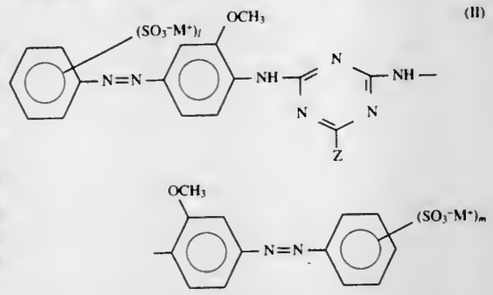
a water-soluble dye which comprises (a) a dye compound of formula (I),

(I)



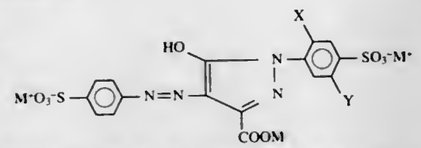
wherein X and Y are each selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxyl group and a halogen; Z is an alkanolamine group; M^+ is selected from the group consisting of an alkali metal cation, a quaternary ammonium cation, a quaternary phosphonium cation, and an alkanol amine cation; and j and k are each an integer of 0 to 3, and (b) at least one of a dye compound of formula (II)

(II)



wherein Z and M^+ are respectively the same as in formula (I); and l and m are each an integer of 0 to 3, or a dye compound of formula (III)

(III)



wherein X, Y and M^+ are respectively the same as in formula (I),

a surfactant, and

a wetting agent.

5,622,551

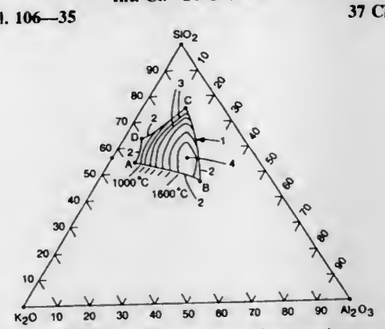
CHEMICALLY DERIVED LEUCITE

Erik M. Erbe, Stillwater, and Ronald S. Sapieszko, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 338,278, Nov. 14, 1994, abandoned, which is a continuation of Ser. No. 145,493, Oct. 29, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 536,073

Int. Cl.[6] C09K *3/00*

U.S. Cl. 106—35 **37 Claims**



1. A process of making chemically derived leucite comprising the step of admixing a potassia precursor, an alumina precursor and a silica precursor to form a uniform suspension of finely divided particles in a liquid medium such that the particles are capable of remaining uniformly distributed throughout the spension for at least on hour a 25° C. from which a composition is formed having a dry weight solids content after firing on a theoretical basis of 12 to 30 weight % K_2O, 8 to 30 weight % Al_2O_3 and 45 to 73 weight % SiO_2; wherein said potassia precursor, alumina precursor and silica precursor are limited to salts, solutions derived from a salt, or sols from which a subsequent oxide composition is obtained.

5,622,552

GLASS IONOMER CEMENT COMPOSITIONS AND RESTORATIVE METHODS

Thomas J. Arnold, Winslow, Ind., assignor to Mion International Corp., Winslow, Ind.

Continuation of Ser. No. 492,273, Jun. 19, 1995, which is a division of Ser. No. 313,885, Sep. 28, 1994, Pat. No. 5,427,613, which is a division of Ser. No. 79,332, Jun. 18, 1993, Pat. No. 5,382,284, which is a continuation-in-part of Ser. No. 942,375, Sep. 9, 1992, Pat. No. 5,252,122, Ser. No. 872,501, Apr. 23, 1992, Pat. No. 5,252,121, and Ser. No. 991,112, Dec. 16, 1992, Pat. No. 5,273,574, which is a continuation-in-part of Ser. No. 942,375, which is a continuation of Ser. No. 748,679, Aug. 22, 1991, abandoned, said Ser. No. 872,501is a continuation-in-part of Ser. No. 748,679. This application May 2, 1996, Ser. No. 641,625

Int. Cl.[6] A61C *5/00*

U.S. Cl. 106—35 **7 Claims**

1. A method of restoring a tooth, comprising the steps of:

applying an etchant or primer to a tooth and subsequently applying a wet glass ionomer cement to said tooth;

placing a wet dental amalgam directly on the wet glass ionomer cement; and

allowing the wet glass ionomer cement and the wet dental amalgam to harden, thereby bonding the amalgam to the tooth.

5,622,553

SUBSTANCE FOR INCREASING FRICTION BETWEEN TWO SURFACES

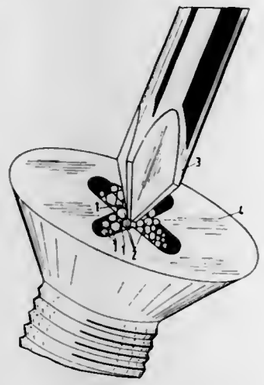
Bernhard Jakob, 48, Shanganagh Vale, Loughlinstown, Co. Dublin, Ireland, and Michael Klemm, Schallbruch 41, D - 42781, Haan, Germany

Continuation of Ser. No. 440,370, May 12, 1995, abandoned. This application Jun. 4, 1996, Ser. No. 657,504

Claims priority, application Germany, May 14, 1994, 44 17 030.0

Int. Cl.[6] C09K *3/14*

U.S. Cl. 106—36 **7 Claims**



1. A substance for increasing friction between two surfaces, said substance consisting of 20 wt.-% to 60 wt.-% of silicon carbide particles, 1.2 wt.-% to 15 wt.-% of bentonite, and 35 wt.-% to 75 wt.-% of water.

5,622,554

ASPHALT-BASED COATING COMPOSITION WITH ALKOXYLATED AMINE-DERIVED SALT SURFACTANT

James A. Krogh, Janesville, and Michael R. Sipe, Milton, both of Wis., assignors to Tomah Products, Inc., Milton, Wis.

Filed Jul. 19, 1996, Ser. No. 684,126

Int. Cl.[6] C09D *195/00*

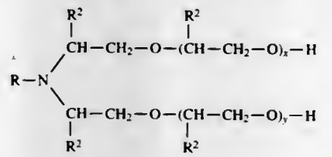
U.S. Cl. 106—284.06 **23 Claims**

1. In an asphalt roof-coating composition including clay and a surfactant, wherein the composition includes:

about 80–95 parts by weight of a roof-coating asphalt cutback;

about 5–20 parts by weight of clay; and

a salt surfactant comprising an acid and a tertiary amine, such tertiary amine having the general structural formula:



wherein

R comprises R^3—$(OCH_2CH_2CH_2)_z$—;

the numeric value of z is selected from the group of numeric values consisting of 0 and 1;

R^3 is C_{16}–C_{20} when z is 0;

R^3 is C_{10}–C_{20} when z is 1;

R^2 is selected from the group consisting of H, —CH_3, —CH_2CH_3 and mixtures thereof; and

x+y=0–18.

5,622,555

PROCESS FOR THE PRODUCTION OF DIS-AZO PIGMENT

Yosbio Muramatsu; Ataru Chiba, and Hitoshi Maki, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,112

Claims priority, application Japan, Apr. 8, 1994, 6-070801

Int. Cl.[6] C09B *27/00*

U.S. Cl. 106—496 **7 Claims**

1. A process for the production of a dis-azo pigment, which comprises

(a) a first step of forming an aqueous paste or slurry containing a synthesized dis-azo pigment into fine particles under hot air at 100° to 300° C. for a short period of time within 0.5 hour, and at the same time, removing water from the formed fine particles to form a powder, and

(b) a second step of keeping the powder under heat at 50° to 150° C. for 0.5 to 10 hours.

5,622,556

LIGHTWEIGHT, LOW WATER CONTENT CEMENTITIOUS COMPOSITIONS AND METHODS OF THEIR PRODUCTION AND USE

David M. Shulman, 7445 S. Milwaukee Way, Littleton, Colo. 80122

Continuation-in-part of Ser. No. 358,858, Dec. 19, 1994. This application Oct. 2, 1995, Ser. No. 537,466

Int. Cl.[6] C04B *16/08*

U.S. Cl. 106—677 **35 Claims**

1. A load bearing cementitious product comprising:

(a) from 40 to 99% by volume of an aqueous cementitious mixture;

(b) from 1 to 60% by volume of micronized polystyrene foam particles; and

(c) a borate insect repellent;

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said cementitious product having an overall water content of from 0.005% to 10% by volume.

5,622,557
MINERAL BINDERS COLORED WITH SILICON-CONTAINING CARBON BLACK
Khaled Mahmud, Tyngsboro; Jameel Menashi, Lexington; James A. Belmont, Acton, and Ralph U. Boes, Concord, all of Mass., assignors to Cabot Corporation, Boston, Mass.
Filed May 22, 1995, Ser. No. 446,143
Int. Cl.[6] C04B *14/36*
U.S. Cl. 106—712 **38 Claims**

1. A binder composition comprising
(a) a mineral binder, and
(b) a silicon-containing carbon black.

5,622,558
DRYING SHRINKAGE CEMENT ADMIXTURE
Neal S. Berke, Chelmsford, Mass., and Michael P. Dallaire, Dover, N.H., assignors to W.R. Grace & Co.-Conn, New York, N.Y.
Filed Sep. 18, 1995, Ser. No. 529,391
Int. Cl.[6] C04B *22/00;24/02*
U.S. Cl. 106—802 **18 Claims**

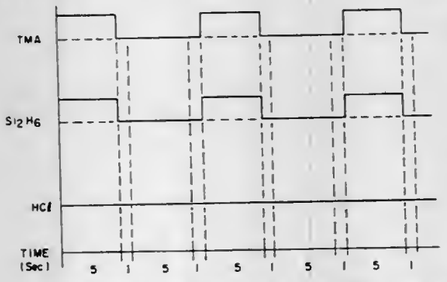
1. A cement admixture capable of inhibiting drying shrinkage of a cement composition and enhancing compressive strength of a formation formed from said composition, comprising an aqueous composition containing from 10 to 75 weight percent of a mixture of

(A). at least one (i) glycol selected from C_3–C_{12} alkylene glycol or (ii) water-soluble condensed alkylene glycol represented by the formula $HO(AO)_xH$ wherein A is a C_2–C_4 alkylene or mixtures thereof, O is oxygen and x is a value of from 1 to 20, and mixtures thereof; and

(B). silica fume

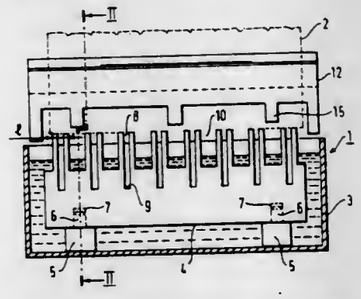
wherein said components (A) and (B) are in a weight ratio of from 10:1 to 1:10.

5,622,559
METHOD OF PREPARING COMPOUND SEMICONDUCTOR
Hideki Goto, Tsuchiura; Katsushi Fujii, Ibaraki, and Kenji Shimoyama, Tsuchiura, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Filed Jun. 1, 1993, Ser. No. 69,728
Claims priority, application Japan, Jun. 2, 1992, 4-141806
Int. Cl.[6] C30B *25/00*
U.S. Cl. 117—89 **11 Claims**



1. A vapor phase growth method of a group III–V compound semiconductor thin-film, comprising reacting a group III compound and a group V compound and depositing the reacted compounds on a substrate, wherein (A) group III organic metals raw material gas having no halogen atoms is alternately introduced for (B) halide gas and/or halogen gas into a growth chamber, and group V hydride gas is introduced into said growth chamber during periods in which said group III organic metals raw material gas is introduced.

5,622,560
DEVICE FOR UNIFORMLY MOISTENING ADHESIVE LABELS
Jean-Claude Haroutel, Orsay, and Jacques Bastien, Osny, both of France, assignors to Neopost Industrie, Bagneux, France
Filed Dec. 29, 1992, Ser. No. 998,041
Claims priority, application France, Dec. 31, 1991, 91 16369
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—216 **6 Claims**



1. In a device for moistening a flexible strip having a face that is at least partially coated with adhesive, said device including a moistening member having a bottom portion immersed in moistening liquid and a top portion that is moistened by said liquid by capillarity, said top portion being in contact with the adhesive-coated face of said flexible strip as said flexible strip runs against said moistening element in a running direction, said top portion being split up by a plurality of laterally spaced, open-topped, vertical capillarity slits extending in said running direction of the flexible strip and having respective bottoms immersed in the moistening liquid; the improvement wherein:

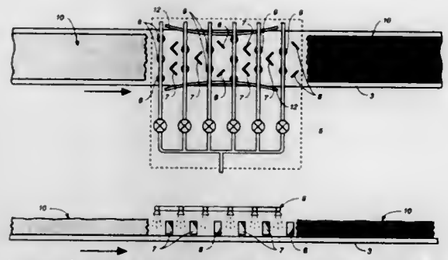
the top portion of the moistening member is further provided with grooves extending parallel to the capillarity slits and being disposed respectively between said slits for removing excess of moistening liquid coming from the capillarity slits and flowing onto the top portion of the moistening member.

5,622,561
PARTICULATE MATERIAL TREATMENT SYSTEM AND CONVEYOR BELT MIXING SYSTEM
David C. Cummins, Baton Rouge, and David L. Roussel, Hester, both of La., assignors to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.
Continuation of Ser. No. 184,532, Jan. 21, 1994, abandoned.
This application Jul. 25, 1995, Ser. No. 506,176
Int. Cl.[6] B05B *13/02;* **B05C** *5/00;* **B65G** *47/22*
U.S. Cl. 118—303 **6 Claims**

1. A material treatment system for significantly reducing dust formation during transfer of particulate material having a tendency of dusting, the system comprising:

(a) an endless conveyor belt for conveying the particulate material;

(b) material spraying means located above the endless conveyor belt across the width of the belt, the spraying means being adapted to spray water or organic surface active agents onto the surface of the particulate material conveyed on the belt in order to wet the surface of the particulate material being conveyed; and



(c) material mixing means located above the surface of the belt and positioned past the spraying means in relation to the direction of travel of the belt, the mixing means including

(i) a pair of skirts, positioned above the belt surface on each side of the belt to direct the conveyed particulate material away from the sides and towards the center of the belt so as to create a converging zone of the particulate material between the skirts;

(ii) at least one plow, having a pointed end and a flared end, located above the surface of the belt between the skirts within the converging zone, the at least one plow being positioned in a manner so that the pointed end of the at least one plow points in a direction opposite the direction of travel of the belt to allow the at least one plow to lift and divert the wetted particulate material being conveyed on the belt towards side edges of the belt to expose additional unwetted material surfaces,

(iii) two or more baffle means located above the belt surface on each side of the belt between the skirts within the converging zone, past the at least one plow in relation to the direction of travel of the belt, the baffle means being positioned at such an angle as to redirect the conveyed particulate material away from the sides and towards the center of the belt while exposing additional unwetted surfaces of the particulate material, and

(iv) a pair of plows, each plow having a pointed end and a flared end, located above the surface of the belt between the skirts within the converging zone, past the baffle means in relation to the direction of travel of the belt, the pair of plows being positioned in a manner so that the pointed end of the plows point in a direction opposite the direction of travel of the belt to allow each plow to lift and divert wetted material being conveyed towards the side edges of the belt to expose additional unwetted material surfaces.

5,622,562
COATING STRIP MATERIAL WITH PROTECTIVE DECORATIVE LAYERS WHILE AVOIDING USE OF SOLVENTS
Robert A. Innes, Kingston, and Neil L. Brockman, Lansdowne, both of Canada, assignors to Alcan International Limited, Montreal, Canada
Division of Ser. No. 344,562, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,990, May 27, 1993.
This application May 24, 1995, Ser. No. 449,418
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—410 **6 Claims**

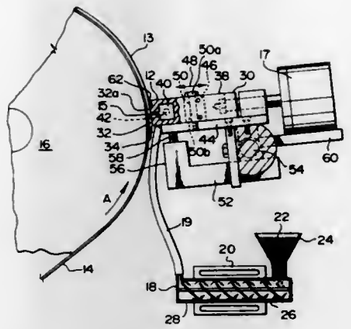
1. Apparatus for coating a surface of an elongated strip article with a solid coating layer of polymer material, comprising:

a sheet feeder for advancing said elongated strip article in a direction of movement;

a first coating head having an elongated open-sided slot and an extended surface immediately adjacent to the open side of the slot;

melting apparatus for heating a solid polymer material to form a melt and for delivering said melt under pressure to said first coating head for extrusion through said slot;

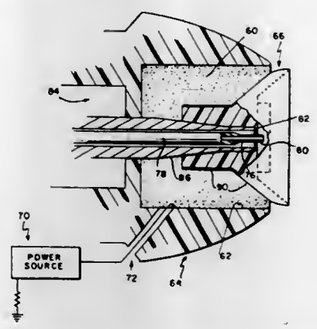
a heater for said first coating head for heating said melt contained within said first coating head;



a support for the first coating head holding said head facing said strip article at an angle to a surface of said article forming a gap between the first coating head and the surface that narrows in the direction of movement of the strip article, and permitting translational movement of the head towards and away from said surface of the strip article; and

a load application device for pushing the first coating head towards the strip article as said melt is extruded as a coating onto said surface from the slot to reduce thickness of the coating by pressing said extended surface of the first coating head onto said coating as the coating is formed.

5,622,563
NONINCEDIVE ROTARY ATOMIZER
Varce E. Howe, Zionsville; David R. Huff, Indianapolis; Jerry L. McPherson, Jr., Greenfield, and James A. Scharfenberger, Indianapolis, all of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Continuation of Ser. No. 437,218, May 8, 1995, which is a continuation of Ser. No. 181,654, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 985,613, Dec. 3, 1992, Pat. No. 5,433,387. This application May 26, 1995, Ser. No. 451,541
Int. Cl.[6] B05B *5/00*
U.S. Cl. 118—620 **9 Claims**



1. A coating material dispensing system for dispensing a coating material onto an article to be coated by the coating material, the system comprising an atomizer, a source of coating material to be dispensed, means for coupling the coating material source to the atomizer, means for imparting an electrical charge to the coating material as it is atomized, a power supply for maintaining a potential difference across the charge imparting means and the article, and means for coupling the power supply to the article and to the charge imparting means, the means for coupling the power supply to the charge imparting means comprising an electrically

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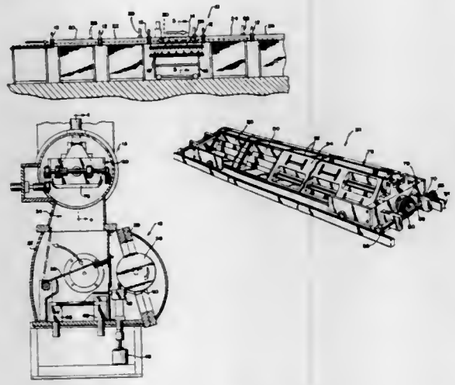
non-conductive housing having a pair of sidewalls, a pair of endwalls and a bottom wall defining a housing interior, a first passageway extending from one of the end walls longitudinally within one of the sidewalls and terminating at a first location intermediate the end walls within the housing interior, a first high potential terminal at the first location, a second passageway extending from the other of the end walls longitudinally within the other of the side walls and terminating at a second location intermediate the end walls within the housing interior, a second high potential terminal at the second location, the first location being closer to said other end wall than to said one end wall and the second location being closer to said one end wall than to said other end wall, a high potential cable for insertion into the first passageway, the high potential cable terminated by a cable termination configured to couple to the first high potential terminal, a first resistive element positioned and extending longitudinally between the sidewalls and terminating at a first end thereof adjacent the first location and at a second end thereof adjacent said second location, means for coupling the first end of the first resistive element to the first high potential terminal, means for coupling the second end of the first resistive element to the second high potential terminal, and means for coupling the second high potential terminal to the charge imparting means, the remaining interior of the housing being filled with potting material substantially to the height of the sidewalls and end walls above the bottom wall.

5,622,564

METALLIZING APPARATUS

Richard G. Vignola, Sarasota, Fla., and Richard Glanz, Crystal Lake, Ill., assignors to Compu-Vac Systems, Inc., Sarasota, Fla.

Filed Jan. 20, 1995, Ser. No. 375,816
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—715 **25 Claims**



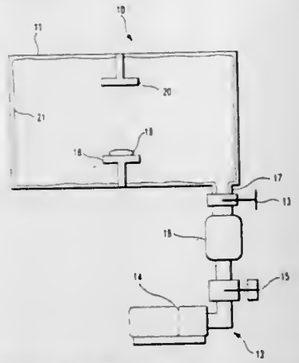
1. A metallizing apparatus comprising:
a chamber which can be selectively sealed from an atmosphere, having a first end and a second end, each end sealed by a valve;
at least one rail running between the first and second ends of said chamber;
a shuttle transportable on said rail for transporting components to be metallized between the first and second ends of said chamber; and
means for generating metal vapor within said chamber.

5,622,565

REDUCTION OF CONTAMINANT BUILDUP IN SEMICONDUCTOR APPARATUS

Yan Ye, Campbell; Anand Gupta, and Shamouil Shamouliam, both of San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 138,528, Oct. 15, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 585,980
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 R **12 Claims**



1. In a plasma generating semiconductor processing apparatus comprising a reactor chamber and an exhaust system through which reactor chamber gases are removed from said reaction chamber, the improvement comprising a coating of a polyfluoroethylene polymer selected from the group consisting of polytetrafluoroethylene $(—CF_2CF_2—)$ polychlorotrifluoroethylene $(—CF_2CFCl—)_n$ and copolymers of tetrafluoroethylene and chorotrifluoroethylene, said polyfluoroethylene polymer being in the form of an oil, grease or wax and having a molecular weight of between about 5000 to about 800,000, on at least a portion of the interior surfaces of said reactor chamber and said exhaust system, wherein said coating exhibits a sticking coefficient of 10^{-4} or less and contributes a partial pressure which is less than 1% of the total pressure at which said chamber is operated, over the entire operational range for said chamber.

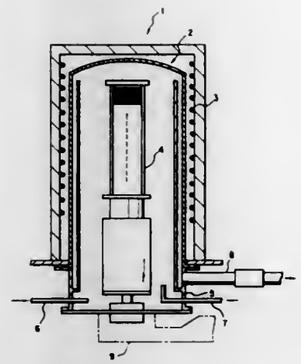
5,622,566

FILM-FORMING APPARATUS

Atsushi Hosaka, Yamanashi-ken; Mitsuaki Iwashita, Nirasaki, and Toshiharu Nishimura, Koufu, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

PCT No. PCT/JP94/01526, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO95/08185, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 16, 1994, Ser. No. 424,473
Claims priority, application Japan, Sep. 16, 1993, 5-255051
Int. Cl.[6] H01L *21/00*
U.S. Cl. 118—723 VE **10 Claims**

1. A film-forming apparatus comprising:
an elongated reaction tube having an object arrangement region in which a plurality of objects to be processed can be arranged in a longitudinal direction of said tube;
a film-forming gas introduction pipe for introducing a film-forming gas into said reaction tube;
a main dopant gas introduction pipe, having a gas outlet located in said reaction tube closer to a longitudinal end of the reaction tube than the object arrangement region, for introducing a dopant gas into the reaction tube and guiding the dopant gas toward another longitudinal end of the reaction tube;
at least one sub dopant gas introduction pipe having a gas outlet located in said reaction tube closer to said another longitudinal end of said reaction tube than said gas outlet of said main dopant gas introduction pipe, for introducing the same dopant gas as the first-mentioned dopant gas into the reaction tube so as to compensate supply of said dopant gas through said main dopant gas introduction pipe;
exhaustion means for exhausting the gases in said reaction tube; and
heating means for heating an interior of said reaction tube;
wherein a film doped with an impurity is formed on each of said objects.

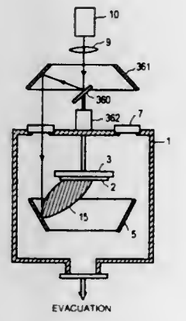


5,622,567

THIN FILM FORMING APPARATUS USING LASER

Kazuyoshi Kojima; Tetsuya Takami; Kenichi Kuroda; Toshiyuki Oishi; Yukihiko Wada, and Akihiko Furukawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,844
Claims priority, application Japan, Nov. 30, 1992, 4-345584
Int. Cl.[6] C23C *14/00*
U.S. Cl. 118—726 **3 Claims**



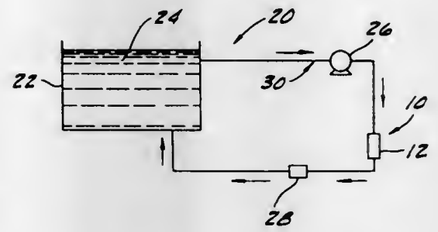
1. A thin film forming laser apparatus comprising:
a chamber having evacuating means;
a target placed in said chamber, said target having a hollow cylindrical shape;
laser beam irradiating means for irradiating said target with a laser beam;
substrate holding means for holding a substrate on which a material included in a plume generated from said target by laser beam irradiation is deposited; and
scanning means for scanning said target with the laser beam emitted from said laser beam irradiating means including means for continuously irradiating the inner circumferential surface of said target with the laser beam.

5,622,568

GETTERING OF METALS FROM SOLUTION

Larry W. Shive, St. Peters, and Saeed Pirooz, St. Louis, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Jun. 13, 1994, Ser. No. 259,052
Int. Cl.[6] C02F *1/42*
U.S. Cl. 134—2 **13 Claims**



1. A process for cleaning particles from a surface of a semiconductor wafer with an alkaline cleaning solution comprising
growing a surface layer of silicon dioxide on polycrystalline silicon by exposing the polycrystalline silicon to an oxygen-containing atmosphere at a temperature in the range of about 900° C. to about 1300° C., the surface layer being grown to a thickness which is greater than the thickness of the native oxide which forms on silicon during oxidation in air;
contacting the cleaning solution with a bed comprising the polycrystalline silicon onto which the surface layer of silicon dioxide has been grown; and
immersing the wafer in the cleaning solution.

5,622,569

ALUMINUM RIGID CONTAINER SHEET CLEANER AND CLEANING METHOD

Alfred M. Dennis, Newburgh, Ind.; Joseph D. Guthrie, Murrysville, and George T. Gregory, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 2, 1995, Ser. No. 459,926
Int. Cl.[6] C23G *1/00*; B08B *1/00*; C09K *13/02*
U.S. Cl. 134—2 **11 Claims**

1. An improved method for cleaning food or beverage container sheet made from a 5000 Series (Aluminum Association designation) aluminum alloy and making said sheet more corrosion resistant, said method comprising contacting said sheet for less than about 20 seconds with a cleaner which includes: about 1.0–10.0 wt. % (10.0–100.0 g/L) of an alkali metal carbonate; about 0.1–2.5 wt. % (1.0–25.0 g/L) of an alkali metal hydroxide, said cleaner including a total concentration of alkali metal carbonate and alkali metal hydroxide in excess of about 3.0 wt. % (30.0 g/L); about 0.1–2.5 wt. % (1.0–25.0 g/L) of an alkali metal gluconate; about 0.1–2.0 wt. % (1.0–20.0 g/L) of a compound containing 1-hydroxyethylidene-1,1-diphosphonic acid (or "HEDP"); and about 0.05–1.0 wt. % (0.5–10.0 g/L) of an alkylphenoxypolyethoxy-ethanol-based surfactant, the balance water and incidental impurities.

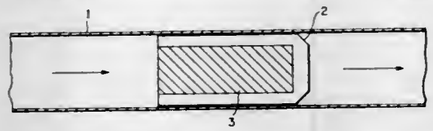
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5,622,570

PROCESS FOR REMOVING ACCUMULATED MELTABLE MATTER IN PIPES BY MEANS OF A HEATED TRAVELLING ELEMENT

Paulo Cesar R. Lima; Carmem Silvia D. D. Lobato, and Carlos Alberto Saliba, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Sep. 13, 1994, Ser. No. 305,369
Claims priority, application Brazil, Sep. 13, 1993, PI9303772
Int. Cl.[6] B08B *7/00;* **C23G** *1/00*
U.S. Cl. 134—5 **8 Claims**



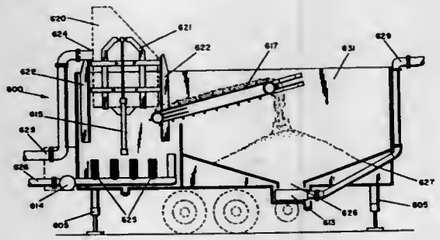
1. A process for removing accumulated meltable residue in a pipe by means of a heated travelling element, said travelling element being a cylindrical pig made of a low density, high elasticity polymeric foam comprising: adding reagents to the pig which, by chemical reaction or physical-chemical modification, causes a highly exothermal reaction which generates heat within said pig to provide a heated pig, introducing the heated pig, immediately after adding the reagents, into the pipe and displacing said heated pig by means of a flowing fluid under pressure so that, by displacement of the heated pig, the meltable residue accumulated within said pipe is melted by the heat generated by the highly exothermal reaction and said melted residue is carried by the heated pig to an opening of the pipe for removal with the heated pig.

5,622,571

PIPE CLEANING MODULES AND SYSTEMS AND METHODS FOR THEIR USE

Donald A. Derlein, Albuquerque, N.M., assignor to Pipeline Services, Inc., Dallas, Tex.

Division of Ser. No. 903,237, Jun. 15, 1992, Pat. No. 5,435,854, which is a continuation-in-part of Ser. No. 647,144, Jan. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 567,309, Aug. 10, 1990, Pat. No. 5,122,193. This application Apr. 26, 1995, Ser. No. 429,051
Int. Cl.[6] B08B *9/06*
U.S. Cl. 134—22.11 **26 Claims**



19. A method for cleaning an interior of a pipeline through which passes a waste fluid composed of liquid waste mixed with waste solids, said method comprising the steps of:

extracting waste fluid from the interior of the pipeline;

depositing the thus extracted waste fluid onto an elevated separator screen, said elevated separator screen being positioned directly above a liquid waste holding tank and adjacent to a solid waste receptacle so that, as waste fluid is deposited on said elevated separator screen, liquid from the thus deposited waste fluid falls through the elevated separator screen and then drops into the liquid waste holding tank while waste solids from the thus deposited waste fluid move off the screen into the solid waste receptacle, thereby separating the deposited waste fluid into thus separated waste solids and a thus separated liquid waste;

removing waste solids from said solid waste receptacle; and

transporting the thus removed waste solids away from the location of the pipeline while simultaneously conducting the steps of extracting and separating waste fluid.

5,622,572

EXTRA-STRENGTH STEEL AND METHOD OF MAKING

Alfred H. Wells, Jr., Williamsburg, and Gerald M. Cobb, Hampton, both of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Aug. 28, 1995, Ser. No. 520,463
Int. Cl.[6] C22C *38/04;38/06;* **C21D** *6/00*
U.S. Cl. 148—320 **9 Claims**

1. The process of producing a high strength, weldable steel having improved toughness comprising:

providing a steel of the following composition in weight percentages:

a) carbon 0.03–0.10
b) manganese 1.10–1.65
c) phosphorous 0.025 max
d) sulfur 0.010 max
e) silicon 0.10–0.50
f) nickel 0.40 max
g) chromium 0.20 max
h) molybdenum 0.03–0.08
i) copper 0.35 max
j) vanadium 0.04–0.10
k) columbium 0.02–0.06
l) aluminum 0.03–0.08

heating a rolled steel plate embodying said composition to a temperature between about 1450° F. and 1700° F. to complete a phase transformation from ferrite and pearlite to austenite, and

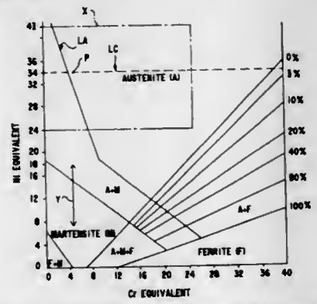
cooling said steel plate to ambient temperature.

5,622,573

METHOD OF DETERMINING COMPONENTS OF A WELDING MATERIAL HAVING BEEN OVERLAID ONTO A CAST IRON BASE METAL

Hideaki Ikeda, and Tuyoshi Kokusho, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,978
Claims priority, application Japan, Nov. 11, 1994, 6-278093; Nov. 14, 1994, 6-279436
Int. Cl.[6] C21D *1/18;* **C23C** *6/00*
U.S. Cl. 148—517 **1 Claim**



1. A method of determining components of a welding material having been overlaid onto a cast iron base metal, said method comprising the steps of:

defining in Schaeffler's structure diagram a region at a value in which there is a difference in hardness before and after a supercooling treatment, said Schaeffler's structure diagram being a diagram having a nickel (Ni) equivalent and a chromium (Cr) equivalent as parameters;

obtaining a target composition in which said nickel (Ni) equivalent and said chromium (Cr) equivalent fall within the region and within a starting temperature of martensitic transformation, the region being enclosed within LA and LC borderlines in said Schaeffler's structure diagram, LA being a borderline between an austenitic region in which only austenite is present at room temperature and a region in which both austenite and martensite are present in mixture, and LC being a borderline in which carbide does not precipitate; and

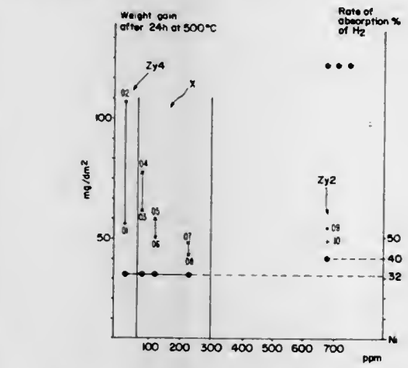
determining the composition of basic components such that the target composition is attained in an overlaid condition.

5,622,574

PRODUCT EXTERNALLY ALLOYED WITH ZR, METHOD FOR MANUFACTURE OF SAME, AND USE OF SAME

Daniel Charquet, Albertbille, France, assignor to Compagnie Europeenne Du Zirconium Cezus, Courbevoie, France

Continuation of Ser. No. 81,165, Jun. 25, 1993, abandoned. This application Sep. 22, 1994, Ser. No. 310,040
Claims priority, application France, Jul. 9, 1992, 92 08760
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—519 **4 Claims**



1. A method for manufacturing a Zr alloy product, comprising the steps of:

a) preparing an ingot of a Zr alloy consisting essentially of, by weight, Sn 0.40 to 1.70%, Fe 0.05 to 0.25%, Cr 0.03 to 0.16%, and Ni 150 to 290 ppm, and the following maximum amounts of impurities: Al 75 ppm, B 0.5 ppm, Cd 0.5 ppm, C 270 ppm, Co 20 ppm, Cu 50 ppm, Hf 100 ppm, H_2 25 ppm, Mg 20 ppm, Mn 50 ppm, Mo 50 ppm, N_2 65 ppm, Si 120 ppm, Ti 50 ppm, W 10 ppm, U total 3.5 ppm, and O_2 1400 ppm, alloy balance Zr;

b) hot shaping the ingot to form a blank;

c) quenching the blank from the beta field; and

d) transforming the quenched blank by a succession of thermomechanical and/or mechanical and heat treatments, the temperatures and times of said treatments being adjusted according to a time factor: $A=\Sigma t_i \exp(-40{,}000/T_i)$, in which t_i and T_i are respectively, the times of treatment in hours, and the temperatures of treatment in ° K,

wherein time factor A including all said treatments is between 4×10^{-19} hours and 5×10^{-18} hours,

and a partial time factor A' including all said treatments except a final treatment is less than 16×10^{-19},

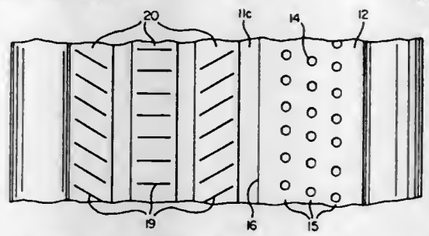
said Zr alloy product thereby having a weight gain Δm less than about 50 mg/dm^2 in a standard nodular corrosion test after 24 hours at 500° C.

5,622,575

PNEUMATIC VEHICLE TIRE WITH A SYMMETRICAL CARCASS, SYMMETRICAL BELT PLIES, AND AN ASYMMETRICAL TREAD

Jobst Meyer-Adlung; Wolfgang Spitz, both of Hanover; Dieter Rohde, Lehrte; Siegfried Praetorius, Barsinghausen, and Klaus-Heiner Hartmann, Neustadt, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed Jun. 9, 1995, Ser. No. 488,852
Claims priority, application Germany, Jun. 10, 1994, 44 20 316.0
Int. Cl.[6] B60C *11/117*
U.S. Cl. 152—209 A **7 Claims**



1. A pneumatic vehicle tire for semitrailers, said vehicle tire comprising:

a symmetric radial carcass;

a symmetric package of belt plies placed on said carcass;

a tire tread of an asymmetric tread design having at least three longitudinal grooves having a depth of 13 mm to 18 mm;

said tire tread having an axially outer wide tread rib, positioned, when mounted on a vehicle, so as to face outwardly relative to the vehicle, said wide tread rib having a width of 25% to 40% of the width of said tire tread when measured at half the depth of an axially outer one of said longitudinal grooves positioned adjacent to said wide tread rib;

said wide tread rib being free of any tread voids having a main direction of extension and selected from the group consisting of longitudinal grooves, longitudinal sipes, transverse grooves, transverse sipes, diagonal grooves, and diagonal sipes; and

wherein only said wide tread rib of said tire tread has tread voids having in a top view of said tire tread a substantially round contour, said tread voids arranged in 1 to 4 tracks in a circumferential direction of said tire tread, wherein each one of said tracks comprises 100 to 150 of said tread voids.

5,622,576

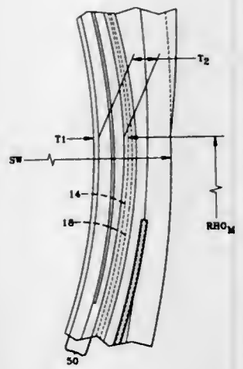
OFF-THE- ROAD PNEUMATIC TIRE WITH SPECIFIED BEAD AREA DESIGN

Jolan F. Lobb, North Canton; Michael W. Cook, Canton; Dale E. Wells, Massillon, and Steven Z. Lewkowicz, South Euclid, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 153,726, Nov. 16, 1993, Pat. No. 5,429,168. This application Nov. 24, 1995, Ser. No. 562,442
Int. Cl.[6] B60C *9/00;9/08;15/02;15/024*
U.S. Cl. 152—454 **2 Claims**

1. An improved off-the-road pneumatic tire, the tire having a nominal rim diameter of at least 50 cm (20 inches), an axis of rotation, a carcass having a pair of bead portions, each bead portion having one annular inextensible bead, the carcass further including a steel-reinforced radial ply extending between and wrapped about each bead, the ply having turn-up ends extending axially and radially outwardly from each bead; a plurality of reinforcing belts disposed radially outwardly of the ply; a tread disposed radially outwardly of the carcass; the bead portion having a radially inner first surface and a radially outwardly extending second surface, the first and second surfaces of the bead portion being designed to engage a design rim as specified by the applicable standards organization, the rim having a pair of bead seat

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portions and a pair of flange portions respectively; the improved tire when normally mounted on the rim, uninflated and unloaded, being characterized by:

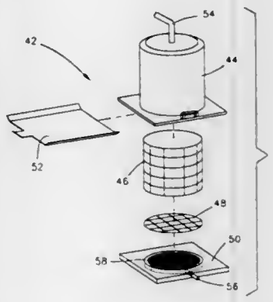
the tire having a thickness T1 of rubber axially and radially inwardly of the ply, the thickness T1 being between 1.5% and 3.5% of the tire's section width, the tire further comprising an insert axially and radially inwardly of the ply, the insert comprising a portion of the rubber having a thickness T1, the insert having a thickness T2 wherein T2 is between 50% and 75% of T1.

5,622,577

RAPID PROTOTYPING PROCESS AND COOLING CHAMBER THEREFOR

Kurt F. O'Connor, Carmel, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Aug. 28, 1995, Ser. No. 520,115
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—62.2 **20 Claims**



1. A rapid prototyping process comprising the steps of:

forming a prototype within a process chamber that generates the prototype through successively depositing individual layers of material that are fused together so as to form the prototype;

transferring the prototype from the process chamber to a cooling chamber while preventing exposure of the prototype to an oxidizing agent;

removing the cooling chamber from the process chamber; and

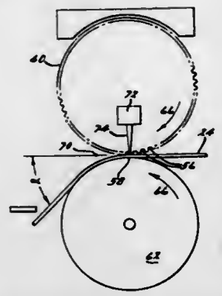
cooling the prototype within the cooling chamber while flowing a nonoxidizing cooling medium over the prototype.

5,622,578

METHOD FOR MANUFACTURING REFASTENABLE FASTENING SYSTEMS INCLUDING A FEMALE LOOP FASTENING COMPONENT AND THE PRODUCTS PRODUCED THEREFROM

Dennis A. Thomas, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 336,277, Nov. 8, 1994. This application Jul. 26, 1995, Ser. No. 507,106
Int. Cl.[6] B29C *47/06*
U.S. Cl. 156—66 **10 Claims**



1. A method for making one or more free formed loops useful as a component of a mechanical fastening system including complimentary male hooks, the method comprising the steps of:

providing a depositing member having at least one aperture;

providing a molten thermally sensitive material;

providing a substrate;

removing a discrete amount of said molten thermally sensitive material from said aperture;

depositing said removed molten thermally sensitive material onto said substrate;

stretching a portion of said discrete amount of said molten thermally sensitive material in a direction having a vector component parallel to the plane of the substrate so as to free form a member including a base, a shank and a distal portion;

fusing said distal portion of said free formed members either to another free formed member or back upon itself to form an opening for receiving said male hooks; and

solidifying said molten thermally sensitive material of said members to form a loop.

5,622,579

METHOD FOR ATTACHMENT OF A SERVICE DEVICE TO A CONTAINER

John W. Tobias, Lancaster, Pa., assignor to Graham Packaging Corporation, York, Pa.

Filed Mar. 31, 1995, Ser. No. 414,646
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.1 **12 Claims**

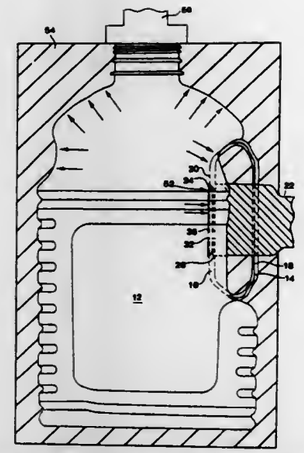
1. A method for ultrasonically bonding a separately-formed plastic handle to a blow-molded plastic container having a finish and a sidewall with an exterior surface and an interior surface, the finish being smaller in transverse cross-section than the sidewall to provide a closeable pouring port, comprising the steps of:

juxtaposing the separate plastic handle adjacent the blow-molded plastic container;

engaging the plastic handle against a portion of the exterior surface of the sidewall of the blow-molded plastic container;

engaging an ultrasonic horn against the plastic handle adjacent to said exterior surface portion;

applying pressure against the interior surface of the blow-molded plastic container opposite said exterior surface portion while said ultrasonic horn applies ultrasonic energy to the plastic handle, said pressure applying step includes the step of pressurizing the entire interior surface of the blow-molded plastic container to a level of at least about 50 psi; and



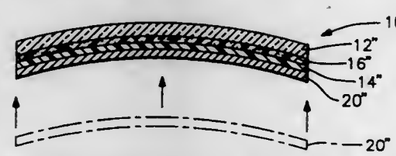
confining the exterior surface of the blow-molded plastic container while said pressure is applied to the interior surface; whereby the plastic handle is ultrasonically bonded to the plastic blow-molded container.

5,622,580

METHOD OF FORMING A CURVED, SHATTERPROOF GLASS LAMINATE

Jose R. Mannheim, Calle 14 N. 35-39, Bogota, Colombia

Division of Ser. No. 170,740, Dec. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 999,525, Dec. 30, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,863
Int. Cl.[6] B32B *31/12;* **B30B** *15/02;* **C03C** *27/12*
U.S. Cl. 156—106 **14 Claims**



1. A method of forming a curved, shatterproof glass laminate for a vehicle side window, back window or sunroof, which comprises the steps of:

providing a laminate layup comprising a curved outer layer of glass selected from the group consisting of heat tempered and heat strengthened glass, and a curved inner layer of a plastic material in a laminated relationship with a layer of adhesive material therebetween;

positioning a mold member against the layup in pressure engagement against the curved plastic layer in conforming relationship therewith, to protect the plastic layer against deformation and to prevent the formation of air pockets in the adhesive during subsequent heating;

subjecting the assembled laminate layup and mold member to a vacuum and then to heat under pressure to form the laminate;

cooling the formed laminate and the mold member under said pressure; and

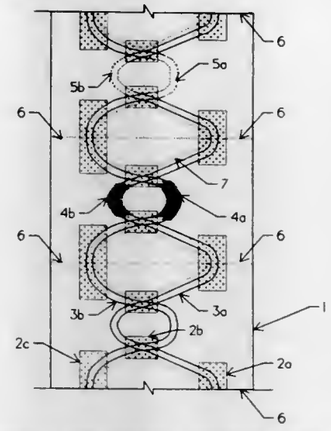
removing the mold member from the laminate wherein the mold member material is selected from the group consisting of plastic and metal, the plastic having a Rockwell hardness reading in a range on the order of at least R18 to R35, a heat coefficient of thermal expansion in a range on the order of 3.0×10^{-5} in./in/°F., and an initial softening point in a range on the order of not less than 80° C. to 150° C., the metal having a thickness in a range on the order of 0.5 to 2 mm, a heat coefficient of thermal expansion in a range on the order of 0.45×10^{-5} to 0.7×10^{-5} in./in/°F., and a Rockwell hardness reading in a range on the order of R150 to R200.

5,622,581

DISPOSABLE GARMENT WITH DE-ELASTICIZED ELASTIC MEMBERS AND METHOD FOR MAKING SAME

Paul Ducker, Vancouver, Wash.; Adrian Wright, Canby, Oreg., and Walter V. Klemp, Houston, Tex., assignors to Drypers Corporation, Houston, Tex.

Continuation of Ser. No. 269,236, Jun. 30, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,232
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 156—163 **12 Claims**



1. A method of manufacturing a disposable garment for infants and incontinent adults comprising the steps of:

applying an adhesive to a garment material having first and second leg openings and a crotch area;

stretching an elastic strand along the first leg opening, across the crotch area, and along the second leg opening;

adhering the stretched elastic strand to the garment material; and

deactivating the stretched elastic strand in the crotch area of the garment material.

5,622,582

METHOD OF FORMING PRINTED COMPOSITE MATERIAL

Geoffrey Foxcroft, East Keilor, Australia, assignor to Viapak Pty Ltd, Australia

PCT No. PCT/AU93/00615, § 371 Date May 31, 1995, § 102(e) Date May 31, 1995, PCT Pub. No. WO94/12335, PCT Pub. Date Jun. 9, 1994
PCT Filed Dec. 1, 1993, Ser. No. 446,610
Claims priority, application Australia, Dec. 1, 1992, PL6137
Int. Cl.[6] B32B *31/08;31/12;31/20*
U.S. Cl. 156—199 **4 Claims**

1. A method of producing a printed article including the following steps:

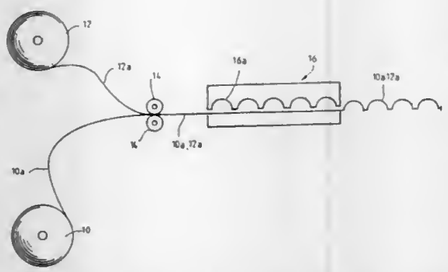
providing a first web of polyethylene upon which a pattern has been printed;

providing a second web of plastics material from which the article is to be formed, one of the first or second webs having a heat seal lacquer applied thereto;

passing the first and second webs through a pair of heated rollers to cause the heat seal lacquer to become tacky;

directing the first and second webs in adjacent overlying relation to a vacuum forming machine including a mold, applying heat

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and vacuum in the vacuum forming machine to cause the first and second webs to conform to the shape of the mold to produce the printed article; and

wherein the application of heat in the vacuum forming machine activates the heat seal lacquer to adhere the first and second webs together.

5,622,583

METHOD OF PRODUCING A FILTER INSERT

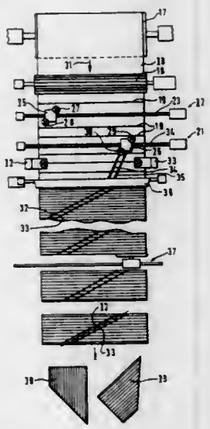
Volker Ernst, Sachsenheim; Arthur Klotz, Remseck; Michael Kolmeder, Dingolfing, and Bernhard Wimmer, Rimbach, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Aug. 29, 1994, Ser. No. 294,844

Claims priority, application Germany, Aug. 27, 1993, 43 28 846.4

Int. Cl.[6] B32B *31/04;31/18*

U.S. Cl. 156—204 10 Claims



2. Method for producing a filter insert having a filter material folded in an accordion-shape, the method comprising the steps of:

transporting the filter material in a transport direction;

impressing fold lines into the filter material;

applying at least two glue beads to a surface of the filter material using glue application devices which are provided with glue application nozzles, the step of applying including moving at least one of the glue application devices transversely to the transport direction of the filter material during the transporting of the filter material such that two of said glue beads extend obliquely to the transport direction;

subsequently folding the filter material along the fold lines; and

cutting the folded filter material into individual filter elements with a cutting apparatus that carries out a cutting movement between said two obliquely extending glue beads.

5,622,584

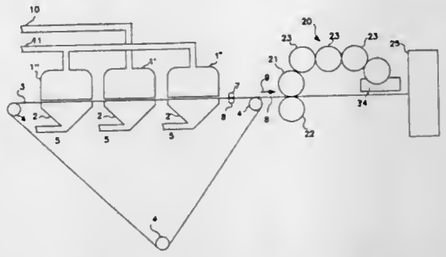
METHOD OF PRODUCING FLOW LINES IN A SANITARY PRODUCT

Karl K. K. Kroyer, Le Vieux Moulin, 12, rue de la Libération, F-06520 Magagnosc, France

Continuation of Ser. No. 141,927, Oct. 28, 1993, abandoned. This application Jul. 13, 1995, Ser. No. 502,013

Int. Cl.[6] A61F *13/20;13/52*

U.S. Cl. 156—209 6 Claims



1. A method for production of diapers and sanitary napkins comprising three interconnected layers including a liquid impervious back sheet, a liquid impervious front sheet, and a liquid pervious core, wherein the liquid impervious front sheet and back sheet are made of hydrophobic fibers, the liquid pervious core is made of hydrophilic fibers, and said method includes the steps of providing an embossing roller having a pattern of raised ridges, applying a wetting agent to said raised ridges, and embossing the hydrophobic front sheet with said embossing roller to form a pattern of hydrophilic flow lines by rendering said hydrophobic fibers hydrophilic in said flow lines and provide an intimate contact between hydrophilic fibers in the flow lines and hydrophilic fibers in the liquid pervious core, said wetting agent being applied for neutralizing the hydrophobicity of the fibers in the hydrophobic front sheet and rendering them hydrophilic to thereby provide said pattern of hydrophilic flow lines and enable a liquid flow through the front sheet to the liquid pervious core of hydrophilic fibers.

5,622,585

METHOD OF HANDLING ELECTRONIC COMPONENT CHIPS

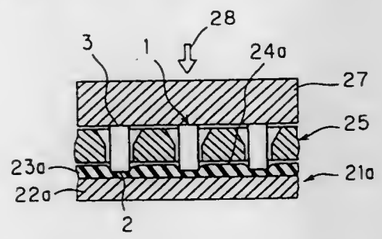
Kenji Minowa; Norio Sakai; Tetsuro Saito, and Toshimi Yoshimura, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 273,781, Jul. 12, 1994, abandoned, which is a division of Ser. No. 240,087, May 9, 1994, Pat. No. 5,383,997, which is a continuation of Ser. No. 855,202, Mar. 20, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 424,575

Claims priority, application Japan, Mar. 20, 1991, 3-55256

Int. Cl.[6] B05C *3/00;13/00*

U.S. Cl. 156—235 20 Claims



1. A method of handling and processing a plurality of preformed independent substantially rectangular-parallelepiped-shaped electronic component chips having first and second opposed end surfaces, said method comprising the steps of:

preparing a first electronic component chip holder having a first adhesive surface;

preparing a second electronic component chip holder having a second adhesive surface, the adhesion of said second adhesive surface being stronger than the adhesion of said first adhesive surface;

placing said first adhesive surface of said first electronic component chip holder on said first end surfaces of said plurality of independent preformed substantially rectangular-parallelepiped-shaped electronic component chips for holding each of said plurality of independent preformed electronic component chips by said first electronic component chip holder;

processing said second end surfaces of said plurality of independent preformed electronic component chips;

moving said first electronic component chip holder holding said plurality of independent preformed electronic component chips toward said second electronic component chip holder;

adhering said second adhesive surface to said processed second end surfaces of said plurality of independent preformed electronic component chips;

separating said first and second electronic component chip holders from each other, said second end surfaces of said plurality of independent preformed electronic component chips being held by said second electronic component chip holder;

processing said first end surfaces of said plurality of independent preformed electronic component chips being held by said second electronic component chip holder; and

removing said plurality of independent preformed electronic component chips from said second electronic component chip holder.

5,622,586

METHOD OF FABRICATING DEVICE MADE OF THIN DIAMOND FOIL

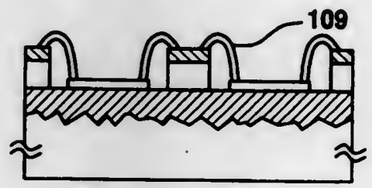
Rimantas Vaitkus, Vilnius, Lithuania; Takashi Inushima, and Masaya Kadono, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Dec. 30, 1994, Ser. No. 366,573

Claims priority, application Japan, Jan. 10, 1994, 6-012201

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—247 7 Claims



1. A method of fabricating a device comprising the steps of:

forming a thin film on a first base wherein said thin film is made of diamond;

adhesively bonding a second base to said thin film;

removing said first base from said thin film to expose a surface of said thin film;

forming a circuit on said exposed surface of said thin film;

cutting said thin film into a desired shape; and

removing said second base from the cut thin film having the circuit formed thereon.

5,622,587

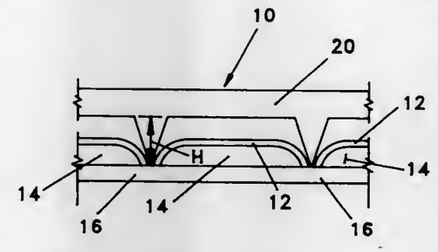
METHOD FOR PRODUCING A THREE-DIMENSIONAL LAMINATED DECAL COMPOSITE

Kenneth L. Barthelman, 1521 Wheatridge, Wichita, Kans. 67235

Filed Dec. 19, 1991, Ser. No. 812,076

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—251 25 Claims



1. A method for producing a three dimensional laminated decal composite having a predetermined configuration including a decal member being adhered to a decal support member with an acrylic based sensitive adhesive that prevents "bubbling up" of the decal member on the decal support member after the production of the three dimensional laminated decal composite, comprising the steps of:

(a) providing a decal support including a top and comprising a closed-cell polyvinyl chloride foam having a density ranging from about 20 lbs/cubic feet to about 30 lbs/cubic feet and having a decal support melting temperature;

(b) providing a decal with a decal melt temperature that is greater than the decal support melting temperature and comprising a major proportion of a vinyl compound, and having an acrylic based pressure sensitive adhesive on a bottom thereof;

(c) securing the top of the decal support to the bottom of the decal having the acrylic based pressure sensitive adhesive by contacting the bottom of the decal having the acrylic based pressure sensitive adhesive with the top of the decal support to produce a decal/decal support combination and subsequently passing the decal/decal support combination through a laminator to produce a laminated decal composite;

(d) providing a thermal die having a die base and at least one cutting ridge secured to the die base and having a height greater than about 0.07 inches;

(e) die-cutting the laminated decal composite of step (c) with the cutting ridge of step (d) and at a cutting temperature ranging from about 260° F. to about 360° F. and a cutting pressure less than about 650 psi and a cutting dwell time ranging from about 0.1 sec. to about 0.8 sec. to produce a three dimensional laminated decal composite having a predetermined configuration and with the acrylic based sensitive adhesive of step (b) preventing "bubbling up" of the decal of step (b) on the decal support of step (a).

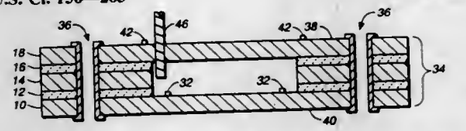
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5,622,588

METHODS OF MAKING MULTI-TIER LAMINATE SUBSTRATES FOR ELECTRONIC DEVICE PACKAGING

Patrick O. Weber, San Jose, Calif., assignor to Hestia Technologies, Inc., Sunnyvale, Calif.

Filed Feb. 2, 1995, Ser. No. 384,268
Int. Cl.[6] H01L *23/12;23/52;* H05K *3/46*
U.S. Cl. 156—263 15 Claims



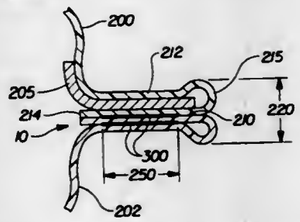
1. A method for making multi-tier laminate substrates for electronic device packaging comprising the steps of:
providing a first laminating layer having a trace on a first side and a second laminating layer having a trace on a first side;
making a first window in a spacer laminating layer;
making a second window corresponding to the first window in at least one layer of dielectric;
making a third window corresponding to the first window in at least one layer of dielectric;
laminating together the first laminating layer, the second laminating layer, the spacer laminating layer, and the layers of dielectric to produce a laminated substrate, wherein one layer of the dielectric is located between the trace on the first side of the first laminating layer and a first side of the spacer laminating layer and one layer of the dielectric is located between the trace on the first side of the second laminating layer and a second side of the spacer laminating layer;
making vias through the laminated substrate;
plating the vias;
producing traces on a second side of the first laminating layer and a second side of the second laminating layer;
making a first opening in the first laminating layer corresponding to the second window; and
treating exposed surfaces of the laminating layers.

5,622,589

METHOD FOR MAKING A FLANGELESS SEAM FOR USE IN DISPOSABLE ARTICLES

Larry K. Johnson, Pleasant Plain, and Stephen J. Lange, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 10, 1995, Ser. No. 541,996
Int. Cl.[6] B32B *31/00;* A61F *13/15*
U.S. Cl. 156—289 19 Claims



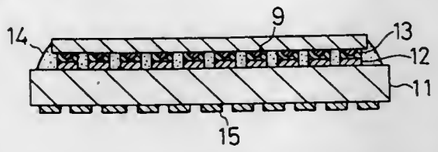
1. A method of making a flangeless seam by joining two members of a disposable article, the method comprising the steps of:
providing a first member of the disposable article;
providing a barrier member;
folding the first member of the disposable article about the barrier member providing opposing proximal and distal portions of the first member, the barrier member being disposed at least partially between the opposing proximal and distal portions;
providing a second member of the disposable article in a folded configuration juxtaposed at least a portion of the first member to form a laminate including the first member, the second member and form barrier member; and
applying a joining means across at least a portion of the laminate joining at least a portion of the first member and the second member, the barrier member preventing the joining means from joining the proximal portion with the distal portion.

5,622,590

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Yoshinobu Kunitomo; Makoto Nozu, both of Kyoto; Yasuyuki Sakashita, Shiga; Masahide Tsukamoto, Nara; Seiichi Nakatani, Osaka; Keiji Saeki, Hyogo, and Yoshifumi Kitayama, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 153,108, Nov. 17, 1993, Pat. No. 5,436,503. This application Apr. 28, 1995, Ser. No. 430,484
Claims priority, application Japan, Nov. 18, 1992, 4-308589
Int. Cl.[6] B32B *7/12;* B29C *65/54;* H01L *21/58;* H05K *3/32*
U.S. Cl. 156—291 14 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:
forming electrodes for bump connection on a first surface of an insulating substrate and an external electrode on a second surface thereof;
forming, on the electrodes provided on a semiconductor chip, lower-stage portions of said bump electrodes by a conductive material, then forming, on said lower-stage portions of said bump electrodes, upper-stage portions of said bump electrodes by a conductive material;
supplying conductive adhesive only to said upper-stage portions and upper parts of said lower-stage portions of said bump electrodes by pushing said bump electrodes to a layer, made of conductive adhesive, provided on a second insulating substrate, then by pulling to separate said bump electrodes from said layer made of said conductive adhesive;
bonding said electrodes for bump connection on said insulating substrate and said bump electrodes on said semiconductor chip by means of said conductive adhesive; and
integrating said insulating substrate and said semiconductor chip with each other by filling the space between said insulating substrate and said semiconductor chip with a resin for sealing.

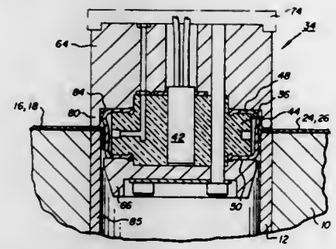
5,622,591

METHOD FOR THERMALLY ATTACHING AN ELEMENT TO A MOUNTING SURFACE

Shawn W. Ritchie; Michael L. Koelsch, both of Rochester, and Charles E. Young, Williamson, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1995, Ser. No. 440,802
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—293 8 Claims

1. A method for attaching an element to a generally cylindrical mounting surface comprising the steps of:
(a) positioning the element to be attached adjacent to the generally cylindrical mounting surface, the element to be attached including a temperature activated bonding means;
(b) supporting an annular, elastomeric element on a thermally conductive support body, the thermally conductive support body including a peripheral edge surface;



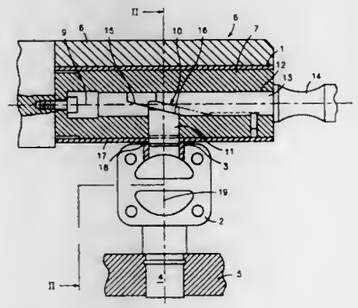
(c) heating the thermally conductive support body with a cartridge heater while the annular, elastomeric element is in contact with the peripheral edge surface thereby heating the annular, elastomeric element to a temperature sufficient to activate the temperature activated bonding means;
(d) inflating the annular, elastomeric element with a gas causing the annular, elastomeric element to expand to engage the element to be attached and press the element to be attached against the generally cylindrical mounting surface, the heated, annular, elastomeric element thereby activating the temperature activated bonding means, the annular, elastomeric element cooling rapidly while inflated and while pressing the element to be attached against the generally cylindrical mounting surface.

5,622,592

APPARATUS FOR WELDING SHAPED WORKPIECES FORMED FROM A PLASTIC MATERIAL

Ernst Tanner, Neuhausen a. Rhf., and Jörg Wermelinger, Schaffhausen, both of Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Division of Ser. No. 186,087, Mar. 3, 1994, Pat. No. 5,476,114. This application Apr. 11, 1995, Ser. No. 420,200
Claims priority, application Switzerland, Mar. 4, 1993, 00644/93
Int. Cl.[6] B29C *65/00*
U.S. Cl. 156—304.2 4 Claims



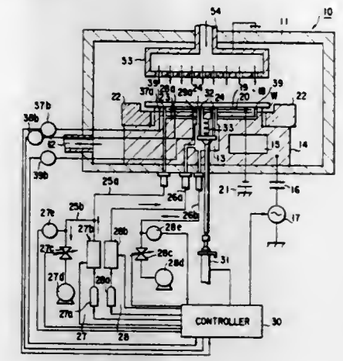
1. An apparatus for welding a shaped workpiece formed of a tubular part having an exterior cylindrical surface and a union welded to the exterior cylindrical surface, said apparatus comprising:
first clamping means for supporting the union and adapted to be mounted on a displaceable carriage;
second clamping means for supporting the tubular part; and
means for displacing the carriage for positioning the union proximate to the exterior cylindrical surface of the tubular part;
a heating device pivotable into a position between and spaced from both the exterior cylindrical surface of the tubular part and the union for contactless heating of the two parts;
wherein said second clamping device comprises a support member having a shape corresponding to an inner profile of the tubular part, and a pin supported in said support member for displacement into the union in a direction transverse to a longitudinal axis of the support member.

5,622,593

PLASMA PROCESSING APPARATUS AND METHOD

Masashi Arasawa, Enzan; Katsuhiko Ono, Yamanashi-ken; Hiroshi Nishikawa, and Kazuo Tsuchiya, both of Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Continuation of Ser. No. 361,579, Dec. 22, 1994, Pat. No. 5,547,539. This application Jun. 5, 1996, Ser. No. 658,557
Claims priority, application Japan, Dec. 22, 1993, 5-346385; Jun. 20, 1994, 6-162706
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—345 18 Claims



1. A plasma processing apparatus using a heat exchange gas to increase the cooling efficiency of a substrate to be processed through a suscepter during plasma generation, comprising:
a first passage open at a peripheral portion in a top of said suscepter;
first gas supply means for supplying a heat exchange gas through said first passage into a small clearance formed between the suscepter and said substrate to be processed;
a first temperature control mechanism for controlling the temperature of the heat exchange gas supplied from said first gas supply means into the first passage;
first exhaust means for exhausting the small clearance formed between the suscepter and the substrate through the first passage;
a second passage open in a central portion in the top of the suscepter;
second gas supply means for supplying a heat exchange gas into the small clearance formed between the suscepter and the substrate through said second passage;
a second temperature control mechanism for controlling the temperature of the heat exchange gas supplied from said second gas supply means into said second passage; and
second exhausting means for exhausting the small clearance formed between the suscepter and the substrate through the second passage.

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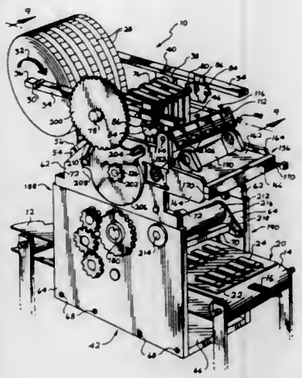
APPARATUS FOR THE MANUFACTURE OF SHEETS BEARING DISPLAY SAMPLES

Stanley Lerner, Glencoe, and Steven B. Winter, Highland Park, both of Ill., assignors to Color Communications, Inc., Chicago, Ill.

Continuation of Ser. No. 217,088, Mar. 25, 1994, Pat. No. 5,370,024, which is a continuation of Ser. No. 899,264, Jun. 16, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 324,381

Int. Cl.[6] B26D *7/32;* **B32B** *31/00*

U.S. Cl. 156—521 **4 Claims**



1. Apparatus for forming samples from a plurality of fabric webbings and for accurately positioning the samples at predetermined positions on a traveling substrate at a workstation, comprising:

means for supplying a plurality of parallel fabric webbings;

a first roller and a second roller, the second roller having an outer surface and located adjacent the first roller and the workstation;

means for rotatably mounting said first and second rollers;

means for guiding the webbing to travel over a portion of said first roller and then over a portion of said second roller;

cutting means including a knife blade fur cutting said parallel fabric webbings adjacent the first roller as the fabric webbings advance past the first roller, to separate a sample from each of said fabric webbings;

means for rotating said first and second rollers to advance the fabric samples toward the workstation:

webbing engaging means having reciprocating members with ends mounted on said first roller and movable into engagement with the parallel webbings and for holding the fabric samples cut by said knife blade, the reciprocating members of the webbing engaging means including pine, the pins being movable to extend above and to withdraw below the surface of the first roller;

first means for reciprocating said reciprocating member ends of the webbing engaging means to engage the webbing and to release the fabric samples for transfer to said second roller;

sample engaging means having second reciprocating members with ends mounted on said second roller and movable into engagement with the fabric samples at the time of transfer thereof from the first roller to the second roller, the reciprocating members of the sample engaging means comprising a plurality of retractable needles arranged in at least two series with at least two of the series of the needles extending in nonparallel directions and the needles of one series extending nonparallel to the needles of the other series, and said needles are moved to extend above and withdraw below the surface of the second roller,

a conveyor for transporting a substrate to the workstation and to a position adjacent the second roller to receive the fabric samples at predetermined positions on the substrate;

drive means for driving the conveyor in timed relationship to the rotation of the second roller to position the substrate to receive the fabric samples being transferred to the substrate; and

second means for reciprocating the ends of the second reciprocating members of the sample engaging means to release the fabric samples from the second roller for application to the substrate at the predetermined positions therefor on the substrate.

5,622,595

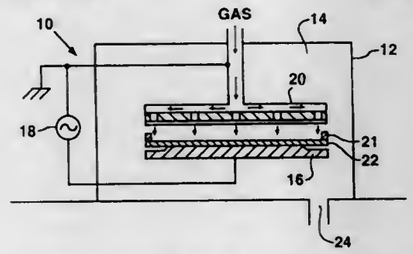
REDUCING PARTICULATE CONTAMINATION DURING SEMICONDUCTOR DEVICE PROCESSING

Anand Gupta, and Joseph Lanucha, both of San Jose, Calif., assignors to Applied Materials, Inc, Santa Clara, Calif.

Continuation of Ser. No. 158,243, Nov. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 899,539, Jun. 16, 1992, abandoned. This application Nov. 20, 1995, Ser. No. 559,855

Int. Cl.[6] B44C *1/22*

U.S. Cl. 438—710 **13 Claims**



1. A method of removing particles from the surface of a substrate mounted in a plasma processing vacuum chamber comprising

a) reducing the pressure in the chamber while maintaining a plasma of a gas stream in the chamber so that the particles are elevated above any obstructions near the substrate being processed; and

b) increasing the flow of the gas stream to carry the elevated particles in the gas stream away from the surface of the substrate.

5,622,596

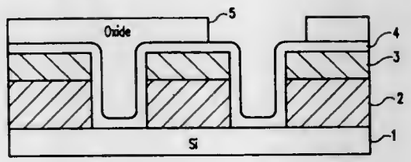
HIGH DENSITY SELECTIVE SIO_2:SI_3N_4 ETCHING USING A STOICHIOMETRICALLY ALTERED NITRIDE ETCH STOP

Michael D. Armacost, Wallkill; David Dobuzinsky, Hopewell Junction, both of N.Y.; Jeffrey Gambino, Gaylordsville, Conn., and Son Nguyen, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1995, Ser. No. 435,063

Int. Cl.[6] H01L *21/31*

U.S. Cl. 438—702 **5 Claims**



1. A method of etching an aperture in an oxide layer, where the oxide layer is deposited over a nitride layer that is used as an etch stop, said nitride layer covering a corner over a lower etch susceptible material comprising the steps of:

depositing a nitride etch stop layer over the etch susceptible material, the nitride etch stop layer comprising silicon at greater than 50 to 65 atomic percent;

depositing an oxide layer over the nitride etch stop layer;

patterning an aperture above the oxide layer; and

etching through the oxide layer, stopping on the nitride etch stop layer.

5,622,597

PROCESS FOR DEINKING OF RECYCLED PAPER

John W. Callen, and Alicia Anderson-Norris, both of Cataula, Ga., assignors to Callaway Corporation, Columbus, Ga.

Filed Jan. 24, 1995, Ser. No. 377,144

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **16 Claims**

1. In a flotation process for recycling inked waste paper to obtain new, usable paper, which comprises the steps of preparing a pulp slurry and thereafter deinking said pulp slurry in a pressurized deinking module, the improvement which comprises adding a cationic surfactant which is a monovalent salt of an imidazolinium compound in an effective amount, whereby the brightness of the pulp and the fiber yield are increased.

5,622,598

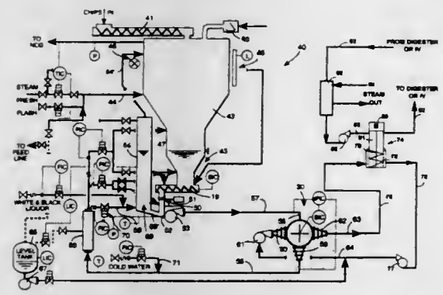
CHIP PUMPING TO A DIGESTER

J. Robert Prough, Queensbury, N.Y., assignor to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Filed Apr. 25, 1995, Ser. No. 428,302

Int. Cl.[6] D21C *7/06;7/08*

U.S. Cl. 162—52 **21 Claims**



1. A method of feeding a slurry of comminuted cellulosic fibrous material in liquid to a digester utilizing a pretreatment vessel, a high pressure feeder having a low pressure inlet, and a slurry pump having an inlet, comprising the steps of:

(a) pretreating the comminuted cellulosic fibrous material in the pretreatment vessel;

(b) metering the flow of comminuted cellulosic fibrous material from the pretreatment vessel;

(c) entraining the metered comminuted cellulosic fibrous material in liquid to form a slurry;

(d) feeding the slurry to the inlet to the slurry pump;

(e) providing a separate supply of liquid to the slurry pump inlet to facilitate the transfer of comminuted cellulosic fibrous material to the pump;

(f) transporting the slurry under the influence of the slurry pump to the low pressure inlet to the high pressure feeder; and

(g) feeding the comminuted cellulosic fibrous material with the high pressure feeder to a digester.

5,622,599

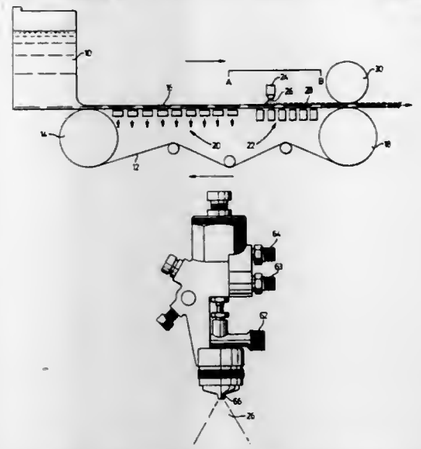
METHOD AND APPARATUS FOR COATING PULP PRODUCTS

Barry Sproule, Lot 7, Concession 6, East Flamborough, Ontario, Canada; Marian Corak, 25 June Wood Cr., Brampton, Ontario, Canada, and Nick Saltarelli, 134 Cambridge Avenue, Iroquois Falls, Ontario, Canada

Filed Jun. 28, 1994, Ser. No. 266,773

Int. Cl.[6] D21F *11/00;* **B05D** *1/02*

U.S. Cl. 162—186 **23 Claims**



1. A method of applying a film of coating material to a web of pulp product on a machine having a screen for forming a web of pulp product comprising the steps of:

(a) depositing a slurry of pulp stock on the screen of the machine;

(b) draining an initial amount of water through the screen, thereby forming the slurry of pulp stock into a web of pulp product on the screen;

(c) applying suction to remove further water from the web of pulp product on the screen;

(d) directing a fluid comprising the coating material against the surface of the web of pulp product on the screen in the form of a high volume low velocity atomized spray mist, wherein the spray mist is provided by a high volume low pressure spray gun having an exit pressure from the gun of from 0.1 to 10 psig, whereby a film of coating material is deposited on the web of pulp product in the machine.

5,622,600

DYED PARTICULATE OR GRANULAR MATERIALS FROM RECYCLED PAPER AND PROCESS FOR MAKING THE MATERIALS

Kim A. Smith, North Haledon; Edward G. Knapick, Ogdensburg; Brent Willemsen, Westfield, and Ernest P. Wolfer, Allendale, all of N.J., assignors to Marcal Paper Mills, Inc., Elmwood Park, N.J.

Continuation-in-part of Ser. No. 118,186, Sep. 9, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,273

Int. Cl.[6] D21F *1/66*

U.S. Cl. 162—190 **27 Claims**

1. A process for dyeing granular material made from waste paper containing kaolin clay, cellulosic material, and other solid components, comprising the steps of:

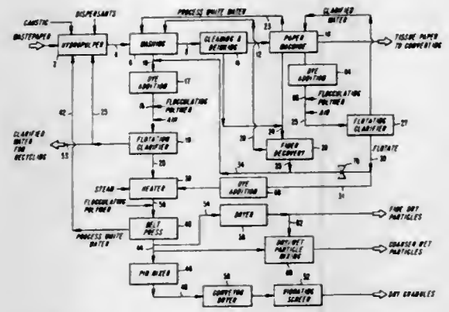
(a) forming a slurry from waste paper containing kaolin clay, cellulosic material, and other solid components;

(b) removing fibers for papermaking from the slurry;

(c) adding dye to the slurry;

(d) adding a flocculating polymer to the slurry containing said dye;

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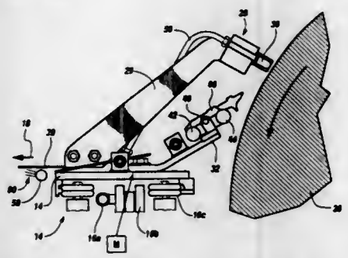
(e) clarifying the slurry to produce a concentrated stream of solid components and dye;
(f) de-watering the concentrated stream to produce a filter cake; and
(g) breaking up the filter cake to produce a granular material.

5,622,601

METHOD AND APPARATUS FOR EFFECTING A CLIPPED TAIL IN A TRAVELING PAPER WEB

Richard J. Adams, Rockton, Ill.; Edward L. Brossard, Janesville, Wis.; Curtiss R. Dahl, Roscoe, Ill.; Timothy E. Lee, and Mark A. Sorenson, both of Beloit, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Sep. 19, 1995, Ser. No. 530,935
Int. Cl.[6] D21F *7/00*
U.S. Cl. 162—194 **10 Claims**



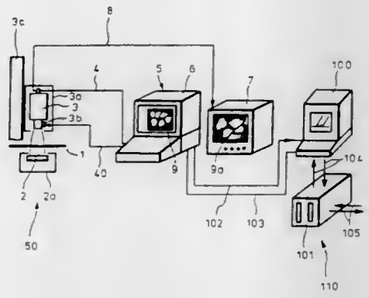
1. A method for automatically producing a clipped tail in a traveling tail of a web as the tail is supported on a co-traveling roll support surface, and to lift and deflect the traveling tail from the roll surface, the tail having spaced, parallel outer edges, comprising the steps of:
1) positioning a doctor over the traveling roll surface from a at a doctor ready position at a location outside of one of the edges of the tail, the doctor having a blade with a leading edge;
2) positioning the nozzle of a water jet in a nozzle ready position at a predetermined location upstream of the doctor blade, relative to the direction of tail travel, and outside of the said one edge of the tail over the roll surface, said doctor and said water jet nozzle both being mounted and fixedly located relative to one another on a platform, said platform being mounted on a transport apparatus for reciprocal traversing movement in a direction parallel with the axis of rotation of the roll between ready and threading positions relative to the roll support surface;
3) engaging the traveling roll surface with the leading edge of the doctor blade, at its ready position outside of the said one of the edges of the tail;
4) impinging a web-severing water stream against the roll support surface at a location on the tail or laterally outside the said one edge of the tail and upstream of the leading edge of the doctor blade;
5) traversing the water jet and doctor blade together on the platform in the predetermined locations relative to each other over the width of the tail transversely of the direction of tail travel to intercept the tail, so as to automatically sever the tail with the water stream to produce a clipped tail, and to simultaneously lift and deflect the traveling clipped tail with the doctor blade away from the supporting roll surface;
6) deactivating the water jet to stop the water stream from being emitted from the water jet nozzle; and
7) disengaging the doctor from web tail deflection engagement.

5,622,602

APPARATUS FOR CONTROLLING THE DEGREE OF PAPER FIBER VARIATION

Masahiro Yakabe, Narita; Satoshi Suzuki, Tokyo; Sadao Degawa, Komae; Shigeki Murayama, Yokohama; Koichi Ishibashi, Tokyo; Ikuo Nakashima, Sayama, and Koji Sakai, Kawasaki, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Division of Ser. No. 25,726, Mar. 2, 1993, Pat. No. 5,393,378, which is a continuation-in-part of Ser. No. 640,409, Jan. 23, 1991, abandoned. This application Dec. 13, 1994, Ser. No. 355,051
Claims priority, application Japan, May 31, 1989, 1-138469; Jul. 7, 1989, 1-176576; Oct. 17, 1989, 1-269906; Oct. 17, 1989, 1-269907
Int. Cl.[6] D21F *7/06*; G01N *21/89*
U.S. Cl. 162—252 **10 Claims**



1. A system for generating a paper quality membership function to be used in an apparatus for controlling the degree of fiber variance in paper sheet, comprising:
(a) means for picking up an image of transmitted light from a light source on an area of paper by a plurality of cameras with different visual fields, the cameras being arranged so that images of the transmitted light are picked up by the cameras concurrently in comparatively wide and narrow visual fields and are introduced to a display unit of an image processing computing element, there being means provided for changing the visual field introduced to the display unit;
(b) means for dividing the image of the transmitted light on the display unit into a predetermined size and number of windows, the windows comprising pixels;
(c) means for measuring the tone density of each pixel, and the tone density of each window from the tone density of the pixels comprising the window;
(d) means for calculating values chosen from at least one of the following:
an average value of tone density and a primary variance of tone density of each window from the tone density of each pixel,
an average value of the primary variance of the tone density for all of the windows,

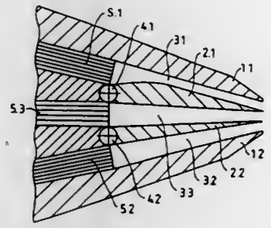
a secondary variance of tone density for all of the windows, and
a variance of average values of tone density of each window; and
(e) means for using one of or at least two in combination of said values as a formation factor;
(f) means for changing the visual field transmitted to said display unit by said plurality of cameras;
(g) means for repeating steps (a)–(e) one or more times to obtain different formation factors;
(h) means for generating a paper quality membership function from the different formation factors obtained; and
(i) means for using said paper quality membership function to control the degree of fiber variance in said apparatus.

5,622,603

INFLUENCING THE JET VELOCITY IN THE MULTILAYER HEADBOX

Ulrich Begemann, Leonberg; Albrecht Meinecke, Heidenheim; Dieter Egelhof, Heidenheim; Wolfgang Ruf, Heidenheim; Helmut Heinzmann, Böhmenkirch, all of Germany, and Hans-Peter Ariedter, St. Pölten, Austria, assignors to J.M. Voith GmbH, Heidenheim, Germany

PCT No. PCT/EP94/00616, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/20678, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 3, 1994, Ser. No. 325,305
Claims priority, application Germany, Mar. 6, 1993, 43 07 143.0
Int. Cl.[6] D21F *1/02*
U.S. Cl. 162—343 **10 Claims**



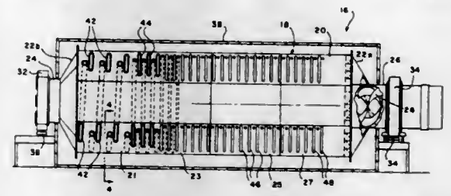
1. A multilayer headbox for adjusting the relative flow velocity of the stock suspension layers of a multilayer headbox of a paper machine wherein rigid lamellae are mounted during operation between respective rigid and operationally immovable upper and lower lips, said upper and lower lips each having two sides and being joined by side parts, said upper and lower lips and side parts defining a nozzle for flow of the stock suspension layers, wherein n flow channels are provided, with $n \geq 2$ and wherein $n-1$ lamellae extend across the machine width in the nozzle transverse to the direction of flow of the stock suspension layers, said lamellae having respective length sides directed upstream and being mounted with no-moment mounting on said length sides, said lamellae further comprising boundaries between individual stock suspension layers, said flow channels each having a cross section and further having respective entrance and exit cross sections, wherein the improvement comprises:
at least one of said lamellae has a generally overall convex profile on one of said sides, viewed in the direction of flow of the stock suspension, structured so that a point of constriction is formed in the flow channel bounded by said generally convex profiled side of the lamellae, thereby narrowing said cross section at said constricted portion when compared to said entrance cross section.

5,622,604

COKE COOLING APPARATUS

Ralph Gerstenkorn, and Leslie J. Okonek, both of Bellingham, Wash., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 27, 1995, Ser. No. 395,057
Int. Cl.[6] C10B *39/10*
U.S. Cl. 202—227 **16 Claims**



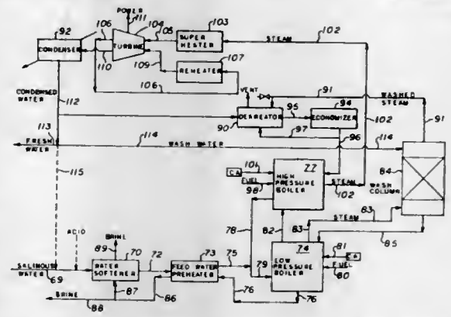
1. A coke cooling apparatus comprising an elongated rotatable drum having a circumferential wall forming a hollow drum shell and a plurality of axially and circumferentially spaced cooling pockets supported inside said drum shell for cooling coke in said drum shell and for augering said coke through said drum shell, each of said cooling pockets comprising an elongated tubular member having opposed, planar sidewalls, an end cap secured to said sidewalls at one end, the other end of said cooling pocket being open and a drain conduit formed at said one end, said cooling pocket being insertable in a first opening formed in said drum shell and including a flange for securing said cooling pocket to said drum shell, said drum shell including a smaller second opening formed opposite said first opening for receiving said drain conduit.

5,622,605

PROCESS FOR DESALINATING WATER WHILE PRODUCING POWER

Gary D. Simpson, 15434 Tadworth Dr., Houston, Tex. 77062, and Karl Lin, 13131 Fallsview La., No. 725, Houston, Tex. 77077

Continuation-in-part of Ser. No. 147,884, Nov. 5, 1993, Pat. No. 5,405,503. This application Apr. 10, 1995, Ser. No. 419,023
Int. Cl.[6] B01D *3/34*; C02F *1/04*; *1/42*
U.S. Cl. 203—10 **24 Claims**



1. A process for desalinating seawater or brine and purifying water containing minerals, salts, and dissolved solids while simultaneously generating power, comprising the steps of;
introducing salinous water or water containing minerals, salts, and dissolved solids into a boiler and boiling it to produce steam and concentrated brine,
removing the concentrated brine from the boiler,
feeding the steam produced in the boiler to a wash column,
introducing fresh wash water into the steam in the wash column to wash the steam such that it is substantially free of trace

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salts, minerals, and dissolved solids, and the trace salts, minerals, and dissolved solids are transferred to the water in the wash column,

removing the water bearing trace salts, minerals, and dissolved solids from the wash column,

superheating said washed steam and expanding it across a steam-operated power generating turbine to generate power,

reheating said washed steam after expanding it across said turbine a first time and thereafter expanding it across said turbine a second time and utilizing the generated power as a product, and

collecting and condensing the steam exhausted from the turbine and utilizing it as a fresh water product.

19. A process for desalinating seawater or brine and purifying water containing minerals, salts, and dissolved solids while simultaneously generating power, comprising the steps of:

introducing salinous water or water containing minerals, salts, and dissolved solids into a first boiler and boiling it to produce steam and concentrated brine,

removing the concentrated brine from said first boiler,

feeding the steam produced in said first boiler to a wash column,

introducing fresh wash water into the steam in the wash column to wash the steam such that it is substantially free of trace salts, minerals, and dissolved solids, and the trace salts, minerals, and dissolved solids are transferred to the water in the wash column,

removing the water bearing trace salts, minerals, and dissolved solids from the wash column,

introducing combustion heat exhausted from said first boiler into a second boiler operating at a higher temperature and pressure than said first boiler,

mixing said washed steam with feed water and introducing said washed steam and feed water mixture into said second boiler and boiling it to produce steam,

removing blowdown liquid from said second boiler,

expanding the steam produced by said second boiler across a steam-operated power generating turbine to generate power and utilizing the generated power as a product,

collecting and condensing the steam exhausted from said turbine; and

separating said collected and condensed steam exhausted from said turbine and utilizing a portion of it as said feed water mixed with said washed steam and introduced into said second boiler.

5,622,606

GAS INLET ARRANGEMENT

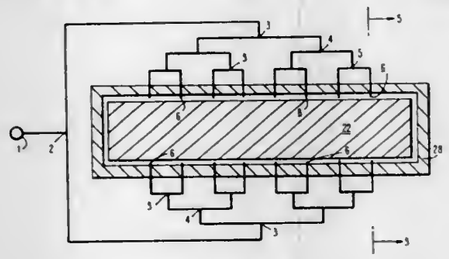
Eduard Kügler, Feldkirch-Tisis, Austria; Jakob Stock, Mastrils, and Helmut Rudigier, Bad Ragaz, both of Switzerland, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Apr. 20, 1994, Ser. No. 230,292

Claims priority, application Switzerland, Apr. 22, 1993, 01240/93

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.12 **15 Claims**



1. A cathode sputtering apparatus, comprising:

a vacuum chamber for containing a substrate to be coated in a vacuum process;

a target which is operated as a magnetron in the chamber, the target having a surface to be sputtered or vaporized for coating the substrate;

a gas source at a selected gas pressure;

a gas inlet connected to the gas source for receiving gas at the selected pressure;

a line system connected to the gas inlet for receiving a plurality of flows of gas from the gas inlet;

a plurality of gas outlet openings into the chamber for introducing gas from the line system into the chamber at a plurality of space locations along the target and toward the target surface, the gas outlet openings being connected to the line system for receiving the flows of gas; and

means in the line system in the form of an arrangement and geometry of the line system, such that a connection between the gas inlet and each of the gas outlet openings has a defined flow resistance coefficient, the flow resistance coefficient of each of the gas outlet openings being equal.

5,622,607

METHOD OF FORMING AN OXIDE INSULATING FILM

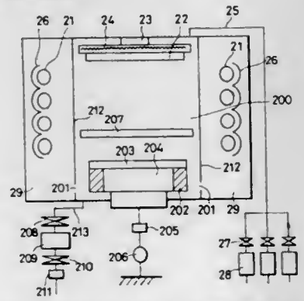
Shunpei Yamazaki, Tokyo, and Takashi Inushima, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Nov. 15, 1991, Ser. No. 793,003

Claims priority, application Japan, Nov. 27, 1990, 2-324904

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.15 **17 Claims**



1. A method of forming an oxide insulating film comprising:

sputtering a material in an atmosphere comprising an oxidizing gas at a first volume ratio in a chamber;

emitting a light into said chamber to enhance the sputtering; and

depositing the sputtered material on a substrate

wherein said atmosphere further comprises an inactive gas at a second volume ratio wherein said second volume ratio is less than said first volume ratio.

5,622,608

PROCESS OF MAKING OXIDATION RESISTANT HIGH CONDUCTIVITY COPPER LAYERS

William A. Lanford, Malden Bridge, and Peijun Ding, Albany, both of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Filed May 5, 1994, Ser. No. 219,131

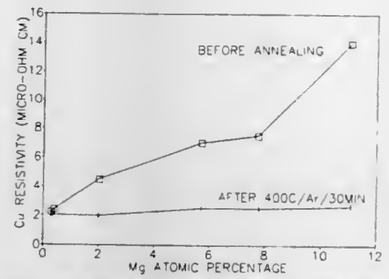
Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.15 **14 Claims**

1. A process for forming an oxidation resistant, conductive copper layer on a substrate, comprising:

depositing copper and magnesium onto the surface of a substrate to form a copper layer comprising copper and magnesium distributed throughout the copper, said copper layer including magnesium in an amount sufficient to form an inert magnesium oxide layer at the surface of said copper layer upon treatment of said copper layer by annealing; and

annealing said copper layer for a time sufficient and at a temperature sufficient to form an inert magnesium oxide layer at the surface of said copper layer.



5,622,609

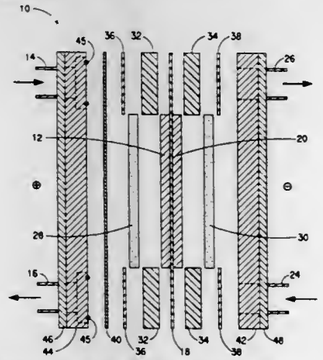
ELECTROCHEMICAL CELL HAVING AN OXIDE GROWTH RESISTANT CURRENT DISTRIBUTOR

David L. Reichert, Newark; Charles C. Seastrom, New Castle, both of Del.; Vinci M. Felix, Kennett Square, Pa.; Clarence G. Law, Jr., West Trenton, N.J.; James A. Trainham, III, Newark, Del.; John S. Newman, Kensington, Calif., and Douglas J. Eames, Chamblee, Ga., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641, and a continuation-in-part of Ser. No. 246,909, May 20, 1994, which is a continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641. This application May 1, 1995, Ser. No. 432,403

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—252 **29 Claims**



2. An electrochemical cell for the direct production of essentially dry halogen gas from essentially anhydrous hydrogen halide, comprising:

(a) means for oxidizing molecules of essentially anhydrous hydrogen halide to produce essentially dry halogen gas and protons;

(b) cation-transporting means for transporting the protons therethrough, wherein one side of the oxidizing means is disposed in contact with one side of the cation-transporting means;

(c) reducing means for reducing the transported protons, wherein the reducing means is disposed in contact with the other side of the cation-transporting means;

(d) a current bus disposed on the other side of the oxidizing means; and

(e) current distributing means disposed on the other side of the oxidizing means for providing a barrier between the current bus and the oxidizing means and the essentially anhydrous hydrogen halide and the halogen gas, wherein the current distributing means comprises a metal selected from the group consisting of a nitrided metal, a carbided metal, a borided metal, the nitrided alloys of a metal, the borided alloys of a metal and the carbided alloys of a metal.

5,622,610

WATER PROCESSING METHOD AND APPARATUS

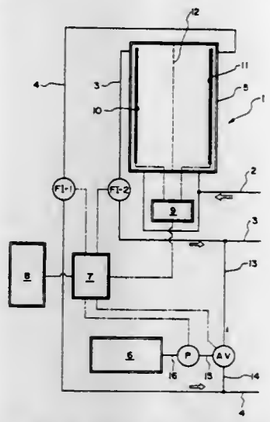
Tadamasa Nakamura, 5-2-401, 3-Chome, Toyogaoka, Tamashi, Tokyo, Japan

Division of Ser. No. 531,922, Sep. 21, 1995. This application May 14, 1996, Ser. No. 645,581

Claims priority, application Japan, Oct. 14, 1994, 6-275884

Int. Cl.[6] C02F *1/461*

U.S. Cl. 204—252 **21 Claims**



1. An apparatus for processing water, comprising an electrolytic cell connected with a water supply pipe for supplying water to be processed and having a cathode and an anode separated from each other by a diaphragm, each of said separated portions being connected with delivery pipes for sending cathodic water or anodic water, a storage tank for storing aqueous solution of chitin chitosan and connected to each of the delivery pipes via a changeover valve, a pump for sending the aqueous solution of chitin chitosan from the storage tank, flow rate sensors mounted respectively at the middle of each of the delivery pipes and at the middle of the anodic water delivery pipe, and a control unit electrically connected with each of said flow rate sensors, said pump, and said changeover valve and for controlling the quantity of chitin chitosan aqueous solution to be sent to each of the delivery pipes via said changeover valve according to the flow rate detected by each of the flow rate sensors.

5,622,611

ELECTROFORMED MULTILAYER FLOW REGULATOR INCORPORATING FORCE-GENERATING MEANS FOR SELECTIVELY CONSTRICTING THE FLUID FLOW PATH, AND A PROCESS FOR THE PREPARATION THEREOF

Gary T. Marks, Phelps; James H. McVeigh, Webster; Judy A. Sline, Romulus; Kenneth E. Wood, Macedon, all of N.Y., and Lawrence W. Evers, Lake Linden, Mich., assignors to Amtx, Inc., Canandaigua, N.Y.

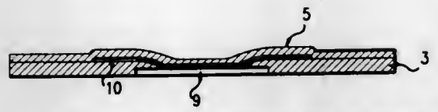
Filed May 22, 1996, Ser. No. 653,928

Int. Cl.[6] C25D *1/00*

U.S. Cl. 205—67 **22 Claims**

18. A method of producing fluid flow regulator comprising at least one entry orifice that receives a fluid; at least one ejection

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orifice that ejects said fluid; and a turbulence inducing intermediate channel between said at least one entry orifice and said at least one fluid ejection orifice that nonlinearly conveys said fluid in a fluid flow direction from said at least one entry orifice to said at least one fluid ejection orifice, the turbulence inducing intermediate channel being defined by a space between first and second electroformed layers, wherein the second layer is electroformed on the first layer or the first layer is electroformed on the second layer, and wherein the second layer is selectively resiliently movable relative to the first layer among at least two positions: (i) an open position in which the second layer is spaced from the first layer to define the turbulence inducing intermediate channel and permit fluid flow therethrough, and (ii) a closed position in which the second layer contacts at least a portion of the first layer to occupy the space and prohibit fluid flow,

said method comprising:

(a) electroforming onto a substrate a layer to define one of said at least one entry orifice and said at least one fluid ejection orifice;

(b) forming a multilayered electroformed pattern by electroforming onto said layer at least one other layer to define said intermediate channel and the other of said at least one entry orifice and said at least one fluid ejection orifice;

(c) separating said multilayered electroformed pattern from said substrate; and

(d) positioning force-generating means in contact with an external one of said layers to provide said fluid flow regulator.

5,622,612

METHOD OF PREPARING CURRENT COLLECTORS FOR ELECTROCHEMICAL CELLS

David R. Mihara, Surrey; Stephen J. Rose, Essex; Robert E. Gustar, West Chiltington, all of Great Britain; David V. Adamson, Ashland, Mass., and Paul Barton, Haywards Heath, Great Britain, assignors to Duracell Inc., Bethel, Conn.

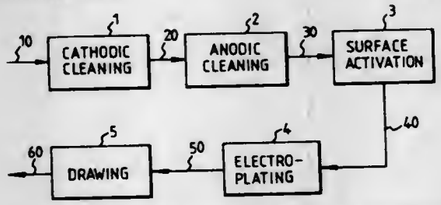
PCT No. PCT/US94/05571, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO94/28590, PCT Pub. Date Dec. 8, 1994

PCT Filed May 18, 1994, Ser. No. 553,254

Claims priority, application United Kingdom, Jun. 2, 1993, 9311336

Int. Cl.[6] H01M *6/00;* **C25D** *5/48;* **B21C** *23/26*

U.S. Cl. 205—138 **9 Claims**



1. A method of manufacturing a plurality of elongated current collectors for alkaline electrochemical cells having an anode and a cathode comprising the steps of:

a) electroplating a metal conductive wire with indium to form an indium plated wire, wherein the indium plating on said conductive wire has a thickness of between about 0.1 and 10 micron; and

b) drawing the indium plated wire formed in step a) to reduce the diameter thereof; and

c) inserting the drawn indium plated wire into said anode.

5,622,613

ELECTROLYTIC METHOD FOR MANUFACTURING HYPOCHLORITE

Osamu Arimoto, and Takamichi Kishi, both of Okayama, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Oct. 4, 1995, Ser. No. 538,655

Claims priority, application Japan, Oct. 5, 1994, 6-241085

Int. Cl.[6] C25B *1/26;1/22*

U.S. Cl. 205—500 **2 Claims**

1. A method for manufacturing hypochlorite, comprising an anode, which has a coating containing palladium oxide by 10 to 45 weight %, ruthenium oxide by 15 to 45 weight %, titanium dioxide by 10 to 40 weight %, and platinum by 10 to 20 weight % as well as an oxide of at least one metal selected from cobalt, lanthanum, cerium or yttrium by 2 to 10 weight % being formed on a conductive base, and a cathode comprising a coating having low hydrogen overvoltage and covered with a reduction preventive film and being formed on a conductive base, whereby an aqueous solution of a chloride is electrolyzed without a diaphragm.

5,622,614

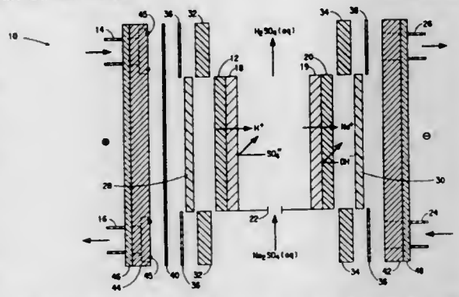
ELECTROCHEMICAL CELL AND PROCESS FOR SPLITTING A SULFATE SOLUTION AND PRODUCING A HYDROXIDE SOLUTION, SULFIRIC ACID AND A HALOGEN GAS

Kenneth B. Keating, Wilmington; James A. Trainham, III, Newark, both of Del.; Clarence G. Law, Jr., West Trenton, N.J.; John S. Newman, Kensington, Calif., and Douglas J. Eames, Chamblee, Ga., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641, and Ser. No. 246,909, May 20, 1994, Pat. No. 5,580,437, which is a continuation-in-part of Ser. No. 156,196. This application May 1, 1995, Ser. No. 431,605

Int. Cl.[6] C25B *1/16*

U.S. Cl. 205—508 **27 Claims**



19. A process for producing a sodium hydroxide solution, sulfuric acid and chlorine gas from essentially anhydrous hydrogen chloride and a sodium sulfate solution, wherein:

(a) a sodium sulfate solution is fed to a first compartment of an electrochemical cell, wherein the sodium sulfate solution comprises sulfate ions and sodium ions;

(b) molecules of essentially anhydrous hydrogen chloride are fed to a second compartment of the electrochemical cell and are transported to an anode of the cell;

(c) the molecules of anhydrous hydrogen chloride are oxidized at the anode to produce halogen gas and protons, and the protons are transported through a first cation-transporting membrane;

(d) the first membrane rejects the sulfate ions and the sulfate ions join the protons to form a sulfuric acid solution;

(e) water is fed to a third compartment of the cell and is reduced at a cathode of the cell to hydrogen and hydroxyl ions; and

(f) a second membrane rejects the hydroxyl ions and the hydroxyl ions are joined with the sodium ions to form a solution of hydroxide.

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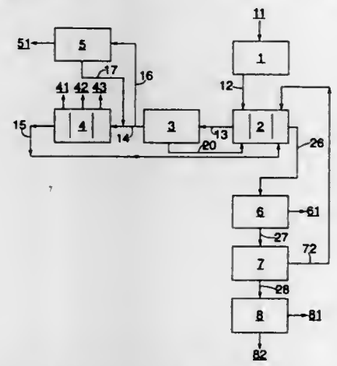
PROCESS FOR ELECTROWINNING OF COPPER MATTE

Sharon K. Young, Tucson, Ariz.; David B. Dreisinger, Delta, and Jinxing Ji, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Jan. 4, 1996, Ser. No. 582,772

Int. Cl.[6] C25C *1/12*

U.S. Cl. 205—582 **28 Claims**



1. A process for production of high purity metallic copper from copper-matte comprising the steps of:

leaching copper-matte under oxidizing conditions in a ferric ion containing acid copper sulfate electrolyte leach assembly, including one or more leach reactors, to solubilize copper into a leach solution forming a copper-rich leach solution and a residue containing elemental sulfur; and

electrowinning copper from the copper-rich leach solution and regenerating ferric ions in an electrowinning cell assembly, including one or more electrowinning cells;

wherein the electrowinning cell assembly is physically decoupled from the leach assembly.

5,622,616

HYDROCONVERSION PROCESS AND CATALYST

Michael K. Porter, Beaumont, and Glenn A. Clausen, Nederland, both of Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation of Ser. No. 907,880, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 798,300, Nov. 22, 1991, which is a continuation-in-part of Ser. No. 694,591, May 2, 1991, abandoned. This application Jan. 30, 1995, Ser. No. 380,211

Int. Cl.[6] C10G *47/02*

U.S. Cl. 208—108 **12 Claims**

1. A process for catalytically hydroconverting hydrocarbon oil which comprises:

(a) contacting hydrocarbon oil containing a substantial quantity of high boiling compounds, boiling above about 538° C., in a conversion zone with (1) solid heterogenous catalyst containing hydrotreating metal on a porous support said catalyst characterized by a total pore volume of about 0.2–1.2 cc/g; a surface area of about 50–500 m^2/g; and a pore size distribution as follows:

Pore Diameter, Å	Volume cc/q
30–100	0.15–0.8
100–1000	0.10–0.50
1,000–10,000	0.01–0.40

and (2) oil-miscible compound comprising an effective porosity modifying amount of metal compound selected from the group consisting of molybdenum hexacarbonyl, molybdenum naphthenate, molybdenum octoate, or molybdenum hexanoate;

(b) converting a substantial portion of high boiling compounds in the hydrocarbon oil at conversion conditions in the presence of hydrogen and mercaptan to low boiling compounds, boiling below about 538° C., to make hydrocarbon oil containing a substantial portion of low boiling point compounds; and

(c) producing solid heterogeneous catalyst with: (1) hydrocarbonaceous deposits having a higher ratio of hydrogen to carbon; and (2) a greater total pore volume; than is correspondingly produced in the absence of the oil-miscible compound.

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GARBAGE TREATING APPARATUS WITH CONNECTED MOISTURE SENSOR AND CONTROLLER

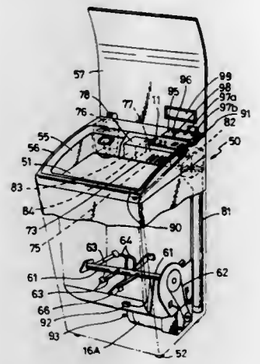
Harushige Tsusaka; Tomisaburo Azuma; Susumu Kawakami; Hidehiko Kishie; Kaoru Yamashita; Hiroyasu Kawanishi; Kenji Esashi; Koichi Fujita; Yoshihide Yoshikawa; Masakatsu Nakamura; Hideki Minoura; Hideo Fujimoto; Masanori Koyamoto; Tadashi Yoshimura, and Etsuko Kajita, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd, Japan

Filed Feb. 10, 1995, Ser. No. 386,531

Claims priority, application Japan, Feb. 15, 1994, 6-018479; Feb. 15, 1994, 6-018480; Feb. 18, 1994, 6-021177; Aug. 26, 1994, 6-202519; Dec. 22, 1994, 6-319657

Int. Cl.[6] B01D *17/12;* **C02F** *3/02*

U.S. Cl. 210—85 **10 Claims**



1. A garbage treating apparatus, comprising:

a treating vessel for receiving garbage for fermentative composition;

an agent adding mechanism arranged for adding to garbage in the vessel a fermentative garbage decomposing agent carrying a microparasite which promotes fermentative decomposition;

a load circuit including a first mechanism operable for circulating air into and out of the vessel at an adjustable circulation rate, a second mechanism operable for heating the circulated air to an adjustable air temperature level, and a third mechanism operable for stirring the garbage and the decomposing agent at an adjustable stirring frequency level to form a mixture thereof within the vessel;

a sensing mechanism operable for sensing a moisture content of the mixture in the vessel; and

a control mechanism connected to the sensing mechanism and the load circuit and operable for comparing a sensed moisture content with a reference value and for establishing a high moisture evaporation mode of operation of the load circuit

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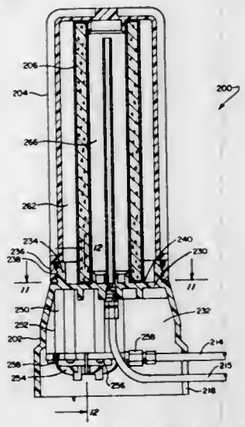
such that respective ones of the first, second, and third mechanisms operate to establish a relatively high rate, temperature, and frequency, respectively, in response to the sensed moisture content being above the reference value, and for establishing a low moisture evaporation mode of operation of the load circuit wherein respective ones of the first, second and third mechanisms continue to operate, however to establish a relatively lower rate, temperature, and frequency, respectively, in response to the sensed moisture content being below the reference value.

5,622,618

APPARATUS FOR MONITORING CUMULATIVE FLOW OF FLUID THROUGH A FILTER MEDIUM

Earl P. Brane, 28200 Thorpe Mtn Dr., Steamboat Springs, Colo. 80477, and Douglas K. Brane, 521 D St., Clearwater, Fla. 34616

Filed May 31, 1995, Ser. No. 454,852
Int. Cl.[6] B01D *35/143*; B67D *5/30*
U.S. Cl. 210—88 **17 Claims**



10. A system for treating fluid flowing along a fluid path, comprising:

a filter base assembly having a receiving and supporting region and an oppositely disposed service region;

a filter cover removably mounted upon said base assembly receiving and supporting region;

a filter located within said filter cover, having a support portion removably receivable and supportable upon said filter base assembly at said receiving and supporting region;

a flow monitor for determining the flow of a predetermined quantity of said fluid along said path, including:

a housing mounted at said filter base assembly service region, having an input port for receiving fluid from said fluid path and an output port for returning said received fluid to said path,

a reduction gear train positioned within said housing and having first to last gear reduction stages exhibiting a predetermined reduction ratio,

a turbine mounted within said housing adjacent said input port, rotatably drivable by fluid incident thereon from said input port and coupled in driving relationship with said first gear reduction stage,

a valve seat within said housing and including an open valve portion and a valve close portion, and

a valve assembly mounted within said housing, having a drive component engaged in driven relationship with said last gear reduction stage, a valve member coupled in driven relationship with said drive component to move from a reset orientation on said valve seat open portion to a closed valve orientation at said valve close portion, said drive component including a ratchet assembly coupled to provide a rotatable driven relationship within said valve member first rotational sense and rotatable in an opposite sense by an applied reset force,

said valve member being resiliently biased toward said valve seat, being movable under said bias from said reset orientation to said closed valve orientation to block fluid along said fluid path, and being rotatable between said reset orientation and said closed valve orientation, and said valve assembly having a reset component engageable to reposition said valve member to said reset orientation by moving it against said bias and applying said reset force thereon; and

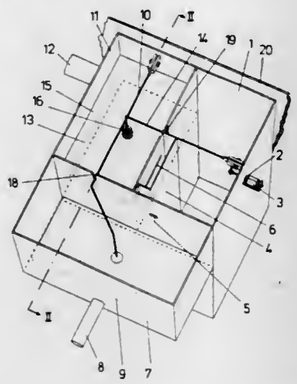
an access channel extending through said filter base assembly at said receiving and supporting region adjacent said reset component for providing access from said receiving and supporting region to engage said reset component only when said filter is removed from said filter base assembly.

5,622,619

LIGHT LIQUID OFF-TAKE SYSTEM FOR A SEPARATOR BASIN

Heinrich Ortner, Mühlgasse 21, A-9900 Lienz, Austria

PCT No. PCT/AT94/00133, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/09684, PCT Pub. Date Apr. 13, 1995
PCT Filed Sep. 16, 1994, Ser. No. 448,445
Claims priority, application Austria, Oct. 5, 1993, 1995/93
Int. Cl.[6] B01D *17/025;17/032*
U.S. Cl. 210—125 **8 Claims**



1. An off-take system for a separator basin for separating a liquid mixture that is to be cleaned, said liquid mixture comprising a light liquid and water, said system comprising:

a separator tank, the upper region of said separator tank having an inlet opening for receiving said liquid mixture, said inlet opening further including a closing device,

said separator tank further including a light liquid overflow opening for transferring said light liquid and a water overflow opening for transferring said water;

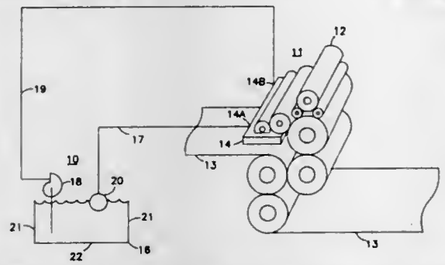
a water collector tank in fluid connection with said water overflow opening for receiving said water; said collector tanks each further including a float and operating linkage, wherein each float mechanically cooperates with said operating linkage, and wherein said operating linkage mechanically cooperates with the closing device of said inlet opening.

5,622,620

APPARATUS FOR TREATING FOUNTAIN SOLUTION

Sean G. Meenan, Plainview; Richard C. Stoyell, Jr., Moravia, and Lawrence A. Smith, Jr., Smithtown, all of N.Y., assignors to PALL Corporation, East Hills, N.Y.

Continuation-in-part of Ser. No. 272,215, Jul. 8, 1994, Pat. No. 5,489,379. This application Mar. 31, 1995, Ser. No. 415,072
Int. Cl.[6] B41F *7/24*
U.S. Cl. 210—130 **20 Claims**



13. An apparatus for treating fountain solution for a printing system which includes at least one fountain solution tray having an outlet and an inlet, the apparatus comprising:

a recirculation assembly connectable between the outlet of the fountain solution tray and the inlet of the fountain solution tray of the printing system and operable to circulate fountain solution along a circulation path from the outlet of the fountain solution tray through the recirculation assembly to the inlet of the fountain solution tray of the printing system, the recirculation;

a microporous filter assembly disposed in the fountain solution sump of the recirculation assembly or in the return line between the outlet of the fountain solution tray of the printing system and the fountain solution sump of the recirculation assembly, the microporous filter assembly including a filter element positioned across a fountain solution flow path, the filter element having a removal rating of at least about 99.98% at about 40μ and having a clean pressure drop equal to or less than about 0.10 PSI/GPM per ten-inch cartridge; and

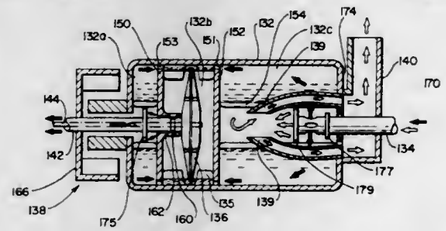
a pressure sensitive device in fluid communication with the filter to bypass the filter in response to a predetermined pressure differential.

5,622,621

FLUID/LIQUID SEPARATOR

Robert W. Kramer, Friendswood, Tex., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 219,587, Mar. 29, 1994, Pat. No. 5,484,521. This application Sep. 27, 1995, Ser. No. 534,765
Int. Cl.[6] B01D *17/038*
U.S. Cl. 210—188 **7 Claims**



1. A fluid/liquid separator for separating mixture of fluid and liquid into separate components of fluid and liquid comprising a rotating bowl having a central axis and having a first compartment and a second compartment in axial alignment with said first compartment, means for imparting rotary motion to said rotating bowl, an inlet in said first compartment for receiving a mixture of fluid and liquid, circumferentially spaced paddle means disposed around said central axis for accelerating the fluid and liquid mixture and together with said means for imparting rotary motion attaining an angular velocity to centrifuge the fluid and liquid to separate into components of fluid and liquid, a fluid inlet in said second compartment axially extending into said first compartment to flow liquid toward said central axis, a fluid outlet radially spaced from said fluid inlet in fluid flow relationship in said in one of said first or second compartment for expelling said fluid therefrom, stationary pump means concentrically mounted relative to said central axis having an inlet adapted to being immersed in said separated liquid and a liquid passage means coaxially mounted about said central axis and connected to the stationary pump means, and an outlet at the end of said liquid passage means for discharging said liquid from said second compartment.

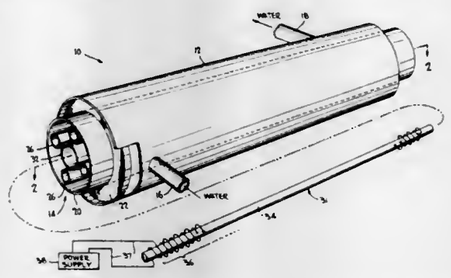
2. A fluid/liquid separator for separating the mixture of fluid and liquid into separate components of fluid and liquid as claimed in claim **1** wherein said fluid is air and said liquid is water.

5,622,622

ULTRAVIOLET STERILIZER AND SOURCE OF IONIZED MOLECULES FOR ELECTROCOALESCENT/MAGNETIC SEPARATION (ECMS) REMOVAL OF CONTAMINANTS FROM WATER STREAMS

Dennis E. J. Johnson, Aurora, Ill., assignor to Aqua-Ion Systems, Inc., Littleton, Colo.

Filed Jan. 25, 1995, Ser. No. 377,621
Int. Cl.[6] C02F *1/32*
U.S. Cl. 210—192 **17 Claims**



1. An improved radiation sterilizer for destroying microorganisms in a stream of water, comprising:

a source of electromagnetic radiation, disposed centrally within an elongated water jacket, said water jacket having a water inlet at a first end thereof and a water outlet at a second end thereof, said source being sealed from water flowing in said water jacket by a cylindrical radiation-transparent glass window, such that water flowing within said water jacket from said inlet to said outlet is exposed to radiation from said source,

said source of electromagnetic radiation comprising an elongated central magnetic field source surrounded by a plurality of elongated ultraviolet lamps, and power supplies for energizing said lamps and said magnetic field source,

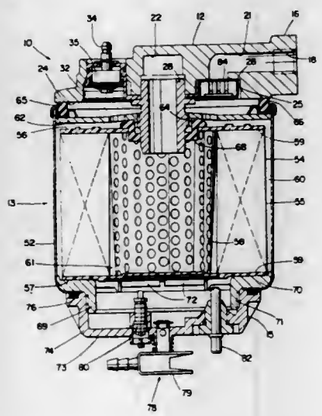
wherein said lamps extend parallel to and are spaced around said magnetic field source, such that said lamps and water within said water jacket are exposed to the magnetic field from said source.

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5,622,623
FUEL FILTER ELEMENT

Walter H. Stone, Modesto, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 131,824, Oct. 5, 1993, abandoned, which is a division of Ser. No. 97,787, Jul. 27, 1993, abandoned, which is a division of Ser. No. 683,096, Apr. 10, 1991, Pat. No. 5,244,571, which is a continuation of Ser. No. 586,827, Sep. 24, 1990, abandoned, which is a division of Ser. No. 370,097, Jun. 20, 1989, Pat. No. 4,997,555, which is a continuation of Ser. No. 242,791, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 32,834, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 784,292, Oct. 7, 1985, Pat. No. 4,692,245, which is a continuation-in-part of Ser. No. 733,808, May 14, 1985, Pat. No. 4,668,393.
This application May 15, 1995, Ser. No. 441,583
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—232 **12 Claims**

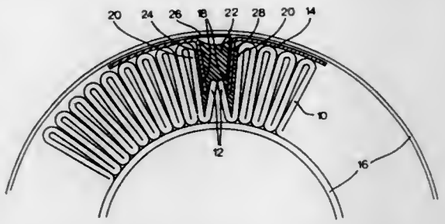


1. A fuel filter element comprising:
a housing means;
an annular filter medium separating a central fuel chamber from a peripheral fuel chamber within said housing means; and
a ring shaped member;
said housing means having a turned-in lower edge portion supporting said ring shaped member and said filter medium, said ring shaped member having an annular threaded portion whereby a collection bowl can be removably attached to said filter element, said filter element further including flow passage means externally of said filter medium for enabling contaminants to pass from said peripheral fuel chamber downwardly and interiorly of said annular threaded portion of said ring shaped member, whereby contaminants may be collected within said collection bowl attached to said filter element.

5,622,624
FILTER ELEMENT WITH EXPANDABLE METAL JACKET

Viktor Lauer, Bilsdorf, and Matthias Schwender, Kirkel, both of Germany, assignors to HYDAC Filtertechnik GmbH, Sulzbach, Germany

PCT No. PCT/EP94/00485, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO94/23818, PCT Pub. Date Oct. 27, 1994
PCT Filed Feb. 19, 1994, Ser. No. 513,901
Claims priority, application Germany, Apr. 20, 1993, 43 12 705.3
Int. Cl.[6] B01D *27/06;29/07;29/21;39/12*
U.S. Cl. 210—232 **8 Claims**

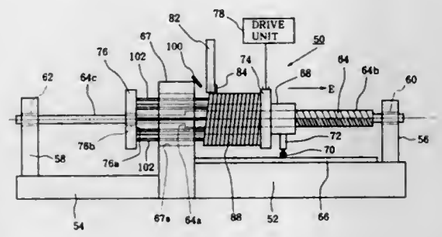


1. A tubular filter element for filtering fluids, comprising:
a zigzag folded filter mat having rounded off mat ends, said mat ends facing one another and being located in fixed positions;
a bed of adhesive connecting and bonding said mat ends; and
a cylindrical expandable metal grid surrounding at least one side of said filter mat and forming a first expandable metal jacket, said metal jacket having a small mesh width and protectively surrounding said filter mat, said metal jacket having bent jacket ends defining said bed of adhesive therebetween and extending radially inwardly, said jacket ends facing one another to define a space therebetween receiving said mat ends, said mat ends and said jacket ends extending substantially parallel.

5,622,625
METHOD OF MANUFACTURING A DRUM

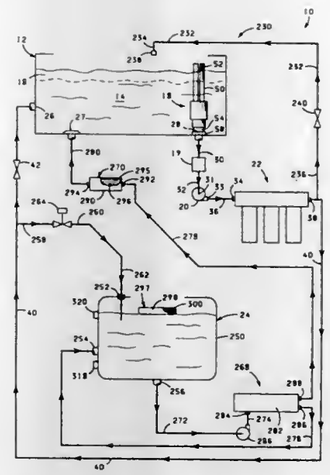
Tadayoshi Nagaoka, Miharamachi, Japan, assignor to Nagaoka International Corp., Japan

Division of Ser. No. 427,089, Apr. 21, 1995. This application Apr. 9, 1996, Ser. No. 629,536
Int. Cl.[6] B01D *39/10;33/06*
U.S. Cl. 210—232 **1 Claim**



1. A method of manufacturing a rotary screen drum comprises including a screw supported rotatably on a support frame
rails laid under the screw;
a screw cover which extends coaxially with the screw and is threadedly engaged on the screw and has wheels rotatably engaged with the rails, said screw cover sliding along the screw by rotation of the screw;
an annular front support rod holder rotatably supported in the vicinity of a forward end of the screw cover for holding one end of a plurality of support rods;
an annular rear support rod holder rotatably supported in the vicinity of a rear end of the screw cover for holding the other end of the plurality of support rods;
drive means for driving and rotating the front support rod holder;
a wedge wire supply drum for storing a wedge wire and winding the wedge wire on the plurality of support rods;
a pressure roll which is disposed in parallel to the screw cover at a predetermined interval from the outer periphery of the screw cover for pressing the wedge wire wound on the plurality of support rods to the plurality of support rods;

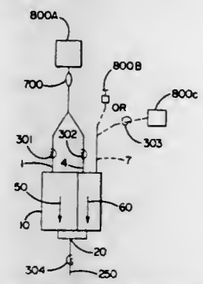
a wedge wire holder which is mounted on a frame vertically pivotally at a location immediately before the wedge wire is wound on the support rods and has a wedge wire insertion opening having a size slightly larger than the cross section of the wedge wire and having a configuration similar to the cross section of the wedge wire and which has a foremost end portion having a configuration similar to a bird's bill; and
a laser welder disposed at a location immediately after the wedge wire is wound on the support rods; the method comprising the steps of
(a) placing said plurality of support rods between the front support rod holder and the rear support rod holder and holding the support rods by the front and rear support rod holders the plurality of support rods including a projection in a radially outward end portion circumferentially generally in a cylindrical configuration;
(b) feeding the cylindrical support rods in one direction by rotating the screw and simultaneously feeding the wedge wire from the wedge wire supply drum and winding the wedge wire on the plurality of support rods through the wedge wire holder; and
(c) welding with said laser welder an inner apex portion of the wedge wire to the projections of the support rods at each crossing point of the wedge wire with the support rods.



5,622,626
MULTIPLE COMPARTMENT FILTER AND METHOD FOR PROCESSING PARENTERAL FLUID

Vlado I. Matkovich, Glen Cove; Samuel T. Wortham, Huntington, and Thomas J. Bormann, Melville, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Apr. 15, 1994, Ser. No. 227,875
Int. Cl.[6] B01D *29/50;35/00;61/00;* **A61M** *1/00*
U.S. Cl. 210—649 **42 Claims**



1. A method for treating parenteral fluid comprising:
passing a first parenteral fluid through a first fluid flow path through a porous fluid treatment arrangement;
passing a second parenteral fluid through a separate and isolated second fluid flow path through the porous fluid treatment arrangement; and,
passing additional first parenteral fluid through the separate and isolated second fluid flow path through the porous fluid treatment arrangement.

5,622,627
PARTS WASHER SYSTEM

Chris E. Fanning, Oklahoma City, and Gary C. Garrett, Edmond, both of Okla., assignors to Advanced Waste Reduction, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 117,265, Sep. 3, 1993, abandoned. This application Apr. 21, 1994, Ser. No. 230,572
Int. Cl.[6] C02F *9/00*
U.S. Cl. 210—650 **57 Claims**

1. A method for treating an aqueous surfactant solution of a parts washer to remove free oils, particulate matter and dissolved heavy metals therefrom while controlling the pH and bacterial growth in the aqueous surfactant solution without chemical additives, the method comprising:
passing the aqueous surfactant solution through an oil absorbent filter to produce a first filtrate substantially free of oils;
passing the first filtrate through a particle filter to produce a second filtrate substantially free of particulate matter; and
passing the second filtrate through a porous metal sponge-like structure formed of metal particles bound together in an interconnected form to produce a resultant filtrate of aqueous surfactant solution having a controlled pH which is resistant to bacterial growth without the addition of chemical additives and which is substantially free of oils, particulate matter and dissolved heavy metals.

5,622,628
TITANIUM DIOXIDE SLURRIES CONCENTRATION

Michael J. Trendell, Yarm; Kevin Drury, Stockton on Tees; Stephen R. Spruce, Yarm; Martin R. B. Davis, Guisborough, and Keith Robson, Durham, all of England, assignors to Tioxide Group Services Limited, United Kingdom

Filed Dec. 5, 1994, Ser. No. 349,214
Claims priority, application United Kingdom, Dec. 7, 1993, 932051
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—651 **28 Claims**

1. A process for the production of an aqueous slurry of titanium dioxide with a high solids content comprising subjecting a suspension of titanium dioxide particles in water to the effect only of differential trans-membrane pressure, cross-flow filtration and continuing the cross-flow filtration process until the suspension contains more than 50 percent by weight titanium dioxide calculated as TiO_2, wherein the suspension which contains more than 50 percent by weight TiO_2 has a viscosity of less than 1.0 Pa s at 20° C.

5,622,629

Patent Not Issued For This Number

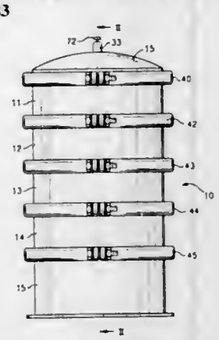
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5,622,630

APPARATUS FOR AND METHOD OF TREATMENT OF MEDIA CONTAINING UNWANTED SUBSTANCES

Dominic A. Romano, Pomona, Calif., assignor to Alvin B. Green, Northridge, and Jules Berman, Beverly Hills, both of Calif.

Continuation of Ser. No. 230,142, Apr. 13, 1994, abandoned. This application May 8, 1996, Ser. No. 646,961
Int. Cl.[6] C02F 1/42
U.S. Cl. 210—683 19 Claims



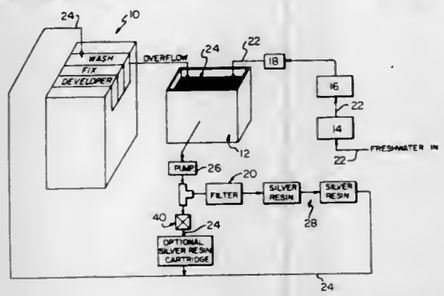
1. A method of treating motor vehicle washing waste water containing at least one of an oil and grease constituent and a nonsurfactant petroleum hydrocarbon-diesel constituent, said method being capable of removing from said waste water substantially 100 percent of at least one of said constituents, said method comprising the step of bringing said waste water into direct contact with the surfaces of a quantity of pebbles of natural zeolite exposed within a tank for said contact, said contact taking place in the presence of a surfactant, wherein said waste water further contains one or more of heavy metals, phenolics, dissolved sulfides, ethylene glycol, barium, strontium, boron, calcium, and sodium, at least one of which is also removed by said step.

5,622,631

PROCESS FOR REDUCING CONSUMPTION OF FRESH WATER AND ENERGY COSTS USED IN A PHOTOFINISHING OPERATION

Gerson J. Rosenfield, 27 High Pasture Rd., Kittery Point, Me. 03905

Division of Ser. No. 891,428, May 29, 1992, Pat. No. 5,439,584. This application Aug. 7, 1995, Ser. No. 512,201
Int. Cl.[6] C02F 9/00
U.S. Cl. 210—668 11 Claims



1. Process for simultaneously reducing the consumption of fresh water used in a photofinishing operation comprising developer, fix, and wash water tanks and for recovering silver from the wash water from said photofinishing operation comprising the following steps:

(a) first providing a collection tank of a predetermined size for the collection of a predetermined amount of wash water from said photofinishing operation, said collection tank being provided external to the photofinishing operation;

(b) filling the collection tank with a predetermined amount of fresh water,

(c) collecting wash water from said photofinishing operation in said collection tank whereby to provide a mixture of fresh water/wash water in said collection tank;

(d) providing a silver recovery means for recovering silver from the fresh water/wash water mixture;

(e) pumping the fresh water/wash water mixture from the collection tank at a predetermined rate to said silver recovery means;

(f) recovering silver from the fresh water/wash water mixture;

(g) recirculating the fresh water/wash water from which silver has been recovered to the wash water tank in said photofinishing operation;

(h) discharging a predetermined amount of the fresh water/wash water periodically pumped from the collection tank to waste;

(i) introducing simultaneously an amount of fresh water into the collection tank equal in volume to that amount of fresh water/wash water discharged to waste; and

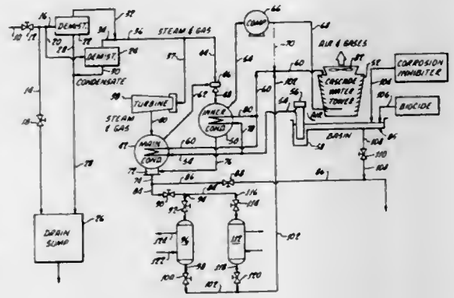
(j) counting steps e-j so long as it is desired to perform the process.

5,622,632

PROCESS FOR CONTROLLING NITROGEN DIOXIDE AND/OR AMMONIA EMISSIONS FROM GEOTHERMAL POWER PLANTS

Darrell L. Gallup, Chino Hills, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Continuation-in-part of Ser. No. 875,344, Apr. 29, 1992, Pat. No. 5,364,439. This application Sep. 14, 1994, Ser. No. 306,020
Int. Cl.[6] C02F 1/42
U.S. Cl. 210—669 26 Claims



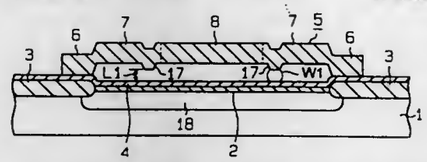
1. A process for controlling the emissions of ammonia and nitrogen dioxide in a system in which the flow of ammonia-containing steam is used to generate electric power, said system including (i) at least one steam turbine, (ii) at least one steam condenser downstream of said turbine in which at least some of the ammonia-containing steam is condensed to steam condensate containing dissolved ammonia and ammonium ions and (iii) at least one cooling tower for cooling the condensate, the cooling tower being open to the atmosphere and having associated therewith a condensate catch basin from which cooled condensate is passed to said condenser to condense said ammonia-containing steam, said process comprising the step of contacting said condensate prior to its introduction into said cooling tower with a crystalline aluminosilicate zeolite under conditions such that sufficient ammonia and ammonium ions are removed from said condensate so that the emissions of nitrogen dioxide and ammonia from said cooling tower are reduced, wherein the source of said ammonia-containing steam is a geothermal fluid.

5,622,633

SEMICONDUCTOR SENSOR WITH SUSPENDED MICROSTRUCTURE AND METHOD FOR FABRICATING SAME

Yoshinori Ohtsuka, Okazaki; Yukihiro Takeuchi, Nishikamo-gun, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 17, 1995, Ser. No. 516,414
Claims priority, application Japan, Aug. 18, 1994, 6-194395; Apr. 18, 1995, 7-092740; Jun. 29, 1995, 7-164172
Int. Cl.[6] H01L 21/00; B44C 1/22
U.S. Cl. 438—53 15 Claims



1. A method for fabricating a semiconductor sensor which has a substrate, a movable structure of beam structure provided above said substrate with a first gap interposed therebetween, and a detector for detecting a physical quantity based on a displacement of said movable structure, the method comprising steps of:

forming a sacrificial layer of uniform thickness on a main surface of said substrate;

simultaneously forming on said sacrificial layer a depression at a portion corresponding to a formation area of a projection for movable-range restriction use and an opening reaching through to said main surface of said substrate at a portion corresponding to a formation area of an anchor of said movable structure;

forming on said sacrificial layer a film which becomes said movable structure; and

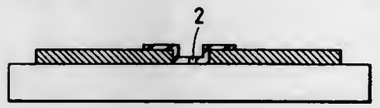
removing said sacrificial layer below said film to make said film said movable structure, whereby a projection for movable-range restriction use to form a second gap narrower than said first gap is formed and said movable structure is suspended on said substrate by said anchor.

5,622,634

METHOD OF MANUFACTURING ELECTRON-EMITTING DEVICE, ELECTRON SOURCE AND IMAGE-FORMING APPARATUS

Takashi Noma, Hadano; Seijiro Kato, Yokohama; Fumio Kishi, Kanagawa-ken; Hisaaki Kawade, Yokohama; Toshikazu Ohnishi; Michiyo Nishimura, both of Sagamihara; Kumiko Uno, Urawa; Takahiro Horiguchi, Tokyo, and Masato Yamanobe, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,382
Claims priority, application Japan, Dec. 17, 1993, 5-343280; Dec. 24, 1993, 5-345930; Jul. 15, 1994, 6-185162; Jul. 15, 1994, 6-185177; Aug. 11, 1994, 6-209377; Dec. 16, 1994, 6-313276
Int. Cl.[6] B44C 1/22
U.S. Cl. 216—40 54 Claims



1. A method of manufacturing an electron-emitting device comprising a pair of device electrodes and an electroconductive film including an electron-emitting region, characterized in that said method comprises a process of forming an electroconductive film including steps of:

forming a pattern on a thin film containing a metal element on the basis of a difference of chemical state; and

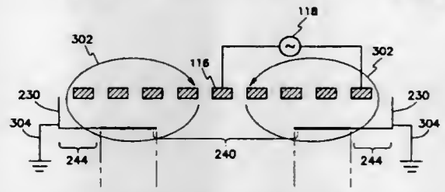
removing part of the thin film on the basis of the difference of chemical state.

5,622,635

METHOD FOR ENHANCED INDUCTIVE COUPLING TO PLASMAS WITH REDUCED SPUTTER CONTAMINATION

Jerome J. Cuomo, Lincolndale; C. Richard Guarnieri, Somer, and Jeffrey A. Hopwood, Brewster, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 5,678, Jan. 19, 1993. This application Apr. 5, 1995, Ser. No. 417,026
Int. Cl.[6] C03C 25/06; H05H 1/24
U.S. Cl. 216—68 10 Claims



1. A method of plasma treating a workpiece with a uniform, high density plasma for enhanced processing and reduced sputter contamination, comprising the steps of:

supporting the workpiece in a process chamber, the process chamber having a dielectric window located in close proximity to the workpiece and a grounded, electrically conducting shield, wherein said shield has a periphery and an outer gap forming a substantially continuous opening about the periphery;

introducing a process gas into the process chamber;

inducing a high frequency current in a coil located outside the process chamber proximate to the dielectric window, wherein said high frequency current in turn produces a magnetic field which generates a substantially uniform and dense plasma of said process gas inside the process chamber for enhanced processing of the workpiece;

guiding the magnetic field through the outer gap of said shield, thereby providing an efficient return path for the magnetic field and maintaining the uniformity and density of said plasma; and

shielding capacitive electric fields generated by the coil away from the dielectric window and toward ground to substantially reduce interference by the capacitive electric fields with inductive coupling between the coil and said plasma, thus substantially eliminating contamination from sputtering of the dielectric window by the capacitive electric fields.

5,622,636

ETCH-ENDING POINT MEASURING METHOD FOR WET-ETCH PROCESS

Yun J. Huh, Cheongju-si; Sang J. Chol, Seoul, and Suk B. Han, Cheongju-si, all of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed May 7, 1996, Ser. No. 646,143
Claims priority, application Rep. of Korea, Dec. 26, 1995, 56310/1995
Int. Cl.[6] H01L 21/311
U.S. Cl. 438—5 24 Claims

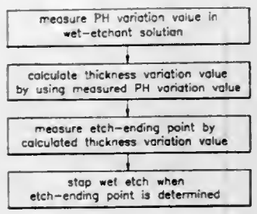
1. A wet-etching method which determines a desired etch-ending point comprising the steps of:

providing an etchant solution in a bath;

perform a wet-etch process by dipping a material to be etched in the bath;

measuring a PH variation value of the etchant solution during the wet-etch process;

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calculating a thickness variation value of the material by using the measured PH variation value; and

stopping the wet-etch process when the thickness variation value reaches a preset value.

5,622,637

PROCESS FOR SEAM WELDING AN OVERLAPPING SHEET-METAL SEAM

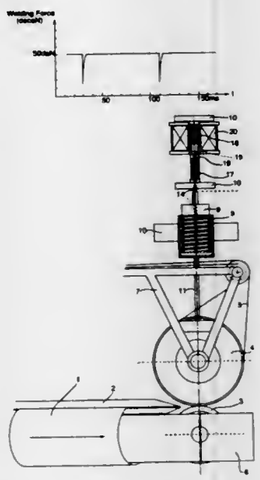
Peter Taiana, Staffelbach, Switzerland, assignor to Elpatronic AG, Zug, Switzerland

Filed May 17, 1995, Ser. No. 443,590

Claims priority, application Switzerland, Jun. 3, 1994, 1750/94

Int. Cl.[6] B23K *11/06*

U.S. Cl. 219—64 **11 Claims**



1. Process for seam welding a series of overlapping metal seams of can bodies with predetermined welding pressure, comprising the steps of:

feeding and welding a series of can bodies with overlapping metal seams between welding rollers;

exerting a welding force through the welding rollers on the overlapping metal seam at a predetermined level during the welding of each can body;

momentarily reducing the welding force exerted by the rollers on the overlapping seam below the predetermined level at the commencement of welding of at least the first in the series of can bodies; and thereafter

increasing the welding force exerted by the rollers on the seam of the can body back to the predetermined level.

5,622,638

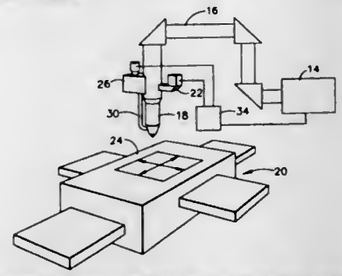
METHOD FOR FORMING AN ENVIRONMENTALLY RESISTANT BLADE TIP

Jerry D. Schell, Evendale; Howard J. Farr, Blue Ash; Thomas J. Kelly, Cincinnati, all of Ohio; Paul J. E. Monson, Wilmington, N.C., and Stephen J. Ferrigno, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 551,689, Nov. 1, 1995, which is a continuation of Ser. No. 290,662, Aug. 15, 1994. This application May 15, 1996, Ser. No. 647,523

Int. Cl.[6] B23K *26/00;* **C23C** *4/00;* **F01D** *11/08*

U.S. Cl. 219—121.64 **13 Claims**



1. A method for forming a blade tip on a turbine blade of a gas turbine engine, the method comprising the steps of;

providing a powder alloy consisting, in weight percent, essentially of about 14 to about 18 percent chromium, about 6.45 to about 6.95 percent aluminum, about 9.75 to about 11.45 percent cobalt, about 5.95 to about 6.55 percent tantalum, about 1.85 to about 2.35 percent rhenium, about 0.05 to about 1.75 percent hafnium, about 0.006 to about 0.03 percent zirconium, about 0.02 to about 0.11 percent carbon, up to about 1.1 percent silicon, up to about 0.01 percent boron, with the balance being nickel and typical impurities;

forming the blade tip by melting and fusing the powder alloy to the turbine blade.

5,622,639

HEAT TREATING APPARATUS

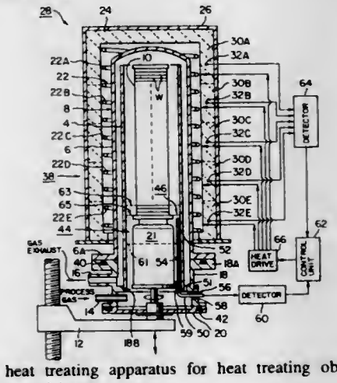
Hirofumi Kitayama, Aiko-gun; Toshimitu Shibata, Yokohama; Toshiaki Miyaju, Tsukui-gun, and Katsushin Miyagi, Sagamihara, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo-to, and Tokyo Electron Tohoku Kabushiki Kaisha, both of Japan

Filed Jul. 26, 1994, Ser. No. 280,855

Claims priority, application Japan, Jul. 29, 1993, 5-207068; Jul. 30, 1993, 5-208216; Apr. 11, 1994, 6-098129

Int. Cl.[6] F27B *5/14*

U.S. Cl. 219—390 **19 Claims**



1. A heat treating apparatus for heat treating objects-to-be-treated, comprising:

a processing vessel having an upper part, a middle part and a lower part, and a processing chamber for receiving loaded objects-to-be treated;

an object-to-be-treated boat mounted on a heat insulating cylinder, and

a heating device for providing a heat treatment to the objects to be treated, and said heating device being divided into a plurality of zones, the apparatus further comprising;

an interior temperature detecting sensor for detecting a heating temperature of the lower part of the processing vessel and for facilitating controlling of the heating temperature of the lower part of the interior of the processing vessel which lower part has a relatively large heat capacity and which is a film depositing area where films stay during heat treatment processing, and said interior temperature detecting sensor being fixed at the lower part of the processing vessel.

5,622,640

CONTROL OF WARMING TIME AND/OR POWER SUPPLIED TO A HEATER IN A BREAD WARMING SYSTEM BASED ON RATE OF TEMPERATURE CHANGE DURING PREVIOUS BAKING OPERATION

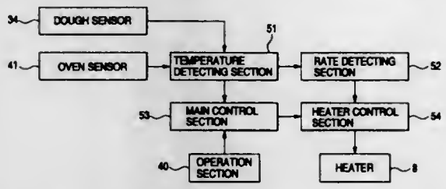
Shinji Yoshida, Daito, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

Filed Oct. 24, 1995, Ser. No. 547,310

Claims priority, application Japan, Oct. 26, 1994, 6-262184

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 **8 Claims**



1. A warming method in a bread maker having a heater for heating a baking chamber and performing an operation of keeping the baking chamber warm by supplying the heater with power after a baking operation has ended, the power being smaller than that to be supplied during the baking operation, said method comprising the steps of:

detecting a rate of temperature increasing of the baking chamber at the start of the baking operation; and

changing at least one of a warming time which is a time of the operation of keeping the baking chamber warm, and a warming power to be supplied to the heater during the keeping operation, to the detected rate.

5,622,641

METHOD FOR IN-SITU REDUCTION OF PCB-LIKE CONTAMINANTS FROM CONCRETE

Bang M. Kim; Andrew P. Shapiro, both of Schenectady, N.Y., and Henry S. Spacil, St. Croix, Virgin Islands (U.S.), assignors to General ElectricCompany, Schenectady, N.Y.

Filed Jul. 5, 1994, Ser. No. 270,541

Int. Cl.[6] H05B *3/08; 1/00;* **G21F** *9/00*

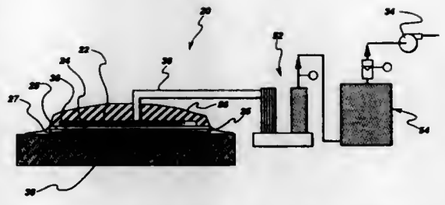
U.S. Cl. 219—541 **18 Claims**

1. A method for decontamination of concrete having a surface and having contamination therein comprising the steps of:

placing an impermeable heating means proximate the concrete surface;

placing a thermal insulator means above the heating means;

placing an impermeable means that extends areally beyond the heating means such that a seal is formed between the heating means and the concrete surface;



applying a vacuum to the concrete through an opening in the impermeable heating means;

heating the concrete with the heating means to a temperature above 100° C.; and

vaporizing the contamination in the concrete.

5,622,642

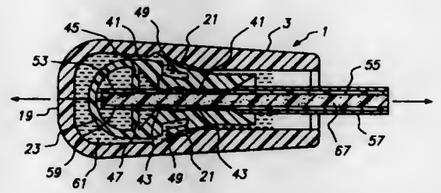
SEALING APPARATUS FOR ELONGATE CABLES HAVING MOVABLE INSERT WITH GRIPPING MEMBERS

Larry M. Edwards, Fremont; Lawrence J. White, Newark, and Timothy O. Stixrud, deceased, late of Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 6, 1995, Ser. No. 384,164

Int. Cl.[6] H05B *3/06;* **A44B** *21/00;* **H02G** *15/02*

U.S. Cl. 219—542 **20 Claims**



1. An apparatus for sealing the end of an elongate cable, said apparatus comprising

(1) a housing of generally tubular shape, the housing comprising

(a) a first open end and a second closed end,

(b) a longitudinal top portion with an interior surface and an exterior surface, and

(c) a longitudinal bottom portion with an interior surface and an exterior surface; and

(2) a polymeric insert which is positioned within the housing and is free to move in an axial direction within the housing and in a vertical direction within the housing, which insert

(a) is in the shape of a clip having a first open end and a second closed end and two open sides,

(b) comprises a first top arm with an interior surface and an exterior surface, and a second bottom arm with an interior surface and an exterior surface, said first and second arms extending from the closed end of the insert,

(c) a plurality of first gripping members which are associated with the interior surface of the first arm, and

(d) a plurality of second gripping members which are associated with the interior surface of the second arm.

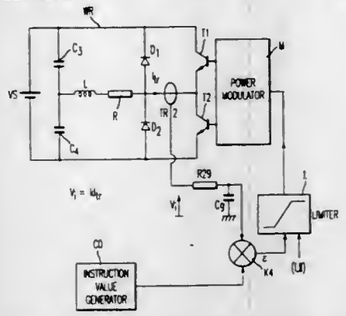
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5,622,643

PROCESS AND DEVICE FOR CONTROLLING POWER FOR A CIRCUIT FOR INDUCTION COOKING INCLUDING A RESONANT INVERTOR

Gérard Morizot, Villingen; Gérard Rilly, Unterkirnach, and Sean Carthy, Villingen, all of Germany, assignors to Compagnie Europeenne pour l'Equipment Menager Cepem, St Jean de la Ruelle, France

Filed Feb. 16, 1994, Ser. No. 197,303
Claims priority, application France, Feb. 16, 1993, 93 01711
Int. Cl.[6] H05B *6/08*
U.S. Cl. 219—625 **17 Claims**



1. A process of controlling power for a circuit of a resonant inverter for supplying a variable impedance load comprising an inducer and a cooking utensil heated by the inducer, the resonant inverter comprising two switching transistors connected in series and at a first junction point so as to conduct alternately under an action of a switching device controlled by a control pulse, two freewheeling diodes mounted in parallel with the two switching transistors and having a second junction point connected to the first junction point of the two transistors, a current transformer connected between the first and second junction points and delivering a first signal proportional to a current passing through the two transistors, and a control circuit receiving said first signal as an input and comprising at least one power modulator delivering a control signal of the control pulse, the process comprising the steps of:

generating an error signal that is a function of an average value of said first signal proportional to the current passing through the two transistors; and

controlling the at least one power modulator so as to make an active power consumed by the variable impedance load essentially independent of a material of the cooking utensil and such that it is an increasing function of a diameter of the cooking utensil.

5,622,644

MIXED GAS R-12 REFRIGERATION APPARATUS

Richard Stevenson, Mesa, Ariz.; Mikhail Boyarsky, Moscow Region, Russian Federation; Boris V. Yudin, Moscow Region, Russian Federation, and Oleg N. Podcherniev, Moscow Region, Russian Federation, assignors to Intercool Energy, Latham, N.Y.

Continuation-in-part of Ser. No. 180,208, Jan. 19, 1994, Pat. No. 5,425,890. This application May 24, 1995, Ser. No. 449,092
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 **2 Claims**

1. A refrigerant composition for use as a substitute for R-12 in R-12 refrigeration apparatus, comprising a mixture of:

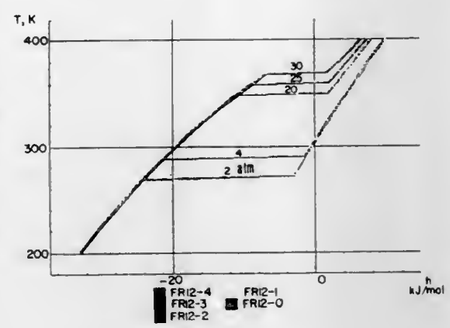
(i) 64–68 molar % of R-134a;

(ii) 32–36 molar % of R-124, and

(iii) 3–4 molar % of n-butane.

2. A refrigerant composition for use as a substitute for R-12 in R-12 refrigeration apparatus, comprising a mixture of:

(i) 64–68 molar % of R-134a;



(ii) 32–36 molar % of R-124, and

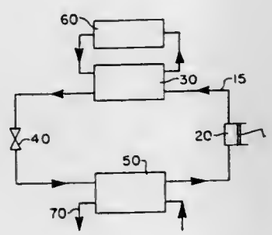
(iii) 1–2 molar % of n-butane.

5,622,645

NONAZEOTROPIC WORKING FLUID MEDIA FOR USE IN THERMODYNAMIC CYCLE APPLICATIONS

Chujun Gu, No. A7 South Road Liuliqiao, Fengtai District Beijing, China

Division of Ser. No. 7,398, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,131, Mar. 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,997
Claims priority, application China, Jan. 24, 1992, 92100395.1
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 **2 Claims**



1. A nonazeotropic working fluid medium for use in a thermodynamic cycle system, comprising a mixture of compounds and characterized in that, when subject to one or more vaporization loss/replenishment cycles:

(a) the weight of the medium changes by less than about 15% of the total original weight of the medium per cycle, wherein the compounds and their weight concentrations are as follows:

$CHClF_2$(R22)	0.5–0.96
CH_3CHCH_2(R1270)	0.005–0.1
CH_3CHF_2(R152a)	0.01–0.25

, and wherein the maximum concentration of impurities in the medium is about 10 percent by weight; and

(b) cumulatively, over all cycles, the weight of the medium changes by no more than about 50% of the total original weight of the medium, resulting in:

i) a total decrease in the coefficient of performance of said medium of no more than about 5%; or

ii) a loss in electric power generating efficiency of not more than about 3 percent.

5,622,646

BLEACH COMPOSITIONS COMPRISING METAL-CONTAINING BLEACH CATALYSTS AND ANTIOXIDANTS

Stefano Scialla, Rome, Italy, and Alastair J. Pretty, Newcastle Upon Tyne, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 224,617, Apr. 7, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,323
Int. Cl.[6] C01B *15/00;15/037*
U.S. Cl. 252—186.33 **15 Claims**

1. Laundry bleaching compositions having metal-containing bleach catalyst-induced fabric damage, said composition comprising:

(a) from about 0.5% to about 40% by weight of the composition of a peroxy compound;

(b) from about 50 ppm to about 500 ppm of a metal containing bleach catalyst; and

(c) from about 50 ppm to about 2000 ppm of a free radical scavenging antioxidant material selected from the group consisting of BHT, BHA, TBHQ, propyl gallate, ascorbic acid, and mixtures thereof whereby fabric damage associated with the metal-containing bleach catalyst is reduced.

5,622,647

DADMAC/VINYL TRIALKOXYSILANE COPOLYMERS FOR DEWATERING IN THE MINING INDUSTRY

E. Michael Kerr, Aurora, and Manian Ramesh, Lisle, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 22, 1995, Ser. No. 447,302
Int. Cl.[6] C10L *9/10*
U.S. Cl. 252—194 **21 Claims**

1. A method for dewatering mineral slurries containing water comprising the steps of:

a. feeding the mineral slurry into a thickener;

b. treating said mineral slurry with an effective amount of a coagulant which comprises a copolymer of diallyldimethyl ammonium halide and a vinyl alkoxysilane;

c. allowing the water to separate from the mineral slurry;

d. withdrawing water from said thickener; and

e. discharging the dewatered mineral products from said thickener.

12. A method for clarifying the water contained in a coal refuse slurry, said method comprising the steps of:

a. treating the coal refuse slurry with an effective amount of a copolymer of diallyldimethyl ammonium halide and a vinyl alkoxysilane;

b. allowing the water to separate from the coal refuse;

c. feeding the separated water and and coal refuse into a twin belt filter press;

d. withdrawing the clarified water through the twin belt filter press; and

e. removing the coal refuse from the twin belt filter press.

5,622,648

REACTIVE LIQUID CRYSTAL COMPOUNDS

Owain L. Parri; David Coates; Simon Greenfield, and Ian Bonny, all of Dorset, Great Britain, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Oct. 14, 1994, Ser. No. 321,884
Claims priority, application European Pat. Off., Oct. 15, 1993, 93116679
The portion of the term of this patent subsequent to Jun. 25, 2013, has been disclaimed.
Int. Cl.[6] C09K *19/12;19/20;19/34*
U.S. Cl. 252—299.66 **8 Claims**

1. A reactive liquid crystal compound of formula I

$$R^1—P—X—(A^1—Z^1)_n—A^2—R^2 \qquad I$$

wherein

R^1 is

$CH_2=CW—COO—$, $CH_2=CH—$, $HW—C\overset{O}{\diagdown\diagup}C—$,

$HWN—$, or $HS—CH_2—(CH_2)_m—COO—$,

W is H, Cl or C_{1-5}-alkyl,

m is 1–7,

P is alkylene with up to 12 C atoms, one or more CH_2 groups optionally being replaced by O in such a manner that oxygen atoms are not directly linked to one another;

X is —O—, —S—, —COO—, —OCO— or a single bond,

R^2 has one of the meanings of R^1—P—X,

n is 1 or 2,

A^1, A^2 are independently 1,4-phenylene which is unsubstituted or mono- or polysubstituted by F, Cl or —W—$C_rH_sF_{2r+1-s}$, or one of A^1 or A^2 is

pyridine-2,5-diyl or pyrimidine-2,5 diyl,

Z^1 is each independently —CO—O—, —O—CO—, —CH_2CH_2— or a single bond,

r is 1 or 2,

s is 0, 1, 2 or 3 if r is 1 and O, 1, 2, 3, 4, or 5 if r is 2,

W is a single bond, —O—, —S— or —CO—,

where n=2 both the moieties A^1 and both the moieties Z^1 are independently as defined above,

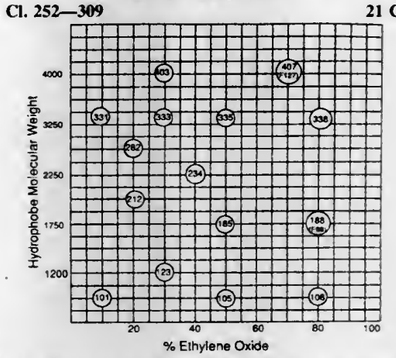
with the provisos (i) that at least one of A^1 and A^2 is a 1,4-phenylene group which is mono-or polysubstituted by Cl or —W—$C_rH_sF_{2r+1-s}$, said 1,4-phenylene group optionally additionally substituted by one or more F-atoms, and (ii) if n=2 (a) only one of Z^1 is —COO— or —OCO— or (b) at least one of A^1 and A^2 is substituted twice or (c) at least two of A^1 and A^2 are substituted.

5,622,649

MULTIPLE EMULSIONS AND METHODS OF PREPARATION

Robert L. Hunter, Tucker, and Carol E. Bennett, Decatur, both of Ga., assignors to Emory University, Atlanta, Ga.

Continuation of Ser. No. 236,361, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 897,390, Jun. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 869,822, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 721,810, Jun. 27, 1991, abandoned. This application Aug. 16, 1994, Ser. No. 291,286
Int. Cl.[6] B01J *13/00*
U.S. Cl. 252—309 **21 Claims**



10. A water-in-oil-in-water emulsion produced by the process comprising:

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A. mixing water with an effective amount of a first surfactant comprising a polyoxyethylene polyoxypropylene block copolymer to form an inner aqueous phase, the polyoxyethylene polyoxypropylene block copolymer having a hydrophile-lipophile balance of less than approximately 2 and having the following formula,

$$HO(C_2H_4O)_b(C_3H_6O)_a(C_2H_4O)_bH$$

wherein the mean moleculular weight of the hydrophobe (C_3H_6O) is between approximately 5000 to 15000, and the percentage of hydrophile (C_2H_4O) is between approximately 2% and 15% by weight;

B. adding oil and a second surfactant in an amount sufficient to form a continuous oil phase having a second surfactant;

C. mixing the continuous oil phase and the inner aqueous phase to form a water-in-oil emulsion comprising a dispersed inner aqueous phase within a continuous oil phase;

D. adding water to the water-in-oil emulsion in an amount sufficient to form a continuous outer aqueous phase; and

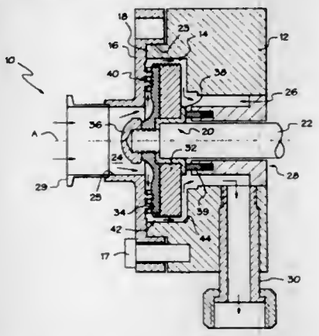
E. mixing the continuous outer aqueous phase with the water-in-oil emulsion to form a water-in-oil-in-water emulsion comprising a dispersed inner aqueous phase within a continuous oil phase which is within a continuous outer aqueous phase.

5,622,650

EMULSIFYING MILLING MACHINE AND PROCESS FOR EMULSIFYING

John K. Rourke, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 15, 1995, Ser. No. 528,774
Int. Cl.[6] B01F *3/08;7/00;* **B01J** *13/00*
U.S. Cl. 252—314 **15 Claims**



1. A mill for emulsifying a first fluid and a second fluid comprising:

a mill body having a cylindrical cavity therein, a fluid inlet at one end of said cavity in fluid communication with said cavity, and a fluid outlet axially removed from said fluid inlet end of said cavity in fluid communication with said cavity;

a first stator surface at said fluid inlet end of said cavity;

a rotor assembly including a rotor mounted on a shaft for rotation in said cavity and having a first milling surface facing said first stator surface;

a first milling space between said first milling surface and said first stator surface;

a plurality of stator projections extending from said first stator surface into said first milling space; and

a plurality of rotor projections extending from said first milling surface into said first milling space;

said fluid inlet delivering the fluids to said first milling space where the fluids are worked on by said rotor to form an emulsion;

said rotor assembly rotates on an axis;

said stator projections are arranged in a plurality of concentric annular rows and increase in size in proportion to their radial distance from said axis;

said rotor projections are arranged in a plurality of concentric annular rows and increase in size in proportion to their radial distance from said axis; and

each of said annular rows of rotor projections concentrically alternate with each of said annular rows of stator projections;

whereby the fluids pass through shear zones of increasing intensity as they travel radially outward through said first milling space.

11. A process for emulsifying a hydrophobic fluid and a hydrophilic fluid comprising the steps of:

introducing hydrophobic and hydrophilic fluids into a first milling space between a rotor and a stator, while rotating said rotor with respect to said stator; and

introducing fluid effluent from said first milling space into a second circumferential milling space at an outer periphery of said rotor;

said stator including at least one annular row of stator projections extending from said stator into said first milling space;

said rotor including at least one annular row of rotor projections extending from said rotor into said first milling space and at least one row of milling projections extending radially into said second milling space; and

each of said annular rows of stator projections being concentrically adjacent to an annular row of rotor projections.

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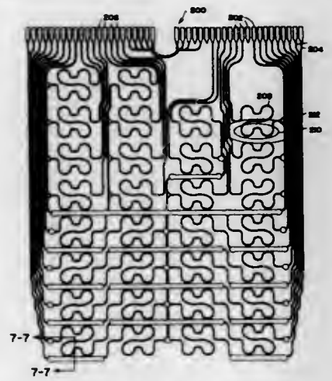
Patent Not Issued For This Number

5,622,652

ELECTRICALLY-CONDUCTIVE LIQUID FOR DIRECTLY PRINTING AN ELECTRICAL CIRCUIT COMPONENT ONTO A SUBSTRATE, AND A METHOD FOR MAKING SUCH A LIQUID

Joseph Kucherovsky, Philadelphia, and Irvin Isen, Narboth, both of Pa., assignors to IMG Group Limited, Chalfont, Pa.

Division of Ser. No. 488,285, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 481,992
Int. Cl.[6] H01B *1/20;1/22;1/24*
U.S. Cl. 252—511 **8 Claims**



1. An electrically-conductive gravure printing liquid for directly printing an electrical circuit component onto a substrate, comprising:

between substantially 55 percent and substantially 85 percent by weight of a solvent, said solvent comprising between substantially 60 percent and substantially 95 percent by weight esters, between substantially 3 percent and substantially 20 percent by weight glycols, and between substantially 3 percent and substantially 20 percent by weight ketones;

between substantially 10 percent and substantially 40 percent by weight of solids including (i) substantially 5 percent to substantially 90 percent by weight of polymer resin, and (ii) substantially 3 percent to substantially 80 percent by weight of a conductive powder; and

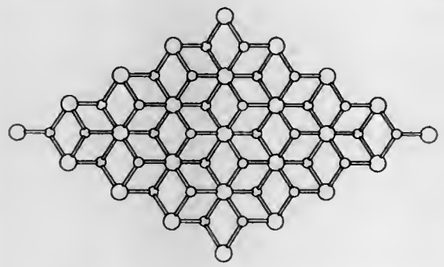
between substantially 1 percent and substantially 7 percent by weight plasticizers.

5,622,653

ELECTRO-CONDUCTIVE OXIDES AND ELECTRODES USING THE SAME

Masahiro Orita, Funabashi; Hiroyuki Sakai, Tokyo; Megumi Takeuchi, Akishima, and Hiroaki Tanji, Kawasaki, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 470,722
Claims priority, application Japan, Jun. 10, 1994, 6-128532; Jan. 11, 1995, 7-002565; Mar. 24, 1995, 7-065840
Int. Cl.[6] H01B *1/00;1/08*
U.S. Cl. 252—518 **13 Claims**



1. An electro-conductive oxide represented by the general formula:

$$M(1)_xM(2)_yIn_zO_{(x+3/2y+3/2z)-d}$$

wherein M(1) is at least one element selected from the group consisting of magnesium and zinc, M(2) is at least one element selected from the group consisting of aluminium and gallium, the ratio (x:y) is within a range of 0.2 to 1.8:1, the ratio (z :y) is within a range of 0.4 to 1.4:1 and the oxygen deficit amount (d) is within a range of from 3×10^{-5} to 1×10^{-1} times the value of (x+3y/2+3z/2).

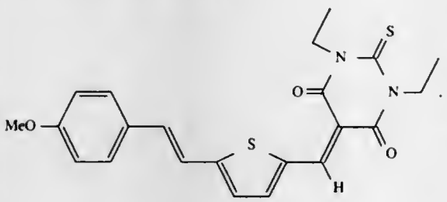
5,622,654

NLO DYE COMPOSITIONS AND USE THEREOF IN PRODUCING NLO ELEMENTS

John D. Summers, Newtown Square, and Wilson Tam, Boothwyn, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 860,863, Mar. 31, 1992, Pat. No. 5,534,201. This application Feb. 16, 1996, Ser. No. 602,394
Int. Cl.[6] F21V *9/00;* **C07D** *401/00*
U.S. Cl. 252—582 **1 Claim**

1. A compound of the formula

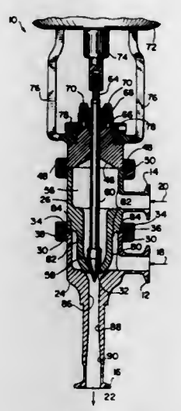


5,622,655

SANITARY DIRECT CONTACT STEAM INJECTION HEATER AND METHOD

Bruce A. Cincotta, Wauwatosa, and Marc K. Mueller, Pewaukee, both of Wis., assignors to Hydro-Thermal Corporation, Waukesha, Wis.

Filed Apr. 10, 1995, Ser. No. 419,177
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—76 **13 Claims**



1. A direct contact steam injection heater comprising:

a non-adjustable, fixed combining tube having an inlet and an outlet, the flow area of the combining tube converging from the inlet to a direct mixing section and slowly diverging downstream of the direct mixing section to the outlet, the direct mixing section having a constant flow area along the direction of flow through the combining tube between the converging section and the diverging section of the combining tube;

a coaxial steam nozzle that discharges steam coaxially in the direction which liquid flows through the combining tube into the converging section of the combining tube immediately upstream of the direct mixing section, the steam exiting the nozzle at a speed greater than or equal to sonic velocity under choked conditions; and

a plug contained within the nozzle that can be adjusted to modulate the amount of steam discharged from the nozzle.

5,622,656

PROCESS OF MANUFACTURE OF BIODEGRADABLE MICROCAPSULES HAVING WALLS COMPOSED OF CROSSLINKED ATELOCOLLAGEN AND POLYHOLOSIDES

Alain Huc, Ste Foy les Lyon; Marie-Christine Levy, Reims; Chantal Buffevant, Vernaison, and Marie-Christine Andry, Dizy, all of France, assignors to Societe Anonyme: Bioetica, Lyons, France

Division of Ser. No. 74,701, Jun. 8, 1993, Pat. No. 5,395,620, which is a continuation of Ser. No. 749,909, Aug. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 336,711, Apr. 12, 1989, abandoned. This application Oct. 25, 1994, Ser. No. 328,903
Claims priority, application France, Jan. 31, 1989, 89 01221
Int. Cl.[6] B01J *13/16;* **A61K** *9/52*
U.S. Cl. 264—4.7 **25 Claims**

1. A process for the manufacture of microcapsules, which comprises the following successive steps:

(a) preparing a solution of atelocollagen,

(b) preparing a solution of polyholoside by dissolving the polyholoside in an aqueous buffer solution whose pH is adjusted so that, after mixing with the solution of atelocollagen, the pH of the mixture is between 5.5 and 10,

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(c) mixing the solution of atelocollagen with the solution of polyholoside to form a homogeneous solution of atelocollagen and polyholoside having a pH between 5.5 and 10,

(d) forming an emulsion with the solution of atelocollagen and polyholoside, as a dispersed phase in a hydrophobic liquid forming the continuous phase, in which the atelocollagen and the polyholoside are essentially insoluble, and

(e) mixing a crosslinking solution of a crosslinking agent containing reactive groups capable of simultaneously reacting with acylatable groups of the atelocollagen and the polyholoside with the resulting emulsion, thereby causing an interfacial and simultaneous crosslinking reaction of the atelocollagen and of the polyholoside, for a period of time sufficient to form microcapsules comprising a crosslinked outerwall surrounding a filled inner space, said outerwall resulting from a crosslinking between molecules of atelocollagen and polyholoside.

5,622,657

PROLONGED RELEASE MICROPARTICLE PREPARATION AND PRODUCTION OF THE SAME

Shigeyuki Takada, Salt Lake City, Utah; Yoshiaki Uda, Takarazuka, and Yasuaki Ogawa, Ohyamazaki-cho, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 387,392, Feb. 13, 1995, which is a continuation of Ser. No. 953,679, Oct. 1, 1992, abandoned. This application May 31, 1995, Ser. No. 455,546

Claims priority, application Japan, Oct. 1, 1991, 3-253517

Int. Cl.[6] B01J *13/04;13/22*

U.S. Cl. 264—4.32 **15 Claims**

1. A process for the production of a microparticle preparation comprising spraying a solution of a polymer containing a drug and an aqueous solution of an agent for preventing aggregation of the microparticles separately from different nozzles and contacting them with each other in a spray dryer to produce microparticles of the polymer which contain the drug and are coated with a film of the agent for preventing aggregation of the microparticles.

5,622,658

WATER-DISPERSIBLE GRANULES

John M. Lloyd, Richmond, and Audrey G. Stuart, Nelson, both of New Zealand, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

Continuation of Ser. No. 321,411, Oct. 19, 1994, Pat. No. 5,443,764, which is a continuation of Ser. No. 144,610, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 967,547, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 746,807, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 327,983, Mar. 1, 1989, abandoned. This application Apr. 12, 1995, Ser. No. 420,554

Claims priority, application New Zealand, Jul. 1, 1987, 220920; WIPO, Jun. 23, 1988, PCT/AU88/00201

Int. Cl.[6] B29B *9/00*

U.S. Cl. 264—15 **8 Claims**

1. A process for the preparation of water dispersible granules comprising an active agricultural chemical for use in preparing aqueous dispersions suitable for application of the active agricultural chemical by spraying, the process comprising mixing the granule components, including the active agricultural chemical and a surfactant therefor, in the presence of water to form an extrudable wet mix, the amount of water being in the range of 5–50 liters per 100 Kg of the granule components, extruding the resulting wet mix to form a plurality of wet extrusions of a compactness such that on tumbling the extrusions can be broken down into discrete sections of substantially uniform length and then tumbling the wet extrusions on each other to break down said extrusions into said discrete sections, continuing the tumbling action so that said sections are rounded into granules of a length generally not exceeding three times their diameter and thereafter drying the granules thus obtained, the resulting granules demonstrating more rapid dispersion and superior suspensability in water than those obtainable with a corresponding composition using pan granulation, said granules being further characterized by their lower tendency to powder and form a dust than granules obtained by pan granulation.

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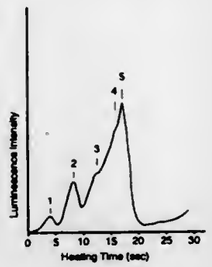
METHOD OF PREPARING DOPED LITHIUM FLUORIDE THERMOLUMINESCENT RADIATION DETECTOR

William F. Spicuzza, Eastlake, Ohio, assignor to Victoreen, Inc., Cleveland, Ohio

Filed Jan. 3, 1995, Ser. No. 367,874

Int. Cl.[6] C09K *11/00*

U.S. Cl. 264—21 **48 Claims**



1. A process for preparing a sensitized lithium fluoride compact suitable for use in preparing a thermoluminescent radiation detector consisting essentially of the steps of:

1) preparing a mixture of microcrystals of undoped lithium fluoride and one or more dopants;

2) heating the mixture at a temperature at which said dopants can diffuse into said microcrystals for a period of time sufficient to produce sensitized microcrystals of lithium fluoride;

3) hot pressing the sensitized lithium fluoride microcrystals for a period of time sufficient to prepare a compact of doped polycrystalline lithium fluoride;

4) cooling said compact to room temperature.

5,622,660

PROCESS FOR PRODUCING CARBON FIBER FABRICS

Seiichi Uemura, Ota-ku; Yoshio Sohda, Kawasaki, and Yasuzi Ido, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 231,898, Apr. 22, 1994, abandoned, which is a continuation of Ser. No. 794,457, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 479,855, Feb. 14, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,027

Claims priority, application Japan, Feb. 16, 1989, 1-35008

Int. Cl.[6] D01F *9/12;9/145*

U.S. Cl. 264—29.2 **8 Claims**

1. A process for producing a two- or three-dimensional carbon fabric comprising melt-spinning an optically anisotropic carbonaceous pitch having an optically anisotropic phase content of 60% to 100% whereby a pitch fiber is formed; heat treating said pitch fiber wherein said fiber is infusibilized; subjecting the infusibilized fiber to a primary heat treatment at a temperature of more than 1000° C. but not higher than 2500° C. to produce primary heat treated fiber having a tensile strength of not less than 300 kg/mm^2 and a breaking elongation in the range of 0.4% to 10%; preparing a two- or three-dimensional fabric from said primary heat treated fiber; and subjecting said two- or three-dimensional fabric to a secondary heat treatment at a temperature which is at least 50° C. higher than the temperature of said primary heat treatment step, said secondary heat treatment step temperature being higher than 1050° C. but no higher than 3300° C. wherein said fiber of said fabric exhibits an elastic modulus of at least 40,000 kg/mm^2 when said secondary heat treatment temperature, conducted in a non-oxidative atmosphere, is 2500° C. and at least 50,000 kg/mm^2 when said secondary heat treatment temperature, conducted in a non-oxidative atmosphere, is 2800° C.

5,622,661

METHOD OF TREATING OF LAYERED LAMINATED PLASTIC OBJECTS

Rolf V. Cederström, Stockholm, Sweden, assignor to Creto (International) Ltd., Stockholm, Sweden

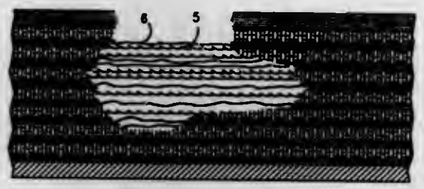
PCT No. PCT/SE93/00951, § 371 Date Sep. 9, 1994, § 102(e) Date Sep. 9, 1994, PCT Pub. No. WO94/11181, PCT Pub. Date May 26, 1994

PCT Filed Nov. 9, 1992, Ser. No. 256,269

Claims priority, application Sweden, Nov. 10, 1992, 9203358

Int. Cl.[6] B32B *35/00;* **B29C** *43/00*

U.S. Cl. 264—36 **11 Claims**



1. A method of treating a layered, laminated plastic object having an internal damaged area containing fluids which internal damaged area is at least partially covered by at least one overlying layer, comprising the steps of:

initially heating the internal damaged area to a temperature effective to evaporate the contained fluids and expand the contained fluids to fracture the at least one overlying layer and expose the damaged area through the at least one overlying layer;

rapidly cooling the exposed damaged area;

then, alternatingly, further heating and rapidly cooling the exposed damaged area to remove contaminants and acids from within the object; and

repairing the exposed damaged area.

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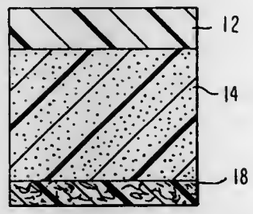
METHOD FOR FORMING A SOUND ATTENUATION COMPOSITE

Manuel J. Veiga, Tewksbury, and Richard J. Satin, Swampscott, both of Mass., assignors to Bradford Industries, Inc., Lowell, Mass.

Division of Ser. No. 127,645, Sep. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,102

Int. Cl.[6] B29C *44/06;44/12*

U.S. Cl. 264—45.3 **8 Claims**



1. A method for forming a sound attenuation composite comprising:

casting a solid polymer barrier layer on release paper;

forming a polymer open cell foam layer

casting said open cell foam layer onto said solid barrier layer;

fusing said open cell foam layer to said barrier layer to form the sound attenuation barrier composite; and

casting a reinforcing layer onto said open cell foam layer prior to fusing said open cell layer to said barrier layer for dimensionally stabilizing the composite.

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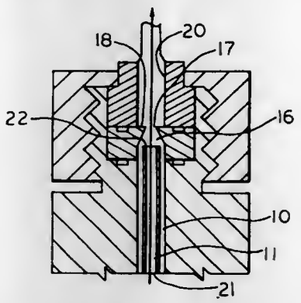
METHOD FOR PREPARING A CONTINUOUS FOAM PROFILE CONTAINING A FILAMENTARY CORE

Daniel N. Kemp, Midland; Dennis M. Schnettler, Sanford, and Ronald W. Wieck, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 14, 1995, Ser. No. 490,370

Int. Cl.[6] B29C *44/20;44/24*

U.S. Cl. 264—45.9 **6 Claims**



1. A method for preparing an extruded foam article comprising the steps of

(1) forming a composite comprising a matrix of a curable liquid foamable composition completely surrounding a substantially linear, non-self-supporting filament having a cross-sectional area A1 by concurrently extruding said composition and said filament in an upward direction through a die orifice into a cylindrical reservoir having a bottom surface and a substantially vertical wall, wherein the velocities of said matrix and said filament are substantially equal, said die orifice is centered in said bottom surface and encloses an area A2, and the height of said vertical wall is sufficient to impart a substantially uniform cross-section to said composite;

(2) heating said composite as required to form a crosslinked foam profile; and

(3) collecting said profile at a rate that maintains a substantially uniform tension on said filament.

5,622,664

METHOD FOR PRODUCING PATTERNED SHAPED ARTICLE

Hiroshi Uchida, Ashikaga; Mituhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

Filed Aug. 24, 1994, Ser. No. 293,964

Claims priority, application Japan, Aug. 24, 1993, 5-229643

Int. Cl.[6] B29C *39/12*

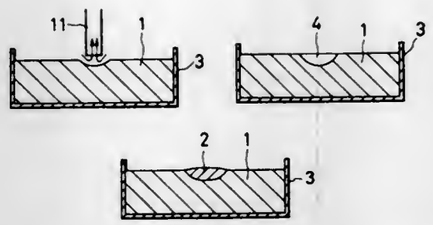
U.S. Cl. 264—113 **18 Claims**

1. A method of producing a patterned shaped article, the method comprising the steps of:

forming a course of first dry particles on a base surface;

using an air flow controller having at least one of at least one suction port and at least one blow port to cause an air flow to form a cavity in the course by removing a part of the first dry particles thereof in accordance with a pattern to be expressed and under a control of at least one parameter among air pressure, air flow rate, air flow speed, air flow direction, air

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flow pulsation, air flow intermittence, suction port size, blow port size, suction port position and blow port position;

charging the cavity with second dry particles; and

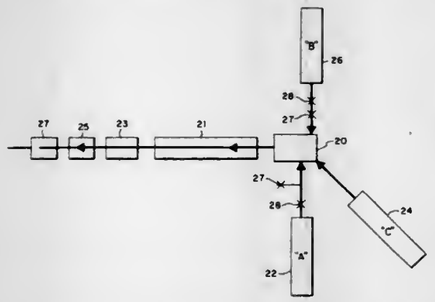
allowing the first and second dry particles to set into an integral mass.

5,622,665

METHOD FOR MAKING TUBING

James C. Wang, 15 Massasoit Ave., Norton, Mass. 02766

Division of Ser. No. 230,333, Apr. 20, 1994, Pat. No. 5,533,985.
This application Jun. 2, 1995, Ser. No. 460,662
Int. Cl.[6] B29C *47/06;47/92*
U.S. Cl. 264—150 **11 Claims**



1. A method for making an elongated tube having an annular wall with an outer surface and an inner surface that defines a central passageway, the tube also having a first section comprised of a first resinous material, a second section comprised of a second resinous material, the first and second resinous materials being of different stiffness, and an intermediate section joining the first section and the second section, the intermediate section being a transition section in which the wall of the tube gradually changes from the first resinous material of the first section to the second resinous material of the second section to form a continuous unbroken tube of differential stiffness without abrupt joints, said method comprising the steps of: providing a first resinous stream of the first resinous material; providing a second resinous stream of the second resinous material; introducing the first and second resinous materials into separate flow channels in a co-extrusion head that defines a plurality of flow channels; controlling the flow of each of the first and second resinous streams into the co-extrusion head; causing the first resinous stream to join with the second resinous stream in the co-extrusion head to produce a contact volume of joint flow so as to form a wedge structure in the transition section in which the first resinous material extends into the second resinous material so that the second resinous material surrounds the wedge structure of the first material; controlling the flow of each resin stream within the co-extrusion head; and passing the resinous materials through an extrusion die to form a continuous unbroken tube of the desired length having the desired sections formed of the first and second resinous materials with the resinous materials naturally adhering to each other in the sections.

5,622,666

MODIFIED VISCOSE FIBRES AND METHOD FOR THEIR MANUFACTURE

Henryk Struszczyk, Zgierz, Poland; Pertti Nousiainen; Olli Kivekäs, both of Tampere, Finland, and Antoni Niekraszewicz, PL-Lodz, Poland, assignors to Novasso Oy, Tampere, Finland

PCT No. PCT/FI93/00412, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/09192, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 11, 1993, Ser. No. 411,782
Claims priority, application Finland, Oct. 9, 1992, 924408
Int. Cl.[6] D01D *5/06;* **D01F** *2/10*
U.S. Cl. 264—191 **21 Claims**

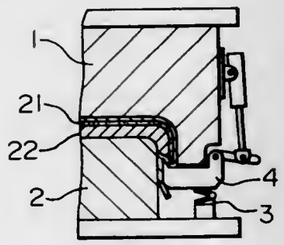
5. Method for manufacture of modified viscose fibers, wherein the manufacture comprises the steps of forming a viscose dope, and spinning the viscose into a bath to form the viscose fibers, the viscose fibers being modified with microcrystalline chitosan by introducing microcrystalline chitosan into the viscose before the spinning step and the spinning being carried out to form viscose fibers containing regenerated cellulose and microcrystalline chitosan forming hydrogen bonds with the structure of the regenerated cellulose, the microcrystalline chitosan being modified by introducing to the viscose before the spinning step of a water-soluble or alkali-soluble or both water-soluble and alkali-soluble natural polymer or a derivative thereof or mixture thereof, of polysaccharide origin, which comprises in its structure of groups capable of creating ionic bond or hydrogen connections or both with said microcrystalline chitosan, and spinning the viscose into the bath to form said modified viscose fibers.

5,622,667

PROCESS FOR PRODUCING SKIN-INTEGRATED LAMINATE

Youichi Fujiyama, Nagoya; Takashi Watanabe, Toyota; Masahito Matsumoto, Ibaraki, and Ryuichi Isbitsubo, Izumi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka; Takashimaya Nippatsu Kogyo Co., Ltd., Toyota, and Hosokawa Seisakusbo Co., Ltd., Osaka, all of Japan

PCT No. PCT/JP94/00211, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO94/19165, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 14, 1994, Ser. No. 318,732
Claims priority, application Japan, Feb. 16, 1993, 5-026405
Int. Cl.[6] B29C *45/00;47/00;* **A23G** *1/22;1/20*
U.S. Cl. 264—266 **1 Claim**



1. A process for producing a skin-integrated laminate in which a skin material is integrated with a surface of a substrate comprising the steps of:

placing a skin material in an open mold assembly between a male mold and a female mold, said female mold having a concave area therein, arranging a pivotable plate mold having an end-forming pointed end part between the male mold and the female mold, pivoting said plate mold having said end-forming pointed end part from a retracted position to a closed position such that said pointed end part of said plate mold protrudes into said concave area of said female mold; closing said open mold assembly while said plate mold is in said closed position to thereby form a cavity between the male mold and the female mold and said plate mold in said closed position, said male mold and said female mold in a clamped state forming a peripheral end opening which opens to an area outside of the cavity, said end opening being closed by said plate mold in said closed position

clamping an end of the skin material with a clamping mechanism;

independently clamping the male mold and the female mold after closing said open mold assembly;

then feeding a molten resin material into said cavity between the skin material and the male mold;

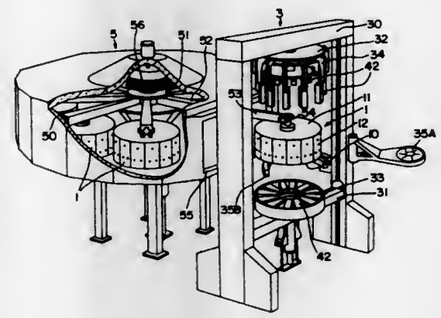
loosening the clamping mechanism to release the clamped end of the skin material during said feeding of the molten resin material, thereby forcing a part of the skin material into contact, along a back portion thereof with the end-forming pointed end part of the plate mold to form a substrate and simultaneously wrapping the substrate with the skin material from one side of the substrate to an end surface of the substrate, whereby the skin material is adhered integratedly in a layer to the substrate.

5,622,669

PROCESS AND APPARATUS FOR THE VULCANIZING OF TIRES

Olivier Dailliez, Charbonnieres-les-Bains; Daniel Laurent, Meylan, and David Myatt, Chateaugay, all of France, assignors to Sedepro, Paris, France

Filed Aug. 5, 1994, Ser. No. 286,284
Claims priority, application France, Aug. 9, 1993, 93 09849
Int. Cl.[6] B29C *35/00;35/08*
U.S. Cl. 264—403 **20 Claims**



1. A tire vulcanization apparatus comprising a heating and encasing station supporting a tire to be introduced into a mold assembled of mold parts, said station including mold closing means which are moved and coupled to said mold parts for enclosing an uncured tire in a mold, heating means at the heating and encasing station for the transfer to the outside of the mold at the station at least part of the heat energy necessary for the vulcanization which is to be imparted to the tire, a chamber for accommodating more than one mold and to which each mold is delivered for maintaining the tire in its mold insulated from the environment in order to limit the heat losses during the time necessary for the vulcanization and means for transferring the mold with the tire encased therein from the heating and encasing station to the chamber after the uncoupling of the mold closing means.

5. A method of vulcanizing tires comprising:

a heat transfer step which includes introducing a given tire into a mold of substantial heat capacity and imparting to the mold at a heating and encasing station, for a short period of time, at least a part of the vulcanization energy which is imparted to the tire from the outside of the mold by an intense heat transfer and terminating the heat transfer to the mold after said short period of time,

moving the mold containing said tire from the heating and encasing station into a chamber which accommodates a plurality of molds,

maintaining the tire in its mold insulated by the chamber from the environment in order to limit the heat losses during the time necessary for vulcanization,

processing the heat transfer step for a subsequent tire at said heating and encasing station while maintaining the said given tire in the mold in the chamber for the time necessary in order for the vulcanization reaction to be completed,

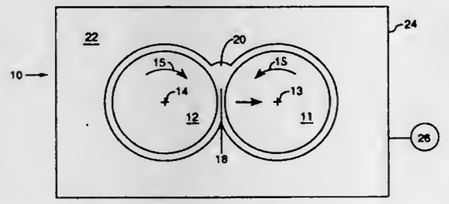
removing a tire from the chamber to a heating and encasing station and then from its mold at the end of the vulcanization reaction.

5,622,668

METHOD FOR PREPARING ORIENTED POLYMER STRUCTURES AND SAID STRUCTURES

Edwin L. Thomas, Natick, and Ramon J. Albalak, Brookline, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 832,469, Feb. 7, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 168,791
Int. Cl.[6] D02J *1/22*
U.S. Cl. 264—289.3 **18 Claims**



1. A method for preparing oriented block copolymer structures comprising the steps of:

providing at least two cylinders which are parallel and adjacent to one another so as to form at least one nip;

rotating said cylinders such that at said nip the cylinder surfaces are moving in the same direction;

introducing a block copolymer solution into one of the nips of said rotating cylinders above the microphase separation transition, thereby subjecting the polymer solution to at least one flow field and whereby orientation of the polymer begins;

inducing a microphase separation of said block copolymer solution to form an oriented block copolymer structure, said oriented block copolymer structure being a film formed on the surface of a predetermined cylinder: and

removing said oriented copolymer structure from said predetermined cylinder, whereby said structure being highly oriented approaches that of a single crystal with geometric symmetry.

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5,622,670

PROCESS FOR FABRICATING CROSSLINKED POLYETHYLENE TUBING ENDS

William Rowley, 35 Wilding Chase, Chagrin Falls, Ohio 44022

Continuation-in-part of Ser. No. 327,028, Oct. 21, 1994, Pat. No. 5,527,503, which is a continuation-in-part of Ser. No. 62,848, May 14, 1993, abandoned. This application Jan. 19, 1996, Ser. No. 588,713

Int. Cl.[6] **B29C** *35/08;57/04*

U.S. Cl. 264—494 **31 Claims**

1. A process for forming a unitary molded tubular connector having at least one integrally molded end cap with a first internal diameter at one end of the connector, a tubular segment having a first internal diameter equal to that of the end cap and a first outer diameter and a thickness as measured as the difference between the first internal diameter and the first outer diameter, the tubular segment originating from the end cap, the connector being formed from a uniform thickness hollow cylindrical tube of the same thickness as the tubular segment, comprising the steps, without regard to order of steps (a) and (b):

(a) molding an end cap comprising the steps in the following order of:

(i) inserting a first end of the tubular connector through a female end cap die, the die surrounding the first outer diameter of the tubing connector and having a cylindrical projection adapted to cooperate with a recess of a male end cap die;

(ii) holding the tubular connector from the female end cap die with the end cap to be formed projecting from the female end cap die, the female and male end cap dies being separated;

(iii) heating the portion of the tubular connector projecting from the female end cap die sufficiently to make such projecting portion pliable enough to form; and

(iv) forming the heated portion of the tubular connector into an end cap by the cooperation of the cylindrical projection of the female end cap die and recess of the male end cap die by closing the female and male end cap dies, the end cap further comprising:

an end face, a sealing means and a flange having a shoulder and further having a centrally disposed aperture therethrough; and

(b) crosslinking the tube with a crosslinking agent.

5,622,671

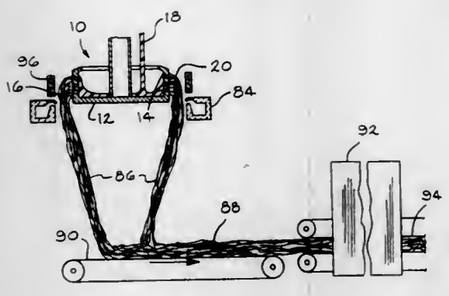
HOLLOW POLYMER FIBERS USING ROTARY PROCESS

Michael T. Pellegrin; James E. Loftus, both of Newark; Randall M. Haines, Frazeysburg; Virgil G. Morris; Patrick L. Ault, both of Newark, and Larry J. Huey, Granville, all of Ohio, assignors to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.

Filed Dec. 12, 1995, Ser. No. 570,954

Int. Cl.[6] **D01D** *5/18;5/24*

U.S. Cl. 264—563 **18 Claims**



1. A method for producing hollow polymer fibers comprising:

supplying molten polymer to a rotating polymer spinner having a peripheral wall;

centrifuging the molten polymer through a first tube extending through the peripheral wall of the spinner to form fibers;

introducing gas into the interior of the molten polymer to form hollow polymer fibers; and

collecting the hollow polymer fibers.

5,622,672

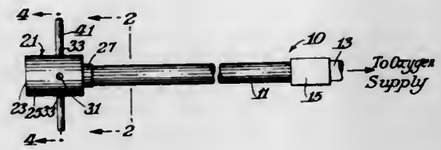
IGNITION OF THERMAL LANCE AND MEANS AND METHOD FOR USE THEREWITH AND THEREFOR

Robert H. Swick, Wilmington, Del.; Russell H. C. Howe-Smith, Wayne, Pa.; David P. Dillard, New Castle, Del., and L. Stephen Bowers, Wettown, Pa., assignors to Alloy Surfaces Co., Del.

Filed Mar. 24, 1995, Ser. No. 410,070

Int. Cl.[6] **B23K** *7/00*

U.S. Cl. 266—48 **20 Claims**



1. A thermal lance/igniter combination which is substantially self-contained, comprising:

an elongated, hollow metallic thermal lance defining an elongated interior space and having an oxygen-receiving end and an ignition end, the ignition end being moveable and removably attached to a substantially self-contained ignition device, said oxygen-receiving end including a means for introducing pressurized, substantially pure oxygen into said elongated space, said substantially self-contained ignition device comprising:

an igniter housing provided at one end with an opening, for receiving the ignition end of the lance and for permitting movement of said ignition end into the interior of the igniter housing, said ignition end being inserted in said opening, the opposite end of said housing being a free end,

a removable barrier inserted in an opening in the igniter housing and in spaced relation to said free end of the housing,

a sealed container disposed within the interior of the housing and extending from the barrier to at least as far as said free end of the housing and having an open side facing the elongated space defined by the lance, said container containing a pyrophoric composition, said open side being air-tightly sealed by an air-impermeable sealing membrane for protecting the pyrophoric composition from contact with the atmosphere,

said ignition end being prevented from contacting said sealing membrane by the barrier but being arranged to actuate penetration of said sealing member upon removal of said barrier and upon moving said ignition end further into the interior of said housing,

said pyrophoric composition being ignited, after removal of said barrier, by movement of said ignition end further into the interior of said housing and by penetration of the sealing membrane and flow-through of substantially pure oxygen via said elongated space into the interior of said housing.

5,622,673

GAS PURGING MEANS FOR WALL-SIDE INSTALLATION IN METALLURGICAL MELTING VESSELS

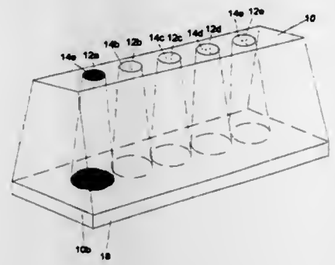
Alfred Relterer, Lorenzen, and Günther Nemecz, Leoben, both of Austria, assignors to Veitsch-Radex Aktiengesellschaft fur Feuerfeste Frzeugnisse, Wien, Germany

Filed Mar. 16, 1995, Ser. No. 405,341

Claims priority, application Germany, Mar. 25, 1994, 44 10 289.5

Int. Cl.[6] **C21C** *5/48*

U.S. Cl. 266—220 **12 Claims**



1. Gas purging means for wall-side installation in a metallurgical melting vessel, comprising

1.1. a gas purging brick assembly including one basic body (**10**) made of a refractory ceramic material, and

1.2. a combination of at least two gas purging different inserts (**14***a–e*), which are arranged at spaced locations above each other in the one basic body (**10**) and possess at least one of the following features:

1.2.1. the same structural design, but a different cross-section area at the gas outlet-side end,

1.2.2. a different structural design,

1.2.3. connected to gas feed lines which feed different amounts of gas or gas under different pressures or a combination of different amounts of gas and gas under different pressures to the gas purging inserts (**14***a–e*).

5,622,674

TOOL STEEL COMPOSITIONS AND METHOD OF MAKING

Jean Bourrat, St. Georges De Mons, France, assignor to Aubert et Duval SA, France

PCT No. PCT/FR93/00979, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/09170, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 5, 1993, Ser. No. 411,836

Claims priority, application France, Oct. 9, 1992, 92 12007

Int. Cl.[6] **C22C** *38/12;* **C21D** *6/00*

U.S. Cl. 420—109 **6 Claims**

1. A tool steel composition consisting essentially of, expressed by weight:

4.5% to 5.8% Cr;

0.75% to 1.75% Mo;

0.25% to 0.50% V;

not more than 0.35% Si;

0.34% to 0.36% C;

not more than 0.8% Mn;

not more than 1.5% W;

not more than 0.5% Ni;

the balance being constituted by Fe, and inevitable impurities;

the concentrations in said composition of the impurities P, Sb, Sn, and As, satisfying the following relationships:

P≦0.008%;

Sb≦0.002%;

Sn≦0.003%;

As≦0.005%;

with the value expressed by the Bruscato relationship $B=(10P+5Sb+4Sn+As)\times10_{-2}$ being no greater than 0.10%.

5,622,675

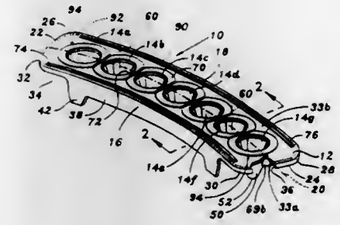
SAMPLE SEGMENT

Ronald C. Glenday, Fullerton; David L. Goodale, Yorba Linda, and Steven D. Mack, Mira Loma, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 71,831, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 48,716, Apr. 16, 1993, abandoned. This application Jun. 13, 1995, Ser. No. 489,793

Int. Cl.[6] **B01L** *3/00*

U.S. Cl. 422—102 **42 Claims**



41. A reagent segment useful with an automated analyzer having transport means comprising an arm, at least two bores and vacuum means for controllably applying a vacuum to the bores, the reagent segment comprising:

a curved body having an upwardly facing surface and a downwardly facing surface;

a plurality of wells integrally formed as inseparable components of the body, each of the wells having an opening in an upwardly facing surface of the body, interior tapered walls, and a rounded bottom, at least two of the wells being transport wells and having an interior axial dimension defined by exterior surface walls and including exterior annular flat surfaces formed around the exterior walls of said transport wells, the flat surfaces facing downwardly in a direction parallel to said axial dimension and being disposed substantially midway along the interior axial dimension, wherein the exterior surface walls of the transport wells include exterior rounded ends and the exterior surface walls of the transport wells between the flat surface and the ends of the wells are reduced and tapered relative to the exterior surface walls between the opening of the wells and the flat surfaces, wherein the reagent segment can be directly engaged by the transport means by each bore receiving one of said exterior flat surfaces with the corresponding flat surface being directly engaged by the transport means;

a reagent disposed in selected ones of the wells;

a free mixing element disposed in at least one of wells in which the reagent is disposed;

a plurality of raised annular bosses formed around the openings of the wells in the upwardly facing surface;

raised arcuate portions proximate edges of the upwardly facing surface; and

a cover affixed to the upwardly facing surface and sealed to the raised annular bosses.

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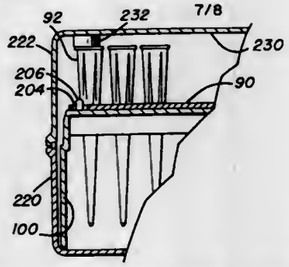
PIPETTE TIP RACK

Peter M. Lind, Yountville, Calif., assignor to LABCON, North America, San Rafael, Calif.

Continuation of Ser. No. 377,161, Jan. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 253,977, Jun. 3, 1994, Pat. No. 5,470,538. This application Mar. 20, 1996, Ser. No. 619,121

Int. Cl.[6] B01L *3/02*; **B65D** *85/00*

U.S. Cl. 422—104 **5 Claims**



1. A pipette holding assembly for holding a plurality of pipette tips, comprising:

a rack having four side walls, each side wall having an upper end and an upper surface member affixed to the upper end of each of the side walls, the upper surface member defining a plurality of holes in a regular pattern and formed to receive and hold conically-shaped pipette tips, said upper surface member further including at least two upstanding bosses, one boss positioned adjacent one end of said upper surface member and the other boss positioned at a point remote from said first boss;

further wherein said rack has a length l and a width w;

a flat, said flat having substantially the same shape as the upper surface member, said flat defining a plurality of holes each formed to receive and hold a conically-shaped pipette tip substantially in the same regular pattern as said upper surface member holes so that when said flat is positioned atop said upper surface member, at least some of said holes in said flat will register with at least some of said holes in said upper surface member, said flat also defining at least two register holes positioned in said flat in substantially the same relative location on said flat as said two upstanding bosses on said upper surface member so that when said flat is placed on said upper surface member and said two upstanding bosses pass through said at least two register holes, said holes in said flat register with said holes in said upper surface member; and,

a box having a hinged cover, said hinged cover having a flat top, said box having an inside length greater than l and an inside width greater than w, said box having in an inside height with said hinged cover in a closed position greater than the height of said rack with said flat atop said rack and with a pipette tip held in said rack and flat,

said flat top of said hinged cover defining at least two lugs formed on the inside of said flat top with said hinged cover and extending downwardly so that each of said lugs would come in contact of at least one pipette tip held in said flat and rack while said cover is closed, whereby said holes in said flat remain in register with said holes in said upper member.

5,622,677

VENTURI RISER REACTOR AND PROCESS FOR CATALYTIC CRACKING

George A. Hadjigeorge, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 28, 1991, Ser. No. 783,592

Int. Cl.[6] F27B *15/08*

U.S. Cl. 422—144 **22 Claims**

1. A riser reactor which comprises:

a plurality of substantially vertically oriented venturis connected in series wherein the first venturi is connected to a cylindrical supply pipe and the last venturi is connected to a cylindrical discharge pipe, the venturis comprising an upstream section comprising:

(1) a cylindrical inlet substantially equaling the diameter, D_1, of the supply pipe; connected to

(2) a contracting portion having the configuration of a frustum of a cone, having a vertex angle of greater than about 0 to about 30 degrees; connected to

(3) a cylindrical throat having a diameter, D_2, equal to about ¼ to ½ of the supply pipe diameter, D_1, the length of the throat being about 0 or greater than 0; the throat being connected with

(4) a downstream section having the configuration of a frustum of a cone diverging from the throat diameter to that of the discharge pipe at an angle of about or less than 30 degrees and greater than 0; and wherein the junctions connecting the inlets, throats, or outlets are formed by gradually curving surfaces.

5,622,678

HIGH PRESSURE GENERATING APPARATUS

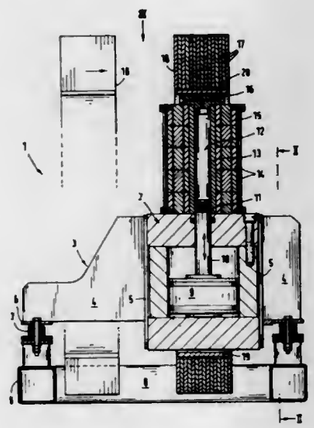
Josef Hiltawsky, Schwerte; Jörg-Peter Körner; Heribert Dierkes, both of Hagen, and Hans-Ottomar Kurtz, Dortmund, all of Germany, assignors to Uhde GmbH, Dortmund, Germany

Filed May 24, 1995, Ser. No. 448,936

Claims priority, application Germany, Jun. 17, 1994, 44 21 341.7

Int. Cl.[6] A61L *2/00*; **A23L** *3/015*

U.S. Cl. 422—295 **5 Claims**



1. An apparatus for generating pressure, comprising:

a first chamber having a first diameter;

a second chamber located beneath the first chamber in a direction of action of gravity forces and having a second diameter substantially larger than the first diameter;

a tandem piston for generating pressure in the first and second chambers and having a first portion displaceable in the first chamber and a second substantially larger portion displaceable in the second chamber, the first portion providing an operating pressure in the first chamber;

a cover for closing the first chamber; and

a displaceable yoke embracing the first chamber and the second chamber and engaging the cover of the first chamber and a bottom of the second chamber, the yoke applying a pressure fore to the cover of the first chamber and the bottom of the second chamber upon built-up of the operating pressure.

5,622,679

EXTRACTION OF RARE EARTH ELEMENTS USING ALKYL PHOSPHINIC ACID OR SALT/ TETRAALKYLAMMONIUM SALT AS EXTRACTANT

Chengye Yuan, Shanghai, China, and Hengli Ma, Tucson, Ariz., assignors to Cytec Technology Corp., Wilmington, Del.

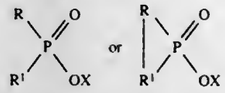
Filed Dec. 13, 1995, Ser. No. 571,504

Int. Cl.[6] C01F *17/00*

U.S. Cl. 423—21.5 **10 Claims**

1. A method of recovering a rare earth element from acidic solution which comprises 1) contacting said solution with an extractant comprising a mixture of:

a) a compound having the formula



wherein R and R^1 are individually, a substituted or unsubstituted, branched or straight chain alkyl group of from 4 to 12 carbon atoms, inclusive, and X is hydrogen or a salt-forming radical and

b) a tetraalkylammonium salt wherein the alkyl groups are the same or different and the total number of carbon atoms in the four alkyl groups ranges from 14 to 56 and 2) recovering the extracted rare earth element.

5,622,680

POST-COMBUSTION CATALYSTS

Laureoce Monceaux, Cholsy-au-Bac; Pierre Courtine, Complegne; Hua Xian, Compiegne, and Wuryaningsih Sri Rahayu, Compiegne, all of France, assignors to Specialites et Techniques en Traitement de Surfaces-STTS, Fleury, France

Continuation of Ser. No. 188,744, Jan. 31, 1994, abandoned, which is a continuation of Ser. No. 965,280, Jan. 25, 1993, abandoned. This application May 10, 1995, Ser. No. 438,873

Claims priority, application France, Jul. 25, 1990, 90 09502

Int. Cl.[6] B01J *8/02*

U.S. Cl. 423—213.5 **8 Claims**

1. A method for treating exhaust gases containing soot from diesel engines to substantially eliminate the soot, comprising contacting the exhaust gases with a catalyst including a perovskite active phase having the formula:

$$La_{0.8}Sr_{0.2}Mn_yM'_z\phi_{1-y-z}O_3$$

in which

M' represents at least one metal selected from the group consisting of Pt, Ru, Pd and Rh;

ϕ represents a cation lacuna; and

$0.85<y\leqq 1$, $0\leqq z<0.08$, and $0.85<y+z\leqq 1$.

5,622,681

DIALYSIS SEPARATION OF HEAT STABLE ORGANIC AMINE SALTS IN AN ACID GAS ABSORPTION PROCESS

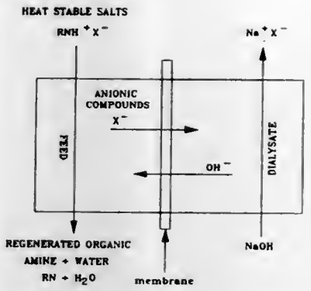
Jeffrey G. Grierson, Angleton, and Kirby T. Rapstein, West Columbia, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 167,252, Dec. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 823,276, Jan. 21, 1992, abandoned. This application Aug. 9, 1995, Ser. No. 513,165

Int. Cl.[6] B01D *61/24*;*53/50*;*53/52*;*53/62*

U.S. Cl. 423—228 **21 Claims**

1. A method using Donnan exclusion principles wherein an ion exchange occurs across a membrane occurs for converting heat stable organic amine salts to a thermally regenerable amine absorbent for acid gases, comprising the steps of:



(a) feeding an organic amine absorbent solution containing greater than 0.5 percent by weight of heat stable organic amine salts into a first compartment of a dialysis cell whereby said organic amine salts ionize to form heat stable salt anions and organic amine portions, wherein said organic absorbent solution in said first compartment is separated from an aqueous base dialyzing solution in a second compartment of the dialysis cell by a membrane;

(b) inducing an exchange of heat stable salt anions in said first compartment for hydroxyl anions in said second compartment by maintaining an effective hydroxide concentration differential between said compartments to regenerate free amine in said first compartment without the use of electrical potential to drive the ion exchange; and

(c) withdrawing absorbent solution from said first compartment having a reduced heat stable organic amine salt concentration and an enhanced free amine concentration.

5,622,682

METHOD FOR CONCENTRATION AND RECOVERY OF HALOCARBONS FROM EFFLUENT GAS STREAMS

Glenn M. Tom, New Milford, Conn., assignor to ATMI EcoSys Corporation, San Jose, Calif.

Continuation of Ser. No. 224,292, Apr. 6, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 395,162

Int. Cl.[6] C01B *7/00*

U.S. Cl. 423—230 **16 Claims**

13. A process for recovery of halocarbon from a process effluent gas stream containing (a) said halocarbon in an amount of from about 0.1% to 5% by weight, based on the total weight of the process effluent gas stream, said halocarbon being selected from the group consisting of perfluorocarbons, fluorinated hydrocarbons, chlorofluorocarbons, sulfur hexafluoride, and mixtures thereof, and (b) acid gas component(s), said process comprising the steps of:

contacting the process effluent gas stream containing said halocarbon with a scavenger composition to remove said acid gas component(s) from the process effluent gas stream, thereby yielding a first effluent gas mixture containing said halocarbon;

contacting the first effluent gas mixture with an adsorbent for the halocarbon component of the first effluent gas mixture, to adsorb said halocarbon component on the adsorbent; and

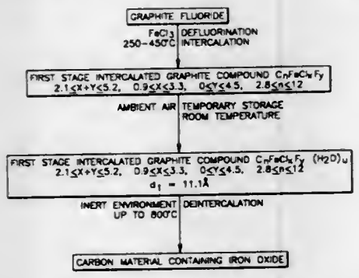
recovering the adsorbed halocarbon by desorbing same from the adsorbent, wherein the steps of contacting the first effluent gas mixture with an adsorbent for the halocarbon component of the first effluent gas mixture, to adsorb said halocarbon component on the adsorbent, and recovering the adsorbed halocarbon by desorbing same from the adsorbent, comprise pressure swing adsorption/desorption.

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5,622,683
CHEMICALLY MODIFIED CARBONACEOUS MATERIALS MADE BY THE DEFLUORINATION OF GRAPHITE FLUORIDE AND PROCESS THEREFOR

Ching-Cheh Hung, 24667 Meadow La., Westlake, Ohio 44145

Filed Jun. 13, 1994, Ser. No. 258,961
Int. Cl.[6] C01B 31/00
U.S. Cl. 423—414 10 Claims

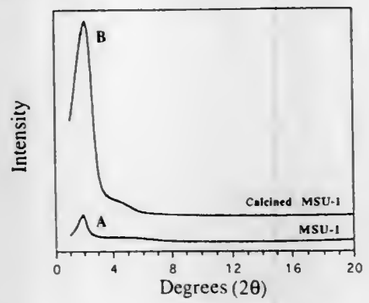


9. A chemically modified carbon-based material having a layered hexagonal structure and characterized by exhibiting pairs of carbon atoms composed of one atom in each of two adjacent layers that are directly bonded to a carbon atom lying between said adjacent layers.

5,622,684
POROUS INORGANIC OXIDE MATERIALS PREPARED BY NON-IONIC SURFACTANT TEMPLATING ROUTE

Thomas J. Pinnavaia, East Lansing, Mich., and Stephen A. Bagshaw, Kaikohe, New Zealand, assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Jun. 6, 1995, Ser. No. 465,770
Int. Cl.[6] C01B 39/04
U.S. Cl. 423—702 51 Claims

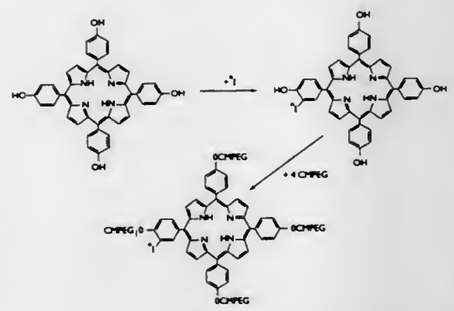


1. A synthetic, semi-crystalline inorganic metal oxide composition having at least one resolved x-ray reflection corresponding to a lattice spacing of 3 to 10 nm, a framework wall thickness of at least about 2 nm, framework confined pores between about 2 and 10 nm, an elementary particle size greater than 500 nm, and a specific surface area of 300 to 1200 square meters per gram.

5,622,685
POLYETHER-SUBSTITUTED PORPHYRIN ANTI-TUMOR AGENTS

Hans J. Sinn, Wiesloch; Hans-Hermann Schrenk, Zeiskam; Wolfgang Maier-Borst, Dossenheim; Eckhard Friedrich, Ilbesheim; Georgi Graschew, Wiesloch; Dieter Wohrle, Bremen, and Thomas Klenner, Hirschberg, all of Germany, assignors to Deutches Krebsforchunszentrum Stiftung des Offentlichen Rechts, Germany

Continuation of Ser. No. 828,818, Mar. 30, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,765
Claims priority, application Germany, May 30, 1990, 40 17 439.5
Int. Cl.[6] A61K 51/02; C07D 487/22
U.S. Cl. 424—1.65 14 Claims



1. A tumor-active or tumor-diagnostic substance which exhibits preferred accumulation in the tumor, which comprises a substance substituted with polyethylene glycol chains, said substance selected from the group consisting of a porphin, a phthalocyanine and a naphthalocyanine and having (1) at least two groups selected from aromatic amino or phenolic hydroxyl groups or both, or (2) at least one aromatic amino or phenolic hydroxyl group or both, and at least one aliphatic amino group, said groups of (1) or (2) being substituted with polyethylene glycol chains whose polymerization degree n is 5 to 250 and whose terminal hydroxyl group is esterified or etherified with a C_1–C_{12} alkyl, wherein the number of said polyethylene glycol chains attached to said substance is at least 3.

5,622,686
DIAGNOSIS AND TREATMENT OF VIRAL EFFECTS USING MAGNETIC METAL TRANSFERRIN PARTICLES

David Gordon, deceased, late of Skokie, Ill.; by Eunice Gordon, legal representative, and Robert T. Gordon, both of 4936 West Estes, Skokie, Ill. 60077

Division of Ser. No. 195,070, Feb. 14, 1994, which is a continuation of Ser. No. 38,037, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 792,474, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 285,979, Dec. 19, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 472,721
Int. Cl.[6] A61B 5/055
U.S. Cl. 424—9.32 10 Claims

1. An in vitro method of diagnosing HIV viral disease or an HIV viral infection in a cell of or from a living host comprising:

introducing in vitro into a locus of said virus or cells, particles localizable near, in or on the virus or viral-infected cells, such particles being capable of responding to a magnetic field and being of a size less than 1 micron, whereby the particles are selectively located near, into or on the virus and/or viral-infected cells, wherein said particles are magnetic metal transferrin particles, and

measuring a magnetic property of the particles.

5,622,687
CALIXARENE CONJUGATES USEFUL AS MRI AND CT DIAGNOSTIC IMAGING AGENTS

Ashwin M. Krishnan, San Diego, and Rolf Lohrmann, La Jolla, both of Calif., assignors to Molecular Biosystems, Inc., San Diego, Calif.

Filed Nov. 15, 1994, Ser. No. 340,206
Int. Cl.[6] A61B 5/055
U.S. Cl. 424—9.33 17 Claims

1. A calixarene conjugate comprising:

(a) a calixarene backbone; and

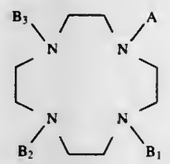
(b) at least one MAGNETIC RESONANCE imaging moiety linked thereto.

5,622,688
MACROCYCLIC CHELANTS, THEIR CHELATES AND USES THEREOF IN THE DIAGNOSTIC FIELD

Fulvio Uggeri; Pier L. Anelli; Giuseppe Manfredi; Marino Brocchetta, and Franco Fedeli, all of Milan, Italy, assignors to Dibra S.p.A., Milan, Italy

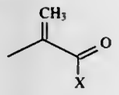
Filed May 24, 1995, Ser. No. 448,742
Claims priority, application Italy, Jul. 29, 1994, M194A1646
Int. Cl.[6] A61K 49/04; 47/22
U.S. Cl. 424—9.363 10 Claims

1. A compound of formula (I)


(I)

wherein

A is a group o formula



wherein

X is a —O—R group wherein R is hydrogen or a linear or branched (C_1–C_5) alkyl group which is unsubstituted or substituted by at least 1–6 hydroxy or an alkoxy group, or both 1–6 hydroxy and an alkoxy group, or X is a $—NR_2R_3$ group wherein R_2 and R_3 are the same or different and are a hydrogen atom, a linear or branched (C_1–C_{10}) alkyl group which is unsubstituted or substituted by at least one 1–6 hydroxy and alkoxy group, or a polyoxaalkyl group comprising 1–10 oxygen atoms and 3–30 carbon atoms, or $—NR_2R_3$ group is a heterocyclic residue wherein R_2 and R_3, taken together, form a (C_4–C_5) chain which is non-interrupted or is interrupted by O, N, S, >N—CH_3, and is unsubstituted or substituted by at least one hydroxy or hydroxyalkyl group,

B_1, B_2, B_3 are the same or different and have the same meaning as A, or are a —CHYCOX group, wherein Y is a $—CH_2OR_1$ group, wherein R_1 is hydrogen or a linear or branched (C_1–C_5) alkyl group which is unsubstituted or substituted by at least one 1–6 hydroxy and alkoxy group, or R_1 is a phenyl or benzyl residue which is mono or polysubstituted on the aromatic ring by halogen, hydroxy, alkoxy, carboxy, carbamoyl, alkoxycarbonyl, (C_1–C_5) alkyl, (C_1–C_5) hydroxyalkyl, amino, acylamino groups, or Y is a R_1 residue as defined above,

and a chelate of said compound of formula (I) with the metal ions having atomic number selected between 20 and 31, 39, 42, 43, 44, 49, or between 57 and 83, and a salt thereof with a physiologically acceptable organic base selected from primary, secondary, tertiary amines or basic amino acids, or with an inorganic base whose cations are sodium, potassium, magnesium, calcium or their mixtures, or with the anion of a physiologically acceptable organic acid, selected from acetate, succinate, citrate, fumarate, maleate, oxalate, or with the anion of an inorganic acid selected from the group consisting of chlorides, bromides and iodides.

5,622,689
ORAL COMPOSITIONS

Michael F. Lukacovic, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 242,491, May 13, 1994, Pat. No. 5,560,905. This application Jun. 7, 1995, Ser. No. 485,224
Int. Cl.[6] A61K 7/16; 7/18; 7/28
U.S. Cl. 424—52 11 Claims

1. An oral composition providing improved oral cleansing with reduced desquamation comprising:

a. from about 0.1% to about 2.5% of an isethionate surfactant;

b. from about 0.1% to about 2.5% of tartaric acid and pharmaceutically-acceptable salts thereof;

c. an amphoteric betaine surfactant selected from the group consisting of decylbetaine, cocobetaine, myristylbetaine, palmitylbetaine, laurylbetaine, cetylbetaine, stearylbetaine, cocobetaine/cocamine oxide, cocamidoethyl betaine, cocoamidopropyl betaine, cocoamidopropyl hydroxysultaine, lauramidopropyl betaine, rincinoleicamidobetaine and mixtures thereof;

d. an enzyme selected from the group consisting of endoglycosidase, papain, dextranase, mutanase, and mixtures thereof; and

e. a fluoride ion source selected from the group consisting of sodium fluoride, stannous fluoride, sodium monofluorophosphate, potassium fluoride and mixtures thereof;

wherein the level of a. and b. does not exceed 4.0% by weight of the total composition and further wherein said composition is substantially free of copper, iron, and zinc ions.

5,622,690
SEED-DERIVED PROTEINACEOUS COMPOSITIONS FOR REDUCTION OF SUNBURN CELL FORMATION

Richard Potter, Seeley Lake, Mont., and Peter T. Pugliese, Bernville, Pa., assignors to Nurture, Inc., Missoula, Mont.

Continuation-in-part of Ser. No. 31,611, Mar. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 505,126, Apr. 5, 1990. This application Oct. 29, 1993, Ser. No. 145,328
Int. Cl.[6] A61K 7/42
U.S. Cl. 424—59 8 Claims

1. A method for reducing the formation of sunburn cells in mammalian skin, comprising applying a topical formulation comprising an amount of a free flowing seed derived material having a protein content of between about 1% to 50% and an average particle size of from about 1.0 μm to 600 μm to skin prior to exposing the skin to ultraviolet radiation.

5,622,691
PREPARING PULVERULENT HAIR BLEACH OF PEROXYGEN OXIDIZER AND POLYOXYETHYLENE/POLYOXYPROPYLENE COPOLYMER

Caroline Tricaud, Cormeilles En Parisis; Jean-Marie Millequant, Saint-Maur, and Henri Sebag, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 361,659, Dec. 22, 1994, abandoned. This application Aug. 30, 1996, Ser. No. 706,362
Claims priority, application France, Jan. 14, 1994, 94 00366
Int. Cl.[6] A61K 7/07; 7/135
U.S. Cl. 424—62 11 Claims

1. A cosmetic composition for bleaching hair, consisting essentially of at least one oxidizing agent selected from peroxygen

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compounds and from 5 to 27% by weight relative to the total weight of said composition of at least one block and/or random linear polyoxyethylene/polyoxypropylene copolymer, said copolymer being anhydrous and, at room temperature, further being both liquid and soluble in water, and said composition being pulverulent and anhydrous.

5,622,692

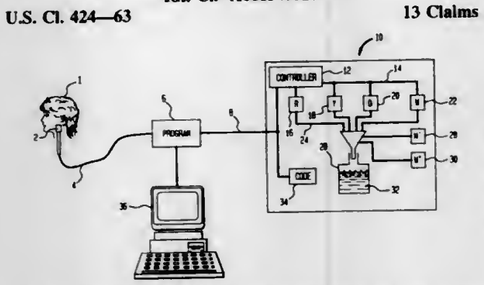
METHOD AND APPARATUS FOR CUSTOMIZING FACIAL FOUNDATION PRODUCTS

Richard T. Rigg, Springfield Gardens, N.Y.; John R. Castro, Stamford; Pamela A. Petro, Shelton, both of Conn., and John A. Szweda, River Vale, N.J., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 110,274, Aug. 23, 1993. This application Apr. 3, 1995, Ser. No. 416,585

Int. Cl.[6] A61K *7/021*

U.S. Cl. 424—63 **13 Claims**



1. A method for customizing a facial foundation at point of sale to a customer comprising:

(i) obtaining a reading of a customer's natural skin coloration by applying a means for measuring coloration in proximity to the skin;

(ii) transmitting the reading to a programmable means for selecting an optimal facial foundation formula;

(iii) transferring the selected optimal facial foundation formula as operating instructions to a formulation machine for automatically preparing the formula;

(iv) dosing together within the formulation machine at least four cosmetic chemical compositions each of which are contained in a separate dispenser, the chemical compositions being respectively a red, yellow, black and white monochromatic composition, the plurality of compositions being chosen in accordance with information provided by the selected optimal facial foundation formula; and

(v) delivering into a container the dosed formula to the customer as a facial foundation product.

5,622,693

SOLID COSMETIC COMPOSITION

Shinichiro Funatsu, Yokohama, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan

Continuation of Ser. No. 220,473, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 559,005, Jul. 27, 1990, abandoned. This application Apr. 28, 1995, Ser. No. 431,384

Claims priority, application Japan, Aug. 7, 1989, 1-204488

Int. Cl.[6] A61K *1/00*

U.S. Cl. 424—69 **5 Claims**

1. A solid cosmetic composition consisting essentially of a freeze-dried product of an aqueous solution containing (i) at least one water-soluble polyethylene glycol having a molecular weight of 9,000 to 20,000 and (ii) as a thickener or a humectant at least one water-soluble polymer selected from the group consisting of vegetable natural polymers, microorganism natural polymers, polymers derived from animals, starch polymers, cellulose polymers, alginic acid polymers, polyvinyl polymers, acrylic polymers, polyethyleneimines, mucopolysaccharides and inorganic clay minerals, said solid cosmetic composition being capable of use after being dissolved in a solvent, the content of the water-soluble polyethylene glycol and of the water-soluble polymer in the freeze-dried product being respectively 10 to 99% by weight and 90 to 1% by weight based upon the total weight of the freeze-dried product.

5,622,694

SILICONE GRAFTED THERMOPLASTIC ELASTOMERIC COPOLYMERS AND HAIR AND SKIN CARE COMPOSITIONS CONTAINING THE SAME

Peter M. Torgerson, Washington Court House, and Sanjeev Midha, Blue Ash, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 259,069, Jun. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 257,961, Jun. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 236,881, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 110,592, Aug. 27, 1993, abandoned. This application May 15, 1995, Ser. No. 440,867

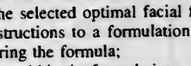
Int. Cl.[6] C02F *226/06*; A61K *31/785*; *7/075*

U.S. Cl. 424—70.122 **20 Claims**

1. A water or alcohol soluble or dispersible thermoplastic elastomeric copolymer having a backbone and two or more hydrophilic polymeric side chains and one or more polysiloxane side chains, said copolymer formed from the copolymerization of randomly repeating A, B, and C units wherein said copolymer comprises:

(i) from about 20% to about 89.9% by weight of said A units, wherein said A units are monomer units that are copolymerizable with said B and C units;

(ii) from about 10% to about 60% by weight of said B units, wherein said B units are hydrophilic nitrogen containing macromonomer units having a polymeric portion and a moiety that is copolymerizable with said A and C units, wherein said B macromonomer units are selected from nitrogen containing macromonomers represented by the following structure



wherein R^{12} is selected from the group consisting of hydrogen, C_1–C_6 straight or branched chain alkyl, benzyl, and mixtures thereof, m is an integer from about 10 to about 2000; E is an ethylenically unsaturated moiety, copolymerizable with A and C, selected from the group consisting of vinyl, allyl, acryloyl, methacryloyl, ethacryloyl, styryl, 2-vinyl benzyl, 3-vinyl benzyl, 4-vinyl benzyl, 2-vinylbenzoyl, 3-vinylbenzoyl, 4-vinylbenzoyl, 1-butenyl, isobutenyl, isoprenyl, cyclopentenyl, cyclohexenyl, and mixtures thereof; and P is selected from the group consisting of 2-pyridyl, 3-pyridyl, 4-pyridyl, [4-dimethylaminomethyl benzene, 4-aminomethyl benzene, 4-dimethylaminoethyl benzene, 4-aminoethyl benzene,] and pharmaceutically acceptable salts and C1–C_4 alkyl quaternized derivatives thereof, and mixtures thereof; and

(iii) from about 0.1% to about 20% by weight of said C units, wherein said C units are polysiloxane macromonomer units having a polymeric portion and a moiety that is copolymerizable with said A and B units, wherein said A units, in conjunction with said copolymerizable moieties of said B units and said C units, form said backbone; wherein said polymeric portion of said B units forms said hydrophilic side chains; wherein said polymeric portion of said C units forms said polysiloxane side chains; wherein said copolymer has a weight average molecular weight greater than about 10,000, and wherein said copolymer exhibits at least two distinct T_g values, said first T_g corresponding to said backbone and having a value less than about 0° C., and said second T_g corresponding to said hydrophilic polymeric side chains and having a value greater than about 25° C.

5,622,695

ANATOMICAL AND BIOLOGICAL PRESERVATIVE AND METHOD

James W. Campbell, and John L. Margrave, both of Houston, Tex., assignors to EFH, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 161,893, Dec. 3, 1993, Pat. No. 5,405,606. This application Sep. 15, 1994, Ser. No. 306,696

Int. Cl.[6] A01N *1/00*

U.S. Cl. 424—75 **12 Claims**

1. An anatomical and biological preservative fluid comprising glutaraldehyde in the amount of about 0.5% to about 3.5% by volume of the fluid;

phenoxyethanol in the amount of about 1% to about 3% by volume of the fluid;

alcohol in the amount of about 27% to about 37% by volume of fluid;

at least one polyhydric alcohol in the amount of about 1% to about 9% by volume of the fluid; and water.

5,622,696

SAFE DIALDEHYDES USEFUL AS EMBALMING AGENTS

Gerald W. Camiener, 26700 Hurlingham Rd., Beachwood, Ohio 44122

Division of Ser. No. 149,820, Nov. 10, 1993, Pat. No. 5,429,797. This application Jul. 18, 1995, Ser. No. 503,483

Int. Cl.[6] A01N *1/00*

U.S. Cl. 424—75 **7 Claims**

1. A method of embalming a human, non-human animal, or plant body or organ which comprises treating said body or organ with an aqueous solution comprising from about 0.4% to about 40% (weight/volume) of a dialdehyde wherein the shortest backbone chain linking the two aldehydes is a chain of 2, 4, 6, or 8 atoms which are selected from the group consisting of carbon, oxygen, nitrogen, and sulfur.

5,622,697

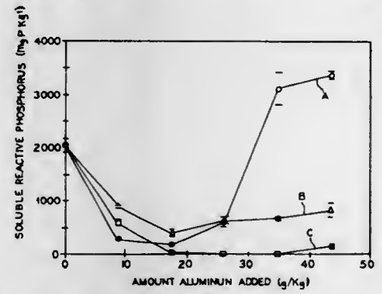
USE OF ALUM TO INHIBIT AMMONIA VOLATILIZATION AND TO DECREASE PHOSPHORUS SOLUBILITY IN POULTRY LITTER

Philip A. Moore, Jr., Fayetteville, Ark., assignor to The Board of Trustees of the University of Arkansas, Little Rock, Ark.

Division of Ser. No. 129,742, Sep. 30, 1993, abandoned. This application May 10, 1995, Ser. No. 437,991

Int. Cl.[6] A61L *9/01*

U.S. Cl. 424—76.6 **10 Claims**



1. A method for reducing phosphorus solubility in poultry litter, comprising the steps of:

providing a sample of a poultry litter composition comprising poultry manure, bedding, spilled food and feathers;

determining the amount of total phosphorus present in said sample;

adding a metal compound selected from the group consisting of aluminum compounds and calcium compounds to said sample in an amount sufficient to provide a mole ratio of metal to phosphorus of from about 0.5:1 to about 2.5:1; and

mixing the metal compound and sample.

5,622,698

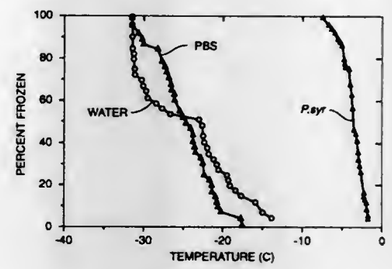
METHOD AND COMPOSITION FOR INCREASING THE SUPERCOOLING POINT IN INVERTEBRATES

Richard E. Lee, Jr., Hamilton, Ohio, assignor to Miami University, Oxford, Ohio

Continuation of Ser. No. 627,567, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 534,906, Jun. 8, 1990, abandoned. This application Jul. 6, 1995, Ser. No. 499,122

Int. Cl.[6] A01N *63/00*; C12N *1/20*

U.S. Cl. 424—93.4 **11 Claims**



1. A method of increasing the supercooling point in an insect thereby increasing its susceptibility to freezing at temperatures above its natural supercooling point, comprising:

treating said insect with an amount of an ice nucleating agent sufficient to increase the supercooling point of the insect above the natural supercooling point of the insect;

wherein said ice nucleating agent is a bacterium selected from the group consisting of *Pseudomonas syringae* and *Erwinia herbicola.*

5,622,699

METHOD OF IDENTIFYING MOLECULES THAT HOME TO A SELECTED ORGAN IN VIVO

Erkki Ruoslahti, Rancho Santa Fe, and Renata Pasqualini, Solana Beach, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Sep. 11, 1995, Ser. No. 526,710

Int. Cl.[6] A61K *49/00*; C12Q *1/68*; *1/70*

U.S. Cl. 424—93.6 **5 Claims**

1. A method of obtaining a molecule selected from the group consisting of a peptide, a polypeptide, a protein, and a fragment of a protein that homes to a selected organ or tissue, comprising the steps of:

a. administering to a subject a phage display library expressing diverse molecules;

b. collecting a sample of the selected organ or tissue; and

c. identifying a molecule that homes to said selected organ or tissue, wherein said molecule is expressed on a phage present in said sample.

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5,622,700

METHOD FOR TREATING A LFA-1-MEDIATED DISORDER

Paula M. Jardieu, Berkeley, and Bruce Montgomery, Redwood City, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 287,055, Aug. 8, 1994, which is a continuation of Ser. No. 128,329, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 933,269, Aug. 21, 1992, abandoned. This application May 2, 1995, Ser. No. 432,543

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—144.1 **37 Claims**

1. A method for treating psoriasis in a mammal without depleting T-lymphocytes in the mammal comprising administering to the mammal an initial dosing of a therapeutically effective amount of an anti-LFA-1 antibody or an anti-ICAM-1 antibody, followed by a subsequent intermittent dosing of a therapeutically effective amount of the antibody that is less than 100%, calculated on a daily basis, of the initial dosing of the abtibody, wherein the antibody is administered to the mammal not more than once per week during the subsequent dosing.

19. A method for prolonging survival of a transplanted graft in a mammalian host for greater than 200 days comprising administering to the mammalian host an initial dosing of a therapeutically effective amount of anti-LFA-1 antibody, followed by a subsequent intermittent dosing of a therapeutically effective amount of anti-LFA-1 antibody that is less than 100%, calculated on a daily basis, of the initial dosing of anti-LFA-1 antibody, wherein the subsequent intermittent dosing comprises administration of anti-LFA-1 antibody no more than once per week for at least about 10 weeks after the initial dosing is terminated, T lymphocytes are not depleted in the mammalian host, and the method results in specific immunosuppression.

5,622,701

CROSS-REACTING MONOCLONAL ANTIBODIES SPECIFIC FOR E- AND P-SELECTIN

Ellen L. Berg, Palo Alto, Calif., assignor to Protein Design Labs, Inc., Mountain View, Calif.

Filed Jun. 14, 1994, Ser. No. 259,963

Int. Cl.[6] A61K *39/395;* **C07K** *16/28;* **C12N** *5/12;15/13*

U.S. Cl. 424—153.1 **12 Claims**

1. A humanized monoclonal antibody having a binding site that specifically binds to P-selectin and to E-selectin comprising a humanized heavy chain and a humanized light chain:

(1) the humanized light chain comprising three complementarily determining regions (CDR1, CDR2 and CDR3) having amino acid sequences from the mouse antibody light chain and comprising a variable region framework sequence substantially identical to a human light chain variable region framework sequence; and

(2) the humanized heavy chain comprising three complementarily determining regions (CDR1, CDR2 and CDR3 having amino acid sequences from the mouse antibody heavy chain, and comprising a variable region framework sequence substantially identical to a human heavy chain variable region framework sequence;

wherein the humanized antibody specifically binds to the P-selectin with a binding affinity having a lower limit of 10^7 M^{-1};

wherein the humanized antibody specifically binds to the E-selectin with a binding affinity having a lower limit of 10^7 M^{-1};

and wherein the specific binding of the antibody to the P-selectin inhibits binding of the P-selectin to a counter-receptor of P-selectin; and

the specific binding of the antibody to the E-selectin inhibits binding of the E-selectin to a counter-receptor of E-selectin.

5,622,702

IMMUNOGENIC COMPOSITIONS AND METHODS FOR THE TREATMENT AND PREVENTION OF GASTRIC AND DUODENAL ULCER DISEASE

Philip C. Gevas, Honolulu, Hi.; Stephen L. Karr, Jr.; Stephen Grimes, both of Davis, Calif., and Richard L. Littenberg, Kai Lua, Hi., assignors to Aphton Corporation, Woodland, Calif.

Continuation of Ser. No. 679,212, Apr. 19, 1991, abandoned, which is a division of Ser. No. 301,353, Jan. 24, 1989, Pat. No. 5,023,077. This application Mar. 30, 1994, Ser. No. 219,773

Int. Cl.[6] C07K *5/00;* **A61K** *39/00;39/38;38/00*

U.S. Cl. 424—184.1 **4 Claims**

1. A pharmaceutical composition comprising an immunogen which induces a sufficient level of antibodies in an immunized animal to neutralize the physiological effect of the peptide hormone G_{17} in the immunized animal and a pharmaceutically acceptable vehicle, the immunogen comprising an immunogenic carrier conjugated to the carboxy terminus of a peptide consisting of an antigenic epitope cross-reactive with an epitope on the amino terminus of G_{17}, which immunogen induces antibodies in the immunized animal which react with an epitope on G_{17} which is present on the first six amino acid residues beginning from the amino terminus of G_{17} and do not cross-react with any other epitope on G_{17} or the peptide hormone G_{34} and prevent the binding of the immunized animal's own G_{17} to its physiologic receptors.

5,622,703

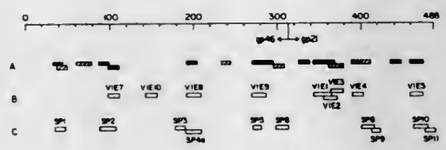
IMMUNODOMINANT SITES OF HTLV-I ENVELOPE PROTEIN

Jay A. Berzofsky, Bethesda, Md., and Akihiko Kurata, Nagasaki-ken, Japan, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 243,118, May 16, 1994, abandoned, which is a continuation of Ser. No. 401,411, Sep. 1, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,615

Int. Cl.[6] A61K *39/21*

U.S. Cl. 424—187.1 **7 Claims**



1. A method of priming a T-cell response in a subject by administration of a composition comprising a peptide having an amino acid sequence selected from the group consisting of SGKSLLHEVDKDISQLTQAIVK (SEQ. ID. NO.:11), DISQLTQAIVKNHKNLLK (SEQ. ID. NO.:12), VKNHKNLLKIAQYAAQN (SEQ. ID. NO.:13), EQGGLCKALQEQCRF (SEQ. ID. NO.:14), LAGPCILRQLRHLPSRVR (SEQ. ID. NO.:15), GGYYSASYSDPCSLK (SEQ. ID. NO.:16), TLPFNWTHCFDPQIQAIVS (SEQ. ID. NO.:18), FTQEVSRLNINLHFSK (SEQ. ID. NO.:19) and LPHSNLDHILEPSIPWKSK (SEQ. ID. NO.:17) and a pharmaceutically acceptable carrier.

5,622,704

ANXIOLYTIC

Rudiger Hacker, Herrsching, and Claudia Mattern, Starnberg, both of Germany, assignors to Arrowdean Limited, Dublin, Ireland

PCT No. PCT/EP94/01690, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/27625, PCT Pub. Date Dec. 8, 1994

PCT Filed May 24, 1994, Ser. No. 367,241

Claims priority, application Germany, May 28, 1993, 43 17 868.5

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **13 Claims**

1. A method for treating anxiety in a patient, said method comprising a step of:

administering to the patient a medicament including active substances of Rhizoma zingiberis and Ginkgo bilobae;

wherein the medicament is administered in an amount effective to result in anxiolytic activity.

5,622,705

ENCAPSIDATED RECOMBINANT POLIOVIRUS NUCLEIC ACID AND METHODS OF MAKING AND USING SAME

Casey D. Morrow, Birmingham, Ala., assignor to The UAB Research Foundation, Birmingham, Ala.

Division of Ser. No. 87,009, Jul. 1, 1993, abandoned. This application May 19, 1995, Ser. No. 444,882

Int. Cl.[6] C12P *21/02;* **C12N** *15/43;* **A61K** *39/13*

U.S. Cl. 424—199.1 **28 Claims**

1. A method for stimulating an immune response to an immunogenic protein or fragment thereof, in a subject, comprising administering to the subject an effective amount of a composition comprising

an encapsidated recombinant poliovirus nucleic acid, at least a portion or a capsid protein of which is encoded and expressed by an expression vector which lacks an infectious poliovirus genome, the encapsidated recombinant poliovirus nucleic acid having a foreign nucleotide sequence substituted for a poliovirus nucleotide sequence which encodes at least a portion of a protein necessary for encapsidating the recombinant poliovirus nucleic acid, the foreign nucleotide sequence encoding, in an expressible form, an immunogenic protein or fragment thereof; and

a physiologically acceptable carrier.

5,622,706

CLONING AND SEQUENCING OF THE GENE WHICH CODES FOR A NEW PILINIC SUBUNIT OF BORDELLA PERTUSSIS

Paola Pedroni, Milan; Barbara Riboli, Cremona; Francesca De Ferra, Milan; Guido Grandi, Milan; Salvatore Toma, Milan; Beatrice Arico , and Rino Rappuoli, both of Quercegrossa-Siena, all of Italy, assignors to Sclavo S.p.A., Siena, and Enitricerche S.p.A., Milan, both of Italy

Continuation of Ser. No. 177,201, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 947,375, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 680,895, Apr. 5, 1991, abandoned, which is a division of Ser. No. 288,169, Dec. 22, 1988, Pat. No. 5,059,537. This application Nov. 4, 1994, Ser. No. 334,425

Claims priority, application Italy, Dec. 22, 1987, 23150-A/87

Int. Cl.[6] A61K *39/02;39/10;* **C07K** *14/235;* **C12N** *15/00*

U.S. Cl. 424—253.1 **1 Claim**

1. An immunologically-active synthetic peptide comprising the amino acid sequence of mature STX depicted in FIGS. 1(*a*)–(*b*).

5,622,707

COMPOSITE MEMBRANES FOR THE GUIDED REGENERATION OF TISSUES

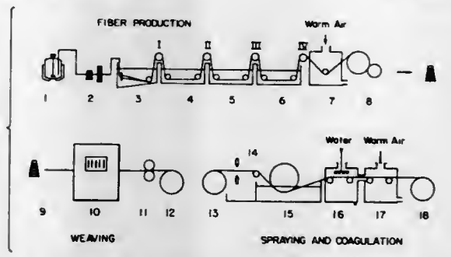
Franco Dorigatti, Lavis; Lanfranco Callegaro, Ponte di Brenta, and Aurelio Romeo, Rome, all of Italy, assignors to M.U.R.S.T. (Italian Ministry for Universities and Scientific and Technological Research), Rome, Italy

Filed Dec. 18, 1992, Ser. No. 992,697

Claims priority, application Italy, Dec. 18, 1991, PD91A0228

Int. Cl.[6] A61K *9/70;31/00*

U.S. Cl. 424—402 **27 Claims**



1. A composite membrane, comprising a reinforcing mesh embedded in and chemically linked to a polymeric matrix, wherein said mesh comprises fibers selected from the group consisting of fibers of a hyaluronic acid ester, and a combination of fibers of a hyaluronic acid ester and an alginic acid ester, and said polymeric matrix comprises a material selected from the group consisting of a hyaluronic acid ester, alginic acid, an alginic acid ester, and a gelled polysaccharide.

5,622,708

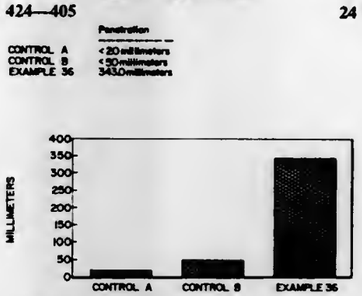
ERODIBLE SANITIZING CAULK

Francis L. Richter, Circle Pines; Duane J. Reinhardt, Maplewood, and Paula J. D. Carlson, Brooklyn Park, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 661,697, Feb. 27, 1991, abandoned, which is a division of Ser. No. 247,279, Sep. 21, 1988, Pat. No. 5,019,346. This application Mar. 9, 1993, Ser. No. 28,349

Int. Cl.[6] A01N *25/02*

U.S. Cl. 424—405 **24 Claims**



1. An erodible sanitizing caulk composition which controllably solubilizes when contacted with water to provide a solution with sanitizing antimicrobial efficacy, said composition further comprising:

(a) from about 5 wt-% to 60 wt-% of sanitizer, said sanitizer selected from the group consisting of an aldehyde compound, a carboxylic acid, a peracid compound, a peroxygen compound, an idophor complex, an interhalogen, a phenolic compound, a surface active agent, a quaternary ammonium salt, halogen releasing agent, and mixtures thereof; and

(b) from about 10 wt-% to 70 wt-% of hardener wherein said hardener controls the consistency of said caulk and the dissolution rate of caulk once subjected to an aqueous flow and

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said caulk has penetrometer softness ranging from about 150 mm to 400 mm, said caulk solubilizing at a rate to provide a solution having at least about 120 parts per million sanitizer when contacted with water.

5,622,709

CIMETIDINE-PHENOL PHARMACEUTICAL COMPOSITION

Margaret M. Szymczak, Cherry Hill, N.J., assignor to Smith-Kline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US94/00807, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO94/16695, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 21, 1994, Ser. No. 491,897
Int. Cl.[6] A61F *2/02*; A61K *31/415;31/045*
U.S. Cl. 424—423 2 Claims

1. A pharmaceutical composition which comprises
(a) cimetidine HCl
(b) about 0.1% to about 0.3% of phenol
(c) Water of Injection.

5,622,710

ANIMAL FEED ADDITIVE BASED ON FERMENTATION BROTH, A PROCESS FOR ITS PRODUCTION AND ITS USE

Wolfram Binder, Rodenbach; Franz-Ludwig Dahm, Alzenau; Ulrich Hertz, Bruchköbel; Heinz Friedrich, Hanau; Hermann Lotter, Altenstadt; Wolfgang Hohn, Gründau; Dieter Greissinger, Niddatal, and Wolfgang Polzer, Gründau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 213,637, Mar. 16, 1994, abandoned.
This application Aug. 23, 1995, Ser. No. 518,222
Claims priority, application Germany, Mar. 17, 1993, 43 08 498.2
Int. Cl.[6] A61K *9/20*; A23K *1/00*
U.S. Cl. 424—438 9 Claims

1. Animal feed additive pellets having a bulk density of at least 550 Kg/m^3, a grain size where 90% by weight is not greater than 1 mm and less than 10% by weight is smaller than 100 μm and a composition which comprises,

	amino acids	40–90% by weight
	proteins	0.5–20% by weight
	carboxylic acids containing less than 8 carbon atoms	max 13% by weight
	total sugar	max 10% by weight
	fats and oils	max 6% by weight
and	minerals	3% by weight,

wherein the pellets are formed by intensive mixing of fine particles, having a size for at least 70% by weight of the fine particles which is smaller than 100 μm, with a binder selected from the group consisting of water and fermentation broth, and wherein the fine particles are obtained by directly spray drying a fermentation broth containing amino acid(s) and biomass, which fermentation broth is obtained by cultivating a bacteria in a fermentation medium containing an assimilable sugar selected from the group consisting of starch hydrolyzates, sucrose, heat sugar and cane sugar molasses under sugar limiting conditions where the assimilable sugar concentration is kept at or reduced to at most 0.3% by weight fine particles which is smaller than 100 μm, and

3) building up using intensive mixing the fine particles with a binder selected from the group of water and fermentation broth to form pellets containing at least 30% by weight of the amino acid and having a grain size where 90% by weight is not greater than 1 mm and less than 10% by weight is smaller than 100 μm.

5,622,711

ADHESIVE COMPOSITION FOR USE AS A WOUND DRESSING OR OSTOMY/PROSTHESIS ADHESIVE

Yen-Lane Chen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 956,616, Oct. 5, 1992, abandoned.
This application Dec. 8, 1994, Ser. No. 351,890
Int. Cl.[6] A61F *13/02*
U.S. Cl. 424—445 13 Claims

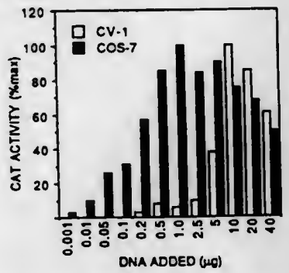
1. A pressure sensitive hydrocolloid adhesive composition for use as a wound dressing or an ostomy/prosthesis adhesive consisting essentially of i) about 20 percent to about 50 percent by weight of a hydrophobic, unsaturated, elastomeric homopolymer having at least about 50 mole percent unsaturation, ii) about 20 percent to about 60 percent by weight of a polyisobutylene tackifier and iii) about 5 percent to about 60 percent by weight of a hydrocolloid absorbent, wherein the homopolymer is cross-linked by 5–200 kGy gamma radiation to provide the composition with a cross-linked matrix having a wet integrity value of at least about eighty percent, a shear hold value of at least about 500 min/500 g and a dry cohesive strength which prevents adhesive composition breakage or delamination when a 1×6 cm strip of the adhesive composition is slowly peeled off a polyester adhesive tape at a 90 degree angle and at a speed of 10 mm/minute.

5,622,712

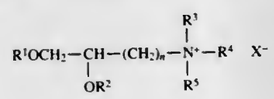
N-[ω, (ω-1)-DIALKYLOXY]- AND N-[ω, (ω-1)-DIALKENYLOXY]-ALK-1-YL-N, N, N-TETRASUBSTITUTED AMMONIUM LIPIDS AND USES THEREFOR

Deborah A. Eppstein, Menlo Park; Philip L. Felgner, Los Altos; Thomas R. Gadek, Oakland; Gordon H. Jones, Cupertino, all of Calif., and Richard B. Roman, Fairhope, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 15,738, Feb. 10, 1993, Pat. No. 5,336,502, which is a division of Ser. No. 614,412, Nov. 16, 1990, Pat. No. 5,208,036, which is a division of Ser. No. 524,257, May 15, 1990, Pat. No. 5,049,386, which is a division of Ser. No. 428,815, Oct. 27, 1989, Pat. No. 4,946,787, which is a division of Ser. No. 114,809, Oct. 29, 1987, Pat. No. 4,897,355, which is a continuation-in-part of Ser. No. 877,916, Jun. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 689,407, Jan. 7, 1985, abandoned. This application May 4, 1994, Ser. No. 237,807
Int. Cl.[6] A61F *2/02*; A61K *9/70;9/127*; B01J *13/02*
U.S. Cl. 424—450 7 Claims



1. A pharmaceutical formulation which comprises a therapeutically effective amount of a drug, an optional pharmaceutically acceptable excipient, and a lipid component comprising a compound of Formula 1 in a quantity of from about 1 to 100% by weight of this lipid component, wherein Formula 1 is represented by the formula



1

or an optical isomer thereof wherein R^1 and R^2 are the same or different and are an alkyl or alkenyl group of 6 to 24 carbon atoms; R^3, R^4 and R^5 are the same or different and are alkyl of 1 to 8 carbon atoms, aryl, aralkyl of 7 to 11 carbon atoms or when two or three of R^3, R^4, and R^5 are taken together to form quinuclidino, pyrrolidino, piperidino, or morpholino; n is 1 to 8; and X is a pharmaceutically acceptable anion; and an aqueous solution in a quantity sufficient to make 100% by volume.

5,622,713

METHOD OF DETOXIFYING ANIMAL SUFFERING FROM OVERDOSE

Rolf J. Mehlhorn, Richmond, Calif., assignor to The Regents of the University of California, Alameda, Calif.

Continuation of Ser. No. 992,586, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 547,382, Jul. 3, 1990, abandoned, which is a continuation of Ser. No. 220,388, Jul. 12, 1988, abandoned, which is a continuation of Ser. No. 776,826, Sep. 17, 1985, abandoned. This application Jan. 18, 1995, Ser. No. 375,190
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 2 Claims

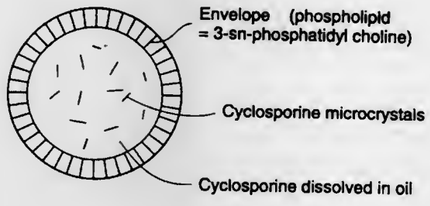
1. A method of detoxifying an animal suffering from an overdose of a chemical species with basic pH responsive groups comprising injecting the animal with a solution having a physiologically benign pH with respect to the animal, the solution having large volumes of liquid crystalline liposomes having a buffer solution buffered to a pH generally lower than or equal to 5.4 and the buffer having at least one selected pKa and a selected molarity within the physiological range of the animal, the liposomes being substantially impermeable to the buffer for at least one hour after injection.

5,622,714

PHARMACEUTICAL PREPARATION CONTAINING CYCLOSPORINE(S) FOR INTRAVENOUS ADMINISTRATION AND PROCESS FOR ITS PRODUCTION

Hans Dietl, Eichendorffstrasse 33, Bad Aibling, Germany

Division of Ser. No. 60,564, May 12, 1993, Pat. No. 5,527,537.
This application Mar. 28, 1996, Ser. No. 623,432
Int. Cl.[6] A61K *9/127*; B01J *13/02*
U.S. Cl. 424—450 17 Claims



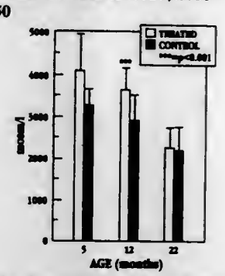
1. A process for the production of a pharmaceutical preparation of a cyclosporine, comprising:
(a) dissolving said cyclosporine in a natural oil to form an oil solution; and
(b) emulsifying said oil solution with a member selected from the group consisting of 3-sn-phosphatidyl choline and phosphatidyl ethanol amine, in water, to form an emulsion;
said process being performed in the absence of alcohol and poly(oxyethylene)-40-castor oil.

5,622,715

METHOD OF IMPROVING RENAL FUNCTION

Yechezkel Barenholz, and Ziv Greenfeld, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation of Ser. No. 257,865, Jun. 10, 1994, abandoned.
This application Apr. 8, 1996, Ser. No. 628,970
Int. Cl.[6] A61K *9/127;9/133*
U.S. Cl. 424—450 6 Claims



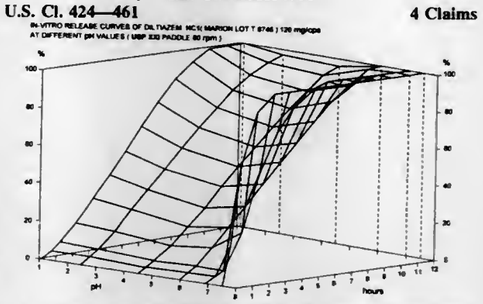
1. A method for improving age-related diminution of renal function in a middle-aged human subject in need of such a treatment, as evidenced by a subnormal rate of glomerular filtration of less than 180 liters per day, comprising:
intravenously administering to the subject, a suspension of small unilamellar liposomes composed of greater than 80 mole percent phosphatidylcholine phospholipids having phase transition temperatures between −10° and 37° C., said liposomes acting as the therapeutic agent for said improving, wherein the liposomes in the suspension have sizes of less than about 0.2 micron, and
repeating said administering over a period of at least several days and in an amount of liposomes effective to produce an improvement in the glomerular filtration rate in said subject characterized by a reduction in serum creatinine concentration of at least 10 percent, such that said liposome suspension is administered 1–3 times per week at a dose of between about 0.05 and 1 g lipid/kg body weight.

5,622,716

PROCESS FOR PREPARING A RETARD PRODUCT CONTAINING DILTIAZEM FOR A SINGLE DAILY ADMINISTRATION

Dieter Barth, Erbach, Germany, assignor to Farmarc Nederland B.V., Amsterdam, Netherlands

Continuation of Ser. No. 145,022, Oct. 27, 1993, abandoned, which is a continuation of Ser. No. 853,885, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 500,025, Mar. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 156,829, Feb. 17, 1988, abandoned. This application Apr. 23, 1996, Ser. No. 636,686
Claims priority, application Switzerland, Feb. 20, 1987, 00637/87
Int. Cl.[6] A61K *9/62*
U.S. Cl. 424—461 4 Claims



1. A process for preparing a medication containing diltiazem-HCl consisting of:

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a. rotating an inert pellet of saccharose/starch in a coating apparatus;
b. spraying the inert pellet with an ethanol solution consisting of diltiazem hydrochloride, ethanol, shellac as a water insoluble binder first component, and a binder second component exhibiting hydrophilic and lipophilic properties, the shellac as the water insoluble binder first component being present in a range of 36% to 12% by weight based upon the total amount of the ethanol solution, the binder second component exhibiting hydrophilic and lipophilic properties being selected from the group consisting of polyvinyl-pyrrolidone, polyethylene glycol, and methylcellulose and being present in the solution in a range of 4% to 28% by weight based upon the total amount of the ethanol solution, the amount of the shellac as the water insoluble binder first component exceeding the amount of binder second component exhibiting hydrophilic and lipophilic properties;
c. repeating step b 40 to 70 times whereby there is obtained rapid release diltiazem pellets; and
d. coating the rapid release diltiazem pellets with a solution consisting of ethylcellulose and talc; and
e. repeating coating step d. 25 times whereby coated delayed-release diltiazem pellets are obtained.

5,622,717

ULCER PREVENTION METHOD USING A MELT-SPUN HYDROGEL

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

PCT No. PCT/US92/10978, § 371 Date Jun. 14, 1994, § 102(e) Date Jun. 14, 1994, PCT Pub. No. WO93/11750, PCT Pub. Date Jun. 24, 1993
Continuation-in-part of Ser. No. 808,599, Dec. 17, 1991, abandoned. This PCT application Dec. 16, 1992, Ser. No. 81,336
Int. Cl.[6] A61K *9/10;9/14*
U.S. Cl. 424—488 **38 Claims**

1. A method of treating ulcer-bearing tissue, comprising contacting ulcer-bearing tissue with an anti-ulcer composition having rapid delivery and enhanced adherence to ulcer-bearing tissue, said composition comprising:
a solid matrix having suspended therein an anti-ulcer medicament, said matrix formed by flash-flow melt-spinning a mixture of
i) a melt-spinnable carrier comprising a saccharide present in an amount sufficient to form a flash-flow melt-spun matrix when said anti-ulcer medicament is dispersed therein;
ii) an anti-ulcer medicant present in an amount sufficient to achieve a therapeutic effect; and
iii) a hydrogel selected from the group consisting of gums, celluloses, pectins, gelatin, polycarbophil and mixtures thereof in an amount sufficient to provide mucosal adherence properties.

5,622,718

ALGINATE-BIOACTIVE AGENT CONJUGATES

Aymen Al-Shamkbani, Oxford, and Ruth Duncan, London, both of United Kingdom, assignors to Keele University, Staffordshire, England

PCT No. PCT/GB93/01999, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/07536, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 23, 1993, Ser. No. 406,876
Claims priority, application United Kingdom, Sep. 25, 1992, 9220294
Int. Cl.[6] A61K *47/48*
U.S. Cl. 424—488 **29 Claims**

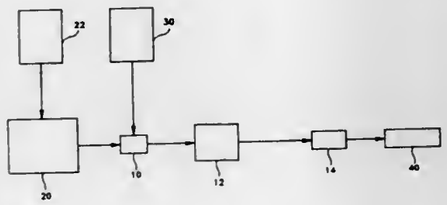
1. An alginate-therapeutically active agent conjugate which comprises:
(a) an alginate, and
(b) a therapeutically active agent, wherein the alginate and the therapeutically active agent are connected via a biodegradable spacer linkage.

5,622,719

PROCESS AND APPARATUS FOR MAKING RAPIDLY DISSOLVING DOSAGE UNITS AND PRODUCT THEREFROM

Garry L. Myers; Gerald E. Battist, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Continuation of Ser. No. 259,496, Jun. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 133,669, Oct. 7, 1993, and Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551.
This application May 23, 1996, Ser. No. 652,252
Int. Cl.[6] A61K *9/20;9/46*
U.S. Cl. 424—488 **14 Claims**



1. A method of preparing quick dissolve comestible units comprising:
subjecting a feedstock which contains a carrier material to flash flow processing to provide uncured shearform matrix;
macerating said uncured shearform matrix;
mixing said macerating uncured shearform matrix and an additive;
molding the mixture of uncured shearform matrix and additive resulting from the previous step to provide a unit dosage from which has bridging between crystallized matrix material upon curing; and
curing said shearform matrix to produce a stable structure.

5,622,720

PROCESS FOR REDUCING THE CRYSTAL SIZE OF ONDANSETRON HYDROCHLORIDE DIHYDRATE

David T. Collin, Ware, England, assignor to Glaxo Group Limited, London, England

Continuation of Ser. No. 239,237, May 6, 1994, abandoned, which is a continuation of Ser. No. 5,736, Jan. 19, 1993, Pat. No. 5,344,658, which is a continuation of Ser. No. 755,736, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 544,644, Jun. 27, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 472,881
Claims priority, application United Kingdom, Jun. 28, 1989, 89/14804
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **14 Claims**

1. A process for reducing the crystal size of ondansetron hydrochloride dihydrate produced by crystallization from solvent, in which said ondansetron hydrochloride dihydrate is desolvated by drying at elevated temperature and reduced or atmospheric pressure and is then rehydrated, wherein the resulting crystals are suitable for homogeneous distribution in a tablet blend, said tablet providing a pharmaceutically acceptable formulation in effective amounts for treatment of ondansetron responsive conditions.

5,622,721

DOSAGE FORMS OF RISEDRONATE

Richard J. Dansereau, Sherburne; Russell Y. Mosher, Norwich; Douglas W. Axelrod, Norwich, and William K. Sietsema, Norwich, all of N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 796,151, Nov. 22, 1991, abandoned.
This application Sep. 14, 1994, Ser. No. 307,495
Int. Cl.[6] A61K *9/16;9/50*
U.S. Cl. 424—490 **25 Claims**

1. A novel oral dosage form of a risedronate active ingredient comprised of a safe and effective amount of a pharmaceutical composition comprising a risedronate active ingredient and pharmaceutically-acceptable excipients, wherein said oral dosage form is enteric coated to prohibit delivery of risedronate active ingredient to the buccal cavity, pharynx, esophagus and stomach of humans and other mammals to thereby prevent irritation in said buccal cavity, pharynx, esophagus and stomach.

5,622,722

SPHEROID FORMULATION

Trevor J. Knott, Wickford; Sandra T. A. Malkowska, Cambridge; Philip J. Neale, Cambridge; Stewart T. Leslie, Cambridge, all of United Kingdom; Ronald B. Miller, Basel, Switzerland, and Derek A. Prater, Cambridge, United Kingdom, assignors to Euro-Celtique, S.A., Luxembourg

Continuation of Ser. No. 20,142, Feb. 19, 1993, abandoned.
This application Dec. 5, 1994, Ser. No. 349,556
Claims priority, application United Kingdom, Feb. 20, 1992, 9203689
Int. Cl.[6] A61K *9/36;9/16*
U.S. Cl. 424—494 **9 Claims**

1. A normal release pharmaceutical spheroid composition, comprising about 0.1–25% by weight hydromorphone or a water soluble pharmaceutically acceptable salt thereof, microcrystalline cellulose and a sugar, the ratio of said microcrystalline cellulose to said sugar being between 1:3 and 3:1 by weight, said composition having a dissolution rate of 90% or more in 45 minutes, thus effecting normal release of said hydromorphone from said composition.

5,622,723

PROCEDURE FOR ENCAPSULATING CHLORPHENIRAMINE

Marie J. Bettman, Dayton, and Sambasiva R. Ghanta, Centerville, both of Ohio, assignors to Eurand America, Incorporated, Vandalia, Ohio

Filed Feb. 3, 1995, Ser. No. 383,033
Int. Cl.[6] A61K *9/16;9/50;* **B01J** *13/02;13/04*
U.S. Cl. 424—495 **8 Claims**

1. In a process for microencapsulating a predetermined amount of finely divided chlorpheniramine maleate in a heated then cooled coacervation medium including cyclohexane, an encapsulating polymer and a phase inducing polymer, and separating the microcapsules containing chlorpheniramine maleate, the improvement which comprises charging an excess of chlorpheniramine maleate to the coacervation medium sufficient to saturate the cyclohexane in the heated coacervation medium with chlorpheniramine maleate and separating the microcapsules containing the predetermined amount of chlorpheniramine maleate from the coacervation medium.

5,622,724

SPRAY PREPARATION FOR TREATING SYMPTOMS OF THE COMMON COLD CONTAINING UNCHELATED IONIC ZINC COMPOUNDS

Derek Bryce-Smith, Reading, England, assignor to Kappa Pharmaceuticals Limited, Reading, England

Continuation of Ser. No. 874,756, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 799,423, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 474,273, Feb. 2, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 112,570
Claims priority, application United Kingdom, Feb. 2, 1989, 8902300
Int. Cl.[6] A61K *33/32*
U.S. Cl. 424—641 **8 Claims**

1. A method for the treatment of the symptoms of the common cold comprising administering a spray of a solution containing a non-toxic, symptom effective treating amount of a solution of a substantially unchelated ionic zinc compound, said solution containing substantially unchelated zinc ions in a concentration of from about 0.004 to about 0.12% (w/vol.), to the nostrils and respiratory tract of a patient in need thereof.

5,622,725

WOUND DISINFECTION AND REPAIR

Robert D. Kross, Bellmore, N.Y., assignor to Alcide Corporation, Redmond, Wash.

Continuation of Ser. No. 206,062, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 133,465, Oct. 8, 1993, which is a continuation-in-part of Ser. No. 854,286, Mar. 20, 1992, Pat. No. 5,252,343. This application Jun. 28, 1996, Ser. No. 672,686
Int. Cl.[6] A61K *33/20;33/40;* **A01N** *59/00*
U.S. Cl. 424—665 **25 Claims**

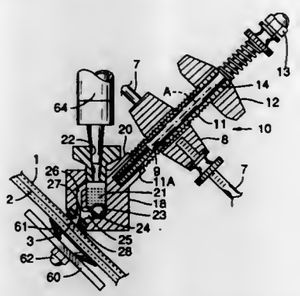
1. A method for the treatment or prevention of microbial infections in a mammal having a peritoneal cavity catheter comprising infusing into the cavity or around the catheter an effective amount of a composition that is compatible with the peritoneal cavity comprising a pharmacologically acceptable carrier that is a peritoneal dialysis solution and chlorine dioxide in an amount ranging from greater than 125 ppm to about 1000 ppm, where the molar ratio of chlorine dioxide to any residual chlorite in the composition is at least 5:1 and the pH of the composition is about 5 to 7.5.

5,622,726

APPARATUS FOR THE REPAIR OF WINDSHIELDS

Arone Tanner, P.O. Box 68243, Portland, Oreg. 97268

Filed Sep. 25, 1995, Ser. No. 533,653
Int. Cl.[6] B32B *35/00*
U.S. Cl. 425—12 **11 Claims**



1. An apparatus for the repair of a damage area of a windshield including,
a support structure attachable to the windshield,

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a valve including a port and a chamber for reception of a repair liquid and a seal defining an outlet for contact with the windshield about the damage area,

positioning means carried by said support structure and coupled to the valve for advancing said seal into contact with the windshield,

means for providing the valve chamber with a repair liquid,

a pump for communication with said valve via said port to vacuumize the damage area of the windshield,

said valve including an internal movable body for controlling the flow of repair liquid from said chamber to said outlet of the valve and the damage area of the windshield, and

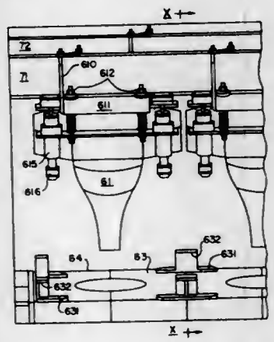
magnetic means for acting on said movable body to actuate said valve.

5,622,727

AUTOMATIC PRESSURE-CASTING BENCH

Giorgio Cuman, Cordenons; Delfino Rovere, Cusano Di Zoppola, and Toffolo R. Petrucco, Roveredo In Piano, all of Italy, assignors to American Standard Inc., Piscataway, N.J.

Filed Jun. 2, 1995, Ser. No. 459,583
Claims priority, application Italy, Jun. 2, 1994, RE94A0041
Int. Cl.[6] B28B *1/26*
U.S. Cl. 425—84 **7 Claims**



1. An apparatus for forming vitreous china sanitary ware castings comprising:

a fixed frame;

a casting bench fixed to said frame, said casting bench including a first set of parallel guides disposed horizontally;

a plurality of movable mold parts located on said first set of guides, said mold parts capable of being paired in sets to form and bound a plurality of cavities, respectively;

a second set of guides fixed to said frame and disposed at right angles to a plane of said bench;

a movable beam disposed on said second set of guides, positioned horizontally parallel to said bench;

an upper support means fixed to said beam for supporting a plurality of mandrels;

said plurality of mandrels fixed to said upper support means which is fixed to said beam, said mandrels capable of being inserted into and removed from said cavities formed by said mold parts;

a plurality of lower frames which equal in number said plurality of mandrels, each lower frame including an elastic suspension means for said mandrels, said suspension means coupled to said beam, said suspension means including a pair of plates, each plate freely threaded on a pair of spindles, a series of springs interposed on each spindle and each spindle being supported between said plates by said upper support means; and

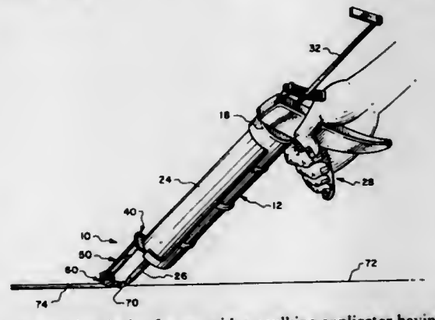
a means for locking said mandrels to said mold parts and for releasing said mandrels from said cavities.

5,622,728

WIPING DEVICE FOR CAULKING, AND METHOD OF FORMING SAME

David Kartler, Las Vegas, Nev., assignor to Thomas P. Mahoney, and J. Mark Holland, both of Newport Beach, Calif.

Continuation-in-part of Ser. No. 118,134, Sep. 8, 1993, Pat. No. 5,413,258. This application May 8, 1995, Ser. No. 437,292
Int. Cl.[6] B28B *3/00*
U.S. Cl. 425—87 **30 Claims**



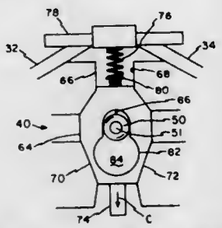
1. In a wiping device for use with a caulking applicator having a caulking outlet, the combination of: mounting means for positioning said device on said caulking applicator adjacent said outlet but spaced therefrom; an arm secured to said mounting means at a location spaced from said outlet; and corner-wiping means located on the outer extremity of said arm, said arm and said corner-wiping means being configured to permit the application and smoothing of caulk in a corner joint of an adjacent surface.

5,622,729

CORNER FINISHER TOOL FOR APPLYING MASTIC

Morris F. Mower, 1017 W. Lampton View Cir., Riverton, Utah 84065

Continuation of Ser. No. 229,479, Apr. 19, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 598,631
Int. Cl.[6] B05C *17/10*
U.S. Cl. 425—87 **13 Claims**



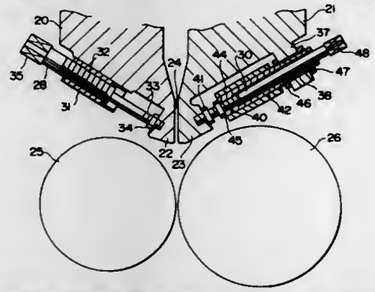
1. A corner finisher tool comprising a corner tool having two side walls with surfaces set at an angle of approximately 90° with respect to each other for applying mastic to a drywall corner, an opening at an apex formed by said two side walls for passing mastic onto said drywall corner, a socket on said corner tool confronting said opening for receiving a ball on an associated tool to be used with the corner tool for finishing a corner thereby forming a quick disconnect ball and socket coupler, said ball being on the end of a neck for delivering said mastic through a passage in said ball to and through said apex opening, said ball and socket providing a freedom for the corner tool to rotate, tip and alter its posture relative to said associated tool so that said side wall surfaces rest firmly against said drywall corner, and said corner tool having a locking plate slidably mounted over said socket, said locking plate having a key hole shaped opening formed therein with a release opening at one end communicating into a capture opening at the other end of said key hole opening, said release opening being larger than said capture opening so that said ball can pass through said release opening but not through said capture opening, said plate sliding to a first position with said release opening end of said key hole opening over said socket for said ball to pass into and out of said socket and sliding to a second position with said capture opening end of said key hole over said socket in order to capture said ball in said socket.

5,622,730

HEAT-DISPLACING T-DIE

Satoru Nitta, Numazu, and Ryuichi Wakita, Mishima, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Japan

Filed Oct. 20, 1995, Ser. No. 546,561
Claims priority, application Japan, Oct. 20, 1994, 6-255419
Int. Cl.[6] B29C *47/16*
U.S. Cl. 425—141 **4 Claims**



1. A heat-displacing T-die for extruding a sheet of a molten resin comprising a die slit gap defined between a pair of flexible lips, wherein the T-die is adapted for adjusting the die slit gap, said T-die further comprising:

a plurality of first hand-operated die bolts arranged widthwise on one of the flexible lips for moving the one lip to adjust the die slit gap;

a plurality of second die bolts arranged widthwise on the other of the flexible lips, an arrangement pitch of the first die bolts being shorter than an arrangement pitch of the second die bolts, the second die bolts having a distal end fixed to the other lip; and

a plurality of heat direct-acting actuators, each actuator including a heater and a heat sleeve surrounding one of said second die bolts, having one end movably fixed to a mounting flange of the die and the other end constituting a free end on a side nearer to the flexible lip and having the heater fitted tight thereon, said head sleeve being formed of a material having a coefficient of thermal expansion higher than that of a material of the second die bolts, each second die bolt being fixedly fastened on the free end of the heat sleeve by means of mating threading on said free end and on said one second die bolt and by a lock nut on the mating threading of said one die bolt and abutting said free end, the actuators automatically operating the second die bolts to move the one lip to adjust the die slit gap.

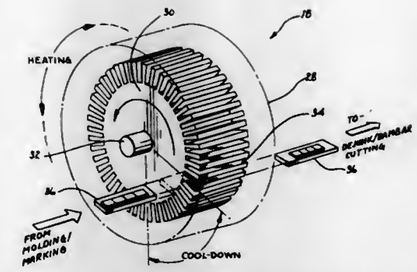
5,622,731

AUTOMATIC POST MOLD CURING APPARATUS FOR USE IN PROVIDING ENCAPSULATED SEMICONDUCTOR CHIPS AND METHOD THEREFOR

Richard H. J. Fierkens, Kuerbeck 15, 6914 AE Herwen, Netherlands

Filed Sep. 10, 1993, Ser. No. 118,601
Int. Cl.[6] B29C *35/02;35/18*
U.S. Cl. 425—384 **8 Claims**

1. A post mold curing apparatus for use in association with a molding line system for providing plastic encapsulated semiconductor chips mounted on leadframes comprising, in combination:



rotating leadframe carrier means comprising a rotary, substantially cylindrical assembly for containing and moving a plurality of semiconductor chips and their associated leadframe strips into both an elevated temperature post mold curing region and into a lower temperature cool-down region; and

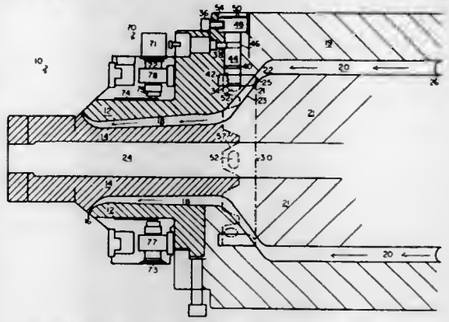
means for inserting said semiconductor chips with their associated leadframe strips into cavity regions located in said cylindrical assembly prior to moving each of said plurality of leadframe strips through said elevated temperature post mold curing region and for removing said semiconductor chips with their associated leadframe strips from said cavity regions after passing through said lower temperature cool-down region.

5,622,732

FOAM SHEET EXTRUSION DIE APPARATUS, AND SYSTEM WITH ADJUSTABLE CHOKE AREA

Robert W. Beckwith, Cummaquid, Mass., assignor to Sencorp Systems Inc., Hyannis, Mass.

Continuation-in-part of Ser. No. 45,477, Apr. 13, 1993, Pat. No. 5,462,423. This application Dec. 5, 1994, Ser. No. 349,524
Int. Cl.[6] B29C *47/22;47/86*
U.S. Cl. 425—466 **19 Claims**



1. An extruder die apparatus for the extrusion of a thermoplastic material, which die apparatus has an adjustable choke area, which apparatus comprises:

a) an extruder housing having an axial bore for the extrusion of thermoplastic material therethrough from the inlet to the outlet of the bore;

b) an inner die lip and an outer die lip about the bore and within the housing and each having a one and an other end, the one end of the inner and outer die lip having a concentric die gap for the extrusion of a thermoplastic material, the inner and outer die lips forming a thermoplastic material extrusion flow passageway from the one to the other end of the die;

c) a peripheral choke gap within said thermoplastic material flow passageway with a restricted, cross-section, thermoplastic material flow area;

d) a generally axially aligned concentric slot in the outer die lip having an open end generally adjacent to the choke gap;

e) a choke ring means slidably movably positioned within said slot and having a selected clearance position within the slot

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and adapted to move between a non-restrictive flow position out of the choke gap and an axial flow restrictive position in the choke gap; and

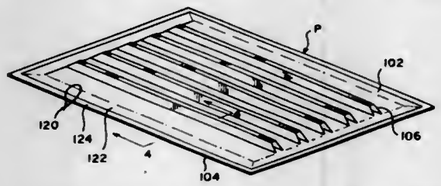
f) radially positioned choke ring adjusting means about the outer periphery of the choke ring means to provide for the axial movement of the choke ring means in said slot between the nonrestricted flow position and the restrictive flow position in selected peripheral sections to adjust the cross sectional area of the choke gap in each section.

5,622,733

TOOLING FOR THE FABRICATION OF COMPOSITE HOLLOW CROWN-STIFFENED SKINS AND PANELS

Don L. Asher, Broken Arrow, Okla., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 4, 1994, Ser. No. 317,452
Int. Cl.[6] B28B *21/36*
U.S. Cl. 425—504 **4 Claims**



1. Tooling apparatus for forming a panel from fiber-reinforced composite materials, comprising:

a first support member for forming a first panel assembly comprising at least one layer of said composite material,

said first support member having a surface over which said at least one layer is disposed, said surface including a plurality of depression as therein for receiving portions of said at least one layer of composite material which are to be pressed therein, each said depression including an opening at one end,

a plurality of second support members for bearing against said depressions atop said at least one layer, each said second support member comprising an inflatable mandrel which urges said at least one layer into a respective one of said depressions,

each of said mandrels including a valve stem for insertion through a respective opening, each said valve stem enabling inflation of the mandrel to which it is attached, and

means for securing each said valve stem to said first support member in such a manner that the mandrel is pulled tightly toward and into intimate sealing engagement with said at least one layer of composite material surrounding said opening in said depression.

5,622,734

APPARATUS FOR PRODUCING A CRIMP-BONDED FIBROUS CELLULOSIC LAMINATE

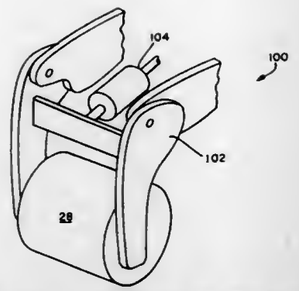
Harry E. Clark, Cumming, Ga.; Cynthia W. Henderson, Neenah; Robert C. Marcinek, Appleton, both of Wis.; Frances W. Mayfield, Marietta, Ga.; Thad W. Perkins, Roswell, Ga., and Jorg F. Voss, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 212,537, Mar. 14, 1994, Pat. No. 5,543,202. This application May 23, 1995, Ser. No. 449,380
Int. Cl.[6] B28B *3/10*
U.S. Cl. 425—517 **20 Claims**

1. An apparatus for crimp-bonding multiple superposed plies of a fibrous cellulosic material comprising:

a rotating hardened metal crimp element and having machine direction and a cross-machine direction;

a rotating smooth hardened metal anvil element having a machine direction and a cross-machine direction;



protruding members configured on the surface of the crimp element in a discontinuous pattern aligned on an axis that is parallel to the cross-machine direction to provide a substantially continuous uniform area of localized surface contact between the rotating elements across the width of the plies; said protruding members being composed of individual elements arranged so that the surface area of an individual protruding member in contact with a fibrous cellulosic laminate between the rotating elements remains substantially constant as the crimp element rotates; and

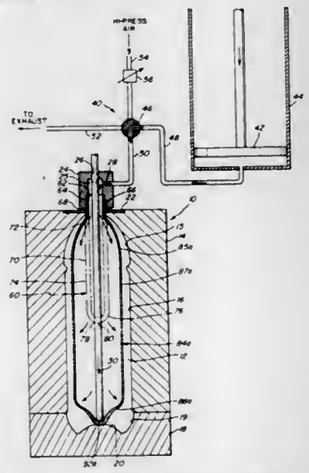
means to apply pressure against the rotating elements so that the pressure load on multiple plies of a fibrous cellulosic material at each area of localized surface contact is sufficient to form crimp bonds between the plies so the plies are joined by autohesive bonding.

5,622,735

FLUID SUPPLY APPARATUS FOR BLOW MOLD

Suppayan M. Krishnakumar, Nashua; Wayne N. Collette, Merrimack, both of N.H., and Nikhil Mani, Billerica, Mass., assignors to Continental PET Technologies, Inc., Florence, Ky.

Division of Ser. No. 126,976, Sep. 24, 1993, Pat. No. 5,474,735. This application Sep. 7, 1995, Ser. No. 524,942
Int. Cl.[6] B29C *49/18*
U.S. Cl. 425—530 **8 Claims**



1. An apparatus for making a blow-molded container comprising:

a blow mold having a blowing cavity which receives a preform and an aperture connected to the cavity for receiving a fluid to expand the preform into contact with the cavity to form a container; and

a fluid supply apparatus including,

a control valve for controlling the flow of fluid into the blow mold,

a first conduit connected to a fluid supply that supplies fluid to the control valve,

a metering chamber for supplying fluid to the blow mold, and

a second conduit from the metering chamber to the control valve,

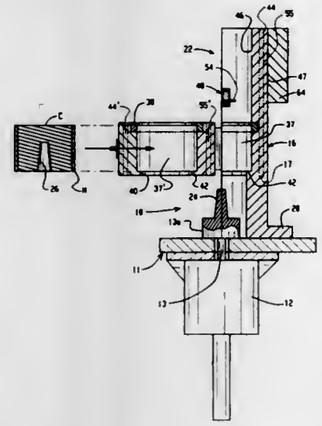
wherein the control valve has a first position in which the metering chamber is fluidly connected to the blow mold and a second position in which the first conduit is fluidly connected to the blow mold.

5,622,736

REMOVAL APPARATUS FOR REMOVING A MOLD SECTION FROM A MOLDED PART

Robert L. Brown, Hartville; Todd A. England, North Canton; Daniel L. Goodell, Tallmadge, and David E. Baxter, deceased, late of Ravenna, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 146,846, Nov. 1, 1993, Pat. No. 5,449,282. This application Jul. 29, 1994, Ser. No. 283,123
Int. Cl.[6] B29C *45/44*
U.S. Cl. 425—556 **10 Claims**



1. A removal apparatus for removing a mold section from a molded part comprising,

a base frame supporting a driver and a power supply, said driver engaged with and driven by said power supply, and a support member engaged with the molded part,

said support member having a clamping station which receives and clamps the mold section engaged with the molded part therein,

said clamping station having an open position which receives the mold section engaged with the molded part therein, and a closed position in which the mold section and molded part are clamped within said clamping station,

a removal station which receives the mold section following removal of the mold section, and

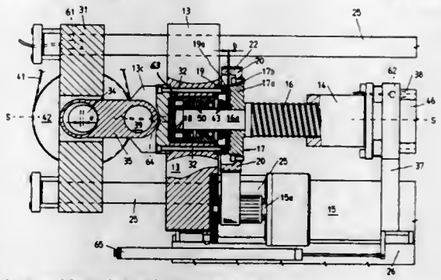
a force rod member which engages the mold section, and is operated by said driver to move the force rod member between said clamping and removal stations during removal of the mold section from the molded part.

5,622,737

MOLD CLOSING UNIT FOR USE IN AN INJECTION MOLDING MACHINE AND PROCESS FOR CONTROLLING IT

Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany

Filed Mar. 31, 1995, Ser. No. 415,097
Claims priority, application Germany, Apr. 2, 1994, 44 11 649.7; Apr. 2, 1994, 44 11 650.0
Int. Cl.[6] B29C *45/66*
U.S. Cl. 425—590 **6 Claims**



1. A mold closing unit, comprising:

a stationary mold carrier;

a movable mold carrier forming with said stationary mold carrier a mold clamping space located therebetween;

a mold comprising at least two parts each being respectively mounted on said stationary mold carrier and said movable mold carrier;

first and second supporting elements;

a force transmitting device connecting said first and second supporting elements to said stationary mold carrier;

a transfer device supported by said first supporting element and being connected to said movable mold carrier for transferring said movable mold carrier at least nearly into and out of a closing position with said stationary mold carrier, the closing position being a position in which said at least two parts are essentially closed; and

an eccentric drive supported by said second supporting element and connecting said second supporting element to said first supporting element, said eccentric drive having a shaft that exerts a closing force that is transmitted through said first supporting element, said transfer device, and said movable mold carrier, said eccentric drive being actuated to exert the closing force after said transfer device has transferred said movable mold carrier into the closing position.

5,622,738

METHOD OF PREPARING WATER-SOLUBLE DIETARY FIBER

Masayasu Takeuchi; Masayoshi Sugawara, both of Fuji; Seishiro Kainuma, Shimizu; Nobuyuki Nakamura, Mishima, and Mikio Yamamoto, Fuji, all of Japan, assignors to Nihon Shokuhin Kako Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 130,155, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 849,794, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 516,434, Apr. 30, 1990, abandoned. This application Mar. 17, 1995, Ser. No. 406,774
Claims priority, application Japan, May 16, 1989, 1-121877; Jul. 18, 1989, 1-185698
Int. Cl.[6] A23B *7/00*
U.S. Cl. 426—52 **7 Claims**

1. A method of preparing a water-soluble dietary fiber, comprising the steps of:

(a) treating a vegetable fiber material with an alkali,

(b) extracting from the treated material from step (a) only a liquid component and

(c) treating said liquid component with an alkaline xylanase originating from a bacterium to carry out an enzymolysis and

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to obtain a partially hydrolyzed product of a hemicellulose so that an aqueous 5% solution of the resultant treated hemicellulose has a viscosity from 5 to 20 cps when measured using a Brookfield viscometer at 60 rpm and 25° C. and wherein the dietary fiber is contained in an amount of not less than 80% as measured by the AOAC Prosky method.

5,622,739

FEED BLOCK WITH IMPROVED MINERAL DELIVERY

Alfred E. Benton, Walnut, and Chester D. Beintema, West Covina, both of Calif., assignors to K.E.S. Associates, Walnut, Calif.

Filed Jun. 6, 1995, Ser. No. 466,264
Int. Cl.[6] A23K *1/18;1/16;1/02;1/175*
U.S. Cl. 426—74 **20 Claims**

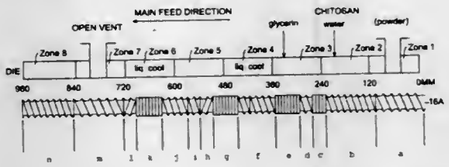
1. A feed block for consumption by livestock comprising:
a quantity of a first group of nutrients; and
an outer shell of a second group of nutrients surrounding the first group of nutrients, wherein the feed block is of a size such that the outer shell is consumed by the livestock licking the outer shell, thereby exposing the first group of nutrients for consumption by the livestock.

5,622,740

METHOD FOR PREPARING EDIBLE CASINGS AND COMPOSITIONS THEREOF

Albert T. Miller, Bridgewater, N.J., assignor to Devro Limited, Scotland, United Kingdom

Filed Nov. 14, 1994, Ser. No. 340,305
Int. Cl.[6] A22C *13/00*
U.S. Cl. 426—138 **25 Claims**



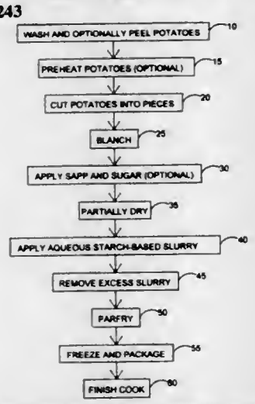
1. The method For making an edible film useful for a casing for a food product, comprising:
adding a quantity of powdered gelatin into a first zone of a cylindrical extruder containing a rotatable screw defining a spiral pathway,
rotating said screw whereby to linearly move said quantity of said powdered gelatin along said spiral pathway,
adding a quantity of an aqueous medium into a second zone of said extruder,
continuing to rotate said screw whereby to linearly move and compound said quantity of said aqueous medium and said powdered gelatin along said spiral pathway,
adding a quantity of a plasticizer selected from the group consisting of glycerin, sorbitol, mannitol and propylene glycol into a third zone said extruder,
continuing to rotate said screw whereby to linearly move and compound together said quantity of said plasticizer, said aqueous medium and said powdered gelatin along said spiral pathway to form a mixture,
heating said mixture to a temperature whereby said gelatin is melted while continuing to rotate said screw,
said respective quantities of gelatin, said plasticizer, and said aqueous medium being between 40 to 65% gelatin, between 5 to 30% by weight plasticizer and the balance being the aqueous medium,
deaerating said mixture,
thereafter extruding said mixture to form a film.

5,622,741

PROCESS FOR PREPARING A POTATO PRODUCT HAVING AN EXTENDED HOLD TIME

Clifford A. Stubbs, Iona, and John F. Stevens, Idaho Falls, both of Id., assignors to Miles J. Willard, Idaho Falls, Id.

Filed Jun. 3, 1996, Ser. No. 656,931
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—243 **10 Claims**



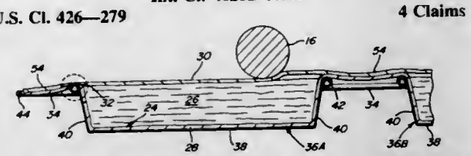
1. A process for preparing a potato product having an extended hold time, the process comprising:
(a) washing, cutting, and blanching raw potatoes;
(b) partially drying surfaces of the blanched potatoes;
(c) coating the partially dried potatoes with an aqueous starch-based slurry, the aqueous slurry including corn flour, corn starch, low solubility dextrin, and water; and then
(d) parfrying the coated potatoes.

5,622,742

METHOD OF MAKING STUFFED PIZZAS AND/OR STUFFED SANDWICHES

Vincenzo Carollo, 273 Blackbaron Dr., Delran, N.J. 08075

Filed Dec. 6, 1995, Ser. No. 568,102
Int. Cl.[6] A21D *13/00*
U.S. Cl. 426—279 **4 Claims**



1. A method of forming plural stuffed pizzas and/or plural stuffed sandwiches at one time, wherein each of said pizzas and/or sandwiches includes a hollow shell formed of a dough and a stuffing material located therein, said method comprising the steps of:
(a) providing a pan comprising a base portion and plural cavity portions, said base portion having a generally planar member, each of said plural cavity portions comprising a planar bottom wall and a side wall, said side wall of each of said plural cavity portions having a bottom edge secured to said bottom wall and a rounded top peripheral edge, said rounded top peripheral edge of each of said plural cavity portions being disposed slightly above said base portion to form sealing and cutting means at each of said cavity portions;
(b) providing a base layer of dough across said pan so that respective portions of said base layer extend into said plural cavity portions to form respective dough pockets;
(c) filling said respective dough pockets with at least one stuffing material;
(d) providing a cover layer of dough across said pan so that respective portions of said cover layer of dough cover dough pockets with said stuffing therein; and

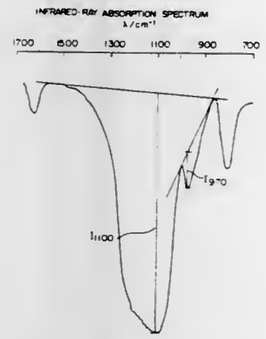
(e) applying pressure across said cover layer dough and said base layer dough forming said dough pockets, whereupon said sealing and cutting means of each of said plural cavity portions causes respective portions of said base layer dough and said cover layer dough to abut and join each other to form a stuffed dough shell having a joined seam extending about the periphery thereof, and wherein the application of such pressure also causes each of said cutting and sealing means of each of said cavity portions to sever portions of said base layer dough and said cover layer dough which is located outside the periphery of said joined seam of the stuffed dough shell from the stuffed dough shell itself.

5,622,743

STABILIZING AGENT FOR BEER

Masanori Tanaka; Kinichi Ono; Tatsuji Morimoto, and Akira Kamon, all of Tokyo, Japan, assignors to Mizusawa Industrial Chemicals, Ltd., and Sapporo Breweries Limited, both of Tokyo, Japan

Filed May 18, 1995, Ser. No. 444,280
Claims priority, application Japan, May 18, 1994, 6-104033
Int. Cl.[6] C12H *1/052*
U.S. Cl. 426—330.4 **14 Claims**



1. A stabilizing agent for beer comprising amorphous silica having a composition represented by the following formula

$$aM_{2/m}O.SiO.nH_2O \quad (A)$$

wherein M denotes an alkali metal and/or an alkaline earth metal, m is a valency of a metal M, a is a number of from 0 to 5×10^{-3} and n is a number of from 0 to 0.2,
having a specific surface area of from 100 to 600 m^2/g and a porous volume of from 1.0 to 2.0 cc/g, and further having an absorbency ratio (R_A) as defined by the following formula

$$RA=I_{970}/I_{1100} \quad (1)$$

wherein I_{970} is a peak absorbency at a wave number of 970 cm^{-1} in an infrared-ray absorption spectrum, and I_{1100} is a peak absorbency at a wave number of 1100 cm^{-1} in the infrared-ray absorption spectrum,
of not smaller than 0.02 but smaller than 0.20, an aqueous suspension of said amorphous silica at a concentration of 1000 ppm and at a temperature of 25° C. exhibiting a pH of from 4 to 6.2 and producing a zeta-potential of negative polarity having an absolute value of not smaller than 20 mV, wherein said amorphous silica exhibits essentially no infrared-ray absorption at a wave number of 3760 cm^{-1}.

5,622,744

METHOD FOR PRODUCING DENSIFIED PRODUCTS FOR AQUATIC AND ANIMAL FEED

Kenneth E. Matson, Sabetha, and Ernest L. Keehn, Wetmore, both of Kans., assignors to Extru-Tech, Inc., Sabetha, Kans.

Division of Ser. No. 99,074, Jul. 29, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,977
Int. Cl.[6] A23K *1/10;1/18;* **A23L** *1/326;3/015*
U.S. Cl. 426—623 **13 Claims**

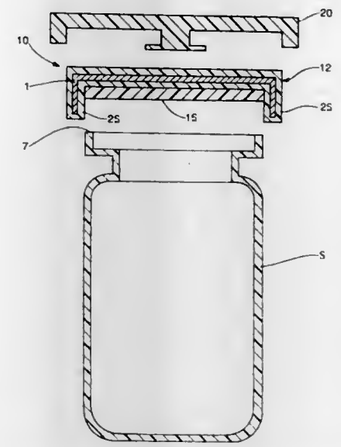
1. A method of preparing compressed densified feed products selected from the group consisting of a sinking aquatic feed product and a densified cattle range cube product comprising the steps of:
(a) preconditioning a plurality of feed ingredients by mixing them and subjecting them to heat;
(b) cooking, gelatinizing and expanding said preconditioned feed ingredients by extruding them through a cooking extruder equipped with a high shear screw to produce an expanded cooked and gelatinized feed product;
(c) transferring said expanded cooked and gelatinized feed product to a product densification unit (PDU) which is physically separate from said cooking extruder, said PDU comprising a high speed, low shear extruder; and
(d) densifying said expanded feed at high speed through said product densification unit by forcing said expanded feed through said PDU at high pressure and high speed via a high speed, low shear screw to produce a compressed and densified feed product which is dense enough to reliably sink in water.

5,622,745

METHOD OF REDUCING PARTICULATES FROM METAL CLOSURES

James W. Sloan, Spring City; Charles Papciak, Exton, and William A. Conard, Harleysville, all of Pa., assignors to The West Company, Incorporated, Lionville, Pa.

Continuation of Ser. No. 340,698, Nov. 16, 1994, abandoned. This application Jan. 18, 1995, Ser. No. 374,449
Int. Cl.[6] A01N *1/02;* **B09D** *5/00*
U.S. Cl. 427—2.1 **12 Claims**



1. A method of reducing metal and lacquer particulate formation generated from abrasion of metallic pharmaceutical components, comprising providing a solid polymeric coating on at least substantially all bare metallic surfaces of said components to form coated components prior to permitting said coated components to contact each other or other objects, wherein the polymeric coating covers edge portions of said components.

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5,622,746

TANTALUM CAPACITOR IMPREGNATION PROCESS

Randolph S. Hahn; Brian J. Melody, both of Greenville; John D. Henley, Jr.; John Piper, both of Simpsonville; Shelby J. Poore, Honea Path; Tsung-Yuan Su, Greer, and John T. Kinard, Simpsonville, all of S.C., assignors to Kemet Electronics Corporation, Greenville, S.C.

Filed Mar. 7, 1995, Ser. No. 399,981
Int. Cl.[6] B05D 5/12; H01G 7/00
U.S. Cl. 427—79 19 Claims

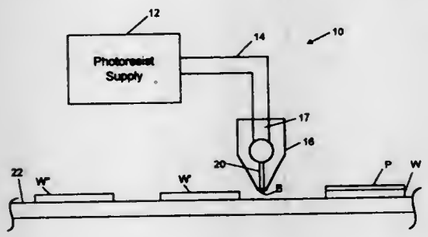
1. A method for forming a coating of manganese dioxide on valve metal capacitor anodes comprising impregnating valve metal capacitor anodes with manganese nitrate; placing the coated anodes in an oven; injecting steam into the oven; injecting a non-halogenated oxidizing agent which is more oxidizing than nitrogen dioxide into the atmosphere of the oven; and heating the oven to a temperature sufficient for pyrolysis of the manganese nitrate to manganese dioxide, wherein the oxidizing agent is selected from the group consisting of nitric acid, ozone, hydrogen peroxide, and mixtures thereof.

5,622,747

METHOD FOR DISPENSING A LAYER OF PHOTORESIST ON A WAFER WITHOUT SPINNING THE WAFER

Charles N. Todd, Idaho Falls, Id., and Frederick Dyson, Bluffdale, Utah, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 196,873, Feb. 14, 1994, which is a continuation of Ser. No. 761,605, Sep. 18, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,434
Int. Cl.[6] B05D 5/12
U.S. Cl. 427—96 6 Claims



1. A method for coating a wafer with a uniform layer of photoresist in a single pass without spinning the wafer, the method comprising the steps of:

applying pressure to liquid photoresist having a surface tension, the pressure causing the photoresist to flow through a channel;

flowing the liquid photoresist from the channel between two parallel plates, the two plates defining a straight edge opening having a length and a width;

adjusting the pressure applied to the photoresist so that the photoresist forms an elongated bead along the straight edge opening, the pressure adjusted such that the bead remains intact at the opening due to the surface tension of the photoresist; and

passing the wafer relative to the plates at a prescribed relative speed and at a prescribed distance beneath the straight edge opening so that the wafer contacts the bead formed during pressure adjusting step;

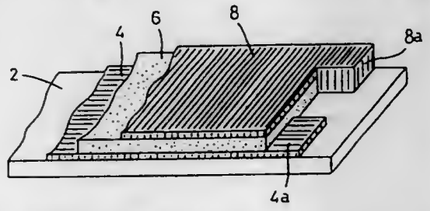
wherein the contacting of the bead with the wafer breaks the surface tension of the photoresist causing the photoresist to flow onto the wafer and form a film of the photoresist having substantially uniform thickness.

5,622,748

METHOD OF FABRICATING A PIEZOELECTRIC/ELECTROSTRICTIVE ACTUATOR

Yukihisa Takeuchi, Nagoya; Koji Kimura, Komaki, and Masato Komazawa, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., and Seiko Epson Corporation, both of Japan

Division of Ser. No. 384,469, Feb. 2, 1995, which is a continuation of Ser. No. 102,960, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 860,128, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 550,977, Jul. 11, 1990, abandoned. This application May 26, 1995, Ser. No. 452,092
Claims priority, application Japan, Jul. 11, 1989, 1-178747; Jan. 20, 1990, 2-11174
Int. Cl.[6] H01L 41/22
U.S. Cl. 427—100 3 Claims



1. A method of fabricating a piezoelectric/electrostrictive actuator, comprising the steps of:

providing a sintered non-piezoelectric/non-electrostrictive ceramic substrate;

forming at least one actuator unit directly on a surface of said sintered non-piezoelectric/non-electrostrictive ceramic substrate, by a method comprising the steps of:

forming a first electrode film on said surface of said ceramic substrate,

forming, by a thick-film forming process, a green piezoelectric/electrostrictive ceramic film on said first electrode film,

forming a second electrode film on the piezoelectric/electrostrictive ceramic film, and

sintering at least said green piezoelectric/electrostrictive ceramic film formed on said first electrode film to provide a sintered piezoelectric/electrostrictive ceramic film bonded to the first electrode film without a bonding adhesive.

5,622,749

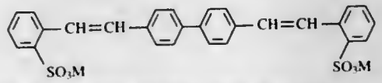
FLUORESCENT WHITENING OF PAPER

Peter Rohringer, Schönenbuch, Switzerland; Thomas Ehlis, Freiburg, Germany, and Josef Zelger, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 237,474, May 3, 1994, abandoned. This application May 22, 1996, Ser. No. 650,263
Claims priority, application United Kingdom, May 8, 1993, 9309510
Int. Cl.[6] B05D 5/06
U.S. Cl. 427—158 32 Claims

1. A method for the fluorescent whitening of paper

a) comprising contacting the paper surface with an aqueous coating composition comprising a white pigment; a binder dispersion; optionally a water-soluble co-binder; and 0.01 to 2% by weight, based on the weight of the pigment, of a fluorescent whitening agent having the formula:



(1)

wherein M is hydrogen, an alkali metal, ammonium or magnesium; or

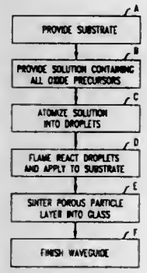
b) comprising contacting the paper in a size press with an aqueous combination of the compound of formula (1) and at least one auxiliary selected from a sequestering agent, a dispersing agent and an emulsifier.

5,622,750

AEROSOL PROCESS FOR THE MANUFACTURE OF PLANAR WAVEGUIDES

Arnd H. Kilian, Summit; John B. MacChesney, Lebanon, both of N.J., and Theodore F. Morse, Providence, R.I., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 31, 1994, Ser. No. 331,460
Int. Cl.[6] B05D 5/06; 3/08
U.S. Cl. 427—163.2 13 Claims



1. A method for making a planar optical waveguide device comprising the steps of:

providing a substrate;

forming an aerosol comprising liquid droplets of a solution containing all elements contained in a glass to be formed;

reacting said droplets by passing them through a flame to form particles of said glass;

depositing said particles on said substrate to form a particulate layer;

sintering said particulate layer to form a continuous layer; and

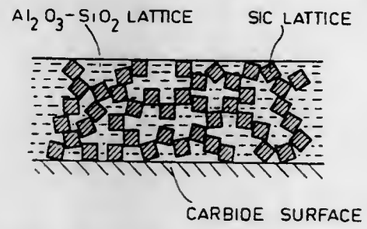
finishing said waveguide device.

5,622,751

METHOD OF PROTECTING PRODUCTS OF COMPOSITE MATERIAL AGAINST OXIDIZING AND PRODUCTS PROTECTED THEREBY

Jacques Thebault, Bordeaux; Marc Lacoste, Villenave D'Ornon, and Alain Nale, Saint Romain La Virvee, all of France, assignors to Soclete Europeenne de Propulsion, Suresnes, France

Continuation of Ser. No. 343,361, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 997,887, Dec. 29, 1992, abandoned. This application Jan. 8, 1996, Ser. No. 583,767
Claims priority, application France, Dec. 30, 1991, 91 16320
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—376.2 15 Claims



1. A method of protecting a composite material product against oxidation by means of at least one refractory ceramic and a healing composition, wherein the method comprises the following steps:

forming a coating on the product of composite material to be protected, said coating comprising a mixture of a non-oxide refractory ceramic consisting of particles smaller than fifty microns, at least one refractory oxide consisting of particles smaller than fifty microns and providing healing properties by forming a glass, and a binder comprising a polymer that is a precursor to a non-oxide refractory ceramic;

cross-linking said polymer that is a precursor to a non-oxide ceramic; and

transforming said polymer into ceramic so as to obtain a protective layer comprising a non-oxide refractory ceramic phase and a healing phase together having a structure comprising two completely commingled networks.

5,622,752

METHODS AND SYSTEM FOR APPLYING A UNIFORM COATING TO A MOVING WORKPIECE USING AN ULTRASONIC SPRAY HEAD

Stuart Erickson, Marblehead, and Drew Erickson, Newburyport, both of Mass., assignors to Ultrasonic Systems, Inc., Amesbury, Mass.

Filed Apr. 24, 1995, Ser. No. 427,145
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—421 18 Claims

1. A method for applying a uniform coating to a workpiece moving in a first direction in a two-dimensional plane, said first direction comprising a workpiece vector, said method comprising the steps of:

(a) employing an ultrasonic spray head ("head") disposed a predetermined distance from said two-dimensional plane to produce a uniform spray having a rectilinear shape with a predetermined width wherein the uniform spray has a uniform distribution and a uniform application force across the predetermined width when the ultrasonic spray head is active;

(b) providing a first linear displacement of said head relative to said workpiece while said head is active such that said workpiece receives a uniform rectangular-shaped coating of said predetermined width, wherein a head vector projected into said two-dimensional plane defines motion of said head relative to said workpiece vector, said head vector and said workpiece vector defining an acute angle;

(c) deactivating said ultrasonic spray head; and

(d) providing a second linear displacement of said head relative to said workpiece while said ultrasonic spray head is inactive such that no coating is received by said workpiece.

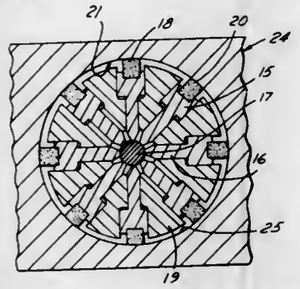
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5,622,753

METHOD OF PREPARING AND COATING ALUMINUM BORE SURFACES

Barry E. Shepley, Novi; Christopher K. Palazzolo, Ann Arbor; Robert E. DeJack, Whitmore Lake; John E. Chancey, Grosse Pointe Farms, and Deborah R. Pank, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1996, Ser. No. 630,106
Int. Cl.[6] C23C 4/10; B05D 7/22
U.S. Cl. 427—453 10 Claims



1. A method of preparing and coating an internal cylindrical bore surface of an aluminum workpiece comprising:

(a) inserting and rotatably reciprocally moving a plurality of honing elements against said bore surface with a pressure of at least 30 psi to effect a pattern of spiral overlapping abrasions on said surface, each element being constituted of multifaceted, irregular-shaped, abrasive particles, said particles, when in contact with said surface, plowing micro-sized, non-smooth and irregularly-spaced grooves in said aluminum workpiece, resulting in spiral peaks and valleys along the direction of movement of the particles, whereupon repeated reciprocation and rotation of the elements thereagainst results in overlapping grooves and cross-abrading of the prior peaks and valleys accompanied by a molding and folding over of certain said peaks and valleys to create irregular micro-sized tears, folds, and undercuts; and

(b) thermally spraying wear resistant metallic particles onto said abraded surface to form a cohesive coating, said deposited particles migrating into said non-smooth grooves and into said irregular tears, folds and undercuts during thermal deposition to increase the mechanical bond strength of said coating to said workpiece surface.

5,622,754

ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 453,409
Int. Cl.[6] B29D 22/00
U.S. Cl. 428—35.7 51 Claims

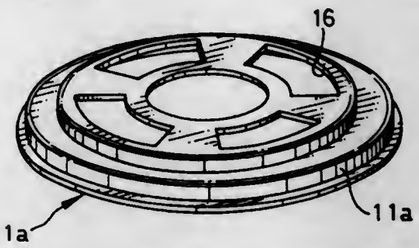
1. A disposable dish made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the disposable dish comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed disposable dish is flexible and may be substantially flattened and unflattened to assume the original shape of the formed disposable dish without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed disposable dish, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the disposable dish and for cooperating to retain the disposable dish in the formed shape, and wherein the disposable dish is selected from the group consisting of a plate, a saucer, a cup, and a bowl.

5,622,755

PHOTOGRAPHIC FILM CASSETTE

Kazunori Mizuno, Kanagawa; Takeshi Nabeta, and Mikio Shimizu, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1995, Ser. No. 542,702
Claims priority, application Japan, Oct. 19, 1994, 6-253716
Int. Cl.[6] B32B 1/08
U.S. Cl. 428—35.7 7 Claims



1. In a photographic film cassette comprising a spool rotably mounted in a cassette shell, a filmstrip being coiled about the spool into a roll, and capable of advancing a film leader out of the cassette shell by rotating the spool in an unwinding direction, the improvement wherein

a pair of flanges having improved durability, which are mounted on the spool to come into contact with end faces or outermost convolution of the film roll, are formed from a material comprising a polyphenylene ether resin composition, which is composed by mixing styrene resin with polyphenylene ether resin in a weight ratio of styrene resin to polyphenylene ether resin from 60:40 to 10:90; and mixing 6 to 19 parts by weight of elastomer per 100 parts by weight of said mixture of styrene resin and polyphenylene ether resin; wherein said material of said flanges further comprises 0.03 to 3 to parts by weight of dimethyl-polysiloxane particles having an average particle diameter of 20 to 1 μm, per 100 parts by weight of said polyphenylene ether resin composition.

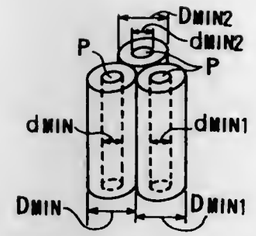
5,622,756

EXPANSION-MOLDED ARTICLE OF POLYOLEFIN RESIN HAVING OPEN VOIDS

Hisao Tokoro, Kamikawachi-machi; Satoru Shioya, and Akira Hinokawa, both of Utsunomiya, all of Japan, assignors to JSP Corporation, Tokyo, Japan

Filed May 12, 1995, Ser. No. 439,785
Claims priority, application Japan, Aug. 16, 1994, 6-214279; Aug. 23, 1994, 6-221167; Dec. 12, 1994, 6-332103; Mar. 7, 1995, 6-074638
Int. Cl.[6] B29D 22/00
U.S. Cl. 428—36.5 7 Claims

1. An expansion-molded article of a polyolefin resin, said expansion-molded article having open voids, said expansion-molded article obtained by filling tubular foamed particles of the polyolefin resin into a mold and fusion-bonding the tubular foamed particles to one another under heat;



wherein said tubular foamed particles have a through-hole and satisfy the following relationship

$$\frac{d_{MIN}}{D_{MIN}} = 0.25 - 0.85$$

wherein

d_{MIN} is a minimum diameter of said through-hole in sections perpendicular to the direction of the through-hole and is at least 1.5 mm and at most 10 mm, and

D_{MIN} is a minimum outer diameter of said tubular foamed particle in a section that d_{MIN} has been provided, and

wherein said expansion-molded article has a coefficient of water permeability of at least 4.0×10^{-2} cm/sec.

5,622,757

FUEL HOSE AND METHOD OF PRODUCING THEREOF

Koyo Murakami, Nagoya; Hiroaki Ito, and Tetsuji Narasaki, both of Komaki, all of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Feb. 16, 1996, Ser. No. 603,593
Claims priority, application Japan, Feb. 16, 1995, 7-28380
Int. Cl.[6] F16L 11/08
U.S. Cl. 428—36.91 4 Claims



1. A fuel hose comprising an outer rubber layer wherein polysulfide is crosslinked so that polysulfide bonding density is not less than 4×10^{-5} mol/cm^3 and an epoxy compound having epoxy equivalent at not more than 300 is contained, and an inner polyamide resin layer which is laminated on the inside face of the outer rubber layer and bonded thereon by heat treatment.

5,622,758

LABEL APPLICATOR

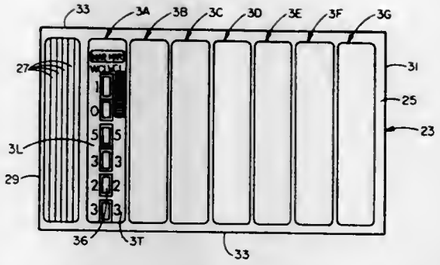
Jeffrey C. Hollis, Modesto, and Thomas S. Trebotich, Fremont, both of Calif., assignors to Tab Products Company, Palo Alto, Calif.

Division of Ser. No. 116,720, Sep. 3, 1993, Pat. No. 5,520,773.
This application Aug. 31, 1995, Ser. No. 521,920
Int. Cl.[6] B32B 7/12
U.S. Cl. 428—40.1 4 Claims

1. A label sheet useful for providing labels to a label applicator that applies the labels to pieces of stock comprising:

a. a flexible backing sheet having leading and trailing edges and opposed side edges;

b. stiffener means affixed to the backing sheet for providing bending stiffness to the backing sheet proximate the leading edge thereof while allowing the backing sheet proximate the leading edge to bend within the label applicator, the stiffener means bending with the backing sheet within the label applicator; and



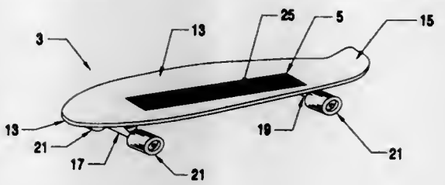
c. at least one label having leading and trailing portions affixed to the backing sheet between the stiffener means and the backing sheet trailing edge.

5,622,759

SKATEBOARD GRIP TAPE

Marco A. Fuster, 5907 Ipswich Rd., Bethesda, Md. 20814

Filed Jun. 23, 1995, Ser. No. 494,071
Int. Cl.[6] B62M 1/00
U.S. Cl. 428—40.2 16 Claims



1. A skateboard comprising:

a substantially flat elongated platform, a top surface of which is adapted to support a rider;

wheels mounted at each end of said elongated platform; and

see-through screen grip tape adhered to said top surface of said skateboard via an adhesive on only a single face of the tape, said screen grip tape including a screen structure coated on only its upper side with an abrasive material, and an array of apertures defined therein between crisscrossing elements of said screen structure such that the grip tape is substantially see-through and the rider is provided with gripping characteristics.

5,622,760

SHEETING MADE FROM POLYMERS OF ETHYLENE AND PROPYLENE, AND ITS USE

Dirk Leiss, Isernhagen, Germany, assignor to Benecke-Kaliko AG, Hanover, Germany

PCT No. PCT/EP94/02158, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO95/01390, PCT Pub. Date Jan. 12, 1995
PCT Filed Jul. 1, 1994, Ser. No. 392,850
Claims priority, application Germany, Jul. 2, 1993, 43 22 140.8
Int. Cl.[6] C08L 23/04
U.S. Cl. 428—41.3 9 Claims

1. Plastic sheeting comprising:

a) a homopolymer of propylene having a melt flow index (230° C./2.16 kg) of 0.8 to 3.0 g/10 minutes, a melting point Tm of 154° to 168° C. (determined with DSC) and an E-modulus of 900 to 1500 N/mm^2, (determined according to DIN 53 457);

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b) a homopolymer of ethylene having a melt flow index (230°/2.16 kg) of 1 to 4 g/10 minutes, a melting point Tm of 110° to 130° C. and E-modulus of 200 to 400 N/mm^2; and

c) an ethylene-propylene copolymer having a melt flow index (230° C./2.16 kg) of 1 to 4 g/10 minutes, a melting point Tm of 140° to 155° C. and an E-modulus of about 400 to 700 N/mm^2,

such that 5 to 20 parts by weight of the homopolymer of ethylene and 5 to 40 parts by weight of the ethylene-propylene copolymer are added to 100 parts by weight of the homopolymer of propylene.

5,622,761

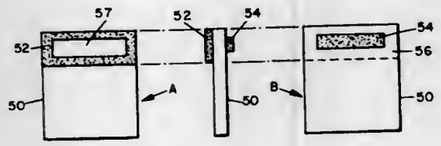
DOUBLE-SIDED RELEASEABLE ADHESIVE TAPE OR NOTE

Roger J. Cole, 12759 Via Felino, Del Mar, Calif. 92014

Filed Feb. 27, 1995, Ser. No. 394,772

Int. Cl.^{6} C09J *7/02*

U.S. Cl. 428—41.9 **38 Claims**



1. A sheet product which comprises:

a sheet of flexible material having a first side and an opposite second side;

a first adhesive attached to a portion of said first side and presenting an exposed area of said first adhesive for releaseable adherence of said sheet product to a first object;

a second adhesive attached to a portion of said second side and presenting an exposed area of said second adhesive for releaseable adherence of said sheet product to a second object;

at least one of said adhesives being applied to its respective side of said sheet in a manner such that a substantial area of said respective side of said sheet is free of adhesive; and

said exposed area of said first adhesive having different releaseability than said exposed area of said second adhesive.

5,622,762

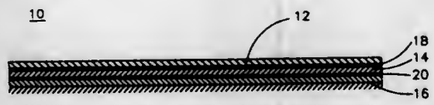
WET SUIT MATERIAL

Ivan L. Perla, 5437 Hansel Ave. J-10, Orlando, Fla. 32809

Filed Jun. 9, 1994, Ser. No. 257,142

Int. Cl.^{6} B65D *65/28;* **B32B** *3/02;33/00;* **A41D** *13/10*

U.S. Cl. 428—43 **5 Claims**



1. A multi-layer material for a diver's wet suit comprising:

an outer layer of a structural fabric;

a first inner layer of a plush layer of cotton, silk or synthetic fabric bonded to said outer layer;

a second inner layer of a plush layer of cotton, silk or synthetic fabric attached to said first inner layer opposite said outer layer; and

a water resistant bond between said outer layer and said first inner layer.

5,622,763

HYDROCARBON VAPOR-IMPERVIOUS CONTAINERS AND PROCESS FOR PRODUCING THEM

Annibale Vezzoli, Como; Aldemaro Ciaperoni, Milan, and Piero Furlan, Treviso, all of Italy, assignors to Montedipe S.r.l., Italy

Division of Ser. No. 380,920, Jan. 31, 1995, Pat. No. 5,567,491, which is a continuation of Ser. No. 144,630, Nov. 2, 1993, abandoned, which is a continuation of Ser. No. 914,222, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 483,650, Feb. 23, 1990, abandoned. This application Jul. 22, 1996, Ser. No. 681,346

Claims priority, application Italy, Feb. 23, 1989, 19546/89

Int. Cl.^{6} B32B *27/34;* **B65D** *65/40*

U.S. Cl. 264—45.7 **9 Claims**

1. A Process for producing a coated container impervious to hydrocarbon vapors in particular to fuel vapors, comprising an outer shell formed from a single layer of polyethylene elastic material, a single thin layer consisting of an in situ polymerized poly-omega-lactam from caprolactam monomers coated on a surface of said single polyethylene plastic layer and adhered thereto, said thin layer covering the plastic layer and being in contact with the hydrocarbon vapor, said thin layer further being formed without substantially altering the mechanical-dynamic properties including impact strength of said polyethylene layer, and wherein said thin layer is between zero and 5 mm in thickness;

wherein the poly-omega-lactam is prepared by polymerization of an omega-lactam having the formula:

$$\left[CH_2-(CH_2)_n-NH-CO\right] \quad (I)$$

wherein n is an integer ranging from 1 to 10; and

wherein the poly, omega-lactam layer contains amounts not greater than 15% by weight with respect to the polymer, of a polyoxyalkylene polyol having a molecular weight greater than 400, of a polyoxypropylene//polyoxyethylene polyol copolymer having a molecular weight ranging from 1,000 to 20,000, or of a polyoxyalkylene amine having a functionality lower than 3, by carrying out anionic polymerization of the omega-lactam directly inside the plastic material container heated to the lactam polymerization temperature and while it is subjected to rotation on two intersecting axes arranged at an angle to each other.

5,622,764

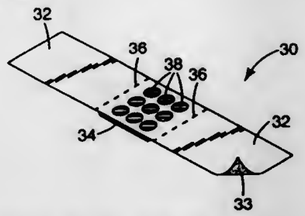
STERILIZATION INDICATORS AND METHODS

Donald R. Battles, Arden Hills, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 7, 1995, Ser. No. 477,543

Int. Cl.^{6} B32B *3/00;3/10;7/08*

U.S. Cl. 428—52 **14 Claims**



1. A sterilization indicator, comprising:

two backing strips, each of said backing strips having ends and opposing sides and a moisture-resistant, water-dispersible, pressure sensitive adhesive on at least one of said opposing sides; and

a sterilization indicator strip affixed to an end of each of said backing strips such that said sterilization indicator strip is easily removable from the backing strips prior to laundering and said sterilization indicator strip comprises an indicator ink in combination with a backing, wherein said indicator ink is capable of undergoing a color change when exposed to sterilization conditions.

5,622,765

RESILIENT HIGH SHRINKAGE PROPYLENE POLYMER YARN AND ARTICLES MADE THEREFROM

Luciano Clementini, Terni, Italy; Adam F. Galambos, New Castle County, Del.; Giuseppe Lesca, Milan, Italy; Kumar Ogale, New Castle County, Del.; Leonardo Spagnoli, Terni, Italy, and Michael E. Starsinic, Cecil County, Md., assignors to Montell North America Inc., Wilmington, Del.

Division of Ser. No. 371,056, Jan. 10, 1995, Pat. No. 5,486,419, which is a continuation-in-part of Ser. No. 824,661, Jan. 23, 1992, abandoned. This application Sep. 21, 1995, Ser. No. 531,983

Int. Cl.^{6} B32B *3/02;* **C08L** *23/06;* **C08F** *10/04*

U.S. Cl. 428—97 **2 Claims**

1. A saxony carpet containing a primary backing and twisted, evenly sheared, heat-set pile yarn, said yarn being in the form of individual lengths of plied yarn or tufts, each of which is attached to and projects upwardly from said backing and terminates as a cut end, said pile yarn comprising propylene polymer yarn of increased resiliency and shrinkage compared to crystalline propylene homopolymer yarn, having a continuous strand of multiple monofilament fibers, said fibers consisting essentially of a member selected from the group consisting of, by weight,

I. a blend of crystalline propylene homopolymer at a concentration of about 10–70% of the blend, and (a) a random crystalline terpolymer consisting essentially of about 96.0–85.0% of propylene, about 1.5–15.0% of ethylene, and about 2.5–10% of a C_4–C_8 alpha-olefin or (b) a random, crystalline, propylene polymer consisting essentially of propylene and about 1.5–20.0% of an olefin selected from the group consisting of ethylene and C4–C8 aplha-olefins; and

II. a proplylene polymer material, optionally in a blend with crystalline, propylene homopolymer, said homopolymer being at a concentration up to about 70% of the blend, said propylene polymer material being selected from the group consisting of:

(a) a composition of random, crystalline, propylene polymers consisting essentially of:

(1) about 30–65% of a copolymer of about 80–90% propylene, and a C_4–C_8 alpha-olefin, and

(2) about 35–70% of a copolymer of propylene and ethylene and optionally about 2–10% of a C_4–C_8 alpha-olefin, said copolymer containing about 2–10% ethylene when said C_4–C_8 alpha-olefin is not present, and about 0.5–5% ethylene when said C_4–C_8 alpha-olefin is present;

(b) a composition of random, crystalline, propylene polymers and a predominantly ethylene copolymer, which composition consists essentially of:

(1) about 15–35% of a terpolymer of about 90–93% propylene, about 2–3.5% ethylene, and about 5–6% C_{4-C8} alpha-olefin,

(2) about 30–75% of a copolymer of about 80–90% propylene, and a C_4–C_8 alpha-olefin, and

(3) about 20–60% of a copolymer of about 91–95% ethylene, and a C_4–C_8 alpha-olefin;

(c) a heterophasic, polyolefin composition consisting essentially of:

(1) 90–55% of polymeric material selected from the group consisting of a propylene homopolymer having an isotactic index greater than 90, and a crystalline copolymer of propylene and an alpha-olefin of the formula CH_2=CHR, where R is H or C_2–C_6 alkyl said olefinic material being less than 10% of the copolymer, and

(2) 10–45% of an elastomeric polymer and propylene and olefinic material selected from the group consisting of alpha-olefins of the formula CH_2=CHR, where R is H or C_2–$_6$ alkyl, said olefinic material being 50–70% of said elastomeric copolymer, and 10–40% of said elastomeric copolymer being insoluble in xylene at ambient temperature.

5,622,766

COMPOUND THREADS, FABRICS PROVIDED THEREFROM

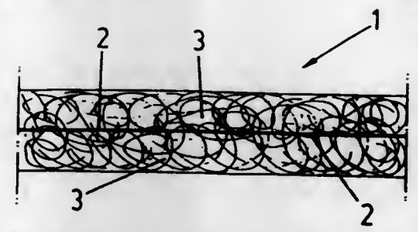
Antonio Caballero Rodriguez, and Leopoldo Marti Andres, both of Barcelona, Spain, assignors to TT 1U, S.L., Barcelona, Spain

Filed Jun. 10, 1994, Ser. No. 259,174

Claims priority, application Spain, Jun. 17, 1993, 9301348; Jun. 17, 1993, 9301349

Int. Cl.^{6} B32B *5/12*

U.S. Cl. 428—110 **12 Claims**



1. A band useful in the manufacture of garments and cloths, as well as in obtaining compound threads, the band comprising:

at least two substantially parallel carrier threads made of first fibers and being spaced from each other to define a space between said carrier threads;

a mass of fibers filling said space and covering at least one side of said carrier threads, wherein at least a first portion of said mass of fibers is made of a fiber material, said first portion comprises second fibers produced when carding said fiber material, said second fibers have a shorter average length than an average length of said first fibers, said carrier threads are bonded together only by said mass of fibers, said second fibers forming said mass of second fibers are bonded with adjacent second fibers and to said carrier threads thereby forming a single means for bonding said carrier threads.

5,622,767

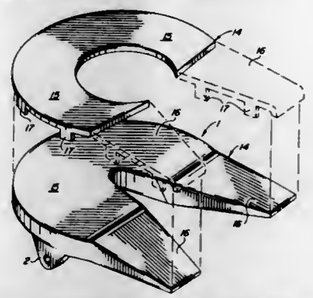
FIFTH WHEEL INSERT, LAMINATE COMPOSITE AND METHOD OF CONSTRUCTION

Michael S. Cork, Richardson, Tex., assignor to Superior Environmental Products, Inc., Addison, Tex.

Division of Ser. No. 458,029, Jun. 1, 1995. This application Jun. 7, 1995, Ser. No. 485,022

Int. Cl.^{6} B32B *3/02;* **B62D** *53/08*

U.S. Cl. 428—121 **2 Claims**



1. An insert for mounting on a fifth wheel having a bearing surface and ramps, said insert comprising a cap shaped substan-

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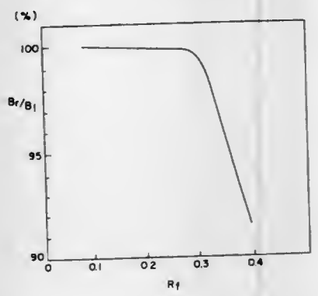
ially in the configuration of at least said bearing surface of the fifth wheel, a friction-reducing, fiber-reinforced polyethylene laminated composite boned to said cap and a plurality of weld tabs extending from said cap in spaced relationship with respect to each other, such that said weld tabs are welded to the fifth wheel responsive to positioning of said cap on said fifth wheel.

5,622,768

MAGNETIC CORE

Yumie Watanabe, Tokyo-To; Yumiko Takahashi, Koshigaya; Takao Sawa; Yoshiyuki Yamauchi, both of Yokohama; Susumu Matsushita, Yokosuka, and Masami Okamura, Yokohama, all of Japan, assignors to Kabushiki Kaishi Toshiba, Kawasaki, Japan

Continuation of Ser. No. 793,347, Jan. 13, 1992, abandoned.
This application May 4, 1994, Ser. No. 238,332
Int. Cl.[6] B32B 3/10; H03K 3/00; H01F 27/24
U.S. Cl. 428—141 9 Claims



1. A magnetic core formed by winding or laminating an alloy ribbon, the magnetic core having a saturation magnetic characteristic of no more than 550 G and having a squareness ratio of Br/Bl, wherein Br is remanent magnetic flux density and Bl is magnetic flux density at a magnetic field of 1 Oe, of at least 96% at a frequency of 100 kHz,

the saturation magnetic characteristic being expressed by a difference between a magnetic flux density obtained by applying a magnetic field of 16 Oe to a magnetic core having an outer diameter of 15 mm and an inner diameter of 10 mm and a height of 4.5 mm, with 10 turns using a measurement frequency of 100 kHz, wherein:

the alloy ribbon comprises an alloy having at least 50.4 at % of Co or an alloy having at least 42 at % of Fe,

a first surface of said alloy ribbon has a surface roughness wherein the area occupied by concavities formed on the first surface is no more than 30% of the total area of said first surface,

a second surface of said alloy ribbon has a surface roughness value in the longitudinal direction of said alloy ribbon that satisfies the following equation:

$$Rf \leqq 0.3,$$

wherein Rf is a parameter characterizing a roughness as determined by the equation:

$$Rf = Rz/T,$$

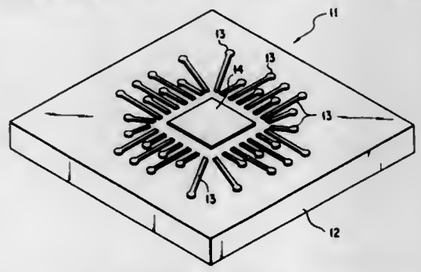
wherein Rz represents the average roughness of ten points at a standard length of 2.5 mm, and T represents the average plate thickness determined by the weight of the alloy ribbon.

5,622,769

CERAMIC CIRCUIT BOARD HAVING A THERMAL CONDUCTIVITY SUBSTRATE

Shoji Kozuka, Kawasaki; Masaru Hayashi, Yokohama; Katsuyoshi Oh-Ishi; Takaaki Yasumoto, both of Kawasaki; Nobuo Iwase, Kamakura; Hiroshi Endo, Yokohama; Koji Yamakawa, Kawasaki; Kaoru Koiwa, Kawasaki, and Kiyoshi Iyogi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1994, Ser. No. 194,495
Claims priority, application Japan, Feb. 12, 1993, 5-023105
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—209 5 Claims



1. A ceramic circuit board comprising:

a ceramic substrate including an aluminum nitride sintered body having a surface and a coating layer formed on the surface of said sintered body, said coating layer consisting essentially of aluminum phosphate and having a surface roughness of not more than 1 μm; and

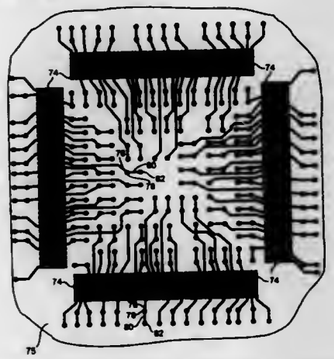
a conductive pattern formed on a surface of said coating layer.

5,622,770

PRINTED CIRCUIT BOARD DESIGN UTILIZING FLEXIBLE INTERCONNECTS FOR PROGRAMMABLE LOGIC COMPONENTS

Gary L. Dowdy, and William P. Hart, both of Raleigh, N.C., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 363,452, Dec. 22, 1994, abandoned.
This application Feb. 9, 1996, Ser. No. 605,337
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—209 13 Claims



1. A printed circuit board adaptable to vary conductive paths between a multiple pin integrated circuit package and a plurality of circuit components disposed on said top side of said circuit board comprising:

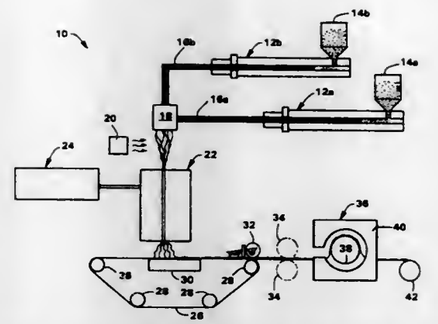
a. a plurality of conductive planes, including a top side and a bottom side;

b. a spaced plurality of electrically conductive mounting pads disposed on said top side, said plurality of mounting pads for electrically and physically coupling each pin of said multiple pin integrated circuit package to the printed circuit board;

c. a plurality of via pairs, each via pair having a first via coupled to one of said plurality of mounting pads by a first conductive path and a second via coupled to said first via by a second conductive path, said first and second vias having a through hole formed from said top side to said bottom side of said circuit board, said through hole having an electrically conductive material plated onto an inside surface, said vias for electrically connecting a conductive path on the top side with a conductive path on the bottom side of said circuit board;

d. a plurality of third conductive paths disposed on said top and bottom sides of said circuit board, each of said plurality of third conductive paths for coupling one of said second vias to one of said plurality of circuit components, providing a complete conductive path from one of said pins of said integrated circuit package to said one circuit component; and

e. wherein said second conductive path is adaptable to change said complete conductive path from one of said pins of said integrated circuit package to said one circuit component to a different complete conductive path from said one pin to a different circuit component.

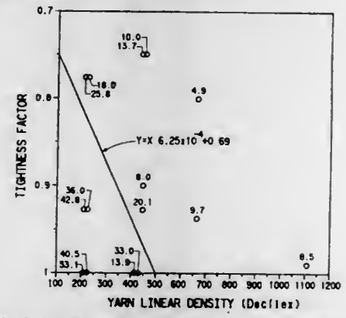


5,622,771

PENETRATION-RESISTANT ARAMID ARTICLE

Minshon J. Chiou; Brian E. Foy, both of Chesterfield, Va., and Louis H. Miner, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 24, 1996, Ser. No. 669,655
Int. Cl.[6] F41H 1/02; B32B 5/06;3/10
U.S. Cl. 428—219 5 Claims



1. A flexible, penetration resistant, article consisting essentially of fabric woven to a fabric tightness factor of at least 0.75 from aramid yarn having a linear density of less than 500 dtex, a toughness of at least 30 Joules/gram, and made from filaments having a linear density of less than 1.67 dtex, wherein the relationship between the fabric tightness factor and the linear density of the yarn is

$$Y = or > X\ 6.25 \times 10^{-4} + 0.69$$

wherein Y=fabric tightness factor and X=linear yarn density.

5,622,772

HIGHLY CRIMPABLE SPUNBOND CONJUGATE FIBERS AND NONWOVEN WEBS MADE THEREFROM

Ty J. Stokes, Suwanee; Alan E. Wright, Woodstock, and Simon K. Ofosu, Lilburn, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 253,876, Jun. 3, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,644
Int. Cl.[6] D03D 3/00
U.S. Cl. 442—401 10 Claims

1. A lofty nonwoven fabric having a bulk of at least about 20 mils/osy and comprising crimped conjugate spunbond fibers, said conjugate spunbond fibers having a weight per unit length equal to or less than about 2.5 denier and comprising:

a propylene polymer component, wherein said propylene polymer component comprises a propylene polymer having a melt flow rate between about 50 g/10 min. and 200 g/10 min. as measured in accordance with ASTM D1238, Testing Condition 230/2.16 and is selected from homopolymers and copolymers of propylene and blends thereof, and

an ethylene polymer component, wherein said ethylene polymer component comprises an ethylene polymer which is selected from homopolymers and copolymers of ethylene,

wherein each of said components occupies a distinct section for substantially the entire length of said spunbond fiber.

5,622,773

PROCESS FOR PLASMA TREATMENT OF ANTIBALLISTICALLY EFFECTIVE MATERIALS

Andreas Reiner, Sulzbach; Dieter H. P. Schuster, and Achim G. Fels, both of Wuppertal, all of Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands

PCT No. PCT/EP94/02572, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO95/04854, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 3, 1994, Ser. No. 387,923
Claims priority, application Germany, Aug. 7, 1993, 43 26 555.3; Jul. 9, 1994, 44 24 320.0
Int. Cl.[6] D03D 3/00
U.S. Cl. 442—135 20 Claims

1. A process for plasma treatment of antiballistically effective materials, said plasma treatment comprising:

treating the antiballistically effective materials in a first stage treatment in a first plasma comprising at least 50% or at least one first inorganic gas, and

treating the antiballistically effective materials in a second stage treatment in a second plasma comprising at least one hydrophobically acting organic gas selected from the group consisting of saturated hydrocarbons, unsaturated hydrocarbons, saturated fluorocarbons, unsaturated fluorocarbons, siloxanes, and vinyl compounds, or a mixture of at least one hydrophobically acting organic gas and at least one second inorganic gas.

5,622,774

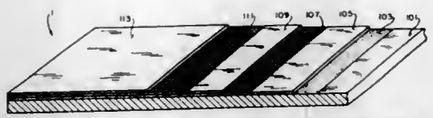
REINFORCED THERMAL PROTECTIVE SYSTEM

Rubin Feldman, Ladue, and Edward W. Taylor, Manchester, both of Mo., assignors to Thermal Science, Inc., Fenton, Mo.

Continuation of Ser. No. 14,816, Feb. 8, 1993, abandoned.
This application Dec. 29, 1994, Ser. No. 368,382
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—136 18 Claims

1. A system for protection against hyperthermal heating comprising an active thermal protective composition and at least one

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foraminous layer of a cloth embedded in the composition, the active thermal protective composition responding to thermal extremes by exhibiting a small volume increase through the formation of an open cell matrix and undergoing an endothermic phase change, the cloth comprising a conformable, non-self-supporting, high-temperature, high-emissivity graphite material, the system providing at least 20% longer protection under conditions of high temperature and high shear forces than a similar system in which the cloth is a fiberglass material.

5,622,775

LAYERED SMOOTH SURFACE ARAMID PAPERS OF HIGH STRENGTH AND PRINTABILITY

Philip P. Burks, Jr., Chesterfield, and Lee J. Hesler, Richmond, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 107,841, Aug. 24, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,705

Int. Cl.[6] B32B *33/00*; **D21H** *13/26;27/38*

U.S. Cl. 442—392 **4 Claims**

1. A multi-layered smooth-calendered aramid paper having a surface suitable for high quality printing wherein the paper contains from 40 to 55% by weight of fibrids and comprises a substrate layer which consists essentially of aramid fibrids and floc and one or two surface layers, each bonded to the substrate layer to from a single consolidated sheet, said surface layer(s) comprising from 10 to 67% of the weight of the paper and consisting essentially of from 65 to 90% by weight aramid fibrids and from 10 to 35% by weight aramid floc and wherein the entire surface of the paper is smooth-calendered.

5,622,776

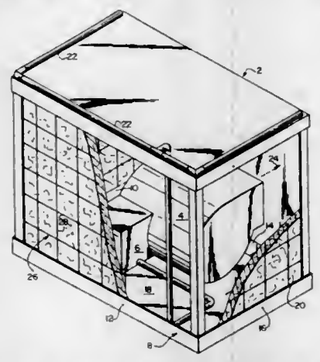
COATED GLASS FIBER FOR USE IN EVAPORATIVE COOLER MEDIA AND METHOD OF FORMING SAME

Esu S. Esu, Morgantown, W. Va., assignor to Hollinee Corporation, Broad Axe, Pa.

Division of Ser. No. 72,697, Jun. 7, 1993, Pat. No. 5,340,651, which is a continuation of Ser. No. 777,145, Oct. 16, 1991, abandoned. This application Apr. 5, 1994, Ser. No. 223,433

Int. Cl.[6] D04H *1/58*

U.S. Cl. 442—118 **6 Claims**



1. A process for improving the water wicking capacity of glass fiber fabricated for use in evaporative cooler media comprising coating said fiber with a blend of an amine-aldehyde and an acrylic, and curing said coating on said fiber by exposure to heat.

5,622,777

HEAT-RESISTANT REINFORCED FOAM

Michael P. Dempsey, Aliquippa, Pa., assignor to Bayer Corporation, Pittsburgh, Pa.

Filed May 17, 1995, Ser. No. 442,622

Int. Cl.[6] B32B *27/00*

U.S. Cl. 442—374 **13 Claims**

1. A process for preparing a heat-resistant reinforced polyurethane/polyurea foam comprising

(A) preparing, at an isocyanate index of 100 to 115, a foamable reaction mixture comprising

(a) an organic polyisocyanate;

(b) 0 to 80% by weight, based on the total amount of components (b), (c), and (d), of an isocyanate-reactive compound containing two or more isocyanate-reactive groups and having a number average molecular weight of from 400 to about 10,000;

(c) 10 to 90% by weight, based on the total amount of components (b), (c), and (d), of an isocyanate-reactive compound containing two or more isocyanate-reactive groups other than amino groups and having a molecular weight of from 32 to 399; and

(d) 5 to 35% by weight, based on the total amount of components (b), (c), and (d), of an organic amine containing at least one amino group having a moderated reactivity toward the organic polyisocyanate, as indicated by a gel time exceeding about 5 seconds measured from the material initiation time at 25°–40° C., and having a number average molecular weight of from 86 to 400, said organic amine being selected from the group consisting of

(1) a sterically hindered aromatic amine in which one or more aromatic ring substituents are situated ortho to the amino groups,

(2) an aromatic amine other than amine (d)(1) in which at least one of the amino groups exhibits reduced reactivity due primarily to electronic effects rather than steric factors,

(3) an aromatic or non-aromatic amine having secondary amino groups,

(4) a non-aromatic amine having sterically hindered primary amino groups, and

(5) mixtures thereof; and

(B) introducing foamable reaction mixture (A), while said reaction mixture (A) is still fluid, into a mold containing about 12 to about 35% by weight of a fibrous mat having a weight per unit area of about 225 g/m^2 to about 750 g/m^2.

5,622,778

SYNTHETIC RESIN COMPOSITION AND INTERIOR MATERIAL COATED WITH THE SAME

Mitsumasa Horii, Seto; Masahiro Sugiura, Aichi-ken; Seiji Onoda, Seto; Yoshio Yamada, Nagoya; Osamu Araki, Toyota; Yoshiro Umemoto, Nagoya; Kazuo Ito, Toyoake; Takatoshi Sekihara, Nagoya; Akihiro Matsuyama, Nagoya; Masaaki Izumichi, Nagoya; Kiyoshi Umehara, and Reizaburo Tomioka, both of Takaishi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken; Toyota Jidosha Kabushiki Kaisha, Toyota; Toyoda Boshoku Corporation, Kariya, and Dainippon Ink and Chemicals, Incorporated, Tokyo-to, all of Japan

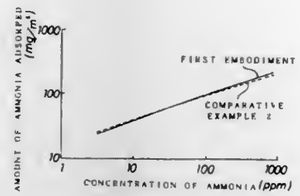
Division of Ser. No. 250,865, May 27, 1994, Pat. No. 5,539,015, which is a continuation of Ser. No. 918,040, Jul. 24, 1992, abandoned. This application Jan. 26, 1996, Ser. No. 592,232

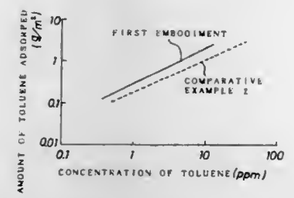
Claims priority, application Japan, Jul. 25, 1991, 3-209797; Nov. 19, 1991, 3-331183; Nov. 29, 1991, 3-317008; Mar. 16, 1992, 4-058494; Mar. 16, 1992, 4-058495

Int. Cl.[6] B32B *27/00*

U.S. Cl. 442—118 **3 Claims**

1. A fabric coated with a synthetic resin composition, wherein said synthetic resin composition comprises an aqueous medium, two surfactants, and a resin and an odor-reducing amount of filler dispersed in said aqueous medium by said surfactants wherein said resin is selected from the group consisting of an acrylic resin, an





ethylene-vinyl acetate resin, a polyurethane resin and a polybutadiene resin, said filler comprises a hydrated magnesium silicate based clay mineral and activated carbon, wherein said filler is present in an amount of 50 to 200 parts by weight based on 100 parts by weight of said resin, said surfactants comprising (i) from 0.1 to 20 parts by weight of a first high molecular weight compound having a weight-average molecular weight of at least 10000 and (ii) from 0.3 to 10 parts by weight of a second high molecular weight compound having a weight-average molecular weight of not less than 150 and less than 10000, with respect to 100 parts by weight of said resin so as to maintain an action of deodorization of said filler and so the content of said resin and said filler can be increased, wherein said composition has a solids content of at least 25%.

5,622,779

CELLULAR FACTORS THAT REGULATE THE EXPRESSION OF GENES ENCODING PROTEINS INVOLVED IN CHOLESTEROL HOMEOSTASIS AND METHODS OF USING SAME

Roger Davis, Solana Beach, Calif., assignor to San Diego State University Foundation, San Diego, Calif.

Filed May 27, 1994, Ser. No. 250,810

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—520 **17 Claims**

1. A substantially purified cellular factor that regulates the expression of a gene encoding a protein involved in cholesterol homeostasis, wherein said factor elutes at 11.27 minutes by reverse phase-high performance liquid chromatography (RP-HPLC) using acetonitrile:methanol (70:30) as a solvent.

5,622,780

MICROWAVEABLE MULTILAYER FILMS WITH METAL-LIKE APPEARANCE

Mario Paleari, Pogliano Milanese, Italy, assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed May 4, 1995, Ser. No. 434,827

Claims priority, application European Pat. Off., May 11, 1994, 94201350

Int. Cl.[6] B32B *5/16*

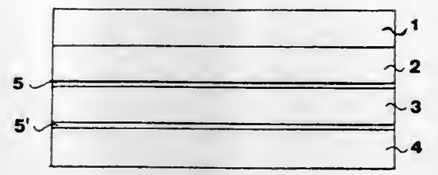
U.S. Cl. 428—328 **13 Claims**

1. A microwaveable multilayer film with metallic appearance, comprising at least:

a) a sealing layer,

b) an interior layer, and

c) an outer abuse layer,



wherein the film comprises from about 0.05 to about 2.5% by weight, based on the total weight of the film, of aluminum powder in finely divided form, dispersed in at least one layer selected from the interior and the outer abuse layers;

and wherein the film is capable of being crossed by at least 70% of the microwaves generated by a microwave oven without negatively interfering therewith.

5,622,781

COATED SUBSTRATE FOR USE AS A TONER RECORDING MEDIUM AND METHOD OF MAKING SAME

Norman Macaulay, Tonawanda; Nancy G. Mitchell, Grand Island, and Mary R. Dean, Williamsville, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 11,715, Feb. 1, 1993, Pat. No. 5,437,925, which is a continuation-in-part of Ser. No. 684,202, Apr. 12, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 464,002

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—331 **19 Claims**

1. A toner recording medium comprising;

a substrate having coated thereon a toner receptive composition ranging from about 50 to up to 90 parts of a particulate silica and about 10 to 50 parts of a polyvinyl alcohol, by dry weight, in a coating weight of less than 2.0 g/m^2 per side of the substrate; wherein the substrate has a Stockigt sizing degree before coating greater than 25 seconds.

5,622,782

FOIL WITH ADHESION PROMOTING LAYER DERIVED FROM SILANE MIXTURE

Charles A. Poutasse, III, Beachwood, and Andrea M. Kovacs, Lakewood, both of Ohio, assignors to Gould Inc., Eastlake, Ohio

Continuation of Ser. No. 53,721, Apr. 27, 1993, abandoned. This application Jun. 22, 1994, Ser. No. 264,192

Int. Cl.[6] C09J *7/02*

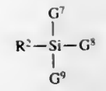
U.S. Cl. 428—344 **16 Claims**

1. A copper foil having an adhesion promoting layer overlying at least one side of said foil, said adhesion promoting layer being suitable for enhancing adhesion between said foil and another substrate, said adhesion promoting layer being derived from a composition comprising silanes (A) and (B);

silane (A) being at least one selected from the group consisting of tetramethoxysilane, tetraethoxylsilane, tetrapropoxysilane, tetra-n-butoxysilane, tetrakis(2-ethoxyethoxy)silane, tetrakis(2-ethylbutoxy)silane, tetrakis(2-ethylhexoxy)silane, tetrakis(methoxyethoxyethoxy)-silane, tetrakis(2-methoxyethoxy)silane, tetrakis(1-methoxy-2-propoxy)silane, bis[3-(triethoxysilyl)propyl]amine, bis[3-(trimethoxysilyl)propyl]ethylenediamine, bis(trimethoxysilylethyl)benzene, 1,6-bis(trimethoxysilyl)-hexane, 1,2-bis(trichlorosilyl)ethane, 1,6-bis(trichlorosilyl)hexane, and 1,8-bis(trichlorosilyl)octane; and

silane (B) being at least one compound represented by the formula

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wherein R^2 is an organofunctional group, said organofunctional group being reactive with said another substrate; and G^7, G^8 and G^9 are independently halogen, hydrocarbyloxy, or hydroxy groups.

5,622,783

PRESSURE-SENSITIVE ADHESIVE AND A PRESSURE-SENSITIVE COMPRISING CONSTRUCTION CONTAINING A LAYER OF THE ADHESIVE

L. Huizer, Zoetermeer; H. van der Bent, Katwijk, and P. J. Heederik, Delft, all of Netherlands, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 795,970, Nov. 22, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 215,002

Claims priority, application Netherlands, Nov. 23, 1990, 90.02557

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—355 EN **21 Claims**

1. A pressure-sensitive adhesive suited for use as a permanent pressure-sensitive adhesive for plasticized vinyl substrates which comprises an ethylene-vinyl acetate copolymer in which the vinyl acetate content of the copolymer is more than 40% by weight of the copolymer in admixture with a plasticizer and a modifying thermoplastic polymer which is sufficiently polar to be compatible with the plasticizer and compatible with the ethylene-vinyl acetate copolymer, said modifying polymer being present in an amount 5 to 50% by weight of the adhesive, said ethylene-vinyl acetate copolymer present in an amount of at least 5% by weight of the adhesive and said plasticizer being present in a positive amount up to 50% by weight of the pressure-sensitive adhesive.

5,622,784

SYNTHETIC RESIN OPHTHALMIC LENS HAVING AN INORGANIC COATING

Etsuo Okaue; Mikito Nakajima; Satoshi Kubota, and Takao Mogami, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 20,181, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 759,990, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 3,883, Jan. 16, 1987, abandoned. This application Jan. 18, 1994, Ser. No. 183,105

Claims priority, application Japan, Jan. 21, 1986, 61-010468; Feb. 3, 1986, 61-021381; Feb. 3, 1986, 61-021382; Apr. 21, 1986, 61-091568

Int. Cl.[6] B32B *9/04;* **G02C** *7/10;11/08*

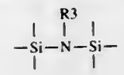
U.S. Cl. 428—447 **22 Claims**

1. A method for making a synthetic resin opthalmic lens having an SiO_2 antireflective coating film resistant to spots caused by water, comprising coating a synthetic resin ophthalmic lens substrate with an antireflective coating of SiO_2 and treating the surface of the SiO_2 coating film at a temperature from 10° to 60° C. with at least a compound which reacts with or is adsorbed onto the surface of the coating to improve the water repellency of the treated film, the compound selected from the group consisting of:

(1) halogenated silane compounds;

(2) silane compounds having a linkage selected from the group of Si-SH and Si-SR wherein R is an organic group; and

(3) silane compounds having an Si-N linkage in the form of



wherein R3 is hydrogen or an organic group; and

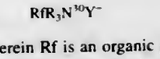
(4) organic compounds having fluorine substituting groups selected from

(i) acyl halides represented by the formula:



wherein Rf is an organic group partially substituted by fluorine and X is halogen;

(ii) ammonium salt represented by the formula:



wherein Rf is an organic group partially substituted by fluorine, R is an alkyl group having 1 to 3 carbon atoms, and Y^- is anion selected from the group consisting of halogen ion, sulfate ion and carboxylic acid ion;

(iii) isocyanate esters represented by Rf—N=C=O and thioisocyanate esters represented by Rf—N=C=S wherein Rf is an organic group partially substituted by fluorine;

(iv) hydrogen fluoride; and

(v) metal fluorides.

5,622,785

COATING FOR A BRAKE PAD, A METHOD OF REDUCING BRAKE PAD NOISE, AND A BRAKE PAD

Dennis A. Gaylor, Clover, S.C., and Donald L. Burgoon, Gastonia, N.C., assignors to Performance Friction Corporation, Clover, S.C.

Filed Jan. 31, 1994, Ser. No. 188,936

Int. Cl.[6] B32B *27/08;27/42;* **B05D** *3/02;* **C08J** *5/14*

U.S. Cl. 428—525 **10 Claims**

4. A brake pad coated with a cured composition comprising about 40 to about 90% by weight of a phenol formaldehyde thermosetting resin;

about 1 to about 40% by weight of graphite;

about 1 to about 40% by weight of molybdenum disulfide; and

0 to about 40% by weight of fillers and pigments.

5,622,786

POLYMER-REINFORCED, EUCALYPTUS FIBER-CONTAINING PAPER

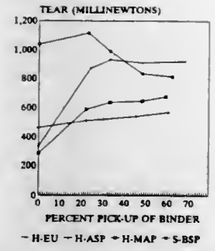
Robert E. Weber, Marietta; Linda G. Harris, Lawrenceville, and Amy B. Reed, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 30, 1994, Ser. No. 346,665

Int. Cl.[6] D21H *21/22;11/00;* **B32B** *29/00;* **D21F** *11/00*

U.S. Cl. 428—537.5 **19 Claims**

1. An improved-strength, polymer-reinforced paper comprising: fibers, of which at least about 30 percent on a dry weight basis are eucalyptus fibers; and



from about 15 to about 60 percent on a dry weight basis, based on the dry weight of the fibers, of a latex binder.

5,622,787

MASK FOR TRANSFERRING A PATTERN FOR USE IN A SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

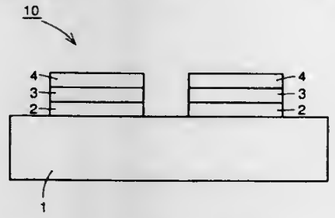
Hirofumi Sakata, and Tadashi Nishioka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor Systems Engineering Corporation, Hyogo, both of Japan

Filed Sep. 26, 1994, Ser. No. 311,441

Claims priority, application Japan, Dec. 9, 1993, 5-309248

Int. Cl.[6] H01L *21/30*

U.S. Cl. 428—620 **6 Claims**



1. A mask for transferring a pattern comprising:

a transparent substrate having a main surface;

a semiconductor monocrystalline film formed with a pattern feature on the main surface of said transparent substrate;

a metal monocrystalline film formed on said semiconductor monocrystalline film; and

a metal oxide anti-reflection film, having a thickness in the range of 50 to 100 nm, formed on said metal monocrystalline film.

5,622,788

METHOD OF SOLDER BONDING, AND ARTICLE PRODUCED BY THE METHOD

John V. Gates, II, New Providence; Gerard E. Henein, Chatham, and Joseph Shmulovich, Murray Hill, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 355,146, Dec. 13, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 555,933

Int. Cl.[6] B32B *15/00*

U.S. Cl. 428—688 **7 Claims**

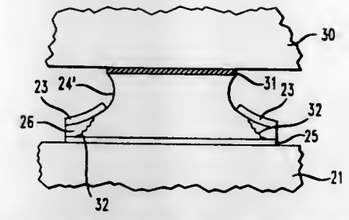
1. An article comprising

a) a first body, with a bonding pad disposed on a surface of the first body; and

b) a second body that is joined to the first body at the bonding pad by means of solder of a given composition;

CHARACTERIZED IN THAT the article further comprises

c) a confinement layer, having a window therethrough for receiving a portion of the solder of the given composition and disposed on said bonding pad, said confinement layer being substantially inert with respect to molten solder of the given composition at a soldering temperature; wherein



d) the bonding pad comprises a first layer of a sacrificial material selected to interact at the soldering temperature with molten solder of the given composition such that, after cooling of the solder below the melting point thereof, re-solidified molten material comprising a portion of the solder and a portion of the sacrificial material extends laterally and vertically beyond said window whereby at least a portion thereof forms a wedge shape to distribute stress over an area of said first body larger than the area of said bonding pad disposed on said first body prior to interaction between said solder and said sacrificial material.

5,622,789

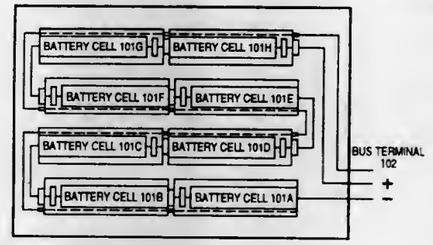
BATTERY CELL HAVING AN INTERNAL CIRCUIT FOR CONTROLLING ITS OPERATION

Steven J. Young, Milpitas, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 12, 1994, Ser. No. 310,802

Int. Cl.[6] H01M *2/20;2/22;2/30*

U.S. Cl. 429—7 **25 Claims**



1. A battery cell comprising:

a positive terminal;

a negative terminal;

a battery cell core coupled to the negative terminal and positive terminal to provide power externally using the positive terminal and the negative terminal;

a circuit coupled to the battery cell core to monitor the battery cell state;

a bus coupled to the circuit and having separate bus terminals at both the positive and negative terminals to communicate conditions of the battery cell core; and

a charging device coupled to the battery cell core to charge the battery cell core.

5,622,790

FUEL CELL AND CATALYST FOR USE THEREIN

Andrew L. Dicks, Ashby De La Zouch; Thomas A. Smith, Melton Mowbray, and Stephen H. Clarke, Hugglescote Coalville, all of Great Britain, assignors to British Gas PLC, London, Great Britain

Filed Dec. 11, 1995, Ser. No. 570,635

Claims priority, application United Kingdom, Dec. 9, 1994, 9424886

Int. Cl.[6] H01M *8/14*

U.S. Cl. 429—16 **13 Claims**

1. A fuel cell, comprising:

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a carbonate that is in a molten state at an operating temperature of said fuel cell; and

a reforming catalyst in physical contact with said carbonate;

wherein said catalyst is produced by reducing a catalyst precursor, said precursor being prepared by mixing a Feitnecht compound represented by the following formula:

$$M_x^{2+}Me_y^{3+}(OH^-)_{2x+3y-2z}(A^{2-})_z \cdot nH_2O$$

wherein Me^{2+} is Ni^{2+},

Me^{3+} is Al^{3+} or Al^{3+} and Cr^{3+},

A^{2-} is a single divalent anion or two monovalent anions,

x/y is from 1.5/1 to 4/1,

z/(x+y) is from 0.05 to 0.2, and n/(x+y) is from 0.25 to 1.0;

with a non-calcined alumino-silicate clay mineral and at least one stabilizing additive to form a mixture, and thereafter calcining said mixture;

wherein said stabilizing additive is selected from the group consisting of alkaline earth metal compounds, rare earth metal compounds, a mixture of an alkaline earth metal compound and a rare earth metal compound, a mixture of an alkaline earth metal compound and an alkali metal compound, a mixture of a rare earth metal compound and an alkali metal compound, and a mixture of an alkaline earth metal compound, rare earth metal compound and alkali metal compound.

5,622,791

PHOTOELECTROCHEMICAL CELL

Dale R. Shackle, Morgan Hill, Calif., assignor to Valence Technology, Inc., Henderson, Nev.

Filed Aug. 25, 1995, Ser. No. 519,474

Int. Cl.[6] H01M *6/36*

U.S. Cl. 429—111 **15 Claims**

1. A photoelectrochemical cell which comprises:

a current collector;

a semiconductor secured on one side to the current collector;

a transparent single phase, solid solvent-containing electrolyte secured to the other side of the semiconductor; and

a transparent electrode secured to the solid electrolyte on a side opposite from the semiconductor;

wherein the solid electrolyte comprises a redox couple, a solid, polymeric matrix, an inorganic ion salt, and a non-aqueous electrolytic solvent.

5,622,792

ADDITIVES FOR EXTRUDING POLYMER ELECTROLYTES

Fernand Brochu, Longueuil, and Michel Duval, Montreal, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Division of Ser. No. 186,103, Jan. 25, 1994, Pat. No. 5,486,435.

This application Oct. 30, 1995, Ser. No. 550,101

Int. Cl.[6] H01M *6/18*

U.S. Cl. 429—192 **10 Claims**

1. A composition for preparing an electrolyte film for lithium polymer electrolyte batteries, which comprises:

a polymer and a lithium salt and ultra-fine powders of metal oxides with particle sizes between about 7 and 40 nm.

5,622,793

METHOD FOR PREPARING NEGATIVE ELECTRODE MATERIAL FOR A LITHIUM SECONDARY CELL

Takashi Iijima; Kimihito Suzuki, both of Kawasaki, and Maki Sato, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

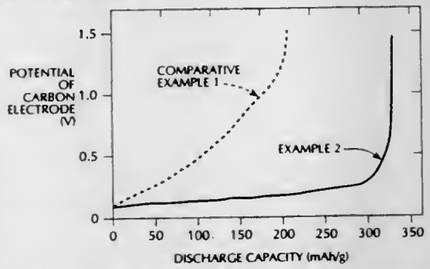
PCT No. PCT/JP93/00695, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO93/24967, PCT Pub. Date Dec. 9, 1993

PCT Filed May 25, 1993, Ser. No. 341,553

Claims priority, application Japan, May 25, 1992, 4-156148

Int. Cl.[6] H01M *4/60*

U.S. Cl. 429—218 **5 Claims**



1. A method for preparing a negative electrode material for a lithium secondary cell, which comprises a step of heat-treating pitch fibers at a first temperature of 800°–2600° C. to make carbon fibers, a step of pulverizing said carbon fibers to make carbon fiber particles, and a step of heat-treating said carbon fiber particles at a second temperature higher than the first temperature to obtain carbon fiber particles with a layer spacing d between the carbon layers of less than 0.338 nm and an average particle size of 5–200 μm, as determined based on X-ray diffraction.

5,622,794

LIGHT-SHIELDING PHOTOSENSITIVE RESIN COMPOSITION, LIGHT-SHIELDING PHOTOSENSITIVE TRANSFER MATERIAL AND METHOD FOR FORMING LIGHT-SHIELDING FILM

Morimasa Sato; Masayuki Iwasaki, and Haruhiko Yoshino, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1994, Ser. No. 354,870

Claims priority, application Japan, Dec. 9, 1993, 5-309263

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—7 **3 Claims**

1. A method for forming a light-shielding film, comprising the steps of:

(1) forming a layer of a light-shielding photosensitive resin composition selectively or wholly on the front surface of a transparent substrate having thereon an image composed of red, blue and green pixels and a non-pixel area;

(2) selectively or wholly exposing the layer through the back side of the transparent substrate; and

(3) developing the thus-exposed layer to form a light-shielding film on a part or all of the non-pixel area;

wherein the light-shielding photosensitive resin composition comprises: (1) an alkali-soluble binder; (2) a photopolymerization initiator; (3) an addition-polymerizing monomer having one or more ethylenic, unsaturated double bonds; and (4) one or more colorants;

and wherein the spectral sensitivity of the photopolymerization initiator relative to the spectral characteristic of the transparent substrate has a ratio A/B of 0.1 or less, where A is the area under a spectral sensitivity curve of the photo-polymerization initiator at a wavelength of 400 nm or longer and B is the area under the same spectral sensitivity curve between the lowermost wavelength at which transmittance of the substrate is 10% or more and 400 nm.

5,622,795

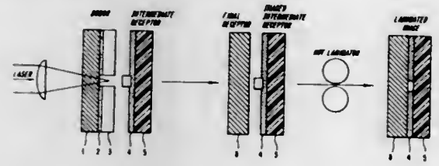
LAT IMAGING ONTO INTERMEDIATE RECEPTOR ELEMENTS/LAT DECALCOMANIA

Ernest W. Ellis, Leverett, Mass., assignor to Rexham Graphics Inc., So. Hadley, Mass.

Division of Ser. No. 105,938, Aug. 13, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,470

Int. Cl.[6] G03C *11/12*; G03F *7/34*

U.S. Cl. 430—14 **10 Claims**



1. A composite article of manufacture comprising an adhesively coated LAT image protective overcoat, said protective overcoat comprising a reflective substrate and bearing a contrasting LAT image pattern of intelligence on the adhesive face surface thereof and having a base substrate superposed on the other face surface thereof, and said adhesive face surface being laminated to a final base element.

5,622,796

PROCESS FOR PRODUCING METROLOGICAL STRUCTURES PARTICULARLY FOR DIRECT MEASUREMENT OF ERRORS INTRODUCED BY ALIGNMENT SYSTEMS

Paolo Canestrari, Merate; Samuele Carrera, Cavenago, and Giovanni Rivera, Castiglione Delle Stiviere, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 990,449, Dec. 15, 1992, abandoned. This application Dec. 22, 1994, Ser. No. 363,231

Claims priority, application Italy, Dec. 18, 1991, MI91A3385

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—22 **70 Claims**

1. A method of producing metrological structures comprising the steps of:

A. producing, on a substrate, metrological alignment markings according to a first predetermined pattern; and

B. producing, on the substrate, isolated regions formed from a second layer of a second material, the isolated regions being physically separated from each other and arranged according to a second predetermined pattern so that the metrological markings and isolated regions are formed at predetermined positions.

5,622,797

DEVICE AND METHOD FOR HANDLING AND PROCESSING PHOTOGRAPHIC FILM

Wayne F. Erickson, Churchville; Stephen J. Rowan, Spencerport, and William S. Raymond, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1996, Ser. No. 595,706

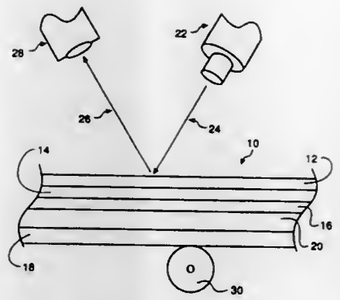
Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—30 **20 Claims**

1. A method for processing a silver halide photographic element having a support on the bottom and a light sensitive silver halide emulsion layer on the top, comprising:

directing a ray of infrared light in a direction so as to fall on the top side of the element;

detecting the presence or absence of infrared light reflected from the top of the element whereby the presence or absence of the element can be determined; and



using the detection of the reflected infrared light to control a processing step.

5,622,798

ELECTROPHOTOGRAPHIC METHOD WITH RESIDUAL CHARGE ELIMINATION

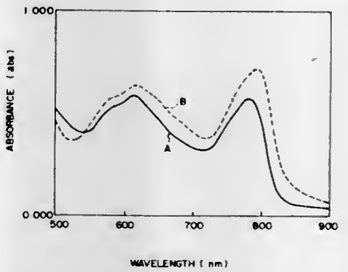
Keizo Kimoto, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 12, 1995, Ser. No. 542,061

Claims priority, application Japan, Oct. 13, 1994, 6-248163

Int. Cl.[6] G03G *21/08*

U.S. Cl. 430—31 **16 Claims**



1. An electrophotographic process wherein charge elimination of a single layer organic photosensitive material having an absorbance, at a maximum absorption wavelength of a visible portion per μm of the thickness of a photosensitive layer, of at least 0.05 is carried out by using the irradiation of a light-emitting diode light which emits a light having a maximum absorption wavelength of a visible portion of the photosensitive layer ±10 nm is irradiated.

5,622,799

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, PROCESS CARTRIDGE AND ELECTROPHOTOGRAPHIC APPARATUS HAVING THE ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Koichi Suzuki; Hideyuki Takai, both of Yokohama; Satomi Sugiyama, and Mitsuhiro Kunieda, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 345,702

Claims priority, application Japan, Nov. 22, 1993, 5-314054

Int. Cl.[6] G03G *5/06; 5/047*

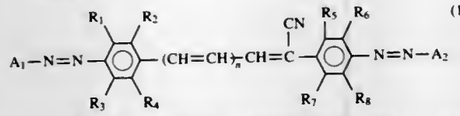
U.S. Cl. 430—58 **8 Claims**

1. An electrophotographic photosensitive member comprising:

a conductive substrate and a photosensitive layer thereon,

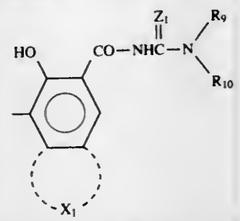
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said photosensitive layer containing a charge transporting material and a disazo pigment represented by the following formula (1):



(1)

wherein R_1 to R_8 are the same or different and are each a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group, n is a positive integer, A_1 and A_2 are the same or different and are each a coupler residual groups having a phenolic hydroxyl group, and at least one of A_1 and A_2 is a coupler residual group represented by the following formula (2):



(2)

wherein X_1 is a residual group forming a polycyclic aromatic ring or a heterocyclic ring by condensing with a benzene ring, R_9 and R_{10} are the same or different and are each a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, a heterocyclic group or a residual group forming a cyclic amino by bonding together, and Z_1 is an oxygen atom or a sulfur atom.

6. An electrophotographic photosensitive member according to claim 1 or 2, wherein said photosensitive layer comprises a charge generating layer containing said disazo pigment as a charge generating material on said conductive substrate and a charge transporting layer on said charge generating layer.

5,622,800

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, ELECTROPHOTOGRAPHIC APPARATUS AND APPARATUS UNIT INCLUDING THE PHOTOSENSITIVE MEMBER

Wataru Ando; Takeshi Akasaka, both of Tsukuba, and Hajime Miyazaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,630, Oct. 27, 1993. This application Sep. 14, 1995, Ser. No. 528,527

Claims priority, application Japan, Oct. 22, 1993, 5-264717

Int. Cl.[6] G03G *5/047;5/09*

U.S. Cl. 430—58 **9 Claims**

1. An electrophotographic photosensitive member, comprising an electroconductive support and a photosensitive layer disposed on the electroconductive support, wherein said photosensitive layer contains a charge-generating material and a fullerene compound having an organosilicon group divalently bonded thereto as a charge transporting material.

6. A photosensitive member according to claim 1, wherein said photosensitive layer includes a charge generation layer and a charge transport layer disposed thereon, said charge transport layer containing the fullerene compound.

5,622,801

PHTHALOCYANINE PIGMENT AND DISPERSION THEREOF AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING THE PIGMENT

Hidemi Nukada; Takahiro Suzuki; Katsumi Nukada; Katsumi Daimon, and Yasuo Sakaguchi, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd, Tokyo, Japan

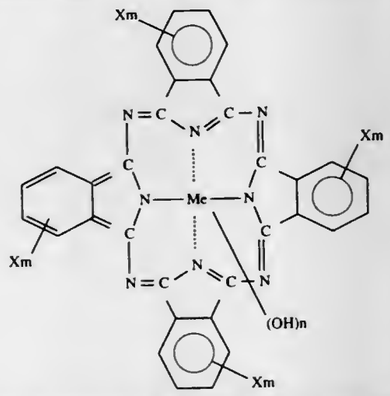
Continuation of Ser. No. 181,429, Jan. 14, 1994, abandoned. This application Oct. 4, 1995, Ser. No. 539,045

Claims priority, application Japan, Jan. 14, 1993, 5-020812

Int. Cl.[6] G03G *5/047;* **C08L** *101/00*

U.S. Cl. 430—58 **19 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate having a photosensitive layer containing a pigment composition as a charge generating material, said pigment composition comprising a phthalocyanine compound and 0.001 to 0.3 part by weight of an organometallic compound containing a metal atom having a hydrolyzable functional group or a hydrolysis product thereof per part by weight of the phthalocyanine compound, wherein said organometallic compound is chemically bonded to said phthalocyanine compound through a coupling reaction with a hydroxy group of the phthalocyanine compound and said phthalocyanine compound is represented by formula (I):



(I)

wherein Me represents Al, Ga, In, Si, Ge or Sn; X represents H, Cl, Br or I; m represents an integer of from 1 to 4; and n represents 1 where Me is Al, Ga or In, or 2 where Me is Si, Ge or Sn.

5,622,802

TONER FOR ELECTROSTATIC LATENT IMAGE DEVELOPING

Ichiro Demizu, Toyonaka; Yasuki Nagai, Amagasaki; Mitsutoshi Nakamura, Ibaraki; Yukio Tanigami, Amagasaki, and Hideaki Ueda, Kishiwada, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 488,434

Claims priority, application Japan, Jun. 13, 1994, 6-130475

Int. Cl.[6] G03G *9/09*

U.S. Cl. 430—106 **20 Claims**

1. A toner for electrostatic latent image developing comprising a binder resin and a color agent selected from the group consisting of C. I. Pigment Blue 15-3, C. I. Pigment Red 122 and C. I. Pigment Yellow 17, said toner being produced by emulsion dispersion of a colored resin solution comprising the binder resin, the coloring agent and a non-water soluble organic solvent in an aqueous dispersion including a water component followed by removal of said non-water soluble organic solvent and said water component.

5,622,803

NEGATIVELY CHARGED TONER FOR USE IN ELECTROSTATOGRAPHY

Serge Tavernier, Lint; Werner Op de Beeck, Keerbergen; Jean-Marie Dewanckele, Drongen, and Peter Van Rompuy, Westerlo, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

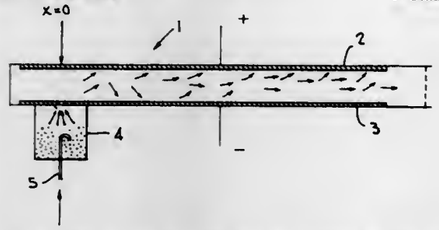
PCT No. PCT/EP94/01310, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO94/27191, PCT Pub. Date Nov. 24, 1994

PCT Filed Apr. 25, 1994, Ser. No. 356,236

Claims priority, application European Pat. Off., May 11, 1993, 93201352

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **9 Claims**



I. A dry toner powder the toner particles of which are triboelectrically negatively charged and are suited for development of an electrostatic charge pattern, wherein said toner particles contain:

(1) at least one triboelectrically negatively chargeable thermoplastic resin serving as binder having a volume resistivity of at least 10^{13} Ω-cm, and

(2) at least one onium compound, and

(3) said toner particles are free from non-resinous charge-controlling agent(s) providing negative triboelectric chargeability, wherein

(i) said thermoplastic resin comprises at least one anionic or electronegative group which is a member selected from the group consisting of carboxylic acid groups, sulphonate groups, anhydride groups, halide groups, nitrile groups, sulphone groups and ether groups,

(ii) said substance(s) (2) is (are) capable of lowering the volume resistivity of said binder by a factor of at least 3.3 when present in said binder in a concentration of 5% by weight relative to the weight of said binder,

(iii) said toner powder containing toner particles including a mixture of said ingredients (1) and (2) under triboelectric charging conditions has an median (q/d) charge/diameter value (x), expressed as absolute value lower than 10 fC/10 μm but not lower than 1 fC/10 μm,

(iv) said toner powder under the same triboelectric charging conditions but free of said substance(s) (2) then has an absolute median q/d value (x) at least 50% higher than when said substance(s) (2) is (are) present, and

(v) the distribution of the charge/diameter values of the individual toner particles is characterized by a coefficient of variation $v \leqq 0.33$.

5,622,804

LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY, PROCESS FOR PRODUCING THE SAME, AND PROCESS FOR IMAGE FORMATION USING THE SAME

Hirotaka Matsuoka; Takako Kobayashi, and Ken Hashimoto, all of Minami ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 421,871

Claims priority, application Japan, May 30, 1994, 6-137822; May 30, 1994, 6-137823

Int. Cl.[6] G03G *9/125*

U.S. Cl. 430—115 **13 Claims**

1. A liquid developer for electrophotography which comprises a carrier comprising at least one ether compound, a charge director contained in the carrier, and toner particles dispersed in the carrier and having a volume-average particle diameter of from 0.5 μm to 5 μm, wherein said toner particles comprise a thermoplastic resin substantially insoluble in the carrier at a temperature used for development, a colorant dispersed in the resin, and a charge control agent,

wherein said ether compound is represented by general formula:

$$R_1O(C_nH_{2n}O)_xR_2$$

wherein R_1 and R_2 may be the same or different and each represent an alkyl group, a cycloalkyl group, an aryl group, or an aralkyl group, provided that the total number of carbon atoms contained in R_1 and R_2 is from 6 to 20; n is an integer of 2 or 3; and x is an integer of 0 to 3, and

wherein said resin is selected from the group consisting of polyolefins, ethylene copolymers having a polar group, homopolymers of styrene, styrene-acrylic copolymers, polyesters and polyurethanes.

5,622,805

NON-CONTACT INK DEVELOPING METHOD USING WATER-REPELLENT SURFACE

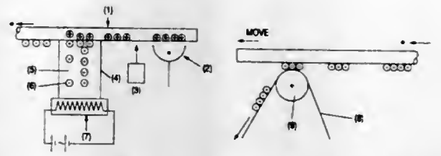
Yasuhiro Uehara; Masahiro Sato; Yuji Kobayashi; Yasuhiro Kusumoto; Tsutomu Sugimoto, and Yoshio Shoji, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

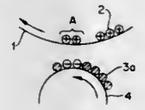
Continuation of Ser. No. 137,793, Oct. 19, 1993, abandoned. This application Sep. 1, 1995, Ser. No. 522,541

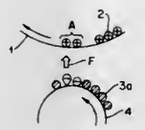
Claims priority, application Japan, Apr. 9, 1993, 5-083045

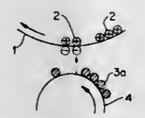
Int. Cl.[6] G03G *9/00;15/10;* **B41J** *2/06;2/01*

U.S. Cl. 430—117 **7 Claims**









1. A non-contact ink developing method for developing an electrostatic latent image formed on an electrostatic latent image formation member with ink, the developing method comprising the steps of:

selecting a conductive liquid ink as said ink;

disposing a conductive developing roller proximate to said electrostatic latent image formation member, the conductive developing roller having a surface provided with a water-repellent finish for producing ink droplets which are substantially spherical in shape on the water-repellant finish of the

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surface, wherein the conductive ink and the conductive developing roller each have a resistivity of 10^{10} Ω.cm or less;

supplying said conductive liquid ink to the surface of said conductive developing roller to produce a plurality of said ink droplets on the water-repellent finish of the surface, wherein the water-repellant finish provided on the surface of said conductive developing roller produces ink droplets having a contact angle relative to the surface of said conductive developing roller of at least 120°; and

ejecting said ink droplets toward said electrostatic latent image in a developing area facing said electrostatic latent image formation member by an electrostatic induction force generated by charges of said electrostatic latent image and charges of opposite polarity induced in said ink droplets by said electrostatic latent image, such that said ink droplets attach to said electrostatic latent image.

5,622,806

TONER AGGREGATION PROCESSES

Richard P. N. Veregin, Mississauga, and Maria N. V. McDougall, Burlington, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1995, Ser. No. 576,246

Int. Cl.[6] G03G *9/087;9/093*

U.S. Cl. 430—137 **25 Claims**

1. A process for the preparation of toner with controlled particle size comprising:

(i) preparing a pigment dispersion in water, which dispersion is comprised of a pigment, an ionic surfactant in amounts of from about 0.5 to about 10 percent by weight of water, and an optional charge control agent;

(ii) shearing the pigment dispersion with a latex mixture comprised of a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant, a nonionic surfactant, and resin particles, thereby causing a flocculation or heterocoagulation of the formed particles of pigment, resin, and optional charge control agent;

(iii) stirring the resulting sheared viscous mixture of (ii) at from about 300 to about 1,000 revolutions per minute to form electrostatically bound substantially stable toner size aggregates with a narrow particle size distribution;

(iv) reducing the stirring speed in (iii) to from about 100 to about 600 revolutions per minute, and subsequently adding further anionic or nonionic surfactant in the range of from about 0.1 to about 10 percent by weight of water to control, prevent, or minimize further growth or enlargement of said aggregates in the coalescence step (v);

(v) heating and coalescing from about 5° to about 50° C. above about the resin glass transition temperature, Tg, which resin Tg is from between about 45° C. to about 90° C., said aggregates to form said toner comprised of resin, pigment and optional charge control agent;

(vi) washing the said aggregates at a temperature of from about 15° C. to about 5° C. below the glass transition temperature of the resin, and subsequently filtering the said aggregates until substantially all of the surfactant has been removed from the said aggregates, followed by subsequent drying of said aggregates at a temperature of from about 15° C. to about 5° C. below the glass transition temperature of the resin; and

(vii) subsequently adding to said toner product a first layer of a hydrophilic oxide, and a second layer of a hydrophobic oxide.

5,622,807

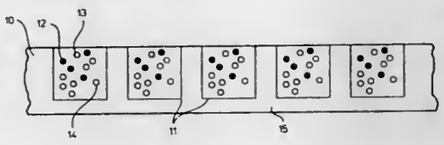
PHOSPHOR FILM COMPOSITION FOR USE IN IMAGE CAPTURE

Gregory M. Cutler, Cupertino, and Andreas Weber, Redwood City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 14, 1994, Ser. No. 338,922

Int. Cl.[6] G03C *1/725*

U.S. Cl. 430—139 **8 Claims**



1. A composition for use in constructing a photosensitive film for recording an image, said composition comprising first, second, and third particle types, each said particle type comprising a crystalline base material having a trap dopant and a color dopant deposited therein, each of said color dopants having a different spectral sensitivity, wherein each of said trap dopants has a different activation energy for releasing electrons traps therein into the conduction band of said crystalline base material.

5,622,808

RECEIVER FOR DYE IMBIBITION PRINTING

Wayne A. Bowman, Walworth; Charles P. Hagmaier, Rochester, and Frank D. Manioci, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,413

Int. Cl.[6] G03C *8/26;7/25;7/24*

U.S. Cl. 430—199 **8 Claims**

1. In a dye imbibition printing blank comprising a support bearing a dye-receiving layer comprising a cationic mordant, a hydrophillic colloid, and a plasticizer polymer, the improvement wherein the plasticizer polymer is a latex polymer having a glass transition temperature below 30° C. comprising from about 2 to 20 wt % of units having a quaternary ammonium group.

5,622,809

KIT FOR MAKING A PROCESSING LIQIUD FOR PROCESSING A LITHOGRAPHIC PRINTING PLATE

Lode Deprez, Wachtebeke; Johan Loccufier, Zwijnaarde, and Jos Vaes, Betekom, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 18, 1996, Ser. No. 617,380

Claims priority, application European Pat. Off., Mar. 21, 1995, 95200693

Int. Cl.[6] G03C *5/50*

U.S. Cl. 430—250 **6 Claims**

1. A kit for preparing a processing liquid for use in preparing a lithographic printing plate according to silver salt diffusion transfer processing, and comprising all necessary active compounds for preparing said processing liquid, said active compounds including a solid hydrogensulphite amine complex or a solid sulphurdioxide amine complex, said amine of said complexes being capable of acting as a silver halide solvent.

5,622,810

SILVER HALIDE COLOR PHOTOSENSITIVE MATERIAL

Takashi Nakamura; Hiroshi Fukuzawa, and Michio Ono, all of Minami-Ashigara, Japan, assignors to Fuji Photo Flim Co., Ltd., Kanagawa, Japan

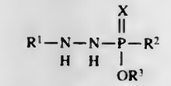
Filed Oct. 18, 1995, Ser. No. 544,935

Claims priority, application Japan, Oct. 18, 1994, 6-252420; Jan. 20, 1995, 7-007343; Jan. 23, 1995, 7-008093

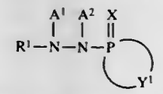
Int. Cl.[6] G03C *1/06*

U.S. Cl. 430—264 **22 Claims**

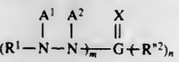
1. A silver halide color photosensitive material having on a support at least one photosensitive silver halide emulsion layer, said material containing at least one nondiffusible compound represented by the following formula (I), (1-1) or (1-2):



wherein R^1 represents an aryl group or a heterocyclic group, R^2 represents an alkyl group, a cycloalkyl group, an alkoxy group or an aryloxy group, R^3 represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group and X represents an oxygen atom or a sulfur atom; provided that R^3 does not represent a phenyl group when R^2 represents a phenoxy group:



wherein R^1 represents an aryl group or a heterocyclic group; A^1 and A^2 each represents a hydrogen atom or a hydrolyzable group; X represent an oxygen atom or a sulfur atom; and Y^1 represents atoms completing a phosphorus atom-containing heterocyclic ring:



wherein R^1 represents an aryl group or a heterocyclic group; R^{*2} represents an alkyl group, a cycloalkyl group, an aryl group, a heterocyclic group, an alkoxy group or an aryloxy group; A^1 and A^2 each represents a hydrogen atom or a hydrolyzable group; G represents a carbon atom or a phosphorus atom; X represents an oxygen atom or a sulfur atom; when G represents a carbon atom, m is 2 and n is 0; when G represents a phosphorus atom, m is 2 and n is 1, or m is 3 and n is 0; and when m is 2 or more, two or three $R^1N(A^1)N(A^2)$— groups may be the same or different.

5,622,811

METHOD FOR FORMING RESIN ARTICLES

Yousuke Ogue, Amagasaki, and Hideho Ariyoshi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Feb. 7, 1995, Ser. No. 386,053

Claims priority, application Japan, Feb. 7, 1994, 6-013258

Int. Cl.[6] G03C *9/08;* **B29C** *35/08*

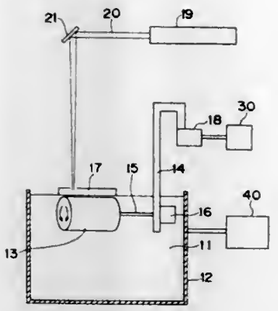
U.S. Cl. 430—269 **6 Claims**

1. A method for forming a resin article by forming a film of photosetting resin liquid or thermosetting resin liquid on a surface of a workpiece, which comprises:

a step of holding the workpiece in a direction to keep its axis approximately in a horizontal posture;

a step of rotating the workpiece about the axis to thereby form the film of the liquid on the surface of the workpiece;

a step of supplying a beam from above the workpiece onto the film for setting the resin liquid;



a step of relatively moving at least one of the workpiece and the beam continuously or intermittently along the axis; and

a step of using a smoothing means to regulate a thickness of the film formed on the surface of the workpiece over a liquid bath containing the liquid.

5,622,812

OPTICAL MATERIAL

Fumio Tatezono, Hirakata; Toshio Harada, Ohta; Masahiro Irie, 1-29-4-404, Kasugakouen, Kasuga-city, Fukuoka, and Meguru Ohara, Akashi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka; Masahiro Irie, Kasuga, and Kobe Natural Products, Kobe, all of Japan

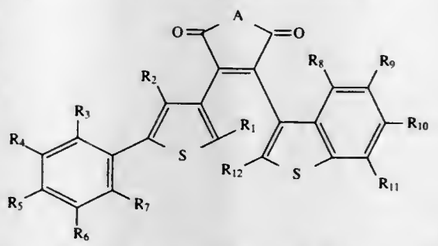
Filed Mar. 6, 1995, Ser. No. 399,971

Claims priority, application Japan, Mar. 8, 1994, 6-037308

Int. Cl.[6] G03C *1/73*

U.S. Cl. 430—270.15 **4 Claims**

1. An optical material containing a photochromic compound being expressed in the following general formula (II):



where A represents an oxygen atom, —NH, or a substituted nitrogen atom,

R_1 represents a methyl group, an alkoxy group or a perfluoroalkyl group,

R_2 to R_4 and R_6 to R_{11} represent atoms or groups selected from the group of a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group, an alkoxy group, a cyano group, a nitro group, an alkylcarbonyl group, an alkoxycarbonyl group, a perfluoroalkyl group, an aryl group, a cycloalkyl group, an arylcarbonyl group, an aryloxycarbonyl group, a monoalkylaminocarbonyl group, a dialkylaminocarbonyl group, an alkylcarbonyloxy group, an arylcarbonyloxy group, an aryloxy group, an alkoxycarbonyloxy group, and an aryloxycarbonyloxy group, said photochromic compound may optionally be bonded to a polymer as a side chain via the position of A,

R_5 is an alkoxy group, and

R_{12} is an alkoxy group or a perfluoroalkyl group.

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5,622,813

PHOTOSENSITIVE RESIN COMPOSITION FOR FLEXOGRAPHIC PRINTING PLATE

Kazunori Kanda, Yao, and Tadashi Hayashi, Hirakata, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 8,482, Jan. 25, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,472
Claims priority, application Japan, Jan. 24, 1992, 4-010799
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—281.1 **3 Claims**

1. A photosensitive resin composition for a flexographic printing plate, comprising:

(a) 10 to 99 parts by weight of a resin particle having an average particle size of 0.01 to 5 μm, said resin particle having a core/shell structure, wherein the shell portion has a three-dimensionally crosslinked structure and the core portion is not crosslinked, said resin particle having a weight ratio of core portion to shell portion of from 20:80 to 99:1, said shell portion being prepared from a mixture of at least one monofunctional monomer or conjugated diene monomer and at least one polyfunctional monomer excluding a conjugated diene monomer, wherein the ratio of the monofunctional:polyfunctional monomers in said shell portion is 70:30 to 95:5,

(b) 1 to 90 parts by weight of a compound having a photopolymerizable group, and

(c) 0.01 to 10 parts by weight of a photopolymerization initiator, the amounts of the above components (a), (b) and (c) in the photosensitive resin composition being determined based on a total of 100 parts by weight of the above components (a), (b) and (c),

wherein the core portion of the resin particle (a) has a Tg of 0° C. or lower, and the shell portion has a Tg of 30° C. or higher.

5,622,814

METHOD FOR FABRICATING ACTIVE SUBSTRATE

Yutaka Miyata, Hirakata; Tetsuya Kawamura, Kyoto, and Hiroshi Tsutsu, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 968,479, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 758,706, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 337,892, Apr. 14, 1989, abandoned. This application Jul. 11, 1994, Ser. No. 272,634
Claims priority, application Japan, Apr. 20, 1988, 63-97008; Sep. 30, 1988, 63-248197
Int. Cl.[6] G03F *7/00*
U.S. Cl. 430—314 **17 Claims**

1. A sequential method for fabricating an active matrix substrate comprised of a plurality of gate electrodes, in a specific region of which a slit pattern is provided, made of a non-transparent material formed on a specific region of a first side of a transparent substrate having a second side opposite said first side, a first insulating layer formed on the transparent substrate and the gate electrodes, a first semiconductor layer formed on the first insulating layer, a second semiconductor layer formed on the first semiconductor layer, and a plurality of source and drain electrodes formed on the first insulating layer and said second semiconductor layer, said method comprising at least:

a step of coating a positive photoresist layer on the second semiconductor layer,

a step of light over-exposure effected from the second side of the transparent substrate,

a step of developing the positive photoresist layer, and

a step of overetching to remove a part of the first and second semiconductor layers by using the developed positive photoresist layer as a mask.

17. A sequential method for fabricating an active matrix substrate, comprising:

forming a plurality of gate electrodes spaced apart on a first principal surface of a transparent substrate;

forming a first insulating layer on said gate electrodes and on said first principal surface of said transparent substrate;

forming a first semiconductor layer on said first insulating layer;

forming a second insulating layer on said first semiconductor layer;

forming a positive photoresist layer on said second insulating layer;

directing light onto a second principal surface of said transparent substrate which is opposite said first principal surface to effect exposure of said positive photoresist except for portions of said positive layer masked by said gate electrodes;

developing said positive photoresist layer and removing said positive photoresist layer except for said portions of said positive photoresist layer masked by said gate electrodes;

etching away said second insulating layer using said portions of said positive photoresist layer as a mask;

heat treating said portions of said positive photoresist layer to cause said portions of said positive photoresist layer becomes larger;

etching away said first semiconductor layer using said portions of said positive photoresist layer as a mask;

etching away said positive photoresist layer;

forming a second semiconductor layer at least on said second insulating layer and on said first semiconductor layer;

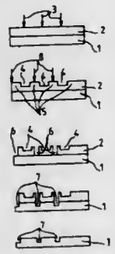
forming source and drain electrodes on said second semiconductor layer.

5,622,815

PROCESS OF MANUFACTURE OF A MASTER DISK AND/OR OF AN OPTICAL DISK

Jean Ledieu, Crespieres, France, assignor to Digipress, Caen, France

Filed Feb. 21, 1995, Ser. No. 391,943
Claims priority, application France, Feb. 21, 1994, 94 01941
Int. Cl.[6] G11B *7/26*
U.S. Cl. 430—320 **11 Claims**



1. A process of manufacture of a master disk and/or of an optical disk, comprising the steps of:

depositing onto a support a layer of a resin sensitive to at least one stress,

transferring into the layer of sensitive resin a preformatting signal, this transfer leading to the creation of a first succession of micropits or first groove representative of the preformatting signal, the depth of these micropits or groove being smaller than the thickness of the layer of sensitive resin by applying a first stress,

recording into the layer of sensitive resin the information to be duplicated by applying a second stress, this recording leading to the creation of a second succession of micropits representative of the information to be duplicated, the depth of the micropits of the second succession being equal to the thickness of the layer of sensitive resin within the zones where they are created,

transferring the information into the substrate, thereby leading to the creation of micropits into the substrate, and

removing the zones of residual resin,

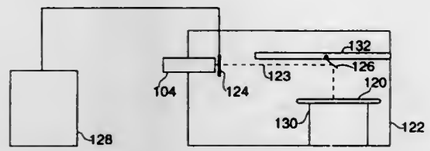
the master disk or the optical disk thus obtained comprising the information to be duplicated only and not the preformatting signal.

5,622,816

DIRECT TO STAMPER/MOTHER OPTICAL DISK MASTERING

Glenn J. Maenza, Glen Mills, Pa., and Edward W. Morton, Lawrenceville, N.J., assignors to Sony Corporation, Tokyo, Japan, and Sony Music Entertainment, Inc., New York, N.Y.

Division of Ser. No. 282,695, Jul. 29, 1994, Pat. No. 5,494,782. This application Jun. 7, 1995, Ser. No. 476,172
Int. Cl.[6] G11B *7/125;7/26*
U.S. Cl. 430—347 **16 Claims**



1. An apparatus for manufacturing an optical disk master wherein a stream of digital information is converted to a plurality of pits and lands in the optical disk master representative of the digital information, comprising:

a conductive substrate having a surface;

a laser arranged to operate in a mode-locked state and to generate a beam having a focal point;

manipulator means for moving the focal point over the surface of the substrate in a pattern so as to allow for the formation of the pits and lands; and

means for controlling the exposure of the beam to the substrate with the digital information as the focal point of the beam is being moved such that exposed portions of the substrate are directly ablated thereby creating the pits, and unexposed portions of the substrate are unaltered thereby creating the lands.

5,622,817

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Johannes Willsau, and Heinrich Odenwälder, both of Leverkusen, Germany, assignors to Agfa-Gevaert AG., Germany

Filed Aug. 3, 1995, Ser. No. 511,057
Claims priority, application Germany, Aug. 16, 1994, 44 29 030.6
Int. Cl.[6] G03C *7/305*
U.S. Cl. 430—543 **6 Claims**

1. A color negative film comprising a support and at least one light-sensitive silver halide emulsion layer containing a color coupler and at least one light-insensitive layer adjacent to said light-sensitive layer, wherein the adjacent, light-insensitive layer contains a compound which reacts with a developer oxidation product during development with the splitting off of a radical which increases the sensitivity and which corresponds to formula I:

$$A\text{-}B\text{-}(T_1)_m\text{-}(COUP\text{-}D)\text{-}(T_2)_n \quad (I),$$

wherein

A represents a ballast radical,

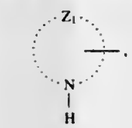
B represents the radical of a compound which reacts during development with the splitting off of $(T_1)_m$-(COUP-D)-$(T_2)_n$,

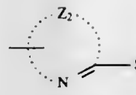
T_1 and T_2 are identical or different and are time control elements which can be split off during development,

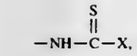
m and n are identical or different and represent 0 or 1,

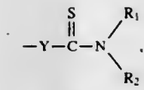
COUP represents the radical of a 4-equivalent coupler, and

D represents a group with an affinity for silver halide and is selected from the group consisting of IIa, IIb, IIc, IId and IIe


IIa


IIb


IIc


IId

IIe

where

Z_1 represents the remaining members for the completion of a 5- or 6-membered ring which contains at least one additional heteroatom,

Z_2 represents the remaining members for the completion of a 5- or 6-membered ring,

X represents $—NH_2$, —NHR,



—SR or —OR,

Y represents —S—, —NR— or —O—,

R represents an aliphatic, aromatic or heterocyclic radical, and

R_1 and R_2 independently of one another represent H, an aliphatic, aromatic or heterocyclic radical, or jointly represent the remaining members of a 5- or 6-membered ring.

5,622,818

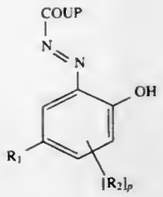
COLOR PHOTOGRAPHIC ELEMENTS CONTAINING YELLOW COLORED MAGENTA DYE FORMING MASKING COUPLERS

Daniel L. Kapp; Janet N. Younathan, both of Rochester, N.Y.; Robert J. Ross, Elmhurst, Ill., and James P. Merrill, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1995, Ser. No. 564,515
Int. Cl.[6] G03C *7/333*
U.S. Cl. 430—555 **7 Claims**

1. A multilayer silver halide color photographic element comprising a support bearing a light-sensitive silver halide emulsion layer and a yellow-colored magenta dye-forming masking coupler wherein the masking coupler is a ballasted 5' -substituted-2'-hydroxy-4-phenylazo-5-pyrazolone represented by the structural formula:

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wherein:

COUP is a 5-pyrazolone dye forming coupler having the azo group attached to its coupling position;

R_1 and R_2 each independently represents a substituent with a Hammett sigma-para value of less than 0.05 selected from the group consisting of an alkyl group, an aryl group, an amino group, a ureido group, an alkoxy group and an aryloxy group, or together R_1 and R_2 represents an alkylene group with a Hammett sigma-para value of less than 0.05; and

p is an integer of 0 to 3.

5,622,819

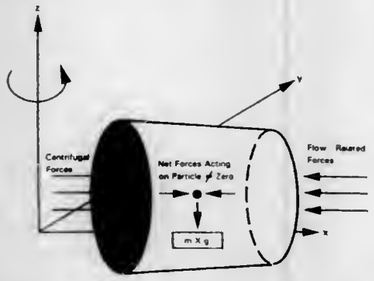
CENTRIFUGAL FERMENTATION PROCESS

Heath H. Herman, Tucker, Ga., assignor to Kinetic Biosystems, Inc., Tucker, Ga.

Filed Mar. 28, 1995, Ser. No. 412,289

Int. Cl.[6] C12Q *1/00;1/02;* **C12N** *1/00*

U.S. Cl. 435—4 **12 Claims**



1. A method of containing a biocatalyst comprising containing the biocatalyst in at least one chamber in a centrifugal force field wherein a continuous flow of a liquid acts to create a force which opposes the centrifugal force field and wherein a gravitational force contributes to the resultant vector summation of all forces acting on the biocatalyst, wherein the gravitational force, the centrifugal force and the opposing liquid force substantially immobilize the biocatalyst at a position in the chamber, the liquid is at hydraulic pressures greater than ambient pressure, and wherein no gaseous phase is present in said chamber.

5,622,820

METHOD FOR AMPLIFICATION AND DETECTION OF RNA AND DNA SEQUENCES

John J. Rossi, Glendora, Calif., assignor to City of Hope, Duarte, Calif.

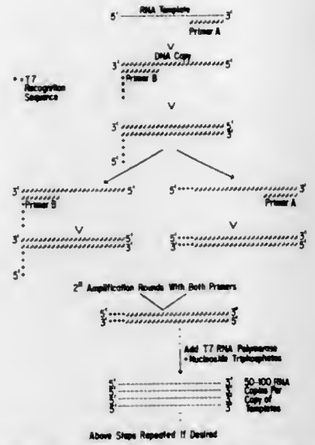
Continuation of Ser. No. 180,740, Apr. 12, 1988, which is a continuation-in-part of Ser. No. 165,915, Mar. 10, 1988, abandoned. This application Nov. 3, 1994, Ser. No. 334,398

Int. Cl.[6] C12Q *1/70;1/68;* **C12P** *19/34*

U.S. Cl. 435—5 **16 Claims**

1. A method which comprises:

(i) providing a sequence of an HIV-1 RNA present in a human blood sample;



(ii) providing a cellular marker sequence which is a beta actin sequence or a T-cell receptor constant region beta chain sequence or a T4 receptor sequence;

(iii) simultaneously subjecting said sequence of said HIV-1 RNA and said cellular marker nucleic acid sequence to amplification by the polymerase chain reaction to produce a polymerase chain reaction amplification product;

(iv) determining whether said polymerase chain reaction amplification product contains an amplification product of said sequence of said HIV-1 RNA; and

(v) determining whether said polymerase chain reaction amplification product contains an amplification product of said cellular marker nucleic acid sequence;

wherein the absence in said polymerase chain reaction amplification product of an amplification product of said sequence of an HIV-1 RNA and also of an amplification product of said cellular marker nucleic acid sequence indicates that said absence of said amplification product of said sequence of an HIV-1 RNA is a false negative reading.

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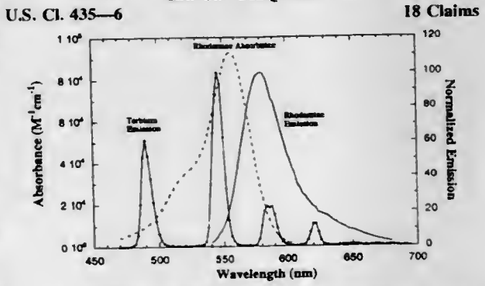
LUMINESCENT LANTHANIDE CHELATES AND METHODS OF USE

Paul R. Selvin, and John Hearst, both of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

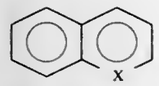
Filed Jun. 29, 1994, Ser. No. 269,162

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **18 Claims**



1. A lanthanide chelate comprising a lanthanide chelator covalently joined to a sensitizer, wherein said chelate is capable of binding a lanthanide with an equilibrium constant of at least 10^6M^{-1}, a complex of said chelate and said lanthanide is capable of enhanced lanthanide luminescence, and said sensitizer comprises a polynuclear heterocyclic aromatic compound of the general formula:



wherein X comprises an atom from periodic group 5 or 6, wherein a single position 2–8 carbon atom of said sensitizer is substituted with a linking group through which said sensitizer is covalently joined to said chelator.

5,622,822

METHODS FOR CAPTURE AND SELECTIVE RELEASE OF NUCLEIC ACIDS USING POLYETHYLENEIMINE AND AN ANIONIC PHOSPHATE ESTER SURFACTANT AND AMPLIFICATION OF SAME

Tobias E. Ekeze, Rocheser; John W. Backus, Williamson; David J. Sharkey, Rochester; Richard C. Sutton, Rocheser, and JoAnne H. Kerscbner, Rochester, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Sep. 13, 1994, Ser. No. 305,769

Int. Cl.[6] C12Q *1/68;1/70;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **18 Claims**

1. A method for providing a nucleic acid from a lysate comprising the steps of:

A) contacting a lysate suspected of containing a nucleic acid with polyethyleneimine in an amount sufficient to form a water-insoluble precipitate of polyethyleneimine with all nucleic acids present in said lysate,

B) separating said water-insoluble precipitate from said lysate,

C) contacting said separated water-insoluble precipitate with a strong base to release said nucleic acids from the polyethyleneimine,

D) simultaneously with or subsequently to step C), contacting said nucleic acids with an anionic phosphate ester surfactant selected from the group consisting of nonaromatic, fluorinated phosphate ester surfactants and nonaromatic, nonfluorinated, oxyalkylatedalkyl phosphate ester surfactants to keep said released nucleic acids in solution, and

E) adjusting the pH of the solution containing said released nucleic acids to from about 6 to about 9.

5,622,823

SYSTEM AND METHOD FOR PRODUCING MAPS AND CLONING GENES THEREFROM

Mark W. Perlin, 5904 Beacon St., Pittsburgh, Pa. 15217

Continuation of Ser. No. 105,753, Aug. 12, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 323,532

Int. Cl.[6] C12N *15/10;* **C12Q** *1/68*

U.S. Cl. 435—6 **27 Claims**

1. A method for cloning a gene of a genome comprising the steps of:

isolating a set of first nucleic acid fragments, each first fragment part of the genome;

isolating a set of second nucleic acid fragments, each second fragment part of the genome;

isolating a set of collections of third nucleic acid fragments, each collection including a third fragment that is part of the genome and that has a size greater than or equal to the average size of said second fragments;

forming a Table A, wherein each row (or column) of Table A consists of the results of a determination of which collections of third fragments hybridize with a specific second fragment;

forming a Table B, wherein each column (or row) of Table B consists of the results of a determination of which collections of third fragments contain the sequence of a specific first fragment;

determining a map location of each second fragment by forming a comparison between Table A and Table B, wherein the comparison finds which column (or row) of Table B most closely matches the row (or column) of Table A corresponding to the given second fragment: producing a map which determines where the first fragments are located within the genome and where the second fragments are located within the genome; and

isolating the gene by positional cloning using the map.

5,622,824

DNA SEQUENCING BY MASS SPECTROMETRY VIA EXONUCLEASE DEGRADATION

Hubert Köster, Concord, Mass., assignor to Sequenom, Inc., Boston, Mass.

Continuation of Ser. No. 34,738, Mar. 19, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 388,171

Int. Cl.[6] C12Q *1/68;* **B01D** *59/44;* **G01N** *30/72*

U.S. Cl. 435—6 **28 Claims**

1. A method of determining a sequence of a nucleic acid, comprising the steps of:

(i) obtaining multiple copies of the nucleic acid to be sequenced:

(ii) cleaving the multiple copies from a first end to a second end with an exonuclease to sequentially release individual nucleotides;

(iii) identifying each of the sequentially released nucleotides by mass spectrometry; and

(iv) determining the sequence of the nucleic acid from the identified nucleotides.

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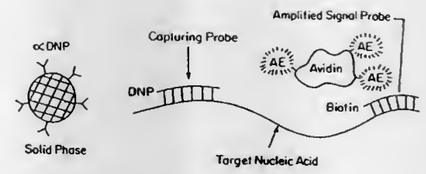
EFFICIENT GENE PROBE CONJUGATIONS BY AN UNCONVENTIONAL MIXED ANHYDRIDE METHOD

Say-Jong Law, Westwood, and Hana Lukinsky, Mansfield, both of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 775,399, Oct. 16, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,963

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **20 Claims**



1. A method for conjugating a label to aminoalkyl-functionalized single-stranded polynucleotides comprising:

a. forming a mixed anhydride intermediate containing said label by reacting a carboxylate-containing ligand with chloroformate in the presence of an anhydrous aprotic organic solvent,

b. evaporating the chloroformate and other volatile components, and

c. reacting said intermediate, redissolved in an anhydrous aprotic organic solvent system, with said polynucleotide dissolved in water, such that the ratio of the aprotic organic solvent system portion to the water portion ranges from about 9:1 to 1:9,

wherein said label is capable of forming said mixed anhydride intermediate and said chloroformate is of the structure ROC(O)Cl, where R represents aryl, straight chain or branched alkyl- or aralkyl group with up to 20 carbon atoms.

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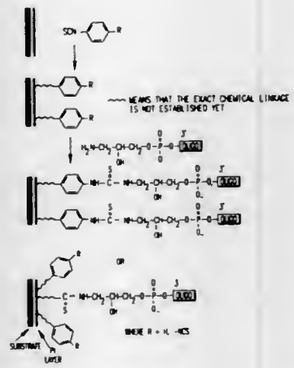
METHOD FOR IMMOBILIZATION OF MOLECULES ON PLATINUM SOLID SUPPORT SURFACES

Rajender S. Varma, The Woodlands, Tex., assignor to Houston Advanced Research Center, The Woodlands, Tex.

Filed Dec. 22, 1994, Ser. No. 362,264

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **10 Claims**



1. A method for immobilizing an amino-containing molecule on a platinum surface, comprising the steps of:

(a) reacting said platinum surface with an isocyanate or an isothiocyanate to produce immobilized reactive moieties; and

(b) reacting said immobilized reactive moieties with said molecule.

5,622,827

AMPLIFICATION PRIMERS AND NUCLEIC ACID PROBES TARGETED TO *COCCIDIOIDES IMMITIS* NUCLEIC ACID

Diane L. McAllister, San Diego, and Kathleen A. Clark, Cardiff-By-The-Sea, both of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Filed Feb. 7, 1995, Ser. No. 384,541

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **40 Claims**

6. A method for detecting the presence of *Coccidioides immitis* in a test sample and distinguishing said *Coccidioides immitis* from *Histoplasma capsulatum* and *Blastomyces dermatitidis*, comprising the steps of:

a) contacting said test sample under stringent hybridization assay conditions with a nucleic acid hybridization assay probe which forms a hybrid stable for detection under stringent hybridization conditions with *Coccidioides immitis* nucleic acid, and said probe comprising a nucleic acid 22–100 nucleotide bases in length comprising a nucleotide base sequence selected from the group consisting of: SEQ ID NOs: 21, 22, 23, and 24;

wherein said probe distinguishes *Coccidioides immitis* nucleic acid from *Histoplasma capsulatum* and *Blastomyces dermatitidis* nucleic acid under stringent hybridization assay conditions; and

(b) detecting said hybrid as an indication of the presence of *Coccidioides immitis* in said sample.

5,622,828

HIGH-AFFINITY OLIGONUCLEOTIDE LIGANDS TO SECRETORY PHOSPHOLIPASE A2 ($sPLA_2$)

David H. Parma, and Larry Gold, both of Boulder, Colo., assignors to Nexstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned, and Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938. This application Mar. 6, 1995, Ser. No. 399,412

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **11 Claims**

1. A method for identifying nucleic acid ligands and nucleic acid ligand sequences to secretory phospholipase A2 ($sPLA_2$) comprising:

a) contacting a candidate mixture of nucleic acids with $sPLA_2$, wherein nucleic acids having an increased affinity to the $sPLA_2$ relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;

b) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture; and

c) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acid sequences with relatively higher affinity and specificity for binding to $sPLA_2$, whereby nucleic acid ligands and nucleic acid ligand sequences of $sPLA_2$ may be identified.

5,622,829

GENETIC MARKERS FOR BREAST, OVARIAN, AND PROSTATIC CANCER

Mary-Claire King, Berkeley; Lori Friedman; Beth Ostermeyer, both of Albany; Sarah Rowell, Kensington; Eric Lynch, Albany; Csilla Szabo, Richmond, and Ming Lee, Union City, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 326,983, Oct. 20, 1994, abandoned, which is a continuation of Ser. No. 232,535, Apr. 18, 1994, abandoned, which is a continuation of Ser. No. 163,959, Dec. 8, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 425,061

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **26 Claims**

14. A method of screening a patient for a breast, ovarian or prostatic cancer susceptibility, said method comprising the steps of:

contacting a sample comprising a first nucleic acid with a second nucleic acid under conditions whereby said second nucleic acid is capable of specifically hybridizing with said first nucleic acid in the presence of wild-type BRCA1,

said first nucleic acid comprising a sample BRCA1 allele, or a sample BRCA1 allele fragment thereof, wherein said sample BRCA1 allele fragment is capable of specifically hybridizing with its corresponding sample BRCA1 allele in the presence of wild-type BRCA1, and

said second nucleic acid comprising an isolated nucleic acid comprising mutant BRCA1 allele #5803 (SEQUENCE ID NO: 1), 9601 (SEQUENCE ID NO: 2), 9815 (SEQUENCE ID NO: 3), 8403 (SEQUENCE ID NO: 4), 8203 (SEQUENCE ID NO: 5), 388 (SEQUENCE ID NO: 6), 6401 (SEQUENCE ID NO: 7), 4406 (SEQUENCE ID NO: 8), 10201 (SEQUENCE ID NO: 9), 7408 (SEQUENCE ID NO: 10), 582 (SEQUENCE ID NO: 11) or 77 (SEQUENCE ID NO: 12), or a mutant BRCA1 allele fragment thereof, wherein said mutant BRCA1 allele fragment is capable of specifically hybridizing with its corresponding mutant BRCA1 allele in the presence of wild-type BRCA1,

detecting the presence or absence of specific hybridization of said second nucleic acid with said first nucleic acid;

wherein the presence of specific hybridization of said second nucleic acid with said first nucleic acid is indicative of breast, ovarian or prostatic cancer susceptibility for a patient having said sample BRCA1 allele.

5,622,830

METHOD OF IDENTIFYING INTERLEUKIN 1β CONVERTING ENZYME INHIBITORS

Gaston O. Daumy, and Laurence A. Reiter, both of 235 E. 42nd St., New York, N.Y. 10017-5755

Division of Ser. No. 354,685, Dec. 12, 1994, Pat. No. 5,498,695. This application Jun. 6, 1995, Ser. No. 470,890

Int. Cl.[6] G01N *33/573;* **C12Q** *1/37*

U.S. Cl. 435—7.4 **1 Claim**

1. A method of detecting inhibitors of interleukin 1β converting enzyme (ICE) comprising evaluating a compound's capacity to inhibit the ICE-induced hydrolysis of a para-nitroanilide peptide selected from the group consisting of $PhCH_2CH_2COValAlaAsp$-p-nitroanilide, $PhCH_2NHCoValAlaAsp$-p-nitroanilide, t-BOCValAlaAsp-p-nitroanilide, AcValAlaAsp-p-nitroanilide and CBZValAlaAsp-p-nitroanilide by:

a) mixing active ICE immobilized to anti-ICE antibodies covalently linked to protein A beads with said para-nitroanilide peptide in the presence or absence of said compound in a reaction vessel, and

b) monitoring enzymatic activity spectrophotometrically at 405 nm.

5,622,831

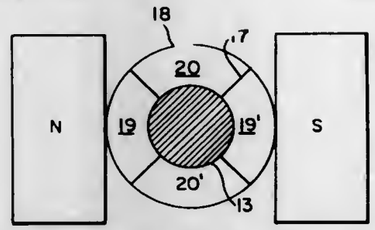
METHODS AND DEVICES FOR MANIPULATION OF MAGNETICALLY COLLECTED MATERIAL

Paul A. Liberti, Huntingdon Valley, and Yozhou Wang, Media, both of Pa., assignors to Immunivest Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 228,818, Apr. 18, 1994, Pat. No. 5,541,072, and Ser. No. 424,271, Apr. 24, 1995, which is a continuation-in-part of Ser. No. 976,476, Nov. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 588,662, Sep. 26, 1990, Pat. No. 5,200,084. This application Jun. 7, 1995, Ser. No. 482,652

Int. Cl.[6] G01N *33/567;33/553*

U.S. Cl. 435—7.21 **25 Claims**



3. A method for separating a target substance having at least one characteristic determinant from a fluid medium suspected of containing said target substance, said method comprising:

a. contacting said fluid medium with a quantity of magnetic particles having directly or indirectly immobilized on their surface a specific binding substance that binds specifically to said at least one characteristic determinant, under conditions causing binding of said at least one characteristic determinant to said specific binding substance, resulting in target substance-bearing magnetic particles;

b. introducing said fluid medium into a separation chamber;

c. providing a ferromagnetic element either in or adjacent to said separation chamber, and a collection surface, wherein said collection surface is selected from the group consisting of a wall of said separation chamber, a portion of said ferromagnetic element, and a wall of a collection chamber disposed in said separation chamber;

d. applying a magnetic field which intercepts said separation chamber, said magnetic field having a first region which exerts an attractive magnetic force urging said target substance-bearing magnetic particles in said fluid medium in a direction toward said ferromagnetic element and said surface and causing said target substance-bearing magnetic particles to be collected on said surface, and a second region which exerts a repulsive force causing repulsion of said collected target substance-bearing magnetic particles away from said ferromagnetic element and said surface, said surface being movably positionable relative to said magnetic field;

e. positioning said surface relative to said magnetic field for exposure to said first region and collecting on said surface said target substance-bearing magnetic particles attracted to said element;

f. discharging said fluid medium from said separation chamber;

g. introducing dispersion medium into said separation chamber;

h. repositioning said surface relative to said magnetic field for exposure to said second region and dispersing said target substance-bearing magnetic particles repelled from said element in said dispersion medium; and

i. recovering said target substance-bearing magnetic particles.

5,622,832

ARACHIDONIC ACID RELEASING PHOSPHOLIPASE A2 ENZYME AND METHODS OF USE

John L. Knopf, and James Clark, both of Acton, Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Feb. 28, 1990, Ser. No. 486,628

Int. Cl.[6] C12Q *1/44;* **C12N** *15/55;9/20*

U.S. Cl. 435—19 **7 Claims**

1. In a method of identifying an inhibitor of phospholipase A_2 enzyme including the steps of combining a phospholipid, a candidate inhibitor compound, and a phosphalipase A_2 enzyme and observing whether said phospholipase A_2 enzyme cleaves said phospholipid and releases fatty acid thereby, the improvement comprising:

said phospholipase A_2 enzyme being substantially free from association with other proteinaceous materials and being characterized by an amino acid sequence selected from the group consisting of:

(a) an amino acid sequence encoded by the DNA sequence of Table I or Table II;

(b) an amino acid sequence encoded by a DNA sequence capable of hybridizing to said DNA sequence of Table I or Table II under stringent conditions and which is a natural mammalian homologue of said DNA sequence of Table I or Table II; and exhibiting phospholipase A_2 activity in the mixed micelle assay; and

(c) an amino acid sequence encoded by an allelic variant of said DNA sequence of Table I or Table II.

5,622,833

PROCESS FOR INHIBITING ACTIVITY OF ENDOTOXIN

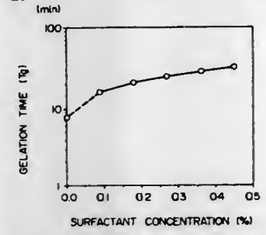
Masakazu Tsuchiya, and Kazuaki Harada, both of Amagasaki, Japan, assignors to Wako Pure Chemical Industries Ltd., Osaka, Japan

Division of Ser. No. 183,436, Jan. 19, 1994, abandoned. This application May 31, 1995, Ser. No. 455,531

Claims priority, application Japan, Jan. 21, 1993, 5-026159

Int. Cl.[6] C12Q *1/37;1/54;* **A61K** *38/00;* **C07K** *16/00*

U.S. Cl. 435—23 **7 Claims**



1. A process for measuring at least one endotoxin analogous substance present in a sample and having a property of reacting

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with a horseshoe crab hemocyte lysate to cause enzyme activation reaction or gelation reaction, which comprises

i) pre-treating the sample having endotoxin and the endotoxin analogous substance therein by selectively inhibiting the activity of endotoxin comprising contacting at least one surfactant and an endotoxin-inhibiting peptide which binds to the endotoxin to inhibit the reaction of the endotoxin, with the sample, then

II) reacting the sample with horseshoe crab hemocyte lysate, and

III) measuring the activity of an enzyme activated by said enzyme activation reaction or measuring the degree of turbidity change or gelation due to said gelation reaction caused by the reaction of step ii), by means of a measuring instrument or with the naked eye.

5,622,834

METHOD OF ISOLATING POLY-β-1-4-N-ACETYLGLUCOSAMINE FROM MICROALGAL CULTURE

John N. Vournakis, Hanover, N.H.; Sergio Finkielsztein, Chestnut Hill; Ernest R. Pariser, Belmont, both of Mass., and Mike Helton, Memphis, Tenn., assignors to Marine Polymer Technologies, Inc., Danvers, Mass.

Filed Dec. 1, 1993, Ser. No. 160,569

Int. Cl.[6] C12P *19/26;* **C08B** *37/08;* **A61K** *31/73*

U.S. Cl. 435—84 **18 Claims**

1. A method for isolating poly-β-1→4-N-acetylglucosamine comprising about 4,000 to about 150,000 N-acetylglucosamine monosaccharides covalently attached in a β-1→4 conformation, free of protein, substantially free of other organic contaminants, and having a molecular weight of about 800,000 daltons to about 30 million daltons comprising:

(a) culturing a microalgae comprising a cell body and a poly-β-1→4N-acetylglucosamine fiber in a sterile culture solution having a neutral pH;

(b) agitating the culture in step (a) about every 8 to 12 hours;

(c) subjecting the microalgae to a mechanical force for a time sufficient to separate the cell body from the poly-β-1→4-N-acetylglucosamine fiber;

(d) segregating the poly-β-1→4-N-acetylglucosamine fiber from the cell body; and

(e) treating the poly-β-1→4-N-acetylglucosamine fiber with an organic solvent or a detergent,

so that all protein, substantially all other organic contaminants, and substantially all inorganic contaminants are removed from the segregated poly-β-1→4-N-acetylglucosamine fiber, and the poly-β-1→4-N-acetylglucosamine is isolated.

5,622,835

WT1 MONOCLONAL ANTIBODIES

Meenhard Herlyn, Wynnewood, Pa.; Jennifer Morris, Wilmington, Del.; Frank J. Rauscher, III, Cranbury, N.J., and Ulrich Rodeck, Philadelphia, Pa., assignors to The Wistar Institute of Anatomy & Biology, Philadelphia, Pa.

Filed Apr. 28, 1994, Ser. No. 234,783

Int. Cl.[6] C12N *5/12;* **C07K** *16/00;16/18;16/30*

U.S. Cl. 435—328 **10 Claims**

1. A monoclonal antibody directed against an epitope located in Wilms' tumor protein antigen amino acids 1–181 SEQ ID NO:4, said antibody capable of specifically binding to Wilms' tumor protein, and selected from the group consisting of H2, which is secreted by the hybridoma cell line ATCC No. 11598, H7 which is secreted by the hybridoma cell line ATCC No. 11599, and HC17 which is secreted by hybridoma cell line ATCC No. 11600.

5,622,836

MONOCLONAL ANTIBODIES WHICH RECOGNIZE MALIGNANT CELLS FROM BLADDER CARCINOMAS

Karen Z. Walker, Coogee, and Pamela J. Russell, Wahroonga, both of Australia, assignors to The University of Sydney, and The Central Sydney Area Health Service, both of New South Wales, Australia

Continuation of Ser. No. 793,367, Jan. 3, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,009

Claims priority, application Australia, May 24, 1989, PJ4351; WIPO, May 24, 1990, PCT/AU90/00218

Int. Cl.[6] C07K *16/28;16/30;* **C12N** *5/12*

U.S. Cl. 435—344 **26 Claims**

1. A hybridoma cell line producing an antibody directed against an antigen of malignant cells associated with transitional cell carcinoma of the human bladder, which antigen is found in voided urine of transitional bladder cell carcinoma patients, characterized in that the hybridoma cell line is selected from the group consisting of HB10406, HB11784 and HB11785.

5,622,837

PANCREAS ELASTASE 1-SPECIFIC ANTIBODY, A PROCESS FOR OBTAINING IT, AND A TEST KIT CONTAINING SUCH ANTIBODY

Hans Scheefers; Ursula Scheefers-Borchel, both of Wettenberg, and Andreas Sziegoleit, Langgöns, all of Germany, assignors to ScheBo Tech Medizinisch-Biologische Forschungsgesellschaft mbH, Wettenberg, Germany

Continuation of Ser. No. 220,395, Mar. 30, 1994, abandoned, which is a continuation of Ser. No. 969,173, Mar. 29, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,172

Claims priority, application Germany, Jul. 28, 1990, 40 23 972.1; Mar. 11, 1991, 41 07 765.2

Int. Cl.[6] C12N *5/00;* **C07K** *16/40;* **G01N** *33/53*

U.S. Cl. 435—338 **10 Claims**

1. A process for obtaining monoclonal or polyclonal antibodies capable of specifically binding to human elastase 1 present both in bodily fluids and in stools, which comprises immunizing an experimental animal with an antigen having the amino acid sequence Thr-Met-Val-Ala-Gly-Gly Asp-Ile-Arg (SEQ ID NO:1) or immunogenic partial peptides thereof conjugated to a carrier, and recovering resulting monoclonal or polyclonal antibodies capable of specifically binding to human elastase 1 present in human bodily fluids and in stools.

5,622,838

DNA PREPARATION CODING FOR RICIN A AND METHODS OF USING SAME

John M. Lord; Lynne M. Roberts, both of Leamington Spa, and Francis I. Lamb, Kenilworth, all of England, assignors to Imperial Chemical Industries PLC, Great Britain

Continuation of Ser. No. 630,815, Jul. 13, 1984, abandoned. This application Mar. 23, 1989, Ser. No. 327,434

Claims priority, application United Kingdom, Jul. 15, 1983, 8319265; Mar. 13, 1984, 8406569

Int. Cl.[6] C12N *1/21;5/10;15/29;* **C12P** *21/02*

U.S. Cl. 435—69.1 **15 Claims**

1. A biologically pure sample of a DNA molecule, said DNA molecule comprising at least a substantial portion of:

(a) nucleotides 1–801 of the nucleotide sequence shown in Table 1, or

(b) a nucleotide sequence that is equivalent by virtue of degeneracy of the genetic code to nucleotides 1–801 of the nucleotide sequence shown in Table 1,

wherein said portion encodes a polypeptide which inhibits protein synthesis at 60S subunits of ribosomes.

5,622,839

RECOMBINANT PRODUCTION OF HUMAN CALCITONIN RECEPTOR POLYPEPTIDES

Emma E. Moore, Seattle; Paul O. Sheppard, Redmond, and Rolf E. Kuestner, Bothell, all of Wash., assignors to Zymo-Genetics, Inc., Seattle, Wash.

Continuation of Ser. No. 100,887, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 954,804, Sep. 30, 1992, abandoned. This application May 30, 1995, Ser. No. 453,742

Int. Cl.[6] C12N *15/12;15/63;5/10*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated polynucleotide molecule which comprises a sequence encoding:

(a) a human calcitonin receptor having the sequence shown in SEQ ID NO: 2,

(b) a human calcitonin receptor having the sequence shown in SEQ ID NO: 25,

(c) a naturally occurring allelic variant of (a) or (b), or

(d) a polypeptide comprising the N-terminal ligand-binding domain, the first transmembrane domain, and the first intracellular domain of (a), (b), or (c).

5,622,840

METHOD FOR CONTROLLING GENE EXPRESSION

Masayuki Yabuta, Tatebayashi; Seiko Miura, Konosu, and Kazuhiro Ohsuye, Ohra-gun, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jun. 1, 1995, Ser. No. 456,923

Claims priority, application Japan, Jun. 1, 1994, 6-140736; Aug. 3, 1994, 6-200311

Int. Cl.[6] C12P *21/02;* **C07K** *14/245;* **C12N** *15/31*

U.S. Cl. 435—69.1 **22 Claims**

1. A lactose repressor protein of *E. coli* wherein at least one amino acid at the position of 94, 241, 265 or 300 in the wild lactose repressor is replaced with an amino acid other than that of the wild lactose repressor.

5,622,841

METHOD FOR THE PRODUCTION OF HETEROLOGOUS POLYPEPTIDES USING A PROMOTER ELEMENT AND SIGNAL PEPTIDE OF A BACILLUS GENE ENCODING AN ALKALINE PROTEASE

Alan P. Sloma, Davis, Calif.; Helle Outtrup, Ballerup, Denmark; Claus Dambmann, Søborg, Denmark, and Dorrit A. Aaslyng, Roskilde, Denmark, assignors to Novo Nordisk Biotech, Inc., Davis, Calif., and Novo Nordisk A/S, Bagsvaerd, Denmark

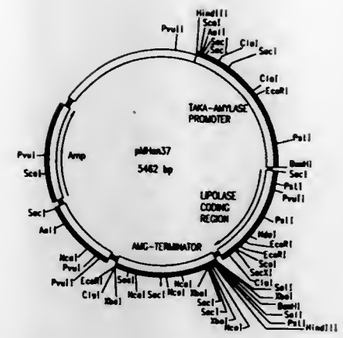
Division of Ser. No. 434,255, May 3, 1995, which is a continuation-in-part of Ser. No. 325,386, Oct. 26, 1994. This application Jun. 2, 1995, Ser. No. 459,967

Claims priority, application Denmark, May 27, 1992, 702/92

Int. Cl.[6] C12N *15/62;15/57;15/74;15/75*

U.S. Cl. 435—69.1 **3 Claims**

1. A recombinant method for producing a heterologous polypeptide in a microbial host cell comprising



(a) transforming said host cell with a vector comprising a promoter and a nucleic acid construct comprising a nucleic acid sequence encoding a desired heterologous polypeptide, wherein said promoter comprises a transcriptional activating region of the nucleic acid sequence set forth in SEQ ID NO:9, and wherein said nucleic acid contruct is positioned in operable linkage with said promoter;

(b) culturing the transformed host cell of step (a); and,

(c) recovering said heterologous polypeptide from the transformed host cell of step (b).

5,622,842

DNA ENCODING CANINE IMMUNOGLOBULIN A

Gregory F. Hollis, Westfield, and Mayur D. Patel, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 9, 1994, Ser. No. 336,891

Int. Cl.[6] C12N *15/13;15/63;5/10;* **C07K** *16/00*

U.S. Cl. 435—69.6 **4 Claims**

1. A DNA molecule comprising of a nucleotide sequence of SEQ. ID. NO.:1.

5,622,843

PHOSPHOLIPID TRANSFER PROTEINS AND DNA ENCODING THEM

Joseph R. Day, Brier; John J. Albers, Seattle; Catherine E. Lofton-Day, Brier, and Janet L. Adolphson, Mountlake Terrace, all of Wash., assignors to Zymogenetics, Inc., and University of Washington, both of Seattle, Wash.

Filed Dec. 30, 1993, Ser. No. 176,402

Int. Cl.[6] C07K *14/435;* **C12N** *15/12*

U.S. Cl. 435—69.6 **8 Claims**

1. An isolated polynucleotide molecule encoding a mammalian phospholipid transfer protein selected from the group consisting of:

a) DNA molecules comprising a coding sequence corresponding to SEQ ID NO: 1 from nucleotide 88 to nucleotide 1566;

b) DNA molecules comprising a coding sequence corresponding to SEQ ID NO: 1 from nucleotide 139 to nucleotide 1566;

c) DNA molecules comprising a coding sequence corresponding to SEQ ID NO: 1 from nucleotide 523 to nucleotide 1566;

d) allelic variants of (a); and

e) polynucleotide molecules that specifically hybridize to the complement of (a), (b), (c) or (d), and wherein said polynucleotide molecules encode polypeptides that are at least 85% homologous to a sequence of SEQ ID NO: 2.

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5,622,844

METHOD OF PREPARING A MANNOSYL-CYCLODEXTRIN

Sumio Kitahata, 621-440 Noda Kumatori-cho, Sennan-gun, Osaka; Koji Hara, Yokohama; Koki Fujita, Yokohama; Nobuhiro Kuwahara, Yokohama, and Kyoko Koizumi, Fujiidera, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Kanagawa-ken, and Sumio Kitahata, Osaka, both of Japan

Division of Ser. No. 368,392, Dec. 30, 1994, Pat. No. 5,523,218, which is a continuation of Ser. No. 992,863, Dec. 17, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,091

Claims priority, application Japan, Apr. 8, 1992, 4-114304

Int. Cl.[6] C12P *19/04;19/44;19/18;19/08*

U.S. Cl. 435—101 15 Claims

1. A method of producing a mannosyl-cyclodextrin having a mannosyl group bonded to a hydroxyl group of glucosyl group of a cyclodextrin via an α-bond, which comprises contacting a liquid containing a cyclodextrin and an α-mannosyl compound with an α-mannosidase.

5,622,845

FERMENTATION METHOD FOR PRODUCING NORLEUCINE

David P. Brunner, Portage; Gary C. Harbour; Richard J. Kirschner, both of Kalamazoo; James F. Pinner, Portage, and Robert L. Garlick, Augusta, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 566,442, Aug. 17, 1990, which is a continuation-in-part of Ser. No. 157,275, Feb. 17, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 470,683

Int. Cl.[6] C12N *1/20;* C12P *13/04;13/06*

U.S. Cl. 435—106 1 Claim

1. A method for producing norleucine comprising growing *E. coli* on a fermentation medium having a low concentration of amino acids and then isolating the norleucine produced by said *E. coli.*

5,622,846

BIOTECHNOLOGICAL PROCESS FOR THE PREPARATION OF CYCLIC-S-α-IMINO CARBOXYLIC ACIDS AND R-α-IMINO CARBOXAMIDES

Andreas Kiener, Visp; Jean-Paul Roduit, Gröne; Jörg Kohr, Raron, and Nicholas Shaw, Visp, all of Switzerland, assignors to Lonza AG, Basel, Switzerland

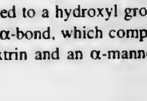
Filed Jun. 7, 1995, Ser. No. 478,960

Claims priority, application Switzerland, Jun. 9, 1994, 1813/94; Jul. 13, 1994, 2231/94

Int. Cl.[6] C12P 13/00

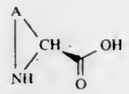
U.S. Cl. 435—128 2 Claims

1. A purified microorganism capable of (i) utilizing as sole nitrogen source an α-imino carboxamide in a form selected from the group consisting of the racemate and its optically active isomers, of the general formula



I

wherein A together with —NH— and —OH— is an optionally substituted 5- or 6-membered saturated heterocyclic ring, and (ii) converting an (RS)-α-imino carboxamide of the Formula I into an S-α-imino carboxylic acid of the general formula



II

said microorganism being selected from the group consisting of *Pseudomonas putida, Pseudomonas fluorescens, Klebsiella pneumoniae,* and *Klebsiella terrigena,* and mutants thereof.

5,622,847

PROCESS FOR THE SEPARATION OF SOLID MATERIALS FROM MICROORGANISMS

Robert H. Cumming; Julie S. Watson, both of Cleveland, and Paul Rees, Southampton, all of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02329, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO94/11491, PCT Pub. Date May 26, 1994

PCT Filed Nov. 12, 1993, Ser. No. 433,501

Claims priority, application United Kingdom, Nov. 12, 1992, 9223709

Int. Cl.[6] C08G *63/06;* C12P *7/62*

U.S. Cl. 435—135 14 Claims

1. A process of producing a polyhydroxyalkanoic acid in which a solid polyhydroxyalkanoic acid is recovered from a solid polyhydroxyalkanoic acid-producing microorganism of the species *Nocardia* or *Alcaligenes* which comprises growing the microorganism at a fermentation temperature, conditioning it to render it susceptible to thermal shock in a conditioning stage by cooling it below the fermentation temperature without any substantial freezing, solubilising protein contained in the microorganism by heating the microorganism in water to a protein solubilisation temperature 10° C. to 150° C. above the fermentation temperature without permitting any substantial recovery from the conditioning stage and separating polyhydroxyalkanoic acid as a solid from the protein.

5,622,848

ELECTRICALLY HYDROLYZED SALINES AS MICROBIOCIDES FOR IN VITRO TREATMENT OF CONTAMINATED FLUIDS CONTAINING BLOOD

Robert E. Morrow, Salt Lake City, Utah, assignor to Medical Discoveries, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 527,321, May 23, 1990, Pat. No. 5,334,383. This application Jul. 15, 1994, Ser. No. 275,904

Int. Cl.[6] C12N *13/00*

U.S. Cl. 435—173.1 12 Claims

1. A method for the in vitro treatment of a microbially contaminated fluid selected from the group consisting of whole blood, blood cells, blood plasma, and mixtures thereof which comprises contacting said fluid with an effective amount of a microbiocidal solution comprising an electrolyzed saline containing ozone and active chlorine species wherein the ozone content is in the range of about 5 and 100 mg/L and the active chlorine species content is in the range of about 5 and 300 ppm for a time sufficient to reduce the microbial contamination in said fluid while maintaining therapeutic characteristics thereof.

5,622,849

CATALASE FROM BACILLUS AND PROCESS FOR PRODUCING THE SAME

Yuichi Fusho, Kanagawa, and Yoshihiro Yajima, Chiba, both of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 354,721, Dec. 6, 1994, Pat. No. 5,486,467. This application Aug. 21, 1995, Ser. No. 517,545

Claims priority, application Japan, Jan. 18, 1994, 6-3698; Apr. 25, 1994, 6-86745

Int. Cl.[6] C12N *9/08*

U.S. Cl. 435—192 4 Claims

1. An isolated catalase obtained from a microorganism of the genus Bacillus having a catalase activity at 0° C. of 95% or more of its catalase activity at 30° C., when measured at pH 7 and wherein said catalase has:

(1) an operative temperature of 0° to 60° C. and an optimum temperature of 0° to 30° C., when measured within the range of from 0° to 60° C.,

(2) an optimum pH of 7 to 10,

(3) a resistance to 10 mM potassium fluoride,

(4) a molecular weight of 65,000±3,000, when measured by SDS polyacrylamide gel electrophoresis, and

(5) an isoelectric point of about 4.8, when measured by isoelectric focusing.

5,622,850

RECOMBINANT METHODS FOR THE PRODUCTION OF A BACILLUS ALKALINE PROTEASE

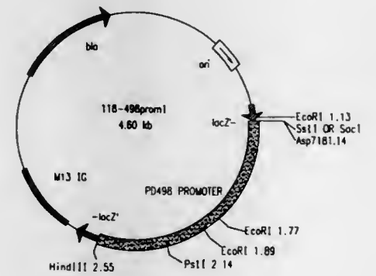
Alan P. Sloma, Davis, Calif.; Helle Outtrup, Ballerup, Denmark; Claus Dambmann, Søborg, Denmark, and Dorrit A. Aaslyng, Roskilde, Denmark, assignors to Novo Nordisk Biotech, Inc., Davis, Calif., and Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 434,255, May 3, 1995, which is a continuation-in-part of Ser. No. 325,386, Oct. 26, 1994. This application Jun. 2, 1995, Ser. No. 460,327

Claims priority, application Denmark, May 27, 1992, 702/92

Int. Cl.[6] C12N *9/54;15/57;15/74;15/75*

U.S. Cl. 435—221 8 Claims



1. A recombinant method for producing an alkaline protease in a microbial host cell comprising the following steps:

(a) transforming said host cell with a vector comprising a nucleic acid construct comprising a nucleic acid sequence encoding an alkaline protease, wherein said alkaline protease-encoding sequence comprises a region encoding a mature protease having the amino acid sequence of SEQ ID NO:8 and a promoter operably linked with said nucleic acid construct, said promoter comprising a transcription activating region of the nucleic acid sequence set forth in SEQ ID NO:9;

(b) culturing the transformed host cell of step (a); and,

(c) recovering said alkaline protease from the transformed host cell of step (b) or from the culture medium of said host cell.

5,622,851

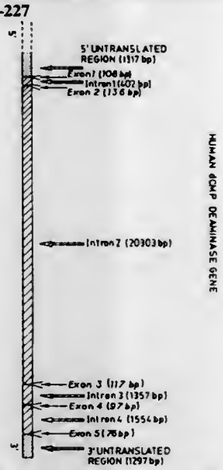
HUMAN DEOXYCYTIDYLATE DEAMINASE GENE

Frank Maley; Gladys R. Maley, both of Delmar, and Karen X. B. Weiner, Syracuse, all of N.Y., assignors to Health Research, Incorporated, Albany, N.Y.

Filed Jan. 10, 1995, Ser. No. 370,975

Int. Cl.[6] C12N *9/78;15/63;15/09;* C07H *21/04*

U.S. Cl. 435—227 8 Claims



1. An isolated DNA molecule encoding a gene for human deoxycytidylate deaminase comprising a 5' untranslated region, said 5' untranslated region having a nucleotide sequence as shown in SEQ ID NO:2.

5,622,852

BCL-X/BCL-2 ASSOCIATED CELL DEATH REGULATOR

Stanley J. Korsmeyer, Clayton, Mo., assignor to Washington University, St. Louis, Mo.

Filed Oct. 31, 1994, Ser. No. 333,565

Int. Cl.[6] C12N *1/15;1/21;5/10;15/12;* C07H *21/00*

U.S. Cl. 435—325 9 Claims

Mouse Polynucleotide Sequence Encoding Bad Polypeptide

SEQ ID NO: 3

5'-ATGGGAACCCCAAAGCAGCCCTCGCTGGCTCCTGCACACGCCCTAGGCTTCAGCGAGTCC
GATCCCGGAATCCGCACGCCTGGGCAGCGACGCGGGAGCAAGGCGTTCGAGACCAGCAGCCCAG
ACTATGTTCCAGATCCCAGAGTTTGAGCCGAGTGAGCAGGAAGACGCTAGTGCTACAGATAGG
GGCCTGGGCCCTAGCCTCACTGAGGACCAGCCAGGTCCCTACCTGGCCCCAGGTCTCCTGGGG
AGCAACATTCATCAGCAGGGACGGGCAGCCACCAACAGTCATCATGGAGGCGCAGGGGCTATG
GAGACTCGGAGTCGCCACAGTTCGTACCCAGCGGGGACCCACAGAGGATCAAGGGATGGAGCAG
GAGCTTAGCCCTTTCCGAGGACACTCGGTTCGGCTCCCCCAATCTCTGGCAACGCAGCCGC
TACGGCCGTGAGCTCCGAAGGATGAGCGATGACTTTGAGGGTTCCTTCAAGGACTTCCTCGC
CCAAAGAGCGCAGGCACTGCAACACAGATGCGACAAAGCGCCGGCTGGACGGCGCATTATCCAG
TCCTGGTGGGATCGAAACTTGGGCAAAGGAGGCTCCACCCCCTCCCAGTGA-3'

1. A polynucleotide, free of homologous chromosomal DNA, comprising a sequence encoding a mammalian Bad polypeptide, wherein said polypeptide a) lacks the carboxyl terminal signal-anchor sequence characteristic of the membrane bound members of the bcl-2 family, b) has a BH-1 and BH-2 domain, and c) selectively heterodimerizes with bcl-2, and bcl-x_L.

5,622,853

T LYMPHOCYTE PRECURSOR

Leon W. M. M. Terstappen, Palo Alto, Calif., and Louis J. Picker, Dallas, Tex., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 517,101, May 1, 1990, abandoned. This application Mar. 14, 1991, Ser. No. 669,142

Int. Cl.[6] C12N *5/00;* G01N *33/53;* F01N *1/02*

U.S. Cl. 435—372.3 1 Claim

1. A substantially pure population of T lymphocyte precursor cells said cells being characterized as $CD34^+$, $CD7^+$ and Leu 8^+.

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5,622,854
METHOD AND REAGENT FOR INHIBITING T-CELL LEUKEMIA VIRUS REPLICATION
Kenneth G. Draper, Solon, Ohio, assignor to Ribozyme Pharmaceuticals Inc., Boulder, Colo.
Continuation of Ser. No. 882,714, May 14, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,941
Int. Cl.[6] C12N *15/85;* **C12Q** *1/68;* **A61K** *48/00*
U.S. Cl. 435—366 **11 Claims**

1. An enzymatic RNA molecule which specifically cleaves RNA of HTLV-1.

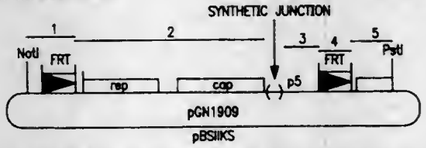
9. A mammalian cell including an enzymatic RNA molecule of any of claims **1**, **2–6** in vitro.

10. The cell of claim **9**, wherein said cell is a human cell.

5,622,855
PRESERVED, NON-INFECTIOUS CONTROL CELLS PREPARED BY THE MODULATION OR MODIFICATION OF CULTURED CELLS
John A. Maples, Davie; Patricia A. Roth, Pembroke Pines, and Melissa J. Stiglitz, North Miami Beach, all of Fla., assignors to Coulter Corporation, Miami, Fla.
Division of Ser. No. 73,937, Jun. 8, 1993, Pat. No. 5,409,826. This application Apr. 10, 1995, Ser. No. 378,840
Int. Cl.[6] A01N *1/02;* **C12N** *5/08;* **G01N** *31/00*
U.S. Cl. 435—325 **6 Claims**

1. A control cell composition comprising a preserved mixture of (a) normal leukocyte cells and (b) cells from an established mammalian cell line which have been artificially enzymatically or chemically activated or modified to express at least some of the antigenic characteristics expressed on the leukocyte cells in a person having a disease or disorder which results in the expression of said antigenic characteristics on said leukocyte cells.

5,622,856
HIGH EFFICIENCY HELPER SYSTEM FOR AAV VECTOR PRODUCTION
Georges Natsoulis, Berkeley, Calif., assignor to Avigen, Alameda, Calif.
Filed Aug. 3, 1995, Ser. No. 510,790
Int. Cl.[6] C12N *5/10;15/63*
U.S. Cl. 435—325 **35 Claims**



1. A nucleic acid molecule encoding AAV helper functions, said molecule comprising:

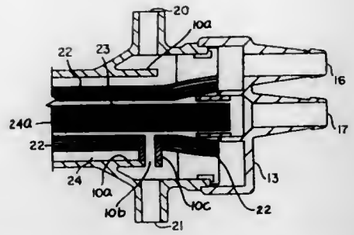
an AAV rep coding region;

an AAV cap coding region; and

a first nucleotide sequence comprising an AAV p5 promoter region, said first nucleotide sequence arranged in the molecule such that the p5 promoter region is situated 3' relative to the rep coding region.

5,622,857
HIGH PERFORMANCE CELL CULTURE BIOREACTOR AND METHOD
Randal A. Goffe, Arlington, Wash., assignor to Genespan Corporation, Redmond, Wash.
Filed Aug. 8, 1995, Ser. No. 512,546
Int. Cl.[6] C12N *5/00;* **C12M** *3/06*
U.S. Cl. 435—378 **46 Claims**

1. A bioreactor comprising:



a housing comprising an inner wall defining a substantially tubular cell culture chamber, first and second ends defining a longitudinal axis through said chamber, and a port providing access to said chamber,

a central bundle of porous hollow fibers disposed around the longitudinal axis within said chamber,

an annular bundle of gas permeable hollow fibers disposed concentric to and surrounding said central bundle,

means disposed at said first and second ends for passing nutrient media through said porous hollow fibers, and

means disposed at said first and second ends for passing an oxygen containing gas through said gas permeable hollow fibers.

17. A method of cell culture comprising:

introducing cells into the cell culture chamber of a bioreactor of claim **1**, and

incubating said cells within said chamber while passing an oxygen containing gas through said gas permeable hollow fibers and while passing nutrient media through said porous hollow fibers.

5,622,858
ARTHROBACTER STRAIN PRODUCING ESTERASE FOR THE ENANTIOSELECTIVE CLEAVAGE OF 1-ARYLALKYL ESTERS
Hans-Willi Krell, Penzberg, and Peter Rasor, München, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
Division of Ser. No. 338,499, Nov. 21, 1994, abandoned. This application May 31, 1995, Ser. No. 455,522
Claims priority, application Germany, May 27, 1992, 42 17 506.2
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—252.1 **1 Claim**

1. A biologically pure culture of Arthrobacter spec. DSM 7034.

5,622,859
BIOLOGICALLY PURE STRAIN OF *ENTEROCOCCUS FALCIUM* FERM BP-4504
Satoshi Iritani, Akawa-gun; Masakazu Mitsuhashi, Okayama; Hiroto Chaen, Okayama, and Toshio Miyake, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan
Continuation of Ser. No. 364,489, Dec. 27, 1994, Pat. No. 5,545,418. This application Mar. 28, 1996, Ser. No. 623,007
Claims priority, application Japan, Dec. 27, 1993, 5-346818
Int. Cl.[6] A01N *63/00;* **C12N** *1/00;1/12;1/20*
U.S. Cl. 435—252.1 **1 Claim**

1. A biologically pure *Enterococcus faecium* FERM BP-4504, which is a bacterium capable of proliferating in an alkaline nutrient culture medium having a pH not less than 9.5.

5,622,860
GENES ENCODING MELANOCORTIN RECEPTORS
Tadataka Yamada, and Ira Gantz, both of Ann Arbor, Mich., assignors to The Regents Of The University Of Michigan, Ann Arbor, Mich.
Filed Feb. 17, 1994, Ser. No. 200,711
Int. Cl.[6] C12N *5/10;15/12*
U.S. Cl. 435—252.3 **4 Claims**

4. An isolated nucleic acid molecule encoding an amino acid sequence selected from the group consisting of Sequence Listing ID. No. 6, Sequence Listing ID No. 8 and Sequence Listing ID No. 10.

5,622,861
RECOMBINANT DNA ENCODING HEPATITIS A VIRUS RECEPTOR
Gerardo Kaplan, Rockville, Md., and Stephen M. Feinstone, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Aug. 5, 1994, Ser. No. 287,001
Int. Cl.[6] C12N *5/10;15/12*
U.S. Cl. 435—252.3 **8 Claims**

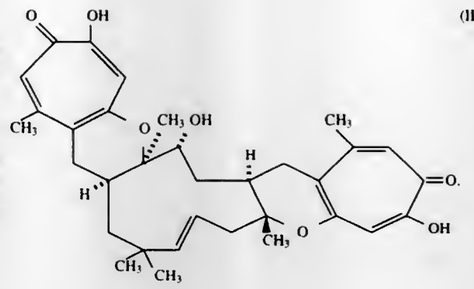
I. An isolated nucleic acid comprising a nucleic acid encoding a hepatitis A virus receptor consisting of the polypeptide set forth in the Sequence Listing as SEQ ID NO: 2.

5,622,862
ASSAY SYSTEMS FOR TRKB NEUROTROPHIN ACTIVITY
Stephen P. Squinto, Irvington; David Glass; Thomas H. Aldrich, both of New York; Peter DiStefano, Carmel; Trevor Stitt, Huntington Station; Mark E. Furth, Pelham, and George D. Yancopoulos, Briarcliff Manor, all of N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.
Continuation of Ser. No. 690,199, Apr. 23, 1991, abandoned.
This application Nov. 14, 1994, Ser. No. 339,578
Int. Cl.[6] C12N *15/00;5/10*
U.S. Cl. 435—353 **1 Claim**

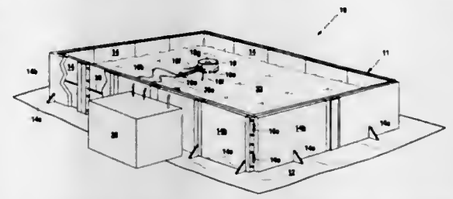
1. A PC12 cell line transformed with a nucleic acid sequence encoding a trkB receptor protein wherein said nucleic acid sequence is expressed.

5,622,863
CULTURE OF *EUPENICILLIUM BREFELDANUM*
Friedrich Mayerl, Norwalk; Xiaohua Huang, Wallingford, and Qi Gao, Meriden, all of Conn., assignors to Bristol-Myers Squibb Co., Princeton, N.J.
Division of Ser. No. 956,710, Oct. 5, 1992, Pat. No. 5,284,866. This application Dec. 1, 1993, Ser. No. 160,597
Int. Cl.[6] C12N *1/14*
U.S. Cl. 435—254.1 **1 Claim**

1. A biologically pure culture of *Eupenicillium brefeldianum* strain C39686, ATCC-74184, which produces the compound of Structure II in a recoverable amount in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances, wherein Structure II is:



5,622,864
APPARATUS FOR REMEDIATING CONTAMINATED SOIL CONTAINING ORGANIC COMPOUNDS
Alan B. Buchanan, P.O. Box 1672, Canyon Lake, Tex. 78130
Division of Ser. No. 143,439, Oct. 26, 1993, Pat. No. 5,563,066. This application Aug. 4, 1995, Ser. No. 511,705
Int. Cl.[6] C12M *1/00*
U.S. Cl. 435—290.1 **9 Claims**



1. A portable sectional container for remediating soil contaminated by organic compounds, comprising:

a plurality of substantially rectangular floor members each having at least one flat surface, said floor members being sealably connected in side by side relationship and with said flat surface upwardly facing, thereby defining the floor of said container;

a plurality of substantially rectangular upstanding wall members each having at least one flat surface and at least one sealable end surface, said wall members being sealably connected in side by side relationship, and having their bottom edges sealably engagable with the peripheral edges of said floor members for enclosing said container's floor on four sides, thereby defining a four cornered container capable of receiving at least 50 cubic yards of said contaminated soil therein;

a door assembly sealably closeable, and mounted in one of said upstanding wall members for entry into the interior of the container;

said door assembly opening outwardly from said one upstanding wall member;

said door assembly extending laterally in width, sufficient to provide for entry of transport vehicles for said contaminated material;

said door assembly, when closed, preventing liquid leakage from said container, thereby permitting said container to be filled with water containing remediation materials to a depth covering said contaminated soil;

means for adding water containing remediation materials to said container to form a pool having a depth sufficient to cover a layer of contaminated soil inserted in the container;

means for recirculating said water containing remediation materials into and out of said container; and

a plurality of water spraying nozzles to discharge pressurized recycled water downwardly to agitate and shear said contaminated soil in said container.

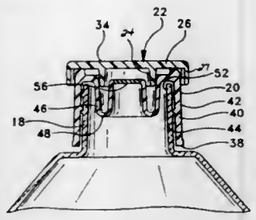
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5,622,865

REUSABLE VENTED FLASK CAP COVER

John J. Kayal, Wayne; Susan L. Barker, Tenafly, and John M. Janson, Piscataway, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 8, 1995, Ser. No. 525,993
Int. Cl.[6] C12M *1/00*
U.S. Cl. 435—304.1 **8 Claims**



1. A culture vessel assembly constructed to grow cell cultures in incubators comprising:

a vessel comprising a chamber and a neck connected to said chamber having an opening for introducing cells and culture fluids into said chamber;

cap comprises a top portion, a bottom portion, an annular skirt extending from said top portion to said bottom portion and having an inner surface and outer surface, an inner inverted skirt portion surrounded by said inner surface of said annular skirt and extending from said top portion toward said bottom portion, an annular space between said inner surface of said annular skirt and said inverted skirt portion, a compartment area in said top portion as defined by said inverted skirt portion and an orifice in said top portion as defined by said inverted skirt portion surrounded by said compartment area, whereby said means for allowing gas diffusion into and out of said vessel is attached to said orifice; and

a plug removably attached to said closure for occluding gas diffusion into and out of said vessel comprising a top flange having a top surface and a bottom surface, a bottom stop surface, an annular outer skirt extending from the top flange to the bottom stop surface having an outer wall surface and an inner wall surface and projections extending from the bottom surface of the top flange along the inner wall surface of the annular outer skirt.

5,622,866

EXPRESSION CASSETTES USEFUL IN CONSTRUCTION OF INTEGRATIVE AND REPLICATIVE EXPRESSION VECTORS FOR STREPTOMYCES

Haideh Motamedi, and Ali Shafiee, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 23, 1994, Ser. No. 264,861
Int. Cl.[6] C12N *15/63;15/00;1/20;* **C07H** *21/04*
U.S. Cl. 435—320.1 **20 Claims**

3. An integrative expression cassette for the expression of a gene of interest in Streptomyces comprising:

(1) a promoter functional in Streptomyces species;

(2) a synthetic ribosomal binding site (RBS) which comprises the heptamer (SEQ ID NO:2) AGGAGGA;

(3) an ATG start codon;

(4) a multiple cloning site, which gives additional cloning sites into which a gene of interest may be cloned;

(5) a trancription terminator derived from the terminator region of a methyltransferase gene involved in the biosynthesis of FK-506, wherein the transcription terminator comprises the nucleotide sequence depicted in base 845 to base 1150 of (SEQ ID NO:10);

in association with:

(i) a hygromycin resistance gene which acts as selectable marker by inactivating the drug hygromycin B;

(ii) a minicircle as an integratoin element, wherein the minicircle is a *Streptomyces* integration element derived from *Streptomyces coelicolor* and wherein the nucleotide sequence of the minicircle comprises the ATT sequence; and

(iii) a Col E1 replicon;

wherein the components (1)–(5) are associated in the specified order and each of the components (i), (ii), and (iii) may be independently associated either upstream or downstream of components (1)–(5).

5,622,867

PROLONGED PRESERVATION OF BLOOD PLATELETS

Stephen A. Livesey, Eltham, Australia; Jerome Connor, and Laura M. Currie, both of Houston, Tex., assignors to Lifecell Corporation, The Woodlands, Tex.

Filed Oct. 19, 1994, Ser. No. 326,036
Int. Cl.[6] A61K *35/14*
U.S. Cl. 436—18 **25 Claims**

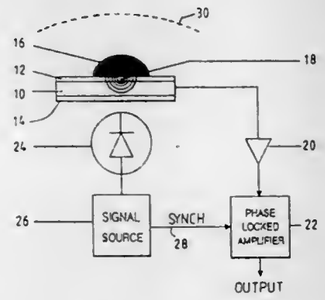
1. An inhibitor system effective to prolong the in vitro presentation of human platelets at temperatures of 8° C. and below, said system capable of inhibiting platelet activity during storage, but enabling platelet activity to resume after the inhibitor system is removed from the platelets, comprising: a plasma phase containing amiloride, sodium nitroprusside, adenosine, dipyridamole, quinacrine, ticlopidine and heparin in amounts effective to prolong storage time of bioactive platelets, said inhibitor system being functionally effective to block the cyclic AMP pathway, the sodium channel, the cyclic GMP pathway, the cyclooxygenase pathway, the lipooxygenase pathway, the phospholipase pathway, and the membrane modification pathway.

5,622,868

ANALYTICAL APPARATUS UTILIZING A COLORIMETRIC OR OTHER OPTICALLY DETECTABLE EFFECT

David J. Clarke, Salisbury, and Freidoun Zamani-Farahani, Andover, both of United Kingdom, assignors to Microbiological Research Authority CAMR (Centre for Applied Microbiology & Research), Salisbury, United Kingdom

Continuation of Ser. No. 209,380, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 778,872, Dec. 24, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,192
Claims priority, application United Kingdom, Apr. 27, 1989, 8909701
Int. Cl.[6] G01N *21/00*
U.S. Cl. 436—147 **26 Claims**



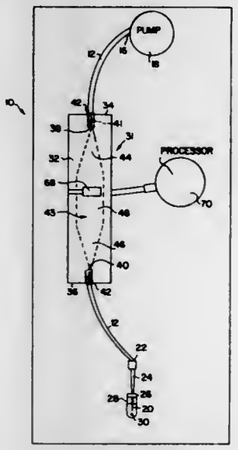
1. A method of analysis of a sample, utilising transducer means having a transducer surface, there being provided at said transducer surface at least one electrophoretic separation layer and a colorimetric reagent thereon; comprising the steps of establishing a body of sample at said surface; effecting separation of species within the sample in the place of the separation layers; irradiating said sample with electromagnetic radiation such that heat is generated by the absorption of said electromagnetic radiation; and monitoring said transducer output signal to derive through determination of said heat generation at said surface, a measure of absorption in the sample proximate the surface.

5,622,869

METHOD OF DETECTING AN OBSTRUCTION IN A FLUID FLOW LINE OF A MEDICAL LABORATORY INSTRUMENT

Gregory D. Lewis, Cary; Dean L. Keiter, and Mario Moreno, both of Durham, all of N.C., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 197,762, Feb. 16, 1994, Pat. No. 5,451,373. This application Jul. 10, 1995, Ser. No. 500,073
Int. Cl.[6] G01N *21/13;21/00*
U.S. Cl. 436—148 **12 Claims**



1. A method for detecting obstructions in a fluid flow path of an automated sample handling system, comprising:

moving a sample tube to a sample removing station where an automated probe is positioned, said automated probe being in fluid communication with a pump, a fluid flow path being defined between said pump and said probe;

with said probe positioned above said sample tube, lowering said probe a predetermined distance into said sample tube;

aspirating into said probe a predetermined amount of sample from said sample tube;

removing said probe from said sample tube; and

dispensing said sample from said probe into a test well;

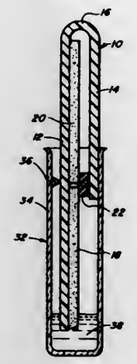
wherein at commencement of said aspiration step, said pump causes an initial vacuum for drawing sample from said sample tube, after said initial vacuum but within said aspiration step, a change in pressure is detected within said fluid flow path which indicates the presence or absence of obstructions preventing said predetermined amount of fluid from being drawn from said sample tube.

5,622,870

DEVICE AND METHOD FOR COMPLETING A FLUIDIC CIRCUIT

N. Chung Sizto; Nurith Kurn, both of Palo Alto; Rajesh D. Patel, Fremont; Martin Becker, Palo Alto, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Division of Ser. No. 821,338, Jan. 13, 1992, which is a continuation of Ser. No. 441,676, Nov. 27, 1989, abandoned. This application May 30, 1995, Ser. No. 453,860
Int. Cl.[6] G01N *33/558;21/00*
U.S. Cl. 436—165 **12 Claims**



1. A method for creating a capillary flow relationship among three pieces of bibulous material which prior to actuation are in a non-capillary flow relationship to each other which comprises:

(a) providing a device which comprises (i) two pieces of bibulous material each in a non-capillary flow relationship to the other, and (ii) a distortable member having affixed thereto a third piece of bibulous material, said distortable member being disposed with respect to said two pieces of bibulous material such that distortion of said distortable member brings said third piece of bibulous material into contact with said two pieces of bibulous material, and

(b) distorting said distortable member by insertion thereof into a container having limited space resulting in constriction of said distortable member, which thereby results in contact of said pieces of bibulous material so as to achieve a capillary flow relationship among said pieces.

5,622,871

CAPILLARY IMMUNOASSAY AND DEVICE THEREFOR COMPRISING MOBILIZABLE PARTICULATE LABELLED REAGENTS

Keith May, Bedfordshire; Michael E. Prior, Northamptonshire, and Ian Richards, Bedford, all of England, assignors to Unilever Patent Holdings B.V., Netherlands

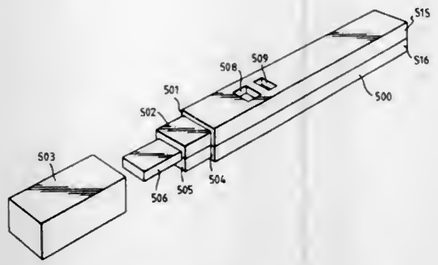
Continuation of Ser. No. 876,449, Apr. 30, 1992, abandoned, which is a divisIon of Ser. No. 795,266, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 294,146, Feb. 27, 1989, abandoned. This application Jul. 15, 1993, Ser. No. 102,313
Claims priority, application United Kingdom, Apr. 27, 1987, 8709873; Oct. 30, 1987, 8725457
Int. Cl.[6] G01N *33/558*
U.S. Cl. 436—514 **36 Claims**

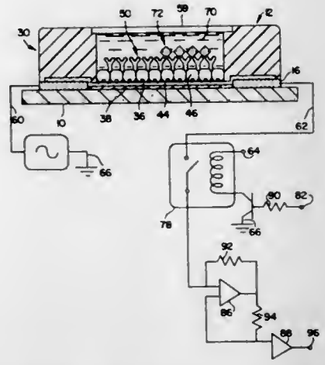
20. An analytical method comprising:

contacting an analytical test device for detecting an analyte suspected of being present in a liquid biological sample, said device including:

a) a hollow casing having a liquid biological sample application aperture and means permitting observation of a test result;

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b) a test strip comprising a dry porous carrier contained within said hollow casing, said carrier communicating directly or indirectly with the exterior of said hollow casing through said liquid biological sample application aperture to receive applied liquid biological sample, said carrier having a test result zone observable via said means permitting observation, said test strip, in the dry unused state, containing a labelled reagent capable of specifically binding with said analyte to form a first complex of said labelled reagent and said analyte, said label being a particulate direct label, wherein said labelled reagent is dry on said test strip prior to use and is released into mobile form by said applied liquid biological sample,

wherein mobility of said labelled reagent within said test strip is facilitated by at least one of 1) coating at least a portion of said test strip upstream from said test result zone with, or 2) drying said labelled reagent onto a portion of said test strip upstream from said test result zone in the presence of, a material comprising a sugar, in an amount effective to reduce interaction between said test strip and said labelled reagent;

said carrier containing in said test result zone a means for binding said first complex, said means for binding comprising specific binding means and being immobilized in said test result zone;

migration of said applied liquid biological sample through said dry porous carrier conveying by capillarity said first complex to said test result zone of said dry porous carrier whereat said binding means binds said first complex thereby to form a second complex;

said second complex being observable via said means permitting observation, thereby to indicate the presence of said analyte in said liquid biological sample, with said liquid biological sample suspected of containing said analyte;

allowing said liquid biological sample to convey by capillary action through said dry porous carrier into said test result zone and said labelled reagent is conveyed therewith;

and detecting the presence of said analyte in said liquid biological sample by observing the presence of any labelled reagent-analyte complex bound in said test result zone.

5,622,872

ANALYTE DETECTION THROUGH OBSERVED OPTICAL MODULATION OF POLYMERIZED LIPID LAYERS

Hans O. Ribi, Hillsborough, Calif., assignor to Biocircuits Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 149,075, Nov. 9, 1993, abandoned, which is a division of Ser. No. 893,563, Jul. 3, 1992, abandoned, which is a continuation of Ser. No. 453,784, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 366,651, Jun. 15, 1989, Pat. No. 5,156,810. This application May 11, 1995, Ser. No. 439,413

Int. Cl.[6] G01N *33/53*

U.S. Cl. 436—518 **5 Claims**

1. A method for detecting the presence of an analyte in a sample, wherein said analyte is a ligand or a receptor of a specific binding pair, said method comprising:

contacting said sample with a polymerized surfactant layer having optical properties, polymerized from polyunsaturated surfactant monomers of the formula:

$$(A)_a(D)_dC_x(C{\equiv}C)_nC_yLB$$

wherein:

A is a functionality for linking to an underlying substrate;

a is 0 or 1;

C is carbon:

x and y are at least 1 and the sum of x and y is in the range of 4–32;

n is 2;

D and L are bond or linking groups; and

B is a specific binding member which binds to said receptor;

with one terminus of each of said monomers proximal to the underlying substrate and the other terminus comprising B, said polymerization occurring at the C≡C groups of said monomers;

wherein said optical properties of said surfactant layer change due to specific binding of said receptor to B, with the proviso that when said analyte is said ligand aid sample comprises a predetermined amount of said receptor;

detecting said change in said optical properties upon specific binding of said receptor to B; and

relating said change to the presence of said analyte in said sample;

whereby the presence of said analyte in said sample is detected.

5,622,873

PROCESS FOR MANUFACTURING A RESIN MOLDED IMAGE PICK-UP SEMICONDUCTOR CHIP HAVING A WINDOW

Jin-Sung Kim, and Gi-Rok Huh, both of Chungcheongbuk-do, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 23, 1995, Ser. No. 376,723

Claims priority, application Rep. of Korea, Jan. 24, 1994, 94-1209

Int. Cl.[6] H01L *21/56;21/58;21/60*

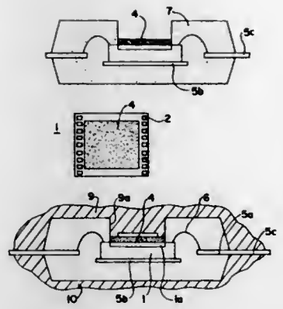
U.S. Cl. 438—65 **18 Claims**

12. A process for manufacturing an image pick-up device, comprising the steps of:

bonding an image pick-up chip on a chip-attaching portion of a lead frame, the image pick-up chip having pads and a light-receiving region;

wire-bonding the pads to leads of the lead frame;

sealing the image pick-up chip within a chip-receiving body by resin-molding using a mold having a projection provided with a groove, wherein the groove has a size and position that correspond to the light-receiving region, wherein the light-receiving region does not contact with the projection; and



sealing a transparent plate onto the cavity of the chip receiving body, the cavity corresponding to the projection.

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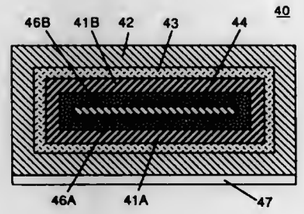
PROCESS FOR FORMING A MAGNETORESISTIVE SENSOR FOR A READ/WRITE HEAD

Gerald T. Seidler, Plainsboro, and Stuart A. Solin, Princeton Junction, both of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 572,833, Dec. 14, 1995. This application Jun. 21, 1996, Ser. No. 668,415

Int. Cl.[6] H01L *43/00*

U.S. Cl. 438—3 **10 Claims**



1. A process for preparing a sensor suitable for read/writing a magnetic pattern stored in tracks in a storage medium comprising:

forming on a conductive surface of a substrate a first layer of semiconductive material that is of high resistivity;

forming on a limited portion of said first layer a second layer of a material that exhibits a magnetoresistive effect suitable for use by the sensor;

forming on a limited portion of said second layer a third layer of high conductivity;

forming over said third layer a fourth layer that is of the same material as said second layer and then that joins with the second layer to form a loop enclosing a front end portion of the third layer;

forming a fifth layer that is of the same material as the first layer and that joins with the first layer to form a loop enclosing a front end portion of the second, third and then fourth layers; and

diffusing into the front edge portions of the first and fifth layers a dopant of a type to increase the conductivity of the diffused regions of the first and fifth layers with essentially little effect on the resistivity of the second and fourth layers for forming a conductive loop around the second and fourth layers for use as the outer electrode of a Corbino-disk, the third layer forming the inner electrode of said disk.

5,622,875

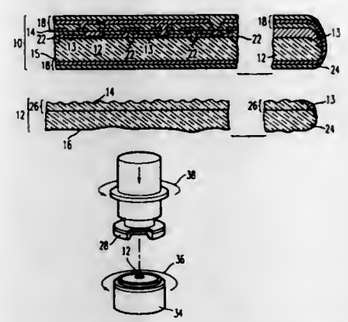
METHOD FOR RECLAIMING SUBSTRATE FROM SEMICONDUCTOR WAFERS

John E. Lawrence, Cupertino, Calif., assignor to Kobe Precision, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 239,351, May 6, 1994, abandoned. This application Aug. 17, 1994, Ser. No. 291,073

Int. Cl.[6] H01L *21/304*

U.S. Cl. 438—691 **23 Claims**



1. A process for preparing a reclaimed substrate wafer from a semiconductor wafer, wherein said semiconductor wafer comprises a substrate wafer having an active surface, an opposite passive surface and one or more external layers, wherein said active surface has located therein one or more semiconductor components and wherein said external layers are located on at least one of the active surface and the passive surface, said process comprising the steps of:

removing said external layers from said substrate wafer;

subsequent to said removing step, cup-wheel grinding the active surface to remove said semiconductor components and provide a ground surface;

polishing at least one of said passive and said ground surface.

5,622,876

METHOD FOR MAKING MONOLITHIC INTEGRATED BRIDGE TRANSISTOR CIRCUIT

Raffaele Zambrano, San Giovanni La Punta, and Sergio Palara, Aci Castello, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania CT, Italy

Division of Ser. No. 124,245, Sep. 20, 1993, Pat. No. 5,464,993. This application Jun. 1, 1995, Ser. No. 458,083

Claims priority, application European Pat. Off., Sep. 18, 1992, 92830506

Int. Cl.[6] H01L *2/265*

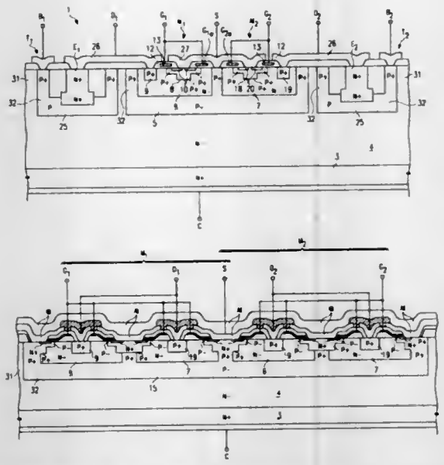
U.S. Cl. 438—135 **14 Claims**

1. A process for manufacturing a monolithically integrated, transistor bridge circuit, comprising the steps of:

forming a pair of insulated-gate-bipolar transistors having source regions of a first conductivity type, and forming a pair of bipolar transistors having emitter regions of said first conductivity type; said pair of insulated-gate-bipolar transistors and said pair of bipolar transistors being integrated monolithically in a common monolithic structure;

forming an isolation well which completely surrounds said pair of insulated-gate-bipolar transistors with a junction which is not part of said pair of insulated-gate-bipolar transistors nor of said pair of bipolar transistors; and

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interconnecting said pair of insulated-gate-bipolar transistors with said pair of bipolar transistors in a bridge configuration.

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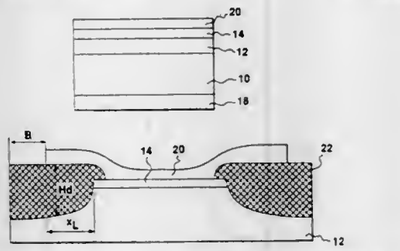
METHOD FOR MAKING HIGH-VOLTAGE HIGH-SPEED GALLIUM ARSENIDE POWER SCHOTTKY DIODE

German Ashkinazi, Tel Aviv; Boris Meyler, Ramat Gan; Menachem Nathan, Tel Aviv; Leonid Zolotarevski, Tel Aviv, and Olga Zolotarevski, Tel Aviv, all of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd., Tel Aviv, Israel

Continuation of Ser. No. 24,965, Mar. 2, 1993, abandoned. This application Oct. 21, 1994, Ser. No. 326,893

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—571 **19 Claims**



1. A process for making a power Schottky semiconductor device comprising the steps of:

(a) providing a first semiconductor :region including gallium arsenide having a first semiconductor region donor concentration lower than about 5×10^{15} cm^{-3} and a thickness of more than about 3 micro-meters, said first semiconductor region joined to a second semiconductor region having a second semiconductor region donor concentration which is greater than about 1×10^{18} cm^{-3};

(b) chemically depositing a barrier electrode in the form of an ordered epitaxial nickel layer having a thickness of from about 0.05 to about 0.5 micrometers, said nickel layer being chemically deposited from a solution containing nickel, said nickel layer being formed on said first semiconductor region to create a Schottky barrier;

(c) placing a conductive metal layer overlying said barrier electrode; and,

(d) forming an ohmic contact on said second semiconductor region.

5,622,878

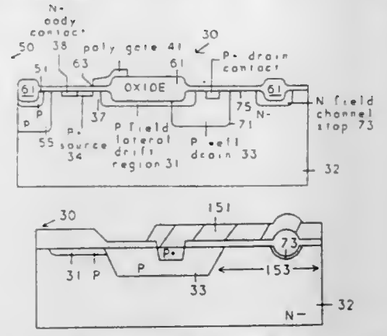
METHOD OF MAKING AN INTEGRATION OF HIGH VOLTAGE LATERAL MOS DEVICES IN LOW VOLTAGE CMOS ARCHITECTURE USING CMOS-COMPATIBLE PROCESS STEPS

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 227,157, Apr. 13, 1994, Pat. No. 5,541,435, which is a division of Ser. No. 882,070, May 12, 1992, Pat. No. 5,322,804. This application Jun. 7, 1995, Ser. No. 474,647

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—218 **7 Claims**



1. A process for manufacturing a field effect transistor comprising the steps of:

(a) forming a source region and a drain region of a first conductivity type in a first portion of a semiconductor body of a second conductivity type, wherein said second conductivity type is opposite to said first conductivity type;

(b) forming a gate overlying a surface of said first portion of said semiconductor body between said source region and said drain region;

(c) forming a complementary polarity type MOS device in a further surface portion of said semiconductor body, including carrying out a field implant to form a channel stop region having an impurity concentration of said second conductivity type, said channel stop region being spaced part from and not touching said source region and said drain region;

(d) routing an interconnect layer for said drain region to another, spatially removed portion of said semiconductor body, said interconnect layer passing over said channel stop region of said second conductivity type; and

(e) preventing formation of an induced, parasitic channel in a surface portion of said semiconductor body beneath said interconnect layer, otherwise resulting from a voltage on said interconnect layer during operation of said field effect transistor, by increasing said impurity concentration of said second conductivity type of a first portion of said channel stop region, relative to said impurity concentration of said second conductivity type of a second portion of said channel stop region.

5,622,879

METHODS FOR FABRICATING AND OPERATING ELECTRICALLY ERASABLE AND PROGRAMMABLE INTEGRATED CIRCUIT MEMORY

Jean Devin, Aix en Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Division of Ser. No. 974,429, Nov. 12, 1992, Pat. No. 5,436,479. This application May 31, 1995, Ser. No. 456,143

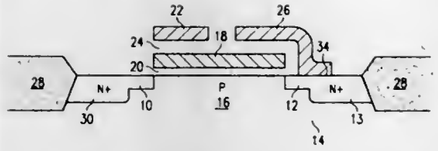
Claims priority, application France, Nov. 13, 1991, 91 13946

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 438—266 **4 Claims**

1. A method for fabricating an integrated circuit memory cell, comprising the steps of:

(a) providing a body of monocrystalline semiconductor material;



(b) forming a patterned field insulation layer which exposes said semiconductor material in a location to provide an active area of a first conductivity type;

(c) forming a gate insulation layer over said active area and a first thin film conductor layer over said gate insulation layer; and patterning said first conductor layer to provide, in each memory cell location, a laterally isolated floating gate which crosses said active area to define a channel region;

(d) implanting said active area, where not covered by said first conductive layer, with dopants of a second conductivity type, to form source extension and drain extension diffusions in said active region on opposite sides of said channel region;

(e) implanting second conductivity type dopants, at higher dose and energy than said implanting step (d), to form a source diffusion which is continuous with said source extension, and a drain diffusion which is continuous with said drain extension;

(f) forming an interlevel insulation layer over said first conductor and a second thin film conductor layer over said interlevel insulation layer, and patterning said second conductor layer to provide, in each location of a memory cell: a portion of said second conductor layer which overlies and is capacitively coupled to said floating gate, and which is laterally extended to define a control gate; and another portion of said second conductor layer which overlies and is capacitively coupled to said floating gate, and which is electrically connected to said drain to define a drain coupling element, and is otherwise isolated.

5,622,880

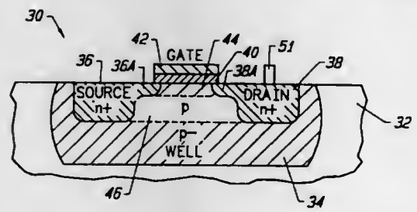
METHOD OF MAKING A LOW POWER, HIGH PERFORMANCE JUNCTION TRANSISTOR

James B. Burr, Foster, and Michael P. Brassington, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 292,513, Aug. 18, 1994. This application Mar. 31, 1995, Ser. No. 414,621

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—194 **15 Claims**



1. A method of fabricating a MOS transistor, the method comprising the following steps:

forming a bulk region of a first conductivity type having a buried electrode region also of the first conductivity type, which said buried electrode region has an average dopant concentration that is at least about 10 times greater than an average dopant concentration in the bulk region excluding the buried electrode region;

forming source and drain regions of a second conductivity type separated by a channel region which said channel region is disposed above said buried electrode region; and

forming a gate over said channel region, wherein the conditions employed to form the channel region are such that the MOS transistor has a ratio of an on current to an off current of at most about 10^5.

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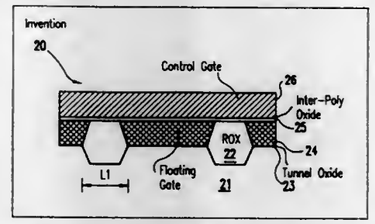
PACKING DENSITY FOR FLASH MEMORIES

Joyce E. Acocella, Hopewell Junction, N.Y.; Carol Galli, Odenton, Md.; Louis Lu-Chen Hsu, Fishkill, N.Y.; Seiki Ogura, Hopewell Junction, N.Y.; Nivo Rovedo, LaGrangeville, N.Y., and Joseph F. Shepard, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Hopewell Junction, N.Y.

Filed Oct. 6, 1994, Ser. No. 319,393

Int. Cl.[6] G11C *13/00*

U.S. Cl. 438—264 **10 Claims**



1. A method of fabricating an electrically erasable programmable memory cell including, in sequence, the steps of

forming at least two spaced isolation structure portions extending from a surface of a substrate,

forming a nitride layer over at least said isolation structure portions,

forming a tunnelling oxide layer and a floating gate layer extending at least between said isolation structure portions,

performing planarizing on said floating gate layer to a surface of said nitride layer, and

completing said electrically erasable programmable memory cell.

5,622,882

METHOD OF MAKING A CMOS DYNAMIC RANDOM-ACCESS MEMORY (DRAM)

Abraham Yee, Cupertino, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 30, 1994, Ser. No. 367,533

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—210 **20 Claims**

1. A method of making a CMOS-technology DRAM having multiple memory cells, each of said multiple memory cells including an FET and a stacked capacitor, said method comprising the steps of:

providing a silicon substrate having a well of a first polarity and a pair of spaced apart source and drain implantations of like polarity opposite to said first polarity;

forming a conductive gate disposed upon said substrate between said pair of source and drain implantations;

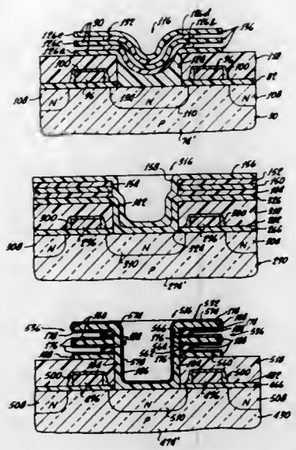
providing a layer of oxide covering said well;

forming plural alternating layers or sub-layers of material atop said layer of oxide, at least alternate layers or sub-layers of which are conductive;

forming from said plural alternating layers or sub-layers of material a one capacitor plate structure which is congruent with one of said pair of source and drain implantations, so that said one capacitor plate structure is stacked above said FET;

providing said one capacitor plate structure with connection through said layer of oxide to said one of said pair of source and drain implantations of said FET;

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wherein said step of forming plural alternating layers or sub-layers of material atop said layer of oxide, at least alternate layers or sub-layers of which are conductive, includes the step of:

forming plural alternating layers of material atop said layer of oxide, which plural alternating layers of material include alternate layers which are different from the next-adjacent ones of said plural alternating layers of material with regard to respective rates of isotropic etching; and

wherein said step of forming plural alternating layers or sub-layers of material atop said layer of oxide, at least alternate layers or sub-layers of which are conductive, includes the steps of:

forming said plural alternating layers or sub-layers initially as a single layer of silicon; and

performing plural ion implantations into said single layer of silicon to create respective plural alternating sub-layers of doped silicon, which plural alternating sub-layers include alternate doped sub-layers of more highly doped silicon alternating with sub-layers of comparatively less highly doped silicon.

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METHOD FOR MANUFACTURING SEMICONDUCTOR MEMORY DEVICE HAVING LANDING PAD

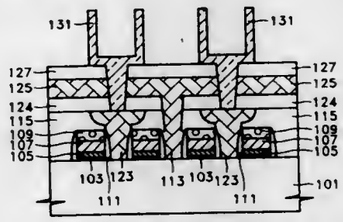
Jeong-Seok Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 30, 1995, Ser. No. 550,481

Claims priority, application Rep. of Korea, May 31, 1995, 95-14346

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—396 **6 Claims**



1. A method for manufacturing a semiconductor device having a landing pad for a storage electrode including the steps of:

forming a first interlayer insulation film over a semiconductor substrate on which a transistor and a bit line landing pad are formed, the first interlayer insulation film covering the bit line landing pad and a gate of the transistor;

sequentially etching the first interlayer insulation film to form a contact hole in the first interlayer insulation film using an isotropic wet etching method and using an anisotropic dry etching method;

filling the contact hole with a first conductive material to form the storage electrode landing pad for connecting the storage electrode to a source/drain region of the transistor;

planarizing the first conductive material using the first interlayer insulation film as a planarizing stopper to leave only the storage electrode landing pad in the contact hole;

forming a bit line connected to the bit line landing pad; and

forming the storage electrode connected to the storage electrode landing pad.

5,622,884

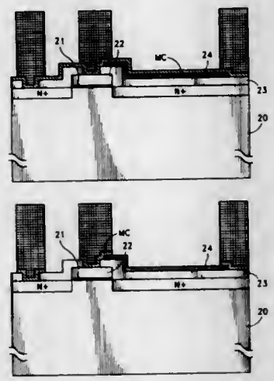
METHOD FOR MANUFACTURING A SEMICONDUCTOR MEMORY CELL AND A POLYSILICON LOAD RESISTOR OF THE SEMICONDUCTOR MEMORY CELL

Min-Sea Liu, Hsinchu, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed May 30, 1996, Ser. No. 655,139

Int. Cl.[6] H01L *21/70;27/00;21/8244*

U.S. Cl. 438—238 **4 Claims**



1. A method for manufacturing a polysilicon load resistor of a semiconductor memory cell, the semiconductor memory cell being formed with at least one transistor and having a semiconductor substrate with a gate dielectric layer on a portion thereof, and a gate electrode layer over the gate dielectric layer, said method comprising the steps of:

(a) depositing an insulating layer over the gate electrode layer and remaining portion of the semiconductor substrate around the gate electrode and gate dielectric layers;

(b) depositing a polysilicon layer over said insulating layer;

(c) implanting ions in said polysilicon layer so as to adjust resistance thereof;

(d) etching said polysilicon layer so as to form a load resistor with two ends;

(e) etching said insulating layer so as to expose a portion of the gate electrode layer; and

(f) forming a metal contact at two ends of the load resistor, one of said metal contacts being located on the exposed portion of the gate electrode so as to establish electrical connection between the gate electrode layer and said load resistor.

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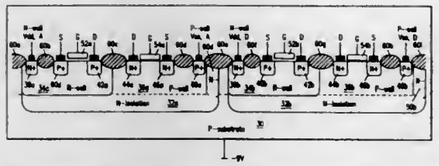
METHOD FOR FABRICATING TRANSISTORS IN ISOLATION REGIONS IN A SUBSTRATE

Richard B. Merrill, Daly City, and Whu-ming Young, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 221,602, Apr. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,214

Int. Cl.[6] H01L *21/761*

U.S. Cl. 438—220 **3 Claims**



1. A method of forming a plurality of transistors in a substrate, the transistors being capable of operating at a range of voltages relative to one another, comprising the steps of:

providing a substrate having a principal surface and doped to have a first conductivity type;

forming a plurality of spaced-apart isolation regions in the substrate, each isolation region doped to have a second conductivity type;

forming over each isolation region and extending from the isolation region to the principal surface a first well of the first conductivity type and a second well of the second conductivity type;

forming a source and a drain region spaced apart in each of the wells of the first conductivity type, each source and drain region extending to the principal surface layer and doped to have the second conductivity type;

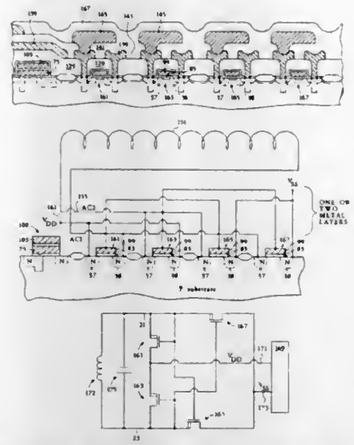
forming a source and a drain region spaced apart in each of the wells of the second conductivity type, each source and drain region extending to the principal surface and doped to have the first conductivity type;

forming a plurality of gate electrodes overlying the principal surface of the substrate, each gate electrode lying between one of the source and drain regions;

forming in each well a well contact region doped to have the same conductivity type as the well and being more highly doped than the well and extending to the principal surface; and

connecting each of the well contact regions to a different voltage level;

wherein a first of the transistors is electrically isolated from the second of the transistors and from the substrate by the isolation regions.



with each of said spaced apart source and drain electrodes consisting of a first and a second dopant region, said first dopant region being of a second conductivity type and formed by a first implant with a first dopant concentration in a semiconductor substrate of a first conductivity type, said second dopant region being of said second conductivity type and formed by a second implant with a second dopant concentration higher than said first dopant concentration, forming a gate electrode by depositing insulative material between ,said spaced apart source and drain electrodes and depositing conductive material over said insulative material to form gate regions over the insulative material, covering said spaced apart source and drain electrodes and gate electrode with an oxide, the combination of the distance between said spaced apart source and drain electrodes, dopant concentrations of said first and second dopant regions and thicknesses of said insulative material and said oxide resulting in said breakdown voltage greater than twice said maximum operating voltage of said utilization circuit,

depositing conductive layers for interconnecting said spaced apart source and drain electrodes and said gate electrode of said first through fourth MOS transistors in a full wave rectifier circuit arrangement having a pair of inputs and a pair of outputs, and

connecting a coil to said pair of inputs and coupling said utilization circuit to said pair of outputs for drawing power therefrom as a load.

5,622,886

METHOD OF MAKING A HIGH VOLTAGE RECTIFIER FOR AN INTEGRATED CIRCUIT CHIP

Dean L. Allum, Monument, and Richard B. Woodard, Elbert, both of Colo., assignors to Atmel Corporation, San Jose, Calif.

Continuation of Ser. No. 220,747, Mar. 31, 1994, abandoned. This application May 13, 1996, Ser. No. 648,306

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—238 **8 Claims**

1. A method of making an alternating current full wave rectifier circuit for a passive integrated transponder in an integrated circuit chip, said passive integrated transponder having a utilization circuit characterized by a predetermined maximum operating voltage comprising,

forming first, second, third, and fourth MOS transistors characterized by a breakdown voltage greater than twice said maximum operating voltage of said utilization circuit, the forming of each of said first through fourth MOS transistors including the steps of forming spaced apart source and drain electrodes

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5,622,887

PROCESS FOR FABRICATING BICMOS DEVICES INCLUDING PASSIVE DEVICES

Hiroyuki Miwa, Kanagawa; Mamoru Shinohara; Takayuki Gomi, both of Tokyo, and Tomotaka Fujisawa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 189,191, Jan. 31, 1994, Pat. No. 5,414,291. This application Oct. 17, 1994, Ser. No. 323,873

Claims priority, application Japan, Jan. 30, 1993, 5-034871; Jan. 30, 1993, 5-034872; Feb. 28, 1993, 5-062979; Mar. 4, 1993, 5-044105; Mar. 31, 1993, 5-098788

Int. Cl.[6] H01L *21/70*

U.S. Cl. 438—202 **2 Claims**

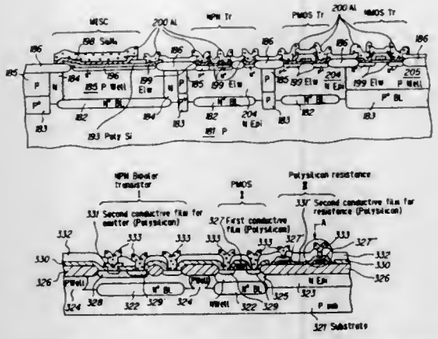
1. A process for fabricating a semiconductor device comprising:

forming an oxide film on a silicon layer;

depositing a first electrically conductive material on said oxide film, followed by forming a first electrically conductive film having a pattern;

forming a first insulator film over an entire surface of the resulting structure, followed by partially forming an opening in said first insulator film;

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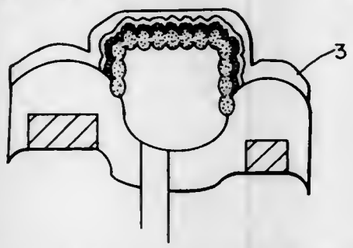
forming a second electrically conductive film on said opening;
forming, over an entire surface of the resulting structure, a second insulator film which functions as an insulator of a MIS capacitor, followed by further forming a third insulator film on said second insulator film;
forming a contact hole over said first electrically conductive film by sequentially removing said third insulator film, said second insulator film, and said first insulator film;
removing said third insulator film from an upper portion of said second insulator film; and
after depositing a third electrically conductive material over the entire surface of the resulting structure, forming a third electrically conductive film having a pattern.

5,622,888

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Makoto Sekine, and Satoshi Kamiyama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,355
Claims priority, application Japan, Nov. 9, 1994, 6-274826
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—398 **10 Claims**



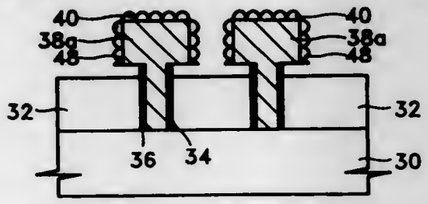
1. A method of manufacturing a semiconductor device having a capacitive element, comprising the steps of:
removing a natural oxide film from a surface of a lower electrode of polysilicon or amorphous silicon of the capacitive element;
reacting the lower electrode from which the natural oxide film has been removed with a halogen gas of a metal of high melting point to selectively replace the lower electrode with the metal of high melting point or a silicide of the metal of high melting point;
exposing a portion of the lower electrode which has selectively been replaced with the metal of high melting point or a silicide of the metal of high melting point to a silane gas, and thereafter;
reducing the halogen gas of the metal of high melting point with a silane gas or hydrogen to selectively deposit coarse crystal particles on the surface of the lower electrode;
forming a capacitive insulating film on the lower electrode over the coarse crystal particles deposited on the lower electrode;
densifying and nitriding the capacitive insulating film; and
forming an upper electrode on the densified, nitrided capacitive insulating film.

5,622,889

HIGH CAPACITANCE CAPACITOR MANUFACTURING METHOD

Cha-young Yoo; Young-sun Kim; Young-wook Park, and Se-jin Shim, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 25, 1996, Ser. No. 591,391
Claims priority, application Rep. of Korea, Jan. 26, 1995, 95-1413
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—397 **5 Claims**



1. A capacitor manufacturing method, comprising the steps of:
forming a first insulating film including a contact hole on a surface of a semiconductor substrate;
forming a first conductive layer on said first insulating film while burying said contact hole;
forming a first HSG film having hemispherical particles of a first size on a surface of said first conductive layer;
sequentially forming a second insulating film and a third insulating film on a surface of said first HSG film;
patterning said second insulating film and said third insulating film;
etching said first HSG film and said first conductive layer by using said patterned third insulating film and second insulating film as a mask to form a lower storage node having said first conductive layer and said HSG film;
removing said third insulating film;
forming a second HSG film having hemispherical particles of substantially the same size as the size of the hemispherical particles in the first HSG film on said second insulating film and said lower storage node;
removing said second HSG film formed around said lower storage node; and
removing said second insulating film and at the same time removing a portion of said first insulating film so that said first conductive layer does not contact said first insulating film.

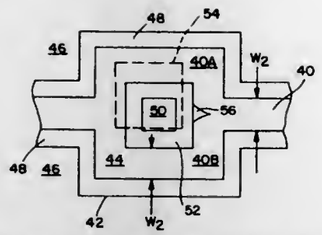
5,622,890

METHOD OF MAKING CONTACT REGIONS FOR NARROW TRENCHES IN SEMICONDUCTOR DEVICES

James D. Beasom, Melbourne Village, and Dustin A. Woodbury, Indian Harbor Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 22, 1994, Ser. No. 279,027
Int. Cl.[6] H01L *21/302*
U.S. Cl. 438—404 **16 Claims**

1. In a method of contacting a conductive material in a trench in a semiconductor device, the trench having a first width that is narrower than the width of the electrical contact plus an alignment tolerance, the method comprising the step of dividing the trench into two spaced apart trench sections, each of the divided trench



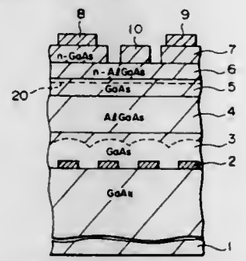
sections having a width narrower than the width of the electrical contact plus an alignment tolerance, the two trench sections being separated by an island, wherein the combined width of the two trench sections and the island exceeds the width of the electrical contact plus the alignment tolerance.

5,622,891

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE WITH REDUCED SIDE GATE EFFECT

Junji Saito, Yamahashi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 88,337, Jul. 9, 1993. This application Dec. 1, 1994, Ser. No. 352,771
Claims priority, application Japan, Jul. 10, 1992, 4-183408
Int. Cl.[6] H01L *21/208*
U.S. Cl. 438—172 **20 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:
forming an insulative film on a single crystal semiconductor substrate;
patterning said insulative film to selectively expose the surface of said single crystal semiconductor substrate;
then epitaxially growing a non-doped buffer layer on the whole surface of said single crystal semiconductor substrate;
epitaxially growing a semiconductor multilayer including an active layer where carriers are transported in a resultant device, on said non-doped buffer layer; and
forming first and second electrodes on said semiconductor multilayer, said first and second electrodes being mutually electrically connected through said active layer.

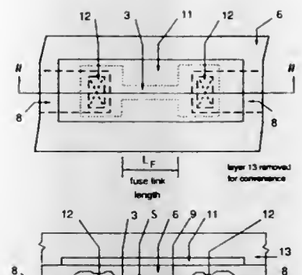
5,622,892

METHOD OF MAKING A SELF COOLING ELECTRICALLY PROGRAMMABLE FUSE

Raschid J. Bezama, Mahopac; Dominic J. Schepis, Wappingers Falls, both of N.Y., and Krishna Seshan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 258,162, Jun. 10, 1994, abandoned. This application Mar. 17, 1995, Ser. No. 407,431
Int. Cl.[6] H01L *21/306;21/326*
U.S. Cl. 438—601 **11 Claims**

1. A method of making a buried semiconductor fuse structure in an integrated circuit comprising:



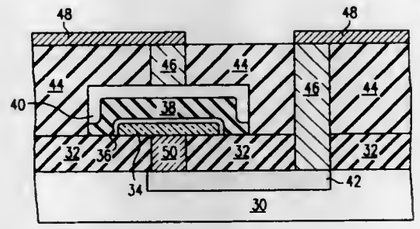
forming a first insulating layer on a substrate having conductive lines formed thereon;
forming a fuse link comprising a narrow strip having a conductive pad attached at each end, said fuse link connecting at least two of said conductive lines, said fuse link programmed to blow;
forming at least one second insulating layer on said conductive lines and said fuse link;
forming a thermally conductive layer on said second insulating layer and completely covering said fuse link, said thermally conductive layer dissipating heat developed during programming of said fuse link; and
providing at least one third insulating layer formed on said thermally conductive layer, wherein
said thermally conductive layer shields said conductive lines and said third insulating layer from excessive thermal energy generated during the programming of said fuse link.

5,622,893

METHOD OF FORMING CONDUCTIVE NOBLE-METAL-INSULATOR-ALLOY BARRIER LAYER FOR HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES

Scott R. Summerfelt, Dallas, Tex.; Jason Reid; Marc Nicolet, both of Pasadena, Calif., and Elzbieta Kolawa, Sierra Madre, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex., and California Institute of Technology, Pasadena, Calif.

Filed Aug. 1, 1994, Ser. No. 283,454
Int. Cl.[6] H01L *21/283*
U.S. Cl. 438—396 **14 Claims**



1. A method of forming a microelectronic structure, said method comprising:
(a) forming an oxidizable layer;
(b) forming a noble-metal-insulator-alloy layer on said oxidizable layer;
(c) forming an oxygen stable layer on said noble-metal-insulator-alloy layer; and
(d) forming a layer of a high-dielectric-constant material on said oxygen stable layer, wherein the noble-metal-insulator-alloy

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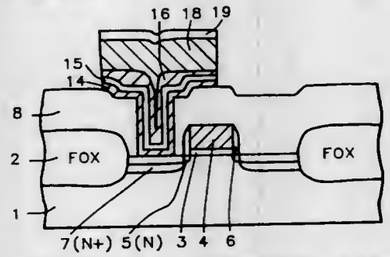
layer inhibits diffusion of oxygen to the oxidizable layer, whereby deleterious oxidation of the oxidizable layer is minimized.

5,622,894

PROCESS TO MINIMIZE A SEAM IN TUNGSTEN FILLED CONTACT HOLES

Syun-Ming Jang, and Yu C. Douglas, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd, Hsin-Chu, Taiwan

Filed Mar. 15, 1996, Ser. No. 616,852
Int. Cl.[6] H01L *21/441*
U.S. Cl. 438—643 **24 Claims**



1. A method for fabricating a MOSFET device, on a semiconductor substrate, using a metal filled contact hole, to provide electrical contact between an underlying conductive region, in said semiconductor substrate, and an overlying interconnect metallization structure, comprising the steps of:

providing said underlying conductive region, in said semiconductor substrate;

depositing a dielectric layer on said semiconductor substrate, including depositing on said underlying conductive region;

photolithographic processing to open a small diameter hole, in a photoresist layer, exposing underlying said dielectric layer, directly over an area of said underlying conductive region;

anisotropic etching of said dielectric layer, in opening of said photoresist layer, to create a small diameter contact hole, to said underlying conductive region;

removal of said photoresist layer;

surface cleaning of said underlying conductive region, in said small diameter contact hole;

deposition of an adhesive layer on top surface of said dielectric layer, on sides of said small diameter contact hole, and on said underlying conductive region, in said small diameter contact hole;

deposition of a barrier layer on said adhesive layer;

deposition of a metal fill layer, on said barrier layer, completely filling said small diameter contact hole;

partial removal of said metal fill layer, from top surface of said barrier layer, forming a metal plug in said small diameter contact hole, while leaving metal fill residuals on top surface of said barrier layer;

deposition of a interconnect metallization layer, on said metal fill residuals on surface of said barrier layer, and on said metal plug, in said small diameter contact hole;

deposition of an anti-reflective layer, on said interconnect metallization layer;

photolithographic processing to create a photoresist shape on said anti-reflective layer, directly overlying said metal plug, in said small diameter contact hole;

anisotropic removal of said anti-reflective layer, of said interconnect metallization layer, of said metal fill residuals, of said barrier layer, and of said adhesive layer, in areas not covered by said photoresist shape, to create an interconnect metallization structure of said anti-reflective layer, said interconnect metallization layer, said metal fill residuals, said barrier layer, and said adhesive layer, overlying said metal plug, in said small diameter contact hole; and

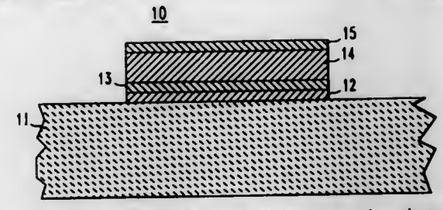
removal of said photoresist shape.

5,622,895

METALLIZATION FOR POLYMER-DIELECTRIC MULTICHIP MODULES

Aaron L. Frank, Malden, Mass.; Ajibola O. Ibidunni, Litchfield, N.H.; Douglas B. Johnson, Hampstead, N.H.; Dennis L. Krause, Atkinson, N.H., and Trac Nguyen, Haverhill, Mass., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 239,797, May 9, 1994, Pat. No. 5,466,972. This application Aug. 4, 1995, Ser. No. 511,163
Int. Cl.[6] H01L *21/44*
U.S. Cl. 216—18 **16 Claims**



1. A method of forming electrical interconnections between conductive elements on the major surface of an insulating substrate, which comprises;

depositing on the substrate a first metal layer comprising titanium,

depositing over said first metal layer a second metal layer comprising an alloy of titanium and palladium, said alloy comprising 0.3–14 weight percent palladium, remainder being essentially titanium,

depositing over said second metal layer a third metal layer comprising copper, and

depositing over the copper layer a fourth metal layer comprising an alloy of titanium and palladium, said alloy comprises 0.3–14 weight percent palladium.

5,622,896

METHOD OF MANUFACTURING A THIN SILICON-OXIDE LAYER

Dirk M. Knotter, and Jacob Wijdenes, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1995, Ser. No. 543,565
Claims priority, application European Pat. Off., Oct. 18, 1994, 94203011
Int. Cl.[6] H01L *21/28;21/56*
U.S. Cl. 438—123 **11 Claims**

1. A method of applying a silicon-oxide layer to a substrate, in which method a film of a solution of a polyorganosiloxane in a first solvent is applied to a surface of said substrate, whereafter the film is dried, thereby forming a polyorganosiloxane layer which is subsequently rinsed with a second solvent and then converted to said silicon-oxide layer by means of an UV-ozone treatment.

5,622,897

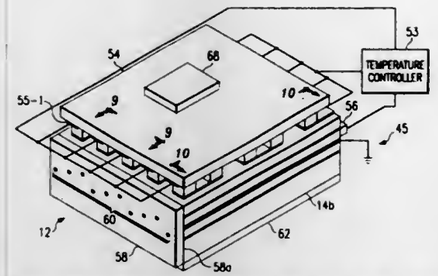
PROCESS OF MANUFACTURING A DROP-ON-DEMAND INK JET PRINTHEAD HAVING THERMOELECTRIC TEMPERATURE CONTROL MEANS

Donald J. Hayes, Plano, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 66,396, May 20, 1993, Pat. No. 5,435,060, and Ser. No. 220,835, Mar. 31, 1994. This application Jul. 8, 1994, Ser. No. 272,145
Int. Cl.[6] H01L *35/28;21/68;* **B41J** *2/175*
U.S. Cl. 438—21 **27 Claims**

1. A method of manufacturing a drop-on-demand ink jet printhead, comprising the steps of:

providing a channel array constructed of a thermally conductive material, said channel array having a top side surface, a front



side surface, a spaced series of internal ink-carrying channels which extend rearwardly from said front side surface and piezoelectric actuation means acoustically coupled to each of said ink-carrying channels for selectively imparting pressure pulses thereto; and

mounting thermoelectric temperature control means to said top side surface of said channel array;

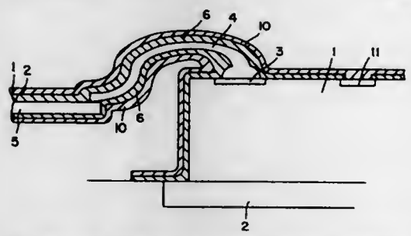
said thermoelectric temperature control means including means for heating and cooling said channel array.

5,622,898

PROCESS OF MAKING AN INTEGRATED CIRCUIT CHIP COMPOSITE INCLUDING PARYLENE COATED WIRE

John H. Zechman, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 988,849, Dec. 10, 1992. This application May 19, 1995, Ser. No. 445,381
Int. Cl.[6] H01L *21/56*
U.S. Cl. 438—127 **14 Claims**



1. A method for fabricating a composite which comprises providing an integrated circuit chip having electrically conductive site thereon; interconnecting conductive lead to said conductive site with electrically conductive wire; then conformally coating said wire with a dielectric material wherein said dielectric is parylene; then coating said dielectric material with an electrically conductive coating and then encapsulating the chip, wire and portion of said conductive lead in a dielectric encapsulating composition.

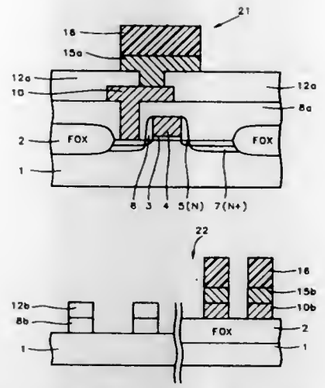
5,622,899

METHOD OF FABRICATING SEMICONDUCTOR CHIPS SEPARATED BY SCRIBE LINES USED FOR ENDPOINT DETECTION

Ying-Chem Chao, Ming-Hsiang, and Chin-Heng Shen, Hsin-Chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Apr. 22, 1996, Ser. No. 635,828
Int. Cl.[6] H01L *21/301*
U.S. Cl. 438—9 **18 Claims**

1. A method of fabricating a plurality of regions, containing semiconductor devices, on a semiconductor substrate, using scribe line regions between said regions, comprising the steps of:



providing transfer gate transistors on said regions, containing said semiconductor devices;

deposition of a first insulator layer on said regions, containing said semiconductor devices, and on said scribe line regions;

patterning said first insulator layer to open a contact hole in said first insulator layer, to an element in said regions containing semiconductor devices, and to form first insulator mesas, in a first area of said scribe line regions;

deposition of a first metallization layer on said regions and in said contact hole, containing said semiconductor devices, and on said scribe line regions;

patterning said first metallization layer to form a first level metal structure on said regions and in said contact hole, containing said semiconductor devices, and to form first metal mesas, in a second area of said scribe line regions;

deposition of a second insulator layer on said regions and on said first level metal structure, containing said semiconductor devices, and on said scribe regions including said first insulator mesas;

patterning said second insulator layer to open a via hole in said second insulator layer, to expose top surface of said first level metal structure, in said regions, containing said semiconductor devices, and to form second insulator mesas, overlying said first insulator mesas, in said first area of said scribe line regions;

deposition of a second metallization layer on said regions, containing said semiconductor devices, and on said scribe line regions; and

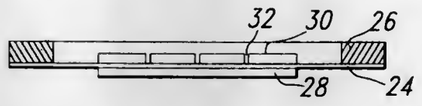
patterning said second metallization layer to form a second level metal structure on said regions and in said via hole, containing said semiconductor devices, and to form second metal mesas, overlying said first metal mesas, in said second area of said scribe line regions.

5,622,900

WAFER-LIKE PROCESSING AFTER SAWING DMDS

Gregory C. Smith, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 25,533, Mar. 3, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 374,384
Int. Cl.[6] H01L *21/302*
U.S. Cl. 438—464 **19 Claims**



1. A method for fabricating a device comprising:

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attaching a device wafer containing two or more said devices to a front side of a membrane, wherein said devices have an initial relative alignment;

attaching a substrate wafer to a back side of said membrane; and

separating said devices by sawing or breaking said device wafer, wherein said substrate wafer rigidly maintains said initial relative alignment during and after said separating process.

5,622,901

METHOD OF FORMING A SEMICONDUCTOR STRAIN SENSOR

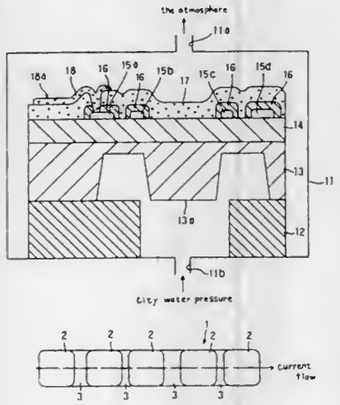
Tsuyoshi Fukada, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 13,532, Dec. 3, 1992, abandoned, which is a continuation of Ser. No. 652,079, Feb. 7, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,292

Claims priority, application Japan, Feb. 8, 1990, 2-29863

Int. Cl.[6] H01L *21/77*

U.S. Cl. 438—50 **24 Claims**



1. A method of forming a temperature coefficient of strain sensitivity (TCK) compensated semiconductor strain sensor including a detection circuit, said method comprising the steps of:

forming a polycrystalline silicon resistor film including grains of a crystal on an insulative substrate at a stress receiving region of said insulative substrate, said polycrystalline silicon resistor film having a piezoelectric effect and being formed to have a thickness of less than 0.4 μm, said step of forming said polycrystalline silicon resistor film including a step of:

setting a resistivity of said polycrystalline silicon resistor film having said thickness of less than 0.4 μm to a value between 1.9×10^{-3} and 3.9×10^{-3} Ω·cm at room temperature; and

forming said detection circuit to be in electrical contact with said polycrystalline silicon resistor film corresponding to an amount of strain applied to said stress receiving region of said insulative substrate;

wherein said thickness of said polycrystalline silicon resistor film corresponds to a thickness of a single layer of said grains of said crystal included in said polycrystalline silicon resistor film.

5,622,902

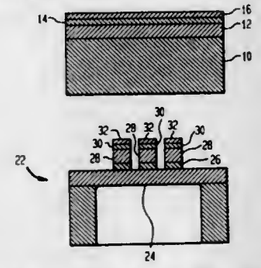
PASSIVATION/PATTERNING OF PZR DIAMOND FILMS FOR HIGH TEMPERATURE OPERABILITY

Anthony D. Kurtz, Teaneck; Alexander A. Ned, and Timoteo I. Vergel de Dios, both of Bloomingdale, all of N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed Mar. 14, 1996, Ser. No. 615,458

Int. Cl.[6] H01L *21/31;21/77*

U.S. Cl. 438—50 **22 Claims**



1. A method for preventing a diamond film coated on a substrate from oxidizing at temperatures above 800° C. in an oxygen atmosphere, comprising the steps of:

placing said diamond film coated on the substrate into a reactor set a first temperature which is below a temperature at which diamond oxidizes;

evacuating said reactor set at the first temperature remove all oxygen therefrom;

raising said reactor to a second temperature; and

depositing a passivation layer over said diamond film at the second temperature, whereby said passivation layer prevents said diamond film from oxidizing at temperatures above 800° C. in an oxygen atmosphere.

5,622,903

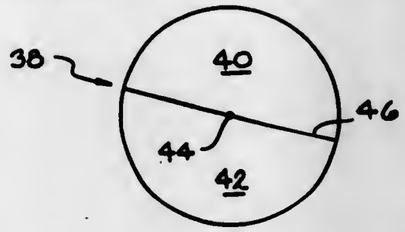
IRREGULARLY SHAPED GLASS FIBERS AND INSULATION THEREFROM

Charles F. Rapp, Newark, and Russell M. Potter, Hebron, both of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 435,003, May 4, 1995, abandoned. This application Apr. 29, 1996, Ser. No. 639,656

Int. Cl.[6] C03C *13/00;3/085*

U.S. Cl. 501—35 **34 Claims**



1. An irregularly shaped glass fiber suitable for insulation, the glass fiber comprising two distinct glasses, wherein each glass has:

a different coefficient of thermal expansion, where the two coefficients differ by at least 2.0 ppm/C;

a temperature for a log viscosity of 3 ranging from 1600° to 2050° F. (982° to 1121° C.) and a liquidus temperature at least 50° F. (28° C.) below the log viscosity of 3;

a KI value equal to or greater than 40; and

a different composition, wherein (i) a first composition consists essentially of 45–60 percent by weight SiO_2, 0–3 percent by weight Al_2O_3, 0–20 percent by weight B_2O_3, 12–22 percent by weight Na_2O+K_2O, 0–14 percent by weight MgO+CaO, 0–35 percent by weight BaO, and less than about 10 percent by weight of any or all of ZrO_2, TiO_2, Fe_2O_3, ZnO, SrO or Li_2O, the total of all ingredients being 100 percent by weight, and (ii) a second composition consists essentially of 30–60 percent by weight SiO_2, 0–10 percent by weight Al_2O_3, 15–50 percent by weight B_2O_3, 2–15 percent by weight Na_2O+K_2O, 0–25 percent by weight MgO+CaO, 0–30 percent by weight BaO, and less than about 10 percent by weight of any or all of ZrO_2, TiO_2, Fe_2O_3, ZnO, SrO or Li_2O, the total of all ingredients being 100 percent by weight.

5,622,904

GLASS MATERIAL FOR MOLDING OPTICAL ELEMENTS

Katsuyuki Ohkubo; Tomoaki Sugawara; Hiroyuki Endou; Hiroshi Ueno, all of Atsugi, and Akihito Minato, Zama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 42,643, Apr. 5, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,082

Claims priority, application Japan, Apr. 6, 1992, 4-114103; Sep. 25, 1992, 4-255173; Oct. 15, 1992, 4-276434; Feb. 12, 1993, 5-023940

Int. Cl.[6] C03C *3/04;* **B28B** *7/34*

U.S. Cl. 501—53 **8 Claims**

1. A glass material comprising an uneven distribution of lead, wherein the concentration of lead in a 120 Å thick low concentration region of said glass material is lower than the concentration of lead in all other regions of said glass material, said low concentration region located in a portion of said glass material which does not include the surface thereof.

5,622,905

SILICON NITRIDE BASED SINTERED BODY

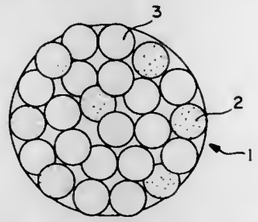
Takashi Matsuura; Akira Yamakawa, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 30, 1994, Ser. No. 269,021

Claims priority, application Japan, Jun. 30, 1993, 5-187347; Jun. 13, 1994, 6-155223

Int. Cl.[6] C04B *35/587;35/599*

U.S. Cl. 501—97 **2 Claims**



1. A silicon nitride based sintered body consisting essentially of silicon nitride and/or sialon crystals whose mean longer-axis diameter is not more than 200 nm.

5,622,906

COMPOSITIONS USEFUL FOR OLEFIN POLYMERIZATION AND PROCESSES THEREFOR AND THEREWITH

Ted M. Pettijohn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 16, 1994, Ser. No. 307,201

Int. Cl.[6] C08F *4/626;4/633;10/00*

U.S. Cl. 502—104 **14 Claims**

1. A process comprising (1) contacting a transition metal-containing catalyst with an organoaluminoxane dispersed in a solvent to form a slurry; (2) combining said slurry with a boroxine to prepare a combination of a transition metal-containing catalyst and boron-containing organoaluminoxane; and (3) contacting said combination with a metallocene wherein said transition metal-containing catalyst, organoaluminoxane, solvent, and boroxine are each present in an effective amount sufficient to prepare a composition which can be used to prepare an olefinic polymer having multimodel molecular weight distribution.

5,622,907

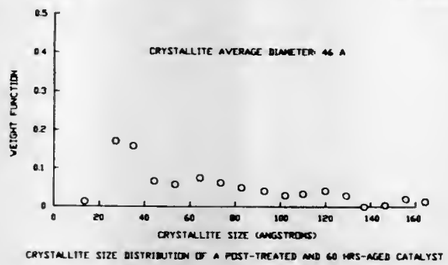
POST-REDUCING TREATMENT OF ALCOHOL SYNTHESIS CATALYSTS WITH CARBON DIOXIDE

Sunggyu Lee; Vetkav R. Parameswaran; Byung G. Lee, all of Akron, Ohio, and Conrad J. Kulik, Newark, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 344,880, Apr. 28, 1989. This application Feb. 23, 1990, Ser. No. 483,641

Int. Cl.[6] B01J *21/18;23/06*

U.S. Cl. 502—174 **6 Claims**



CRYSTALLITE SIZE DISTRIBUTION OF A POST-TREATED AND 60 HRS-AGED CATALYST

1. In a method for improving the catalytic activity of an alcohol synthesis catalyst comprising copper oxide, zinc oxide and a metal oxide selected from the group consisting of alumina, silica and chromia, wherein said catalyst is activated by a first pre-synthesis treatment step in a reducing atmosphere to reduce copper oxide to copper;

the improvement comprising a second pre-synthesis treatment step of exposing said catalyst, subsequent to said first pre-synthesis treatment step and prior to contacting said catalyst with a carbon monoxide-containing feed gas for alcohol synthesis, with a carbon monoxide-free atmosphere containing at least 7% by volume carbon-dioxide at a total pressure in the range of about 1 to 100 atm at a temperature in the range of about 10° to 250° C. for a period of time whereby a substantial amount of said zinc oxide in said catalyst is converted to zinc carbonate.

5,622,908

SURFACE IMPREGNATED CATALYST, PROCESS FOR THE PRODUCTION THEREOF, AND USE THEREOF FOR THE PREPARATION OF VINYL ACETATE

Roland Abel, Oberhausen, and Karl-Fred Wörner, Hofheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jul. 18, 1994, Ser. No. 276,522

Claims priority, application Germany, Jul. 16, 1993, 43 23 980.3

Int. Cl.[6] B01J *23/44*

U.S. Cl. 502—339 **9 Claims**

1. A process for producing a surface impregnated catalyst comprising palladium, potassium, and cadmium on porous support particles, which comprises spraying the support particles, while mixing intimately, once or a plurality of times with at least one solution of at least one salt of each of the palladium, potassium, and cadmium in the form of drops having an average diameter of at least 0.3 mm or in the form of liquid jets and drying the support particles immediately after each spraying, with the dynamic vis-

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cosity of the solution being at least 0.003 Pa s and the solution volume in each spraying being from 5 to 80% of the pore volume of the support particles with the proviso that the at least one solution is not atomized prior to said spraying.

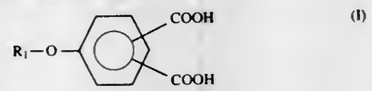
5,622,909

THERMOSENSITIVE RECORDING MATERIALS

Hiromi Furuya, Shimizu-machi; Yasutomo Mori, Numazu; Keishi Taniguchi, Susono, and Takeshi Yuyama, Oyama-machi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 15, 1995, Ser. No. 441,435
Claims priority, application Japan, May 17, 1994, 6-127055
Int. Cl.[6] B41M *5/155*
U.S. Cl. 503—216 **2 Claims**

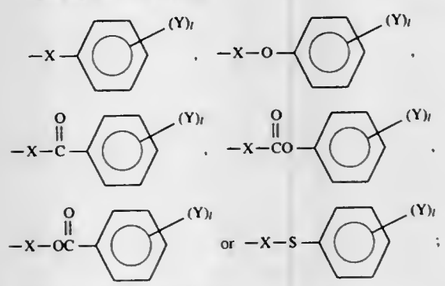
1. A thermosensitive recording material having a support, on which a thermosensitive color developing layer mainly composed of a leuco dye and a color developer which is contacted with the leuco dye while heating to develop a color and a protective layer mainly composed of polyvinyl alcohol together with either aziridine compound or dimethylolurea are successively provided, the color developer being at least one of phthalic acid derivatives represented by the following general formula (I):



(I)

wherein

R_1 is a straight or branched, saturated or unsaturated hydrocarbon group, a straight hydrocarbon group which may have a hydroxy group or a ether or carbonyl linkage, an aryl group which may be substituted,



X is a saturated or unsaturated bivalent hydrocarbon group;

Y is a lower alkyl or alkoxy group, a nitro group or a halogen atom; and

l is 0 to 5.

5,622,910

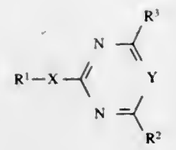
MIXTURES OF HERBICIDES AND ANTIDOTES

Frank Zurmühlen, Frankfurt am Main; Heinz-Josef Löher; Günter Schiegel, both of Liederbach; Rainer Schütze, Idstein; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP92/01445, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/00010, PCT Pub. Date Jan. 7, 1994
PCT Filed Jun. 26, 1992, Ser. No. 162,169
Claims priority, application Germany, Jun. 29, 1991, 41 21 663.6; Sep. 20, 1991, 41 31 334.8
Int. Cl.[6] A01N *25/32;43/54;43/66*
U.S. Cl. 504—105 **16 Claims**

1. A herbicidal agent which contains

A) at least one herbicidal active substance from the group of the substituted pyrimidines and triazines of the formula A



(A)

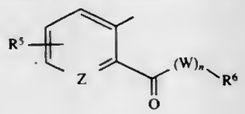
in which

X is O, S or NR^4,

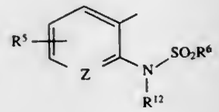
Y is N or CH,

R^2 and R^3 independently of one another are hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$haloalkoxy, $(C_1–C_4)$alkylmercapto, $(C_1–C_4)$alkylamino or di$(C_1–C_4)$alkylamino,

R^1 is a substituted aryl or heteroaryl radical of the formula



or



n is 0 or 1,

W is —O—, —NR^4—, —S—, —ON(R^{11})— or —O—N=C(R^{11})—,

Z is N, N→O or CR^4,

R^4 and R^5 independently of one another are hydrogen, halogen, cyano, $(C_1–C_4)$alkyl, $(C_2–C_4)$alkenyl, $(C_2–C_4)$alkynyl, $(C_1–C_4)$alkoxy, $(C_2–C_4)$alkenyloxy, $(C_2–C_4)$alkynyloxy, benzyloxy, 4,6-di[$(C_1–C_4)$alkoxy]pyrimidin- 2-yloxy, $(C_1–C_4)$alkylthio, $(C_2–C_4)$alkenylthio, $(C_2–C_4)$alkynylthio, benzylthio, $(C_1–C_4)$alkylamino, di[$(C_1–C_4$-alkyl]-amino, $(C_1–C_4)$haloalkyl or $(C_1–C_4)$haloalkoxy,

R^6 is hydrogen, $(C_1–C_4)$alkyl, $(C_2–C_4)$alkenyl, $(C_2–C_4)$alkynyl, alkali metal or 1 equivalent alkaline earth metal, alkylammonium, aryl, CF_3 or $(CHR^{13})_{m'}CHR^7R^8$ where m' is 0 or 1,

R^7 and R^{13} independently of one another are hydrogen, $(C_1–C_4)$alkyl or $(C_1–C_4)$alkoxy,

R^8 is $(C_1–C_4)$alkoxycarbonyl, cyano, halogen, acetyl, pivaloyl, benzoyl, $(C_1–C_4)$alkoxy, aryloxy, haloacetoxy, methanesulfonyloxy, hydroxyl, $(C_1–C_4)$alkylmercapto, $(C_1–C_4)$alkylsulfonyl, arylmercapto, di-($C_1–C_4$)alkylamino, pyridyl, aryl or $CONR^9R^{10}$,

R^9 and R^{10} independently of one another are hydrogen, $(C_1–C_4)$alkyl, $(C_2–C_4)$alkenyl, aryl or benzyl,

R^{11} is hydrogen or $(C_1–C_4)$alkyl or

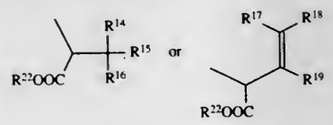
R^6 and R^{11} together are methylene, ethanediyl or propanediyl,

R^{12} is hydrogen, alkyl or alkoxy and

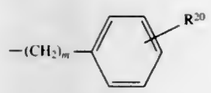
aryl is phenyl or naphthyl, each of which is unsubstituted or mono- or disubstituted by radicals selected from the group comprising halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, phenoxy, nitro and $(C_1–C_4)$alkoxycarbonyl,

or

R^1 is a radical of the formula



R^{14} is hydrogen, halogen, halo $(C_1–C_4)$alkyl, $(C_1–C_4)$alkyl, cycloalkyl, $(C_1–C_4)$alkylmercapto$(C_1–C_4)$alkyl, hydroxy$(C_1–C_4)$alkyl, hydroxyl, cyano, aryloxy$(C_1–C_4)$alkyl, thienyl, aryl, dihydronaphthyl or



where aryl is as defined above,

R^{20} is hydrogen, halogen, nitro, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy or $S(O)_pR^{21}$,

R^{21} is alkyl,

p is 0, 1 or 2,

m is 0, 1 or 2,

R^{15} and R^{16} independently of one another are hydrogen or alkyl, or together with the carbon atom form a 3-, 4-, 5- or 6 -membered cycloalkane ring in which a methylene group can be replaced by oxygen and which can be substituted by one or two alkyl groups,

R^{17} and R^{18} independently of one another are hydrogen or $(C_1–C_4)$alkyl,

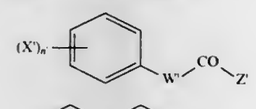
R^{19} is $(C_1–C_4)$alkyl or phenyl, or

R^{18} and R^{19} are —$(CH_2)_f$— where l is 3 or 4 and which can be substituted by one or two alkyl groups,

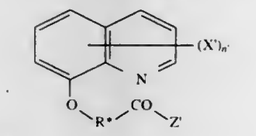
R^{22} is hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkenyl, $(C_1–C_4)$alkynyl, phenyl, $(C_1–C_4)$alkylideneamino, $(C_1–C_4)$alkoxycarbonyl($C_1–C_4$)alkyl, $(C_1–C_4)$alkoxy($C_1–C_4$)alkyl, halo$(C_1–C_4)$alkyl, cycloalkyl, nitro-substituted phenylmercapto($C_1–C_4$)alkyl, halogen or benzyl which can be substituted by $(C_1–C_4)$alkyl or $(C_1–C_4)$alkoxy,

or a salt thereof, and

B) at least one compound from the group of the safener compounds of the formulae B1 and B2



(B1)



(B2)

in which

X' is hydrogen, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, nitro or $(C_1–C_4)$haloalkyl,

Z' is OR^{31}, SR^{31} or $NR^{31}R$, or forms a saturated or unsaturated 3- to 7-membered heterocycle which has at least one nitrogen atom and up to 3 hetero atoms, which is linked to the carbonyl group via the nitrogen atom and which is unsubstituted or substituted by radicals selected from the group comprising $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy or optionally substituted phenyl,

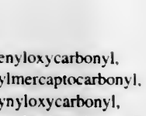
R is hydrogen, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy or optionally substituted phenyl,

R* is a (C_1 or C_2)alkanediyl chain which can additionally be substituted by one or two $(C_1–C_4)$alkyl radicals,

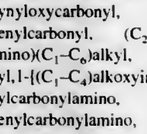
R^{31} is hydrogen, $(C_1–C_{18})$alkyl, $(C_3–C_{12})$cycloalkyl, $(C_2–C_8)$alkenyl or $(C_2–C_8)$alkynyl, where the above carbon-containing radicals are unsubstituted or mono- or polysubstituted by identical or different radicals selected from the group comprising halogen, hydroxyl, $(C_1–C_8)$alkoxy, $(C_1–C_8)$alkylmercapto, $(C_2–C_8)$alkenylmercapto, $(C_2–C_8)$alkynylmercapto, $(C_2–C_8)$alkenyloxy, $(C_2–C_8)$alkynyloxy, $(C_3–C_7)$cycloalkyl, $(C_3–C_7)$cycloalkoxy, cyano, mono- and di$(C_1–C_4$alkyl)amino, $(C_1–C_8)$alkoxycarbonyl, $(C_2–C_8)$alkenyloxycarbonyl, $(C_1–C_8)$alkylmercaptocarbonyl, $(C_2–C_8)$alkynyloxycarbonyl, $(C_1–C_8)$alkylcarbonyl, $(C_2–C_8)$alkenylcarbonyl, $(C_2–C_8)$alkynylcarbonyl, 1-(hydroxyimino)$(C_1–C_6)$alkyl, 1-[$(C_1–C_4)$alkylimino] $(C_1–C_4)$alkyl,1-[$(C_1–C_4)$alkoxyimino] $(C_1–C_6)$alkyl, $(C_1–C_8)$alkylcarbonylamino, $(C_2–C_8)$alkenylcarbonylamino, $(C_2–C_8)$alkynylcarbonylamino, aminocarbonyl, $(C_1–C_8)$alkylaminocarbonyl, di-$(C_1–C_6)$alkylaminocarbonyl, $(C_2–C_6)$alkenylaminocarbonyl, $(C_2–C_6)$alkynylaminocarbonyl, $(C_1–C_8)$alkoxycarbonylamino, $(C_1–C_8)$alkylaminocarbonylamino, $(C_1–C_6)$alkylcarbonyloxy which is unsubstituted or substituted by halogen, nitro, $(C_1–C_4)$alkoxy or optionally substituted phenyl, or $(C_2–C_6)$alkenylcarbonyloxy, $(C_2–C_6)$alkynylcarbonyloxy, $(C_1–C_8)$alkylsulfonyl, phenyl, phenyl$(C_1–C_6)$alkoxy, phenyl$(C_1–C_6)$alkoxycarbonyl, phenoxy, phenoxy$(C_1–C_6)$alkoxy, phenoxy$(C_1–C_6)$alkoxycarbonyl, phenylcarbonyloxy, phenylcarbonylamino, phenyl$(C_1–C_6)$alkylcarbonylamino, the last 9 radicals mentioned being unsubstituted in the phenyl ring or mono- or polysubstituted by radicals selected from the group comprising halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$haloalkyl, $(C_1–C_4)$haloalkoxy and nitro, and radicals of the formulae —SiR'$_3$, —O—SiR'$_3$, R'$_3$Si$(C_1–C_8)$alkoxy, —CO—O—NR'$_2$, —O—N=CR'$_2$, —N=CR'$_2$, —O—NR'$_2$—CH(OR')$_2$ and —O—$(CH_2)_m$—CH(OR')$_2$, where the R' radicals in said formulae independently of one another are hydrogen, $(C_1–C_4)$alkyl, phenyl which is unsubstituted or mono- or polysubstituted by radicals selected from the group comprising halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$haloalkyl, $(C_1–C_4)$haloalkoxy and nitro, or two of these radicals together are a $(C_2–C_6)$alkanediyl chain, and m=0 to 6, and a substituted alkoxy radical of the formula R"O—CHR'"(OR")$(C_1–C_6)$alkoxy in which the R" radicals independently of one another are $(C_1–C_4)$alkyl or together are $(C_1–C_4)$alkanediyl, and R'" is hydrogen or $(C_1–C_4)$alkyl,

n' is an integer from 1 to 5,

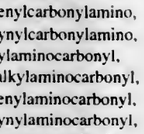
W' is a divalent heterocyclic radical of one of the formulae W1 to W4,



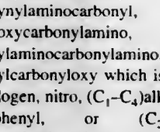
(W1)



(W2)



(W3)



(W4)

R^{32} is hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, $(C_3–C_{12})$cycloalkyl or optionally substituted phenyl and

R^{33} is hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, $(C_1–C_4)$alkoxy$(C_1–C_4)$alkyl, $(C_1–C_6)$hydroxyalkyl, $(C_3–C_{12})$cycloalkyl or tri$(C_1–C_4)$alkylsilyl.

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5,622,911
METHOD FOR ENHANCING THE EFFICACY OF AGRICULTURAL CHEMICAL WITH ALKOXYLATED FATTY ACID AMIDES

Keiko Hasebe; Tadayuki Suzuki, and Yuichi Hioki, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

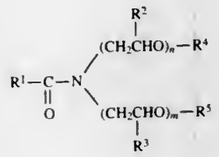
Filed Feb. 10, 1995, Ser. No. 386,877

Claims priority, application Japan, Feb. 14, 1994, 6-017454; Feb. 14, 1994, 6-017455

Int. Cl.[6] A01N *25/30*

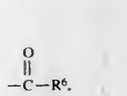
U.S. Cl. 504—116 **19 Claims**

1. A method for enhancing the efficacy of an agricultural chemical which comprises applying at least one compound represented by the following formula (I) together with the agricultural chemical to a locus which would benefit from such treatment:



(I)

wherein R^1 represents a linear or branched alkyl or alkenyl group having 5 to 29 carbon atoms; each R^2 represents a hydrogen atom or a methyl group; each R^3 represents a hydrogen atom or a methyl group; R^4 and R^5 may be the same or different from each other and each independently represents a hydrogen atom, a group represented by the formula:



wherein R^6 represents a linear or branched alkyl or alkenyl group having 1 to 29 carbon atoms, or a group represented by the formula: $—CH_2COOX$, wherein R^4 and R^5 are not both hydrogen, wherein X represents a hydrogen atom, a sodium atom, a potassium atom, an ammonium group or an organic ammonium group; m is a number of 0 to 30; and n is a number of 1 to 30.

5,622,912
SPROUT INHIBITION COMPOSITIONS COMPRISING CHLORPROPHAM AND SUBSTITUTED NAPHTHALENES AND METHODS OF USING SAME

Bruce D. Riggle, Eaton, Colo., and Ronald K. Schafer, Boise, Id., assignors to Platte Chemical Company, Greeley, Colo.

Filed May 24, 1996, Ser. No. 653,222

Int. Cl.[6] A01N *47/20;27/00*

U.S. Cl. 504—143 **40 Claims**

1. A composition adapted for inhibiting sprout formation in tubers during storage, comprising:

ClPC (chlorpropham); and

a substituted naphthalene.

5,622,913
(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS INTERMEDIATES FOR THE PREPARATION OF AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

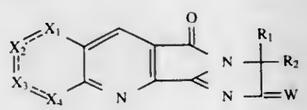
Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and Jerry L. Johnson, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 123,827, Sep. 20, 1993, Pat. No. 5,510,319, which is a division of Ser. No. 465,569, Jan. 16, 1990, Pat. No. 5,252,538, which is a continuation of Ser. No. 876,599, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 808,578, Dec. 13, 1985, abandoned, and a continuation-in-part of Ser. No. 612,531, May 21, 1984. This application Jun. 2, 1995, Ser. No. 459,938

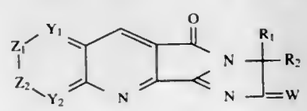
Int. Cl.[6] A01N *43/90;* **C07D** *471/14*

U.S. Cl. 504—245 **8 Claims**

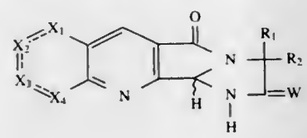
1. (2-Imidazolin-2-yl) fused heteropyridine compounds having the structure



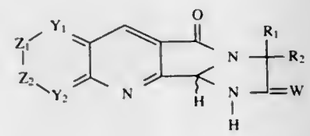
(V)



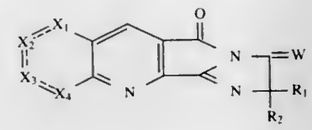
(VII)



(IX)

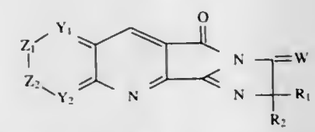


(XI)



(XIII)

or



(XV)

wherein R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; or when taken together with the carbon to which they are attached, R_1 and R_2 represent C_3–C_6 cycloalkyl, optionally substituted with methyl;

- - - represents a single or double bond;

W is O or S;

X_1, X_2, X_3 and X_4 are any combination of CR_4, CR_5R_6, O, S, N or NR_3 and are the same or different, with the proviso that one of X_1, X_2, X_3 and X_4 must be O, S, N, or NR_3 and three of X_1, X_2, X_3 and X_4 must be CR_4 or CR_5R_6.

Y_1 and Y_2 are N or CR_4;

Z_1 and Z_2 are O, S, NR_3 or CR_5R_6 with the proviso that one of Y_1, Y_2, Z_1, and Z_2 must be N, O, S, or NR_3 and the other three must be the same or different CR_4 or CR_5R_6 groups

R_3 is C_1–C_4 alkyl, which may be optionally substituted with phenyl or one or more halogens; C_3–C_6 alkenyl, optionally substituted with phenyl or one or more halogens; C_3–C_6 alkynyl, optionally substituted with phenyl or halogen; C_1–C_4 alkoxy, optionally substituted with phenyl or one or more halogens; C_3–C_6 alkenyloxy optionally substituted with phenyl or one or more halogens; C_3–C_6 alkynyloxy optionally substituted with halogen or phenyl; or C_2–C_6 alkanyloxy, optionally substituted with halogen or phenyl;

R_4 is hydrogen, halogen, C_1–C_6 alkyl; C_1–C_4 alkoxy C_2–C_6 alkanyloxy; C_1–C_4 alkylthio; phenoxy; C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkoxycarbonyl; C_1–C_4 dialkylamino; C_1–C_4 alkylsulfonyl or phenyl, optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl;

R_5 and R_6 are each hydrogen, C_1–C_4 alkyl; C_1–C_4 alkoxy, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkylsulfonyl or phenyl optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl; or any combination of these groups except when R_5 and R_6 are the same group, they are either both hydrogen or both C_1–C_4 alkyl; and when taken together, R_5 and R_6 may form a ring in which R_5R_6 are represented by the structure $—(CH_2)_n—$ where n is an integer of 4 or 5, or when taken together, R_5 and R_6 may form a group =O or $=NR_7$ wherein R_7 is phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylamino;

R_3, R_4, R_5 and R_6, when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such R_3–R_6 pairs can be represented by the structure $—(CH_2)_m—$ or $—(CH)_m—$ where m is an integer of 3 or 4;

with the provisos that

- - - represents a single bond between:

X_1 and X_2 when either X_1 or X_2 is S, O, NR_3 or CR_5R_6;

X_2 and X_3 when either X_2 or X_3 is O, S, NR_3 or CR_5R_6;

X_3 and X_4 when either X_3 or X_4 is O, S, NR_3 or CR_5R_6.

5,622,914
QUINOLINE COMPOUNDS AS FUNGICIDES OR BACTERICIDES

Yoshio Kurahashi, Oyama; Koichi Moriya, Tochigi; Haruko Sawada, Ibaraki; Haruhiko Sakuma; Ryo Watanabe, both of Tochigi, and Asami Ito, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

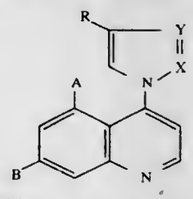
Filed Sep. 19, 1995, Ser. No. 529,963

Claims priority, application Japan, Sep. 21, 1994, 6-251620; Mar. 31, 1995, 7-097670

Int. Cl.[6] A01N *43/42;* **C07D** *215/44*

U.S. Cl. 504—247 **9 Claims**

1. A method of using a quinoline compound of formula I as a fungicide or a bactericide which comprises applying to fungi or bacteria or to a locus from which it is desired to exclude such fungi or bacteria a fungicidally or bactericidally effective amount of quinoline compound of the formula



(I)

in which

X is a nitrogen atom and Y is a CH-group or

Y is a nitrogen atom and X is a CH-group,

R is hydrogen, halogen, acetyl or alkyl which is optionally substituted by one to three radicals independently selected from the group consisting of alkoxy, phenyl, hydroxy, halogen and cyano, or

R is alkenyl which is optionally substituted by one to three radicals independently selected from the group consisting of halogen, cyano, alkoxy, phenyl and hydroxy, or

R is alkynyl which is optionally substituted by one to three radicals independently selected from the group consisting of halogen, phenyl, trimethylsilyl, hydroxy, cyano, alkoxy, alkylamino, dialkylamino, alkylcarbonyl, tolyl, alkoxycarbonyl and alkylcarbonyloxy, or

R is cycloalkyl which is optionally substituted by one to three radicals independently selected from the group consisting of halogen and cyano,

A is hydrogen or halogen and

B is halogen or halogenoalkyl,

or an acid addition salt or metal salt complex thereof.

5,622,915
METHOD OF USING TRICLOPYR TO INCREASE FRUIT SIZE OR QUALITY OR MATURATION RATE

Jose Buendia, Madrid; Rafael Molina, Murcia, and Jose L. P. Gil, Valencia, all of Spain, assignors to DowElanco, Indianapolis, Ind.

PCT No. PCT/US94/07526, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO95/01725, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 5, 1994, Ser. No. 392,832

Claims priority, application United Kingdom, Jul. 5, 1993, 9313838

Int. Cl.[6] A01N *43/40*

U.S. Cl. 504—254 **8 Claims**

1. A method for regulating plant growth which comprises applying to a fruit bearing plant 3,5,6-trichloro-2-pyridyloxyacetic acid or a C_{1-10} alkyl ester or salt thereof

at an application rate that is nonphytotoxic and effective to provide increased fruit size or quality or faster maturation, and

at a time when the plant is bearing sufficiently mature fruit so that significant thinning does not occur.

5,622,916
SUBSTITUTED 2-CYLCOHEXEN-1-YL-AMINE FUNGICIDAL AND HERBICIDAL AGENTS

Franz Kunisch, Odenthal-Gloebusch; Peter Babczinski, Wuppertal; Dieter Arlt, Cologne; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach; Wilhelm Brandes, Leichlingen, and Harry Strang, Duesseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 762,807, Sep. 20, 1991, Pat. No. 5,270,340, which is a continuation of Ser. No. 452,460, Dec. 15, 1989, abandoned. This application Sep. 15, 1993, Ser. No. 121,671

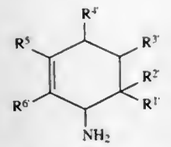
Claims priority, application Germany, Dec. 27, 1988, 38 43 978.6; Aug. 17, 1989, 39 27 115.3

Int. Cl.[6] A01N *33/04;37/08;37/18;43/80*

U.S. Cl. 504—269 **7 Claims**

1. A substituted 2-cyclohexen-1-yl-amine derivative of the formula

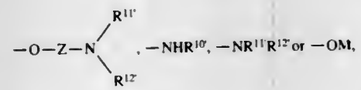
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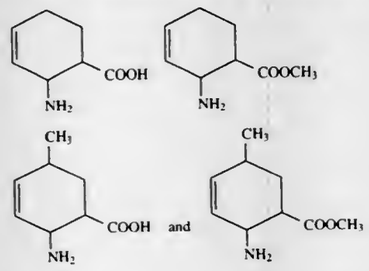
in which
$R^{1'}$ represents hydrogen, alkyl or halogen,
$R^{2'}$ represents formyl, or



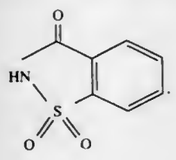
$R^{3'}$, $R^{4'}$, $R^{5'}$ and $R^{6'}$ are identical or different in each case represent hydrogen, alkyl, alkoxy or represent unsubstituted or substituted aryl,
$R^{8'}$ represents hydroxyl, hydroxyalkyloxy, halogenalkyloxy, alkoxy or alkoxyalkyloxy, unsubstituted or substituted cycloalkyloxy, unsubstituted or substituted aralkyloxy, unsubstituted or substituted aryloxy, unsubstituted or substituted aralkyl, alkylthio or unsubstituted or substituted arylthio, or represents a group



$R^{10'}$ represents hydrogen, alkyl or unsubstituted or substituted aryl,
$R^{11'}$ and $R^{12'}$ are identical or different and in each case represent alkyl or unsubstituted or substituted aryl,
M represents an equivalent of a corresponding alkali metal cation, alkaline earth metal cation or ammonium cation and
Z represents a non-branched or branched alkyl chain,
$R^{4'}$ and $R^{5'}$ together represents an alkyl chain which has 3 or 4 carbon atoms and which is linked via the 4- and 3-positions,
or an addition product thereof with an acid or metal salt, with the exception of the cis-diastereomer of compounds of the formula



or forms a complex with a compound of the formula



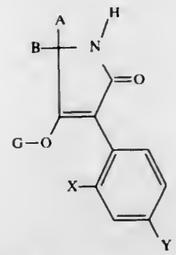
5,622,917

(1a) **SUBSTITUTED 1H—3-ARYL-PYRROLIDINE-2,4-DIONE DERIVATIVES**

Reiner Fischer, Monheim; Thomas Bretschneider, Lohmar; Bernd-Wieland Krüger, Bergisch Gladbach; Michael Ruther, Monheim; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim; Hans-Joachim Santel, and Markus Dollinger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

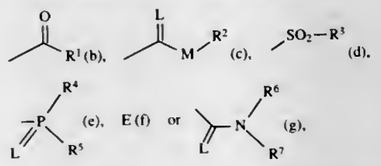
Filed Jan. 3, 1995, Ser. No. 383,801
Claims priority, application Germany, Feb. 9, 1994, 44 04 001.6; Sep. 6, 1994, 44 31 730.1
Int. Cl.[6] A01N *43/54;43/36;43/38;* **A61K** *31/505;31/415;32/40;* **C07D** *207/273;401/04;401/14;403/04;403/14;405/04;409/04, 409/14*
U.S. Cl. 504—283 **13 Claims**

1. A 1H-3-aryl-pyrrolidine-2,4-dione derivative of the formula (I)



(I)

in which
A represents hydrogen, or alkyl, alkenyl, alkoxyalkyl or alkylthioalkyl, each of which is optionally substituted by halogen, or cycloalkyl which is optionally interrupted by at least one hetero atom selected from oxygen or sulfur and optionally substituted, or aryl, arylalkyl or hetaryl, each of which is optionally substituted by halogen, alkyl, halogenoalkyl, alkoxy or nitro,
B represents hydrogen, alkyl or alkoxyalkyl, or
A and B together with the carbon atom to which they are bonded represent a saturated or unsaturated, unsubstituted or substituted cycle which is optionally interrupted by at least one hetero atom selected from oxygen or sulfur,
one of X and Y represents halogen and the other represents alkyl,
G represents hydrogen (a) or one of the groups



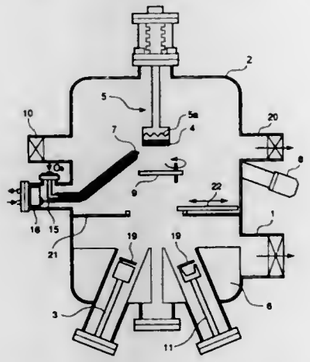
E represents a metal ion equivalent or an ammonium ion,
L and M represent in each case oxygen or sulfur,
R^1 represents alkyl, alkenyl, alkoxyalkyl, alkylthioalkyl or polyalkoxyalkyl, each of which is optionally substituted by halogen, or cycloalkyl which is optionally substituted by halogen or alkyl and can be interrupted by at least one hetero atom, or in each case optionally substituted phenyl, phenylalkyl, hetaryl, phenoxyalkyl or hetaryloxyalkyl,
R^2 represents alkyl, alkenyl, alkoxyalkyl or polyalkoxyalkyl, each of which is optionally substituted by halogen, or in each case optionally substituted cycloalkyl, phenyl or benzyl,
R^3, R^4 and R^5 independently of one another represent alkyl, alkoxy, alkylamino, dialkylamino, alkylthio, alkenylthio or cycloalkylthio, each of which is optionally substituted by halogen, or in each case optionally substituted phenyl, phenoxy or phenylthio, and
R^6 and R^7 independently of one another represent hydrogen, or alkyl, cycloalkyl, alkenyl, alkoxy or alkoxyalkyl, each of which is optionally substituted by halogen, or in each case optionally substituted phenyl or benzyl, or together with the N atom to which they are bonded a cycle which is optionally interrupted by oxygen or sulfur,
a diastereomer mixture, pure diastereomer or enantiomer thereof wherein hetaryl, above, is a membered selected from the group consisting of furanyl, pyridyl, imidazolyl, pyrazolyl, triazolyl, indolyl, thiazolyl, thienyl, or pyrimidinyl.

5,622,918

PROCESS AND APPARATUS FOR PREPARING YBACUO SUPERCONDUCTING FILMS

Takao Nakamura, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 25, 1995, Ser. No. 519,640
Claims priority, application Japan, Aug. 26, 1994, 6-225708
Int. Cl.[6] C23C *14/24;* **B05D** *5/12*
U.S. Cl. 505—473 **13 Claims**



1. A process for preparing a film formed of a YBaCuO superconducting oxide material on a substrate by using an apparatus comprising a vacuum chamber, supplying an oxidizing gas near the substrate so that pressure around the substrate is increased while maintaining high vacuum around an evaporation source and K cell evaporation sources arranged in the vacuum chamber wherein the substrate is heated, supplying a molecular beam of constituent atoms of the YBaCuO oxide material excluding oxygen from the K cell evaporation sources and chilling said oxidizing gas in a supply line extending into said vacuum chamber and locally supplying said oxidizing gas through the supply line to the vicinity of the substrate.

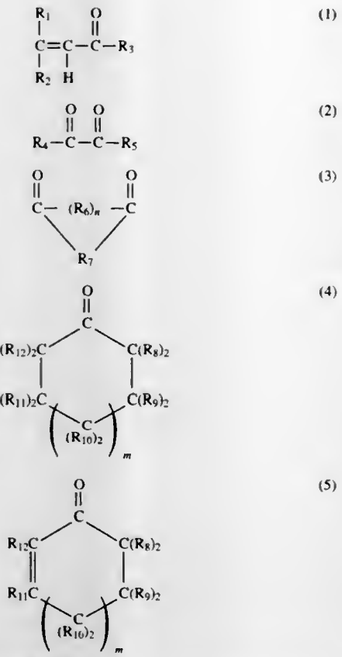
5,622,919

COMPOSITION AND METHOD FOR CONTROLLING PRECIPITATION WHEN ACIDIZING WELLS

Michael M. Brezinski; Tommy R. Gardner; Karen L. King, and James L. Lane, Jr., all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

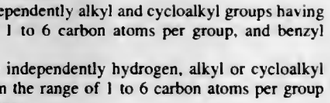
Continuation of Ser. No. 73,370, Jun. 7, 1993, which is a continuation-in-part of Ser. No. 840,371, Feb. 24, 1992, abandoned, Ser. No. 881,590, Jun. 29, 1992, abandoned, and Ser. No. 950,374, Sep. 23, 1992, abandoned. This application Nov. 13, 1995, Ser. No. 556,679
Int. Cl.[6] C09K *7/00;* **E21B** *37/06*
U.S. Cl. 507—90 **20 Claims**

1. A method of controlling the precipitation of sulfides from a acidic solution containing sulfides comprising:
contacting said acidic solution containing sulfides with a sulfide reactant wherein said sulfide reactant is selected from the group consisting of compounds of the following formulae:

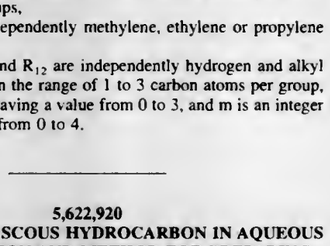


(1)

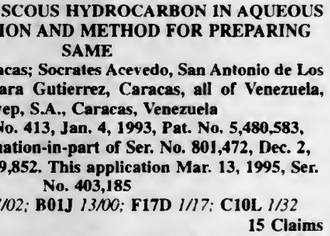
(2)



(3)



(4)



(5)

and mixtures thereof; wherein
R_1, and R_2 are independently alkyl and cycloalkyl groups having in the range of 1 to 6 carbon atoms per group, and benzyl groups,
R_3, R_4 and R_5 are independently hydrogen, alkyl or cycloalkyl groups having in the range of 1 to 6 carbon atoms per group and benzyl groups,
R_6 and R_7 are independently methylene, ethylene or propylene groups,
R_8, R_9, R_{10}, R_{11} and R_{12} are independently hydrogen and alkyl groups having in the range of 1 to 3 carbon atoms per group, n is an integer having a value from 0 to 3, and m is an integer having a value from 0 to 4.

5,622,920

EMULSION OF VISCOUS HYDROCARBON IN AQUEOUS BUFFER SOLUTION AND METHOD FOR PREPARING SAME

Hercilio Rivas, Caracas; Socrates Acevedo, San Antonio de Los Altos, and Xiomara Gutierrez, Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 413, Jan. 4, 1993, Pat. No. 5,480,583, which is a continuation-in-part of Ser. No. 801,472, Dec. 2, 1991, Pat. No. 5,419,852. This application Mar. 13, 1995, Ser. No. 403,185
Int. Cl.[6] C09K *7/02;* **B01J** *13/00;* **F17D** *1/17;* **C10L** *1/32*
U.S. Cl. 507—232 **15 Claims**

1. A method for forming a stable emulsion of a viscous hydrocarbon in an aqueous buffer solution, comprising the steps of:
providing a viscous hydrocarbon containing an inactive natural surfactant selected from the group consisting of carboxylic acids, phenols, esters, and mixtures thereof and having a salt content by weight of less than or equal to about 15 ppm and having a water content by weight of less than or equal to about 0.1%;
forming a solution of a buffer additive comprising a water soluble amine having at least two alkyl groups and an alkali additive selected from the group consisting of alkali metal

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salts, alkaline earth metal salts, and mixtures thereof; in an aqueous solution to provide a basic aqueous buffer solution having a pH of between about 11 to about 13; and

mixing the viscous hydrocarbon with the aqueous buffer solution wherein the ratio by weight of the viscous hydrocarbon to the aqueous buffer solution is between about 75:25 to about 95:5 at a rate sufficient to provide an emulsion of a viscous hydrocarbon in the aqueous buffer solution, whereby the buffer additive extracts the inactive natural surfactant from the viscous hydrocarbon into the aqueous buffer solution and activates the inactive natural surfactant so as to stabilize the emulsion.

5,622,921

ANIONIC COMPOSITIONS FOR SLUDGE PREVENTION AND CONTROL DURING ACID STIMULATION OF HYDROCARBON WELLS

Richard J. Dyer, Midland, Tex., assignor to Nowsco Well Service, Inc., Houston, Tex.

Filed Jan. 21, 1993, Ser. No. 6,602
Int. Cl.[6] C09K *7/00*
U.S. Cl. 507—259 **28 Claims**

1. An anti-sludge composition comprising:
an alkyl aryl sulfonic acid or salt thereof,
a nonethoxylated glycol, and
an acetylenic alcohol,
in an alkyl alcohol solvent.

5,622,922

METHOD OF SOLUBILIZING A BENZOTRIAZOLE WITH A THIADIAZOLE

Dean B. Clarke, Neshanic Station, and Dale R. Carroll, Rahway, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Dec. 27, 1995, Ser. No. 579,530
Int. Cl.[6] C10M *133/38*
U.S. Cl. 508—272 **10 Claims**

1. A method for forming a homogeneous product from a benzotriazole and a 2,5-dihydrocarbyldithio-1,3,4, -thiadiazole having the formula

where R_1 and R_2 are independently R_3S or H. R_3 is a hydrocarbyl group having from 1 to 16 carbon atoms, provided at least one of R_1 and R_2 is not hydrogen, x is an integer from 0 to 3, and wherein the benzotriazole is normally incompatible with said thiadiazole at a temperature of 25° C., which comprises heating at a temperature in the range of from 50° to 150° C. the benzotriazole with an amount of the thiadiazole sufficient to form said homogeneous product.

5,622,923

LUBRICATING COMPOSITIONS, FUNCTIONAL FLUIDS AND GREASES CONTAINING THIOPHOSPHORUS ESTERS OR THEIR SALTS WITH A OXYALKYLENE GROUP, AND METHODS OF USING THE SAME

Naresh C. Mathur, Highland Heights, and Mary G. Raguz, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 16, 1995, Ser. No. 491,140
Int. Cl.[6] C10M *137/10*
U.S. Cl. 508—431 **26 Claims**

1. A lubricating composition comprising a major amount of an oil of lubricating viscosity and (A) at least one monothiophosphorus compound selected from the group consisting of a metal-free monothiophosphorus acid ester, an amine salt of a monothiophosphorus acid ester, and a mixture thereof, wherein the monothiophosphorus compound contains at least one hydrocarbyl terminated oxyalkylene group, at least one hydrocarbyl terminated polyoxyalkylene group, or a mixture thereof, and (B) at least one organic polysulfide or at least one boron containing antiwear or extreme pressure agent.

5,622,924

VISCOSITY INDEX IMPROVER AND LUBRICATING OIL

Kouzou Sakai; Hidehiko Matsuya, and Yoshihisa Ohta, all of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

PCT No. PCT/JP95/00309, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO95/24458, PCT Pub. Date Sep. 14, 1995
PCT Filed Feb. 28, 1995, Ser. No. 535,053
Claims priority, application Japan, Mar. 8, 1994, 6-065583; Oct. 27, 1994, 6-289007
Int. Cl.[6] C10M *145/00*
U.S. Cl. 508—469 **20 Claims**

1. A lubricating oil composition, which comprises a lubricating oil base oil (D), comprising an isoparaffin-containing high viscosity index mineral oil and a viscosity index improver added thereto, comprising a polymer (B) containing at least 70% by weight of structural units of an alkyl acrylate or methacrylate monomer (A) containing not more than 10 carbon atoms in the alkyl group.

5,622,925

STABLE, AQUEOUS LAUNDRY DETERGENT COMPOSITION HAVING IMPROVED SOFTENING PROPERTIES

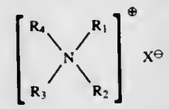
Francesco de Buzzaccarini, Fairfield; Timothy J. Farwick, Cincinnati, and Yueqian Zhen, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 232,509, Apr. 25, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 541,204
Int. Cl.[6] C11D *1/04;1/29;1/62;1/65*
U.S. Cl. 510—329 **30 Claims**

1. A substantially clear, aqueous, isotropic heavy duty liquid laundry detergent composition comprising, by weight of the composition:

a) from about 10% to about 40% of an anionic surfactant component which comprises, by weight of the composition:
(i) from about 5% to 40% of alkyl polyethoxylate sulfates wherein the alkyl group contains from 10 to 22 carbon atoms and the polyethoxylate chain contains from 1 to 15 ethylene oxide moieties; and
(ii) no more than about 5% of alkyl benzene sulfonates; and

b) from about 1% to about 10% of quaternary ammonium fabric-softening agent having the formula



wherein R_1 and R_2 are individually selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 hydroxy alkyl, benzyl, and $-(C_2H_4O)_xH$ where x has a value from 2 to 5; X is an anion; and (1) R_3 and R_4 are each a C_8–C_{14} alkyl or (2) R_3 is a C_8–C_{22} alkyl and R_4 is selected from the group consisting of C_1–C_{10} alkyl, C_1–C_{10} hydroxy alkyl, benzyl, and $-(C_2H_4O)_xH$ where x has a value from 2 to 5;

c) from about 1% to about 10% of a fatty acid containing from about 8 to about 20 carbon atoms;

provided that the anionic surfactant and quaternary ammonium fabric-softening agent are present in a weight ratio of at least about 3:1 wherein said composition is free from suspended crystal, precipitates or more than one liquid or liquid crystalline phase.

5,622,926

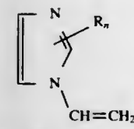
VINYLPYRROLIDONE AND VINYLIMIDAZOLE COPOLYMERS, THEIR PREPARATION AND THEIR USE IN DETERGENTS

Christian Schade, Ludwigshafen; Juergen Detering, Limburgerhof, and Wolfgang Trieselt, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03598, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/14861, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 17, 1993, Ser. No. 454,173
Claims priority, application Germany, Dec. 29, 1992, 42 44 386.5
Int. Cl.[6] C11D *1/94;3/28*
U.S. Cl. 510—340 **3 Claims**

1. A copolymer which is obtainable by free radical copolymerization of a mixture of

(a) from 20 to 95% by weight of a 1-vinylimidazole of the formula (I)



(I)

where R is H, CH_3 or C_2H_5 and n is from 1 to 3, or a mixture of 1-vinylimidazoles of the formula I which contains up to 20% by weight of other monoethylenically unsaturated monomers, and

(b) from 5 to 80% by weight of water-insoluble polymers selected from the group consisting of unsaturated polyesters; homopolymers of butadiene; copolymers of butadiene with styrene, acrylonitrile, acrylates of alcohols of 1 to 8 carbon atoms, isoprene, vinyl ethers where the alkyl chain is of 1 to 18 carbon atoms and acrylic acid; mercaptoalkyl-carrying polysiloxanes; and bis(thiol)polytetrahydrofurans.

5,622,927

PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATING VULVITIS OR VULVOVAGINITIS

György Hangay; Gáborné Olah; Edit Tókos, and György Vámos, all of Budapest, Hungary, assignors to Vepex KFT., Budapest, Hungary

PCT No. PCT/HU93/00016, § 371 Date Aug. 16, 1995, § 102(e) Date Aug. 16, 1995, PCT Pub. No. WO94/02148, PCT Pub. Date Feb. 3, 1994
PCT Filed Mar. 18, 1993, Ser. No. 374,572
Claims priority, application Hungary, Jul. 22, 1992, 92 02398
Int. Cl.[6] A61K *38/00;* **A01N** *37/18*
U.S. Cl. 514—2 **8 Claims**

1. A pharmaceutical composition for treating the symptoms of vulvitis or vulvovaginitis, which comprises as active ingredients 0.05–0.5% by weight of folic acid, 0.25–2.5% by weight of d-panthenol or 0.15–1.5% by weight of allantoin or a mixture of panthenol and allantoin, 0.75–7.5% by weight of protein hydrolysate or casein hydrolysate, 3.0–15.0% by weight of lactose or dextrose, 0.25%–2.5% by weight of lactic acid, 0.25–2.5% by weight of magnesium sulfate and 0.75–7.5% by weight of sodium chloride or ammonium chloride in an admixture with a pharmaceutically acceptable carrier.

5,622,928

GLIA ACTIVATION FACTOR AND ITS PRODUCTION

Ken-ichi Naruo, Hyogo; Chisako Seko, Osaka; Tsutomu Kurokawa, Hyogo, and Tatsuya Kondo, Tokyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 340,820, Nov. 17, 1994, Pat. No. 5,512,460, which is a continuation of Ser. No. 835,713, Feb. 12, 1992, abandoned. This application Jan. 24, 1996, Ser. No. 593,535
Claims priority, application Japan, Feb. 14, 1991, 3-20860; Apr. 9, 1991, 3-224454; Jan. 10, 1992, 4-3399
Int. Cl.[6] A61K *38/18*
U.S. Cl. 514—2 **12 Claims**

1. A glia activating factor (GAF) which is a protein obtained from a glioma cell culture solution and has glial growth promoting activity, said GAF having the amino acid sequence of SEQ ID NO:1 or a fragment thereof possessing GAF activity.

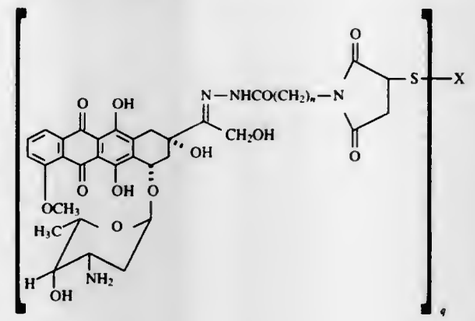
5,622,929

THIOETHER CONJUGATES

David Willner, Hamden; Pamela A. Trail, Farmington; H. Dalton King, Hamden; Sandra J. Hofstead, Middletown; Robert S. Greenfield, Wallingford, and Gary R. Braslawsky, Glastonbury, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jan. 23, 1992, Ser. No. 824,951
Int. Cl.[6] A61K *38/16;31/70;* **C07K** *9/00;* **C07H** *15/24*
U.S. Cl. 514—8 **52 Claims**

6. A formulation which comprises as an active ingredient a compound of Formula (Ib):



in which
n is an integer from 1 to 10;
q is about 1 to about 10; and
X is a ligand reactive with a selected target cell population;
in a pharmacutically acceptable amount associated with a pharmaceutically acceptable carrier, diluent or excipient therefor.

5,622,930

C1 INHIBITOR MUTEINS AND USES THEREOF

Eric Eldering, and Lucien Aarden, both of Amsterdam, Netherlands, assignors to CLB, Amsterdam, Netherlands

Continuation-in-part of Ser. No. 617,920, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 428,202, Oct. 27, 1989, abandoned. This application Sep. 5, 1991, Ser. No. 755,573
Int. Cl.[6] A61K *38/57;* **C07K** *14/81*
U.S. Cl. 514—12 **25 Claims**

1. A recombinant C1 inhibitor mutein comprising an amino acid

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sequence in accordance with SEQ ID NO: 8, modified to wherein the amino acid at position **440** of said sequence is replaced or deleted.

5,622,931

HUMAN TISSUE FACTOR RELATED DNA SEGMENTS, POLYPEPTIDES AND ANTIBODIES

Thomas S. Edgington, La Jolla, Calif., and James H. Morrissey, Oklahoma City, Okla., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 165,939, Mar. 9, 1988, Pat. No. 5,223,427, which is a continuation-in-part of Ser. No. 67,103, Jun. 25, 1987, Pat. No. 5,110,730, which is a continuation-in-part of Ser. No. 33,047, Mar. 31, 1987, abandoned. This application Apr. 29, 1992, Ser. No. 880,079

Int. Cl.[6] C07K *14/00;* **A61K** *38/36*

U.S. Cl. 514—12 **2 Claims**

1. A composition comprising an aqueous solution of human tissue factor heavy chain protein wherein said protein is soluble and has an amino acid residue sequence represented by FIG. 1 from position 1 to position 219.

5,622,932

IGF-1 SUPERAGONISTS

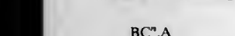
Richard D. DiMarchi, Carmel, Ind.; Li Fan, Lombard, Ill., and Harlan B. Long, Carmel, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 5, 1995, Ser. No. 435,252

Int. Cl.[6] C07K *14/65*

U.S. Cl. 514—12 **9 Claims**

1. An IGF-1 analog of the formula:



(1)

wherein:

B is the B domain of IGF-1 or a functional analog thereof,

C is the C domain of IGF-1 or a functional analog thereof,

n is the number of amino acids in the C domain and is from about 6 to about 12, and

A is the A domain of IGF-1 or a functional analog thereof.

5,622,933

MULTIPLE BRANCH PEPTIDE CONSTRUCTIONS FOR USE AGAINST HIV

Jean M. Sabatier, Chateauneuf de Rouge; Abdelaziz Benjouad, Cachan; Nouara Yahi, Marseille; Emmanuel Fenouillet, La Valette du Var; Kamel Mabrouk, Marseille; Jean-Claude Gluckman, Paris; Jurphaas Van Rietschoten, Aix en Provence, and Herve Rochat, Mimet, all of France, assignors to Armel S.A., Steinsel, Luxembourg

Filed Jun. 15, 1994, Ser. No. 260,086

Claims priority, application United Kingdom, Sep. 13, 1993, 9318901

Int. Cl.[6] A61K *38/04*

U.S. Cl. 514—16 **27 Claims**

1. A method of treating HIV infections comprising administering to a patient such amount of a multiple branch peptide construction as is sufficient to induce in the patient a blood concentration of the multiple branch peptide construction of up to 10^{-4} molar, the multiple branch peptide construction being non-immunogenic at the aforesaid blood concentration and comprising a core matrix to which are bonded from 2 to 16 peptides which consist of the amino acid sequence GPGR succeeded by from 2 to no more than 4 amino acid residues.

5,622,934

PEPTIDES WITH AN INSULIN-LIKE ACTION

Wendelin Frick, Frankfur am Main; Günter Müller, Sulzbach am Taunus; Stefan Müllner, Hochheim am Main, and Gerhard Breipohl, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

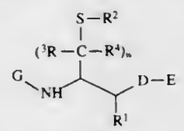
Continuation of Ser. No. 982,902, Nov. 30, 1992. This application May 23, 1994, Ser. No. 247,394

Claims priority, application Germany, Nov. 29, 1991, 41 39 376.7

Int. Cl.[6] A61K *38/06*

U.S. Cl. 514—18 **9 Claims**

9. A method of treating diabetes mellitus or insulin-independent diabetes comprising administering to a patient having diabetes mellitus or insulin-independent diabetes at least one peptide of the formula I:



(I)

in which

G is:

a) a hydrogen atom,

b) an amino acid residue, or

c) an amino acid residue monosubstituted or polysubstituted by:

1) —CO—(C_1–C_8)-alkyl, linear or branched, or

2) an amino acid protecting group,

D is:

a) an amino acid residue,

b) a phosphoamino acid residue,

c) a monosaccharide residue, or

d) a covalent bond,

E is:

a) —NR—$(CH_2)_n$—NR^5_2, in which each R^5 is identical or different and is a moiety selected from the group consisting of

1) a hydrogen atom,

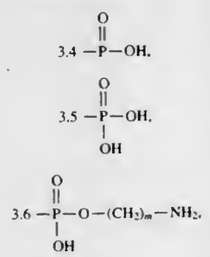
2) 1 to 6 monosaccharide residues, and

3) 1 to 6 monosaccharide residues monosubstituted or polysubstituted independently of one another by:

3.1 methyl,

3.2 a monosaccharide residue,

3.3 a disaccharide residue,



3.4 3.5 3.6

3.7 inositol,

3.8 inositol phosphate, or

3.9 a phosphate group bearing a phenyl, benzyl, or propylnitrile moiety,

n is an integer from 0 to 6, except

n cannot be 1 when R^5 is hydrogen, and

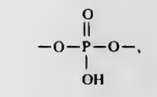
m is an integer from 0 to 4,

b) a glycerol residue, or

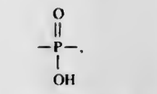
c) —NH—$(CH_2)_r$—R^6—R^7, in which p is 2 to 4,

R^6 is:

1) —O—,



2)



3)

4) —NH—CO—O—,

5) —S— or

6) —O—CO—O—,

R^7 is:

1) a hydrogen atom,

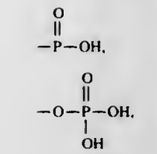
2) 1 to 6 monosaccharide residues, or

3) 1 to 6 monosaccharide residues monosubstituted or polysubstituted independently of one another by:

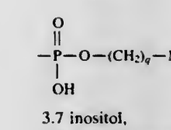
3.1 methyl,

3.2 a monosaccharide residue,

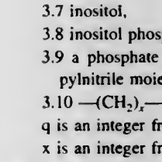
3.3 a disaccharide residue,



3.4



3.5



3.6

3.7 inositol,

3.8 inositol phosphate,

3.9 a phosphate group bearing a phenyl, benzyl, or propylnitrile moiety, or

3.10 —$(CH_2)_x$—CN, and

q is an integer from 2 to 4 and

x is an integer from 1 to 4, except

R6 cannot be —O—CO—O— when R7 is hydrogen,

R^1 is:

a) —(C_1–C_4)-alkyl, or

b) =O,

R^2 is:

a) a sulfhydryl protecting group,

b) (C_1–C_3)-alkyl, or

c) a hydrogen atom,

R^3 and R^4 independently of one another are:

a) a hydrogen atom, or

b) methyl, and

w is an integer 1 or 2,

or a stereoisomeric form, or a dimer of the peptide of formula I with cystine as the dimerization component, or a physiologically acceptable salt of the peptide of formula I.

5,622,935

MEDICINE FOR PREVENTING AND CURING BONE FRACTURE

Masayoshi Koyama, Kawagoe; Mikiko Takahashi, Hasuda, and Kazuyuki Doi, Musashimurayama, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Nov. 3, 1994, Ser. No. 335,411

Claims priority, application Japan, Nov. 5, 1993, 5-276473

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—21 **1 Claim**

1. A method for preventing or treating fractures which comprises administering to a patient suffering from or prone to bone fracture resulting from osteoblast-relating disease an effective amount of purified platelet factor 4.

5,622,936

TUMOR INHIBITING SACCHARIDE CONJUGATES

Manfred Wiessler, Heidelberg, and Michael Dickes, Dossenheim, both of Germany, assignors to Deutsches Krebsforschungszentrum Stiftung des offentlichen Rechts, Germany

PCT No. PCT/EP89/01251, § 371 Date Jun. 19, 1990, § 102(e) Date Aug. 13, 1990, PCT Pub. No. WO90/04597, PCT Pub. Date May 3, 1990

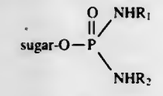
PCT Filed Oct. 19, 1989, Ser. No. 499,522

Claims priority, application Germany, Oct. 20, 1988, 38 35 772.0

Int. Cl.[6] A61K *31/70;* **C07H** *15/00*

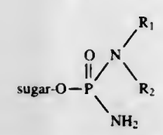
U.S. Cl. 514—25 **10 Claims**

1. A glycoconjugate of phosphoric acid amide mustard or ifosfamide mustard having the formula



I

or



Ia

wherein the sugar moiety is linked to the phosphoric acid amide mustard residue (1), or to the ifosfamide mustard residue (1a), R_1 and R_2, whioh can be the same or different, denote hydrogen, C_1–C_4 allkyl or C_1 C_6 halogenoslkyl, and the sugar moiety is a mono-, dl- or polysaccharide in any existing isomeric or enantiomeric forms.

5,622,937

COMPOSITIONS AND METHODS OF INHIBITING THE BINDING OF E-SELECTIN OR P-SELECTIN OR SIALYL-LEWIS^X OR SIALYL-LEWIS^A

Timothy P. Kogan, Sugar Land; Brian Dupre, Houston; Huong Dao, Houston, and Pamela J. Beck, Houston, all of Tex., assignors to Texas Biotechnology Corporation, Houston, Tex.

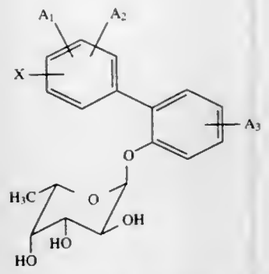
Continuation of Ser. No. 236,517, Apr. 29, 1994, abandoned. This application May 1, 1996, Ser. No. 641,341

Int. Cl.[6] A61K *31/70;* **C07H** *15/00*

U.S. Cl. 514—25 **6 Claims**

1. A compound having the formula:

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wherein X is selected from the group consisting of —CO_2R, —$(CH_2)_nO(CH_2)_mCO_2R$, —$(CH_2)_nCO_2R$, —$(CH_2)_nSO_3H$, —$(CH_2)_nPO_3D_1D_2$, and —OH;

A_1 and A_2 are independently selected from the group consisting of hydrogen, halogen, lower alkyl, —OR, —$(CH_2)_nNR(CH_2)_mCO_2R$, —NRR, —CN, —N_3, and —NO_2; and A_3 is hydrogen, halogen, lower alkyl, —$(CH_2)_pNH_2$, —$(CH_2)_pNR(CH_2)_qCO_2R$, or —$(CH_2)_pNH(CH_2)_qCH_3$;

where n and m are independently 1 to 6, p and q are independently 0 to 12, R is lower alkyl or hydrogen, and D_1 and D_2 are independently hydrogen or methyl, and the pharmaceutically acceptable salts, esters, and amides thereof.

5,622,938

SUGAR BASE SURFACTANT FOR NANOCRYSTALS

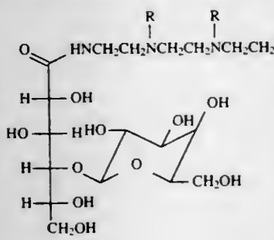
Sui-Ming Wong, Collegeville, Pa., assignor to Nano Systems L.L.C., Collegeville, Pa.

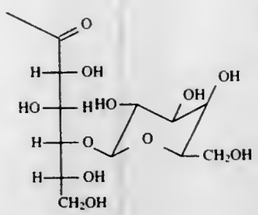
Continuation-in-part of Ser. No. 386,026, Feb. 9, 1995, abandoned. This application May 19, 1995, Ser. No. 444,796

Int. Cl.[6] A01N *43/04;* **A61K** *31/70*

U.S. Cl. 514—35 **20 Claims**

1. Particles consisting essentially of a crystalline drug substance having a surface modifier having the structure:





wherein R is $Ph(CH_2)_{10}CO$ or $C_{12}H_{25}NHCO$ adsorbed on the surface thereof in an amount sufficient to maintain an effective average particle size of less than about 400 nm.

5,622,939

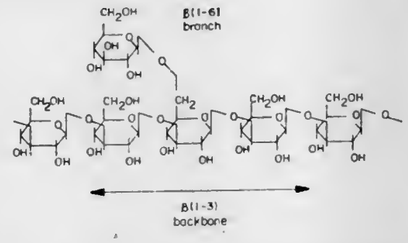
GLUCAN PREPARATION

Spiros Jamas, Boston; D. Davidson Easson, Jr., Shrewsbury, and Gary R. Ostroff, Worcester, all of Mass., assignors to Alpha-Beta Technology, Inc., Worcester, Mass.

Filed Aug. 21, 1992, Ser. No. 934,015

Int. Cl.[6] A61K *31/715;* **C07H** *1/00;3/00;* **C08B** *37/00*

U.S. Cl. 514—54 **35 Claims**



9. A composition comprising an underivatized, aqueous soluble β(1–3) glucan in a triple helix conformation having immunostimulating properties, in a physiologically acceptable vehicle, wherein said glucan does not stimulate production of interleukin-1, tumor necrosis factor or both, in vitro.

5,622,940

INHIBITION OF INFECTION-STIMULATED ORAL TISSUE DESTRUCTION BY β(1,3)-GLUCAN

Gary R. Ostroff, Worcester, Mass., assignor to Alpha-Beta Technology, Worcester, Mass.

Filed Jul. 14, 1994, Ser. No. 274,955

Int. Cl.[6] A61K *31/715;* **C07H** *1/00*

U.S. Cl. 514—54 **30 Claims**

1. A method of treating or preventing infection-stimulated oral tissue destruction in a mammal, comprising administering a therapeutically effective amount of an underivatized, aqueous soluble, β(1,3)-glucan which does not induce proinflammatory cytokines to the mammal.

5,622,941

ORAL 1 α-HYDROXYPREVITAMIN D

Joyce C. Knutson, Madison; Charles W. Bishop, Verona, and Charles R. Valliere, Madison, all of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 901,886, Jun. 22, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 188,942

Int. Cl.[6] A61K *31/59*

U.S. Cl. 514—167 **4 Claims**

1. A method for increasing the blood level of activated vitamin D in an animal or human comprirsing the step of administering orally to the animal or human an effective amount of substantially pure, crystalline 1α-hydroxprevitamin D along with one or more pharmaceutically acceptable excipients, wherein said 1α-hydroxprevitamin D is 1α,25-hydroxprevitamin D_3.

5,622,942

PERCUTANEOUS ABSORPTIVE ANESTHETIC

Masahiro Nakano; Motohiro Mishima, both of Kumamoto; Tatsuhiko Kano, Yatsushiro-gun, and Nobuyuki Nagata, Kawasaki, all of Japan, assignors to Minophagen Pharmaceutical Company, Tokyo, Japan

PCT No. PCT/JP92/00543, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993

PCT Filed Apr. 24, 1992, Ser. No. 142,332

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—171 **8 Claims**

1. A percutaneous absorptive anesthetic composition comprising:

one or more compounds selected from the group consisting of:

glycyrrhetic acid 3β-monohemisuccinate;

glycyrrhetic acid 3β-monohemiphthalate;

18β-olean-12-ene-3 β,30-diol-3 β,30-dihemiphthalate;

18β-olean-9(11),12-diene-3 β,30-diol-3 β,30-dihemiphthalate;

olean-11,13(18)-diene-3 β,30-diol-3 β,30-dihemiphthalate;

and a pharmaceutically allowable salt of any of the foregoing, and an anesthetic.

5,622,943

MINIMIZING PROGESTIN ASSOCIATED BREAKTHROUGH BLEEDING

Gary D. Hodgen, Norfolk, Va., assignor to The Medical College of Hampton Roads, Norfolk, Va.

PCT No. PCT/US93/04003, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO93/21927, PCT Pub. Date Nov. 11, 1993

PCT Filed May 3, 1993, Ser. No. 331,606

Claims priority, application WIPO, May 6, 1992, PCT/US92/03574

Int. Cl.[6] A61A *31/56*

U.S. Cl. 514—179 **21 Claims**

1. A method for minimizing uterine bleeding in a female using a progestin-only pharmaceutical preparation comprising administering to said female a biologically effective amount of an antiprogestin.

5,622,944

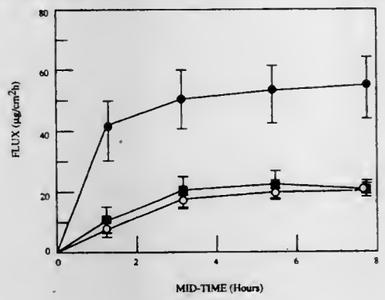
TESTOSTERONE PRODRUGS FOR IMPROVED DRUG DELIVERY

Ron L. Hale, Woodside; Amy T. Lu, Los Altos; Dennis W. Solas, San Francisco, and Michel J. N. Cormier, Mountain View, all of Calif., assignors to Affymax Technologies N.V., Middlesex, England, and Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 898,219, Jun. 12, 1992, abandoned, and Ser. No. 77,296, Jun. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 898,219, and Ser. No. 9,463, Jan. 27, 1993, abandoned. This application May 4, 1995, Ser. No. 434,892

Int. Cl.[6] A61K *31/575*

U.S. Cl. 514—181 **14 Claims**



5,622,945

RUBYRIN MACROCYCLES

Jonathan L. Sessler, Austin, Tex.; Takashi Morishima, Yokohama, Japan, and Steven J. Weghorn, Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

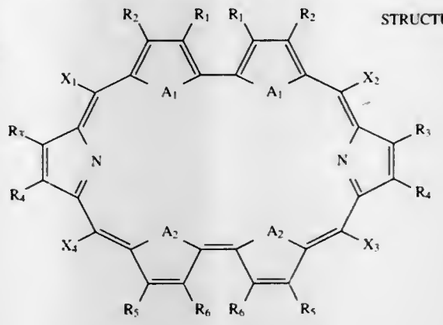
Division of Ser. No. 15,208, Feb. 9, 1993, Pat. No. 5,410,045, which is a continuation-in-part of Ser. No. 926,357, Aug. 4, 1992, abandoned. This application Jan. 4, 1995, Ser. No. 368,336

Int. Cl.[6] C07D *487/22;* **A61K** *31/395*

U.S. Cl. 514—185 **36 Claims**

1. A macrocycle with one of the following structures:

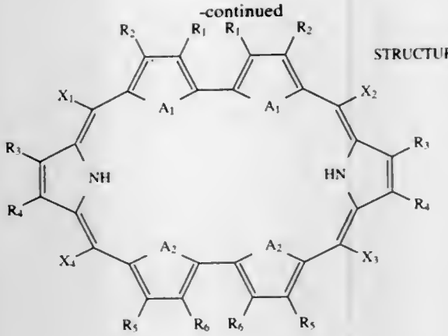
STRUCTURE I



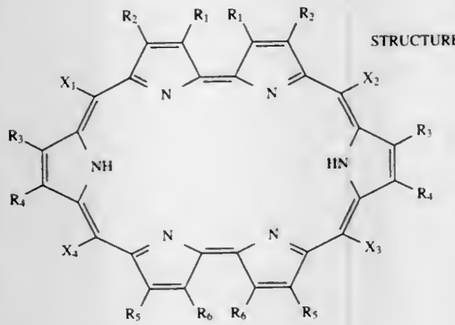
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STRUCTURE II



STRUCTURE III



wherein:

A_1 and A_2 are nitrogen, oxygen or sulphur; and the substituents R_1, R_2, R_3, R_4, R_5, and R_6 and X_1, X_2, X_3, and X_4 are independently in each occurrence H, alkyl, aryl, amino, hydroxyl, alkoxy, carboxy, carboxamide, ester, amide, sulfonate, hydroxy substituted alkyl, alkoxyl substituted alkyl, carboxy substituted alkyl, ester substituted alkyl, amide substituted alkyl, amino substituted aryl, ester substituted aryl, ether substituted aryl, alkoxy substituted aryl, carboxy substituted aryl, amide substituted aryl, thio substituted ester, phospho substituted ester, amino substituted ester, or are of the formula $(CH_2)_n$—A—$(CH_2)_m$—B, wherein A is CH_2, O, S, NH, or NR_7, wherein R_7 is any of the groups listed above, n and m are integers <10 or zero, and B includes a nucleobase or saccharide moiety.

5,622,946

RADIATION SENSITIZATION USING TEXAPHYRINS

Jonathan L. Sessler, Austin, Tex.; Anthony M. Harriman, Bischheim, France, and Richard A. Miller, Portola Valley, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif., and Board of Regents, Univ. of Tex. Sys., Austin, Tex.

Continuation-in-part of Ser. No. 135,118, Oct. 12, 1993, Pat. No. 5,457,183. This application May 10, 1995, Ser. No. 437,968

Int. Cl.[6] A61K *31/555*

U.S. Cl. 514—185 **46 Claims**

1. An improved method for radiation therapy of a patient with a neoplasm or atheroma employing a radiation sensitizer, wherein the improvement comprises treating said patient with an effective amount of a texaphyrin as the radiation sensitizer.

5,622,947

BENZOHETEROCYCLIC COMPOUNDS AND VASOPRESSIN ANTAGONIST AND OXYTOCIN ANTAGONIST COMPOSITIONS CONTAINING A BENZOHETEROCYCLIC COMPOUND

Hidenori Ogawa; Kazumi Kondo; Hiroshi Yamashita; Kenji Nakaya, all of Tokushima; Hajime Komatsu, Tokyo; Michinori Tanaka, Tokushima; Kazuyoshi Kitano, Tokushima; Michiaki Tominaga, Tokushima, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01483, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO94/08582, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 15, 1993, Ser. No. 244,424

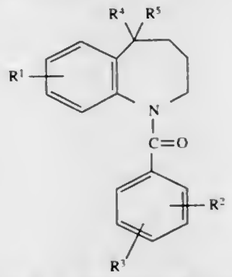
Claims priority, application Japan, Oct. 16, 1992, 4-277589

Int. Cl.[6] A61K *31/55;* **C07D** *223/16*

U.S. Cl. 514—213 **28 Claims**

1. A benzoheterocyclic compound or a salt thereof represented by the formula (1A):

(1A)



wherein R^1 is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkanoyloxy group, an amino-lower alkoxy group which may have a substituent selected from the group consisting of a lower alkyl group, a lower alkanoyl group, a carboxy-substituted lower alkoxy group, and a lower alkoxycarbonyl-substituted lower alkoxy group, and an aminocarbonyl-lower alkoxy group which may have a lower alkyl group as a substituent;

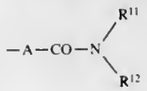
R^4 is selected from the group consisting of:

(a) a group of the formula:



wherein R^6 is a hydrogen atom, a lower alkyl group or a lower alkenyl group; and R^7 is a benzoyl group having a halogen atom as a substituent on the phenyl ring,

(b) a group of the formula:



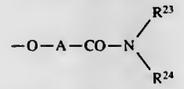
wherein A is a lower alkylene group, R^{11} is a hydrogen atom or a lower alkyl group, and R^{12} is selected from the group consisting of a hydroxyl group-substituted lower alkyl group, a pyridyl-substituted lower alkyl group, a pyridyl group, a group of the formula:

$$—A—NR^{39}R^{40}$$

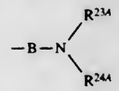
wherein A is the same as defined above, and R^{39} and R^{40} are the same or different, and are each a hydrogen atom or a lower alkyl group which may have a hydroxyl group as a substituent; further R^{39} and R^{40} may form a 5- or 6-membered saturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom, said heterocyclic ring may have a member selected from the group consisting of a lower alkyl group on the heterocyclic ring, a pyrazinyl-substituted lower alkyl group which may have as a substituent a lower alkyl group on the pyrazine ring, a pyrrolyl-substituted lower alkyl group which may have as a substituent a lower alkyl group on the pyrrole ring, a pyrrolidinyl-substituted lower alkyl group which may have as a substituent a lower alkyl group on the pyrrolidine ring, and a phenyl group which may have a halogen atom on the phenyl ring,

further, R^{11} and R^{12} may form a 5- to 7-membered saturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom; said heterocyclic group may be substituted with a member selected from the group consisting of a lower alkyl group, a lower alkoxy-carbonyl group and an amino group which may have a substituent selected from the group consisting of a lower alkyl group, a lower alkanoyl group, a lower alkoxycarbonyl-substituted lower alkyl group, a phenyl group which may have a halogen atom on the phenyl ring, a cyano-substituted lower alkyl group, a lower alkenyl group, an oxyranyl-substituted lower alkyl group, a carbamoyl-substituted lower alkyl group and a lower alkyl group having 1 to 2 substituents selected from the group consisting of a hydroxyl group and an amino group which may have a lower alkyl group, or a pyrrolidinylcarbonyl-lower alkyl group,

(c) a group of the formula:



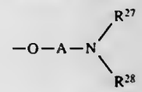
wherein A is the same as defined above, R^{23} is a hydrogen atom or a lower alkyl group, and R^{24} is a group of the formula:



wherein B is an alkylene group, R^{23A} and R^{24A} are the same or different, and are each a hydrogen atom or a lower alkyl group,

further R^{23A} and R^{24A} may form a 5- to 6-membered saturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom, further R^{23} and R^{24} may form a 5- to 7-membered saturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom, said heterocyclic group may have a lower alkyl groups as a substituent,

(d) a group of the formula:



wherein A is the same as defined above; R^{27} and R^{28} are the same or different, and are each a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower alkylsulfonyl group, an aminothiocarbonyl group which may have a lower alkyl group as a substituent, a group of the formula:

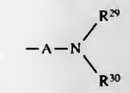


wherein R^{41} is a hydrogen atom or a cyano group; R^{42} is a lower alkyl group or an amino group which may have a lower alkyl group as a substituent,

a carbamoyl group, a lower alkoxycarbonyl group, a cycloalkyl group, a phenyl-lower alkyl group which may have a halogen atom as a substituent on the phenyl ring, a cyano-substituted lower alkyl group, a halogen atom-substituted lower alkylsulfonyl group, and an amino group-substituted lower alkyl group which may have a lower alkyl group as a substituent,

further, R^{27} and R^{28} may form a 5- to 10-membered single ring or binary ring saturated or unsaturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom, said heterocyclic group may be substituted with a lower alkanoylamino group on the heterocyclic ring,

(e) a group of the formula:



wherein A is the same as defined above, R^{29} is a hydrogen atom or a lower alkyl group, and R^{30} is a lower alkenyl group, a cycloalkyl group or a lower alkynyl group,

further R^{29} and R^{30} may form a 5- to 6-membered saturated heterocyclic group, by combining with the adjacent nitrogen atom bonded thereto, together with or without another nitrogen atom or oxygen atom; said heterocyclic group is substituted with a member of the group consisting of an amino group having a lower alkanoyl group, a lower alkylsulfonyl group, a lower alkoxycarbonyl group and an aminocarbonyl group which may have a lower alkyl group as a substituent,

(f) a 1,2,4-triazolyl-substituted lower alkoxy group,

(g) a 1,2,3,4-tetrazolyl-substituted lower alkoxy group,

(h) a 1,2,3,5-tetrazolyl-substituted lower alkoxygroup,

(i) a 1,2,3,4-tetrazolyl-substituted lower alkyl group,

(j) a 1,2,3,5-tetrazolyl-substituted lower alkyl group,

(k) 1,2,4-triazolyl-substituted lower alkyl group,

(l) a pyridylthio-substituted lower alkoxy group,

(m) a pyrimidinylthio-substituted lower alkoxy group which may have a lower alkyl group on the pyrimidine ring,

(n) an imidazolthio-substituted lower alkoxy group,

(o) a pyridylsulfinyl-substituted lower alkoxy group,

(p) a pyridylsulfonyl-substituted lower alkoxy group,

(q) an imidazolylsulfinyl-substituted lower alkoxy group, and

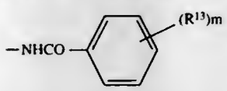
(r) an imidazolylsulfonyl-substituted lower alkoxy group;

R^5 is a hydrogen atom or a hydroxyl group;

R^2 is selected from the group consisting of a hydrogen atom, a lower alkyl group, a hydroxyl group, a halogen atom and a lower alkoxy group; and

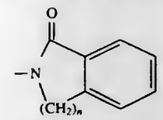
R^3 is selected from the group consisting of:

(a) a group of the formula:



wherein R^{13} is selected from the group consisting of a halogen atom, a hydroxyl group, a carbamoyl group, a lower alkyl group, a piperazinyl-lower alkoxy group having a lower alkanoyl group at 4-position in the piperazine ring, an imidazolyl-substituted lower alkoxy group, a piperidinyl-lower alkoxy group having lower alkanoylamino groups on the piperidine ring, a 1,2,4-triazolyl-substituted lower alkoxy group, an ureido-substituted lower alkoxygroup which may have a lower alkyl group, and an amino-substituted lower alkoxy group which may have a lower alkyl group as a substituent, and m is 0 or an integer of 1 to 3,

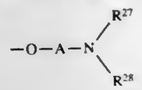
(b) a group of the formula:



wherein n is 1 or 2,

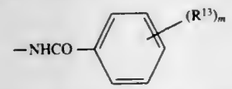
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provided that when R^1 is a hydrogen atom or a halogen atom, then R^4 is a group of the formula:



wherein A is the same as defined above, R^{27} and R^{28} are the same or different, and are each a hydrogen atom or a lower alkyl group; and R^5 is a hydrogen atom or a hydroxyl group.

further, when R^3 is a group of the formula:



then R^{13} is selected from the group consisting of a carbamoyl group, a piperazinyl-lower alkoxy group having a lower alkanoyl group at the 4-position in the piperazine ring, an imidazolyl-substituted lower alkoxy group, a piperidinyl-substituted lower alkoxy group having a lower alkanoylamino group on the piperidine ring, a 1,2,4-triazolyl-substituted lower alkoxy group and an ureido-substituted-lower alkoxy group which may have a lower alkyl as a substituent; and m is an integer of 1 to 3, or

further, when R^{11} and R^{12} form a saturated heterocyclic group, by combining together with the adjacent nitrogen atom with or without another nitrogen atom or oxygen atom, and said heterocyclic group may have as a substituent a substituent selected from the group consisting of a lower alkyl group, a lower alkoxycarbonyl group and an amino group which may have, as a substituent a lower alkyl group or a lower alkanoyl group;

then said saturated heterocyclic group formed by combining R^{11} and R^{12} is a 7-membered heterocyclic group.

5,622,948

PYRROLE PYRIDAZINE AND PYRIDAZINONE ANTI-INFLAMMATORY AGENTS

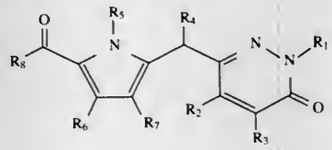
James P. Dunn, Los Altos; Chakk S. Ramesha, San Jose; Jim W. Barnett, La Honda; Denis J. Kertesz, Mountain View; Aaron B. Miller, Sunnyvale; David Morgans, Jr., Los Altos; C. Elliott Sigal, San Francisco; Eric B. Sjogren, Mountain View; David B. Smith, San Mateo, all of Calif., and Francisco X. Talamas, Cuernavaca, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 1, 1994, Ser. No. 347,915

Int. Cl.[6] A61K *31/50*

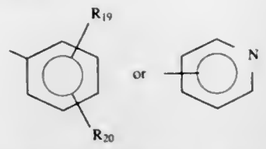
U.S. Cl. 514—236.5 **115 Claims**

1. A compound having the structure:



wherein:

R_1 is —H, lower alkyl, halo-lower alkyl, acetyl (optionally substituted with one to three groups selected from lower alkyl, acetoxy, and amino), $—(CHR_{24})(CH_2)_nR_{14}$, $—(CHR_{24})(CH_2)_nC(O)R_{15}$, $—(CHR_{24})(CH_2)_nC(O)NR_{16}R_{17}$ or $CHR_{24}R_{18}$; where n is an integer from 0–5, R_{14} is —CN, —OH, lower alkoxy, lower acyloxy (optionally substituted with One to three groups selected from lower alkyl, acetoxy, and amino), lower dialkylamino, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, lower alkene, lower alkyne or methane sulfonamido; R_{15} is lower alkoxy; R_{16} and R_{17} are independently selected from the group consisting of —H and lower alkyl; R_{18} is:



where R_{19} and R_{20} are independently selected from the group consisting of —CN, halo, lower alkoxy and lower alkyl; and R_{24} is —H, lower alkyl or phenyl;

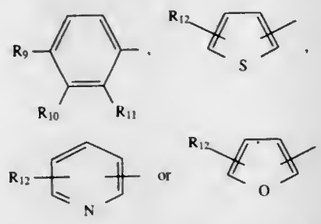
R_2 and R_3 are independently selected from the group consisting of —H, halo and $—CH_3$;

R_4 is —H, lower alkyl or —CN;

R_5 is —H or lower alkyl;

R_6 and R_7 are independently selected from the group consisting of —H, halo, lower alkyl, lower alkoxy and lower alkylthio; and

R_8 is:



where R_9 is —H, halo, lower alkyl, halo-lower alkyl, amino, lower dialkylamino, lower alkyl amido, lower alkylthio, lower alkoxy, lower alkene and lower alkyne; R_{10} and R_{11} are —H; and R_{12} is —H, Cl or $—CH_3$;

or a pharmaceutically acceptable salt thereof.

5,622,949

RETROVIRAL PROTEASE INHIBITORS

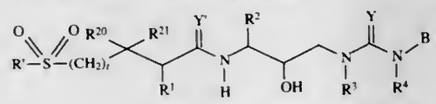
John J. Talley; Daniel P. Getman, both of Chesterfield; John N. Freskos, Clayton; Ko-Chung Lin, St. Louis; Robert M. Heintz, Ballwin; Donald J. Rogier, Jr., St. Louis, and Deborah E. Bertenshaw, Brentwood, all of Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 886,531, May 20, 1992, Pat. No. 5,475,013, which is a continuation-in-part of Ser. No. 789,642, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,010

Int. Cl.[6] C07D *317/06;* **A61K** *31/195*

U.S. Cl. 514—237.8 **58 Claims**

1. A compound represented by the formula:



wherein t represents either 0 or 1, R' represents radicals as defined for R^3;

R^1 represents hydrogen, $—CH_2SO_2NH_2$, $—CO_2CH_3$, $—CH_2CO_2CH_3$, $—CONH_2$, $—CH_2C(O)NHCH_3$, $—CH_2C(O)N(CH_3)_2$, $—CONHCH_3$, $—CONH(CH_3)_2$, $—C(CH_3)_2(SCH_3)$, $—C(CH_3)_2(S[O]CH_3)$, and $—C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine,

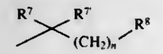
alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano alanine, and allo-threonine side chains;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals optionally substituted with a group selected from $—NO_2$, $—OR^9$, $—SR^9$, and halogen radicals, wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals where said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroalkyl, heterocycloalkyl, heteroaryl, and heterocycloalkylalkyl radicals or, in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

R^4 represents hydrogen and radicals as defined for R^3;

B represents radicals represented by the formula:



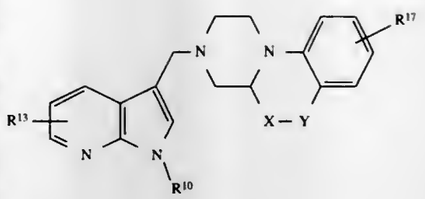
wherein n represents an integer of from 0 to 6;

R^7 and R^7 independently represent alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals where said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroalkyl, heterocycloalkyl, heteroaryl, and heterocycloalkylalkyl radicals or, in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical and amino acid side chains selected from the group consisting of asparagine, leucine, isoleucine, allo-isoleucine, glycine, alanine, glutamine, valine and t-butylglycine or R^7 and R^7 together with the carbon atom to which they are attached form a cycloalkyl radical; and

R^8 represents cyano, hydroxy, alkyl, alkoxy, cycloalkyl, aryl, aralkyl, heterocycloalkyl and heteroaryl radicals and radicals represented by the formulas $C(O)R^{16}$, CO_2R^{16}, SO_2R_{16}, SR^{16}, $CONR^{16}R^{17}$, CF_3, and $NR^{16}R^{17}$ wherein R^{16} and R^{17} independently represent hydrogen and radicals as defined for R^3, or R^{16} and R^{17} together with a nitrogen to which they are attached in the formula $NR^{16}R^{17}$ represent heterocycloalkyl and heteroaryl radicals with the provisos that (1) if both of R^7 and R^7 are an amino acid side chain of glycine or an alkyl, including an amino side chain of leucine, isoleucine, allo-isoleucine, alanine, valine and t-butylglycine, then R^8 must be cyano, CF_3, $C(O)R^{16}$, CO_2R^{16}, SO_2R^{16}, SR^{16}, or $CONR^{16}R^{17}$, and (2) if both R^7 and R^7 are selected from one or more of an amino acid side chain of glycine, an alkyl, including an amino acid side chain of leucine, isoleucine, allo-isoleucine, alanine, valine and t-butylglycine, an alkenyl and an alkynyl then R^8 cannot be alkyl, alkenyl, or alkynyl;

R^{20} and R^{21} represent radicals as defined for R^1; and

Y and Y' independently represent O and S.



(IID)

wherein

X represents a group of formula $—CH_2—$ or $—CH_2CH_2—$;

Y represents a chemical bond or an oxygen atom; and

R^{10} represents hydrogen or methyl;

R^{13} represents hydrogen, halogen, cyano, nitro, trifluoromethyl, amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkoxy or C_{2-6} alkylcarbonyl; and

R^{17} represents hydrogen, C_{1-6} alkyl, halogen, trifluoromethyl, hydroxy, hydroxy(C_{1-6})alkyl, C_{1-6} alkoxy, aryl(C_{1-6}) alkoxy, C_{1-6} alkoxy(C_{1-6})alkyl, carboxy, C_{2-6} alkoxycarbonyl, C_{2-6} alkylcarbonyl, cyano, nitro, amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, amino(C_{1-6})alkyl, C_{1-6} alkylamino(C_{1-6})alkyl or di(C_{1-6})alkylamino(C_{1-6})alkyl.

5,622,951

PIPERAZINE DERIVATIVES AS 5-HT ANTAGONISTS

Terence J. Ward, Reading, and Mark A. Ashwell, Slough, both of England, assignors to John Wyeth & Brother Ltd., England

PCT No. PCT/GB93/02661, § 371 Date May 24, 1995, § 102(e) Date May 24, 1995, PCT Pub. No. WO94/15928, PCT Pub. Date Jul. 21, 1994

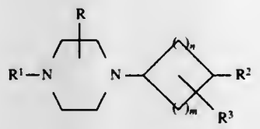
PCT Filed Dec. 24, 1993, Ser. No. 436,413

Claims priority, application United Kingdom, Jan. 6, 1993, 9300194

Int. Cl.[6] A61K *31/405;* **C07D** *403/04*

U.S. Cl. 514—253 **7 Claims**

1. A compound according to the formula



wherein:

R and R^3 are H;

n and m are each 2 or n is 1 and m is 3;

R^1 and R^2 are independently phenyl, optionally substituted by 1 or 2 substituents selected from lower alkyl, lower alkoxy, nitro and phenyl;

phenylloweralkyl;

pyridinyl, optionally substituted by lower alkyl and lower alkoxy;

pyrimidinyl,

or isoquinolinyl;

a cis or trans isomer;

or a pharmaceutically acceptable salt thereof.

5,622,950

PYRROLO-PYRIDINE DERIVATIVES

Raymond Baker, Green Tye; Neil R. Curtis, Puckeridge; Janusz J. Kulagowski, Bishops Stortford; Paul D. Leeson, Cambridge; Mark P. Ridgill, Watton-At-Stone, and Adrian L. Smith, Bishops Stortford, all of England, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

Division of Ser. No. 296,574, Aug. 26, 1995, which is a continuation-in-part of Ser. No. 200,113, Feb. 22, 1994, Pat. No. 5,432,177. This application Jun. 2, 1995, Ser. No. 459,993

Claims priority, application United Kingdom, Mar. 1, 1993, 9304111; Aug. 5, 1993, 9316275

Int. Cl.[6] A61K *31/495;31/50;* **C07D** *241/36;401/00*

U.S. Cl. 514—249 **11 Claims**

1. A compound of formula IID, or a pharmaceutically acceptable salt thereof:

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GLYCINE RECEPTOR ANTAGONISTS AND THE USE THEREOF

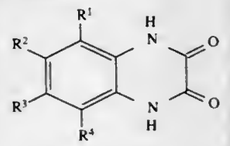
Eckard Weber, Laguna Beach, Calif., and John F. W. Keana, Eugene, Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Eugene Oregon, Eugene, Oreg., and The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 148,259, Nov. 5, 1993, Pat. No. 5,514,680, which is a continuation-in-part of Ser. No. 69,274, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,167, Dec. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 903,080, Jun. 22, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 405,713

Int. Cl.[6] A61K *31/495;* **C07D** *241/52*

U.S. Cl. 514—255 **19 Claims**

1. A 5,6,7-trisubstituted 1,4-dihydroquinoxaline-2,3-dione compound having the Formula:



or a tautomer or a pharmaceutically acceptable salt thereof;

wherein

R^1 is halo, amino, hydroxylamino, acylamino, haloalkyl or nitro;

R^2 is amino, hydroxylamino, acylamino, nitro, haloalkyl or halo;

R^3 is halo, amino, hydroxylamino, acylamino or haloalkyl; and

R^4 is hydrogen;

with the proviso that when R^2 is amino, then R^3 is other than halo or monohaloalkyl.

5,622,953

1-AMINO-3-PHENOXY PROPANE DERIVATIVES AS MODULATOR AGENTS AND THEIR APPLICATIONS

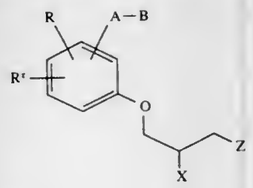
Bernd Janssen, Ludwigshafen; Andreas Kling, Mannheim; Stefan Mueller, Speyer; Kurt Ritter, Heidelberg; Rainer Schlecker, Bissersheim, all of Germany; Gerhard Keilhauer, Marlboro; Cynthia Romerdahl, Wayland, both of Mass., and Ulrich Traugott, Mountain Lakes, N.J., assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 137,226, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 38,706, Mar. 29, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,630

Int. Cl.[6] A61K *31/495;31/445;* **C07D** *241/04;401/10*

U.S. Cl. 514—255 **4 Claims**

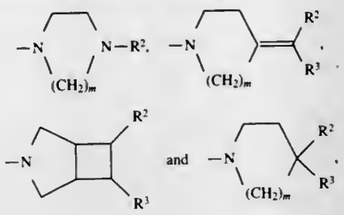
1. A 1-amino-3-phenoxy-propane derivative of formula I



where

X is H or OH:

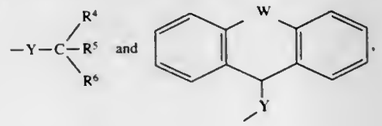
Z is selected from the group consisting of



where

m is 2; and

R^2 and R^3 independently from each other are hydrogen or phenyl; with the proviso that R^2 and R^3 are not hydrogen at the same time; and wherein the phenyl moiety may be substituted by up to three members selected from the group consisting of linear or branched alkyl, alkoxy, halogen, nitro,



where

R^4 is hydrogen;

R^5 is hydrogen;

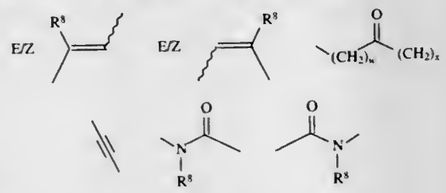
R^6 is cycloalky; or

R^5 and R^6 are each phenyl which may be substituted by a member selected from the group consisting of alkoxy, alkylenedioxy and halogen;

Y is a carbonyl- or a $(CH_2)_n$-moiety, where n is 0, 1 or 2; and

W is —CH=CH— or $—(CH_2)_p—$, where p is 2;

A is a member selected from the group consisting of



and

$$—(CH_2)_y—O—(CH_2)_z—,$$

where

R^8 is hydrogen or linear or branched alkyl;

w and x are 0 or 1;

y and z independently from each other are 0 or 1;

B is a member selected from the group consisting of phenyl, pyridyl, furanyl, thienyl, oxazolyl, isoxazolyl and thiazolyl; with the proviso that B is not phenyl when A is —O—CH_2—; where B may be substituted by up to two members selected from the group consisting of linear or branched alkyl, alkoxy, methoxyalkyl, carbonylalkoxy, CF_3, halogen, pyrazolyl, 1,2,4-oxadiazolyl and 1,2,4-thiadiazolyl; where the substituents on B may be substituted by a member selected from the group consisting of methoxyalkyl, carbonylalkoxy, CF_3, halogen, phenyl and benzyl;

wherein the phenyl and benzyl resides may be independently substituted by up to two members selected from the group consisting of halogen, alkyl, alkoxy and CF_3; and

R and R^x are selected from the group consisting of hydrogen, linear or branched alkyl, alkoxy, halogen, nitro, CF_3 and $NR'R^*$; where R' and R^* are linear alkyl or a cyclic hydrocarbon, annellated to the phenyl moiety of formula 1 to form a naphthalene group.

5,622,954

5[W(SUBSTITUTED ARYL)ALKENYLENE AND ALKYNYLENE]-2,4-DIAMINOPYRIMIDINES AS PESTICIDES

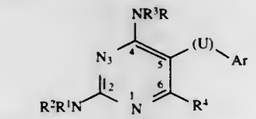
Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown, all of N.J.; Walter H. Yeager, Yardley, Pa.; Mary E. Brown, Belle Mead, and John W. Buser, North Brunswick, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 241,083, May 11, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 398,205

Int. Cl.[6] C07D *239/48;239/49;* **A01N** *43/54*

U.S. Cl. 514—256 **46 Claims**

1. A 5-substituted 2,4-diaminopyrimidine compound of the formula:



(I)

wherein

R, R^1, R^2, and R^3 are independently selected from hydrogen, alkyl, cycloalkyl, alkoxyalkyl, alkoxyalkoxyalkyl, arylalkyl, alkylcarbonyl, cycloalkylcarbonyl, alkoxycarbonyl, alkoxyalkylcarbonyl, alkoxyalkoxyalkylcarbonyl, arylcarbonyl, pyridinylcarbonyl, aryloxyalkyl, haloalkylcarbonyl, and cyanoalkylcarbonyl; wherein the alkyl groups contain from 1 to about 12 carbon atoms; or

R^1 and R^2, and R^3 and R, each independently, when taken together with pentylene or 3-oxapentylene, form piperidine and morpholine ring systems respectively;

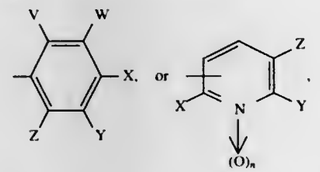
R^4 is hydrogen or lower alkyl;

U is alkenylene, haloalkenylene, alkoxyalkenylene, 2-(1-substituted-1 -cycloalkyl)alkenylene, 2-(substituted-oxacycloalkyl)alkenylene, 2-[2-substituted-2 -(1,3-dioxacycloalkyl)]alkenylene, dialkylsilylalkenylene, oxoalkenylene, or hydroxyalkenylene; or

alkynylene, alkoxyalkynylene, heterocycloalkylalkynylene, 2-(1-substituted-1 -cycloalkyl)alkynylene, 2-(substituted-oxacycloalkyl)alkynylene, 2-[2-substituted-2 -(1,3-dioxacycloalkyl)]alkynylene, dialkylsilylalkynylene, oxoalkynylene, or hydroxyalkynylene;

wherein the alkenylene and alkynylene groups each contain from 3 to about 12 carbon atoms, the alkyl groups contain from 1 to about 12 carbon atoms, and the cycloalkyl groups contain from 3 to about 12 carbon atoms; and the heterocyclo substituent of the heterocycloalkynylene is selected from 1-piperidinyl, 1 -morpholinyl, and 1-pyrrolidinyl;

Ar is



wherein

V, W, X, Y, and Z are independently selected from hydrogen, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, lower alkoxyalkyl, lower alkylsulfonyl, substituted aryl, substituted aryloxy, and hydroxy; wherein aryl and aryloxy are independently substituted with one or more substituents selected from lower alkyl, halogen, hydroxy, lower haloalkyl, lower alkoxy, lower haloalkoxy, lower alkoxyalkyl, carboxy, lower alkoxycarbonyl, cyano, nitro, aminocarbonyl, lower alkylsulfinyl, lower alkylcarbonylamino, lower alkylsulfonylamino, lower alkylthio, lower alkylsulfonyl, formyl, lower alkoxycarbonyl, dialkysilyloxy, phenyl, arylalkoxy, and aryloxyalkoxy substituents wherein the phenyl, phenoxy, arylalkoxy and aryloxyalkoxy substituents are optionally substituted with one or more of halogen, lower haloalkyl, lower alkyl, lower alkoxy, or lower alkylsulfonyl;

aryl is a carbocyclic aryl of 6 to 10 carbon atoms; and

n is 0 or 1;

and agriculturally acceptable salts thereof.

5,622,955

METHODS OF TREATING *CRYPTOSPORIDIUM PARVUM*

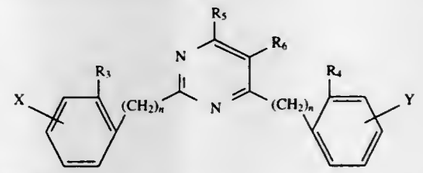
David W. Boykin, Atlanta, Ga.; Christine C. Dykstra, Chapel Hill, N.C.; Richard R. Tidwell, Pittsboro, N.C.; James E. Hall, Chapel Hill, N.C.; W. David Wilson; Arvind Kumar, both of Atlanta, Ga., and Byron L. Blagburn, Auburn, Ala., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.; Georgia State University Research Foundation, Inc., Atlanta, Ga., and Auburn University, Auburn, Ala.

Division of Ser. No. 305,823, Sep. 13, 1994, Pat. No. 5,521,189, which is a continuation-in-part of Ser. No. 238,766, May 6, 1994. This application May 31, 1995, Ser. No. 456,164

Int. Cl.[6] A61K *31/505;* **C07D** *239/26*

U.S. Cl. 514—256 **15 Claims**

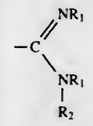
1. A method of treating *Cryptosporidium parvum* in a subject in need of such treatment, comprising administering to said subject a compound of Formula I:



(I)

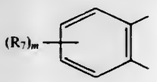
wherein:

X and Y are located in the para or meta positions and are



wherein:

each R_1 is independently selected from the group consisting of H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl or two R_1 groups together represent C_2–C_{10} alkyl, hydroxyalkyl, or alkylene, or two R_1 groups together represent



wherein m is from 1–3 and R_7 is H or -$CONHR_8NR_9R_{10}$, wherein R_8 is loweralkyl, and R_9 and R_{10} are each independently selected from the group consisting of H and lower alkyl;

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R_2 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl;

n is a number from 0 to 2;

R_3 and R_4 are each independently selected from the group consisting of H, loweralkyl, loweralkoxy, alkylaryl, aryl, oxyaryl, aminoalkyl, aminoaryl, or halogen; and

R_5 and R_6 are each independently selected from the group consisting of H, loweralkyl, aryl, alkylaryl, aminoalkyl, aminoaryl, halogen, oxyalkyl, oxyaryl, or oxyarylalkyl;

or a pharmaceutically acceptable salt thereof, in an amount effective to treat *Cryptosporidium parvum*.

5,622,956

NITRO-SUBSTITUTED HETEROCYCLIC COMPOUNDS

Kozo Shiokawa, Kanagawa-ken; Shinichi Tsuboi, Tokyo; Shoko Sasaki, Tokyo; Koichi Moriya, Tokyo; Yumi Hattori, Tokyo, and Katsuhiko Shibuya, Tokyo, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Division of Ser. No. 291,236, Aug. 16, 1994, Pat. No. 5,472,960, which is a division of Ser. No. 126,950, Sep. 27, 1993, Pat. No. 5,366,976, which is a division of Ser. No. 998,337, Dec. 30, 1992, Pat. No. 5,290,779, which is a division of Ser. No. 823,240, Jan. 21, 1992, Pat. No. 5,231,098, which is a division of Ser. No. 699,068, May 13, 1991, Pat. No. 5,122,527, which is a division of Ser. No. 510,509, Apr. 18, 1990, Pat. No. 5,036,082, which is a division of Ser. No. 353,370, May 17, 1989, Pat. No. 4,960,780, which is a division of Ser. No. 208,421, Jun. 17, 1988, Pat. No. 4,876,263. This application Jun. 5, 1995, Ser. No. 461,903

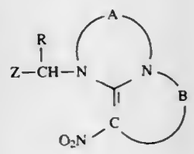
Claims priority, application Japan, Jun. 26, 1987, 62-157528

Int. Cl.[6] C07D *487/04*; A61K *31/505*

U.S. Cl. 514—258 **4 Claims**

1. A nitro-substituted heterocyclic compound of the formula (I):

(I)



wherein

R represents hydrogen or C_{1-4}-alkyl;

Z represents C_{6-10}-aryl, or a 5- to 6-membered heterocyclic group containing 1 to 2 hetero atoms selected from the group consisting of O, S and N, at least one of which is a nitrogen atom, and said aryl and heterocyclic group is unsubstituted or substituted by a member selected from the group consisting of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-haloalkyl, C_{1-4}-alkylthio, C_{1-4}-haloalkoxy, C_{1-4}-haloalkylthio, nitro and cyano;

A represents unsubstituted propylene or propylene substituted by methyl; and

B represents 3 carbon atoms of a heterocyclic ring which is formed, together with the adjacent C-atom and N-atom and is unsubstituted or substituted by at least one substituent selected from the group consisting of halogen, C_{1-6}-alkyl, C_{1-4}-alkoxy, alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part, unsubstituted or substituted C_{6-10}-aryl, keto, imino, phenoxy, C_{1-4}-alkylthio, alkoxycarbonylimino having 1 to 4 carbon atoms in the alkoxy part, phenoxycarbonylimino, benzoylimino, benzyl, cyano, thioketo, hydroxy and C_{1-2}-alkylidene.

5,622,957

BENZOPYRROLIZINOQUINOLIZINONES

Jean-Daniel Brion, Saint-Leu-la-Foret; Claude Thal, Sceaux; Luc Demuynck, Orleans; Jean-Gilles Parmentier, Issy les Moulineaux; Jean Lepagnol, Chaudon; Pierre Lestage, Paris; Jean-François Pujol, Lyons; Pascal Schmitt, Metz-Queleu, and Pierre Potier, Paris, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 354,660, Dec. 13, 1994, Pat. No. 5,602,131. This application May 3, 1995, Ser. No. 433,163

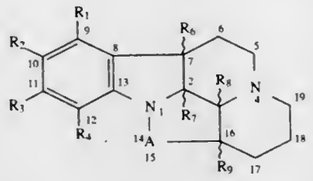
Claims priority, application France, Dec. 14, 1993, 93 14944

Int. Cl.[6] A61K *31/475*

U.S. Cl. 514—279 **4 Claims**

1. A compound selected from those of formula (I):

(I)



wherein:

R_1, R_2, R_3 and R_4, which may be identical or different, are: selected independently of one another from:

hydrogen,

halogen,

hydroxy,

linear or branched (C_1–C_6)-alkyl optionally substituted by halogen, by one or more amino, by one or more nitro, by linear or branched (C_1–C_6)-alkoxy and/or by aryl, selected from phenyl and naphthyl, which are themselves optionally substituted by halogen, nitro, amino, (C_1–C_6)-alkyl and/or (C_1–C_6)-alkoxy,

and linear or branched (C_1–C_6)-alkoxy optionally substituted by halogen, by amino, by one or more nitro, and/or by one or more linear or branched (C_1–C_6)-alkoxy,

or R_1, R_2, R_3 and R_4, taken in pairs and carded by adjacent carbon atoms, form methylenedioxy or ethylenedioxy,

R_6 and R_7, either each simultaneously represents hydrogen, adopting a cis-configuration with respect to one another,

or together form a bond,

no two adjacent R_1 through R_4 groups being tertiary butyl,

R_8 and R_9, either each simultaneously represents hydrogen, adopting a cis- or trans-configuration with respect to one another,

or together form a bond, in which case R_6 and R_7 also together form a bond,

A represents the bivalent radical

wherein

Z is selected from oxygen and sulfur,

R_5 is selected from hydrogen and linear or branched (C_1–C_6)-alkyl optionally its optical isomers alone or in admixture, and where appropriate, their pharmaceutically-acceptable addition salts with an acid.

5,622,958

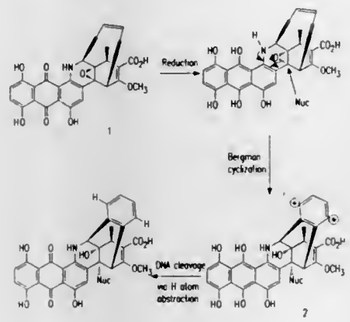
ENEDIYNE QUINONE IMINES AND METHODS OF PREPARATION AND USE THEREOF

Samuel J. Danishefsky, New Haven, Conn.; Matthew D. Shair, New York, N.Y.; Taeyoung Yoon, Pasadena, Calif., and T.-C. Chou, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Dec. 1, 1994, Ser. No. 347,952

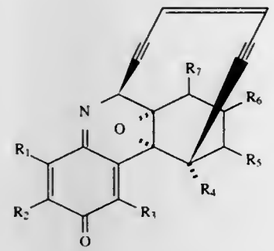
Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—280 **45 Claims**



Scheme 1 Mode of action of dynemicin A

1. A compound having the structure:



wherein R_1, R_2 and R_3 are independently the same or different and are H, Br, Cl, F, CO_2H, or linear or branched C_1–C_6 alkyl, linear or branched acylamino, linear or branched acyloxy, linear or branched alkoxycarbonyl, linear or branched alkoxy, aryloxy, linear or branched hydroxyalkyl, linear or branched aminoalkyl, phenyl, pyridyl, pyrryl, indolyl, naphthyl, thiophenyl or furanyl; wherein R_4 is H, OH or linear or branched alkoxy, linear or branched alkoxycarbonyl, linear or branched acyloxy or aryloxy; wherein R_5 is H, Br, Cl, F, O═, OH or S—SR, or linear or branched C_1–C_6 alkyl, phenyl, pyridyl, pyrryl, indolyl, naphthyl, thiophenyl or furanyl, linear or branched alkoxy, linear or branched acyloxy or linear or branched hydroxyalkyl; wherein R_6 is H, Br, Cl, F, CO_2H, OH or S—SR', or linear or branched C_1–C_6 alkyl, phenyl, pyridyl, pyrryl, indolyl, naphthyl, thiophenyl or furanyl, linear or branched alkoxycarbonyl, linear or branched alkoxy or linear or branched hydroxyalkyl; wherein R_7 is H, OH or S—SR", or linear C_1–C_6 alkyl, linear or branched alkoxycarbonyl, linear or branched alkoxy or linear or branched hydroxyalkyl; and wherein R, R' and R" are independently the same or different and are linear or branched C_1–C_6 alkyl, linear or branched acyl or linear or branched alkoxyalkyl; with the proviso that (a) R_1 or R_2 is H, Br, Cl, F, CO_2H, or linear C_1–C_6 alkyl, linear or branched acylamino, linear or branched acyloxy, linear or branched alkoxycarbonyl, linear or branched alkoxy, aryloxy, linear or branched hydroxyalkyl, or linear or branched aminoalkyl and (b) either R_5 or R_6 is H.

5,622,959

METHOD OF TREATING RETROVIRAL INFECTIONS IN MAMMALS

Esther Priel, Beer Sheva, Israel; Donald G. Blair, Kensington, and Stephen D. Showalter, Frederick, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 520,456, May 8, 1990, Pat. No. 5,422,344. This application Mar. 3, 1995, Ser. No. 397,936

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—283 **9 Claims**

1. A method for treating retroviral infections in a mammal, including humans, comprising administering to said mammal an anti-retroviral effective amount of a topoisomerase I inhibitor.

5,622,960

TOPOISOMERASE II INHIBITORS AND THERAPEUTIC USES THEREFOR

Yves Pommier, Bethesda, Md.; Timothy L. MacDonald, and Jose S. Madalengoitia, both of Charlottesville, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 868,408, Apr. 14, 1992, abandoned. This application Oct. 23, 1992, Ser. No. 965,922

Int. Cl.[6] C07D *471/00*; A61K *31/44*

U.S. Cl. 514—287 **9 Claims**

1. A compound that inhibits topoisomerase II catalytic activity and that is represented by the following formula (C):

(C)

wherein

(i) X denotes NH;

(ii) R_6 denotes F, Cl, Br, CN, OH, NH_2 or H;

(iii) R_7 denotes H, OH, the formula

wherein

R denotes H, OH, F, Br, Cl, NO_2, NH_2, CN, OCH_3, or $CO_2CH_2CH_3$;

R_7 also denotes the formula

$$—T—(CH_2)_nZ$$

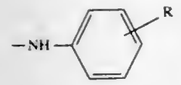
wherein

T denotes NH or O;Z denotes NH_2, OH, $N(CH_3)_2$, or $N(CH_2CH_2Cl)_2$; n is 2,3 or 4; and

R_7 may be derivatized with a 4,6 o-protected sugar; and

(iv) W and W' are the same or different and denote, respectively, H or F, provided that if R_6 is H, then R_7 denotes the formula

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wherein
R denotes H, OH, F, Br, Cl, NO_2, NH_2, CN, OCH_3, or $CO_2CH_2CH_3$; or



wherein
T denotes NH or O; Z denotes NH_2, OH, $N(CH_3)_2$, or $N(CH_2CH_2Cl)_2$; n is 2, 3 or 4.

5,622,961

5α-REDUCTASE INHIBITORS

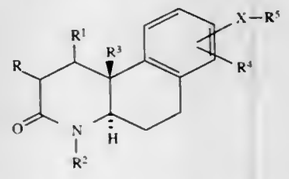
James E. Audia; Loretta A. McQuaid; Blake L. Neubauer, and Vincent P. Rocco, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,282, Sep. 20, 1994. This application May 11, 1995, Ser. No. 439,396

Int. Cl.[6] A61K *31/47;31/50;31/505;* **C07D** *237/00;221/06*

U.S. Cl. 514—290 **41 Claims**

1. A method for treating conditions consequent upon an excess of 5α-reductase activity comprising the administration to a patient in need of such treatment a compound of formula I:



wherein
R and R^1 both represent hydrogen or combine to form a bond;
R^2 represents hydrogen or C_1–C_3 alkyl;
R^3 represents methyl or ethyl;
R^4 and —X—R^5 each occupies one of the 7-, 8- and 9-positions;
R^4 represents hydrogen, halo, methyl or ethyl;
X represents C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, a bond, —SO—, —SO_2—, —CO—Y—$(CH_2)_n$—, [—Y—CO—$(CH_2)_n$]—Y—CO—$(CH_2)_n$, —CO—, —Z—$(CH_2)_n$—, or —SO_3—; wherein X groups which are not symmetrical may be in either orientation;
Y represents —S—, —O—, or —NH—;
Z represents —O— or —S—;
n represents 0–3;
R^5 represents phenyl, naphthalenyl, pyridinyl, pyrazinyl, pyridazinyl, pyrimidinyl, anthracenyl, acenaphthalenyl, thiazolyl, benzimidazolyl, indazolyl, thiophenyl, phenanthrenyl, quinolinyl, fluorenyl, isoquinolinyl, indanyl, benzopyranyl, indolyl, benzisoquinolinyl, benzindolyl, benzothiazolyl, benzothiophenyl, quinoxalinyl, benzoxazolyl, tetrazolyl, naphthothiazolyl, quinazolinyl, thiazolopyridinyl, pyridazinoquinazolinyl, benzisothiazolyl, benzodioxolyl, benzodioxinyl, diphenylmethyl or triphenylmethyl;
the above R^5 groups are unsubstituted or substituted with 1–3 groups chosen from the group consisting of halo, trifluoromethyl, trifluoroethoxy, C_1–C_4 alkyl, trifluoromethoxy, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkylthio, C_1–C_6 alkanoyl, phenyl, oxo, phenoxy, phenylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, amino, C_1–C_3 alkylamino, diphenylmethylamino, triphenylmethylamino, benzyloxy, benzylthio, (mono-halo, nitro or CF_3)benzyl(oxy or thio), di(C_1–C_3 alkyl, C_3–C_6 cycloalkyl, or C_4–C_8 cycloalkylalkyl)amino, (mono-C_1–C_3 alkyl, C_1–C_3 alkoxy or halo)-(phenyl, phenoxy, phenylthio, phenylsulfonyl or phenoxysulfonyl), C_2–C_6 alkanoylamino, benzoylamino, diphenylmethylamino (C_1–C_3 alkyl), aminocarbonyl, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl)aminocarbonyl, halo-C_1–C_6 alkanoyl, aminosulfonyl, C_1–C_3 alkylaminosulfonyl, di(C_1–C_3 alkyl)aminosulfonyl, phenyl(oxy or thio) (C_1–C_3 alkyl), (halo, C_1–C_3 alkyl or C_1–C_3 alkoxy)phenyl(oxy or thio)(C_1–C_3 alkyl), benzoyl, or (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino)(C_1–C_3 alkyl);
or an above R^5 group is substituted with a morpholino(C_1–C_3 alkyl) group, a phenyl(C_1–C_3 alkyl)piperidinyl group, a phenyl(C_1–C_3 alkyl)-piperidinylaminocarbonyl group, a C_2–C_6 alkanoyl-aminothiophenyl group, or a (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino)naphthalenylsulfonylamino group;
or R^5 is a perhalophenyl group;
or a pharmaceutically acceptable salt thereof.

5,622,962

5α-REDUCTASE INHIBITORS

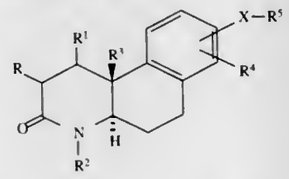
James E. Audia; Loretta A. McQuaid; Blake L. Neubauer, and Vincent P. Rocco, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,282, Sep. 20, 1994. This application May 11, 1995, Ser. No. 439,405

Int. Cl.[6] A61K *31/47;31/50;31/505;* **C07D** *237/00;221/06*

U.S. Cl. 514—290 **31 Claims**

1. A compound of the formula



wherein
R and R^1 both represent hydrogen or combine to form a bond;
R^2 represents hydrogen or C_1–C_3 alkyl;
R^3 represents methyl or ethyl;
R^4 and —X—R^5 each occupies one of the 7-, 8- and 9-positions:
R^4 represents hydrogen, halo, methyl or ethyl;
X represents C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, a bond, —SO—, —SO_2—, —CO—Y—$(CH_2)_n$—, —Y—CO—$(CH_2)_n$, —CO—, —Z—$(CH_2)_n$—, or —SO_3—; wherein X groups which are not symmetrical may be in either orientation;
Y represents —S—, —O—, or —NH—;
Z represents —O— or —S—;
n represents 0–3;
R^5 represents phenyl, naphthalenyl, pyridinyl, pyrazinyl, pyridazinyl, pyrimidinyl, anthracenyl, acenaphthalenyl, thiazolyl, benzimidazolyl, indazolyl, thiophenyl, phenanthrenyl, quinolinyl, fluorenyl, isoquinolinyl, indanyl, benzopyranyl, indolyl, benzisoquinolinyl, benzindolyl, benzothiazolyl, benzothiophenyl, quinoxalinyl, benzoxazolyl, tetrazolyl, naphthothiazolyl, quinazolinyl, thiazolopyridinyl, pyridazinoquinazolinyl, benzisothiazolyl, benzodioxolyl, benzodioxinyl, diphenylmethyl or triphenylmethyl;
the above R^5 groups are unsubstituted or substituted with 1–3 groups chosen from the group consisting of halo, trifluoromethyl, trifluoroethoxy, C_1–C_4 alkyl, trifluoromethoxy, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkylthio, C_1–C_6 alkanoyl, phenyl, oxo, phenoxy, phenylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, amino C_1–C_3 alkylamino, diphenylmethylamino, triphenylmethylamino, benzyloxy, benzylthio, (mono-halo, nitro or CF_3)benzyl(oxy or thio), di(C_1–C_3 alkyl, C_3–C_6 cycloalkyl, or C_4–C_8 cycloalkylalkyl)amino, (mono-C_1–C_3 alkyl, C_1–C_3 alkoxy or halo)-(phenyl, phenoxy, phenylthio, phenylsulfonyl or phenoxysulfonyl), C_2–C_6 alkanoylamino, benzoylamino, diphenylmethylamino (C_1–C_3 alkyl), aminocarbonyl, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl)aminocarbonyl, halo-C_1–C_6 alkanoyl, aminosulfonyl, C_1–C_3 alkylaminosulfonyl, di(C_1–C_3 alkyl)aminosulfonyl, phenyl(oxy or thio) (C_1–C_3 alkyl), (halo, C_1–C_3 alkyl or C_1–C_3 alkoxy)phenyl (oxy or thio)(C_1–C_3 alkyl), benzoyl, or (amino, C_1–C_3 alkylamino or di (C_1–C_3 alkyl)amino) (C_1–C_3 alkyl);
or an above R^5 group is substituted with a morpholino(C_1–C_3 alkyl) group, a phenyl(C_1–C_3 alkyl)piperidinyl group, a phenyl(C_1–C_3 alkyl)piperidinylaminocarbonyl group, a C_2–C_6 alkanoylaminothiophenyl group, or a (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino)naphthalenylsulfonylamino group;
or R^5 is a perhalophenyl group;
or a pharmaceutically acceptable salt thereof.

5,622,963

INNOVATIVE TECHNIQUE FOR IMMUNOSUPPRESSION INVOLVING ADMINISTRATION OF RAPAMYCIN LOADED FORMED BLOOD ELEMENTS

Jay J. Armstrong, Bensalem, Pa., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 998,065, Dec. 22, 1992, Pat. No. 5,482,945. This application Apr. 18, 1995, Ser. No. 423,182

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **2 Claims**

1. A method for inducing suppression of the immune responses of pulmonary inflammatory disease which consists of intravenous or intraarterial administration of a therapeutically effective amount of rapamycin-loaded formed blood elements suspended in blood plasma or a physiological substitute thereof.

5,622,964

HETEROCYCLIC DERIVATIVES

Cyrus J. Ohnmacht, Jr.; Diane A. Trainor; Janet M. Forst; Mark M. Stein, and Robert J. Harris, all of Wilmington, Del., assignors to Zeneca Limited, London, England

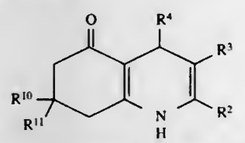
Continuation of Ser. No. 227,833, Apr. 14, 1994, Pat. No. 5,455,253, which is a continuation-in-part of Ser. No. 135,896, Oct. 13, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,713

Claims priority, application United Kingdom, Oct. 20, 1992, 9221989; Apr. 20, 1993, 9308065

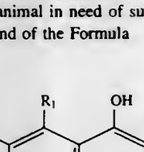
Int. Cl.[6] C07D *405/04;215/20;* **A61K** *31/435*

U.S. Cl. 514—311 **13 Claims**

1. A method for the treatment of asthma, comprising administering to a mammal in need of such treatment an effective amount of a compound of Formula I



or a pharmaceutically acceptable salt thereof, wherein: either
R^2 is hydrogen, (1–6C)alkyl or (1–4C)fluoroalkyl; and
R^3 is hydrogen, cyano (1–6C)alkyl, (1–6C)fluoroalkyl or ethanoyl; or
R^2 and R^3 when taken together form a 1,4-butandiyl;
R^4 is 2- or 3-thienyl or furyl substituted at the 4- and/or 5-position(s) by a radical or radicals independently selected from a group (a) consisting of nitro, cyano, halo (1–4C)alkyl, (1–4C)alkylsulphonyl and 2-thienyl provided that a 3-thienyl or furyl group may only be substituted at the 5-position; or
R^4 is a 2-pyridyl which is substituted at the 5 position and/or either at the 4 position or the 6 position by a member of the above group (a); or
R^4 is a 3-pyridyl which is substituted at the 6 position by a member of the above group (a); or
R^4 is a 4-pyridyl which is a substituted at the 2 position by a member of the above group (a); or
R^4 is a group of Formula II,



wherein:
R^7 is hydrogen; and
R^8 and R^9 are independently selected from hydrogen, hydroxy, (1–4C)alkoxy, nitro, cyano, (1–4C)fluoroalkyl, (1–4C)fluoroalkoxy, halo, (1–4C)alkyl, (1–4C)alkanoyl, phenyl an (1–4C)phenylulfonyl; or
R^8 and R^9 taken together are (1–3C)alkylenedioxy; and
R^{10} and R^{11} are each independently hydrogen or (1–4C)alkyl, but excluding 3-cyano-4 -phenyl-2,7,7-trimethyl-4,6,7,8-tetrahydro-5(1H)-quinolone and 3-ethanoyl-4-phenyl-2,7,7 -trimethyl-4,6,7,8-tetrahydro-5(1H) quinolone.

5,622,965

4-HYDROXY-3-NITRO-1,2-DIHYDROQUINOLIN-2-ONES AND THE USE THEREOF AS EXCITATORY AMINO ACID AND GLYCINE RECEPTOR ANTAGONISTS

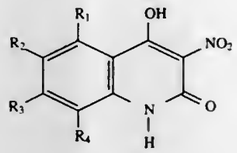
Sui X. Cai, Irvine; Eckard Weber, Laguna Beach, both of Calif., and John F. W. Keana, Eugene, Oreg., assignors to State of Oregon, acting by and through The Oregon State Board of Higher Education, acting for and on behalf of The Oregon Health Sciences University and The University of Oregon, Eugene Oregon, Eugene, Oreg., and The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 30,608, Mar. 12, 1993, abandoned. This application Aug. 2, 1993, Ser. No. 101,244

Int. Cl.[6] A61K *31/47;* **C07D** *215/22;215/38*

U.S. Cl. 514—312 **22 Claims**

1. A method of treating neuronal loss associated with stroke, ischemia, CNS trauma, hypoglycemia or surgery, comprising administering to an animal in need of such treatment an effective amount of a compound of the Formula



or a pharmaceutically acceptable salt thereof:
wherein
R_1–R_4 may be hydrogen, nitro, amino, halo, haloalkyl, cyano, alkyl, alkenyl, alkynyl, azido, acylamino, sulfonyl, aryl or alkoxy.

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5,622,966
7-SUBSTITUTED QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

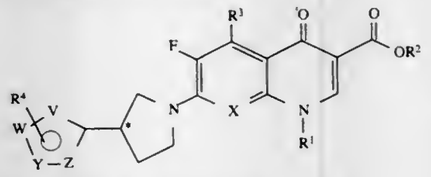
Edgardo Laborde, Canton, and Mel Schroeder, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 312,598, Sep. 27, 1994, Pat. No. 5,446,044, which is a division of Ser. No. 221,145, Mar. 30, 1994, Pat. No. 5,384,407, which is a division of Ser. No. 14,286, Feb. 5, 1993, Pat. No. 5,342,844, which is a division of Ser. No. 832,188, Feb. 6, 1992, Pat. No. 5,221,676. This application May 25, 1995, Ser. No. 450,090

Int. Cl.[6] **A61K** *31/47;* **C07D** *401/04;471/04*

U.S. Cl. 514—300 **16 Claims**

1. A compound of the formula



wherein * denotes an asymmetric carbon;

X is C—H, C—F, C—Cl, C—OCH_3, C—CF_3, or N;

R^1 is a C_1–C_4-alkyl, C_3–C_6-cycloalkyl, or phenyl substituted by one or more halogen atoms;

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, or a cation;

R^3 is hydrogen, amino, or methyl;

V, W, Y, and Z are each independently C—H, oxygen, nitrogen, or sulfur;

R^4 is hydrogen or one, two or three substituents independently selected from C_1–C_4-alkyl, halo-substituted C_1–C_4-alkyl, hydroxy-substituted C_1–C_4-alkyl, halogen, hydroxy, C_1–C_4-alkoxy, mercapto, amino, mono-(C_1–C_4-alkyl)amino, di-(C_1–C_4-alkyl)amino, formamido, mono-(C_1–C_4-alkyl)amido, di-(C_1–C_4-alkyl)amido, cyano, nitro, C_1–C_4-alkoxycarbonyl, carboxyl, aminomethyl, mono-(C_1–C_4-alkyl)aminomethyl, di-(C_1–C_4-alkyl)aminomethyl, wherein free hydroxy and amino groups may be protected;

or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, provided that the ring comprising V, W, Y and Z is not 1,2,3-triazol-1-yl; 1,2,4-triazol-1-yl; 1,2,3,4-tetrazol-1yl; or 1,2,3,4-tetrazol-2-yl.

5,622,967
QUINOLONE CARBOXAMIDE CALPAIN INHIBITORS

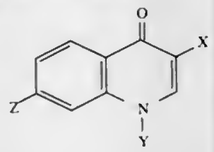
Roland E. Dolle, King of Prussia; Todd L. Graybill, Pottstown; Irennegbe K. Osifo, West Chester; Alex L. Harris, Lansdale; Matthew S. Miller, Newtown, and Jill S. Gregory, Phoenixville, all of Pa., assignors to Sterling Winthrop, Inc., New York, N.Y.

Division of Ser. No. 54,122, Apr. 26, 1993. This application May 25, 1995, Ser. No. 450,961

Int. Cl.[6] **C07D** *215/233;* **A61K** *31/47*

U.S. Cl. 514—312 **16 Claims**

1. A compound of the formula (I)



(I)

wherein:

Z is aryl, substituted aryl, phenyl-lower-alkyl, hetero-aryl selected from the group consisting of pyrazolyl, imidazolyl, isoxazolyl, tetrazolyl, furyl, thienyl, oxazolyl, thiazolyl, piperidyl, morpholinyl, imidazolinyl, piperazinyl, and thiamorpholinyl, substituted heteroaryl, heterocycloalkyl, heterocyclocalkyl-lower-alkyl, hetero-aryl-lower-alkyl wherein one or more hydrogens of aryl and heteroaryl is optionally replaced by A and B;

Y is phenyl, phenyl-lower-alkyl, wherein one or more hydrogens of phenyl is optionally replaced by A and B;

X is —$CONH_2$, CONHOH, $CON(R)_2$, or CONR—CHR—CO—A or CONR—$(CHR)_n$—A;

A and B are independently H, OH, OR, lower alkyl, $N(R)_2$, $CON(R)_2$, SR, $NHSO_2R$, hydroxy-lower-alkyl, NHCOR, $NRSO_2CF_3$, OSO_2CF_3, or CN;

R is phenyl-lower-alkyl, hydroxy-lower-alkyl, CO-lower-alkyl, or CO—$(CH_2)_n$-aryl; and

is 1, 2, or 3,

a pharmaceutically acceptable salt thereof.

5,622,968
ACENAPHTHYL SUBSTITUTED GUANIDINES AND METHODS OF USE THEREOF

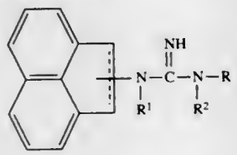
Stanley M. Goldin, Lexington; Subbarao Katragadda, Belmont; Lain-Yen Hu, Bedford; N. Laxma Reddy, Malden; James B. Fischer, Cambridge; Andrew G. Knapp, Salem, and Lee D. Margolin, Belmont, all of Mass., assignors to Cambridge NeuroScience, Inc., Cambridge, Mass.

Continuation of Ser. No. 343,829, Nov. 22, 1994, which is a division of Ser. No. 833,421, Feb. 10, 1992, Pat. No. 5,403,861, which is a continuation of Ser. No. 652,104, Feb. 8, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,312

Int. Cl.[6] **A61K** *31/47;31/405;31/34;311/155*

U.S. Cl. 514—313 **28 Claims**

1. A method for blocking voltage sensitive calcium channels of mammalian neuronal cells comprising the administration to a mammal in need of such treatment, an effective amount of a compound having the formula:



wherein

R is cycloalkyl of 3 to 12 carbon atoms, carbocyclic aryl, alkaryl, aralkyl or heterocyclic having 6 to 18 carbon atoms and 1–3 separate of fused rings, and 0–5 O, N, and/or ring atoms in an aryl, alicyclic or mixed ring system;

R^1 and R^2 are the same or different and selected from the group consisting of hydrogen, lower C_{1-6} alkyl, lower C_{1-6} alkylamino, C_{5-10} aryl or substituted aryl;

wherein R and the acenaphthyl group are optionally substituted by hydroxy, acetate, oxo, amino, lower C_{1-6} alkyl, lower C_{1-6} alkyl amino, alkoxy of 1–6 carbon atoms, di-lower C_{2-12} alkyl amino, nitro, azido, sulfhydryl, cyano, isocyanato, halogen, amido, sufonato or carbamido.

5,622,969
METHOD OF TREATING LEUKOTRIENE CAUSED DISEASES WITH N-BENZYL DIHYDROINDOLE LTD_4 ANTAGONISTS

J. Scott Sawyer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

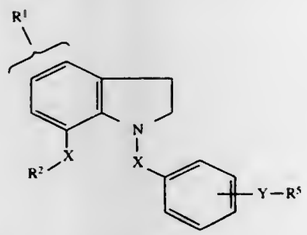
Division of Ser. No. 166,489, Dec. 14, 1993, Pat. No. 5,486,612. This application Mar. 31, 1995, Ser. No. 415,106

Int. Cl.[6] **A61K** *31/47;31/425;31/44*

U.S. Cl. 514—314 **6 Claims**

2. A method of treating an animal, including a human, suffering from or susceptible to a disease in which leukotrienes are a causal mediator which comprises administering an effective amount of a

compound of formula (II) or pharmaceutically acceptable salt or prodrug thereof;



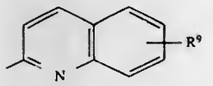
(II)

wherein;

R^1 is selected from the group consisting of hydrogen, halo, C_{1-4} alkyl, C_{1-4} alkoxy, nitrile, optionally protected carboxy, C_{1-4} alkoxy-carbonyl and trihalomethyl;

R^2 is tetrazolyl, nitrile, carboxy, C_{1-4} alkoxy-carbonyl or —$CONR^7R^8$ where R^7 and R^8 are each hydrogen or C_{1-4} alkyl;

R^5 is



where

R^9 is hydrogen, halo, C_{1-4} alkyl, C_{1-4} alkoxy or trihalomethyl;

each X is independently selected from a bond, —$(CH_2)_n$— where n is from 1 to 5, —O—$CR^{11}R^{12}$—, —$CR^{11}R^{12}$—$CR^{13}R^{14}$— or —CR^{11}=CR^{12}— where R^{11}, R^{12}, R^{13} and R^{14} are each hydrogen or C_{1-4} alkyl; and

Y is —O—$CR^{15}R^{16}$— or —CR^{15}=CR^{16}— where R^{15} and R^{16} are each hydrogen or C_{1-4} alkyl.

5,622,970
IMMUNOSUPPRESSIVE COMPOUNDS

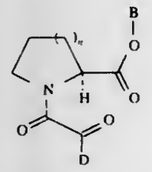
David A. Armistead, Maynard; Joshua S. Boger, Concord; Harold V. Meyers, Lexington; Jeffrey O. Saunders, Littleton, and Roger D. Tung, Cambridge, all of Mass., assignors to Vertex Pharmaceuticals, Incorporated, Cambridge, Mass.

Division of Ser. No. 27,870, Mar. 8, 1993, which is a divisIon of Ser. No. 547,814, Jul. 2, 1990, Pat. No. 5,192,773. This application Jun. 1, 1995, Ser. No. 456,572

Int. Cl.[6] **A61K** *31/445;31/40;* **C07D** *211/60;207/16*

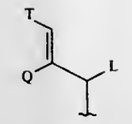
U.S. Cl. 514—315 **10 Claims**

1. An immunosuppressant compound represented by the formula:



and pharmaceutically acceptable salts thereof, wherein n is 1 or 2;

wherein B is CHL-Ar, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl, (C5–C7)-cycloalkyl, (C5–C7)-cycloalkenyl, Ar substituted (C1–C6)-alkyl or Ar-substituted (C2–C6)-alkenyl, or



wherein L and Q are independently hydrogen, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl;

wherein T is Ar or substituted cyclohexyl with substituents at positions 3 and 4 which are independently selected from the group consisting of hydrogen, hydroxyl, O-(C1–C4)-alkyl, O-(C2–C4)-alkenyl and carbonyl;

wherein Ar is selected from the group consisting of 1-naphthyl, 2-naphthyl, 2-furyl, 3-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl and phenyl having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, CF_3, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl, O-(C1–C4)-straight or branched alkyl, O-(C2–C4)-straight or branched alkenyl, O-benzyl, O-phenyl, amino and phenyl;

wherein D is O-(C1–C4)-straight or branched alkyl, O-(C2–C4)-straight or branched alkenyl, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl, ((C5–C7)-cycloalkyl or (C5–C7)-cycloalkenyl) which may be substituted with (C1–C4)-straight or branched alkyl or (C2–C4)-straight or branched alkenyl, 2-indolyl, 3-indolyl, ((C1–C4)-alkyl or (C2–C4)-alkenyl)-Ar or Ar; and

wherein the stereochemistry at carbon position 1 is R or S;

provided that:

when n is 1 and D is phenyl, B is not hydrogen, methyl, ethyl, isopropyl or benzyl;

when n is 2 and D is methoxy, B is not tert-butyl or methyl; and

when n is 1 or 2 and D is (C1–C6)-straight or branched alkyl, B is not benzyl or (C1–C6)-straight or branched alkyl.

5,622,971
ENDOTHELIN ANTAGONISTS

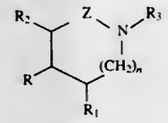
Martin Winn, Deerfield; Steven A. Boyd, Mundelein; Charles W. Hutchins, Gurnee; Hwan-Soo Jae, Glencoe; Andrew S. Tasker, Gurnee; Thomas W. von Geldern, Richmond; Jeffrey A. Kester, Deerfield, and Bryan K. Sorensen, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 442,575, May 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 334,717, Nov. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 293,349, Aug. 19, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,935

Int. Cl.[6] **A61K** *31/44;* **C07D** *211/08*

U.S. Cl. 514—315 **22 Claims**

1. A compound of the formula:



wherein

Z is —$C(R_{18})(R_{19})$— or —C(O)— wherein R_{18} and R_{19} are independently selected from hydrogen and loweralkyl;

n is 1;

R is —$(CH_2)_m$—W wherein m is an integer from 0 to 6 and W is

(a) —$C(O)_2$—G wherein G is hydrogen or a carboxy protecting group,

(b) —$PO3H_2$,

(c) —P(O)(OH)E wherein E is hydrogen, loweralkyl or arylalkyl,

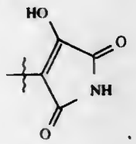
(d) —ON,

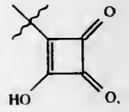
(e) —C(O)NHR_{17} wherein R_{17} is loweralkyl,

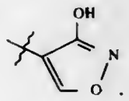
(f) alkylaminocarbonyl,

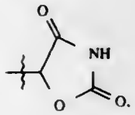
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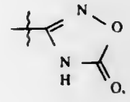
(g) dialkylaminocarbonyl,
(h) tetrazolyl,
(i) hydroxy,
(j) alkoxy,
(k) sulfonamido,
(l) —C(O)NHS(O)$_2$R$_{16}$ wherein R$_{16}$ is loweralkyl, haloalkyl, phenyl or dialkylamino,
(m) —S(O)$_2$NHC(O)R$_{16}$,

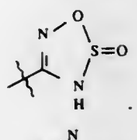
(n) 

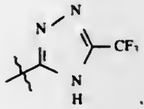
(o) 

(p) 

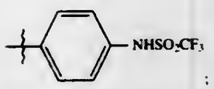
(q) 

(r) 

(s) 

(t) 

or

(u) 

;

R$_1$ and R$_2$ are independently selected from hydrogen, loweralkyl, alkoxyalkyl, alkoxycarbonylalkyl, hydroxyalkyl, alkoxyalkoxyalkyl, thioalkoxyalkoxyalkyl, cycloalkyl, aryl, arylalkoxyalkyl and heterocyclic, with the proviso that one of R$_1$ and R$_2$ is other than hydrogen; R$_3$ is

(a) R$_4$—C(O)—R$_5$—, R$_6$—S(O)$_2$—R$_7$— or R$_{26}$—S(O)—R$_{27}$— wherein R$_5$ is (i) a covalent bond, (ii) alkylene, (iii) alkenylene, (iv) —N(R$_{20}$)—R$_8$— or —R$_{8a}$—N(R$_{20}$)—R$_8$— wherein R$_8$ and R$_{8a}$ are independently selected from alkylene and R$_{20}$ is hydrogen, loweralkyl, alkenyl, cylcoalkyl or cycloalkylalkyl or (v) —O—R$_9$— or —R$_{9a}$—O—R$_9$ wherein R$_9$ and R$_{9a}$ are independently selected from alkylene; R$_7$ is (i) a covalent bond, (ii) alkylene, (iii) alkenylene or (iv) —N(R$_{21}$)—R$_{10}$— wherein R$_{10}$ is alkylene and R$_{21}$ is hydrogen or loweralkyl; R$_4$ and R$_6$ are independently selected from the group consisting of
(i) (R$_{11}$)(R$_{12}$)N— wherein R$_{11}$ and R$_{12}$ are independently selected from
(1) hydrogen,
(2) loweralkyl,
(3) alkoxyalkyl,
(4) alkenyl,
(5) alkynyl,
(6) cycloalkyl,
(7) cycloalkylalkyl,
(8) aryl,
(9) heterocyclic,
(10) arylalkyl, and
(11) (heterocyclic)alkyl,
(ii) loweralkyl,
(iii) alkenyl,
(iv) alkynyl,
(v) cycloalkyl,
(vi) cycloalkylalkyl,
(vii) aryl,
(viii) ar/lalkyl,
(ix) heterocyclic,
(x) (heterocyclic)alkyl and
(xi) alkoxyalkyl;
R$_{26}$ is (i) loweralkyl, (ii) haloalkyl, (iii) alkenyl, (iv) alkynyl, (v) cycloalkyl, (vi) cycloalkylalkyl, (vii) and, (viii) arylalkyl, (ix) heterocyclic, (x) (heterocyclic)alkyl, (xi) alkoxyalkyl or (xii) alkoxy-substituted haloalkyl; and R$_{27}$ is alkylene or alkenylene;
(b) R$_{22}$O—C(O)—R$_{23}$— wherein R$_{22}$ is a carboxy protecting group or heterocyclic and R$_{23}$ is (i) a covalent bond, (ii) alkylene, (iii) alkenylene or (iv) —N(R$_{24}$)—R$_{25}$— wherein R$_{25}$ is alkylene and R$_{24}$ is hydrogen or loweralkyl,
(c) loweralkyl,
(d) alkenyl,
(e) alkynyl,
(f) cycloalkyl,
(g) cycloalkylalkyl,
(h) aryl,
(i) arylalkyl,
(j) aryloxyalkyl,
(k) heterocyclic,
(l) (heterocyclic)alkyl,
(m) alkoxyalkyl,
(n) alkoxyalkoxyalkyl, or
(o) R$_{13}$—C(O)—CH(R$_{14}$)— wherein R$_{13}$ is amino, alkylamino or dialkylamino and R$_{14}$ is aryl or R$_{15}$—C(O)— wherein R$_{15}$ is amino, alkylamino or dialkylamino;
or a pharmaceutically acceptable salt thereof with the proviso that when Z is CH$_2$—R$_1$ is loweralkyl or aryl, R$_2$ is hydrogen and R is hydroxy or hydroxyalkyl, then R$_3$ is other than loweralkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, —C(O)O-loweralkyl,—C(O)O-alkenyl, or R$_4$—C(O)—R$_5$, wherein R$_5$ is a covalent bond or alkylene and R$_4$ is loweralkyl, cycloalkyl or cycloalkylalkyl.

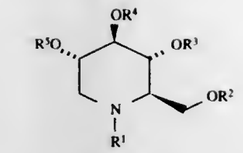
5,622,972

METHOD FOR TREATING A MAMMAL INFECTED WITH RESPIRATORY SYNCYTIAL VIRUS

Martin L. Bryant, Chesterfield, Mo.; Francis J. Koszyk, Prospect Heights, Ill.; Richard A. Mueller, Glencoe, Ill., and Richard A. Partis, Evanston, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 201,537, Feb. 25, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 585,603
Int. Cl.^{6} A61K *31/445*
U.S. Cl. 514—315 **12 Claims**

1. A method for treating a mammal infected with respiratory syncytial virus (RSV) comprising administering to the mammal an RSV inhibitory effective amount of a compound or its pharmaceutically acceptable salt of the formula



wherein R^1 is selected from the group consisting of H, linear or branched C$_1$–C$_{14}$ alkyl; C$_7$–C$_{14}$ aroyl; C$_7$–C$_{14}$ aralkyl, wherein the aryl moiety of the aralkyl or aroyl is optionally substituted with from 1 to 3 substituents selected from the group of C$_1$–C$_6$ alkyl, C$_1$–C$_6$ alkoxy, hydroxy, Cl, Br and F; and wherein R^2, R^3, R^4 and R^5 are independently selected from the group consisting of H and acyl group of the formula



wherein R^6 is a linear or branched C$_1$–C$_{10}$ alkyl, a C$_3$–C$_7$ cycloalkyl, or a C$_4$–C$_{10}$ (cycloalkyl)alkyl moiety.

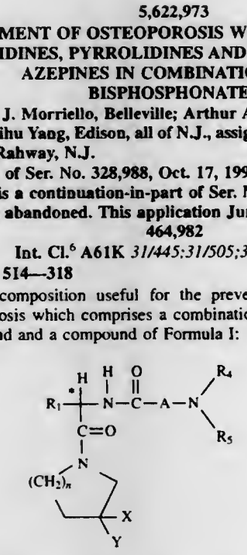
5,622,973

TREATMENT OF OSTEOPOROSIS WITH SUBSTITUTED PIPERIDINES, PYRROLIDINES AND HEXAHYDRO-1H-AZEPINES IN COMBINATION WITH BISPHOSPHONATES

Gregori J. Morriello, Belleville; Arthur A. Patchett, Westfield, and Lihu Yang, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

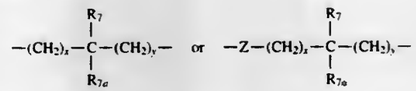
Division of Ser. No. 328,988, Oct. 17, 1994, Pat. No. 5,492,816, which is a continuation-in-part of Ser. No. 173,449, Dec. 23, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,982
Int. Cl.^{6} A61K *31/445;31/505;31/41;31/425*
U.S. Cl. 514—318 **26 Claims**

1. A composition useful for the prevention or treatment of osteoporosis which comprises a combination of a bisphosphonate compound and a compound of Formula I:



Formula I

wherein:
R$_1$ is selected from the group consisting of: C$_1$–C$_{10}$ alkyl, aryl, aryl(C$_1$–C$_6$ alkyl), (C$_3$–C$_7$ cycloalkyl)(C$_1$–C$_6$ alkyl)—, (C$_1$–C$_5$ alkyl)—K—(C$_1$–C$_5$ alkyl)—, aryl(C$_0$–C$_5$ alkyl)—K—(C$_1$–C$_5$ alkyl)—, and (C$_3$–C$_7$ cycloalkyl)(C$_0$–C$_5$ alkyl)—K—(C$_1$–C$_5$ alkyl)—, where K is O, S(O)$_m$, N(R$_2$)C(O), C(O)N(R$_2$), OC(O), C(O)O, —CR$_2$=CR$_2$—, or —C≡C—, where aryl is selected from: phenyl, naphthyl, indolyl, azaindole, pyridyl, benzothienyl, benzofuranyl, thiazolyl, or benzimidazolyl, and R$_2$ and alkyl may be further substituted by 1 to 9 halogen, S(O)$_m$R$_{2a}$, 1 to 3 of OR$_{2a}$ or C(O)OR$_{2a}$, and aryl may be further substituted by 1 to 3 of C$_1$–C$_6$ alkyl, 1 to 3 of halogen, 1 to 2 of OR$_2$, methylenedioxy, —S(O)$_m$R$_2$, 1 to 2 of —CF$_3$, —OCF$_3$, nitro, —N(R$_2$)C(O)(R$_2$), —C(O)OR$_2$, —C(O)N(R$_2$)(R$_2$), —1H-tetrazol-5-yl, —SO$_2$N(R$_2$)(R$_2$), —N(R$_2$)SO$_2$ phenyl, or —N(R$_2$)SO$_2$R$_2$;
R$_2$ is selected from: hydrogen, C$_1$–C$_6$ alkyl, or C$_3$–C$_7$ cycloalkyl, and where two C$_1$–C$_6$ alkyl groups are present on one atom, they may be optionally joined to form a C$_3$–C$_6$ cyclic ring, optionally including oxygen, sulfur or NR$_{3a}$, where R$_{3a}$ is hydrogen, or C$_1$–C$_6$ alkyl, optionally substituted by hydroxyl;
X is selected from: hydrogen, —C≡N, —(CH$_2$)$_q$N(R$_2$)C(O)R$_2$, —(CH$_2$)$_q$N(R$_2$)C(O)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$N(R$_2$)SO$_2$(CH$_2$)$_t$aryl, —(CH$_2$)$_q$N(R$_2$)SO$_2$R$_2$, —(CH$_2$)$_q$N(R$_2$)C(O)N(R$_2$)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$N(R$_2$)C(O)N(R$_2$)(R$_2$), —(CH$_2$)$_q$C(O)N(R$_2$)(R$_2$), —(CH$_2$)$_q$C(O)N(R$_2$)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$C(O)OR$_2$, —(CH$_2$)$_q$C(O)O(CH$_2$)$_t$aryl, —(CH$_2$)$_q$OR$_2$, —(CH$_2$)$_q$OC(O)R$_2$, —(CH$_2$)$_q$OC(O)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$OC(O)N(R$_2$)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$OC(O)N(R$_2$)(R$_2$), —(CH$_2$)$_q$C(O)R$_2$, —(CH$_2$)$_q$C(O)(CH$_2$)$_t$aryl, —(CH$_2$)$_q$N(R$_2$)C(O)OR$_2$, —(CH$_2$)$_q$N(R$_2$)SO$_2$N(R$_2$)(R$_2$), —(CH$_2$)$_q$S(O)$_m$R$_2$, and —(CH$_2$)$_q$S(O)$_m$(CH$_2$)$_t$aryl, where an R$_2$, (CH$_2$)$_q$ and (CH$_2$)$_t$ group may be optionally substituted by 1 to 2 C$_1$–C$_4$ alkyl, hydroxyl, C$_1$–C$_4$ lower alkoxy, carboxyl, CONH$_2$, S(O)$_m$CH$_3$, carboxylate C$_1$–C$_4$ alkyl esters, or 1H-tetrazol-5-yl, and aryl is phenyl, naphthyl, pyridyl, thiazolyl, or 1H-tetrazol-5-yl groups which may be optionally substituted by 1 to 3 halogen, 1 to 3 —OR$_2$, —CON(R$_2$)(R$_2$), —C(O)OR$_2$, 1 to 3 C$_1$–C$_4$ alkyl, —S(O)$_m$R$_2$, or 1H-tetrazol-5-yl;
Y is selected from: hydrogen, C$_1$–C$_{10}$ alkyl, —(CH$_2$)$_t$aryl, —(CH$_2$)$_q$(C$_3$–C$_7$ cycloalkyl), —(CH$_2$)$_q$—K—(C$_1$–C$_6$ alkyl), —(CH$_2$)$_q$—K—(CH$_2$)$_t$aryl, —(CH$_2$)$_q$—K—(CH$_2$)$_t$(C$_3$–C$_7$ cycloalkyl containing O, NR$_2$, S), and —(CH$_2$)$_q$—K—(CH$_2$)$_t$(C$_3$–C$_7$ cycloalkyl), where K is O, S(O)$_m$, C(O)NR$_2$, CH=CH, C≡C, N(R$_2$)C(O), C(O)NR$_2$, C(O)O, or OC(O), and where the alkyl, R$_2$, (CH$_2$)$_q$ and (CH$_2$)$_t$ groups may be optionally substituted by C$_1$–C$_4$ alkyl, hydroxyl, C$_1$–C$_4$ lower alkoxy, carboxyl, —CONH$_2$ or carboxylate C$_1$–C$_4$ alkyl esters, and aryl is phenyl, naphthyl, pyridyl, 1-H-tetrazol-5-yl, thiazolyl, imidazolyl, indolyl, pyrimidinyl, thiadiazolyl, pyrazolyl, oxazolyl, isoxazolyl, thiopheneyl, quinolinyl, pyrazinyl, or isothiazolyl which is optionally substituted by 1 to 3 halogen, 1 to 3 —OR$_2$, —C(O)OR$_2$, —C(O)N(R2)(R2), nitro, cyano, benzyl, 1 to 3 C$_1$–C$_4$ alkyl, —S(O)$_m$R$_2$, or 1H-tetrazol-5-yl, with the proviso that if X is hydrogen, Y is other than hydrogen;
R$_4$ and R$_5$ are independently hydrogen, C$_1$–C$_6$ alkyl, or substituted C$_1$–C$_6$ alkyl where the substituents may be 1 to 5 halo, 1 to 3 hydroxy, 1 to 3 C$_1$–C$_{10}$ alkanoyloxy, 1 to 3 C$_1$–C$_6$ alkoxy, phenyl, phenyloxy, 2-furyl, C$_1$–C$_6$ alkoxycarbonyl, S(O)$_m$(C$_1$–C$_6$ alkyl), or R$_4$ and R$_5$ may be taken together to form —(CH$_2$)$_d$—L$_a$(CH$_2$)$_e$— where L$_a$ is —C(R$_2$)$_2$—, O,S(O)$_m$ or N(R$_2$), d and e are independently 1 to 3 and R$_2$ is as defined above;
A is:



where x and y are independently 0, 1, 2 or 3;
Z is N—R$_{6a}$ or O, where R$_{6a}$ is hydrogen or C$_1$–C$_6$ alkyl;
R$_7$ and R$_{7a}$ are independently hydrogen, C$_1$–C$_6$ alkyl, trifluoromethyl, phenyl, or substituted C$_1$–C$_6$ alkyl where the substituents are imidazolyl, phenyl, indolyl, p-hydroxyphenyl, OR$_2$, S(O)$_m$R$_2$, C(O)OR$_2$, C$_3$–C$_7$ cycloalkyl, N(R$_2$)(R$_2$), C(O)N(R$_2$)(R2), or R$_7$ and R$_{7a}$ may independently be joined to one or both of R$_4$ and R$_5$ groups to form an alkylene bridge between the terminal nitrogen and the alkyl portion of the R$_7$ or R$_{7a}$ groups, wherein the bridge contains 1 to 5 carbons atoms, or R$_7$ and R$_{7a}$ can be joined to one another to form C$_3$–C$_7$ cycloalkyl;
m is 0, 1, or 2;
n is 1, 2, or 3;
q is 0, 1, 2, 3, or 4;
t is 0, 1, 2, or 3;
and pharmaceutically acceptable salts and individual diastereomers thereof.

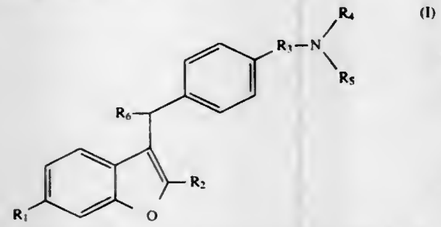
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5,622,974
α-SUBSTITUTED-3-BENZYL-BENZOFURANS

Brian S. Muehl, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 10, 1995, Ser. No. 402,414
Int. Cl.[6] A61K *31/34;31/445;* **C07D** *405/10;307/80*
U.S. Cl. 514—320 **11 Claims**

1. A compound of the formula I



(I)

wherein R_1 is OH, $OCO(C_1–C_6$ alkyl), OCO(aryl), $OSO_2(C_4–C_6$ alkyl), $OCOO(C_1–C_6$ alkyl), OCOO(aryl), $OCONH(C_1–C_6$ alkyl), or $OCON(C_1–C_6$ alkyl)$_2$;

R_2 is aryl, $C_1–C_6$ alkyl, $C_3–C_6$ cycloalkyl, or 4-cyclohexanol;

R_3 is $O(CH_2)_2$ or $O(CH_2)_3$;

R_4 and R_5 are optionally $CO(CH_2)_2CH_3$, $CO(CH_2)_3CH_3$, $C_1–C_6$ alkyl, or R_4 and R_5 combine to form, with the nitrogen to which they are attached, piperidine, morpholine, pyrrolidine, 3-methylpyrolidine, 3,3-dimethylpyrrolidine, 3,4-dimethylpyrollidine, azepine, or pipecoline;

R_6 is OH, $O(C_1–C_6$ alkyl), O(aryl), $O(C_1–C_6$ alkyl)aryl)), OCH_2CH_2cyano, $O((C_1–C_6$ alkyl)$C_1–C_6$ alcohol), OSO_2CH_3, $OSO_2C_6H_4CH_3$, SH, $S(C_1–C_6$ alkyl), NH_2, $NH(C_1–C_6$ alkyl), $N(C_1–C_6$ alkyl)$_2$, cyano, or halo; and

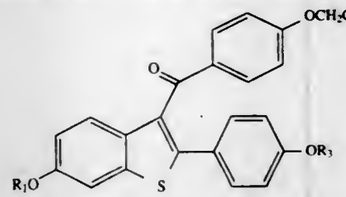
pharmaceutically acceptable salts thereof.

5,622,975
METHODS FOR INHIBITING VASCULAR SMOOTH MUSCLE CELL MIGRATION

Jai P. Singh, Carmel, and Todd R. Wiernicki, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

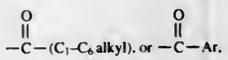
Filed Jun. 1, 1995, Ser. No. 457,700
Int. Cl.[6] A61K *31/445;31/38*
U.S. Cl. 514—324 **4 Claims**

1. A method of treating vascular smooth muscle cell migration comprising administering to a human or other mammal in need of treatment an effective amount of a compound having the formula



(I)

wherein R_1 and R_3 are independently hydrogen,



wherein Ar is optionally substituted phenyl;

R_2 is pyrrolidino, hexamethyleneimino, or piperidino; and pharmaceutically acceptable salts and solyates thereof.

5,622,976
OXADIAZOLE DERIVATIVES HAVING ACETYLCHOLINESTERASE-INHIBITORY AND MUSCARINIC AGONIST ACTIVITY

Hisashi Takasugi, Sakai; Atsushi Kuno, Osaka, and Mitsuru Ohkubo, Hyogo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/01658, § 371 Date Jun. 24, 1994, § 102(e) Date Jun. 24, 1994, PCT Pub. No. WO93/13083, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 18, 1992, Ser. No. 244,904
Claims priority, application United Kingdom, Dec. 31, 1991, 9127533; Oct. 5, 1992, 9220904
Int. Cl.[6] A61K *31/445;* **C07D** *413/12*
U.S. Cl. 514—326 **7 Claims**

1. A compound of the the formula:

R^1-Q-Z-X-A-M

wherein

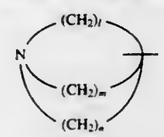
Q is oxadiazolediyl,

Z is bond or vinyl,

A is bond, lower alkylene or lower alkynylene

wherein

R^1 is lower alkyl; unsaturated 5 or 6-membered heteromonocyclic group containing 1 to 4 nitrogen atom(s), unsaturated 5 or 6-membered heteromonocyclic group containing 1 to 2 sulfur atom(s) or saturated heterobicyclic group of the formula:



(wherein l, m and n are each integer of 1 to 3), each of which may have 1 to 2 substituent(s) selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, cyano, nitro, mono(or di or tri)halo(lower)alkyl and acyl;

phenyl which may have 1 to 2 substituent(s) selected from the group consisting of lower alkyl, lower alkoxy, nitro, halogen, mono(or di or tri)halo(lower)alkyl, lower alkylthio, lower alkylsulfinyl, cyano, lower alkylsulfonyl and lower alkanoyl;

phenyl(lower)alkyl which may have 1 to 2 substituent(s) selected from the group consisting of lower alkyl, lower alkoxy, nitro, mono(or di or tri)halo(lower)alkyl, cyano, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl; or

phenyl(lower)alkenyl which may have 1 to 2 substituent(s) selected from the group consisting of lower alkyl, lower alkoxy, nitro, mono(or di or tri)halo(lower)alkyl, cyano, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl,

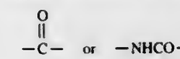
X is a group of the formula:



(in which R^4 is hydrogen or lower alkyl), a group of the formula:



(in which R^8 is hydroxy or lower alkanoyloxy),



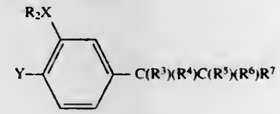
M is piperidyl, piperazinyl, or pyrrolidinyl, each of which may have one substituent selected from the group consisting of lower alkyl, acyl and phenyl(lower)alkyl which may have 1 to 2 substituent(s) selected from the group consisting of halogen, cyano, nitro, lower alkyl, lower alkoxy and lower alkylthio.

5,622,977
TRI-SUBSTITUTED (ARYL OR HETEROARYL) DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Graham J. Warrellow, Northwood; Ewan C. Boyd, Slough; Rikki P. Alexander, High Wycombe, and John C. Head, Windor, all of United Kingdom, assignors to Celltech Therapeutics Limited, Slough, United Kingdom

Continuation-in-part of Ser. No. 171,822, Dec. 22, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,214
Claims priority, application United Kingdom, Dec. 23, 1992, 9226831; Aug. 2, 1993, 9315966
Int. Cl.[6] A61K *31/44;* **C07D** *405/10;409/10;213/04*
U.S. Cl. 514—336 **29 Claims**

1. A compound of formula (1)



wherein

Y is halogen or —OR^1, where R^1 is substituted or unsubstituted C_{1-6}alkyl, said R^1 substituent being halogen;

X is —O—, —S— or —$N(R^8)$—, where R^8 is hydrogen or C_{1-6}alkyl;

R^2 is substituted or unsubstituted C_{3-8}cycloalkyl or substituted or unsubstituted C_{3-8}cycloalkenyl, said R^2 substituents being halogen, C_{1-6}alkyl, hydroxyl or C_{1-6}alkoxy;

R^3 is hydrogen, halogen or —OR^9, where R^9 is hydrogen or substituted or unsubstituted C_{1-6}alkyl, substituted or unsubstituted C_{2-6}alkenyl, substituted or unsubstituted C_{1-3}alkoxyC_{1-3}alkyl, substituted or unsubstituted C_{1-6}alkanoyl, HC(=O)—, —$CONR^{11}R^{12}$ or —$CSNR^{11}R^{12}$; where each of R^{11} and R^{12} is hydrogen or substituted or unsubstituted C_{1-6}alkyl; said R^3 substituents being halogen, C_{1-6}alkyl, hydroxyl or C_{1-6}alkoxy; each of R^4 and R^5 is independently —$(CH_2)_n$Ar, where n is an integer of 0 to 3, and Ar is monocyclic or bicyclic, substituted or unsubstituted C_{6-12}aryl, or monocyclic or bicyclic, substituted or unsubstituted heteroaryl selected from the group consisting of pyrrolyl, furyl, thienyl, imidazolyl, N-methylimidazolyl, N-ethylimidazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, 1,3,5-triazinyl, 1,2,4-triazinyl, 1,2,3-triazinyl, benzofuryl, isobenzofuryl, benzothienyl, isobenzothienyl, indolyl, isoindolyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, quinazolinyl, napbthyridinyl, pyrido[3,4-b]pyridyl, pyrido[3,2-b]pyridyl, pyrido[4,3-b]pyridyl, quinolinyl, isoquinolinyl, tetrazolyl, 5,6,7,8-tetrahydroquinolinyl and 5,6,7,8-tetrahydroisoquinolinyl, said R^4 and R^5 substituents being R^{13} or —$Alk^1(R^{13})_m$;

each of R^6 and R^7 is independently hydrogen or substituted or unsubstituted C_{1-6}alkyl, said R^6 and R^7 substituents being halogen, hydroxyl or C_{1-6}alkoxy;

R^{13} is halogen, —NH_2, substituted —NH_2, nitro, cyano, —OH, —$OAlk^1(R^{13a})_m$, cycloalkoxy, HC(=O)—, —CO_2H, esterified —CO_2H, —SH, —$SAlk^1(R^{13a})_m$, —C(=O)Alk^1, —SO_3H, —SO_2Alk^1, —SO_2NH_2, —SO_2NHAlk^1, —$SO_2N(Alk^1)_2$, —$CONH_2$, —$CONHAlk^1$, —$CON(Alk^1)_2$, —$NHSO_2$H, —$NHSO_2Alk^1$, —$N(SO_2Alk^1)_2$, —$NHSO_2NH_2$, —$NHSO_2NHAlk^1$, —$NHSO_2N(Alk^1)_2$, —NHC(=O)Alk^1 or —NHC(—O)OAlk^1;

R^{13a} is halogen, —NH_2, nitro, cyano, —OH, cycloalkoxy, HC(=O)—, —CO_2H, esterified —CO_2H, —SH, —C(=O)Alk^1, —SO_3H, —SO_2Alk^1, —SO_2NH_2, —SO_2NHAlk^1, —$SO_2N(Alk^1)_2$, —$CONH_2$, —$CONHAlk^1$, —$CON(Alk^1)_2$, —$NHSO_2$H, —$NHSO_2Alk^1$, —$N(SO_2Alk^1)_2$, —$NHSO_2NH_2$, —$NHSO_2NHAlk^1$, —$NHSO_2N(Alk^1)_2$, —NHC(—O)Alk^1 or —NHC(=O)OAlk^1;

Alk^1 is straight or branched C_{1-6}alkylene, C_{2-6}alkenylene or C_{2-6}alkynylene, optionally interrupted with up to three —O—, —S—, —$N(R^8)$— or —$S(O)_p$— groups or, when Alk^1 is a substituent, Alk^1 is straight or branched C_{1-6}alkyl, C_{2-6}alkenyl or C_{2-6}alkynyl, optionally interrupted with up to three —O—, —S—, —$N(R^8)$— or —$S(O)_p$— groups;

m is an integer of 0 to 3; and

p is 1 or 2;

or the salt, solvate, hydrate or N-oxide thereof.

5,622,978
PHARMACEUTICAL PREPARATIONS FOR THE ORAL ADMINISTRATION OF DIHYDROPYRIDINES IN BEVERAGE FORM

Silvana Ciceri, Como; Gilberto Dondi, Milanino, and Paolo Scurati, Milan, all of Italy, assignors to Bayer S.p.A., Milan, Italy

Division of Ser. No. 99,288, Jul. 29, 1993, Pat. No. 5,491,154. This application Sep. 29, 1995, Ser. No. 536,552
Claims priority, application Italy, May 8, 1993, MI92A1930
Int. Cl.[6] A61K *31/44;* **C07D** *211/90;213/55*
U.S. Cl. 514—356 **3 Claims**

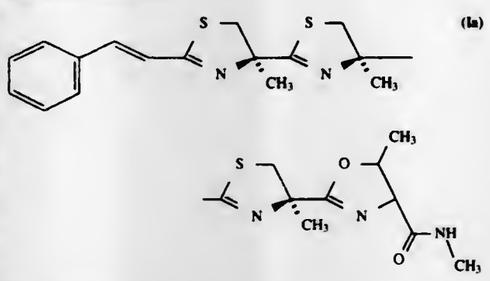
1. A solid pharmaceutical preparation which is administered as a beverage comprising a therapeutically effective amount of a coprecipitate of an essentially amorphous dihydropyridine selected from the group consisting of nimodopine and nisoldipine, and a vinylpyridone polymer wherein said polymer has a molecular weight of 25,000 to 90,000 daltons and the weight ratio of dihydropyridine to polyvinylpyrrolidone is between 1:2 to 1:5.

5,622,979
THIANGAZOLE, ITS PREPARATION, COMPOSITIONS AND USE THEREOF

Gerhard Höde, Braunschweig; Norbert Bedorf, Königslutter; Edgar Forche; Klaus Gerth, both of Braunschweig; Herbert Irschik, Wolfenbüttel; Rolf Jansen; Brigitte Kunze, both of Braunschweig; Hans Reichenbach, Wolfenbüttel; Florenz Sasse, Braunschweig; Heinrich Steinmetz, Hildesheim-Sorsum; Wolfram Trowitzsch-Kienast, Braunschweig, all of Germany, and Johannes P. Pachlatko, Seltisberg, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y., and Gesellschaft fur Biotechnologische Forschung mbH, Braunschweig, Germany

Continuation of Ser. No. 286,389, Aug. 5, 1994, abandoned, which is a division of Ser. No. 78,159, Sep. 17, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,384
Claims priority, application Germany, Dec. 24, 1990, 40 41 685.2
Int. Cl.[6] A01N *43/78*
U.S. Cl. 514—365 **3 Claims**

1. A pesticidal composition comprising a pesticidally-effective amount of a compound having the absolute configuration represented by formula Ia



(Ia)

and a suitable carrier.

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5,622,980

ORAL COMPOSITIONS OF H2-ANTAGONISTS

Henry C. Caldwell, Ambler, Pa., and Ashok J. Desai, Wilmington, N.C., assignors to Applied Analytical Industries, Inc., Wilmington, N.C.

Continuation-in-part of Ser. No. 288,711, Aug. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 107,126, Aug. 17, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 382,602

Int. Cl.[6] A61K *31/425;31/415;31/34;33/12;33/06;33/08*

U.S. Cl. 514—370 **15 Claims**

1. A pharmaceutical composition for the oral administration of a therapeutically effective amount of an H_2-antagonist, wherein said composition exhibits a non-bitter taste, said composition consisting essentially of an H_2-antagonist, a silicate taste-masking agent capable of forming an adsorbate complex with said H_2-antagonist, wherein said complex inhibits the release of the H_2-antagonist in the oral cavity, and between about 2.5 and about 10 percent based upon the weight of the composition of a dissociation agent capable of enhancing the release of said H_2-antagonist from said adsorbate complex, wherein said dissociation agent comprises calcium carbonate.

5,622,981

USE OF METABOTROPIC RECEPTOR AGONISTS IN PROGRESSIVE NEURODEGENERATIVE DISEASES

David D. Eveleth, Mission Viejo; Judith A. Kelleher, Irvine, and Carl W. Cotman, Santa Ana, all of Calif., assignors to Cortex Pharmaceuticals, Inc., Irvine, Calif.

Continuation of Ser. No. 70,518, Jun. 1, 1993, abandoned. This application Apr. 7, 1995, Ser. No. 418,903

Int. Cl.[6] A61K *31/195;31/42*

U.S. Cl. 514—380 **18 Claims**

1. A method of treating a mammal with a neurodegenerative disease which is caused at least in part by β-amyloid protein neurotoxicity, comprising administering to said mammal a pharmacologically effective dose of a metabotropic receptor agonist.

5,622,982

ACYLATED AMINOALKANIMIDAZOLES AND -TRIAZOLES

Ingeborg Schuster, and Helmut Egger, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

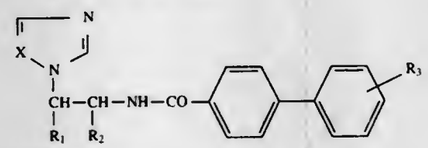
Filed May 16, 1995, Ser. No. 442,053

Claims priority, application United Kingdom, May 18, 1994, 9409882

Int. Cl.[6] A61K *31/415;* **C07D** *401/12;409/12;233/61*

U.S. Cl. 514—399 **16 Claims**

1. A compound of the formula



I

wherein either

R_1 is phenyl, naphthyl, thienyl or pyridyl, or phenyl, naphthyl, thienyl or pyridyl monosubstituted by halogen, (C_{1-4})alkoxy, (C_{1-4})alkyl, di-(C_{1-4})alkylamino or cyano and

R_2 is hydrogen; or

R_1 is hydrogen and

R_2 is pyridyl or 2-(5-chloro)pyridyl;

R_3 is hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4}) alkoxy, cyano, (C_{1-4}) alkoxycarbonyl, (C_{1-4}) alkylcarbonyl, amino or di-(C_{1-4}) alkylamino; and

X is CH;

in free form or in salt form.

5,622,983

N-SUBSTITUTED CYCLOALKYL AND POLYCYCLOALKYL α-SUBSTITUTED TRP-PHE- AND PHENETHYLAMINE DERIVATIVES

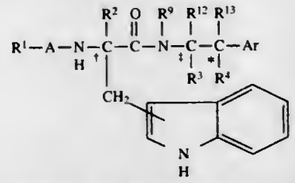
David C. Horwell, Foxton; Martyn C. Pritchard, Swavesey; Edward Roberts, Wood Ditton; Reginald S. Richardson, Haverhill, all of England, and Julian Aranda, Vorstetter, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 235,814, Apr. 28, 1994, which is a continuation-in-part of Ser. No. 958,196, Oct. 7, 1992, abandoned, which is a division of Ser. No. 629,809, Dec. 19, 1990, Pat. No. 5,278,316, which is a continuation-in-part of Ser. No. 545,222, Jun. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 530,811, Jun. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,486, Oct. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 374,327, Jun. 29, 1989, abandoned. This application May 22, 1995, Ser. No. 447,141

Int. Cl.[6] A61K *31/405;31/41;* **C07D** *403/12*

U.S. Cl. 514—419 **7 Claims**

1. A compound of the formula

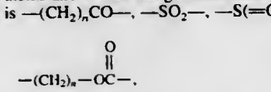


I

or a pharmaceutically acceptable salt thereof wherein:

R^1 is a cycloalkyl or polycycloalkyl hydrocarbon of from three to twelve carbon atoms with from zero to four substituents each independently selected from the group consisting of a straight or branched alkyl of from one to about six carbon atoms, halogen, CN, OR* SR*, CO_2R^*, CF_3, NR^5R^6, and $—(CH_2)_nOR^5$ wherein R* is a straight or branched alkyl of from one to six carbon atoms, R^5 and R^6 are each independently hydrogen or alkyl of from one to about six carbon atoms and n is an integer from zero to six;

A is $—(CH_2)_nCO—$, $—SO_2—$, $—S(=O)—$, —NHCO—,



—SCO—, $—O—(CH_2)_nCO—$ or $—HC=CHCO—$ wherein n is an integer from zero to six;

R^2 is a straight or branched alkyl of from one to about six carbon atoms, —HC=CH_2, —C≡CH, $—CH_2—CH=CH_2$, $—CH_2C≡CH$, $—(CH_2)_nAr$, $—(CH_2)_nOR^*$, $—(CH_2)_nOAr$, $—(CH_2)_nCO_2R^*$, or $—(CH_2)_nNR^5R^6$ wherein n, R*, R^5 and R^6 are as defined above and Ar is as defined below;

R^3 and R^4 are each independently selected from hydrogen, R^2 and $—(CH_2)_n—B—D$ wherein:

n' is an integer of from zero to three;

B is a bond,

$—OCO(CH_2)_n—$,

$—O(CH_2)_n—$,

$—SO_2NH(CH_2)_n—$,

$—NHSO_2(CH_2)_n—$,

$—NHCO(CH_2)_n—$,

$—CONH(CH_2)_n—$,

—NHCOCH=CH—,

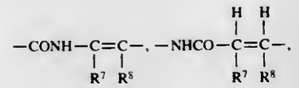
$—COO(CH_2)_n—$,

$—CO(CH_2)_n—$,

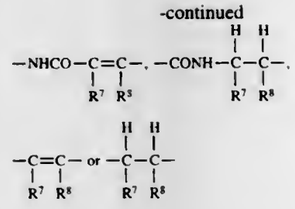
$—S—(CH_2)_n—$,

$—S(=O)—(CH_2)_n—$,

$—SO_2—(CH_2)_n—$,



-continued



wherein R^7 and R^8 are independently selected from hydrogen and R^2 or together form a ring $(CH_2)_m$, wherein m is an integer of from 1 to 5 and n is as defined above;

D is

—COOR*,

$—CH_2OR^*$,

$—CHR^2OR^*$,

$—CHR_2OR^*$,

$—CHR^2SR^*$,

$—CONR^5R^6$,

—CN,

$—NR^5R^6$,

—OH,

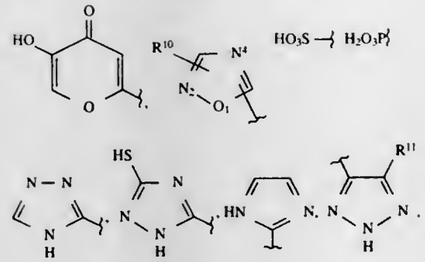
$PhSO_2NHCO—$,

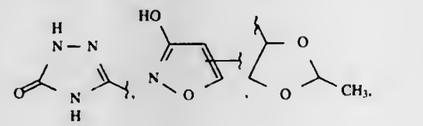
$CF_3CONHCO—$,

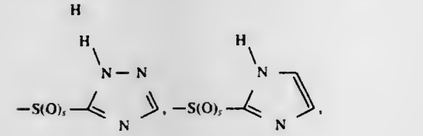
$CF_3SO_2NHCO—$,

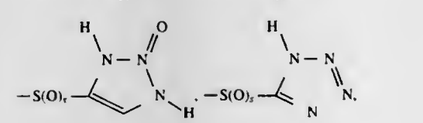
$H_2NSO_2—$,

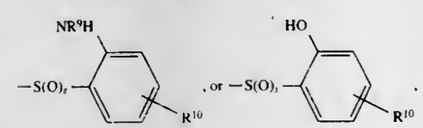
—H and acid replacements tetrazole, and











R^{10} is OH, NH_2, CH_3, Cl;

R^{11} is CN, CO_2H, or CF_3;

s is in integer of from 0 to 2;

wherein R*, R^2, R^5, and R^6 are as defined above;

R^9 is hydrogen or a straight or branched alkyl of from one to about six carbon atoms, $—(CH_2)_nCO_2R^*$, $—(CH_2)_nOAr'$, $—(CH_2)_nAr'$ or $(CH_2)_nNR^5R^6$, wherein n, R*, R^5, and R^6 are as defined above or taken from R^3 and Ar' is taken from Ar as defined below;

R^{12} and R^{13} are each independently hydrogen or are each independently taken with R^3 and R^4 respectively to form a moiety doubly bonded to the carbon atom: and

Ar is an unsubstituted or substituted five-membered aromatic heterocyclic ring optionally fused with a benzene ring.

5,622,984

AMIDINOPHENOL DERIVATIVES

Hisao Nakai; Masanori Kawamura, both of Mishima, and Tsumoru Miyamoto, Shiga, all of Japan, assignors to Ono Pharmaceutical Company, Limited, Osaka, Japan

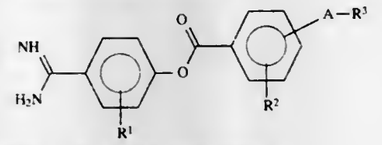
Division of Ser. No. 121,499, Sep. 16, 1993. This application Mar. 1, 1995, Ser. No. 396,784

Claims priority, application Japan, Sep. 18, 1992, 4-274992; Mar. 31, 1993, 5-096758

Int. Cl.[6] A61K *31/40;* **C07D** *207/08;205/04;223/04*

U.S. Cl. 514—423 **11 Claims**

1. A compound of the formula (I):



(I)

wherein R^1 and R^2 each, independently, is:

(i) hydrogen,

(ii) C1–4 alkyl,

(iii) C1–4 alkoxy,

(iv) C2–5 acyl,

(v) halogen,

(vi) nitro,

(vii) benzoyl, or

(viii) $COOR^4$, wherein R^4 is C1–3 alkyl;

A is

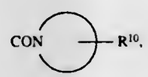
(1) bond,

(2) C1–4 alkylene, or

(3)

wherein R^5 and R^6 each, independently, is hydrogen or C1–4 alkyl;

R^3 is



wherein



is a 4, 5 or 7 membered, mono-cyclic hetero ring containing one or two nitrogens; and

R^{10} is

(1) hydrogen,

(2) C7–10 phenylalkyl, or

(3) $COOR^{13}$, wherein R^{13} is

(i) hydrogen,

(ii) C1–4 alkyl, or

(iii) C7–10 phenylalkyl;

or an acid-addition salt thereof.

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5,622,985
METHOD FOR PREVENTING A SECOND HEART ATTACK EMPLOYING AN HMG COA REDUCTASE INHIBITOR

Adeove Y. Olukotun, Hopewell, N.J., and John C. Alexander, Winnetka, Ill., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation-in-part of Ser. No. 824,679, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 536,367, Jun. 11, 1990, abandoned. This application Apr. 19, 1995, Ser. No. 424,984

Int. Cl.[6] A61K *31/40;31/21*

U.S. Cl. 514—423 **19 Claims**

1. A method for preventing or reducing the risk of a second heart attack in a mammalian species having a substantially normal serum cholesterol level, which comprises administering to a mammalian species having a substantially normal serum cholesterol level in need of such treatment a therapeutically effective amount of an inhibitor of the enzyme 3-hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase.

5,622,986
2'-AND/OR 7-SUBSTITUTED TAXANES

Richard B. Greenwald, Somerset, and Durgadas Bolikal, Edison, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

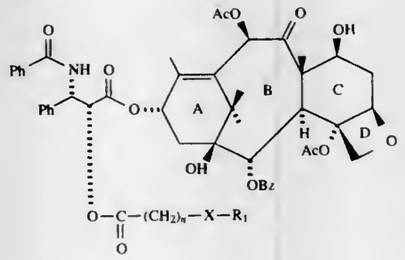
PCT No. PCT/US94/12133, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO95/11020, PCT Pub. Date Apr. 27, 1995

Continuation-in-part of Ser. No. 140,346, Oct. 20, 1993, abandoned. This PCT application Oct. 19, 1994, Ser. No. 351,462

Int. Cl.[6] A61K *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **27 Claims**

1. A taxane-based composition, comprising a moiety of the formula:



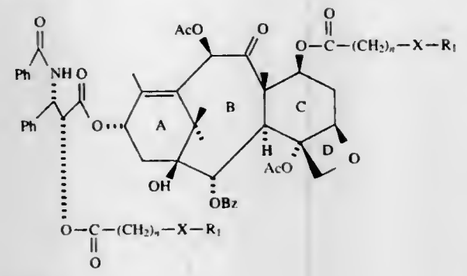
wherein:

n is a positive integer;

X is oxygen or NL, where L is selected from the group consisting of hydrogen, C_{1-8} alkyls, aryls and aralkyls; and

R_1 is selected from the group consisting of substantially nonantigenic polymers, C_{1-12} alkyls and substituted alkyls.

26. A taxane-based composition, comprising a moiety of the formula:



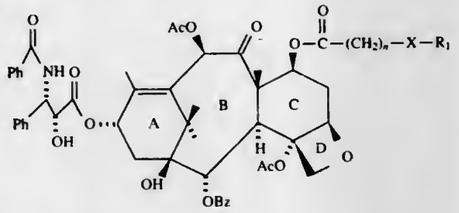
wherein:

n is a positive integer for the 2'-position substitution and independently zero or a positive integer for the 7-position substitution;

each X is independently oxygen or NL, where L is selected from the group consisting of hydrogen, C1-8 alkyls, aryls and aralkyls; and

each R_1 is independently selected from the group consisting of substantially nonantigenic polymers, C_{1-12} alkyls and substituted alkyls.

27. A taxane-based composition, comprising a moiety of the formula:



wherein:

n is zero or a positive integer;

X is oxygen or NL, where L is selected from the group consisting of hydrogen, C_{1-8} alkyls, aryls and aralkyls; and

R_1 is selected from the group consisting of substantially nonantigenic polymers, C_{1-12} alkyls and substituted alkyls;

except that X is not NH when n is zero.

5,622,987
5,6-DIHYDRONAPHTHO [1,2-B]PYRANS AND THEIR USE AS PHARMACEUTICAL COMPOUNDS

Michael Brunavs, Frimley; Colin P. Dell, Dorking; Peter T. Gallagher, Camberley; William M. Owton, Lightwater, and Colin W. Smith, Bracknell, all of United Kingdom, assignors to Eli Lilly and Company, Indianapolis, Ind., and Lilly Industries Limited, Basingstoke, England

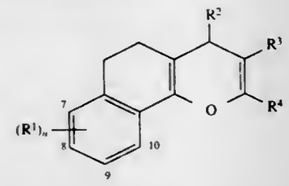
Division of Ser. No. 293,786, Aug. 22, 1994, which is a division of Ser. No. 14,016, Feb. 5, 1993, Pat. No. 5,378,699. This application Jun. 5, 1995, Ser. No. 461,342

Claims priority, application United Kingdom, Feb. 19, 1992, 9203497

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—454 **6 Claims**

1. A compound of the formula:



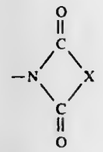
in which

n is 0, 1 or 2 and R^1 is attached at any of the positions 7, 8, 9 or 10, and each R^1 is halo, carboxy, trifluoromethyl, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, hydroxy-C_{1-4} alkyl, hydroxy-C_{1-4} alkoxy, nitrogen-containing heterocyclyl, nitro, trifluoromethoxy, —$COOR^5$ where R^5 is an alkyl group, —COR^6, —$CONR^6R^7$ or —NR^6R^7 where R^6 and R^7 are each hydrogen or C_{1-4} alkyl;

R^2 is phenyl, naphthyl or heteroaryl selected from thienyl, pyridyl, benzothienyl, quinolinyl, benzofuranyl or benzimidazolyl, said phenyl, naphthyl and heteroaryl groups being optionally substituted, or R^2 is furanyl optionally substituted with C_{1-4} alkyl;

R^3 is nitrile, carboxy, —$COOR^8$ where R^8 is an alkyl group, or —$CONR^9R^{10}$ where R^9 and R^{10} are each hydrogen or C_{1-4} alkyl; and

R^4 is —$NR^{11}R^{12}$,—$NR^{11}COR^{12}$, —$N(COR^{11})_2$ or —$N{=}CHOCH_2R^{11}$ where R^{11} and R^{12} are each hydrogen or C_{1-4} alkyl optionally substituted with carboxy, —$N{=}CH{-}NR^{13}R^{14}$ where R^{13} is hydrogen or C_{1-4} alkyl and R^{14} is C_{1-4} alkyl, optionally substituted phenyl or optionally substituted heteroaryl,



where X is C_{2-4} alkylene, or —$NHSO_2R^{15}$ where R^{15} is C_{1-4} alkyl, trifluoromethyl or optionally substituted phenyl; provided that

when n is 0, R^3 is nitrile and R^4 is —NH_2, R^2 is not phenyl or phenyl substituted with 4-nitro, 2- or 4-chloro, 2,4-dichloro-, 4-nitrile, 4-methylthio, 2-bromo, 2- or 4-methyl or 2- or 4-methoxy;

(ii) when n is 0, R^3 is —$COOR^8$, R^8 is methyl or ethyl and R^4 is —NH_2, R^2 is not phenyl; and

(iii) when n is 0, R^3 is —$CONH_2$ and R^4 is —NH_2, R^2 is not phenyl or 4-methoxyphenyl;

and salts thereof.

5,622,988
USE OF A LOW MOLECULAR WEIGHT METABOLITE FROM FUNGUS FOR REDUCING PROLONGED COAGULATION TIME

Helle Worsaae, Gentofte; Frank W. Rasmussen, Valby, and Mirella E. Rasmussen, Copenhagen, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

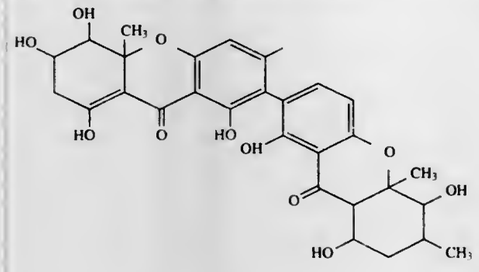
Continuation-in-part of Ser. No. 95,785, Jul. 22, 1993, Pat. No. 5,409,951, which is a continuation-in-part of Ser. No. 714,107, Jun. 11, 1991, abandoned. This application Mar. 16, 1995, Ser. No. 405,336

Claims priority, application Denmark, Jun. 15, 1990, 1461/90

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—455 **2 Claims**

1. A method of decreasing prolonged coagulation time in a mammal comprising administering to the mammal an effective amount of a compound of the general formula Ia



Ia

5,622,989
AMINO-BENZOFURYL-AND THIENYL-DERIVATIVES

Gabriele Bräunlich, Wuppertal; Rüdiger Fischer, Köln; Mazen Es-Sayed, Wuppertal; Rudolf Hanko, Düsseldorf, all of Germany; Stephen Tudhope, Windsor, Great Britain; Graham Sturton, Bray Maidenhead, Great Britain; Trevor Abram, Marlow, Great Britain; Wendy J. McDonald-Gibson, Wallingford, Great Britain, and Mary F. Fitzgerald, Begbroke, Great Britain, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

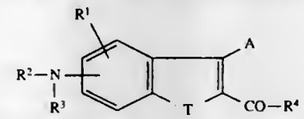
Filed May 23, 1995, Ser. No. 449,402

Claims priority, application United Kingdom, May 31, 1994, 9410868; May 31, 1994, 9410878; May 31, 1994, 9410879

Int. Cl.[6] A61K *31/34;* **C07D** *307/80*

U.S. Cl. 514—469 **14 Claims**

1. An amino-benzofuryl- or thienyl-derivative of the formula



(I)

in which

I

R^1 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or represents halogen, carboxyl, cyano, nitro, trifluoromethyl or a group of a formula —OR^5, —SR^6 or —NR^7R^8, in which

R^5, R^6 and R^8 are identical or different and denote hydrogen, cycloalkyl having 3 to 6 carbon atoms, benzyl or a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 hetereoatoms selected from the group consisting of N, S or O and to which a phenyl ring can be fused and which is optionally substituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms or

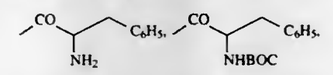
denote straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, or

denote phenyl, which is optionally monosubstituted to disubstituted by identical or different substituents selected from the group consisting of nitro, halogen, carboxy or straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms, or

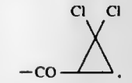
R^5 denotes a hydroxyl protecting group,

R^7 denotes hydrogen or a straight-chain or branched alkyl having up to 4 carbon atoms,

R^2 represents formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 8 carbon atoms in the alkyl group, or represents benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms in the alkyl group, or represents a group of a formula



—SO_2R^9, —$CO{-}(CH_2)_aNR^{10}R^{11}$, —$CO{-}(CH_2)_b{-}R^{12}$, —$CO{-}S{-}R^{13}$ or a residue of the formula



in which

R^9 denotes straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl, or denotes phenyl, which is optionally substituted by trifluo-

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romethyl, cyano, nitro or straight-chain or branched alkyl having up to 6 carbon atoms,

R_{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,

R^{12} denotes straight-chain or branched hydroxyl, oxyacyl, alloxy or alkoxycarbonyl each having up to 6 carbon atoms or carboxy,

a denotes a number 0, 1, 2 or 3,

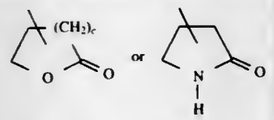
h denotes a number 1, 2 or 3,

R^{13} denotes straight-chain or branched alkyl having up to 6 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or has the abovementioned meaning of R^2,

T represents an oxygen or sulfur atom

A represents hydrogen, hydroxyl, cycloalkyl with 3 to 6 carbon atoms, carboxy or straight-chain or branched alkoxycarbonyl or alkoxy each having up to 6 carbon atoms, or straight-chain or branched alkyl or alkenyl each having up 8 carbon atoms and each of which is optionally mono-substituted by cyano or by a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 heteroatoms selected from the group consisting of N, S and O, which is optionally substituted by identical or different substituents selected from the group consisting of hydroxy, halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms, or alkyl or alkenyl are optionally substituted by a group of a formula



in which

c denotes a number 1 or 2,

and in which both rings are optionally monosubstituted by hydroxy, halogen or by straight-chain or branched alkyl having up to 6 carbon atoms,

or alkyl or alkenyl are optionally monosubstituted by a group of a formula —CO—R^{14}, —CO—$NR^{15}R^{16}$, —$CONR^{17}$—SO_2—R^{18} or —$PO(OR^{19})(OR^{20})$, —OR^{21} or



in which

R^{14} denotes hydroxyl, cycloalkyloxy having 3 to 7 carbon atoms or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms,

R^{15}, R^{16} and R^{17} are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, phenyl or benzyl, or

R^{15} denotes hydrogen, and

R^{16} denotes hydroxyl, or

R^{15} and R^{16} together with the nitrogen atom form a 5- or 6-membered saturated heterocycle,

R^{18} denotes a straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl or trifluoromethyl, or denotes phenyl, which is optionally substituted by substituents from the series comprising halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms,

R^{19}, R^{20} and R^{21} are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

R^{22} denotes hydrogen, an aminoprotecting group or straight-chain or branched alkyl having up to 6 carbon atoms,

R^{23} and R^{24} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, or

R^{23} has the abovementioned meaning, and

R^{24} denotes cycloalkyl having 3 to 6 carbon atoms or aryl having 6 to 10 carbon atoms or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cyano, methylthio, hydroxy, mercapto, guanidyl or a group of a formula —$NR^{25}R^{26}$ or R^{27}—CO—, wherein

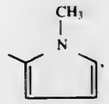
R^{25} and R^{26} have the meaning shown above for R^{15}, R^{16} and R^{17},

R^{27} denotes hydroxyl, benzyloxycarbonyl, straight-chain or branched alkoxy having up to 6 carbon atoms or the abovementioned group —$NR^{25}R^{26}$,

alkyl is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or by aryl having up 6 to 10 carbon atoms, which is optionally substituted by hydroxyl, halogen, nitro, straight-chain or branched alkoxy having up to 8 carbon atoms or by the abovementioned group of the formula —$NR^{25}R^{26}$, or alkyl is optionally substituted by indolyl wherein the —NH— function is optionally protected by a straight-chain or branched alkyl having up to 6 carbon atoms or by an amino protecting group, or by a 5 to 6 membered unsaturated heterocycle having up to 4 N-atoms wherein all —NH-functions are protected by straight-chain or branched alkyl having up to 6 carbon atoms or by an amino protecting group, and

R^4 represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of hydroxyl, adamantyl, phenoxy, cycloalkyl having up to 3 to 6 carbon atoms, halogen, nitro, furanyl, thienyl, pyridyl, tetrazolyl, trifluoromethyl, difluoromethyl, cyano, carboxyl, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 11 carbon atoms in the alkyl group or by phenyl, which is optionally monosubstituted to trisubstituted by nitro, halogen, formyl, carbonyl or straight-chain or branched alkoxy, acyl, alkoxycarbonyl or alkyl each having up to 6 carbon atoms, which is optionally substituted by hydroxyl or

phenyl is substituted by a group of formula —$NR^{28}R^{29}$, —SR^{30}, SO_2R^{31}, —O—SO_2R^{32} or



in which

R^{28} and R^{29} have the meaning shown above for R^{10} and R^{11}, or

R^{28} denotes hydrogen, and

R^{29} denotes straight-chain or branched acyl having up to 6 carbon atoms,

R^{30} denotes straight-chain or branched alkyl having up to 6 carbon atoms,

R^{31} and R^{32} are identical or different and represent straight-chain or branched alkyl having up to 6 carbon atoms, benzyl or phenyl, which are optionally substituted by trifluoromethyl, halogen or straight-chain or branched alkyl having up to 6 carbon atoms, with the proviso that A does not denote methyl or

II

if A represents a methyl group R^1, T and R^4 have the meaning described in part I, and in this case

R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or represent formyl or straight-chain or branched acyl, alkoxy or alkoxy carbonyl each having up to 8 carbon atoms, or represent benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms, or represent a group of a formula —$SO_2(NH)_eR^{33}$, SO_2NH_2, —CO—$(CH_2)_dNR^{34}R^{35}$, —$(CH_2)_e$—CO—R^{36}, —CO—$(CH_2)_f$—R^{37} or —CO—X, in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,

R^{34} and R^{35} are identical or different and have the abovementioned meaning of R^{10} and R^{11},

R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 6 carbon atoms,

R^{37} has the abovementioned meaning of R^{12} or denotes straight-chain or branched alkoxy or oxyacyl each having up to 6 carbon atoms or hydroxyl,

d has the abovementioned meaning of a,

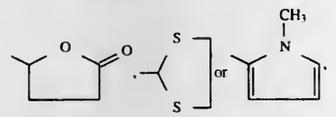
e denotes a number 1, 2, 3, 4 or 5,

f has the abovementioned meaning of b,

g denotes a number 0 or 1,

X denotes a 5-membered saturated or unsaturated heterocycle having up to 3 heteroatoms selected from the group consisting of N, S or O, which is optionally monosubstituted to trisubstituted by nitro, methyl or ethyl, or

X denotes a residue of the formula



or

III

R^1, A and T have the abovementioned meaning described in part I or

A represents methyl,

R^2 and R^3 have the abovementioned meaning described in part II, and in this case

R^4 represents a 5 to 7 membered, saturated or unsaturated hetereocycle, which contains up to three oxygen, sulphur and/or nitrogen atoms as heteroatoms and to which further a benzene ring can be fused and wherein both rings are optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of hydroxyl, halogen, nitro, 1H-tetrazolyl, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 8 carbon atoms or by a group of formula —$NR^{38}R^{39}$, —SR^{40}, SO_2R^{41} or —O—SO_2R^{42}, in which

R^{38} and R^{39} have the meaning shown above for R^{28} and R^{29} and are identical to the latter or different from the latter,

R^{40} has the abovementioned meaning of R^{30},

R^{41} and R^{42} are identical or different and have the abovementioned meaning of R^{31} and R^{32},

or a salt thereof,

provided that N-[2-(4-ethoxybenzoyl)-3-hydroxy-5-benzofuranyl]-acetamide; 6-amino-2-benzoyl-5-cyano-3-methylbenzofuran; 6-amino-2-(4-p-chlorobenzoyl)-5-cyano-3-methylbenzofuran; N-[2-benzoyl)-3-methyl-5-benzofuranyl]-acetamide; N-[2-(2,5-dimethylbenzoyl)-3-methyl-5-benzofuranyl]-acetamide; and 5-amino-2-benzoyl-3-methylbenzofuran and salts thereof are excluded.

5,622,990

IBUPROFEN LYSINATE PHARMACEUTICAL FORMULATION

Ashok Katdare; Chung Y. Lui, and Scott N. Kleinbart, all of P.O. Box 4, West Point, Pa. 19403

Continuation of Ser. No. 673,613, Mar. 22, 1991, abandoned. This application May 1, 1992, Ser. No. 879,086

Int. Cl.[6] A01N *31/10;* **A61K** *31/235*

U.S. Cl. 514—533 **5 Claims**

1. A pharmaceutical ibuprofen lysinate dry granulation formulation comprising about 90% w/w ibuprofen lysinate, provided that the formulation does not contain a disintegrant.

5,622,991

TREATING INFLAMMATORY LIVER DISORDERS BY ENTERALLY ADMINISTERING A FAT-CONTAINING DIET LOW IN POLYUNSATURATED FATS

Andrew J. Dannenberg, New York, N.Y., and Amin A. Nanji, Wellesley, Mass., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y., and New England Deaconess Hospital Corp., Boston, Mass.

Filed Aug. 30, 1994, Ser. No. 297,863

Int. Cl.[6] A01N *37/00*

U.S. Cl. 514—558 **7 Claims**

1. A method of treating a patient having an inflammatory liver disorder selected from the group consisting of alcoholic hepatitis and viral hepatitis, said method consisting essentially of administering to said patient an enteral diet containing fat in an amount so the fat provides from 20 to 50% of total calories, said fat containing more than 45% saturated fatty acids on a total fatty acid source basis and less than 15% polyunsaturated fatty acids on a total fatty acid source basis, thereby to mediate amelioration of the inflammation associated with said disorder.

5,622,992

TOPICAL AROMATIC RELEASING COMPOSITIONS

William F. Beck, Batavia, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 316,704, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 171,872, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 56,010, Apr. 30, 1993, abandoned. This application Mar. 7, 1996, Ser. No. 612,197

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—613 **3 Claims**

1. A method for treatment of nasal symptoms comprising administrating a safe and effective amount of topical aromatic releasing decongestant composition, wherein said composition consists essentially of:

(a) from about 0.001% to about 1% of a mixture of at least two volatile aromatic compounds selected from the group consisting of 3-1-menthoxypropane-1,2-diol, N-substituted-p-menthane-3-caroxamides, and acylic carboxamides; and

(b) from about 0.01% to about 99.9% of a pharmaceutically-acceptable aqueous solution carrier;

wherein said composition is free of pharmaceutically-active decongestants.

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5,622,993

STICK FORMULATIONS FOR TOPICAL DRUG DELIVERY OF THERAPEUTIC AGENTS AND USES THEREOF

James W. McGinity, Austin; Thomas G. Gerding, Georgetown, both of Tex., and Roland Bodmeier, Berlin, Germany, assignors to Medical Polymers, Austin, Tex.

Division of Ser. No. 345,051, Nov. 14, 1994. This application Sep. 1, 1995, Ser. No. 523,084

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—626 **17 Claims**

1. A stick formulation comprising from about 30 to about 70% w/w wax, from about 10 to about 55% w/w oil, from about 1 to about 30% w/w water, a surfactant and lidocaine hydrochloride, wherein the lidocaine hydrochloride is a least partially dissolved in water droplets dispersed in the wax.

5,622,994

SPIN TRAPPING PHARMACEUTICAL COMPOSITIONS AND METHODS FOR USE THEREOF

John M. Carney, Lexington, Ky., and Robert A. Floyd, Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla., and University of Kentucky Research Foundation, Lexington, Ky.

Continuation of Ser. No. 52,870, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 716,952, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 589,177, Sep. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,651, Oct. 17, 1989, Pat. No. 5,025,032. This application Mar. 15, 1994, Ser. No. 212,800

Int. Cl.[6] A61K *31/255*

U.S. Cl. 514—643 **36 Claims**

1. A method for ameliorating the side effects caused in a patient by oxidative damage resulting from the administration to said patient of a cancer therapeutic agent, said method comprising administering to said patient an effective side effect-ameliorating amount of an active ingredient selected from the group consisting of:

(1) phenyl N-tert-butyl nitrone (PBN) derivatives selected from the group consisting of hydroxy PBNs, PBN esters, acetoxy PBNs, phenyl PBNs, alkyl PBNs, alkoxy PBNs, acetamide PBNs, and diphenyl PBNs;

(2) imidazole PBN, phenothiazinyl PBN, nitrosobenzene PBN, 2-methyl nitrosopropane PBN, PBN Cyclodextran polymer and cyclized PBN;

(3) 5,5-dimethyl pyrroline N-oxide (DMPO) esters, acetoxy DMPOs, phenyl DMPOs, alkyl DMPOs, acetamide DMPOs, diphenyl DMPOs, and DMPO dimers;

(4) alpha-(4-pyridyl 1-oxide)-N-tert-butylnitrone (POBN) esters, hydroxy POBNs, phenyl POBNs, alkoxy POBNs, and acetamide POBNs;

(5) N-tert-butyl-alpha-(4-nitro-phenyl)nitrone;

(6) N-tert-butyl-alpha-(2-sulfophenyl)nitrone;

(7) 3,3,5,5-tetramethyl-1-pyrroline N-oxide;

(8) 2,4,6-tri-tert-butylnitrosobenzene (BNB); and

(9) 2,2,6,6-tetramethyl piperidinooxy (TEMPO),

optionally in association with a pharmaceutically acceptable carrier.

5,622,995

METHODS FOR CONTROL AND MITIGATION OF MOLLUSCS

Billy D. Fellers, Glen Rose, Tex.; Arthur J. Freedman, Lebanon, N.J., and Thomas M. Laronge, Vancouver, Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 578,812, Sep. 6, 1990, abandoned. This application Aug. 15, 1994, Ser. No. 290,450

Int. Cl.[6] A01N *33/04;33/08;* **C02F** *1/50*

U.S. Cl. 514—667 **6 Claims**

1. A freshwater molluscicidal method comprising the step of applying to a freshwater target habitat of freshwater molluscs a molluscicidally effective amount of a compound or mixture of compounds selected from the group consisting of ethoxylated and/or propoxylated aliphatic diamines, and salts thereof, wherein said diamines have chain length of 2 to 22 carbon atoms and have at least one mole percent degree of ethoxylation and/or propoxylation.

5,622,996

POLYMER-SUPPORTED SULFONATED CATECHOL AND LINEAR CATECHOL AMIDE LIGANDS AND THEIR USE IN SELECTIVE METAL ION REMOVAL AND RECOVERY FROM AQUEOUS SOLUTIONS

Richard H. Fish, Berkeley, Calif., assignor to Regents of the University of California, Oakland, Calif.

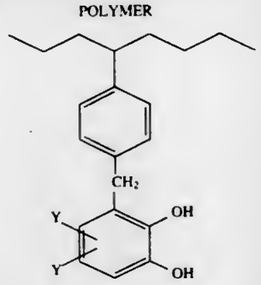
Filed Feb. 17, 1995, Ser. No. 389,851

Int. Cl.[6] C08F *8/32;8/36*

U.S. Cl. 521—33 **15 Claims**

1. A polymer having improved binding properties for metal ions and multiple pendant substituted catechol ligands, wherein the polymer-ligand is of general Structure (II):

POLYMER (II)



wherein

Y is selected from the group consisting of, SO_3H, SO_3M, COOH, and COOM, and M is a metal atom selected from the group consisting of alkali metals and alkaline earth metals, wherein said polymer backbone POLYMER is essentially water insoluble.

5,622,997

PROCESS FOR PREPARING A MOLDED ION EXCHANGE RESIN STRUCTURE

Stephen R. Tennison, and Richard H. Weatherhead, both of Surrey, England, assignors to BP Chemicals Limited, and The British Petroleum Co., p.l.c., Loudon, England

Filed Jun. 6, 1995, Ser. No. 469,232

Claims priority, application United Kingdom, Jul. 4, 1994, 9413408

Int. Cl.[6] C08F *236/00;279/00*

U.S. Cl. 521—33 **9 Claims**

1. A process for preparing a moulded ion exchange resin structure in which particles of an ion exchange resin precursor having chemically reactive functional groups on their surfaces are compressed into a preform having a predetermined shape, are subsequently chemically bonded together by a reaction of the functional groups present on their surfaces and are converted to an ion exchange resin.

5,622,998

DEPOLYMERIZED NATURAL RUBBER AND PROCESS FOR PREPARATION THEREOF

Yasuyuki Tanaka, Tokyo; Toshiaki Sakaki; Atsuko Kawasaki, both of Hyogo; Masaharu Hayashi, Wakayama; Eiji Kanamaru, Tokyo, and Kazuhiko Shibata, Osaka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo; Kao Corporation; Fuji Latex Co., Ltd., both of Tokyo, and Nitto Denko Corporation, Osaka, all of Japan

Filed Sep. 12, 1995, Ser. No. 527,322

Claims priority, application Japan, Sep. 14, 1994, 6-220538

Int. Cl.[6] C08J *3/09;* **C08C** *1/00*

U.S. Cl. 521—41 **20 Claims**

1. A depolymerized natural rubber, which is a liquid rubber having a number-average molecular weight of from 2,000 to 50,000 obtained by the oxidative, chemical depolymerization of a deproteinized natural rubber.

5,622,999

POLYSILICIC ACID/POLYISOCYANATE BASIC MATERIALS, BINDING MATERIALS AND FOAMS AND PROCESS FOR PREPARING SAME

Gabor Nagy; Miklos Barothy, and Margit Menyhart, all of Budapest, Hungary, assignors to Pollvent Fejleszto, Kivitelezo es Ertekesito KFT, Budapest, Hungary

PCT No. PCT/HU92/00022, § 371 Date Jan. 19, 1994, § 102(e) Date Jan. 19, 1994, PCT Pub. No. WO92/21713, PCT Pub. Date Dec. 10, 1992

PCT Filed May 18, 1992, Ser. No. 185,924

Claims priority, application Hungary, Jun. 3, 1991, 1843/1991

Int. Cl.[6] C08G *18/18*

U.S. Cl. 521—106 **14 Claims**

1. A polysilicic acid/polyisocyanate composition having a controlled gelation time and the mechanical characteristics of a polyester, which consists essentially of:

100 parts by mass of a polyisocyanate;

80 to 200 parts by mass of a polysilicic acid component;

3 to 50 parts by mass of phosphoric acid triesters and/or salts of phosphoric acid mono- and/or diesters formed with amines and/or alkaline metals;

0 to 1 part by mass of a catalyst selected from the group consisting of triethylenediamine, triethylamine, dimethylbenzyl amine, bis(dimethylaminoethyl) ether, tetramethylguanidine, dimethylformamide, dimethylacetamide, dimethylaniline, tetramethylurea, N-methylpyrrolidone, N-vinylpyrrolidone, dimethylaminopropionitrile, and hexamethylenetriamine, or a salt thereof formed with an organic or inorganic acid or a catalyst selected from the group consisting of tetramethoxy ammonium hydroxide, diethoxyethanolamine, tetramethoxyethylenediamine, diethoxymorpholine, and mixtures thereof;

5 to 50 parts by mass of a reactive diluent which after mixing with the polysilicic acid, hydrolyses due to the effect of sodium hydroxide present in the polysilicic acid, to release polyvalent alcohols capable of reacting with the polyisocyanate to function as chain lengthening or flexibilizing agents, or to release monovalent alcohols capable of reacting with the polyisocyanate to function as chain terminating agents,

0 to 5 parts by mass of a tenside as well as 0 to 400% by mass of fillers and optionally other auxiliaries, calculated for the total mass of the components listed above.

5,623,000

PRESSURE-SENSITIVE ADHESIVE HAVING EXCELLENT HEAT-RESISTANCE, ADHESIVE SHEET USING IT, AND METHOD FOR PRODUCING THOSE

Takao Yoshikawa, and Takaaki Moriyama, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 181,877, Jan. 13, 1994, Pat. No. 5,462,977, which is a continuation of Ser. No. 969,580, Oct. 30, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,282

Claims priority, application Japan, Oct. 31, 1991, 3-313235

Int. Cl.[6] C09J *7/02*

U.S. Cl. 522—16 **11 Claims**

1. A pressure-sensitive adhesive having excellent heat resistance at temperatures of 100° C. to 260° C., comprising a photopolymerization product of a composition comprising:

a) 100 parts by weight of a monomer mixture comprising from 70 to 100% by weight of a (meth)acrylic acid alkyl ester having from 2 to 14 carbon atoms in the alkyl moiety and from 30 to 0% by weight of a monoethylenically unsaturated monomer copolymerizable with the (meth)acrylic acid alkyl ester,

b) from 0.02 to 5 parts by weight of a poly-functional (meth-)acrylate) as a crosslinking agent, and

c) from 0.01 to 4 parts by weight of a photopolymerization initiator,

wherein said photopolymerization product has been heat dried in the absence of a low boiling organic solvent after photopolymerization and comprises solvent-insoluble components in an amount of at least 60% by weight and unreacted monomers in an amount of less than 5,000 ppm.

5,623,001

INK COMPOSITIONS AND A METHOD FOR MAKING SAME

Murray Figov, Ra'anana, Israel, assignor to Scitex Corporation Ltd., Herzlia, Israel

Filed Sep. 13, 1995, Ser. No. 527,594

Claims priority, application Israel, Sep. 21, 1994, 111014

Int. Cl.[6] C09D *11/10;* **C08J** *3/28*

U.S. Cl. 522—84 **17 Claims**

1. An ultraviolet radiation curable ink-jet ink composition comprising in combination:

a. water, said water content being between about 20% and 75% by weight;

b. a water miscible ultra-violet curable polymerizable material;

c. a photoinitiator; and

d. a colorant,

wherein the viscosity of said ink-jet ink composition is between about 2–40 centipoise.

5,623,002

MATERIAL FOR CONTACT LENS AND CONTACT LENS PREPARED THEREFROM

Masashi Nomura, Saitama-ken, and Yuuichi Yokoyama, Kounosu, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Continuation of Ser. No. 44,893, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 661,137, Feb. 27, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,701

Claims priority, application Japan, Feb. 28, 1990, 2-48476

Int. Cl.[6] G02C *7/04;* **C08F** *20/04*

U.S. Cl. 523—106 **7 Claims**

1. A nonwater containing soft contact lens obtained by visible ray polymerization of a mixture consisting essentially of at least

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one unsaturated carboxylic acid and at least one visible ray polymerization initiator selected from the group consisting of d,l-camphorquinone, diacetyl and acenaphthenequinone, where the unsaturated carboxylic acid is a mono or dicarboxylic acid which is unsubstituted, silyl substituted, fluoroalkyl substituted, perfluoroalkyl substituted or alkyl substituted: and

processing the treated material into the soft contact lens including esterification with an alcohol.

5,623,003

COATING COMPOSITIONS CONTAINING POLYESTER RESIN, EPOXY RESINS AND AN ANTICORROSION PIGMENT

Shoichi Tanaka, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Amagasaki, Japan

Continuation-in-part of Ser. No. 409,659, Mar. 24, 1995, abandoned. This application Jun. 11, 1996, Ser. No. 661,566
Claims priority, application Japan, Mar. 29, 1994, 6-84086
Int. Cl.[6] C08K *3/18;* **C08L** *63/04;67/02*
U.S. Cl. 523—428 **8 Claims**

1. A coating composition containing a resin composition consisting of (A) 10 to 90 parts by weight of at least one resin selected from the group consisting of a polyester resin having a glass transition temperature of −5° C. to 80° C. and a number average molecular weight of 5,000 to 30,000, and an epoxy-modified polyester resin having a glass transition temperature of 10° C. to 130° C. and a number average molecular weight of 6,000 to 30,000; (B) 5 to 70 parts by weight of a novolac-based epoxy resin; (C) 5 to 40 parts by weight of a curing agent per 100 parts by weight of the resin composition respectively; and (D) 20 to 120 parts by weight of an anticorrosion pigment per 100 parts by weight of the resin composition, said glass transition temperature being measured by a differential thermal analysis at a heating speed of 10° C./minute.

5,623,004

GRAFT COPOLYMER COATING COMPOSITIONS

James L. Bertram; Zeng K. Liao, and A. L. McCrary, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 248,797, May 25, 1994, Pat. No. 5,426,139. This application Apr. 26, 1995, Ser. No. 429,396
Int. Cl.[6] C08K *3/20;* **C08L** *63/02*
U.S. Cl. 523—436 **20 Claims**

1. A twice-grafted copolymer that comprises:

(1) a phenolic resin, which is the reaction product of at least one diglycidyl ether of a dihydric phenol and an excess of at least one dihydric phenol;

(2) a pendant poly(alkylene oxide) chain linked to the phenolic resin, and

(3) a pendant poly(unsaturated acid) polymer or copolymer linked either to the phenolic resin, or to the poly(alkylene oxide) chain, or to both

wherein Components (1), (2) and (3) are selected such that the twice-grafted copolymer is not substantially water-dispersible in its free-acidic state.

5,623,005

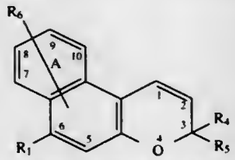
PHOTOCHROMIC NAPHTHOPYRAN COMPOUNDS

Martin Rickwood, Southport; Katharine E. Smith, Dewsbury; Christopher D. Gabbutt, Blackburn, and John D. Hepworth, Preston, all of United Kingdom, assignors to Pilkington PLC, United Kingdom

PCT No. PCT/GB94/00628, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/22850, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 25, 1994, Ser. No. 530,162
Claims priority, application United Kingdom, Mar. 30, 1993, 9306587
Int. Cl.[6] C07D *405/02;413/02;* **G02B** *5/23*
U.S. Cl. 524—96 **23 Claims**

1. A naphthopyran compound of general formula (I)

(I)



wherein R_1 represents a group of the formula $—NR_2R_3$ wherein each of R_2 and R_3, which may be the same or different, independently represents an alkyl group, or a carbocyclic or heterocyclic group, or R_2 and R_3 taken together with the nitrogen atom to which they are attached represent a heterocyclic ring having one or more hetero atoms and which may optionally carry at least one substituent selected from alkyl, aryl or heteroaryl groups;

each of R_4 and R_5, which may be the same or different, independently represents an alkyl, alkenyl, carbocyclic or heterocyclic group, or R_4 and R_5 taken together with the carbon atom to which they are attached form a carbocyclic ring or a heterocyclic ring; and

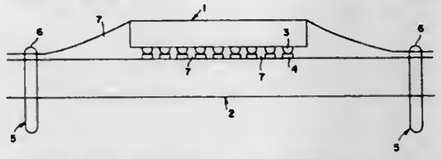
R_6 represents a hydrogen atom or a substituent selected from alkyl, alkoxy, aryl, aryloxy, heteroaryl, halogen, a group of formula R_1 as defined above, azo, imino, amide, carboxylate, ester, cyano, trifluromethyl or nitro, and in addition R_6 may represent a carbocyclic or heterocyclic ring fused to ring A.

5,623,006

SOLDER INTERCONNECTION

Konstantinos I. Papathomas, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 304,826, Sep. 13, 1994, Pat. No. 5,468,790, which is a division of Ser. No. 997,964, Dec. 29, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,716
Int. Cl.[6] C08K *5/34;* **C08G** *73/06;* **H01L** *23/48;23/52*
U.S. Cl. 524—100 **20 Claims**



1. A solder interconnection for forming connections between an integrated semiconductor device and a carrier substrate comprising:

a plurality of solder connections that extend from the carrier substrate to electrodes on said semiconductor device to form a gap between said carrier substrate and the semiconductor device, wherein said gap is filled with a composition obtained from curing a composition containing as binder:

(a) monocyanate; and

(b) dicyanate; prepolymer thereof or mixtures thereof, wherein the amount of (a) is about 5 to about 50% by weight of the total of (a) and (b), and correspondingly, the amount of (b) is about 50% to about 95% by weight based upon the amount of (a) and (b), and filler having a maximum particle size of about

49 microns and being substantially free of alpha particle emissions; wherein the amount of the polymer is about 30% to about 50% by weight of the total of polymer and filler and correspondingly, the amount of filler is about 50% to about 70% by weight based upon the weight of polymer and filler.

5,623,007

REVERSION RESISTANT RUBBER COMPOSITION

Thomas P. Kuebler, Uniontown, Ohio, assignor to Kumho Tire Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 493,325, Jun. 21, 1995, abandoned. This application Aug. 29, 1996, Ser. No. 705,011
Int. Cl.[6] C08K *5/34*
U.S. Cl. 524—105 **14 Claims**

1. A sulfur vulcanizable rubber composition comprising:

(a) a rubber or mixture thereof: and

(b) as anti-reversion agents, (1) about 3 to about 5 phr of a homogeneous mixture of zinc salts of the following acids: (i) at least one carboxylic acid of the formula RCOOH wherein R is a radical selected from the group consisting of an alkyl group having 5 to 17 carbon atoms and a cycloalkyl group having 5 to 17 carbon atoms, and (ii) at least one unsubstituted or substituted aromatic carboxylic acid, wherein the molar ratio of component (i) to component (ii) is within the range of 1:19 and 19:1, and (2) about 0.8 to about 2 phr of a compound of the following formula (I) or mixture thereof:

$$Q_1—D—(Q_2)_n \quad (I)$$

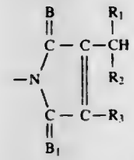
wherein:

n is 1, 2 or 3;

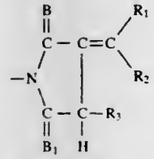
D is a monomeric or oligomeric divalent, trivalent or tetravalent group containing at least one carbon atom and may optionally contain one or more hetero atoms or radicals selected from the group consisting of nitrogen, oxygen, silicun, phosphorus, boron, sulfone and sulfoxy; and

Q_1 and Q_2 may be the same or different and each is independently selected from the group consisting of formulas (II) and (III):

(II)



(III)



wherein R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, C_1–C_{18} alkyl groups, C_3–C_{18} cycloalkyl groups, C_6–C_{18} aryl groups, C_7–C_{30} araikyl groups and C_7–C_{30} alkaryl groups, and R_2 and R_3 may combine to form a ring when R_1 is hydrogen; and B and B_1 are independently selected from the group consisting of oxygen and sulfur.

5,623,008

RUBBER COMPOSITION FOR GLASS-RUN

Hideyuki Fujiwara, and Takashi Mizushima, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Japan

Filed Nov. 13, 1995, Ser. No. 558,092
Claims priority, application Japan, Dec. 28, 1994, 6-327149
Int. Cl.[6] C08K *5/15*
U.S. Cl. 524—114 **7 Claims**

1. A glass-run equipped with a urethane lubricating layer on the glass contact area, which comprises an EPDM and an adhesive modifier, wherein the adhesive modifier comprises a glycidyl ether, and a metal hydroxide of a metal selected from metals of the III B group and the II A group.

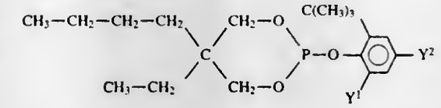
5,623,009

NEO-DIOL PHOSPHITES AS POLYMER STABILIZERS

James A. Mahood, Parkersburgh, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 307,545, Sep. 16, 1994, Pat. No. 5,424,348, which is a continuation of Ser. No. 96,530, Jul. 22, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 415,394
Int. Cl.[6] C08K *5/527;* **C07F** *9/02*
U.S. Cl. 524—117 **11 Claims**

1. A phosphite of the formula:



wherein Y^1 is alkyl and Y^2 is selected from the group consisting of t-butyl and sec-butyl.

4. A thermoplastic polymeric composition comprising a thermoplastic resin and from 0.01 to 1.0 percent by weight of a phosphite as claimed in claim 1 based on the total weight of the composition.

5,623,010

ACRYLATE-CONTAINING POLYMER BLENDS AND METHODS OF USING

James D. Groves, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 22, 1995, Ser. No. 493,633
Int. Cl.[6] C08K *3/10*
U.S. Cl. 524—174 **10 Claims**

1. A polymer blend comprising

(a) a modified block copolymer comprising

(i) a polystyrene block and

(ii) a polydiene block or a hydrogenated polydiene block, said polydiene block or hydrogenated polydiene block containing an average of one or more carboxyl groups; and

(b) a polymer comprising a polymerization reaction product of

(i) an acrylic or methacrylic acid ester of a non-tertiary alcohol having 1 to 14 carbon atoms, inclusive, and

(ii) from about 1 to about 15 parts, based on 100 parts by weight of polymer (b), of a monomer having carboxylic acid functionality,

wherein said polymer (b) further comprises a titanate selected from the group consisting of ethanol, 2,2',2"-nitrilotris-titanium (4+) salt); titanium bis(ethyl-3-oxobutanolato-O $_1O^3$)bis-2-propanolato: a reaction product of tetraalkyltitanate with a β-diketone and an alkanolamine; and tetrabutyltitanate (1-butanol,titanium (4+) salt).

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5,623,011

TACKIFIED EMULSION PRESSURE-SENSITIVE ADHESIVE

Margaret M. Bernard, LaVerne, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 289,418, Aug. 12, 1994, abandoned. This application May 14, 1996, Ser. No. 645,693

Int. Cl.[6] C08L *31/02*

U.S. Cl. 524—270 **35 Claims**

1. A pressure-sensitive adhesive, comprising:

(a) a pressure-sensitive adhesive polymer formed by emulsion polymerization of a monomer mixture comprising, on a polymerized basis and based on the total weight of the monomers:

(i) from about 35 to about 60% by weight of at least one alkyl acrylate containing from about 4 to about 8 carbon atoms in the alkyl group,

(ii) from about 15 to about 35% by weight of at least one vinyl ester containing from 2 to about 16 carbon atoms in the alkyl chain of the ester,

(iii) from about 15 to about 35% by weight of at least one diester of a dicarboxylic acid, wherein each alkyl group of the diester independently contains from about 6 to about 12 carbon atoms, and

(iv) from 0 to about 5% by weight of at least one unsaturated carboxylic acid containing from about 3 to about 5 carbon atoms,

said polymer having a glass transition temperature of less than about −30° C. and gel content of from about 50 to about 70% by weight of the polymer; and

(b) a tackifier having an acid number of from about 30 to about 60 and a ring and ball softening point of from about 50° to about 70° C.

5,623,012

PELLETIZING AID FOR POLYMERS

Charles C. Hwo, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1995, Ser. No. 574,805

Int. Cl.[6] C08K *5/098*

U.S. Cl. 524—398 **13 Claims**

1. A method for minimizing the agglomeration of freshly manufactured polyolefin pellets comprising adding an effective amount of pelletizing aid package consisting essentially of a high density polyethylene and a fatty acid metallic surfactant to a device comprising a cooling agent and said freshly prepared pellets during the manufacturing of said pellets.

5,623,013

XONOTLITE-REINFORCED ORGANIC POLYMER COMPOSITION

Hideho Tanaka; Yukihiko Asano; Kunio Watanabe, and Hisataka Uchimura, all of Yamaguchi, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Aug. 2, 1995, Ser. No. 510,224

Claims priority, application Japan, Dec. 16, 1994, 6-313001; Dec. 16, 1994, 6-313002; Dec. 20, 1994, 6-317234

Int. Cl.[6] C08J *5/10;* **C08K** *3/34;* **C08L** *23/00*

U.S. Cl. 524—443 **11 Claims**

1. A Xonotlite-reinforced organic polymer composition obtained by mixing (A) an organic polymer and (B) fibrous Xonotlite, in which said fibrous Xonotlite

(1) satisfies conditions (a), (b), and (c):

(a) 0.1 μm≦D≦0.4 μm

(b) 1 μm≦L<5 μm

(c) 10≦L/D≦15

wherein D and L represent an average fiber diameter and an average fibor longth, respectively, of fibrous Xonotlite (B);

(2) has a BET specific surface area of not less than 21 m^2/g as measured by nitrogen adsorption;

(3) has had its surface treated with a surface active agent and/or a coupling agent; and

(4) has been formed into granules.

5,623,014

DISPERSION OR SOLUTION CROSSLINKABLE AT ROOM TEMPERATURE WITH HYDROXYLAMINES OR OXIME ETHERS

Gerhard Bauer, Weinheim; Oral Aydin; Kaspar Bott, both of Mannheim; Horst Neuhauser, Dudenhofen; Gregor Ley, Wattenheim; Albrecht Zosel, Weinheim; Jochen Wild, Ruppertsberg; Albrecht Harreus, Ludwigshafen, and Eckehardt Wistuba, Bad Durkheim, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/01395, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/25588, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 3, 1993, Ser. No. 347,466

Claims priority, application Germany, Jun. 13, 1992, 42 19 384.2

Int. Cl.[6] C08F *8/30*

U.S. Cl. 524—543 **6 Claims**

1. A dispersion or solution of a crosslinkable copolymer selected from the group consisting of free radical polymers, polycondensates and polyadducts, which consists of from 0.001 to 20% by weight of aldehyde groups —CHO or keto groups —CO— available for crosslinking and contains, as a crosslinking agent, a compound having at least two oxime ether groups derived from corresponding H_2N—O— groups.

5,623,015

LATEX BINDER COMPOSITIONS

David F. Diehl, Akron, and Peter C. Hayes, Stow, both of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Division of Ser. No. 201,824, Feb. 25, 1994, Pat. No. 5,523,345. This application Apr. 4, 1996, Ser. No. 628,216

Int. Cl.[6] C08L *39/00*

U.S. Cl. 524—555 **7 Claims**

1. In an article comprising a cellulose based substrate and having nonwoven fibers therein bound together with a binder made by the emulsion polymerization of monomers comprising primary comonomers of from about 30 parts to about 70 parts by weight of one or more conjugated diene monomers having from 4 to 8 carbon atoms and from about 70 to about 30 parts by weight of one or more vinyl-substituted aromatic monomers having from 8 to 12 carbon atoms, the total amount of said primary monomers being 100 parts by weight;

from about 0.1 to about 3 parts by weight of an acrylamide monomer or a derivative thereof and optionally from about 0.1 to about 10 parts by weight of an unsaturated carboxylic acid monomer other than methacrylic acid and acrylic acid for every 100 parts by weight of said primary comonomers,

wherein the improvement comprises the addition of from about 0.1 to about 6 parts by weight of a methacrylic acid monomer and from about 0.1 to about 5 parts by weight of an N-methylol-functional ethylenically unsaturated monomers including derivatives thereof for every 100 parts by weight of said primary monomers.

5,623,016

AQUEOUS, AUTOCROSSLINKING POLYURETHANE-VINYL HYBRID DISPERSIONS

Heinz-Peter Klein, Mainz, and Joerg-Peter Geisler, Ingelheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 327,495, Oct. 21, 1994. This application Jun. 1, 1995, Ser. No. 456,321

Claims priority, application Germany, Oct. 23, 1993, 43 36 206.0

Int. Cl.[6] C08L *31/04*

U.S. Cl. 524—591 **6 Claims**

1. A process for the production of an aqueous, autocrosslinking polymer dispersion binder which comprises polyhydrazides and carbonyl-containing urethane-vinyl hybrid polymers, which are composed of vinyl-containing urethane macromonomer blocks and vinyl blocks derived from further vinyl monomer units, at least one of which contains one or more carbonyl groups, said process comprising the steps of:

(a) reacting polyhydroxy compounds, polyisocyanates, vinyl monomers, and hydrophilic monomers which contain hydrophilic groups to form a vinyl-containing urethane macromonomer;

(b) dispersing said vinyl-containing urethane macromonomer in water;

(c) reacting said dispersed vinyl-containing urethane macromonomer with further vinyl monomers by free radical-initiated polymerization, wherein at least one of the further vinyl monomers contains one or more carbonyl groups, to form a carbonyl-containing polyurethane-vinyl hybrid; and

(d) adding an effective crosslinking amount of a polyhydrazide.

5,623,017

CLEAR SILICONE GELS

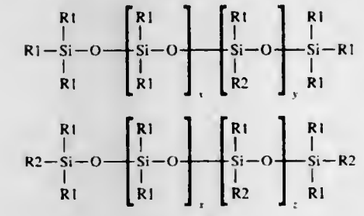
Randal M. Hill, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 8, 1996, Ser. No. 598,451

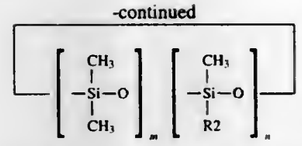
Int. Cl.[6] C08K *3/20*

U.S. Cl. 524—860 **7 Claims**

1. A method of making a gel composition comprising sequentially (i) combining 15–30% by weight of a silicone polyether based on the weight of the composition, and a cyclic methyl siloxane of the formula $\{(CH_3)_2SiO\}_p$ or a linear methyl siloxane of the formula $(CH_3)_3SiO\{(CH_3)_2SiO\}_qSi(CH_3)_3$ in which p is 3–6 and q is 0–5; (ii) mixing the silicone polyether with the cyclic or linear methyl siloxane; (iii) adding water to the mixture of silicone polyether and cyclic or linear methyl siloxane such that the methyl siloxane and water are in proportions between 40:60 to 80:20 by weight; and (iv) mixing the water, silicone polyether, and cyclic or linear methyl siloxane until a clear gel forms; the gel having a viscosity of about 700,000 poise at an applied shear stress of 2,500 dyne/cm^2 which decreases to less than about 10,000 poise at an applied shear stress of 15,000 dyne/cm^2; the silicone polyether having a formula selected from the group consisting of



-continued



where R1 is an alkyl group containing 1–6 carbon atoms; R2 is $-(CH_2)_aO(C_2H_4O)_b(C_3H_6O)_cR3$; x is 0–3; y is 1–3; z is 0–2; m is 3–5; n is at least one; a is 3–6; b is 13–24; c is 0–5; and R3 is hydrogen, a methyl radical, or an acyl radical.

5,623,018

THERMOPLASTIC RESIN COMPOSITION INCLUDING AN AMORPHOUS RESIN, AN EPOXY GROUP-CONTAINING ETHYLENE COPOLYMER, AND A POLYFUNCTIONAL COMPOUND OR A CARBOXYLIC ACID METAL SALT

Tadayuki Ohmae, Toyonaka; Noboru Yamaguchi; Kenzo Chikanari, both of Ichihara, and Kiyoshi Ogura, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., and Sumika A&L Inc., both of Osaka-fu, Japan

Division of Ser. No. 260,742, Jun. 15, 1994, Pat. No. 5,508,347. This application Jun. 7, 1995, Ser. No. 487,512

Claims priority, application Japan, Jun. 16, 1993, 5-144950; Jun. 16, 1993, 5-144951

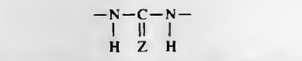
Int. Cl.[6] C08L *69/00;25/12;25/06;* **C08K** *5/098*

U.S. Cl. 525—74 **1 Claim**

1. A thermoplastic resin composition comprising (A) an amorphous resin selected from the group consisting of a polystyrene-based resin, a vinyl cyanide-aromatic vinyl copolymer and a polycarbonate resin, and further comprising, per 100 parts by weight of the amorphous resin,

0.01 to 20 parts by weight of (B) an epoxy group-containing ethylene copolymer, and

0.01 to 20 parts by weight of at least one member selected from the group consisting of (C) a polyfunctional compound and (D) a metal salt of a C_2–C_{20} aliphatic mono- or di-carboxylic acid or a metal salt of a C_7–C_{13} aromatic mono-, di- or tri-carboxylic acid wherein said polyfunctional compound is a heterocyclic compound having per molecule, at least one unit represented by the formula (2)



(2)

wherein Z represents oxygen atom or sulfur atom.

5,623,019

COMPATIBILIZED THERMOPLASTIC MOLDING COMPOSITION

Jeffrey S. Wiggins, Pittsburgh, Pa.; Harald Pielartzik, Krefeld, Germany; Robert J. Kumpf; Joachim Franke, both of Pittsburgh, Pa., and Clifford J. Lau, Sewickley, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Jul. 13, 1995, Ser. No. 502,112

Int. Cl.[6] C08L *23/02;75/04;53/02*

U.S. Cl. 525—92 C **18 Claims**

1. A homogenous thermoplastic molding composition comprising

(i) about 30 to 90 percent TPU,

(ii) about 10 to 70 percent of a polyolefin having a number average molecular weight of at least 10,000 and

(iii) about 1 to 8 percent of a compatibilizing agent wherein said polyolefin is selected from the group consisting of

(i) low density polyethylene

(ii) high density polyethylene

(iii) polypropylene

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(iv) poly-3-methylbutene-1-polybutene-1
(v) poly-4-methylpentene-1
(vi) copolymer of mono olefin with another monoolefin
(vii) copolymer of olefin with a diolefin
(viii) copolymer of olefin vinyl acetate, and
(ix) copolymer of olefin with vinyl acrylate

and wherein said compatibilizing agent comprises a second copolymer having a number average molecular weight of about 25,000 to 350,000 containing 1) blocks of monoalkylene arene having a number average molecular weight of about 5,000 to 125,000 and 2) blocks having a number average molecular weight of about 10,000 to 250,000 selected from the group consisting of hydrogenated conjugated diene, and non-hydrogenated conjugated diene, said second copolymer having a structure selected from the group consisting of

(a) linear diblocks,
(b) linear and branched tri-blocks containing no hydrogenated conjugated diene blocks,
(c) linear and branched tri-blocks containing hydrogenated conjugated diene blocks wherein said blocks of monoalkylene arene comprise at least 56% relative to the weight of said triblock,
(d) radial block containing no hydrogenated conjugated diene blocks,
(e) radial block containing hydrogenated conjugated diene blocks wherein said monoalkylene arene blocks comprise at least 56% relative to the weight of said radial block,
(f) radial block containing hydrogenated conjugated diene blocks as end-groups,
(g) linear multi-blocks containing at least one hydrogenated conjugated diene as an end block, and
(h) linear multi-blocks containing non-hydrogenated conjugated diene

wherein said multi-blocks comprise at least four blocks, and wherein monoalkylene arene is selected from the group consisting of styrene, methyl styrene and ring substituted styrene, and wherein diblock copolymers denote tapered and non-tapered segments, said percent being relative to the weight of said composition.

5,623,020

POLYANILINE DERIVATIVES AND THEIR PRODUCTION PROCESS

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 858,058

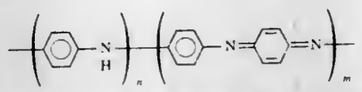
Claims priority, application Japan, Apr. 1, 1991, 3-092650; May 1, 1991, 3-126506; May 1, 1991, 3-126507; Jun. 12, 1991, 3-166122; Jun. 21, 1991, 3-175704; Jun. 28, 1991, 3-183858; Jul. 5, 1991, 3-191218; Aug. 26, 1991, 3-236907; Aug. 26, 1991, 3-236908; Oct. 9, 1991, 3-289437; Oct. 11, 1991, 3-290373; Dec. 12, 1991, 3-350616; Jan. 17, 1992, 4-025952; Jan. 17, 1992, 4-025954

Int. Cl.[6] C08G *71/00;* **C08L** *79/00*

U.S. Cl. 525—185 **17 Claims**

1. A polyaniline derivative which comprises a polyaniline having number average molecular weight in a range of from 2,000 to 500,000 represented by the following formula (I) as the main polymer chain.

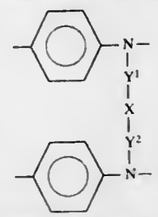
(I)



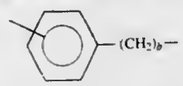
wherein m and n are 0 or an integer of at least 1, m/(m+n)=0–1, and m+n=10–5,000.

and cross-linking units represented by the following formula (II)

(II)



wherein X is a divalent C_1–C_{30} aliphatic hydrocarbon group, a group represented by the formula:



wherein b is 1–3, a divalent aromatic hydrocarbon group, a divalent polysiloxane group, or another divalent group derived from a compound having 2 or more repeating structural units, Y^1 and Y^2 which may be identical or different denote each

$$-CO-,\ -C(=Z)NH-,\ -SO_q-\ \text{or}\ -\underset{\underset{OH}{|}}{CH}-CH-;$$

wherein Z is an oxygen atom or a sulfur atom, Q is an oxygen atom, a sulfur atom or —NH— atom, and a is 0–2.

5,623,021

CRYSTALLINE PROPHYLENE COPOLYMER COMPOSITIONS HAVING A LOW SEAL TEMPERATURE AND GOOD INK ADHESION

Anteo Pelliconi, Rovigo; Giampaolo Pellegatti, Ferrara, and Paolo Vincenzi, Rovigo, all of Italy, assignors to Montell North America Inc., Wilmington, Del.

Filed Mar. 23, 1995, Ser. No. 409,364

Claims priority, application Italy, Mar. 24, 1994, MI94A0565

Int. Cl.[6] C08L *23/00*

U.S. Cl. 525—240 **11 Claims**

1. A crystalline propylene copolymer composition comprising (percent by weight):

A) 20–60% of a copolymer of propylene with ethylene, containing 1% to 5% of ethylene; and
B) 40–80% of a copolymer of propylene with ethylene and a C_4–C_8 alpha-olefin, the ethylene content being 1% to 5% and the C_4–C_8 alpha-olefin content being 6% to 15%; the total content of ethylene in the composition being 1% to 5% and the total content of C_4–C_8 alpha-olefin in the composition being 2.4% to 12%.

said composition being prepared by sequential polymerization in at least two stages.

5,623,022

PROCESS FOR PRODUCING PROPYLENE BLOCK COPOLYMERS

Toshihiko Sugano, Yokohama, and Takao Tayano, Yokkaichi, both of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 502,141

Claims priority, application Japan, Jul. 14, 1994, 6-162405

Int. Cl.[6] C08F *297/08*

U.S. Cl. 525—247 **16 Claims**

1. A process for producing a propylene block copolymer comprising carrying out substantially in the gas phase the following

polymerization step (1) in the presence of a catalyst comprising the following Components (A) and (B), and then carrying out the following polymerization step (2) in the presence of the catalyst used in and in the presence of the polymer prepared in the polymerization step (1) to form a block copolymer having a weight ratio of a polymer produced in the polymerization step (1) to the resulting polymer produced in the polymerization step (2) in the range from 5/95 to 70/30:

Component (A) which is a compound of a transition metal in the IVB–VIB groups of the Periodic Table which has a n-conjugated five-membered ring ligand;

Component (B) which is at least one compound selected from the compound group consisting of:

ingredient (i) which is an alkylalumoxane;

ingredient (ii) which is a reaction product of the compound represented by the formula

$R^4B—(OH)_2$

wherein R^4 represents a hydrocarbon group having 1–10 carbon atoms, with an organoaluminum compound;

ingredient (iii) which is a Lewis acid; and

ingredient (iv) which is an ionic compound,

Polymerization step (1) which is a step for polymerizing propylene with at least one comonomer selected from the group consisting of ethylene and an α-olefin having 4–20 carbon atoms so that the polymerization ratio in a molar ratio of propylene to the comonomer will be in the range from 0/100 to 80/20; and

Polymerization step (2) which is a step for producing a crystalline propylene homopolymer or a propylene copolymer of propylene with at least one comonomer selected from the group consisting of ethylene and an α-olefin having 4–20 carbon atoms, the copolymer having a comonomer content no higher than 10% by weight based on the monomers used in the polymerization step (2).

5,623,023

CURABLE COMPOSITIONS WHICH RELEASE IMIDAZOLE UPON IRRADIATION

Tadatomi Nishikubo, Fujisawa, Japan, assignor to Taiyo Ink Manufacuturing Co., Ltd., Japan

Filed May 21, 1996, Ser. No. 650,981

Claims priority, application Japan, May 23, 1995, 7-146889

Int. Cl.[6] C08G *59/44;59/54*

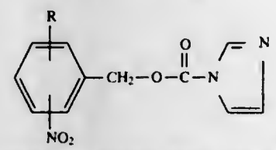
U.S. Cl. 525—327.3 **18 Claims**

1. A curable composition comprising:

(A) an imidazole derivative represented by the following general formula (1), which is capable of generating free imidazole by irradiation with a light, and

(B) a polyfunctional epoxy compound:

(1)



wherein R represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl group, a nitro group, a cyano group, an alkoxyl group, a phenoxy group, or an aromatic ring residue capable of forming a condensed ring in combination with a benzene ring.

5,623,024

PROCESS FOR MELT-SPINNING FIBERS FROM MODIFIED POLYAMIDE BLENDS

Richard Kotek, Arden, N.C., and Hans-Georg Matthies, Ludwigshafen, Germany, assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 319,723, Oct. 7, 1994, Pat. No. 5,559,194, which is a continuation of Ser. No. 12,821, Feb. 3, 1993, abandoned. This application Jan. 25, 1996, Ser. No. 591,320

Int. Cl.[6] C08L *77/02;77/12*

U.S. Cl. 525—397 **8 Claims**

1. A process for manufacturing a fiber, comprising fiber melt-spinning a polymer blend which comprises:

(a) from about 70 to about 99.85% by weight of a polyamide;
(b) from about 1 to about 5% by weight of a copolymer miscible with the polyamide derived from hexamethylenediamine, isophthalic acid (I), and terephthalic acid (T); and
(c) from about 10 to about 25% by weight of an amorphous poly(phenylene oxide) polymer immiscible with the polyamide.

5,623,025

EPOXY-FUNCTIONAL HYDROXY ESTERS

Jimmy D. Elmore, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 361,075, Dec. 21, 1994, abandoned. This application May 6, 1996, Ser. No. 643,196

Int. Cl.[6] C08F *4/42*

U.S. Cl. 525—450 **20 Claims**

1. A composition comprising a product produced by reacting dimethylolpropionic acid and an epoxy resin selected from the group consisting of aliphatic or cycloaliphatic glycidyl ethers, epoxy novolacs and cycloaliphatic epoxies, said epoxy resin having a functionality of at least about 1.5 epoxide group per molecule in a dimethylol propionic acid to epoxy resin mole ratio of from about 1:1 to about 1:500.

5,623,026

SILOXANES CONTAINING EPOXY GROUPS, AND MIXTURES THEREOF WITH POLYCARBONATES

Josef Buekers; Peter Bier, both of Krefeld; Sabine Schlitte, Langenfeld; Hubertus Eversheim, Wermelskirchen, and Helmut-Martin Meier, Ratingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 494,808, Jun. 26, 1995, abandoned. This application Dec. 28, 1995, Ser. No. 587,454

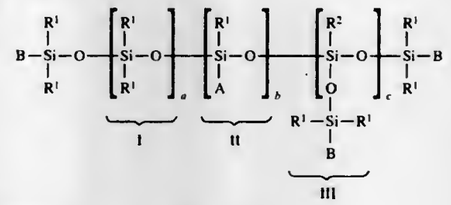
Claims priority, application Germany, Jul. 8, 1994, 44 24 105.4

Int. Cl.[6] C08F *283/02*

U.S. Cl. 525—463 **6 Claims**

1. A mixture comprising aromatic polycarbonate and siloxane having the formula (1)

(1)



wherein

A is a C_1–C_{20} alkyl radical with epoxy groups,
B is R^1 or A,
R^1, R^2 independently of each other, is C_1–C_{20} alkyl or C_6–C_{10} aryl.

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a is zero or a whole number from 1–100,
b is zero or a whole number from 1–100,
c is a whole number from 1–5; and
wherein the mixture contains 0.001 to 2.5% by weight of the siloxane, based on total mixture weight.

5,623,027

SILICONE-MODIFIED ALIPHATIC POLYESTER

Ronald J. Lewarchik, Sleepy Hollow; Marc L. Smith, Crystal Lake, both of Ill., and Edward J. Holzrichter, Redlands, Calif., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 155,063, Nov. 19, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 394,022
Int. Cl.[6] C08G *63/695*
U.S. Cl. 525—466 **2 Claims**

1. A coating composition comprising
A) an adduct comprising polyester chains adducted to silicone resin, said silicone resin comprising between about 5 and about 30 weight percent of said adduct, said polyester chains comprising between about 70 and about 95 weight percent of said adduct, said polyester chains having hydroxyl numbers of between about 10 and about 120, said polyester chains being formed from polyfunctional alcohols and polyfunctional acids and/or anhydrides, plus
B) a hydroxyl-reactive cross-linking agent provided at at least about one-half the stoichiometric equivalent of hydroxyl functionality of said polyester;
the improvement wherein 100 percent of said polyfunctional acids and/or anhydrides of said polyester chains are cyclohexane dicarboxylic acid(s) or anhydride(s) and 100 percent of said polyfunctional alcohols of said polymer chain are aliphatic or cycloaliphatic, whereby improved coatability and re-coatability is achieved in said coating composition.

5,623,028

HEAT CURED RUBBERS

John J. Fitzgerald, Clifton Park; John A. Osaheni, Niskayuna; Stanlee T. Buddle, Gloversville, all of N.Y., and Donald T. Pero, Adams, Mass., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 1, 1995, Ser. No. 566,250
Int. Cl.[6] C08F *283/00*
U.S. Cl. 525—474 **4 Claims**

1. A heat curable silicone rubber composition comprising:
(a) from about 5 parts by weight to about 100 parts by weight of a vinyl on chain vinyl stopped gum having the formula:

$$M^{vi}D^{vi}_{x}D_{y}M^{vi}$$

where x and y are different integers greater than zero and the sum of x and y have values whereby the viscosity of (a) is between 200,000 and 200,000,000 cps and the alkenyl level varies from about 0.20 weight percent to about 14.00 weight percent;
(b) from about 0.2 parts by weight to about 95 parts by weight of a vinyl stopped gum having the following formula:

$$M^{vi}D_{z}M^{vi}$$

where z is an integer greater than zero having a value whereby the viscosity of (b) is between 200,000 and 200,000,000 cps and the alkenyl level varies from about 150 to about 350 weight parts per million;
(c) from 0.2 parts by weight to about 75 parts by weight of a vinyl on chain gum having non-reactive end groups with the following formula:

$$MD^{vi}_{q}M$$

where q is an integer greater than zero whereby the viscosity of (c) is between 200,000 and 200,000,000 cps and the alkenyl level varies from about 0.10 weight per cent to about 14.00 weight percent;
(d) from about 0.0001 parts by weight to about 30 parts by weight of a diluent gum having the following formula:

$$MD_{w}M$$

where w is an integer greater than zero whereby the viscosity of (d) is between 200,000 and 200,000,000 cps;
whereby the quantities present of the components (a), (b), (c), and (d) add to 100 parts by weight;
(e) from about 0.1 parts by weight to about 5 parts by weight of an MQ resin, as a mold release agent, having a viscosity between 500 and 50,000 centipoise, where the M:Q ratio between about 0.8:1.0 and about 0.8:1.5;
whereby the quantities present of the components (a), (b), (c), (d), and (e) add to between about 100.1 parts by weight to about 105 parts by weight;
(f) from about 15 to about 80 parts by weight of a fumed silica filler treated by the process of
(i) contacting a fumed silica filler having a surface with a compound that will react with silanol groups present on said surface of said silica, said compound selected from the group consisting of
vinyl-dimethyl-silanol, vinyl-dimethoxy-ethoxy-silane, vinyl-triethoxy-silane, hexamethyldisilazane, hexamethyldisiloxane, divinyltetramethyldisilazane, tetramethyldivinyldisilazane, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane,
duodecamethylcyclohexasiloxane, triethysilanol and mixtures thereof,
(ii) forming reacted silanol groups that are the product of contacting said silica with said compound thereby reducing the number of unreacted surface silanol groups below about 3.29 silanol groups per square nanometer of surface of said silica;
whereby the quantities present of the components (a), (b), (c), (d), (e) and (f) add to between 115.1 parts by weight and 185 parts by weight;
(g) from about 0.01 to about 1.5 parts by weight of a vinyl specific curing agent; whereby the quantities present of the components (a), (b), (c), (d), (e), (f) and (g) add to between 115.11 parts by weight and 186.5 parts by weight; where:
$M=R^1{}_3SiO_{1/2}$ with R^1 selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl;
$M^{vi}=R^2(R^1)_2SiO_{1/2}$ with R^1 selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl and R^2 selected from the group of 2 to 10 carbon atom linear or cyclic alkenyl groups;
$D^{vi}=R^2(R^1)SiO_{2/2}$ where R^1 and R^2 are as previously defined;
$D=(R^3)_2SiO_{2/2}$ where each R^3 is independently selected from the group consisting of 1 to 8 carbon atom alkyl groups, phenyl, and trifluoropropyl; and
$Q=SiO_{4/2}$;
whereby the sealing force retention of said heat curable silicone rubber composition when cured is above about 10.

5,623,029

REINFORCED COMPOSITIONS AND LENS BODIES MADE FROM SAME

Shih-Liang S. Yang, Laguna Hills, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 193,966, Feb. 9, 1994, Pat. No. 5,512,609, which is a continuation-in-part of Ser. No. 48,092, Apr. 15, 1993, abandoned, which is a division of Ser. No. 868,412, Apr. 14, 1992, Pat. No. 5,233,007. This application Jun. 7, 1995, Ser. No. 473,393
Int. Cl.[6] C08K *5/54*; **C08G** *77/20*
U.S. Cl. 525—478 **18 Claims**

1. A composition comprising.
a major amount by weight of a cross-linked copolymer component derived from monomers comprising (1) at least one polysiloxane including aryl-containing substituents and (2) at least one cross-linker component selected from the group consisting of polyorganohydrosiloxanes and mixtures thereof; and
a polymeric resin component selected from the group consisting of silicon-based resins including organic groups and mixtures thereof in an amount effective to increase the tensile strength of said composition relative to an identical composition without said polymeric resin component, said composition being optically clear, said cross-linked copolymer component and said polymeric resin component each having an index of refraction of at least about 1.46, said composition being elastomeric.

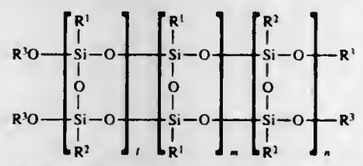
5,623,030

CURABLE COMPOSITION AND PROCESS FOR PRODUCING MOLDED ARTICLES USING THE SAME

Manabu Tsumura; Masafumi Hiraishi; Takahisa Iwahara, and Toshifumi Hirose, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1995, Ser. No. 564,593
Claims priority, application Japan, Dec. 1, 1994, 6-321193
Int. Cl.[6] C08F *283/00*
U.S. Cl. 525—478 **17 Claims**

1. A curable composition comprising:
(A) a silsesquioxane ladder polymer represented by formula (I):



(I)

wherein a plurality of R^1, which may be the same or different, each represent a monovalent hydrocarbon group; a plurality of R^2, which may be the same or different, each represent a monovalent aromatic hydrocarbon group; R^3 represents a hydrogen atom or a monovalent hydrocarbon group; l, m, and n each represent 0 or a positive integer satisfying $2 \leq l+m+n$, and having a number average molecular weight of not less than 500,
(B) a silicon compound having at least two SiH groups per molecule and having a number average molecular weight of not more than 1,000,
(C) a silicon compound having at least two vinylsilyl groups per molecule and having a number average molecule weight of not more than 1,000, and
(D) a neutral platinum catalyst.

5,623,031

MODIFIED LIQUID EPOXY RESIN COMPOSITION

Tetsuro Imura; Yasuyuki Murata, and Yoshinori Nakanishi, all of Yokkaichi, Japan, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 288,371, Aug. 10, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,380
Claims priority, application Japan, Aug. 20, 1993, 5-226714
Int. Cl.[6] C08F *283/00*; **C08L** *61/00*
U.S. Cl. 525—489 **11 Claims**

1. A curable liquid epoxy resin composition comprising (i) a liquid epoxy resin composition produced by reacting a reaction mixture comprising (a) 100 parts by weight of an epoxy resin comprising a crystalline epoxy resin, (b) from about 3 to about 20 parts by weight, based on the epoxy resin, of a compound having two or more phenolic hydroxyl groups, a carboxylic acid having two or more carboxyl groups, or a compound having phenolic hydroxyl group(s) and carboxyl group(s) in one molecule and (c) from about 3 to about 20 parts by weight, based on the epoxy resin, of a compound having one phenolic hydroxyl group or carboxyl group in one molecule and (ii) an epoxy resin curing agent.

5,623,032

LOW-VOLATILE AND STRONGLY BASIC TERTIARY AMINO ALCOHOLS AS CATALYST FOR THE MANUFACTURE OF IMPROVED PHENOLIC RESINS

Gaoming Wu, Wheeling, Ill., assignor to Angus Chemical Company, Buffalo Grove, Ill.

Filed Jun. 23, 1995, Ser. No. 493,904
Int. Cl.[6] C08L *8/28;61/06*
U.S. Cl. 525—491 **32 Claims**

1. A process for preparing phenolic resole resins by condensation polymerization of phenol and formaldehyde, said process comprising
reacting phenol or a phenol derivative and formaldehyde or a formaldehyde derivative in the presence of an effective catalytic amount of a tertiary amino alcohol.

5,623,033

TITANIUM CATALYST COMPONENT FOR ETHYLENE POLYMERIZATION, ETHYLENE POLYMERIZATION CATALYST, AND PROCESS FOR ETHYLENE POLYMERIZATION USING THE SAME

Mamoru Kioka, and Tsuneo Yashiki, both of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 130,789, Oct. 4, 1993, Pat. No. 5,468,503. This application Jun. 2, 1995, Ser. No. 459,803
Claims priority, application Japan, Oct. 5, 1992, 4-266068
Int. Cl.[6] C08F *4/654;4/655;10/02*
U.S. Cl. 526—124.8 **17 Claims**

1. A process for ethylene polymerization comprising polymerizing ethylene or copolymerizing ethylene with an α-olefin having 3 to 20 carbon atoms in such an amount that the resulting polymer contains at least 90% by mole of ethylene in the presence of a catalyst for ethylene polymerization, said catalyst comprising:
(I) a titanium catalyst component for ethylene polymerization obtained by a process consisting essentially of:
mixing a halogen-containing magnesium compound, 2-ethylhexylalcohol and a hydrocarbon solvent to form a magnesium solution (a-1),
contacting the magnesium solution (a-1) with triethylaluminum (a-2) to form a solid magnesium aluminum complex (A) containing no reducing organic group, wherein the organoaluminum compound (a-2) is used in such an amount that the molar ratio of the 2-ethylhexylalcohol used for the preparation of the magnesium solution (a-1) to the aluminum atom (Al) contained in the triethylaluminum (a-2) is in the range of about 1 to 5, the temperature for contacting the magnesium solution (a-1) with the triethylaluminum (a-2) is in the range of −50° to 150° C., and the contact of the magnesium solution (a-1) with the triethylaluminum (a-2) is carried out by adding the triethylaluminum (a-2) to the magnesium solution (a-1) having a magnesium concentration of 0.005 to 2 mol/liter; and
contacting the solid magnesium aluminum complex (A) with a tetravalent titanium compound (B) to thereby form a titanium catalyst component, wherein the tetravalent titanium compound (B) is used in such an amount that the atomic ratio (Ti/(Mg+Al)) of the titanium (Ti) contained in the solid magnesium aluminum complex (A) is in the range of 0.005 to 18, and the contact of the solid magnesium aluminum complex (A) with the tetravalent titanium compound (B) is carried out at a temperature of 0° to 150° C.,
wherein titanium atoms contained in the titanium catalyst component are substantially tetravalent and wherein the molar ratio of alkoxy groups derived from the 2-ethylhexylalcohol and/or unconverted 2-ethylhexylalcohol or combination thereof to titanium is in

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the range of 0.26 to 6.0, the atomic ratio of Ti/Mg of the titanium catalyst component is in the range of 0.001 to 1.5, and the atomic ratio of Al/Mg of the titanium catalyst component is in the range of 0.1 to 2.0 and

(II) an organoaluminum compound.

5,623,034

PROCESS FOR PRODUCING STYRENIC POLYMER

Yoshiaki Aoyama, and Norio Tomotsu, both of Ichihara, Japan; assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 364,767, Dec. 27, 1994, abandoned. This application Jul. 22, 1996, Ser. No. 685,981

Claims priority, application Japan, Dec. 27, 1993, 5-329509

Int. Cl.[6] C08F *12/08*

U.S. Cl. 526—160 **10 Claims**

1. A process for producing a styrenic polymer having a syndiotactic configuration which comprises polymerizing a styrenic monomer having a content of indene-based compounds of at most 50 ppm by bringing a polymerization catalyst for producing the styrenic polymer having a syndiotactic configuration into contact with said styrenic monomer.

5,623,035

PROCESS FOR THE SYNTHESIS OF RUBBERY POLYMERS

Adel F. Halasa, Bath; Laurie E. Austin, Hartville, and Susan A. Weakland, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 21, 1995, Ser. No. 505,441

Int. Cl.[6] C08F *4/50;2/06;36/04*

U.S. Cl. 526—183 **40 Claims**

1. A process for the synthesis of rubbery polymers which have a broad molecular weight distribution and which are particularly useful in tire tread rubber compounds, said process comprising the polymerization of at least one conjugated diolefin monomer in an organic solvent in the presence of a catalyst system which is comprised of (a) a dialkyl magnesium compound and (b) an alkali metal alkoxide containing from about 3 to about 8 carbon atoms; wherein the molar ratio of the alkali metal alkoxide to the dialkyl magnesium compound is within the range of about 4:1 to about 1:2; wherein the alkali metal in the alkali metal alkoxide is selected from the group consisting of sodium, potassium, rubidium and cesium; and wherein said process is carried out at a temperature which is within the range of about 60° C. to about 100° C.

27. A process for the synthesis of rubbery copolymers of α-methylstyrene and 1,3-butadiene which have a broad molecular weight distribution and which are particularly useful in tire tread rubber compounds, said process comprising the copolymerization of α-methylstyrene monomer and 1,3-butadiene monomer in an organic solvent at a temperature which is within the range of about 60° C. to about 100° C. in the presence of a catalyst system which is comprised of (a) a dialkyl magnesium compound, (b) a potassium alkoxide containing from about 2 to about 12 carbon atoms, and (c) a polar modifier; wherein the molar ratio of the potassium alkoxide to the dialkyl magnesium compound is within the range of about 6:1 to about 1:5, and wherein the molar ratio of the polar modifier to the dialkyl magnesium compound is within the range of about 10:1 to about 1:2.

5,623,036

METHOD FOR MAKING A SURFACE HYDROPHOBIC

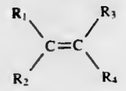
RenéGouardères, Pau-Idron, France, assignor to Elf Atochem S. A., Puteaux, France

Division of Ser. No. 304,648, Sep. 12, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,316

Int. Cl.[6] C08F *18/20*

U.S. Cl. 526—245 **11 Claims**

1. A method for protecting a surface by imparting a hydrophobic nature to it which comprises applying to said surface a layer of a copolymer of monomers of formula:



(I)

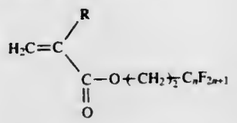
in which

R_1, R_2, R_3 and R_4 are hydrogen, or

R_1 is selected from chlorine and fluorine and R_2, R_3 and R_4 are hydrogen, or

R_1 and R_2 are both selected from chlorine and fluorine and R_3 and R_4 are hydrogen, or

R_1 is phenyl and R_2, R_3 and R_4 are hydrogen, with fluorinated (meth)acrylates of the formula:



(II)

in which

R is selected from hydrogen and methyl, and

n is an integer greater than or equal to 1,

wherein the copolymers exhibit a random chain sequencing of comonomers and contain 0.1 to 30% by weight of said fluorinated (meth)acrylates.

5,623,037

COATINGS BASED ON PERFLUOROPOLYETHERS CONTAINING ACRYLIC GROUPS

Giovanni Simeone, Solaro; Claudio Tonelli, Concorezzo; Ezio Strepparola, Treviglio, and Fabrizio Mutta, Caronno Pertusella, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Apr. 28, 1994, Ser. No. 234,912

Claims priority, application Italy, Apr. 28, 1993, MI93A0837

Int. Cl.[6] C08F *16/24*

U.S. Cl. 526—247 **4 Claims**

1. Coatings obtained by the copolymerization of:

(a) 1–50% by weight of a monomer having a general formula:



(I)

wherein:

Y is F, Cl, CF_3, C_2F_5, C_3F_7, or C_4F_9.

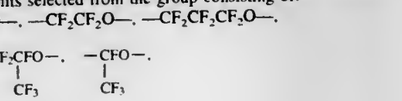
X is F or CF_3;

p is an integer from 1 to 5;

R is H or CH_3; and

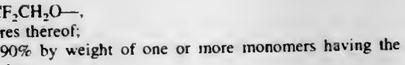
R_f represents a radical having perfluoropolyethereal structure of average molecular weight of from 400 to 3000, formed by sequences of oxyfluoroalkylenic units, the sequences comprising units selected from the group consisting of:

$-CF_2O-$, $-CF_2CF_2O-$, $-CF_2CF_2CF_2O-$.



and mixtures thereof;

(b) 40–90% by weight of one or more monomers having the formula:



(IV)

wherein:

R^1=H, CH_3, F, or Cl; and

A is an alkyl having from 1 to 12 carbon atoms or a fluoroalkyl having from 1 to 10 carbon atoms, or an aliphatic or aromatic cyclic group having from 6 to 8 carbon atoms; and

(c) 2–30% by weight of one or more monomers having the formula:



(V)

wherein:

R^2=H, CH_3, F, or Cl;

W=O or NH;

B=H or $(CH_2)_sB_1$,

where:

s is 1 to 5, and

B_1 is —COOH, —OH, $-CH_2CH_2$, NCO, $-CO-CH_2CO-CH_3$, or $-Si(OR^3)_3$,

where R^3 is an alkyl group having 1 to 5 carbon atoms.

5,623,038

FLUORINE-CONTAINING POLYMERS AND PREPARATION THEREOF

Michael P. Greuel, White Bear Lake Township, Ramsey County, and Werner M. Grootaert, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 355,506, Dec. 14, 1994, abandoned. This application May 8, 1995, Ser. No. 436,122

Int. Cl.[6] C08F *14/26*

U.S. Cl. 526—255 **9 Claims**

1. A semi-crystalline polymer comprising interpolymerized units derived from tetrafluoroethylene and allylic-hydrogen containing olefin monomer, wherein less than 10% of the total heat of fusion is attributable to a secondary melt-transition above 300° C. as shown by the heating curve from Differential Scanning Calorimetry.

5,623,039

CYCLOOLEFIN POLYMERS

Wilfried Hatke, Hofheim, and Frank Osan, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

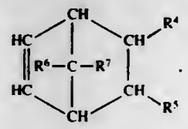
Filed Jul. 11, 1995, Ser. No. 500,658

Claims priority, application Germany, Jul. 13, 1994, 44 25 409.1

Int. Cl.[6] C08F *232/08*

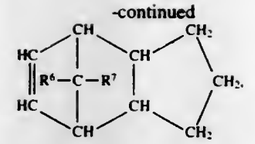
U.S. Cl. 526—281 **5 Claims**

1. A cycloolefin polymer having a solution viscosity >0.25 dl/g (at 135° C. in decalin in accordance with DIN 53 728) and comprising 0.1–100% by weight, based on the total mass of the cycloolefin polymer of polymerized units of at least one polycyclic olefin of the formula II, III, IV, V, VI or VII

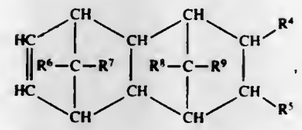


(II)

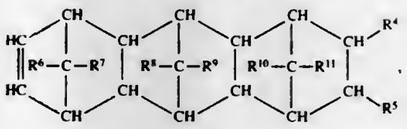
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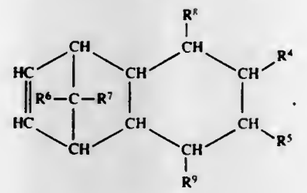
(III)



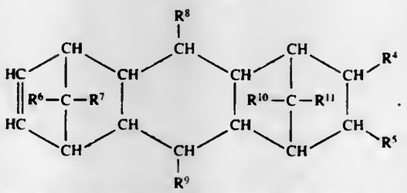
(IV)



(V)



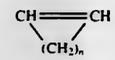
(VI)



(VII)

where R^4, R^5, R^6, R^7, R^8, R^9, R^{10} and R^{11} are identical or different and are each a hydrogen atom or a C_1-C_{30}-hydrocarbon radical or two or more radicals R^4 to R^{11} are joined cyclically, with identical radicals in the various formulae being able to have a different meaning.

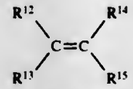
from 0 to 45% by weight, based on the total mass of the cycloolefin polymer, of polymerized units of at least one monocyclic olefin of the formula VIII



(VIII)

where n is a number from 2 to 10,

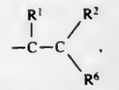
from 5 to 80% by weight, based on the total mass or the cycloolefin polymer, of polymerized units of an acyclic olefin of the formula IX



(IX)

where R^{12}, R^{13}, R^{14}, R^{15} are identical or different and are each a hydrogen atom or a C_1-C_8-alkyl or a C_6-C_{14}aryl, wherein the cycloolefin polymer has at one or both ends an olefinically unsaturated group having at least three carbon atoms and wherein the olefinically unsaturated group is produced from an olefin that is different from the cycloolefins of the formulae II–VIII and the acyclic olefins of the formula IX and has the formula I

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(I)

where any of R^1, R^2, R^3 can be a hydrogen, except that each of R^1, R^2, R^3 cannot simultaneously be hydrogen, or R^1, R^2, R^3 are identical or different and are each a C_1-C_{16}-alkyl, a C_1-C_{16}-aryl, a C_1-C_{16}-alkenyl, a C_1-C_{16}-haloalkyl or a C_1-C_{16}-haloaryl.

5,623,040

POLYMERISABLE PHOTOCHROMIC NAPHTHACENEDIONES, POLYMERS OF THESE MONOMERS, PROCESS FOR THEIR PREPARATION AND THE USE THEREOF

Evelyn Fischer, Weil am Rhein, Germany, and Walter Fischer, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 135,775, Oct. 12, 1993, Pat. No. 5,488,119. This application Aug. 2, 1995, Ser. No. 510,453

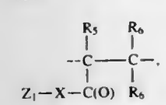
Claims priority, application Switzerland, Oct. 15, 1992, 3216/92

Int. Cl.[6] C08F *12/32;112/32*

U.S. Cl. 526—284 **10 Claims**

1. A homopolymer or copolymer containing, based on the polymer.

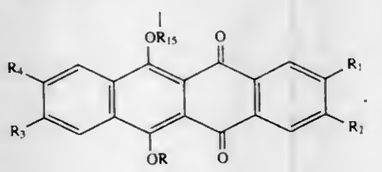
a) 0.01 to 100% molar of at least one structural unit of formula VIII



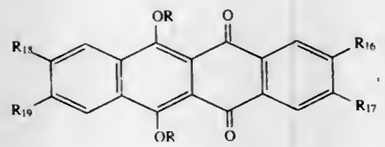
(VIII)

wherein R_5 and R_6 are each independently of the other H, halogen, C_1-C_{12}alkyl or C_6-C_{10}aryl, a linking group or —X—C(O)— is a direct bond, and Z_1 is a radical of formula Ia, Ib, IIa or IIb,

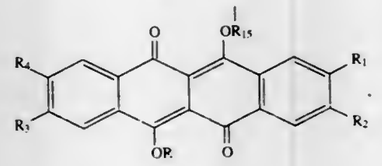
(Ia)



(Ib)

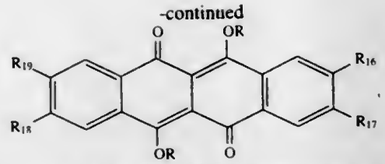


(IIa)



-continued

(IIb)



wherein R_1, R_2, R_3 and R_4 are each independently of the other H, C_1-C_{18}alkyl, C_1-C_{18}alkoxy, C_1-C_{18}alkylthio, C_1-C_{18}alkylsulfinyl, C_1-C_{18}alkylsulfonyl, phenyl, benzyl, phenylthio, benzylthio, phenylsulfinyl, benzylsulfinyl, phenylsulfonyl, benzylsulfonyl, —CN, —CF_3, halogen, —SO_3R_7, —CO—R_7, —CO_2R_7, —CON (R_8)$_2$, —N(R_8)$_2$ or a group of formula III

—X—C(O)—CR_5=$C(R_6)_2$ (III);

wherein one and only one of R_1, R_2, R_3 and $R_4$is a group of formula III; R_{15} is C_1C_{14}arylene which is unsubstituted or substituted by C_1-C_{12}alkyl, C_1-C_{12}alkoxy, C_1-C_{12}alkylthio, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, phenyl, benzyl, phenylsulfinyl, benzylsulfinyl, phenylsulfonyl, benzylsulfonyl, —CN, —CF_3, halogen, —SO_3R_7, —CO—R_7, —CO_2R_7, —$CON(R_8)_2$, or —N(R_8)$_2$; R is unsubstituted C_6-C_{14}aryl or C_6-C_{14}aryl which is substituted by C_1-C_{12}alkyl, C_1-C_{12} alkoxy, C_1-C_{12}alkylthio, C_1-C_{12}alkylsulfinyl, C_1-C_{12}alkylsulfonyl, phenyl, benzyl, phenylsulfinyl, benzylsulfinyl, phenylsulfonyl, benzylsulfonyl, —CN, —CF_3, halogen, —SO_3R_7, —CO—R_7, —CO_2R_7, —$CON(R_8)_2$, —N(R_8)$_2$.or one of the RO- groups is H, one of R_{16} to R_{19} is a bond to polymer backbone and the others have the meanings of R_1 to R_4, and

b) 99.99 to 0% molar of at least one structural unit of formula IX

—A— (IX),

wherein A is a radical of an olefin monomer that differs from formula VIII.

5,623,041

POLYMERS USEFUL AS PRINTING VEHICLES

Steven P. Boucher, Hatfield, Pa., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 359,247, Jan. 16, 1994, abandoned, which is a continuation of Ser. No. 167,264, Dec. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 87,823, Jul. 1, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 406,280

Int. Cl.[6] C08F *220/18*

U.S. Cl. 526—329.2 **27 Claims**

1. A polymer having the formula:



wherein R^1 is an aromatic group having from 6 to 10 carbon atoms, R^3 is a fatty alkyl group having from 12 to 22 carbon atoms, and R^5 is a hardening alkyl group having from 1 to 4 carbon atoms, R^2, R^4, and R^6 are each independently hydrogen or methyl, and y is chosen in relation to x and z such that a film of said polymer has improved alkali resistance over polymers wherein y is 0 wherein the amount of A groups is from 25 to 45% by weight, the amount of B groups is from 23% to 50% by weight and the amount of C groups is from 25% to 45% by weight based on the weight of the polymer.

5,623,042

PROCESS FOR REDUCING TRACE LEVELS OF METALLIC IMPURITIES IN CYCLIZED POLYISOPRENE RESIN

Keith O. Wilbourn, Matthews, N.C.; James M. Davidson, Corydon, Ind., and Richard W. Roberts, Guston, Ky., assignors to Olin Corporation, Cheshire, Conn.

Filed Jul. 19, 1995, Ser. No. 504,213

Int. Cl.[6] C08C *2/04*

U.S. Cl. 528—486 **8 Claims**

1. A process for reducing the level of trace metal impurities in cyclized polyisoprene resin, comprising the steps of:

(1) dissolving impure cyclized polyisoprene resin containing a trace amount of metallic impurities in at least one organic solvent thereby forming an impure organic solvent/cyclized polyisoprene solution;

(2) contacting said impure organic solvent/cyclized polyisoprene resin with an aqueous acidic solution for a sufficient amount of time at a temperature of from about 40° C. to about 100° C., thereby forming a first two-phase mixture comprising an first aqueous phase containing metallic impurities extracted from said impure organic solvent/cyclized polyisoprene and an organic phase containing cyclized polyisoprene resin with a reduced amount of metallic impurities;

(3) separating said first aqueous phase from said first organic phase;

(4) contacting said separated first organic phase with water for a sufficient amount of time at a temperature of about 40° C. to about 100° C., thereby forming a second two-phase mixture comprising a second aqueous phase containing metallic impurities extracted from said first organic phase and a second organic phase containing cyclized polyisoprene resin with a further reduced amount of metallic impurities; and

(5) separating said second aqueous phase from said second organic phase, thereby forming a pure organic solvent/cyclized polyisoprene resin solution.

5,623,043

SILICONE MODIFIED PHOSPHOLIPID COMPOSITIONS

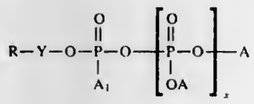
Dennis L. Fost, Ridgewood, and Abe Berger, Summit, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 174,660, Dec. 28, 1993, abandoned, and a continuation-in-part of Ser. No. 298,565, Aug. 31, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 420,748

Int. Cl.[6] C08G *77/04*

U.S. Cl. 528—26 **17 Claims**

1. A silicone-containing phospholipid composition having the general formula:



wherein:

A is selected from H, M or R—Y—;

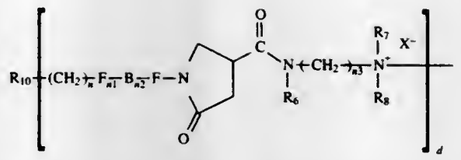
A_1 is selected from H, OH, OM or R—Y—O—;

M is a cation;

Y is substituted or unsubstituted alkylene optionally interrupted by up to 3 oxygen atoms;

x is 0 or an integer from 1–5; and

R is a quaternized organosilicone amidoamine reactant moiety of the formula:



wherein:

R_{10} is the silicone backbone chain to which at least one pyrrolidone containing amidoamine functional group is attached;

R_6 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each, cycloalkyl of up to 6 carbon atoms, or polyoxyalkylene of up to 10 carbon atoms within the oxyalkylene unit;

R_7 and R_8, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety or polyoxyalkylene of up to 10 carbon atoms; or in addition R_7 and R_8 taken together with the nitrogen to which they are attached represents an N-heterocycle;

F which can be the same of different is linear or branched alkylene of 1–12 carbon atoms;

X^- is an anion;

n is 0 or 2;

n^1 is 0 or 1;

n^2 is 0 or 1;

n^3 is an integer from 2 to 12;

B is —NR_{11} sulfur or oxygen, wherein R_{11} is hydrogen or lower alkyl (C_{1-6}); with the proviso that when n^1 is 0 and n^2 is 1, n^1 is 1, when n is 2 and n^2 is 1, n^1 is 0 or 1 and when n is 2 and n^2 is 0, n^1 is 0; and;

d is one or greater.

5,623,044

POLYURETHANE SEALANT COMPOSITIONS

Wen B. Chiao, Bridgewater, N.J., assignor to Essex Specialty Products, Inc., Clifton, N.J.

Continuation of Ser. No. 445,573, May 22, 1995, abandoned, which is a continuation of Ser. No. 960,098, Oct. 13, 1992, abandoned. This application Aug. 9, 1996, Ser. Nn. 690,301

Int. Cl.[6] C08G *77/04;18/00*

U.S. Cl. 528—28 **26 Claims**

1. A polyurethane sealant composition comprising (1) a urethane prepolymer having an isocyanate functionality of from about 2.0 to about 4.0 and an isocyanate content of from about 1.0 to 10 percent: and from about 0.5 to about 20 percent by weight based on the sealant composition of (2) a reaction product of a secondary aminoalkoxy silane and an aliphatic or aromatic polyisocyanate selected from the group consisting of ethylene diisocyanate, 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,12-dodecane diisocyanate, cyclobutane 1,3-diisocyanate, cyclohexane-1,3- and 1,4-diisocyanate, 1-isocyanato-3,3,5-trimethyl-5-isocyanato methyl cyclohexane, 2,4- and 2,6-hexahydrotolylene diisocyanate, hexahydro-1,3- and 1,4-phenylene diisocyanate, perhydro-2,5'- and 4,4'-diphenyl methane diisocyanate, 1,3- and 1,4-phenylene diisocyanate, 2,4-and 2,6-tolylene diisocyanate, diphenyl methane-2,4'and 4,4'-diisocyanate, naphthylene-1,5-diisocyanate, triphenyl methane-4,4',4"-triisocyanate, polyphenyl polymethylene polyisocyanate, isophorone diisocyanate, tetramethylxylene diisocyanate and mixtures thereof, said reaction product having an average of at least one silane group and at least one isocyanate group per molecule and a molecular weight of less than about 2,000, wherein the sealant composition does not contain bitumin.

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5,623,045

PROCESS FOR THE PREPARATION OF COATINGS

Christian Zwiener, Köln; Reinhard Halpaap, Odenthal; Josef Pedain, Köln, and Wolfgang Kiel, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 27, 1995, Ser. No. 430,045

Claims priority, application Germany, May 5, 1994, 44 15 778.9

Int. Cl.[6] C08G *18/32*

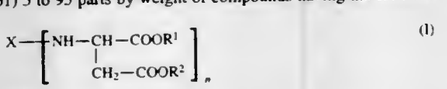
U.S. Cl. 528—68 **11 Claims**

1. A process for the preparation of coatings by coating a substrate with a coating composition having a two-component binder containing

a) a polyisocyanate component and

b) an isocyanate-reactive component which is essentially free of hydroxyl groups and contains

b1) 5 to 95 parts by weight of compounds having the formula



(I)

wherein

X represents an n-valent radical which is inert towards isocyanate groups and obtained by removing the primary amino groups from an organic polyamine having a number average molecular weight (M_n) of 60 to 6000 and containing n (cyclo)aliphatically bound amino groups,

R^1 and R^2 represent the same or different alkyl radicals having 1 to 18 carbon atoms, n represents a whole number of at least 2

and

b2) 5 to 95 parts by weight of compounds having a number average molecular weight (M_n) of 140 to 6500 and having at least two ketimine units per molecule corresponding to the formula



(II)

wherein the sum of the parts by weight of components b1) and b2) is 100, based on the weight of component b1) and b2).

5,623,046

SELF-DISPERSING CURABLE EPOXY RESINS, DISPERSIONS MADE THEREWITH, AND COATING COMPOSITIONS MADE THEREFROM

John G. Papalos, Ledgewood, N.J.; Shailesh Shah, Dresher, Pa.; Reuben H. Grinstein, Blue Bell, Pa.; Joseph L. Mulvey, Lansdale, Pa., and Brian G. Jewell, North Wales, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 296,281, Aug. 25, 1994, Pat. No. 5,604,269, which is a continuation-in-part of Ser. No. 173,847, Dec. 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,578

Int. Cl.[6] C08G *59/50*

U.S. Cl. 528—111 **14 Claims**

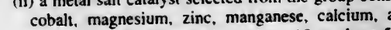
1. An amine-epoxy adduct useful in the preparation of a self-dispersing curable epoxy resin, the adduct comprising the addition product of reactants comprising an aliphatic polyepoxide and greater than 1.0, but no more than about 2.5, reactive equivalents of a polyoxyalkylneamine per reactive equivalent of said aliphatic polyepoxide, wherein said polyoxyalkyleneamine has the structural formula:



wherein:

R_1 designates a monovalent organic radical selected from the group consisting of C_1 to C_{12} aliphatic, alicyclic or aromatic hydrocarbons, and

R_2 represents a polyoxyalkylene chain having the structural formula:



wherein:

R_4 is a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons,

'a' designates a number of ethoxy groups (CH_2—CH_2—O),

'b' designates a number of monosubstituted ethoxy groups (CH_2—$CH(R_4)$—O) where the substitution of one monosubstituted ethoxy group is independent from the substitution of any other monosubstituted ethoxy group in the polyoxyalkylene chain, the sum of 'a' and 'b' is equal to or greater than 10 but less than or equal to 200, and where the sequence of ethoxy and monosubstituted ethoxy groups within a polyoxyalkylene chain may be completely random and/or there may be blocks of ethoxy and/or monosubstituted ethoxy groups, and

R_3 designates H or a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons.

5,623,047

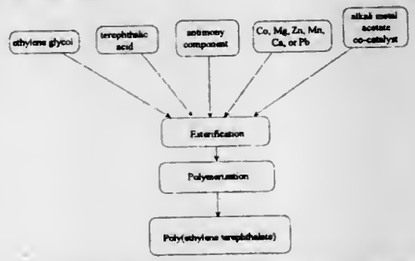
CATALYTIC COMPOSITIONS FOR THE PREPARATION OF POLY(ETHYLENE TEREPHTHALATE) WITH IMPROVED COLOR

Wu-Bin Yuo, Hsinchu; Jong-Wu Chen, Do-Lio City, and Yu-Shan Chao, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsiochu, Taiwan

Filed Mar. 28, 1995, Ser. No. 412,784

Int. Cl.[6] C08G *63/00;63/02;63/78;63/82*

U.S. Cl. 528—285 **11 Claims**



1. A process for the preparation of poly(ethylene terephthalate) from terephthalic acid and ethylene glycol comprising the steps of:

(a) preparing a catalyst composition containing:

(i) an antimony salt catalyst present in a range from about 10 to about 1,000 ppm;

(ii) a metal salt catalyst selected from the group consisting of cobalt, magnesium, zinc, manganese, calcium, and lead salts, present in a range from about 10 to about 500 ppm; and

(iii) an alkali metal acetate salt, present in a range from about 10 to about 500 ppm; wherein all the ppm values are based on the theoretical yield of said poly(ethylene terephthalate), by weight, to be made from said terephthalic acid and ethylene glycol;

(b) placing said catalyst composition, said terephthalic acid and said ethylene glycol in a reaction vessel, wherein said ethylene glycol and said terephthalic acid are provided in a ratio of about 1.2:1;

(c) raising reaction temperature to about 200°–280° C. to start an esterification reaction between said terephthalic acid and said ethylene glycol;

(d) raising reaction temperature to about 250°–300° C. and applying vacuum in said reaction vessel to start a polymerization reaction; and

(e) removing unreacted ethylene glycol to obtain said poly(ethylene terephthalate).

5,623,048

CLEAR AMBER-BASED VARNISH AND PRODUCTION THEREOF

Donald C. Fels, Jr., 1333 King St., Greenwich, Conn. 06831

Filed Feb. 23, 1996, Ser. No. 606,204

Int. Cl.[6] C08L *93/04;* **C09D** *5/06;193/04*

U.S. Cl. 530—203 **34 Claims**

1. In a process for producing amber-based drying oil varnishes by the step of heating ground amber powder in drying oil to a temperature sufficient to melt the amber powder and fuse it into the drying oil to form an essentially homogeneous varnish solution, the improvement comprising obtaining a clearer, more colorless and transparent amber-based drying oil varnish by, before said heating step:

(1) heating an admixture of 1 part by weight amber particles and about 3 to 20 parts by weight drying oil to a temperature at which the amber particle soften, start to swell and rise to the surface of the heated drying oil;

(2) straining the hot amber particles from the drying oil;

(3) comminuting the hot strained amber particles to a powdered slurry in a quantity of hot drying oil of a temperature of at least about 200° F. (93° C.) sufficient to facilitate comminution of the amber particles to a powder; and

(4) thereafter adding to said ground amber powder-drying oil admixture additional hot drying oil of a temperature of at least about 200° F. (93° C.) to provide a weight ratio of 1 part amber to about 3 to 20 parts drying oil.

5,623,049

NUCLEIC ACID-BINDING OLIGOMERS POSSESSING N-BRANCHING FOR THERAPY AND DIAGNOSTICS

Antonius Löbberding, Wuppertal; Burkhard Mielke, Leverkusen; Christoph Schwemler, Leichlingen; Eckhard Schwenner, Wuppertal; Udo Stropp, Haan; Wolfgang Springer, Wuppertal; Axel Kretschmer, Bergisch Gladbach, and Thorsten Pötter, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

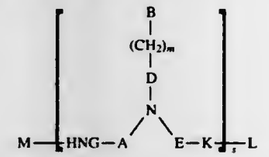
Filed Sep. 6, 1994, Ser. No. 300,884

Claims priority, application Germany, Sep. 13, 1993, 43 31 012.5

Int. Cl.[6] C07K *7/00;* **C07H** *5/04;21/04;* **C07D** *239/00*

U.S. Cl. 530—300 **16 Claims**

1. A compound of the formula I



(I)

in which

A represents —$(CH_2)_n$- or —CO—,

B represents all natural or unnatural nucleobases, or derivatives derived therefrom by chemical modification, or halogenated precursors thereof, optionally substituted on the amino groups by protective groups selected from the group consisting of acetyl, trifluoroacetyl, trichloroacetyl, benzoyl, phenylacetyl, benzyloxycarbonyl, tertbutyloxycarbonyl, allyloxycarbonyl or (9-fluorenyl)methoxycarbonyl, or other protective groups which are customary in peptide and nucleic acid chemistry, or possessing free amino groups,

D represents —$(CO)_p$—,

E and G, independently of each other, represent —CHR—, where

R represents H or a residue of a natural or unnatural amino acid selected from the group consisting of glycine, alanine, valine, leucine, isoleucine, serine, threonine, cysteine, methionine, phenylalanine, tyrosine, histidine, tryptophan, lysine, ornithine, asparagine, aspartic acid, glutamine, glutamic acid, arginine, proline, hydroxyproline or sarcosine, dehydroamino acids selected from the group consisting of dehydroalanine or dehydro-α-aminobutyric acid, phenylglycine, 4-nitrophenylalanine, 3-nitrophenylalanine, 2-nitrophenylalanine, 2-, 3- or 4-aminophenylalanine, 3,4-dichlorophenylalanine, 4-iodophenylalanine, 4-methoxyphenylalanine, 1-triazolylalanine, 2-pyridylalanine, 3-pyridylalanine, 4-pyridylalanine, 1-naphthylalanine or 2-naphthylalanine, optionally possessing protective groups, in their D or L form, or, optionally,

E and G are linked together via an alkyl chain —$(CH_2)_q$—,

K represents —CO—, —SO_2— or —CH_2—,

L can be a carrier system, reporter ligand, a solubility-mediating group or hydrogen,

M can, independently of L, be a carrier system, reporter ligand, a solubility-mediating group or hydrogen,

m can be 0, 1, 2 or 3,

n can be 0, 1, 2, 3 or 4,

p can be 0, 1 or 2,

q can be 0, 1 or 2, and

s can assume values of between 1 and 30 containing the radical of a compound selected from the group consisting of

4-tert-butyloxycarbonylamino-N-[(thymin-1-yl)acetyl]-L-cis-proline,

N-[(N^4-benzoylcytosin-1-yl)acetyl]-4-tert-butyloxycarbonylamino-L-cis-proline,

4-tert-butyloxycarbonylamino-N-[(thymin-1-yl)-acetyl]-L-trans-proline,

4-tert-butyloxycarbonylamino-N-[(N^6-benzyloxycarbonyl-adenin- 9-yl)acetyl]-L-cis-proline,

4-tert-butyloxycarbonylamino-N-[(N^6-benzyloxycarbonyl-adenin- 9-yl)acetyl]-L-trans-proline, and

4-tert-butyloxycarbonylamino-N-[(N^4-benzyloxycarbonyl-cytosin- 1-yl)acetyl]-L-trans-proline.

5,623,050

STABLE POLYPEPTIDES HAVING C-AMP PRODUCTION ENHANCING ACTIVITY AND THE USE THEREOF

Chieko Kitada, Osaka, and Takuya Watanabe, Ibaraki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 18, 1992, Ser. No. 932,455

Claims priority, application Japan, Aug. 22, 1991, 3-211161

Int. Cl.[6] A61K *38/00;* **C07K** *14/00*

U.S. Cl. 530—324 **15 Claims**

1. A polypeptide represented by formula (I):

His-Ser-Asp-Gly-Ile-Phe-Thr-Asp-Ser-Tyr-Ser-Arg-Tyr-Arg-Lys-Gln-NH-CHX-CO-Ala-Val-Lys-Lys-Tyr-Y (SEQ ID NO: 13)

wherein:

NH-CHX-CO is Glu, Gly, Ser or Arg residue; and

Y is an amino acid residue Leu or a peptide selected from the group consisting of Leu-Ala, Leu-Ala-Ala, Leu-Ala-Ala-Val (SEQ ID NO: 22), Leu-Ala-Ala-Val-Leu (SEQ ID NO: 23), Leu-Ala-Ala-Val-Leu-Gly (SEQ ID NO: 24), Leu-Ala-Ala-Val-Leu-Gly-Lys (SEQ ID NO: 25), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg (SEQ ID NO: 26), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr (SEQ ID NO: 27), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys (SEQ ID NO: 14), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln (SEQ ID NO: 15), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln-Arg (SEQ ID NO: 16), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln-Arg-Val (SEQ ID NO: 17), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln-Arg-Val-Lys (SEQ ID NO: 18), Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln-Arg-Val-Lys-Asn (SEQ ID NO: 19) and Leu-Ala-Ala-Val-Leu-Gly-Lys-Arg-Tyr-Lys-Gln-Arg-Val-Lys-Asn-Lys (SEQ ID NO: 20), or a pharmaceutically acceptable amide, ester or salt thereof.

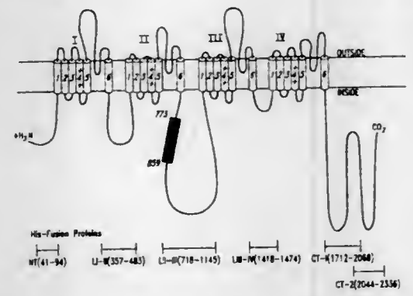
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5,623,051

METHODS AND COMPOSITIONS FOR SCREENING FOR PRESYNAPTIC CALCIUM CHANNEL BLOCKERS

William A. Catterall, and Zu-Hang Sheng, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Nov. 10, 1994, Ser. No. 337,602
Int. Cl.[6] C07K *14/47;14/705;* G01N *33/566*
U.S. Cl. 530—324 16 Claims



5. A peptide consisting of an amino acid sequence of between 87 to 424 amino acid residues in length, wherein said amino acid sequence contains an amino acid sequence having at least 60% sequence similarity with the amino acid sequence of FIG. 11A from alanine, amino acid 773, to aspartic acid, amino acid 859.

5,623,052

SYNTHETIC PEPTIDE LUNG SURFACTANTS HAVING COVALENTLY BONDED ANTIOXIDANTS

Larry R. McLean, Wyoming, and J. Vincent Edwards, Cincinnati, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

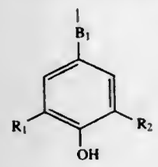
Continuation of Ser. No. 77,802, Jun. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 923,092, Jul. 31, 1992, abandoned. This application Jul. 14, 1995, Ser. No. 502,722
Int. Cl.[6] A61K *38/00;* C07K *5/00;7/00*
U.S. Cl. 530—330 11 Claims

1. A polypeptide of formula:

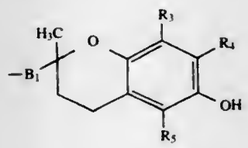
$$X\text{-}A_1\text{-}A_2\text{-}A_3\text{-}A_4\text{-}Y$$

or an optically active isomer or pharmaceutically acceptable salt thereof; wherein

A_1 is a bond or Glu;
A_2 is Trp;
A_3 is Aib, Glu, or Ala; and
A_4 is Lys;
X is of formula Da or Db:



or



wherein B_1 is B, —C(O)—, —B—C(O)—, —C(O)—NH—B—C(O)—; and B is a bond, C_{1-16} alkylene, or C_{2-16} alkenylene; and wherein each R_1, R_2, R_3, R_4, R_5, R_6 and R_7 is independently a C_{1-6} alkyl; and
Y is a carboxyl substituent of A_4 selected from hydroxy, amino, alkylamino, and alkoxy groups.

5,623,053

SOLUBLE MAMMAL-DERIVED FC RECEPTOR WHICH BINDS AT A PH RANGING FROM ABOUT 5.5 TO 6.5 AND RELEASES AT A PH RANGING FROM ABOUT 7.5 TO 8.5

Louis N. Gastinel, and Pamela J. Bjorkman, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 819,413, Jan. 10, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,492
Int. Cl.[6] C07K *14/735*
U.S. Cl. 530—350 7 Claims

1. A soluble heterodimeric Fc receptor comprising a β_2-microglobulin light chain, and a heavy chain derived from a mammalian, membrane-bound Fc receptor by truncating said membrane-bound Fc receptor heavy chain to include only extracellular domains, said soluble Fc receptor having pH-determinable binding capability for the Fc portion of at least one antibody or a complex of said antibody, wherein said soluble, mammal-derived Fc receptor is capable of binding to said antibody over a pH ranging from about 5.5 to about 6.5 and releasing said antibody over a pH ranging from about 7.5 to about 8.5.

5,623,054

CRUCIFER AFT PROTEINS AND USES THEREOF

Hong Zhang, Boston, and Howard M. Goodman, Newton Center, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jun. 23, 1994, Ser. No. 266,451
Int. Cl.[6] C07K *14/415;* C12N *15/00*
U.S. Cl. 530—370 6 Claims

1. A substantially pure recombinant polypeptide comprising an amino acid sequence having at least 90% amino acid identity to the amino acid sequence of AFT1 polypeptide shown in FIG. 1 (SEQ ID NO: 2) and having the same biological activity as said AFT1 polypeptide.

5,623,055

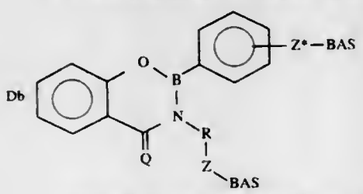
PHENYLBORONIC ACID COMPLEXES DERIVED FROM AMINOSALICYLIC ACID FOR BIOCONJUGATE PREPARATION

Da Mark L. Stolowitz, Long Beach, Calif., assignor to Prolinx, Inc., Redmond, Wash.

Filed Jan. 28, 1994, Ser. No. 189,176
Int. Cl.[6] C07F *5/02*
U.S. Cl. 530—391.1 2 Claims

1. A phenylboronic acid bioconjugate of the General Formula I

General Formula I



wherein group Q is selected from O, S, NH, and N-alkyl, and wherein alkyl denotes an alkyl hydrocarbon moiety,

wherein group R is selected from O, NH, CH_2, and alkyl, and wherein alkyl denotes an alkyl hydrocarbon moiety of from 2 to 6 carbons in length,
wherein groups Z and Z*, may be the same or different and are selected from an alkyl chain of from 1 to 16 carbon equivalents in length, and
wherein groups BAS and BAS* are bioactive species.

5,623,056

CDS DERIVATIVES AND METHODS OF USE FOR CELLULAR MODULATION AND ENHANCEMENT OF CELLULAR ENGRAFTMENT

Mark L. Tykocinski, Shaker Heights, and David R. Kaplan, Cleveland Heights, both of Ohio, assignors to TKB Associates Limited Partnership, Pepper Pike, Ohio

Continuation of Ser. No. 429,401, Oct. 31, 1989, which is a continuation-in-part of Ser. No. 323,770, Mar. 15, 1989, abandoned. This application Dec. 28, 1993, Ser. No. 174,583
Int. Cl.[6] C07K *14/705;14/725*
U.S. Cl. 530—403 25 Claims

1. A CD8 polypeptide conjugate useful for producing an artificial veto cell, comprising:
an extracellular domain portion of CD8 comprising amino acid positions 1–114 which is able to bind a T cell isolated from a human responder peripheral blood mononuclear cell population and reduce the rate of proliferation of said T cell; and
covalently linked to said portion of CD8, a molecule adapted to bind covalently or non-covalently with a antigen presenting cell surface molecule, said molecule not naturally being covalently linked to said extracellular domain portion of said CD8;
wherein said extracellular domain portion and said molecule are linked in a manner which allows said extracellular domain portion to bind said T cell and reduce the rate of proliferation of said T cell, and allows said molecule to bind said antigen presenting cell surface molecule.

5,623,057

PNEUMOCOCCAL POLYSACCHARIDE CONJUGATE VACCINE

Stephen Marburg, Metuchen; Richard L. Tolman, Warren, both of N.J.; Peter J. Kniskern, Lansdale, Pa.; William J. Miller, North Wales, Pa.; Arpi Hagopian, Lansdale, Pa.; Charlotte C. Ip, Blue Bell, Pa.; John P. Hennessey, Jr., Dublin, Pa.; Dennis J. Kubek, Salem, W. Va., and Pamela D. Burke, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 807,942, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 646,570, Jan. 28, 1991, abandoned. This application May 20, 1994, Ser. No. 246,394
Int. Cl.[6] C07K *17/02;* A61K *39/385*
U.S. Cl. 530—404 10 Claims

1. A conjugate comprising an immunogenic protein selected from OMPC and MIEP covalently linked to a polysaccharide derived from one or more subtypes of *Streptococcus pneumoniae*, said polysaccharide having, on average, between 60 and 1200 repeating units per molecule and a polydispersity between 1.0 and 1.4, wherein said polysaccharide has a molecular weight between, on average, 1×10^5 and 1×10^6, and a level of contamination by pneumococcal group-specific C-polysaccharide below 3.0% of the type-specific polysaccharide.

5,623,058

PROCESS FOR LINKING AN ANTIGENIC GLYCOLIPID OF T. CRUZI TO A PROTEIN CARRIER

Martin A. Winkler, Lindenhurst, and Alfred A. Pan, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 275,086, Jul. 13, 1994, Pat. No. 5,550,027, which is a continuation of Ser. No. 911,590, Jul. 10, 1992, abandoned. This application May 25, 1995, Ser. No. 450,600
Int. Cl.[6] C07K *1/00;* A23J *1/00;* C07C *245/00*
U.S. Cl. 530—405 4 Claims

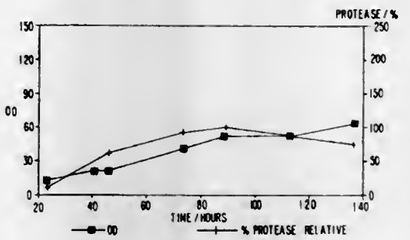
1. A process for linking an antigenic glycolipid of *T. cruzi* to a protein carrier, comprising:
a. obtaining the glycolipid lipophosphonopeptidoglycan (LPPG) from the epimastigote stage of *T. cruzi;*
b. linking LPPG of step (a) with a protein using ethyldimethyl-amino-propyl-carbodiimide (EDAC) by:
i. contacting LPPG with EDAC to form a resultant mixture and incubating said mixture for a time and under conditions sufficient to activate the mixture;
ii. incubating the activated mixture with the protein for a time and under conditions sufficient to link the LPPG with the protein in order to produce an LPPG-protein conjugate;
c. separating the LPPG-protein conjugate from the mixture.

5,623,059

METHOD FOR PROTECTION OF PROTEOLYSIS-SUSCEPTIBLE PROTEIN DURING PROTEIN PRODUCTION IN A FLUID MEDIUM

Per L. Joergensen, Copenhagen; Poul E. Pedersen, Soeborg; Joergen Petersen, Alleroed; Torben K. Nielsen, Roskilde, and Jan M. Mikkelsen, Gentofte, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 848,507, Mar. 9, 1992, Pat. No. 5,371,198. This application Aug. 16, 1994, Ser. No. 291,267
Int. Cl.[6] C07K *1/14;1/30;1/32;1/36*
U.S. Cl. 530—412 23 Claims



1. A process for the production of a protein susceptible to proteolytic inactivation or degradation in a fluid production medium, comprising
(a) protecting the protein against the proteolytic inactivation or degradation during production of the protein in a fluid production medium, by precipitating the protein from the fluid production medium by continuously adding a precipitating agent

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to the fluid production medium under appropriate pH and/or ionic strength conditions, wherein the precipitating agent is selected from the group consisting of an antibody specific for the protein, a salt and a low molecular weight organic solvent;

(b) separating the protein from the production medium;

(c) deprotecting the protein; and

(d) recovering the protein.

5,623,060

DYE MIXTURE CONTAINING AT LEAST FOUR DIAZO DYES HAVING THE SAME COLOR WITH A DIAMINOPYRIDINE COUPLING COMPONENT

Gunther Lamm, Hasslocb; Hermann Loeffler, Speyer, and Helmut Reichelt, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02823, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/07318, PCT Pub. Date Mar. 16, 1995

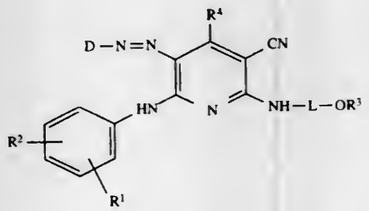
PCT Filed Aug. 25, 1994, Ser. No. 596,142

Claims priority, application Germany, Sep. 4, 1993, 43 29 915.6

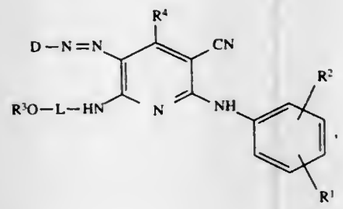
Int. Cl.[6] C09B *67/22;29/42;31/153;56/12;* **D06P** *1/18*

U.S. Cl. 534—573 **14 Claims**

1. A dye mixture, comprising at least four dyes of the same color having the formulae Ia and Ib:



(Ia)



(Ib)

wherein:

D is a radical of a diazo component of aminoanthraquinone, aniline, aminothiophene, aminothiazole, aminoisothazole, aminothiodiazole or aminobenzoisothiazole;

L is C_2–C_8-alkylene, which is uninterrupted or interrupted by 1 or 2 oxygen atoms in an ether group;

R^1 and R^2 are independently of each other hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen;

R^3 is hydrogen, C_1–C_4-alkyl or C_1–C_3-alkanoyl; and

R^4 is hydrogen or C_1–C_4-alkyl.

11. A process for dyeing or printing textile materials, which comprises dyeing or printing textiles with the dye mixture of claim 1.

5,623,061

BENZENE OR NAPHTHALENE AZO DYES CONTAINING SO_2X AND TRIAZINYL FIBER REACTIVE GROUPS, USE THEREOF TO DYE MATERIALS, AND MATERIALS DYED THEREWITH

Horst Jäger, Leverkusen, and Joachim Wolff, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

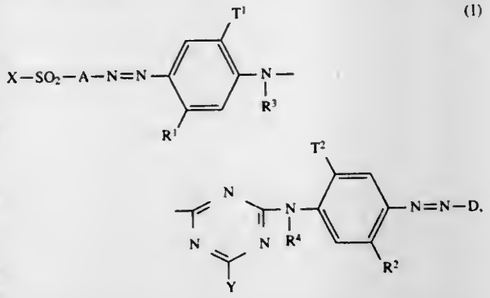
Filed Jun. 29, 1995, Ser. No. 496,750

Claims priority, application Germany, Jul. 6, 1994, 44 23 650.6

Int. Cl.[6] C09B *62/09;62/513;* **D06P** *1/38*

U.S. Cl. 534—637 **10 Claims**

1. A reactive dye of the formula



(I)

in which

A denotes an optionally substituted phenylene or naphthylene radical,

R^1 and R^2 are identical or different and independently of one another represent hydrogen, methyl, ethyl, methoxy, ethoxy or NHCOE, in which E=NH_2, CH_3, C_2H_5, n—C_3H_7, iso—C_3H_7, or CH_2SO_3H,

T^1 and T^2 are identical or different and independently of one another represent hydrogen, methyl, ethyl, methoxy or ethoxy,

D denotes the radical of a diazo component of the benzene or naphthalene series,

R^3 and R^4 are identical or different and independently of one another represent hydrogen, methyl, ethyl, methoxy or ethoxy,

Y represents fluorine, chlorine or an optionally substituted pyridinium radical, and

X denotes $CH{=}CH_2$ or CH_2CH_2—Z, in which Z denotes a radical which can be eliminated under dyeing conditions.

5,623,062

BISAZO COMPOUNDS AS CHARGE GENERATING MATERIALS

Masaomi Sasaki, Susono, and Tomoyuki Shimada, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

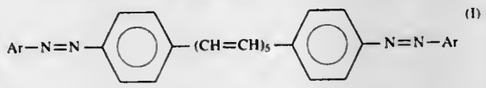
Division of Ser. No. 924,581, Aug. 5, 1992, Pat. No. 5,344,735, which is a continuation of Ser. No. 680,237, Apr. 3, 1991, abandoned, which is a continuation of Ser. No. 341,111, Apr. 20, 1989, abandoned. This application Apr. 28, 1994, Ser. No. 234,941

Claims priority, application Japan, Apr. 20, 1988, 63-97933; May 16, 1988, 63-120145

Int. Cl.[6] C09B *35/023;35/03;* **G03G** *5/09*

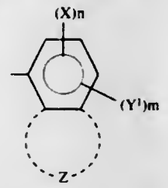
U.S. Cl. 534—653 **5 Claims**

1. A charge generating material having the formula (I):



(I)

wherein Ar in the formula (I) is



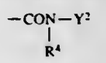
wherein X represents —OH,



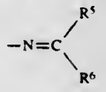
or $—NHSO_2—R^3$,

wherein R^1 and R^2 each represent hydrogen, an unsubstituted or substituted alkyl group; and R^3 represents an unsubstituted or substituted alkyl group or an unsubstituted or substituted aryl group;

Y^1 represents hydrogen, a halogen, an unsubstituted or substituted alkyl group, an unsubstituted or substituted alkoxy group, a carboxyl group, a sulfo group, an unsubstituted or substituted sulfamoyl group,



wherein R^4 represents hydrogen, an unsubstituted or substituted alkyl group, or an unsubstituted or substituted phenyl group; and Y^2 represents an unsubstituted or substituted cyclic hydrocarbon group, an unsubstituted or substituted heterocyclic group, or



wherein R^5 represents an unsubstituted or substituted cyclic hydrocarbon group, an unsubstituted or substituted heterocyclic group, or an unsubstituted or substituted styryl group; and R^6 represents hydrogen, an alkyl group, or an unsubstituted or substituted phenyl group, or R^5 and R^6 may form an unsubstituted or substituted ring in combination with a carbon atom linked thereto;

Z represents an unsubstituted or substituted cyclic hydrocarbon group, or an unsubstituted or substituted heterocyclic group; n is an integer of 1 or 2; and m is an integer of 1 wherein X is situated ortho or para to the site of attachment of the azo group.

5,623,063

3-DEOXYGLUCOSONE DERIVATIVES AND METHOD FOR DETERMINING THE SAME

Toshimitsu Niwa, Kounan; Koichi Nimura, Warabi; Minoru Ohara, Tokyo, and Sigemi Tomiyama, Matsudo, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

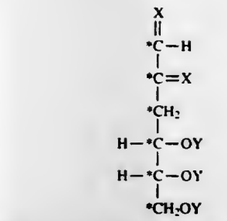
Division of Ser. No. 314,687, Sep. 29, 1994. This application Jun. 6, 1995, Ser. No. 471,751

Claims priority, application Japan, Sep. 29, 1993, 5-264092

Int. Cl.[6] C07G *3/00;* **C07H** *15/00;17/00;17/02*

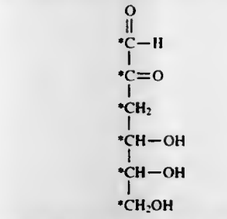
U.S. Cl. 536—17.2 **15 Claims**

1. A process for preparing a first ^{13}C- or ^{14}C-labelled 3-deoxyglucosone derivative of formula (I):



(I)

wherein *C is C, ^{13}C or ^{14}C and at least one of *C is ^{13}C or ^{14}C, X is O or N—OR, wherein R is Me, Et or H, and Y is H, said process comprising: reacting a glucose molecule having from 1 to 6 ^{13}C or ^{14}C atoms, with a compound that contains a hydrazine group or a benzoylhydrazone group in the presence of an acid and an aromatic amine to obtain a hydrazone derivative; reacting said hydrazone derivative with a compound that contains an aldehyde group to obtain a deoxyglucosone derivative of formula II:



(II)

and reacting said deoxyglucosone derivative of formula (II) with a hydroxylamine or an alkoxylamine.

5,623,064

POLY-β-1→4-N-ACETYLGLUCOSAMINE

John N. Vournakis, Hanover, N.H.; Sergio Finkielsztein, Chestnut Hill; Ernest R. Pariser, Belmont, both of Mass., and Mike Helton, Memphis, Tenn., assignors to Marine Polymer Technologies, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 160,569, Dec. 1, 1993. This application Dec. 1, 1994, Ser. No. 347,911

Int. Cl.[6] C08B *37/08;* **C12P** *19/26;* **A61K** *31/73*

U.S. Cl. 536—20 **36 Claims**

1. A poly-β-1→4-N-acetylglucosamine comprising about 4,000 to about 150,000 N-acetylglucosamine monosaccharides covalently attached in a β-1→4 conformation, free of protein, substantially free of other organic contaminants, substantially free of inorganic contaminants, and having a molecular weight of about 800,000 daltons to about 30 million daltons.

5,623,065

GAPPED 2' MODIFIED OLIGONUCLEOTIDES

Phillip D. Cook, Vista, and Brett P. Monia, Carlsbad, both of Calif., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

PCT No. PCT/US92/11339, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/11339, PCT Pub. Date Jul. 8, 1993

Continuation-in-part of Ser. No. 814,961, Dec. 24, 1991, abandoned, and Ser. No. 566,977, Aug. 13, 1990, abandoned. This PCT application Dec. 23, 1992, Ser. No. 244,993

Int. Cl.[6] C07H *21/00;21/02;21/04*

U.S. Cl. 536—23.1 **19 Claims**

1. A compound comprising a plurality of units linked by covalent linkages in a sequence that is hybridizable to a complementary nucleic acid encoding a ras gene product, wherein:

said units are selected from nucleosides and nucleobases;

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said nucleosides are selected from α-nucleosides, β-nucleosides, 4'-thionucleosides and carbocyclic nucleosides;
said nucleobases are selected from purin-9-yl and pyrimidin-1-yl heterocyclic bases;
said linkages are selected from charged phosphorous, neutral phosphorous or non-phosphorous linkages;
said sequence of linked units is divided into at least two segments, wherein: a first of said segments includes nucleosides selected from:
said α-nucleosides linked by charged and neutral 3'–5' phosphorous linkages,
said α-nucleosides linked by charged and neutral 2'–5' phosphorous linkages,
said α-nucleosides linked by non-phosphorous linkages,
said 4'-thionucleosides linked by charged and neutral 3'–5' phosphorous linkages,
said 4'-thionucleosides linked by charged and neutral 2'–5' phosphorous linkages,
said 4'-thionucleosides linked non-phosphorous linkages,
said carbocyclic nucleosides linked by charged and neutral phosphorous linkages,
said carbocyclic nucleosides linked non-phosphorous linkages,
said β-nucleosides linked by charged and neutral 3'–5' linkages,
said β-nucleosides linked by charged and neutral 2'–5' linkages,
said β-nucleosides linked by non-phosphorous linkages; and
a second of said segments including said nucleobases linked by non-phosphorous linkages and nucleobases that are attached to phosphate linkages via a non-sugar tethering moiety;
said sequence of linked nucleosides has at least one of SEQ ID NOS:1–6; and said compound has increased binding affinity to said complementary nucleic acid, inhibits translation of said complementary nucleic acid, and promotes RNase H cleavage in vitro.

5,623,066

CUCUMBER MOSAIC VIRUS COAT PROTEIN GENE

Hector D. Quemada, and Jerry L. Slightom, both of Kalamazoo, Mich., assignors to Asgrow Seed Company, Kalamazoo, Mich.

Continuation of Ser. No. 168,974, Dec. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 805,489, Dec. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 499,474, Jun. 14, 1990, abandoned, which is a continuation of Ser. No. 135,591, Dec. 21, 1987, abandoned. This application Dec. 28, 1994, Ser. No. 365,973

Int. Cl.[6] C12N *15/40;15/82;* **A01H** *5/00*

U.S. Cl. 536—23.72 **7 Claims**

1. A DNA comprising the sequence shown in FIG. 1. said sequence encoding the coat protein from the C strain of cucumber mosaic virus.

5,623,067

SEED-SPECIFIC PROMOTER REGION

Joël S. Vandekerckhove, Loppem, Belgium; Enno Krebbers, Alhambra, Calif.; John Botterman, Zevergem-de Pinte, and Jan Leemans, Deurle, both of Belgium, assignors to Plant Genetic Systems, N.V., Gent, Belgium, and Brazilian Agricultural Research Organization-Embrapa/Cenargen, Brasilia, Brazil

Division of Ser. No. 45,773, Apr. 14, 1993, Pat. No. 5,487,991, which is a continuation of Ser. No. 363,898, Aug. 2, 1989, abandoned. This application Jun. 2, 1995, Ser. No. 459,942

Claims priority, application United Kingdom, Oct. 20, 1987, 87402348

Int. Cl.[6] C12N *15/11;15/29;15/82*

U.S. Cl. 536—24.1 **3 Claims**

1. An isolated DNA fragment comprising a seed-specific promoter region of an *Arabidopsis thaliana* gene coding for a precursor of a 2S albumin wherein said 2S albumin comprises an amino acid sequence selected from the group of AT2S1, AT2S2, AT2S3 and AT2S4 of FIG. 2A.

5,623,068

SYNTHESIS OF DNA USING SUBSTITUTED PHENYLACETYL-PROTECTED NUCLEOTIDES

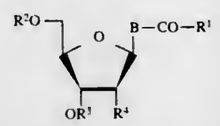
M. Parameswara Reddy, Brea; Firdous Farooqui, LaHabra, and Naeem B. Hanna, Fullerton, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 207,433, Mar. 7, 1994, abandoned. This application Mar. 1, 1995, Ser. No. 396,993

Int. Cl.[6] C07H *1/02;19/10;19/20;21/00*

U.S. Cl. 536—25.34 **20 Claims**

9. In a method of synthesizing oligonucleotides by a condensation method, the improvement which comprises:
using as a starting material at least one nucleotide derivative of general formula I



I

where in R^1 represents CR'R"—Ar, in which Ar is selected from the group consisting of mono- and dihalo- substituted phenyl, and methoxy phenyl and R' and R" are independently selected from the group consisting of hydrogen and lower alkyl; one of R^2 and R^3 is a hydroxyl-protecting group and the other is selected from the group consisting of phosphoramidites, phosphonates, and groups suitable for attachment of the nucleotide to a solid support; R^4 is selected from the group consisting of hydrogen, —OH and protected hydroxyl; and B represents a divalent radical corresponding to a purine or pyrimidine base and wherein —CO—R^1 is attached to an exocyclic N of B.

5,623,069

METHOD FOR PRODUCING 5'-NUCLEOTIDE

Akira Haze, Kawanishi; Hiroyuki Hatano, Kakogawa; Tomomi Ikemoto, Kamigohri-cho, and Yoshifumi Kitamoto, Kakogawa, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 87,047, Jul. 7, 1993, abandoned. This application May 10, 1995, Ser. No. 437,984

Claims priority, application Japan, Jul. 8, 1992, 4-181145

Int. Cl.[6] C07H *1/00;19/06;19/16*

U.S. Cl. 536—26.71 **9 Claims**

1. A method for producing a 5'-nucleotide, which consists essentially of:
a pre-heating step of treating a nucleoside suspension in an organic solvent consisting of a tri-lower (C_{1-6})alkyl phosphate at about 30° C. to 80° C. for about 10 to 120 minutes, the nucleoside being selected from the group consisting of inosine, guanosine, and mixed crystals of inosine and guanosine, to change the suspended nucleoside to an amorphous crystal form, and then
a phosphorylating step of contacting the pre-treated nucleoside suspension with a phosphorous oxyhalogenide at about −30° C. to 10° C., thereby producing a 5'-nucleotide.

5,623,070

HETEROATOMIC OLIGONUCLEOSIDE LINKAGES

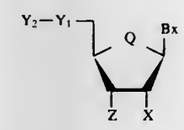
Phillip D. Cook, and Yogesh S. Sanghvi, both of Carlsbad, Calif., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation of Ser. No. 903,160, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Feb. 27, 1995, Ser. No. 395,168

Int. Cl.[6] C07H *19/06;19/167;19/173;21/00*

U.S. Cl. 536—27.6 **8 Claims**

1. A nucleoside of the structure:



wherein
Y_1 is CH_2;
Y_2 is aminooxy, alkylamino having 1 carbon atom, or alkenyl having 2 carbon atoms;
Z is H, OH, O—R'", amino, methyleneamino or phthalimido;
R'" is a hydroxyl blocking group;
X is H or OH;
Q is O; and
Bx is a heterocyclic base moiety.

5,623,071

GALACTOSYL AND MANNOSYL CYCLODEXTRINS

Sumio Kitahata, Osaka; Koji Hara, Yokohama; Koki Fujita, Yokohama; Nobuhiro Kuwahara, Yokohama, and Kyoko Koizumi, Fujüdera, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Kanagawa-ken, and Sumio Kitahata, Osaka, both of Japan

Division of Ser. No. 368,392, Dec. 30, 1994, Pat. No. 5,523,218, which is a continuation of Ser. No. 992,863, Dec. 17, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,090

Claims priority, application Japan, Apr. 8, 1992, 4-114304

Int. Cl.[6] C08B *37/16;* **C12P** *19/04;19/44;19/08*

U.S. Cl. 536—103 **12 Claims**

1. A galactosyl-cyclodextrin comprising a galactosyl group bonded to a 6-hydroxyl group of a glucosyl group of a cyclodextrin via an α-bond.

5,623,072

3-PHENYLPYRIDAZINES, HERBICIDAL COMPOSITIONS AND USES THEREOF

Michael S. South, and Terri L. Jakuboski, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 11, 1994, Ser. No. 320,996

Int. Cl.[6] C07D *237/14;237/18;237/20;* **A01N** *43/58*

U.S. Cl. 544—239 **1 Claim**

1. 5-Methoxy-3-[3-(trifluoromethyl)phenyl] -pyridazine.

5,623,073

BENZIMIDAZOLE COMPOUNDS

Vera A. Anisimova; Margarita V. Levchenko; Tatyana B. Korochina, all of Rostov-On-Don; Alexander A. Spasov, Volgograd; Sergei G. Kovalev, Volgograd, and Galina P. Dudchenko, Volgograd, all of Russian Federation, assignors to Adir Et Compagnie, Courbevoie, France

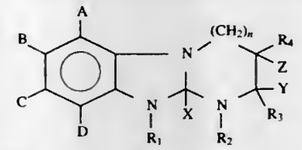
Filed May 18, 1993, Ser. No. 63,531

Claims priority, application France, May 19, 1992, 92 06036; Jul. 31, 1992, 92 09488

Int. Cl.[6] C07D *471/02;239/70*

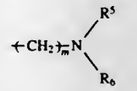
U.S. Cl. 544—252 **12 Claims**

1. A compound selected from those of the general formula (I):



(I)

wherein:
either:
I.
n=0, the third ring being 5-membered,
A, B, C and D, which are the same or different, each represents hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, or hydroxy-lower alkyl,
Y and Z each represents hydrogen or together form a bond, and either:
I.A.
X and R_2 together form a bond and in that case:
I.A.1
R_1 represents a G_1 group,
G_1 representing the group



wherein m represents an integer of 1 to 6 inclusive and R_5 and R_6, which are the same or different:
a/ each represents, independently of the other, hydrogen, lower alkyl, aryl-lower alkyl or substituted aryl-lower alkyl, and R_3 represents hydrogen, lower alkyl, phenyl substituted by hydroxy, hydroxyalkyl, or by two to five groups selected from lower alkyl, lower alkoxy, trifluoromethyl, hydroxy, and hydroxyalkyl, or R_3 represents naphthyl, substituted naphthyl, heteroaryl, substituted heteroaryl, or group G_1, G_1 being as defined hereinbefore,
b/ or R_5 and R_6 together with the nitrogen atom that carries them form a morpholine ring, and R_3 represents hydrogen, lower alkyl, phenyl substituted by lower alkyl, hydroxy, halogen, trifluoromethyl, or by hydroxyalkyl, or by two to five groups selected from lower alkyl, lower alkoxy, halogen, trifluoromethyl, hydroxy, and hydroxyalkyl, or R_3 represents naphthyl, substituted naphthyl, heteroaryl group, substituted heteroaryl, or group G_1, G_1 being as defined hereinbefore,
c/ or R_5 and R_6 together with the nitrogen atom that carries them form piperazine, which is optionally substituted at the nitrogen atom in the 4-position by lower alkyl, aryl, aryl-lower

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UMI

alkyl, substituted aryl, or substituted aryl-lower alkyl, and R_3 represents lower alkyl, phenyl substituted by hydroxy, halogen, trifluoromethyl, or by hydroxyalkyl, or by two to five groups selected from lower alkyl, lower alkoxy, halogen, trifluoromethyl, hydroxy, and hydroxyalkyl, or R_3 represents naphthyl, substituted naphthyl, heteroaryl, or substituted heteroaryl;

or R_1 represents G_2, G_2 denoting $(CH_2)_mCOR_7$, or G_3, G_3 denoting $(CH_2)_mCHOHR_7$, wherein m is as defined hereinbefore and R_7 represents aryl or substituted aryl, and R_3 represents hydrogen, lower alkyl, phenyl substituted by hydroxy, hydroxyalkyl, or by lower alkoxy, lower alkyl, or by two to five groups selected from lower alkyl, lower alkoxy, trifluoromethyl halogen, hydroxy, and hydroxyalkyl, or R_3 represents naphthyl, substituted naphthyl, heteroaryl, substituted heteroaryl, or G_1, G_1 being as defined hereinbefore,

R_4 represents hydrogen, a group G_1 with G_1 being as defined hereinbefore, a group G_4, of the formula:



$$-COO-G_1$$

wherein G_1 is as defined hereinbefore, or a group G_5, of the formula COR_6, wherein R_6 represents aryl, substituted aryl, heteroaryl, or substituted heteroaryl,

with the exception of compounds in which R_4 represents hydrogen at the same time as R_1 represents a group:



wherein m=2

and R_5 and R_6 each represents ethyl whilst at the same time R_3 represents lower alkyl or naphthyl,

I.A.2

X and R_2 together form a bond and R_1 represents a group G_6 of the formula $(CH_2)_mR_8$, m being as defined hereinbefore and R_8 representing lower alkyl, phenyl, substituted phenyl, naphthyl, or substituted naphthyl, and R_3 represents lower alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, hydrogen, or a group G_1, G_1 being as defined hereinbefore, and R_4 represents a G_1, G_4 or G_5 group, G_1, G_4 and G_5 being as defined hereinbefore,

or

I.A.3

X and R_2 together form a bond and R_1 represents methyl, and R_3 represents lower alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, hydrogen, or G_1, G_1 being as defined hereinbefore, and R_4 represents G_4, G_4 being as defined hereinbefore, or G_7, G_7 denoting the group COR_{10} wherein R_{10} represents naphthyl, substituted naphthyl, substituted phenyl, heteroaryl, or substituted heteroaryl,

or

I.B

X and R_1 together form a bond, and

R_2 represents:

G_1, G_1 being as defined hereinbefore, and R_3 represents substituted phenyl, naphthyl, substituted naphthyl, heteroaryl, substituted heteroaryl, or G_1, G_1 being as defined hereinbefore, whilst R_4 represents hydrogen or a group G_1, G_4 or G_5, G_1, G_4 and G_5 being as defined hereinbefore,

or R_2 represents G_2 or a group G_3, G_2 and G_3 being as defined hereinbefore, and R_3 represents hydrogen, lower alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or G_1, G_1 being as defined hereinbefore, whilst R_4 represents hydrogen or a group G_1, G_4 or G_5, G_1, G_4 and G_5 being as defined hereinbefore,

or

II.

n=1, the third ring being 6-membered, and

A, B, C and D, which are the same or different, each represents hydrogen, halogen, lower alkyl, or trifluoromethyl, X and R_2 form a bond or X and R_1 form a bond, wherein at least one of those two bonds must be present in the molecule,

Y and Z each represents hydrogen or together form a bond,

R_1 or R_2—depending on whether X and R_2 or X and R_1 form a bond—represents methyl or G_1 or G_2 or G_3 or G_6, G_1, G_2, G_3 and G_6, each being as defined hereinbefore,

R_3 represents hydrogen, lower alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or a group G_1, G_1 being as defined hereinbefore,

and R_4 represents hydrogen or G_1, or G_4,

or G_5, with G_1, G_4 and G_5 being as defined hereinbefore,

their stereoisomers, as well as their addition salts with a pharmaceutically-acceptable acid,

it being understood by lower alkyl or lower alkoxy a straight-chain or branched group containing 1 to 6 carbon atoms, inclusive

it being understood that aryl means phenyl or naphthyl, and that heteroaryl means furyl, thienyl, pyridyl, pyrrolyl, imidazolyl, benzimidazolyl, benzofuryl, benzothienyl, quinolyl, isoquinolyl, or indolyl, the term "substituted" qualifying the terms arylalkyl, aryl, phenyl, naphthyl, and heteroaryl indicating, unless specified otherwise, that the groups in question are substituted in the cyclic moiety by one to three radicals selected from halogen, trifluoromethyl, hydroxy, lower alkoxy, hydroxy-lower alkyl, and lower alkyl,

and that if there exist in one molecule several G_1 groups or R_5 and R_6 groups, those may be the same or different.

5,623,074

SUBSTITUTED TETRAHYDROISOQUINOLINE COMPOUNDS, AND PROCESS FOR PRODUCING THEM, AND COMPOSITION CONTAINING THEM

Akihiro Tanaka, Tokyo; Takashi Fujikura, Saitama; Ryuji Tsuzuki, Tokyo; Masaki Yokota, Saitama, and Takeyuki Yatsu, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 981,137, Nov. 24, 1992, Pat. No. 5,378,849, which is a division of Ser. No. 737,883, Jul. 25, 1991, Pat. No. 5,204,468, which is a continuation of Ser. No. 569,779, Aug. 21, 1990, abandoned, which is a continuation of Ser. No. 440,086, Nov. 22, 1989, Pat. No. 5,069,551, which is a continuation-in-part of Ser. No. 320,975, Mar. 9, 1989, Pat. No. 4,966,904, which is a division of Ser. No. 173,376, Mar. 25, 1988, Pat. No. 4,876,261. This application Jun. 30, 1994, Ser. No. 269,733

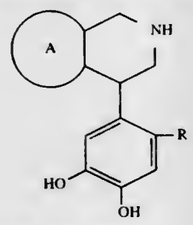
Claims priority, application Japan, Mar. 27, 1987, 62-75439

Int. Cl.[6] C07D *513/04*

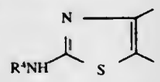
U.S. Cl. 546—114 **4 Claims**

1. An optical isomer of the compound of the formula:

I



wherein Ⓐ represents the formula



wherein R is hydrogen or halogen, and R^4 is a hydrogen atom or a lower alkylsulfonyl, or salts thereof.

5,623,075

THIAZOLEMETHINE DYES

Stefan Beckmann, Bad Dürkheim; Karl-Heinz Etzbach, Frankenthal, and Rüdiger Sens, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

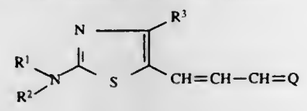
Filed Jun. 28, 1995, Ser. No. 496,203

Claims priority, application Germany, Jul. 5, 1994, 44 23 485.6

Int. Cl.[6] C07D *417/06;* **C09B** *21/00*

U.S. Cl. 546—269.7 **8 Claims**

1. A thiazolemethine dye of the formula (I):



wherein:

R^1 and R^2 are independently of each other hydrogen, unsubstituted C_1-C_8-alkyl, with or without interruption by 1 or 2 oxygen atoms in ether function, C_1-C_8-alkyl, with or without interruption by 1 or 2 oxygen atoms in ether function, and which is substituted with cyano, phenyl, tolyl, hydroxyl, C_1-C_6 alkanoyloxy, acryloyloxy, methacryloyloxy, C_1-C_4-alkoxycarbonyl or C_1-C_4-alkoxycarbonyloxy with or without substitution by phenyl or C_1-C_4-alkoxy in the alkoxy group;

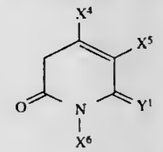
C_3-C_4-alkenyl, C_3-C_7-cycloalkyl, phenyl or tolyl;

or are together with a nitrogen atom joining them a 5- or 6-membered saturated heterocyclic radical selected from the group consisting of pyrrolidinyl, piperidinyl, morpholinyl, piperazinyl and N-(C_1-C_4-alkyl) piperazinyl;

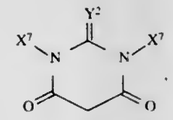
R^3 is hydrogen, halogen, C_1-C_8-alkyl, phenyl, phenyl substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, amino, hydroxyl, halogen or nitro;

benzyl; benzyl which phenyl ring thereof is substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, amino, hydroxyl, halogen or nitro; cyclohexyl, thienyl, hydroxyl or C_1-C_8-monoalkylamino; and

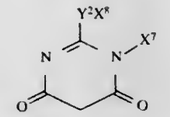
Q is a radical of an acidic —CH compound, wherein Q is derived from nitromethane, nitroethane or from compounds of the formulae IIc, IIe or IIf:



(IIc)



(IIe)



(IIf)

wherein:

Y^1 is oxygen or a radical of the formula $—C(CN)_2$;

Y^2 is oxygen or sulfur;

X^4 is hydrogen or C_1-C_6-alkyl;

X^5 is cyano, carbamoyl, C_1-C_4-alkoxycarbonyl or acetyl;

X^6 is hydrogen, C_1-C_6-alkyl, amino, C_1-C_6-mono- or dialkylamino, C_1-C_4-monoalkanoylamino, benzoylamino or N-(C_1-C_4-alkanoyl) -N-benzoylamino;

X^7 is hydrogen, C_1-C_6-alkyl, benzyl or phenyl; and

X^8 is C_1-C_8 alkyl.

5,623,076

PROCESS FOR THE PREPARATION OF CHLOROMETHYLPYRIDINES

Reinhard Lantzsch, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

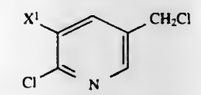
Filed Dec. 18, 1995, Ser. No. 573,714

Claims priority, application Germany, Dec. 23, 1994, 44 46 338.3

Int. Cl.[6] C07D *213/26;213/61;213/38*

U.S. Cl. 546—345 **3 Claims**

1. Process for the preparation of chloromethylpyridines of the general formula (I)



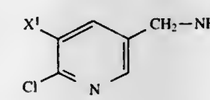
(I)

in which

X^1 represents hydrogen, halogen or alkyl,

characterized in that

pyridine derivatives of the general formula (II)



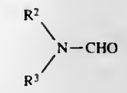
(II)

in which

R^1 represents hydrogen, alkyl or optionally substituted phenyl and

X^1 has the abovementioned meaning

are reacted by means of a formamide derivative of the general formula (III)



(III)

in which

R^2 and R^3 are identical or different and represent alkyl or cycloalkyl or together represent alkanediyl,

and with a chlorinating agent, if appropriate in the presence of a diluent at temperatures between 20° and 120° C.

5,623,077

IMIDAZOLE BASED NITROGEN SULFUR LIGANDS USEFUL IN RADIOGRAPHIC IMAGING AGENTS

Raghavan Rajagopalan, Maryland Heights, and Ananthachari Srinivasan, St. Charles, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 30,940, Mar. 12, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,612

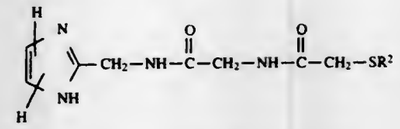
Int. Cl.[6] C07D *233/91;* **A61K** *51/04*

U.S. Cl. 548—338.1 **1 Claim**

1. A ligand useful in forming radionuclide complexes, said

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ligand having the general formula:



wherein R^2 is a benzoyl or a tetrahydropyranyl group.

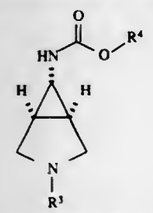
5,623,078

PROCESS FOR PRODUCING AN INTERMEDIATE OF A NEW QUINOLONE COMPOUND

Yasuo Urata; Mamoru Fujita, both of Kanagawaken; Teruyo Sugiura, Chibaken; Fumitaka Ohizumi, Chibaken, and Naoyuki Yoshida, Chibaken, all of Japan, assignors to Chisso Corporation, Osaka, Japan

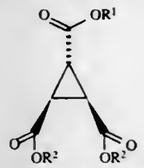
Filed Jun. 20, 1996, Ser. No. 666,742
Claims priority, application Japan, Jun. 23, 1995, 7-180650
Int. Cl.[6] C07D 209/02;209/52
U.S. Cl. 548—452 2 Claims

1. A process for producing an intermediate of a new quinolone compound expressed by the formula (IV)



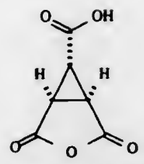
(IV)

wherein R^3 represents a benzyl group, a diphenylmethyl group, a triphenylmethyl group, a benzyloxycarbonyl group, a diphenylmethyloxycarbonyl group or a triphenylmethyloxycarbonyl group and the substituents of the aromatic rings of these respective groups are selected from the group consisting of hydrogen, halogen groups of fluoro, chloro, bromo and iodo, a nitro group, a linear or branched alkyl group of 1 to 8 carbon atoms, a linear or branched alkoxy group of 1 to 8 carbon atoms, an amino group, and a linear or branched perfluoroalkyl group of 1 to 8 carbon atoms, and R^4 represents a linear or branched alkyl group of 1 to 8 carbon atoms, a cycloalkyl group, an aryl group or an aralkyl group, which process comprises subjecting a cyclopropanetricarboxylic acid triester expressed by the formula (I)



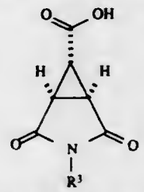
(I)

wherein R^1 and R^2 each represent a linear or branched alkyl group of 1 to 8 carbon atoms, a cycloalkyl group, an aryl group or an aralkyl group, as a starting substance, to hydrolysis and dehydration condensation, to prepare an acid anhydride expressed by the formula (II),



(II)

and condensing this acid anhydride with an amine compound, to obtain a compound expressed by the formula (III)



(III)

wherein R^3 has the same definition as described above,
reducing the carbonyl group of the formula III compound,
reacting a metal azide or diphenylphosphorylazide with the Formula III reduced carbonly compound,
subjecting this compound to Curtius rearrangement, to obtain a compound expressed by the formula (XV)



(XV)

wherein R^3 has the same definition as described above,
and reacting this compound with an alcohol.

5,623,079

METHOD OF PREPARING N-FORMYL-L-ASPARTIC ANHYDRIDE

Takehiko Kataoka; Shinichi Kishimoto, and Osahiro Sato, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,835
Claims priority, application Japan, Sep. 28, 1994, 6-233425
Int. Cl.[6] C07D 307/66
U.S. Cl. 549—253 8 Claims

1. A method of preparing N-formyl-L-aspartic anhydride (FAA) comprising:
reacting L-aspartic acid with acetic anhydride and formic acid in a molar amount 1.05 times as large or larger as that of aspartic acid to form a suspension comprising N-formyl-L-aspartic anhydride, and
centrifuging said suspension of N-formyl-L-aspartic anhydride in the presence or absence of an aromatic hydrocarbon to obtain a cake of FAA while:
(i) supplying said suspension to a separation device under a back pressure of 100 mmHg or higher;
(ii) releasing said back pressure at the time point when at least half or more of said suspension has been supplied; and
(iii) subsequently filtering and/or dehydrating said cake, while optionally washing the cake.

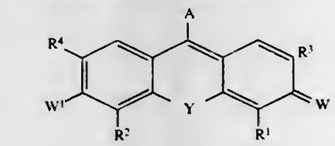
5,623,080

FLUORONE AND PYRONIN Y DERIVATIVES

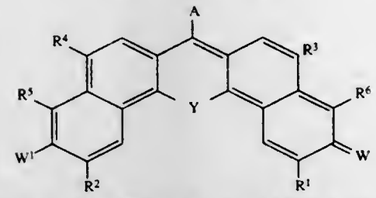
Douglas C. Neckers, Perrysburg, Ohio, and Jianmin Shi, Webster, N.Y., assignors to Spectra Group Limited, Inc., Maumee, Ohio

Division of Ser. No. 154,880, Nov. 19, 1993, Pat. No. 5,451,343, which is a continuation-in-part of Ser. No. 881,048, May 11, 1992, abandoned, and Ser. No. 772,103, Oct. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 756,611, Sep. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 702,886, May 20, 1991, abandoned. This application Feb. 15, 1995, Ser. No. 388,802
Int. Cl.[6] C07D 311/82;311/78;495/12; A01N 43/02
U.S. Cl. 549—393 20 Claims

1. A compound of the formula (I) or (II):



I



II

where R^1, R^2, R^3 and R^6 are the same or different and represent a hydrogen atom or a halogen atom and R^1 and R^2 may combine to form a ring; R^3, and R^4 are the same or different and represent a hydrogen atom, a halogen atom, a benzoyl group, a group of the formula $—L(CH_2)_nR^8$ where n is 1 to 8. R^8 is a hydrogen, hydroxy, amino, dialkylamino, $—COR^{16}$ or $—COOR^{14}$ where R^{16} is a hydrogen, chlorine, COCl, C_1–C_8 alkyl, $—NR_2$ or aryl and R^{14} is a hydrogen, C_1–C_8 alkyl, aryl, COR, 2,4-dinitrophenyl, N-imido or $—NR_2$ and L is a direct bond or C=O; W is =O; W^1 is hydrogen or $—OR^9$, where R^9 is hydrogen, C_1– C_8 alkyl, acyl or a group of the formula $—(CH_2)_nR^{10}$ where n is 1 to 8 and R^{10} is amino, dialkylamino, hydroxy, acryloyl or methacryloyl; Y is oxygen, sulfur, selenium, tellurium, C=O, or $>N—R^{13}$ is where R^{13} is 4-methylphenyl, and A is hydrogen, alkenyl, dichlorotriazinylamino, or an electron withdrawing group selected from the group consisting of $COOR^{11}$, $C(O)OCOR^{11}$, $CONR_2$, CN, NO_2, NCS, NCO, SO_2R^{12}, SO_3, R^{12}, SO_3R^{11}, SO_2NR_2 and CX_3^2 where X^2 is the same or different and is a halogen atom and R^{11} is hydrogen, alkyl, aryl, or aralkyl, and R^{12} is hydrogen, alkyl, aryl, or aralkyl; provided that when R^1–R^6 are all hydrogen, A is not hydrogen.

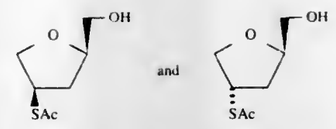
5,623,081

METHOD FOR PRODUCING TETRAHYDROFURANYL COMPOUNDS

Yang-I Lin, 35 Constitution Dr., Tappan, N.Y. 10983; Panayota Bitha, 287 Treetop Cir., Nanuet, N.Y. 10954; Subas Sakya, 7 Phyllis Dr., Pomona, N.Y. 10970; Timothy W. Strohmeyer, 19 Lenox Ave., Demarest, N.J. 07627; Karen Bush, 11 Brook Dr. West, Princeton, N.J. 08540; Carl B. Ziegler, 222 Ridge St., Pearl River, N.Y. 10965, and Gregg B. Feigelson, 1 Independence La., Airmont, N.Y.

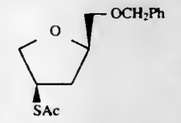
Division of Ser. No. 182,781, Jan. 26, 1994, which is a continuation-in-part of Ser. No. 33,684, Mar. 16, 1993, abandoned. This application May 23, 1995, Ser. No. 448,052
Int. Cl.[6] C07D 307/02
U.S. Cl. 549—475 1 Claim

1. A method for producing tetrahydrofuranyl compounds of the formulae:

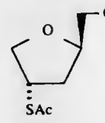


and

in which Ac is an acetyl group, which comprises:
a) reacting benzyloxyacetaldehyde diethyl acetal with a mineral acid to give benzyloxyacetaldehyde;
b) reacting the benzyloxyacetaldehyde with a compound having an allyl metal complex to give 1-phenylmethoxy-4-penten-2-ol as racemate or pure enantioners;
c) treating the 1-phenylmethoxy-4-penten-2-ol with a halogenating agent to give 4,5-dihalo-1-(phenylmethoxy)- 2-pentanol;
d) reacting the 4,5-dihalo-1-(phenylmethoxy)- 2-pentanol with a suitable base to accomplish ring closure to give a mixture of cis and trans 4-halo-2-tetrahydrofuran;
e) chromatographically separating the cis and trans isomers of step (d) to give the pure cis and trans isomers;
f) reacting the pure isomers of step (e) with a suitable thioacetate compound to give compounds of formulae:



and



g) and hydrolysis of the phenylmethoxy group to give the desired tetrahydrofuranyl compounds.

5,623,082

PREPARATION OF ACYL CHLORIDES

Martin Decker, Ludwigshafen; Wolfgang Franzischka, Frankenthal; Rudolf Irnich, deceased, late of Bobenheim, and Manfred Sauerwald, Meckenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 725,916, Jul. 3, 1991, abandoned, which is a continuation of Ser. No. 339,153, Apr. 17, 1989, abandoned. This application Jul. 11, 1995, Ser. No. 488,923
Claims priority, application Germany, May 3, 1988, 38 14 969.9
Int. Cl.[6] C07C 51/58
U.S. Cl. 554—231 9 Claims

1. A process for the preparation of an acyl chloride which comprises:
reacting a carboxylic acid or its anhydride with carbonyl chloride in the presence of a carboxamide selected from the group consisting of di-sec-butylformamide and di-3-pentylformamide.

5,623,083

ACETYLENIC ALCOHOLS AND ETHERS AS ACCELERATORS FOR HYDROSILATION OF SILOXYHYDRIDES

Howard M. Bank, and Gary T. Decker, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 28, 1996, Ser. No. 623,580
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—479 23 Claims

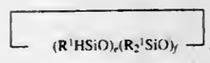
1. A hydrosilation process comprising: contacting
(A) a siloxyhydride described by formulas

$$(XR_2^1SiO)_aH_bSiR^1_{3-a-b},$$

$$XR_2^1Si(OSiHR^1)_c(OSiR_2^1)_dOSiR_2^1X, \text{ and}$$

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-continued



where each R^1 is independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, cycloalkyls comprising four to 12 carbon atoms, and aryls; each X is independently selected from a group consisting of hydrogen and R^1; a=0 to 4, b=0 to 3 with the proviso that when b=0 at least one X is hydrogen, a+b=1 to 4, c=0 to 100 with the proviso that when c=0 at least one X is hydrogen, d=0 to 100, c+d≦100, e=1 to 20, f=0 to 19, and e+f=4 to 20; and

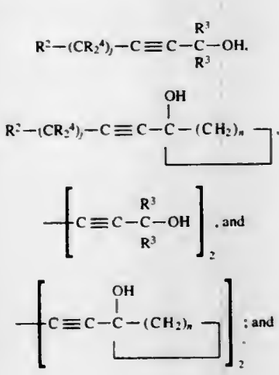
(B) an unsaturated reactant selected from a group consisting of

(i) substituted and unsubstituted unsaturated organic compounds,

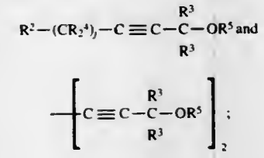
(ii) silicon compounds comprising substituted or unsubstituted unsaturated organic substituents, and

(iii) mixtures of (i) and (ii);

in the presence of a platinum catalyst selected from a group consisting of platinum compounds and platinum complexes, and an accelerator selected from a group consisting of acetylenic alcohols described by formulas



acetylenic ethers described by formulas



where R^2 is selected from a group consisting of hydrogen, hydroxyl, substituted and unsubstituted alkyls comprising one to 20 carbon atoms, and substituted and unsubstituted alkoxys comprising one to 20 carbon atoms, each R^3 is independently selected from a group consisting of hydrogen, alkyls comprising one to 20 carbon atoms, cycloalkyls comprising four to 20 carbon atoms, and aryls; each R^4 is independently selected from a group consisting of hydrogen and R^1; R^5 is selected from a group consisting of monovalent hydrocarbon radicals comprising one to 20 carbon atoms and heterocyclic hydrocarbon radicals having a carbon to oxygen bond, j=0 to 10, and n=4 to 12.

5,623,084

FLUOROALKENYL COMPOUNDS AND THEIR USE AS PEST REPELLENTS

Peter G. Ruminski, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 401,635, Mar. 8, 1995, Pat. No. 5,561,162, which is a division of Ser. No. 321,952, Oct. 12, 1994, Pat. No. 5,457,134, which is a division of Ser. No. 138,937, Oct. 18, 1993, Pat. No. 5,389,680, which is a continuation of Ser. No. 827,231, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 663,218, Mar. 1, 1991, abandoned. This application May 18, 1995, Ser. No. 443,645

Int. Cl.[6] C07C *309/67*

U.S. Cl. 558—54 **2 Claims**

1. 3,4,4-trifluoro-3-butene-1-tosylate.

5,623,085

METHOD FOR REDUCING MICROFOAM IN A SPRAY-APPLIED WATERBORNE COMPOSITION

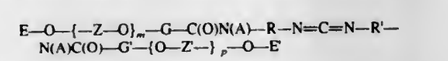
Matthew S. Gebhard, New Britain; Linda S. Smith, Oreland, and James C. Day, North Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 311,688, Sep. 23, 1994. This application Jun. 6, 1995, Ser. No. 468,690

Int. Cl.[6] C07C *275/24*

U.S. Cl. 560—25 **2 Claims**

1. A mono-functional carbodiimide having the formula



wherein

m is an integer of from 1 to 1150; p is an integer of from 1 to 1150; A is independently selected from hydrogen or C_1–C_6 alkyl; E and E' are hydrogen or a C_1–C_{10} alkyl group and may be the same or different; G is a bond, —g'—N(g)— or —g'—O— and G' is a bond, —N(g)—g'—, or —O—g'—, wherein g is selected from hydrogen or an alkyl group and g' is selected from C_1–C_6 alkylene; R and R' are independently selected from alkylene, arylene, substituted arylene, biarylene alkylene or substituted biarylene alkylene; and Z and Z' are a C_1–C_6 alkylene group, and may be the same or different.

5,623,086

PROCESS FOR THE PRODUCTION OF 1,2-BIS (ACYLOXYLATES)

Steven T. Perri, and Stephen N. Falling, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 29, 1995, Ser. No. 581,704

Int. Cl.[6] C07C *67/24*

U.S. Cl. 560—240 **19 Claims**

1. A process for the preparation of a 1,2-bis(acyloxyate) which comprises reacting an epoxide with a carboxylic anhydride in the presence of a catalytic amount of a catalytic composition containing a tertiary amine and a carboxylic acid.

5,623,087

METHOD FOR PREPARATION OF OPTICALLY ACTIVE DIARYLALANINES

Mukund P. Sibi; Prasad K. Despande, and Anthony J. LaLoggia, all of Fargo, N. Dak., assignors to NDSU-Research Foundation, Fargo, N. Dak.

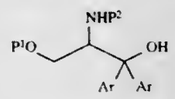
Filed Mar. 10, 1995, Ser. No. 410,861

Int. Cl.[6] C07C *229/00*

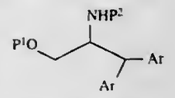
U.S. Cl. 562—576 **26 Claims**

1. A method for preparing a diarylalanine compound comprising the step of:

reacting a diarylaminopropanediol compound represented by the formula:



with a reducing agent to form a diarylaminopropanol compound represented by the formula:



wherein Ar is a substituted or unsubstituted aromatic group; and P^1 and P^2 together are >C=O or

P^1 is hydrogen or —C(O)R^1, where R^1 is a substituted or unsubstituted C_3–C_7 alkyl group, a substituted or unsubstituted C_3–C_7 cycloalkyl group, a substituted or unsubstituted arylalkyl group, or a substituted or unsubstituted phenyl group; and

P^2 is hydrogen, —C(O)R^2, or —C(O)OR^3, wherein R^2 is hydrogen, a substituted or unsubstituted C_1–C_{10} alkyl group, a substituted or unsubstituted C_3–C_7 cycloalkyl group, a substituted or unsubstituted arylalkyl group, or a substituted or unsubstituted phenyl group, and R^3 is a substituted or unsubstituted C_1–C_{10} alkyl group, a substituted or unsubstituted C_3–C_7 cycloalkyl group, a substituted or unsubstituted arylalkyl group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted fluorenyl group, a substituted or unsubstituted allyl group.

5,623,088

METHOD OF PREPARING 4-AMINODIPHENYLAMINE

Michael K. Stern, University City, and James K. Bashkin, St. Louis, both of Mo., assignors to Flexsys America L. P., Akron, Ohio

Division of Ser. No. 157,120, Dec. 6, 1993, Pat. No. 5,453,541, which is a continuation-in-part of Ser. No. 719,876, Jun. 21, 1991, Pat. No. 5,117,063. This application May 10, 1995, Ser. No. 438,603

Int. Cl.[6] C07C *211/62;211/63;211/64*

U.S. Cl. 564—112 **5 Claims**

1. Tetrasubstituted ammonium salts of 4-nitrodiphenylamine and sustituted derivatives thereof wherein the substituted derivatives are products of the reaction of nitrobenzene with aniline containing one or more ring substituents selected from —Cl, —Br, —F, —NO_2, —NH_2, 1–6 carbon alkyl groups, 1–6 carbon alkoxy groups, —SO_3, —COOH and 6–18 carbon aryl, aralkyl and alkaryl groups containing at least one —NH_2 group, and wherein each substituent of the tetrasubstituted ammonium ion is independently selected from the group consisting of alkyl, aryl and arylalkyl groups.

5,623,089

TRIPHENYLBIS(FLUOROALKOXY) PHOSPHORANES AND FLUORINATED KETALS

Zhen-Yu Yang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 320,624, Oct. 7, 1994, which is a continuation of Ser. No. 29,087, Mar. 10, 1993, abandoned. This application May 22, 1995, Ser. No. 447,324

Int. Cl.[6] C07F *9/50*

U.S. Cl. 568—13 **2 Claims**

1. A compound of the formula $Ar_3P(OCH_2Rf)_2$, wherein Ar is Ph or substituted Ph, and R_f is selected from straight chain or branched perfluoroalkyl, perfluoroalkenyl, perfluoroalkynyl, perfluoroalkoxy, perfluoroalkenoxy, perfluorochloroalkyl, perfluorochloroalkenyl, perfluorochloroalkynyl, perfluorochloroalkoxy, perfluorochloroalkenoxy, fluoroalkyl, fluoroalkenyl, fluoroalkynyl, fluoroalkoxy, fluoroalkenoxy, fluorochloroalkyl, fluorochloroalkenoxy, fluorochloroalkynyl, fluorochloroalkoxy, and fluorochloroalkenoxy, of 1–20 carbon atoms, provided, however, that R_f is not CF_3.

5,623,090

METHOD FOR PRODUCTION OF ALCOHOL, KETONE, AND EPOXIDE BY OXIDATION OF HYDROCARBON

Masatake Haruta, Ikeda; Susumu Tsubota, Ashiya, and Toshio Hayashi, Kobe, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,812

Claims priority, application Japan, Oct. 28, 1994, 6-289008

Int. Cl.[6] C07C *45/33*

U.S. Cl. 568—360 **7 Claims**

1. A method for the production of at least one member selected from the group consisting of alcohol, a ketone and mixtures thereof from a saturated hydrocarbon or an epoxide from an unsaturated hydrocarbon by passing a mixture comprising of molecular hydrogen, said saturated or unsaturated hydrocarbon, and oxygen through a bed of a catalyst comprising a titanium dioxide carrier and ultrafine gold particles having a particle radius of no greater than 10 nm deposited on said carrier, thereby effecting the oxidation of said hydrocarbon with oxygen.

5,623,091

PROCESS FOR THE PRODUCTION OF BIS(FLUOROMETHYL)ETHER

Jane L. Butcher, Runcorn; Thomas A. Ryan, Kelsall, and Leslie Burgess, Runcorn, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 268,659, Jun. 29, 1994, Pat. No. 5,463,139, which is a continuation of Ser. No. 24,255, Mar. 1, 1993, abandoned, which is a division of Ser. No. 898,786, Jun. 15, 1992, abandoned. This application Sep. 5, 1995, Ser. No. 523,194

Claims priority, application United Kingdom, Jun. 14, 1991, 9112817; Jun. 14, 1991, 9112860; Jun. 14, 1991, 9112861; Nov. 13, 1991, 9124087; Dec. 11, 1991, 9126330

Int. Cl.[6] C07C *41/22;41/42*

U.S. Cl. 568—683 **8 Claims**

1. A process for the production of a bis(fluoromethyl)ether composition suitable for use in the production of difluoromethane which comprises contacting formaldehyde with hydrogen fluoride either (i) in the liquid phase or (ii) in the presence of a catalyst in the vapor phase to form a composition comprising bis(fluoromethyl)ether and an equimolar amount of by-product water relative to the bis(fluoromethyl)ether, separating at least part of the by-product water from the composition and recovering a bis(fluoromethyl)ether composition containing less than an equimolar amount of water relative to the bis(fluoromethyl)ether.

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5,623,092

FLUORINATION CATALYST AND PROCESS

John D. Scott, Cheshire, and Michael J. Watson, Chester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 87,379, Jul. 8, 1993, Pat. No. 5,449,656, which is a continuation of Ser. No. 822,279, Jan. 21, 1992, Pat. No. 5,281,568. This application Jan. 25, 1995, Ser. No. 377,707

Claims priority, application United Kingdom, Mar. 7, 1991, 9104775

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—168 10 Claims

1. A process for the production of saturated fluorinated hydrocarbons which comprises reacting a halogenated hydrocarbon having from 1 to 4 carbon atoms and selected from halogenated alkenes and halogenated alkanes with hydrogen fluoride in the vapour phase in the presence of a fluorination catalyst comprising an activity-promoting amount of a compound of zinc supported on a chromia, halogenated chromia or chromium oxyhalide support.

5,623,093

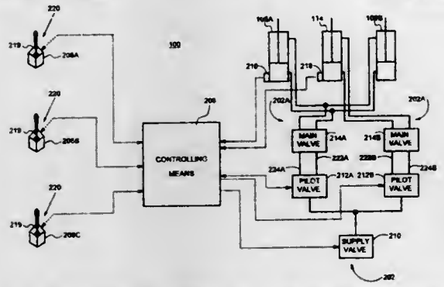
METHOD AND APPARATUS FOR CALIBRATING AN ELECTROHYDRAULIC SYSTEM

Nathan T. Schenkel, Coal City; Rick D. Vance, Washington, both of Ill., and Peter R. Hildner, Apex, N.C., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 30, 1995, Ser. No. 565,369

Int. Cl.[6] G01P *21/00*

U.S. Cl. 73—1.01 11 Claims



1. An apparatus for calibrating an electrohydraulic system including a hydraulic actuator, comprising:

a joystick;

valve means, responsive to an electrical valve signal, for controllably providing hydraulic fluid flow to the hydraulic actuator in response to a magnitude of the electrical valve signal;

position sensing means for sensing a position of the hydraulic actuator and responsively producing an actuator position signal;

controlling means for receiving the actuator position signal, determining when the hydraulic actuator begins movement, and associating the magnitude of the electrical valve signal to a first predetermined joystick position; and thereafter, determining when the hydraulic actuator movement reaches a terminal velocity, and associating the magnitude of the electrical valve signal to a second predetermined joystick position.

5,623,094

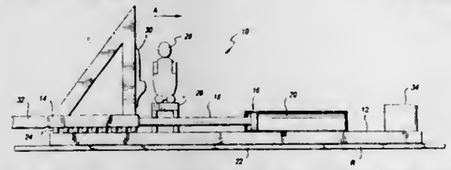
SLED TESTING SYSTEM

Seung-Jae Song, Okemos, Mich., and Patrick M. Miller, Alden, N.Y., assignors to MGA Research Corporation, Akron, N.Y.

Filed Jan. 17, 1996, Ser. No. 586,145

Int. Cl.[6] G01M *7/00*

U.S. Cl. 73—12.07 29 Claims



1. A sled testing system having a driving member, the sled testing system comprising:

a first carriage,

a second carriage, the first carriage and second carriage being movably mounted together, and

an acceleration absorption assembly located relative to the first carriage and the second carriage such that when the second carriage is accelerated by the driving member at a second carriage rate, the first carriage will be simultaneously accelerated at a first carriage rate via the acceleration absorption assembly.

5,623,095

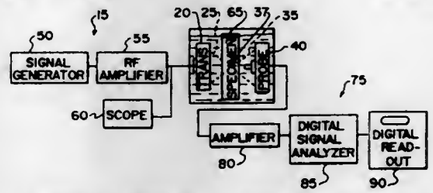
METHOD FOR CHEMICALLY ANALYZING A SOLUTION BY ACOUSTIC MEANS

Laurence S. Beller, Idaho Falls, Id., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 24, 1995, Ser. No. 562,613

Int. Cl.[6] G01N *29/02*

U.S. Cl. 73—61.49 16 Claims



1. A method of analyzing a solution by acoustic means, the method comprising:

immersing a sound focusing transducer within a first liquid filled container;

locating a specimen solution contained within a second container at a sound focal point within the first container;

locating a sound probe adjacent to the specimen;

generating a variable intensity sound signal from the transducer;

measuring a fundamental and multiple harmonic sound signal amplitudes; and then

comparing a plot of a sound response of the specimen with a known solution sound response, thereby determining the solution type and concentration of the specimen.

5,623,096

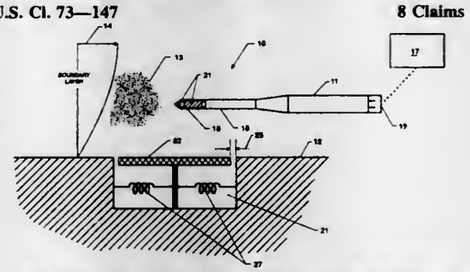
ORTHOGONAL SHEAR STRESS MEASUREMENT PROBE ASSEMBLY FOR BOUNDARY LAYER FLOW

Promode R. Bandyopadhyay, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 19, 1995, Ser. No. 491,693

Int. Cl.[6] G01N *11/00*

U.S. Cl. 73—147 8 Claims



1. An orthogonal shear stress measuring probe assembly for measuring local flow within la boundary layer comprising:

a probe having a tapered leading edge with an inlet and a trailing end with outlets for electrical leads;

a needle having a circular end attached to the tapered end of said probe and a square end forming a block with flat sides, said square end having a pyramid-shaped tip having four triangular faces;

a plurality of micron-sized floating element drag sensors, said drag sensors being mounted on each of the sides of the block and on each of the faces of the pyramid-shaped tip;

electrical leads connected to said floating element drag sensors and leading through said needle and through said probe; and

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an external bridge including a power supply and instrument readouts.

5,623,097

THERMAL-TYPE FLOW SENSOR

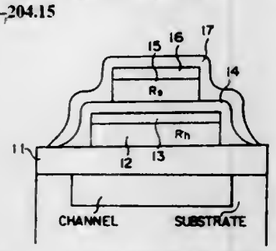
Hiroyuki Horiguchi; Norihiko Murata, both of Yokohama, and Tatsuo Miyachi, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 25, 1994, Ser. No. 348,083

Claims priority, application Japan, Nov. 24, 1994, 5-292294

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.15 **9 Claims**



1. A heater-heat sensor type thermal flow sensor for use in a fluid path, comprising:

a substrate;

a channel formed on a part of said substrate;

a bridge suspended over said channel;

a heater having a first resistance disposed on said bridge;

a heater temperature sensor for measuring a temperature of said heater having a second resistance on said bridge;

an insulating film disposed between said heater and said heater temperature sensor;

a fluid temperature sensor having a third resistance formed on said substrate;

a bridge circuit including said heater temperature sensor, said fluid temperature sensor, a first resistor having a fourth resistance and a second resistor having a fifth resistance disposed outside of the fluid path;

a control circuit for controlling a voltage applied to said heater using an output of said bridge circuit; and

a temperature compensating circuit connected to an output stage of said control circuit.

5,623,098

DUAL MODE SINGLE CAVITY COMPENSATION FOR MICROWAVE RESONATORS

Bruce W. Castleman, St. Petersburg; David S. Donnelly, Palm Harbor, and Paul O. Rock, St. Petersburg, all of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 25, 1994, Ser. No. 218,094

Int. Cl.[6] G01P *15/08*

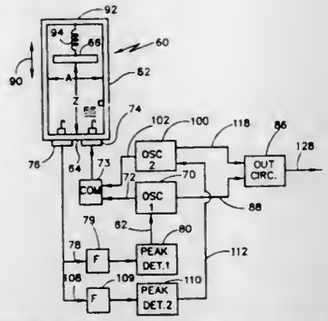
U.S. Cl. 73—497 **6 Claims**

4. An accelerometer comprising:

a cylindrical container having first and second ends to form a cavity with an axis, the cavity having dimensions including a diameter A and a length Z, the second end being movable along the axis in response to acceleration along the axis to change the length Z;

oscillator means for producing RF energy at various frequencies;

means connecting the oscillator means to the cavity to establish a first resonant frequency F_1 which varies with changes in the length Z due to the acceleration and with changes in the diameter A and connecting the oscillator means to the cavity



to establish a second resonant frequency F_2 which varies with changes in the diameter A; and

computer means connected to receive signals indicative of F_1 and F_2 and to modify F_1 in accordance with F_2 to produce a resultant output which varies with the changes in the length Z due to the acceleration but not to the changes in the diameter A.

5,623,099

TWO-ELEMENT SEMICONDUCTOR CAPACITIVE ACCELERATION SENSOR

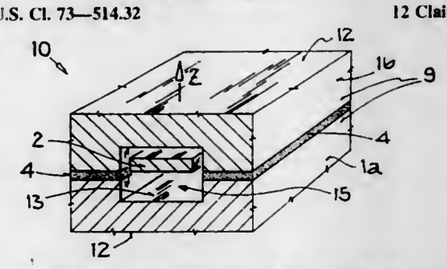
Günther Schuster, Gammelshausen, and Udo Nothelfer, Nersingen, both of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Aug. 21, 1995, Ser. No. 517,436

Claims priority, application Germany, Nov. 3, 1994, 44 39 238.9

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 **12 Claims**



1. A capacitive acceleration sensor, in particular for use in motor vehicles, complete with planar build-up and a movable self-supporting structure, located inside a hollow space, for changing capacity, wherein;

the acceleration sensor comprises two semiconductor elements;

a first of the two semiconductor elements has a cavity formed in a major surface thereof;

a second of the two semiconductor elements has a cavity which is formed in a mayor surface thereof and, within which the self-supporting structure is located and bonded to the second semiconductor element such that the self-supporting structure is freely movable in a perpendicular direction relative to the major surface of the second semiconductor element;

both said semiconductor elements are electrically non-conductively bonded together at the respective said major surfaces and positioned such that the cavity of the first semiconductor element and the cavity of the second semiconductor element together form the hollow space in which said self supporting structure can move, whereby said self-supporting structure and said first semiconductor element form a variable capacitor; and,

respective electrical contacts for said first and second semiconductor elements.

5,623,100

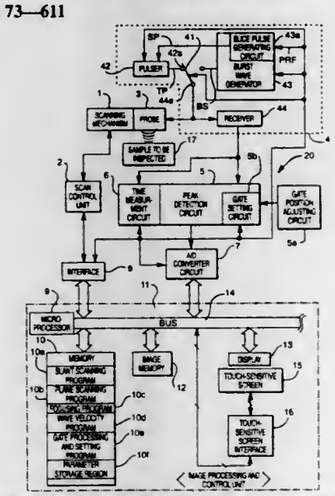
ULTRASONIC INSPECTION AND IMAGING INTSTRUMENT

Yukio Arima, Thukuba; Toshihiro Kimura, Ibaraki-ken; Yuichi Kunitomo, Tsuchiura; Tadatoshi Shimamura, Ishioka; Takeshi Nishiduka, Ibaraki-ken, and Ken Takeuchi, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,535

Int. Cl.[6] G01N *29/06*

U.S. Cl. 73—611 **9 Claims**



1. An ultrasonic inspection and imaging instrument in which an ultrasonic probe is activated via burst signals, an ultrasonic measurement is performed at a predetermined inspection portion in the interior of a sample with burst waves and a result of the ultrasonic measurement is displayed in a form of image, said instrument comprising:

a pulse generator;

a burst signal generator which generates the burst signals;

a focusing type ultrasonic probe which covers a frequency of output pulses of said pulse generator and a frequency of the burst signals within an oscillation band thereof;

a signal reception circuit portion which receives reception signals from said ultrasonic probe and outputs a signal which has a measurement value; and

a control unit having gate position setting means and ultrasonic measurement means;

wherein said gate position setting means activates said ultrasonic probe through the output pulses produced by activating said pulse generator to obtain a first gate position with regard to the inspection portion dependent upon receipt of the measurement value obtained from said signal reception circuit portion, corrects the first gate position to obtain a second gate position for burst wave measurement and sets a gate at the second gate position; and

wherein said ultrasonic measurement means activates said ultrasonic probe by the burst signals with the gate at the second gate position having a predetermined gate width and performs said ultrasonic measurement on the inspection portion and displays said ultrasonic measurement result on a display.

5,623,101

PROCESS TO CORRECT A DIFFERENTIAL PRESSURE SIGNAL

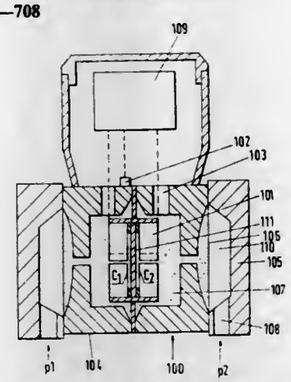
Edmund Freitag, Hille, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 15, 1996, Ser. No. 695,989

Claims priority, application Germany, Aug. 16, 1995, 195 31 926.5

Int. Cl.[6] G01L *19/04*

U.S. Cl. 73—708 **12 Claims**



1. A process for correcting a differential pressure signal, under given process conditions, that is dependent on temperature and static pressure, comprising the steps of:

continuously calculating a first pressure signal and a second pressure signal with a differential pressure measuring transducer;

detecting a temperature in the differential pressure measuring transducer;

calculating a measured absolute pressure signal representing an average of the first and second pressure signals;

calculating a measured differential pressure signal representing a difference between the first and second pressure signals;

determining, for each dependency of the differential pressure signal on temperature and static pressure, sets of polynomial coefficients of a plurality of correction polynomials, under the given process conditions, representing correction values for the temperature and the measured absolute pressure signal; and

recursively calculating a corrected differential pressure signal from the measured differential pressure signal, the measured absolute-pressure signal, the temperature and the corrected differential pressure signal using the plurality of correction polynomials.

5,623,102

THREE WAFER SEMICONDUCTOR PRESSURE-DIFFERENCE SENSOR AND METHOD FOR MANUFACTURE SEPARATING MIDDLE WAFER INTO CONDUCTING DIAPHRAGM AND WEB

Frank Arndt; Detlef Houdeau; Moritz von Rauch, and Helmut Schlaak, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE93/00166, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/17313, PCT Pub. Date Sep. 7, 1993

PCT Filed Oct. 22, 1992, Ser. No. 295,692

Claims priority, application Germany, Feb. 28, 1992, 42 06 675.1

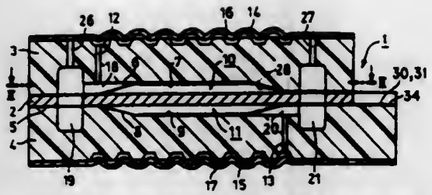
Int. Cl.[6] G01L *13/02*

U.S. Cl. 73—718 **13 Claims**

13. A pressure-difference sensor comprising:

a) a semiconductor measuring diaphragm having a peripheral region;

VOL 1197 ISS 4 APR 22 1997 UMI



b) a lower bearing part having a first side and a second side, said first side of said lower bearing part having a recessed region having a first thickness and having plateau regions on either side of the recessed region, the plateau regions having a second thickness greater than said first thickness, wherein said peripheral region of said semiconductor measuring diaphragm is bonded, in an electrically insulating manner, to a portion of said plateau regions of said lower bearing part thereby defining a first inner chamber and wherein a portion of the first side of the lower bearing part is a free surface;

c) an upper bearing part having a first side and a second side, said first side of said upper bearing part having a recessed region having a third thickness and having plateau regions on either side of the recessed region of the upper bearing part, the plateau regions of the upper bearing part having a fourth thickness greater than said third thickness, wherein said peripheral region of said semiconductor measuring diaphragm is bonded, in an electrically insulating manner, to said plateau regions of said upper bearing part thereby defining a second inner chamber;

d) a first equalization chamber formed in at least one of the upper and lower bearing parts;

e) a second equalization chamber formed in at least one of the upper and lower bearing parts;

f) a first channel fluidly coupling said first equalization chamber with said first inner chamber;

g) a second channel fluidly coupling said second equalization chamber with said second inner chamber;

h) a first electrode arranged on said recessed region of said lower bearing part;

i) second electrode arranged on said recessed region of said upper bearing part;

j) a first outer connector arranged on said free surface of the first side of said lower bearing part;

k) a second outer connector arranged on said free surface of the first side of said lower bearing part;

l) a first conductive path electrically coupling said first electrode with said first outer connector;

m) a second conductive path electrically coupling said second electrode with said second outer connector, wherein said second conductive path includes a web adjacent to, and insulated from, said semiconductor measuring diaphragm;

n) a third outer connector arranged on said free surface of the first side of said lower bearing part; and

o) a third conductive path electrically coupling said semiconductor measuring diaphragm with said third outer connector.

5,623,103

METHOD AND APPARATUS FOR MEASURING FLUID FLOW CHARACTERISTICS

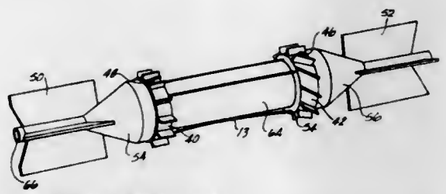
Edward E. Francisco, Jr., Valley, Ariz., assignor to Calibron Systems, Inc., Scottsdale, Ariz.

Continuation of Ser. No. 383,662, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 283,036, Jul. 29, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,471

Int. Cl.[6] G01F *1/82*

U.S. Cl. 73—861.352 **40 Claims**

10. A device for measuring parameters of a fluid flowing from an upstream position to a downstream position through a conduit comprising the following elements:



(1) a downstream bladed rotor;

(2) an upstream bladed rotor;

(3) means for coupling the rotors such that the rotors share a common axis, and such that an angular displacement of one rotor relative to the other rotor applies a restoring torque to the other rotor, the restoring torque being dependent on the amount of angular displacement, such means comprising a plurality of spring elements, one end of each spring element being attached to one rotor at positions radially outward from the common axis of the rotors, the other end of each spring element being attached to the other rotor at positions radially outward from the common axis of the rotors, such that the spring elements are aligned parallel to the direction of fluid flow;

(4) means for determining the time interval between the passage of the rotors through a fixed reference plane extending radially from the common axis of the rotors; and

(5) means for multiplying the time interval by a calibrating constant, the product of the time constant and the calibrating constant being substantially equal to the fluid density.

5,623,104

APPARATUS FOR TESTING POWER PERFORMANCE OF ELECTRIC MOTOR FOR ELECTRIC VEHICLE

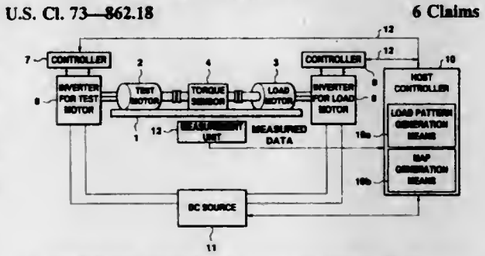
Hiroshi Suga, Toyoake, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 30, 1996, Ser. No. 593,971

Claims priority, application Japan, Mar. 10, 1995, 7-051385

Int. Cl.[6] G01L *3/00*

U.S. Cl. 73—862.18 **6 Claims**



1. An apparatus for testing the power performance of an electric motor for an electric vehicle by driving the electric motor to be mounted on the electric vehicle and a load motor connected to the electric motor, comprising:

electric motor control means for controlling the electric motor in accordance with a predetermined travelling pattern of the electric vehicle said traveling pattern having at least one acceleration or deceleration portion;

load motor control means for controlling the load motor in accordance with a predetermined load pattern; and

main control means for synchronously controlling the operation timing of the electric motor control means and the load motor control means.

5,623,105

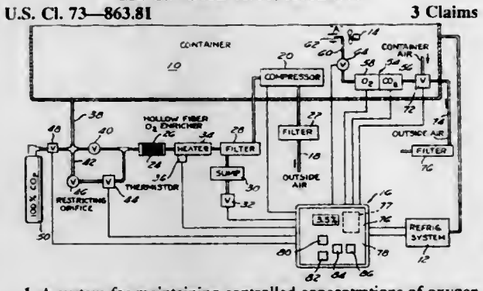
OXYGEN/CARBON DIOXIDE SENSOR AND CONTROLLER FOR A REFRIGERATED CONTROLLED ATMOSPHERE SHIPPING CONTAINER

Max D. Liston, Irvine; Todd I. Harrison, Santa Ana, and Paul K. Hsel, Huntington Beach, all of Calif., assignors to Prolong Systems, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 113,428, Aug. 26, 1993, abandoned, which is a division of Ser. No. 964,937, Oct. 21, 1992, abandoned. This application Jan. 19, 1995, Ser. No. 374,876

Int. Cl.[6] G05B *15/00*; **A61L** *9/00*

U.S. Cl. 73—863.81 **3 Claims**



1. A system for maintaining controlled concentrations of oxygen and carbon dioxide gas within a shipping container, said system comprising a gas analyzer for measuring the carbon dioxide and oxygen levels of gas within the container, a controller electrically interfaced to said gas analyzer for selectively increasing and decreasing the oxygen and carbon dioxide levels of the gas inside said container in response to electrical signals generated by said gas analyzer and a microprocessor for periodically introducing ambient air from outside said container into the analytical path of said gas analyzer for the purpose of checking the performance of said gas analyzer, said microprocessor including a verifier for verifying the performance of said gas analyzer by activating an ambient air calibrator and determining whether the analyzer output of said gas analyzer relating to the oxygen and carbon dioxide levels of the ambient air are within predetermined parameters, said microprocessor defaulting so as to maintain predetermined oxygen and carbon dioxide concentrations within said container when the analyzer output of said gas analyzer relating to the oxygen and carbon dioxide levels of the ambient air are outside of the predetermined parameters.

5,623,106

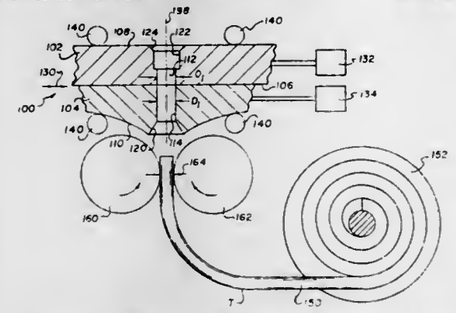
METHOD AND APPARATUS FOR FORMING DISPOSABLE TIPS IN AN ANALYZER

James D. Shaw, Hilton, N.Y., assignor to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Jun. 6, 1995, Ser. No. 471,995

Int. Cl.[6] G01N *35/10*

U.S. Cl. 73—864.14 **9 Claims**



1. A method of making a pipette tip for mounting inside a port of a pipette of a dispensing probe, comprising the steps of:

a) pushing cylindrical stock of continuous length through first and second die plates having first surfaces facing and in sliding contact with each other, and first and second apertures respectively therein and generally aligned with each other to form an axis through which said cylindrical stock passes, the second of said plates having a third aperture that is generally coaxial with said second aperture of said second plate and extending from a surface of second plate opposite to said first surface,

b) inserting a receiving port of a pipette or dispensing probe into said third aperture,

c) pushing said stock far enough through said first and second die plates until said stock is frictionally engaged within the port of a pipette or dispensing probe in said third aperture, and

d) sliding said facing plates relative to each other in a direction generally traverse to said axis until said sliding acts to sever said stock to create a tip for said port in said second aperture.

5,623,107

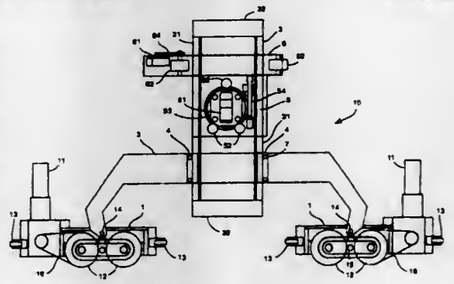
WHEEL DOVETAIL SCANNER

Robert W. Patterson, Sr., Cobleskill, and Dennis F. Lessard, Waterford, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed May 22, 1995, Ser. No. 446,159

Int. Cl.[6] G01M *19/00*

U.S. Cl. 73—865.8 **17 Claims**



1. A scanner comprising

a link beam;

a pair of trolleys, one each coupled to opposite ends of said link beam and having permanent magnet wheels, at least one of the trolleys including an electric motor for powering the trolley;

a mast secured to a center portion of the link beam; and

an inspection probe holder carrying an inspection probe attached to said mast.

5,623,108

METHOD AND SYSTEM FOR MEASURING THREE-DIMENSIONAL DISPLACEMENT

Masayuki Kosugi, Ibaraki, and Akio Tamai, Chiba, both of Japan, assignors to Obayashi Corporation, Osaka, and Agency of Industrial Science and Technology, Tokyo, both of Japan

Division of Ser. No. 277,520, Jul. 19, 1994, Pat. No. 5,511,429. This application Jun. 7, 1995, Ser. No. 478,680

Claims priority, application Japan, Dec. 8, 1993, 5-308227; Mar. 14, 1994, 6-42830

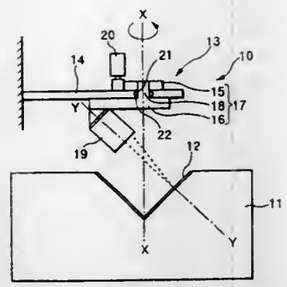
Int. Cl.[6] G01N *21/01*

U.S. Cl. 73—865.8 **12 Claims**

1. A method for measuring three-dimensional displacement of a mass, comprising the steps of:

placing a displacement indicating means on an end surface of the mass for reflecting at least a fraction of three-dimensional displacement of the mass;

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arranging a displacement measuring means opposite to the displacement indicating means for free displacement relative to the mass; and

measuring relative three-dimensional displacement of the mass by detecting displacement of the displacement indicating means relative to the displacement measuring means with the displacement measuring means;

the displacement indicating means comprising a concave surface having an open end and a bottom, the concave surface comprising a curved surface converging from the open end to the bottom.

5,623,109

PLANT MONITORING AND DIAGNOSING METHOD AND SYSTEM, AS WELL AS PLANT EQUIPPED WITH THE SYSTEM

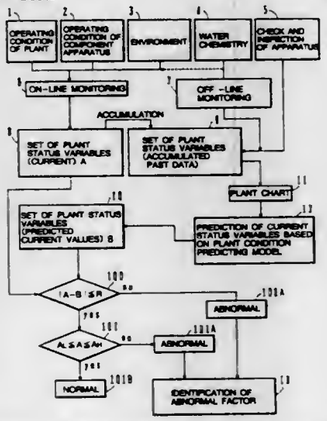
Shunsuke Uchida; Haruo Fujimori, both of Hitachi; Fuminobu Takahashi, Katsuta; Takaharu Fukuzaki, Hitachi, and Izumi Yanada, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 247,039

Claims priority, application Japan, May 21, 1993, 5-119887

Int. Cl.[6] G21C *7/36*

U.S. Cl. 73—865.9 **8 Claims**



1. A method of monitoring and diagnosing plant conditions comprising the steps of:

detecting and accumulating plant operating conditions, apparatus operating conditions and environment conditions;

inputting and accumulating plant inspection data; and

monitoring and diagnosing said plant conditions based on plant record information including said accumulated detection data and inspection data;

wherein said inputting and accumulating plant inspection data comprises:

inputting a first set of detection data of a first type relating to a given characteristic of a plant element to be diagnosed, and

inputting a second set of detection data of a second type relating to said given characteristic but different from said first type of detection data; and

wherein said diagnosing comprises:

determining a correlation between said first set of detection data; calibrating said determined correlation using said second set of detection data; and storing said calibrated correlation as a plant chart for monitoring and diagnosis; and

comparing said calibrated correlation stored as a plant chart and a correlation of a third set of detection data, said third set of detection data being of said first type.

5,623,110

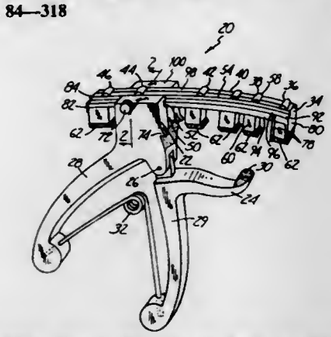
QUICK-SETTING, VARIABLE, CHORD-FORMING, PARTIAL CAPO

Steven G. Hoglund, 1501 E. Broadway, and Wayne A. Cox, 306 E. 4th St., both of Monticello, Minn. 55362

Filed Dec. 6, 1995, Ser. No. 568,203

Int. Cl.[6] G10D *3/00*

U.S. Cl. 84—318 **20 Claims**



8. A partial capo for depressing the strings of a musical instrument of the type having a neck, a fretted fingerboard and strings, comprising:

a. a receiver having,

i. a top surface,

ii. a receiver handle extending generally oppositely from said top surface,

iii. a hinge situated generally oppositely from said top surface and proximate to said receiver handle,

b. a clamp handle pivotably attached to said hinge,

c. a clamp arm engageable with said neck extending from said clamp handle generally parallel to and spaced apart from,

d. a bar slidably engageable with said receiver, said bar further comprising;

i. a bar top surface oriented generally parallel to the plane defined by said receiver top surface,

ii. a bar bottom surface generally opposite said bar top surface,

iii. a plurality of selectably string engaging string depressors extending from said bar bottom surface toward said clamp arm,

e. biasing means for biasing said clamp arm against said neck and simultaneously engaging said string depressors with said strings.

5,623,111

LIGATURE FOR THE MOUTHPIECE OF A SINGLE-REED WIND INSTRUMENT

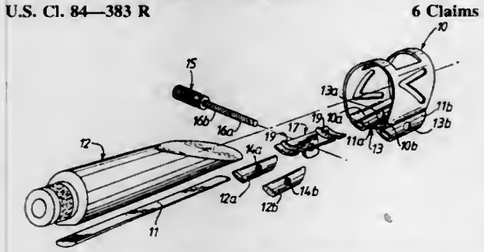
Bernard van Doren, Paris; Marc Charpentier, and Marc Hillion, both of La Londe Les Maures, all of France, assignors to Etablissements Vandoren, Paris, France

Filed Nov. 21, 1995, Ser. No. 560,195

Claims priority, application France, Nov. 23, 1994, 94 14025

Int. Cl.[6] G10D *9/02*

U.S. Cl. 84—383 R **6 Claims**



1. A flexible ligature made from an elastically deformable material suitable for fastening a reed to a mouthpiece of a wind instrument, said ligature comprising:

a body having a profile which is substantially complementary to that of the mouthpiece and which surrounds the mouthpiece and said reed which is inserted between the mouthpiece and the ligature;

first and second parts intergral with opposite ends of said body, said first and second parts being spaced apart and substantially parallel to a lower flat surface of the mouthpiece;

first and second cylindrical sleeves, each located along a respective outside edge of said opposite ends of said first and second parts, said first and second cylindrical sleeves each having at least two aperatures arranged opposite each other and transverse to the axis of the mouthpiece;

first and second cylindrical elements that are respectively arranged within said first and second cylindrical sleeves so that they can freely pivot about their axes, said first and second cylindrical elements each having at least one threaded bore arranged transverse to the axis of the mouthpiece and in line with said apertures, each one of said bores having screw threads of opposite hands; and

at least one clamping screw having two screw threads with opposite hands which are offset along its length and complement the screw threads of said bores, said clamping screw passing through said apertures and threadedly engaging with said bores in order to fasten said first and second parts together in an adjustable manner.

5,623,112

AUTOMATIC PERFORMANCE DEVICE

Yoshihisa Ito; Tomoyuki Kumagai, and Tadasu Kakizaki, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 28, 1994, Ser. No. 365,509

Claims priority, application Japan, Dec. 28, 1993, 5-353286

Int. Cl.[6] G01H *1/06; 1/38*

U.S. Cl. 84—622 **15 Claims**

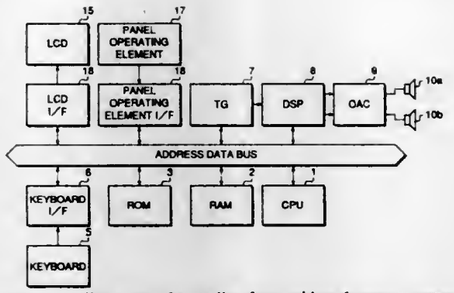
1. An automatic performance device comprising:

a performance phrase memory for storing a plurality of performance phrases each identified by a phrase identifier;

performance pattern-forming means, operable by an operator, for preparing a performance pattern by forming a sequence of at least one phrase identifier;

a performance pattern memory for storing a plurality of said performance patterns;

pattern designating means for designating at least one of said plurality of performance patterns stored in said performance pattern memory;



pattern reading means for reading from said performance pattern memory the sequence of phrase identifiers corresponding to said at least one performance pattern designated by said designating means;

phrase reading means for reading from said performance phrase memory the performance phrases corresponding to said phrase identifiers read by said pattern reading means; and

performance means for performing said performance phrases read by said phrase reading means.

5,623,113

PYROTECHNIC DEVICE FOR LAUNCHING AT LEAST ONE PROJECTILE

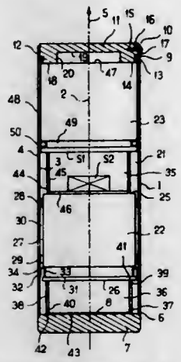
Guy Valembois, Blagnac, France, assignor to Etienne Lacroix Tous Artifices S.A., France

Filed Jul. 14, 1995, Ser. No. 502,343

Claims priority, application France, Jul. 19, 1994, 94 08896

Int. Cl.[6] F41F *7/00;* **F42B** *4/14; 12/58*

U.S. Cl. 89—1.817 **18 Claims**



1. Pyrotechnic device for launching at least one projectile, including:

a longitudinal launcher tube having a rear end closed by a transverse rear wall and an open front end,

a projectile housed in said tube and adapted to slide longitudinally inside the latter, towards the front, to be expelled from said tube via its front end,

means for defining with said tube and said projectile, immediately to the rear of the latter, a rear gas expansion chamber,

an impulse cartridge adapted to develop on command gas pressure in said rear chamber to expel said projectile through said front end of said tube,

means for closing said front end of said tube retained on said tube by retaining means allowing expulsion of said closing means when said closing means are subjected to a longitudinal force directed towards the front and exceeding a predetermined threshold, and

means for defining with said tube, said closure means and said projectile a front gas expansion chamber immediately in front of said projectile,

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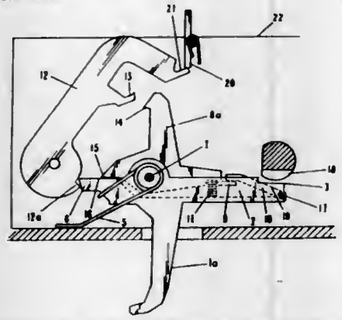
and wherein said impulse cartridge is adapted to develop said gas pressure simultaneously in said front chamber and said rear chamber to apply said force to said closure means and to expel said closing means before expelling said projectile.

5,623,114

SELECTABLE FIRE TRIGGER MECHANISM

Terry A. Soper, 650 Ritter Rd., Las Cruces, N.M. 88005

Filed Mar. 3, 1995, Ser. No. 397,776
Int. Cl.[6] F41A *19/46*
U.S. Cl. 89—141 5 Claims



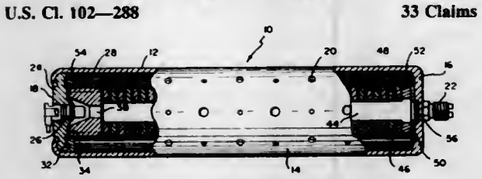
1. A selective fire trigger apparatus for a selective fire weapon comprising:
selective fire cam means, said cam means set at full automatic fire mode;
hammer means;
trigger means for engaging and releasing said hammer means, said trigger means comprising a recess at a rear end thereof;
link means pivotably mounted within said recess; and
rotatable disconnector means for engaging and releasing said hammer means, said rotatable disconnector means comprising an extension at a rear thereof, said link means engaging said extension;
wherein application of a first predetermined pressure on said trigger means enables engagement of said disconnector means and said hammer means, thus enabling semi-automatic fire; and
wherein application of a second predetermined pressure on said trigger means disables engagement of said disconnector means, thus enabling full automatic fire.

5,623,115

INFLATOR FOR A VEHICLE AIRBAG SYSTEM AND A PYROGEN IGNITER USED THEREIN

Donald R. Lauritzen, Hyrum; David J. Green, Brigham City, and Joseph L. Ralston, No. Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 30, 1995, Ser. No. 453,842
Int. Cl.[6] C06C *5/06;* C06D *5/06*
U.S. Cl. 102—288 33 Claims



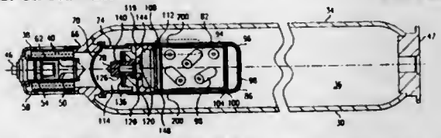
1. A gas generator for a vehicle airbag system, comprising:
an elongated housing having gas outlet openings therein,
a combustion chamber containing an arrangement of a pyrotechnic gas generant material,
said arrangement providing an essentially open ignition channel into the interior of said gas generant material,
an igniter located adjacent said arrangement,
said igniter comprising an initiator and a unitary grain of an igniter material within an ignitor housing, said unitary grain being formed from an ignitor material that has been cast, pressed or extruded into a shaped unitary structure the periphery of which is commensurate with the interior walls of said igniter housing,
said unitary grain of igniter material containing a cavity, the walls of which partially define an ignition chamber,
said ignition chamber containing at least one port through which the ignition products of said igniter material can be discharged,
said igniter and arrangement of gas generant material being located within the gas generator such that ignition and burning of the igniter material will produce hot ignition products which discharge through said at least one port and are directed into said open ignition channel to heat the gas generant material to its ignition temperature causing it to generate gas which flows to and through said gas outlet openings.

5,623,116

HYBRID INFLATOR AND RELATED PROPELLANTS

Brian K. Hamilton, Littleton, and James L. Baglini, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Division of Ser. No. 328,657, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 210,668, Mar. 18, 1994. This application Jan. 11, 1996, Ser. No. 584,440
Int. Cl.[6] C06D *5/06;* B60R *21/28*
U.S. Cl. 102—289 13 Claims



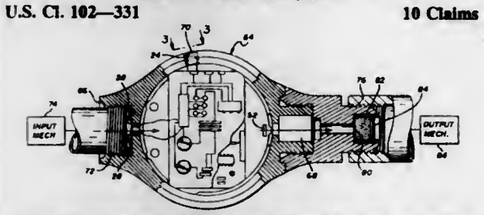
1. A method for operating an inflatable safety system comprising an air/safety bag and an inflator comprising an inflator housing, a pressurized medium contained within at least said inflator housing, a gas generator comprising a gas generator housing comprising at least one gas generator inlet, a plurality of gas generator outlets, an interior surface and an exterior surface, and a propellant contained within an interior of said gas generator housing defined by said interior surface, said method comprising the steps of:
creating a flow path between said inflator housing and said air/safety bag;
igniting and combusting said propellant within at least said interior of said gas generator housing to generate combustion products within at least said interior of said gas generator housing;
providing a flow along said exterior surface of said gas generator housing and past said plurality of said gas generator outlets after said creating a flow path step;
drawing at least a portion of said pressurized medium into said interior of gas generator through said at least one gas generator inlet using said providing a flow step; and
discharging said combustion products and said at least a portion of said pressurized medium from said gas generator housing through said plurality of gas generator outlets.

5,623,117

DELAY ORDNANCE SYSTEM

Donald J. Lewis, Scottsdale, Ariz., assignor to Universal Propulsion Company, Inc., Phoenix, Ariz.

Division of Ser. No. 141,260, Oct. 22, 1993, Pat. No. 5,499,579. This application Dec. 6, 1995, Ser. No. 567,939
Int. Cl.[6] F42C *19/06;15/40*
U.S. Cl. 102—331 10 Claims



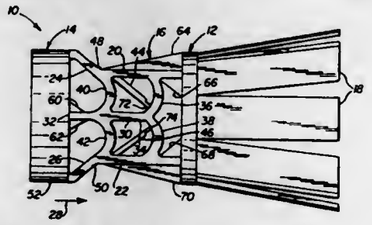
1. In combination for use with an input mechanism and an output mechanism to provide for an operation of the output mechanism a pre-selected time after the operation of the input mechanism,
a housing having first and second openings,
integrated circuit means disposed in the housing, the integrated circuit means having a manually movable arm extending through the first opening in the housing, the manually movable arm being included in a switch having a stationary contact disposed in the housing to become engaged by the manually movable arm upon a manual movement of the arm for defining a closed switch,
switching means having a movable arm and a pair of stationary contacts respectively to provide first and second operative relationships, the movable arm for the switching means being disposed at the second opening in the housing,
the integrated circuit means including timing and firing circuitry having a pyrotechnic device and the switching means and the first switch, the timing and firing circuitry being operative in the first operative relationship of the switching means to prevent the pyrotechnic device from firing and being operative in the second operative relationship of the switching means and in the closure of the closed switch to fire the pyrotechnic device after the pre-selected time,
the housing having a first fitting disposed in communication with the second opening for receiving the input mechanism and for moving the movable arm of the switching means from the first operative relationship to the second operative relationship when the input mechanism is actuated,
the housing having a second fitting disposed in communication with the pyrotechnic device for receiving the output mechanism to obtain an operation of the output mechanism when the pyrotechnic device is fired.

5,623,118

SHOT SHELL WAD

John W. Jackson, Arvada, Colo., assignor to Windjammer Tournament Wads, Inc., Englewood, Colo.

Filed Mar. 1, 1996, Ser. No. 609,343
Int. Cl.[6] F42B *7/08*
U.S. Cl. 102—451 17 Claims



1. A shot shell wad, comprising:
a powder cup;
a shot cup;
a first shot cup support member extending between said powder cup and said shot cup, said first shot cup support member also having a deformable section;
a second shot cup support member positioned in spaced-apart relation from said first shot cup support member, said second shot cup support member also extending between said powder cup and said shot cup and also having a deformable section; and
a stabilizing member having a proximal end and a distal end, said stabilizing member being positioned between said first shot cup support member and said second shot cup support member, the proximal end of said stabilizing member being connected to said powder cup;
a first arched transverse member connected between said first shot cup support member and the distal end of said stabilizing member, said first arched transverse member having a convex side oriented toward said shot cup; and
a second arched transverse member connected between said second shot cup support member and the distal end of said stabilizing member, said second arched transverse member having a convex side oriented toward said shot cup.
4. A shot shell wad, comprising:
a powder cup;
a shot cup;
a first shot cup support member extending between said powder cup and said shot cup, said first shot cup support member also having a deformable section;
a second shot cup support member positioned in spaced-apart relation from said first shot cup support member, said second shot cup support member also extending between said powder cup and said shot cup and also having a deformable section;
a stabilizing member having a proximal end and a distal end, said stabilizing member being positioned between said first shot cup support member and said second shot cup support member, the proximal end of said stabilizing member being connected to said powder cup, the distal end of said stabilizing member being connected to said first and second shot cup support members by respective first and second transverse members, and wherein said stabilizing member also includes a third transverse member connected between said stabilizing member and said first shot cup support member and a fourth transverse member connected between said stabilizing member and said second shot cup support member, said third and fourth transverse members being positioned between said first and second transverse members and said powder cup;
a first cross member mounted between said stabilizing member and said first shot cup support member, one end of said first cross member being connected to said stabilizing member at about the distal end of said stabilizing member, another end of said first cross member being connected to said first shot cup support member at about a juncture between said third transverse member and said first shot cup support member; and
a second cross member mounted between said stabilizing member and said second shot cup support member, one end of said second cross member being connected to said stabilizing member at about the distal end of said stabilizing member, another end of said second cross member being connected to said second shot cup support member at about a juncture between said fourth transverse member and said second shot cup support member.

5,623,119

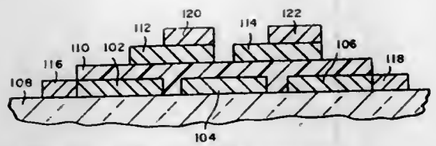
REVERSIBLE THERMOELECTRIC CONVERTER

Joseph C. Yater, 71 Autumn La., Lincoln, Mass. 01773; Jane A. Yater, 2H Sutton Dr., Matawan, N.J. 07747, and Joan E. Yater, 7205 Hart La. #3018, Austin, Tex. 78731

Division of Ser. No. 269,654, Jun. 30, 1994, Pat. No. 5,470,395, which is a division of Ser. No. 860,677, Mar. 30, 1992, Pat. No. 5,356,484. This application Apr. 27, 1995, Ser. No. 429,716
Int. Cl.[6] H01L *37/00*
U.S. Cl. 136—225 21 Claims

1. A reversible thermoelectric converter array comprising:
a substrate;
a plurality of spaced-apart first electrodes formed on said substrate;

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a dielectric film formed on said first electrodes;

spaced-apart second electrodes formed on said dielectric film and spaced from said first electrodes by said dielectric film, each of said second electrodes at least partially overlapping a pair of said first electrodes such that each pair of said first electrodes, the partially overlapping second electrode and the dielectric film form a reversible thermoelectric converter array element, said reversible thermoelectric converter array elements being electrically connected in series, each of reversible thermoelectric converter array elements defining first and second diodes electrically connected together without a thermal barrier between them such that electric voltage fluctuations generated by said first diode are coupled to said second diode when the electrons in said first diode have a higher temperature than the electrons in said second diode, said first and second electrodes each having a thickness selected to insure that electric carriers are quantized in discrete energy levels.

5,623,120

ENERGETIC COMPOSITIONS CONTAINING NO VOLATILE SOLVENTS

Jerry S. Brown, Woodford, Va., and John A. Conkling, Chestertown, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 195,249, Feb. 14, 1994, Pat. No. 5,531,844. This application Mar. 28, 1996, Ser. No. 626,616

Int. Cl.[6] C06B *45/00*

U.S. Cl. 149—19.3 **5 Claims**

1. An energetic composition consisting essentially:

an organic solvent free mixture of

(a) a liquid fluorocarbon, and

(b) aluminum powder.

5,623,121

PYROTECHNIC CHARGE FOR RELEASING ENCLOSED PRESSURIZED GAS

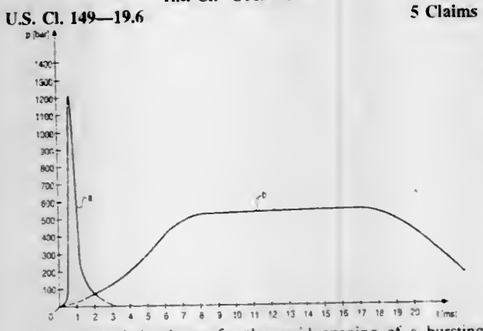
Fritz Schedlbauer, Pfinztal, Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Germany

Filed May 1, 1995, Ser. No. 432,075

Claims priority, application Germany, Apr. 30, 1994, 44 15 255.8

Int. Cl.[6] C06B *45/10*

U.S. Cl. 149—19.6 **5 Claims**



1. A pyrotechnic charge for the rapid opening of a bursting closure of a gas container containing non-toxic pressurized gas for transferring the pressurized gas into an airbag of a person restraining system, said charge comprising an energy carrier of a crystallized nitramine, an energy-rich, reactive polymer as a binder and an energy-rich, gas-forming substance; said energy carrier being hexogen (RDX) or octogen (HMX), the binder being a di- or poly-functional glycidyl-azide polymer (GAP), and the energy rich, gas-forming substance being nitroguanidine (NG) or triaminoguanidine nitrate (TAGN) admixed with a heat-supplying charge, wherein the heat-supplying charge has roughly the same content of the crystalline energy carrier and a binder with a lower energy content.

5,623,122

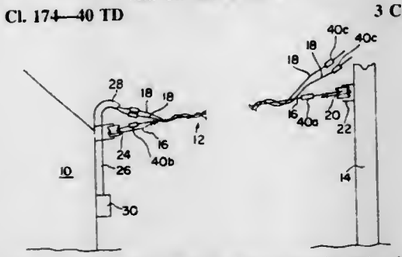
METHOD AND APPARATUS FOR SERVICE CABLE DISCONNECTION

Donald W. Anderson, 1857 Hayes Leonard Rd., Valparasio, Ind. 46383, and David A. Chlebek, LaPorte, Ind., assignors to Donald W. Anderson, Valparaiso, Ind.

Filed Jul. 1, 1994, Ser. No. 269,829

Int. Cl.[6] H02G *7/04*

U.S. Cl. 174—40 TD **3 Claims**



3. A method of electric service cable connection wherein said service cable includes at least first and second pairs of wires to be connected between two structures, comprising:

connecting said first pair of wires together through a first breakaway connection means for separably joining pairs of wires,

connecting said second pair of wires together through a second breakaway connection means for separably joining pairs of wires,

adapting the first breakaway connection means to disconnect the first pair of wires in response to a first separation force being applied to those wires,

adapting the second breakaway connection means to disconnect the second pair of wires in response to a second separation force being applied to those wires, and

said first separation force being different from said second separation force.

5,623,123

SEMICONDUCTOR DEVICE PACKAGE WITH SMALL DIE PAD AND METHOD OF MAKING SAME

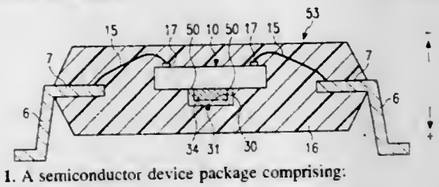
Norito Umehara, Oita, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 10, 1994, Ser. No. 258,119.

Claims priority, application Japan, Jun. 10, 1993, 5-165248

Int. Cl.[6] H01L *23/28*

U.S. Cl. 174—52.2 **17 Claims**



1. A semiconductor device package comprising:

a semiconductor chip having a top surface and a bottom surface, and further having a plurality of electronic-function performing components provided therein;

a plurality of bonding pad on the top surface of said semiconductor chip electrically connected to respective electronic-function performing components thereof;

a lead frame including a plurality of outwardly extending conductive leads having inner and outer integral conductive lead portions arranged about the periphery of said semiconductor chip in outwardly spaced relation thereto;

a die pad having upper and lower surfaces, said semiconductor chip being mounted on the upper surface of said die pad;

said die pad being connected to said lead frame and having a surface area smaller than the surface area of said semiconductor chip mounted thereon such that the outer peripheral portion of said semiconductor chip extends outwardly of the marginal periphery of said die pad;

said die pad having a recess defined in the upper surface thereof opposed to the bottom surface of said semiconductor chip mounted thereon;

an adherent fixing agent filling the recess in said die pad such that the upper surface of said fixing agent is disposed at least substantially in the plane of the upper surface of said die pad;

the bottom surface of said semiconductor chip being in contact with the upper surface of said fixing agent so as to be adhered to said die pad;

a plurality of electrically conductive connector wires respectively connected to bonding pads on said semiconductor chip and the inner conductive lead portions of said conductive leads of said lead frame; and

a body of insulating material encapsulating said semiconductor chip, said die pad, said connector wires, and the inner lead portions of said conductive leads of said lead frame, the outer lead portions of said conductive leads of said lead frame extending outwardly of said body of insulating material.

5,623,124

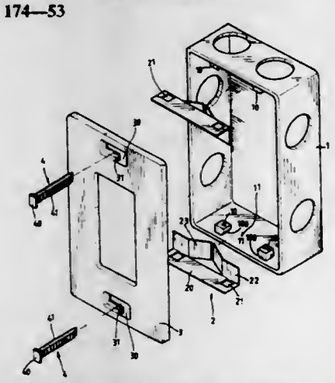
WALL SWITCH HOUSING

Chi-Hua Chien, P.O. Box 1750, Taichung, Taiwan

Filed Mar. 27, 1995, Ser. No. 411,086

Int. Cl.[6] H01H *9/02*

U.S. Cl. 174—53 **3 Claims**



1. A housing of an electrical switch comprising:

a wiring box provided on an inner wall thereof with a predetermined number of locating projections which are separated by a predetermined interval and are provided respectively in one side thereof with a recess;

a predetermined number of resilient pieces which are provided respectively in a horizontal surface thereof with a predetermined number of locating holes corresponding in location to and engageable with said locating projections of said wiring box, said resilient pieces further provided respectively in a vertical surface thereof with a predetermined number of retaining portions corresponding respectively in location to said interval and communicating with said interval at such time when said locating projections are engaged respectively with said locating holes;

a cover plate provided with a predetermined number of retaining holes which are respectively in communication with said retaining portions of said resilient pieces and said intervals of said wiring box when said cover plate is joined with said wiring box; and

a predetermined number of connection nails which are provided respectively with a serrated portion engageable securely with one of said retaining portions of a respective one of said resilient pieces via one of said retaining holes of said cover plate.

5,623,125

ROD BUSHING FOR AN ELECTRICAL TRANSFORMER

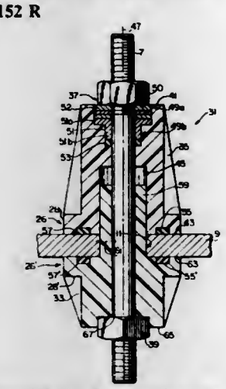
Olivier Pioch, Nice, France, assignor to Pioch, Carros cedex, France

Filed Apr. 21, 1995, Ser. No. 426,179

Claims priority, application France, Apr. 21, 1994, 94 05058

Int. Cl.[6] H01B *17/26*

U.S. Cl. 174—152 R **11 Claims**



1. A post mounted device for mounting over an electrical transformer output post extending through an orifice in a wall of an electrical transformer, said device comprising:

a body for positioning over the output post on a first side of the wall;

a cover for positioning over the output post on a second side of the wall, said cover having a central axis;

fastening means for clamping the wall between said body and said cover;

said cover having, at a first axial end of said cover, means for restricting pivotal motion of said cover relative to the wall and means for sealing said cover against the wall, with said cover further including a stepped cylindrical opening centered on said cover central axis and extending into said cover from a second axial end of said cover opposite from said first axial end, with said stepped cylindrical opening having a large diameter portion and a small diameter portion, said large diameter portion being closer to said second axial end than said small diameter portion;

an annular gasket positioned within said small diameter portion of said stepped cylindrical opening for sealing radially against the output post;

a stepped spacer positioned partially within said large diameter portion and partially within said small diameter portion for applying a compressive load against said annular gasket; and

an elastic washer positioned within said large diameter portion for applying a compressive load against said stepped spacer.

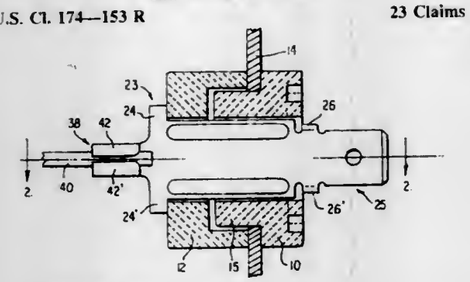
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5,623,126

CERAMIC TERMINAL ASSEMBLY

Jimmy L. Sherrill, Cookeville, Tenn., assignor to Tutco, Inc., Cookeville, Tenn.

Filed Aug. 30, 1994, Ser. No. 297,852
Int. Cl.[6] H01B 17/26
U.S. Cl. 174—153 R 23 Claims



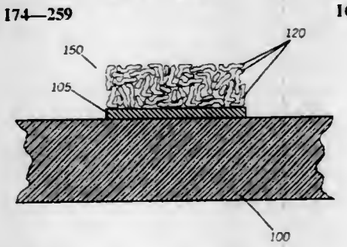
1. A terminal assembly, comprising:
a male element equipped with a base and a protrusion extending from said base, said male element having a first aperture extending through said base and said protrusion;
a female element equipped with a second aperture and having a depression for engaging said protrusion of said male element;
a substantially planar terminal which is inserted into a passageway formed by the alignment of said first and second apertures;
at least one rearward tab attached to a rearward portion of said terminal, said rearward tab being sufficiently long to arrest the forward passage of said terminal through said passageway;
at least one forward tab attached to a forward portion of said terminal, said forward tab being bendable into a position in which it arrests the rearward movement of said terminal through said passageway; and
wherein said assembly has a means for preventing said male element from rotating.

5,623,127

SINGLE ALLOY SOLDER CLAD SUBSTRATE

Edwin L. Bradley, III, Sunrise; Kingshuk Banerji, Plantation, and William B. Mullen, III, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1994, Ser. No. 348,427
Int. Cl.[6] H05K 1/02
U.S. Cl. 174—259 16 Claims



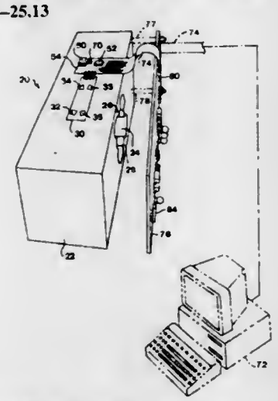
1. A circuit carrying substrate, comprising:
an electrically insulating substrate having solderable portions; and
a substantially planar layer of a soldering composition fused to the solderable portions, the soldering composition comprising a mass of off-eutectic solder particles that are fused together to form an agglomeration having a porous structure.

5,623,128

LOAD CELL WITH MODULAR CALIBRATION COMPONENTS

Steven R. Grimm, and Richard C. Loshbough, both of Spartanburg, S.C., assignors to Mettler-Toledo, Inc., Worthington, Ohio

Filed Mar. 1, 1994, Ser. No. 204,057
Int. Cl.[6] G01G 19/22;3/14;3/08
U.S. Cl. 177—25.13 14 Claims



1. A digital load cell comprising:
a counterforce configured to be disposed to receive a load applied to the load cell;
a transducer means for producing analog representations of loads applied to said counterforce, said transducer means being mounted on said counterforce;
local circuit means removably affixed to said counterforce, including means for receiving and converting analog representations into digital representations of loads applied to the digital load cell, said local circuit means including means for receiving and addling digital correction factors to said digital representations;
means for storing digital correction factors for compensating for physical response factors characteristic of at least one of said counterforce and said transducer means;
said storage means being permanently affixed to said counterforce and spaced apart from said local circuit means; and
connector means removably connecting said storage means to said local circuit means for transmission of digital signals therebetween.

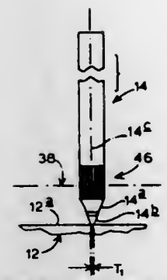
5,623,129

CODE-BASED, ELECTROMAGNETIC-FIELD-RESPONSIVE GRAPHIC DATA-ACQUISITION SYSTEM

Samuel W. Mallicoat, Portland, Oreg., assignor to Microfield Graphics, Inc., Beaverton, Oreg.

Continuation of Ser. No. 148,837, Nov. 5, 1993, Pat. No. 5,434,370, Ser. No. 147,997, Nov. 5, 1993, abandoned, Ser. No. 148,660, Nov. 5, 1993, and Ser. No. 148,691, Nov. 5, 1993.
This application Jul. 27, 1994, Ser. No. 282,034
Int. Cl.[6] G08C 21/00
U.S. Cl. 178—18 11 Claims

8. A writing implement comprising:
an elongate body having a peripheral surface near a writing tip, and containing a pigment supply accessible to the writing tip;
a code pattern disposed on the peripheral surface of the body, wherein the code pattern indicates at least one characteristic of either the pigment or the writing tip; and
wherein the code pattern is circumferentially constant so that the code pattern can be interpreted by a scanner-monitoring device to provide the same characteristic information regardless of which side of the implement is exposed to the scanner-monitoring device.

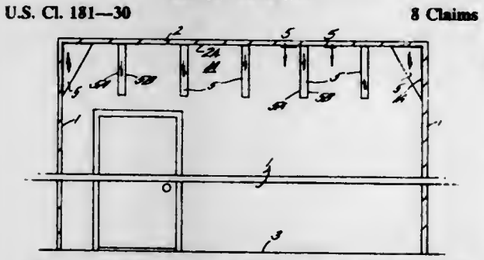


5,623,130

SYSTEM FOR ENHANCING ROOM ACOUSTICS

Arthur M. Noxon, P.O. Box 1189, Eugene, Oreg. 97440

Filed Nov. 20, 1995, Ser. No. 559,830
Int. Cl.[6] E04B 1/99
U.S. Cl. 181—30 8 Claims



1. A system for enhancing the acoustics of a room having wall and ceiling structures by attenuation of sound waves traveling in paths oblique to surfaces of said structures, said system including,
a series of spaced apart sound absorbent members, each of said members having an edge surface and oppositely disposed faces, said faces normal to and terminating at said edge surface, and
a sealant on the edge surface of each of said members for contact with at least one of said structures,
said absorbent members for disposition at spaced intervals along and with the faces thereof disposed normal to at least one of said structures.

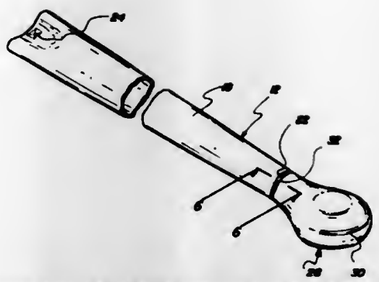
5,623,131

PROTECTIVE STETHOSCOPE COVER HAVING A HEAD COVER CONNECTED TO A BODY COVER

Tommy L. Earnest, 2465 Plum Creek Rd., Christiansburg, Va. 24073

Filed Jul. 18, 1995, Ser. No. 503,503
Int. Cl.[6] A61B 7/02
U.S. Cl. 181—131 3 Claims

1. A protective stethoscope cover comprising:
a center sound tube cover for receiving and at least partially enclosing a center sound tube of a stethoscope;
wherein the sound tube cover comprises an elongated flexible sheath having a transverse dimension sufficient to receive a head of a stethoscope therethrough;
wherein the sound tube cover further comprises an elastic collar secured to the flexible sheath at a first end thereof; wherein the sound tube cover further comprises a hook and loop closure secured to a second end of the flexible sheath, the hook and loop closure being adapted to couple diametrically opposed interior portions of the flexible sheath together to permit projection of lateral sound tubes of a stethoscope from opposed sides of the hook and loop closure;
a head cover securable to a head of a stethoscope, the head cover comprises a semi-spherical cover having an elastic neck opening permitting insertion of the head thereinto, wherein the elastic neck opening of the semi-spherical cover is sealingly coupled to the elastic collar of the flexible sheath.



5,623,132

MODULAR PORT TUNING KIT

Steve Gahm, Freeport, Ill., assignor to Precision Sound Products, Inc., Freeport, Ill.

Filed Aug. 18, 1995, Ser. No. 516,800
Int. Cl.[6] H05K 5/00
U.S. Cl. 181—156 19 Claims

1. A modular port tuning kit for tuning a speaker enclosure, the modular port after fitting and assembly having a given enclosed volume which is sized to tune the speaker enclosure, the port having flared ends for reducing air turbulence, the modular port tuning kit comprising, in combination:
two flared sections molded of thermoplastic material each having a flared end and a joinder end, the joinder end terminating in a continuous cylindrical surface of sufficient thickness to form a butt junction with a juxtaposed second section, stop means near the joinder end and located a predetermined distance from the cylindrical surface,
a mounting flange on the flared end of one of the flared sections for attaching the port to a speaker enclosure;
a straight thermoplastic section comprising a cylinder of thin uniform wall thickness which is substantially the same as the wall thickness of the joinder end at said cylindrical surface, such that the straight section can be juxtaposed to the joinder end of a flared section to form a butt junction;
cylindrical connectors of thermoplastic material compatible with said sections for joining said sections, each cylindrical connector having an inner diameter of a size which produces an interference fit on the outer diameter of the straight section and the joinder end of the flared sections, each cylindrical connector having an axial length which is sufficiently greater than said predetermined distance to cause the cylindrical connector to cooperate with the stop means on a flared section upon insertion of a straight section to form a butt junction supported by the cylindrical connector; and

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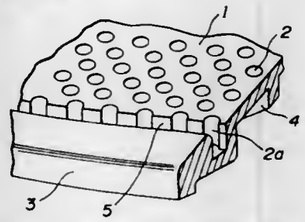
an interference fit being achieved by the relative size of the inside of the collar and outside of the sections which is adequate to allow hand assembly of the components for fitting and testing, and subsequent adhesive connection for a permanent installation.

5,623,133

SPEAKER GRILLE AND MOLDING METHOD THEREFOR

Kazumasa Kurihara, Yokohama, Japan, assignor to Nifco, Inc., Kanagawa-ken, Japan

Filed Mar. 23, 1995, Ser. No. 408,786
Claims priority, application Japan, Apr. 15, 1994, 6-101956
Int. Cl.[6] G10K *11/00*
U.S. Cl. 181—175 **4 Claims**



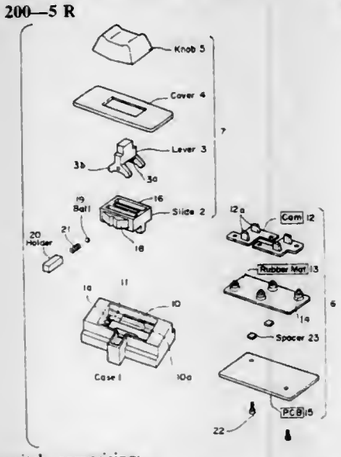
1. In a speaker grille formed of a synthetic resin, comprising; a grille plate having a plurality of through holes and a frame integrally formed with said grille plate to surround an outer periphery of said grille plate; a ring-shaped groove formed between said grille plate and said frame to extend along an inner periphery of said frame.

5,623,134

SWITCH WITH PIVOTING CONTROL MEMBER MOUNTED ON SLIDER

Hiroshi Hayakawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,790
Claims priority, application Japan, Mar. 29, 1994, 6-083874
Int. Cl.[6] H01H *25/00*
U.S. Cl. 200—5 R **8 Claims**



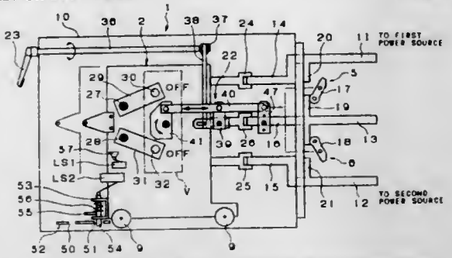
1. A switch, comprising:
a case provided with an opening, the case including a raised guide portion and a recessed portion;
a slider housed in the case;
a control lever which is rotatably supported by the slider, the control lever including an actuating portion extending through the opening of the case, the control lever also including a protrusion;
a fixed contact mounted in the case;
a movable contact movably positioned over the fixed contact;
a knob mounted on a portion of the control lever extending through the opening of the case;
a projection provided on the control lever;
holes formed in the case adacent ends of the case guide; and
a cam having a base portion mounted over the movable contact, and a raised portion jutting through the holes;
wherein the slider is slidable along the case guide until the projection comes in contact with the raised portion of the cam, and subsequent rotation of the control lever causes the base portion of the cam to move downward, thereby causing the moving contact to press against the fixed contact.

5,623,135

POWER SOURCE SWITCHING DEVICE WITH PLURAL INTERLOCKING ELEMENTS

Hidenobu Hashimoto, and Tohru Katoh, both of Aichi-ken, Japan, assignors to Kabushiki Kaisha Aichi Denki Seisakusho, Nagoya, Japan

Filed Sep. 11, 1995, Ser. No. 526,234
Int. Cl.[6] H01H *9/20;33/00;* **H02B** *11/133*
U.S. Cl. 200—50.21 **6 Claims**



1. An improved power source switching device comprising:
a housing internally provided with a first contact piece for connection to a first power source, a second contact piece for connection to a second power source and a third contact piece for connection to a load circuit,
a switch unit movably arranged in said housing and provided with first and second input pieces connectable to said first and second contact pieces respectively, an output piece connectable to said third contact piece, a first contact for selectively electrically connecting said first input piece to said output piece and electrically connected therebetween, and a second contact for electrically connecting said second input piece to said output piece and electrically connected therebetween in an arrangement such that, when said switch unit is registered at an operative position in said housing, said first input piece, said second input piece and said output piece are brought into contact with said first, second and third contact pieces respectively, and that, when said switch unit is registered at an inoperative position out of said housing, said first input piece, second input and said output piece are brought out of contact with said first, second and third contact pieces respectively,
a first by-pass switch unit interposed electrically between said first and third contact pieces for selectively electrically connecting the first and third contact pieces,
a second by-pass switch unit interposed electrically between said second and third contact pieces for selectively electrically connecting the second and third contact pieces,
a first interlocking element operatively related to said first and second by-pass switch units such that said first interlocking element moves when said first and second by-pass switch units are actuated.

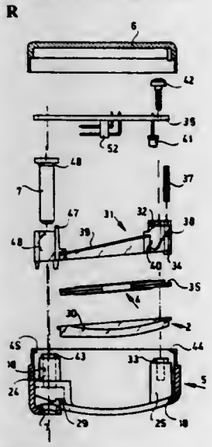
a first engaging element operatively related to said first contact such that actuation of said first contact requires movement of said first engaging element, said first engaging element being arranged so as to block movement of said first interlocking element when said first contact is closed in order to inhibit closure of said second by-pass unit,
a second interlocking element operatively related to said first and second by-pass switch units such that said second interlocking element moves when said first and second by-pass switch units are actuated,
a second engaging element operatively related to said second contact such that actuation of said second contact requires movement of said second engaging element, said second engaging element being arranged so as to block movement of said second interlocking element when said second contact is closed in order to inhibit closure of said first by-pass unit,
a third interlocking element arranged so as to block movement of said second engaging element when said first by-pass switch unit is closed in order to inhibit closure of said second contact, and
a fourth interlocking element arranged so as to block movement of said first engaging element when said second by-pass switch unit is closed in order to inhibit closure of said first contact.

5,623,136

ASSEMBLY-OPTIMIZED ARRANGEMENT OF THE FUNCTIONAL ELEMENTS OF A TAXIMETER

Mechtilde Schmid, Villingen-Schwenningen, and Holger Jäckle, Mönchweiler, both of Germany, assignors to Mannesmann Kienzle GmbH, Villingen-Schwenningen, Germany

Filed Apr. 5, 1995, Ser. No. 417,168
Claims priority, application Germany, Apr. 16, 1994, 9406371 U
Int. Cl.[6] G07B *13/00*
U.S. Cl. 235—30 R **5 Claims**



1. A taximeter, comprising:
a housing formed of a frame-shaped front housing component having a front wall with a cut-out, and a rear housing component secured with the front housing component;
a glass plane received, at least partially, in the cut-out formed in the front wall of the front housing component;
display means received in the front housing component and supported directly on the glass pane;
optical fiber means located in the front housing component on a side of the display means remote from the glass pane and abutting the remote side of the display means;
a plurality of control keys located in the front housing component and extending through respective openings formed in the front wall of the front housing component;
a control data-carrying printed circuit board located in the front housing component on a side of the optic fiber means remote from the display means;
aligning means located in the front housing component and defining a position of one of the display means, the optical fiber means, and the printed circuit board in the front housing component; and
means for securing the printed circuit board to the front housing component,
wherein the aligning means provides for a loose retention of at least of the glass pane, the display means, and the optical fiber means in the front housing component, and
wherein the glass pane, the display means, the optical fiber means, and the control key are fixedly secured in the front housing component upon the printed circuit board being secured to the front housing component.

5,623,137

ILLUMINATION APPARATUS FOR OPTICAL READERS

Jeffrey B. Powers, Liverpool; William H. Havens, and Thomas W. Karpen, both of Skaneateles, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of Ser. No. 109,735, Aug. 20, 1993, Pat. No. 5,430,285. This application Mar. 30, 1995, Ser. No. 413,609
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **33 Claims**



20. An apparatus for illuminating a sensing region located in an object plane, comprising:
a housing having a median longitudinal plane and a scanning axis disposed in a scanning plane;
a plurality of discrete reflectors mounted within said housing for reflecting light directed thereagainst toward the sensing region, each of said reflectors having a first curvilinear profile in a plane parallel to said scanning plane and a second curvilinear profile in a plane parallel to said median longitudinal plane, said reflectors each having reflective surfaces which extend generally along said scanning axis and define respective focal lines connecting respective pluralities of focal points, said reflectors together defining a gap for the passage of light from said sensing region between said reflectors;
a photodetector for receiving light from said sensing region, through said gap, and converting said light into an electrical signal; and
a plurality of sources of substantially Lambertian illumination disposed in the focal lines of each of said reflectors for directing light against the respective reflectors;
wherein the path along which light travels from said sensing region to said detector lies in approximately the same plane as the path along which light travels from said reflectors to said sensing region.

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5,623,138

METHOD AND APPARATUS FOR FOCUSING CONTROL OF AN OBJECT LENS FOR FOCUSING LIGHT ON AN OPTICAL DISK

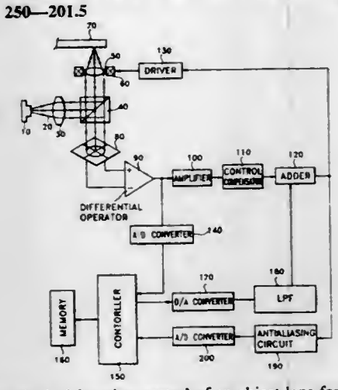
Kyoung H. Lee, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 25, 1995, Ser. No. 428,519

Claims priority, application Rep. of Korea, Jul. 28, 1994, 94-18474

Int. Cl.[6] G02B *27/40;7/04;* G11B *7/00*

U.S. Cl. 250—201.5 8 Claims



1. A method of focusing control of an object lens for focusing a light on an optical disk comprising the

detecting a focusing error signal which represents a degree of focusing error of the object lens from a reflected light of the optical disk;

storing the detected focusing error signal in a memory;

summing the stored signal and a currently detected focusing error signal;

driving an actuator for the object lens using the summed signal; and

re-storing the summed signal in the memory.

5,623,139

CCD X-RAY MICRODENSITOMETER SYSTEM

Alan P. Sliski, Lincoln, Mass., assignor to Photoelectron Corporation, Lexington, Mass.

Filed Aug. 5, 1994, Ser. No. 286,285

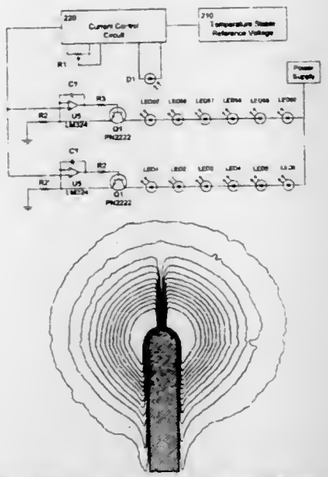
Int. Cl.[6] G01J *1/32*

U.S. Cl. 250—205 13 Claims

1. An microdensitometer system for reading an image recorded on radiation sensitive film, said microdensitometer system comprising:

camera means, directed along an imaging axis, for producing image signals representative of said image, said camera means including a planar array of CCD sensing elements extending transverse to said imaging axis,

illumination means for producing light uniformly across an imaging plane extending transverse to said imaging axis, said illumination means including an array of light producing elements, a stable voltage reference and a light control means coupled to said array of light producing elements and said stable voltage reference, said light control means including means for sensing the light output of at least one of said light producing elements and means for controlling a level of current to each of said light producing elements in response to said sensed light output,



alignment means for adjustably aligning said camera means with respect to said illumination means along said imaging axis.

5,623,140

NONBIASED BISTABLE OPTICAL DEVICE HAVING A LOWER MIRROR HAVING A PLURALITY OF REFLECTIVE LAYERS REPEATEDLY FORMED ON A SUBSTRATE

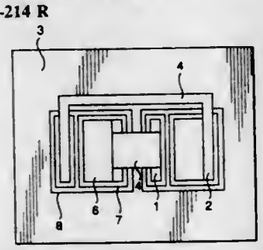
Young-Wan Choi, Seoul; O-Kyun Kwon, and El-Hang Lee, both of Daejeon, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed May 25, 1995, Ser. No. 451,059

Claims priority, application Rep. of Korea, Nov. 18, 1994, 94-29926; Nov. 21, 1994, 94-30617

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 R 6 Claims



1. A nonbiased bistable optical device comprising:

a semi-insulating GaAs substrate;

a lower mirror having a plurality of reflecting layers which are repeatedly formed on said substrate at least more than twelve times, each of said reflecting layers having a first reflecting film having a first refractive index on said substrate and a second reflecting film having a second refractive index different from the first refractive index;

a first contact layer formed on the lower mirror;

a first buffer layer formed on the first contact layer;

a multiple quantum well(MQW) having a plurality of shallow layers which are repeatedly formed, each of said shallow layers having a barrier and a shallow quantum well;

a second buffer layer grown on said MQW; and

a second contact layer formed on said second buffer layer.

5,623,141

X-RAY IMAGE INTENSIFIER WITH HIGH X-RAY CONVERSION EFFICIENCY AND RESOLUTION RATIOS

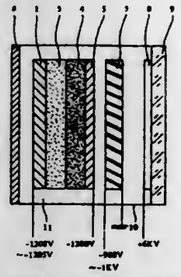
Xun Hou; Xiuqin Liu, and Kezhou Ding, all of Xi'an, China, assignors to Xian Institute of Optics & Precision Mechanics, Academia Sinica, Xi'an, China

Filed Oct. 14, 1994, Ser. No. 322,502

Claims priority, application China, Oct. 16, 1993, 93119245.5

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 VT 6 Claims



1. A proximity focused X-ray image intensifier, comprising:

an input window,

an X-ray photocathode,

a microchannel plate,

an output window with a phosphor screen on its interior side,

an envelope, and

a vacuum cell, wherein the X-ray photocathode is a field-assisted X-ray photocathode.

5,623,142

OPTICAL ENCODING DETECTING COARSE AND FINE POSITION

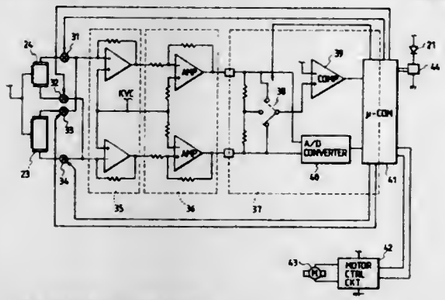
Takayuki Tsuboi, and Hiroyuki Hase, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 128,751, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 990,931, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 833,707, Feb. 11, 1992, abandoned. This application May 30, 1995, Ser. No. 453,471

Claims priority, application Japan, Feb. 13, 1991, 3-020143; Feb. 13, 1991, 3-020144

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.18 21 Claims



1. An apparatus comprising:

(a) a detection device which detects a movement state of an operation member; and

(b) a determination device which determines the movement state of the operation member in accordance with at least first and second determinations, in said first determination said determination device determining an output of said detection device, and in said second determination said determination device more coarsely determining an output of said detection device than in said first determination by judging whether the output of said detection device is within a predetermined value-range.

5,623,143

PHOTO SENSOR HAVING SECTIONED LENS

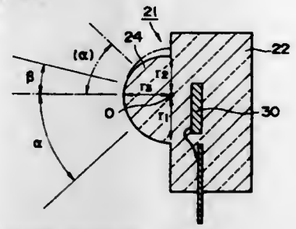
Hiroyuki Takamatsu, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jun. 6, 1995, Ser. No. 468,319

Claims priority, application Japan, Jun. 14, 1994, 6-156673

Int. Cl.[6] H01J *5/02*

U.S. Cl. 250—239 13 Claims



1. A photo sensor comprising:

a photo sensing element for receiving a predetermined light and converting the light into an electrical signal;

a package for sealing said photo sensing element; and

a lens arranged at a front surface of said package for collecting light within a predetermined wavelength range to said photo sensing element;

wherein a shape of said lens has its curvature changed only in a predetermined direction;

wherein said predetermined direction is a vertical direction, which corresponds to a y-axis of an x-y axis array with an origin at a center point of said lens;

wherein said lens is divided into an upper segment and a lower segment; and

wherein said shape of said lens is set to have a curvature at the upper segment in said vertical direction which is larger than that of the lower segment.

5,623,144

MASS SPECTROMETER RING-SHAPED ELECTRODE HAVING HIGH ION SELECTION EFFICIENCY AND MASS SPECTROMETRY METHOD THEREBY

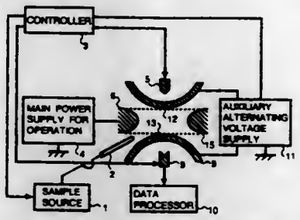
Kiyomi Yoshinari, Hitachi; Yoichi Ose, and Yoshiaki Kato, both of Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 9, 1996, Ser. No. 598,890

Claims priority, application Japan, Feb. 14, 1995, 7-024950; Apr. 12, 1995, 7-087071

Int. Cl.[6] H01J *49/42*

U.S. Cl. 250—281 26 Claims



1. A mass spectrometry method using a mass spectrometer comprising a ring-shaped ring electrode and two end cap electrodes arranged facing each other so as to sandwich said ring electrode, said method comprising the steps of applying at least a radio frequency voltage between a direct current voltage and the

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radio frequency voltage from a main power supply between said ring electrode and said two end cap electrodes to form a quadrupole electric field in a volume surrounded by said electrodes, and ejecting interest ion species from said volume surrounded by said electrodes by unstabilizing trajectories of said interest ion species among ions trapped in said quadrupole electric field, wherein

said interest ion species are ejected and detected by varying the amplitude ratio of an auxiliary alternating current voltage generating an auxiliary alternating current electric field by applying to said end cap electrodes to said radio frequency voltage corresponding to a mass resolution required for mass spectrometry of said interest ion species.

5,623,145

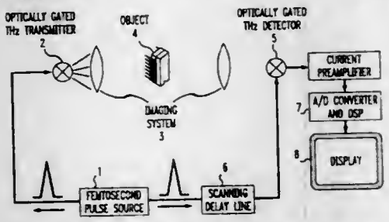
METHOD AND APPARATUS FOR TERAHERTZ IMAGING

Martin C. Nuss, Fair Haven, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 15, 1995, Ser. No. 388,933

Int. Cl.[6] G01N *21/17;21/49*

U.S. Cl. 250—330 **4 Claims**



1. A method of imaging an object comprising the steps of:

transmitting a sequence of pulse signals at a particular point on said object, said signals being in the range of frequencies from 100 GHz to 20 THz;

detecting said signals after propagation through said object;

translating said object to cause said signals to pass through a plurality of spatially distinct areas on said object; and

analyzing spectral information in the time domain to create an image of said object, said information contained in the received signals.

5,623,146

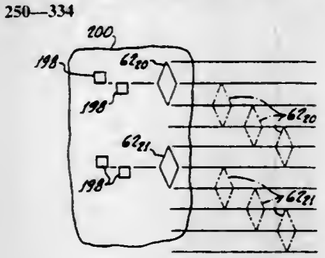
THERMAL IMAGING DEVICE WITH SCANNED LIGHT EMITTING DIODES (LEDS) HAVING VARIABLE WIDTH GEOMETRY AND INTERLACING

Russell K. Jones, Manhattan Beach; Stephen P. Shaffer, West Hills, and Robert Sendall, Chatsworth, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 8, 1995, Ser. No. 569,679

Int. Cl.[6] H04N *3/09*

U.S. Cl. 250—334 **20 Claims**



1. A light emitting diode (LED) display apparatus comprising: a linear array of plural spaced apart like scene light emitting diodes (LEDs) defining like spaces between adjacent scene-LEDs, and a scanner scanning light emitted from said scene-LEDs to a viewer with interlacing of light from successive scans so as to fill in the spaces between adjacent scene-LEDs of said array and to provide an image, said scene-LEDs having a geometric configuration varying in width along a length dimension of said linear array.

5,623,147

RADIATION-SENSITIVE DETECTOR

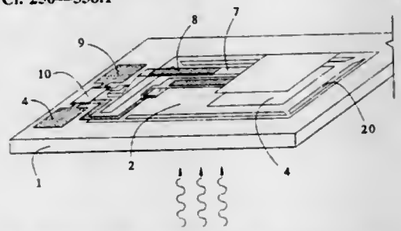
Christian Baert, and Jean-Baptiste Chevrier, both of Louvain, Belgium, assignors to Interuniversitair Micro-Elektronica Centrum VZW, Louvain, Belgium

Filed Nov. 17, 1995, Ser. No. 560,027

Claims priority, application Belgium, Nov. 9, 1995, 09401046

Int. Cl.[6] G01J *5/40*

U.S. Cl. 250—338.1 **7 Claims**



1. An infrared radiation-sensitive detector which comprises:

a holder with a radiation-absorbing membrane fastened thereto,

a metal reference element which is fastened to the holder,

a sensitive arm which, over at least a portion of its length, consists of bimetal, one end thereof being joined to the radiation-absorbing membrane and the other end thereof being free and situated opposite said reference element, in such a way that, when the radiation-absorbing membrane is irradiated by infrared radiation, said sensitive arm warms and moves as a result of the bimetal effect, the electric capacitance between the free end of the sensitive arm and the reference element being altered with the radiation intensity.

5,623,148

DEVICE FOR THE GENERATION OF ELECTRON BEAMS

Bernd-Dieter Wenzel; Wolfgang Erbkamm, and Olaf Gawer, all of Dresden, Germany, assignors to von Ardenne Anlagentechnik GmbH, Dresden, Germany

Filed Dec. 11, 1995, Ser. No. 570,185

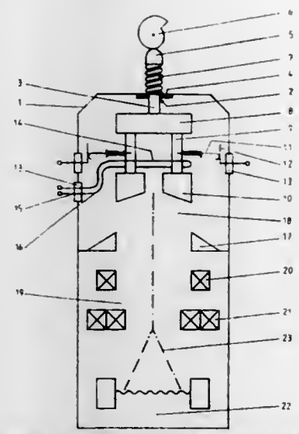
Claims priority, application Germany, Dec. 9, 1994, 44 43 830.3

Int. Cl.[6] H01J *37/075;37/065*

U.S. Cl. 250—427 **12 Claims**

1. Device for the generation of electron beams with a vacuum chamber, in which a massive cathode is arranged with a wire cathode located above it and an aperture anode below it, and below the aperture anode focusing and/or deflecting magnet arrangements are provided which direct an electron beam emitted by the massive cathode and accelerated by the aperture anode to a processing location, wherein

the aperture anode (**17**) is rigid and the massive cathode (**10**) and the wire cathode (**14**) are axially movable in the vacuum chamber (**1**).



following means of contact (**11, 12**) are provided leading outside the vacuum chamber (**1**) over the path of motion of the massive cathode (**10**) and the wire cathode (**14**).

a means of motion (**3**) connected to the massive cathode (**10**) is provided for the axial movement of the massive cathode (**10**).

5,623,149

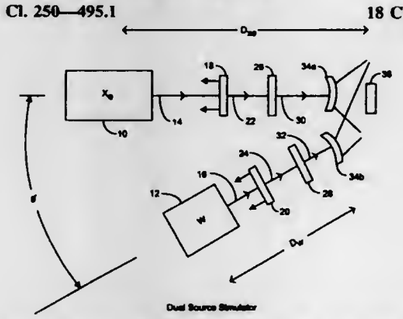
HIGH FIDELITY DUAL SOURCE SOLAR SIMULATOR

Louis C. Kilmer, Torrance, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Feb. 14, 1995, Ser. No. 388,329

Int. Cl.[6] G01J *1/00*

U.S. Cl. 250—495.1 **18 Claims**



1. A solar simulator for providing a solar spectra defined by a solar energy intensity curve over a solar bandwidth, said simulator comprising,

a plurality of light sources providing a respective plurality of light source spectra each having a source energy intensity curve over a source optical bandwidth, and

a plurality of respective optical filters for respectively band pass filtering and curve shape filtering each of said plurality of light source spectra and for providing a respective plurality of filtered spectral segments each having a filtered energy curve over a respective segment bandwidth, said filtered spectral segments summed together by incident illumination into said solar spectra illuminating a predetermined point.

5,623,150

PROCESS FOR THE STABILIZATION OF COMPOSITIONS CONTAINING HYDROFLUOROALKANES AND STABILIZED COMPOSITIONS CONTAINING HYDROFLUOROALKANES

Pierre Barthelemy, Jodoigne, Belgium; Lothar Zipfel, Laatzen, and Thomas Benecke, Hannover, both of Germany, assignors to Solvay (Société Anonyme), Brussels, Belgium

Division of Ser. No. 16,216, Feb. 11, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,535

Claims priority, application Belgium, Feb. 14, 1992, 09200161

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—182.24 **8 Claims**

1. In a premixture for the manufacture of a polyurethane foam, the improvement comprising a composition containing at least one hydrofluoroalkane, a polyol, and at least one salt of at least one metal selected from the group consisting of lithium and alkaline-earth metals in an effective amount to stabilise the hydrofluoroalkane.

5,623,151

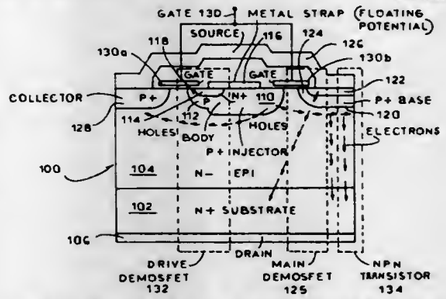
MOS-GATED POWER SEMICONDUCTOR DEVICES WITH CONDUCTIVITY MODULATION BY POSITIVE FEEDBACK MECHANISM

Janardhanan S. Ajit, Redondo Beach, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jun. 16, 1995, Ser. No. 491,250

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—212 **8 Claims**



1. A MOS-gate controlled power bipolar semiconductor device, comprising:

a wafer of semiconductor material having first and second spaced, parallel planar surfaces, at least a portion of the thickness of said wafer which extends from said first semiconductor surface comprising a relatively lightly doped N-type layer for receiving junctions, at least a portion of the thickness of said wafer which extends from said second semiconductor surface comprising a relatively highly doped N+ substrate, a drain electrode being electrically connected to said second semiconductor surface;

a P injector region formed in said relatively lightly doped N-type layer and extending into said relatively lightly doped N-type layer from said first semiconductor surface, said P injector region being contiguous with a P body region also extending into said relatively lightly doped N-type layer from said first semiconductor surface;

a first N-type region formed in said P body region, said first N-type region being electrically connected, by a metal strap disposed at said first semiconductor surface, to the P body region, said metal strap being at a floating potential, said first N-type region being shallower than the P body region in which it is formed and being radially inwardly spaced along said first semiconductor surface from an outer edge of said P body region, such that said outer edge of said P body region extends to said first semiconductor surface, thereby defining

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an n-channel region of a driver DMOSFET of said device, said driver DMOSFET having a current path extending through said relatively lightly doped N-type region:

a P base region formed in said relatively lightly doped N-type layer and extending into said relatively lightly doped N-type layer from said first semiconductor surface, said P base region being laterally spaced from said P injector region by a first portion of said relatively lightly doped N-type region to define a JFET region;

a second N-type region formed in said P base region, said second N-type region being electrically connected to a source electrode at the first semiconductor surface of the device, said second N-type region being shallower than said P base region and radially inwardly spaced along said first semiconductor surface from an outer edge of said P base region, such that said outer edge of said P base region adjacent said JFET region extends to said first semiconductor surface, thereby defining an n-channel region of a main DMOSFET of said device;

a P-type collector region formed in said relatively lightly doped N-type layer and laterally spaced from said P body region by a second portion of said relatively lightly doped N-type region, said P-type collector region being connected to said source electrode;

an insulated gate disposed over said n-channel region of said main DMOSFET, said n-channel region of said driver DMOSFET and said first and second portions of said relatively lightly doped N-type region, whereby, upon the application of a positive potential to said insulated gate, said main DMOSFET and said driver DMOSFET are turned on, the turning-on of said main DMOSFET providing a base drive for a lateral PNP transistor defined by said P injector region, said relatively lightly doped N-type layer and said P base region, the turning-on of said driver DMOSFET resulting in an increased potential at said P injector region and causing holes to be injected from said P injector region into said lightly doped N-type region and into said P base region to provide base drive for a vertical NPN transistor structure defined by said second N-type region, said P base region and said relatively lightly doped N-type layer, the P-type collector region diverting a portion of the injected holes to the current path of said driver DMOSFET, thereby conductivity modulating said driver DMOSFET and reducing the on-resistance of said driver DMOSFET, leading to increased injection of holes from said P injector region and further decreasing the on-resistance of said driver DMOSFET, resulting in a further increased injection of holes by way of a positive feedback mechanism until said driver MOSFET saturates.

5,623,152

INSULATED GATE SEMICONDUCTOR DEVICE

Gourab Majumdar, and Touru Iwagami, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,255
Claims priority, application Japan, Feb. 9, 1995, 7-021577
Int. Cl.[6] H01L *29/76;29/94*
U.S. Cl. 257—330 **10 Claims**

1. An insulated gate semiconductor device comprising:

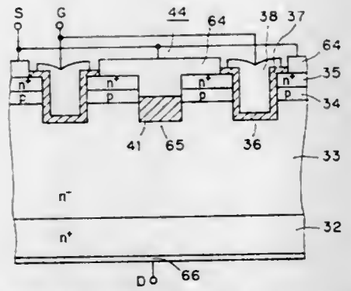
a first semiconductor layer of a first conductivity type having first and second major surfaces;

a second semiconductor layer of a second conductivity type formed on or selectively formed in the first major surface of said first semiconductor layer;

a third semiconductor layer of the first conductivity type selectively formed in a surface of said second semiconductor layer;

a recess having an opening in a surface of said third semiconductor layer or in an exposed surface of said second semiconductor layer and extending depthwise from the opening into said first semiconductor layer;

a dielectric layer formed in said recess for covering an exposed surface of said first semiconductor layer in said recess:



a first main electrode formed in said recess on said dielectric layer for electrically directly connecting said second and third semiconductor layers;

a second main electrode formed on the second major surface of said first semiconductor layer; and

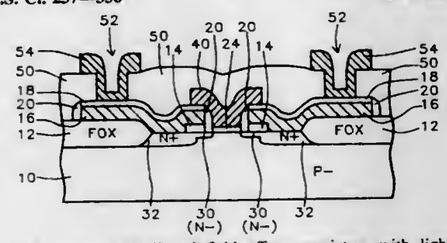
a control electrode formed on an insulating film formed on the surface of said second semiconductor layer between said first and third semiconductor layers.

5,623,153

SUB-QUARTER MICROMETER CHANNEL FIELD EFFECT TRANSISTOR HAVING ELEVATED SOURCE/DRAIN AREAS AND LIGHTLY DOPED DRAINS

Moug-Song Liang, and Charles C. Hsu, both of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsinchu, Taiwan

Division of Ser. No. 416,167, Apr. 4, 1995, Pat. No. 5,545,579. This application Jun. 13, 1996, Ser. No. 663,435
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—336 **10 Claims**



1. A reverse self-aligned field effect transistors with lightly doped drains, comprising of:

a semiconductor substrate doped with a first conductive type dopant;

field oxide areas on said semiconductor substrate around and electrically isolating device areas;

a patterned doped pad oxide layer on said substrate with a second conductive type dopant, portions of said doped pad oxide over part of each of said device areas and leaving parts of each of said device areas free of said pad oxide for source/drain junction openings;

said patterned doped pad oxide layer extending also over portions of said field oxide areas on opposite sides of said device areas;

a patterned first polysilicon layer with a first insulating layer on the surface, portions of said first polysilicon layer over said patterned doped pad oxide layer and over said source/drain junction openings, said first polysilicon layer doped with a second conductive type dopant;

said patterned first insulating layer and said first polysilicon layer and said doped pad oxide layer having channel openings with vertical walls to said device areas on said substrate;

sidewall spacers on said vertical sidewalls in said channel openings, and thereby having reduced channel opening widths;

an ion implant dopant in said device areas within said channel opening of said first conductive type;

a gate oxide on the surface of said device areas in said channel openings;

doped source/drain areas in portions of said device areas resulting from heating and out diffusion from said first polysilicon layer of said second conductive type dopant; and

lightly doped source/drain areas adjacent to said channel openings resulting simultaneously from out diffusion from said patterned doped pad oxide layer of said second conductive type dopant during said heating;

a patterned conformal second polysilicon layer over said channel openings having said second conductive type dopant and thereby providing an overlapping FET gate electrode;

a third insulating layer over said overlapping gate electrodes and over said first insulating layer, said third and first insulating layers having contact openings to said first polysilicon layer, and thereby providing contact openings to said source/drain areas;

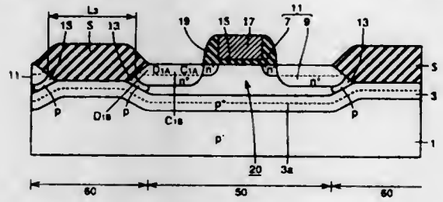
a patterned conducting layer on said third insulating layer and in said contact openings and thereby comprising said reverse self-aligned field effect transistors with said overlapping gate electrodes, source/drain areas and conducting layer contacts.

5,623,154

SEMICONDUCTOR DEVICE HAVING TRIPLE DIFFUSION

Takaaki Murakami; Kenji Yasumura, and Shigeru Shiratake, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 477,697
Claims priority, application Japan, Oct. 25, 1994, 6-260400
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—345 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conducting type, which has a main surface, and which is doped with an impurity of the first conducting type at a first concentration;

a field oxide region for isolating an active region formed on the main surface of said semiconductor substrate to isolate an element forming region;

a first impurity region of the first conducting type, which is doped with an impurity of the first conducting type at a second concentration higher than said first concentration, which first impurity region is in contact with the lower surface of said field oxide region within said semiconductor substrate;

a second impurity region of a second conducting type formed at the main surface of said semiconductor substrate within said element forming region adjacent to said field oxide region; and

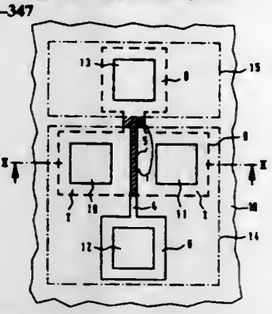
a third impurity region of the first conducting type, which is doped with an impurity of the first conducting type in a third concentration higher than said first concentration and lower than said second concentration, and which is formed within said semiconductor substrate and only between said first impurity region and said second impurity region along said field oxide region and in contact with said second impurity region.

5,623,155

MOSFET ON SOI SUBSTRATE

Martin Kerber, and Reinhard Mahnkopf, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 15, 1995, Ser. No. 559,485
Claims priority, application Germany, Nov. 24, 1994, 44 41 901.5
Int. Cl.[6] H01L *27/01;27/12*
U.S. Cl. 257—347 **6 Claims**



1. A MOSFET, comprising:

an SOI substrate comprising a silicon body layer on an insulator layer;

said silicon body layer having a doped source region, a doped drain region, and a channel region between the source and drain regions and doped for a conductivity type which is opposite a conductivity type of the doped source and drain regions;

a gate electrode formed of a straight-line ridge preceding over said channel region, said gate electrode electrically connecting to a gate terminal region;

said ridge being electrically insulated from said channel region by a dielectric layer;

a highly doped channel terminal region electrically conductively connected to the channel region and which is laterally spaced away from said source region and said drain region; and

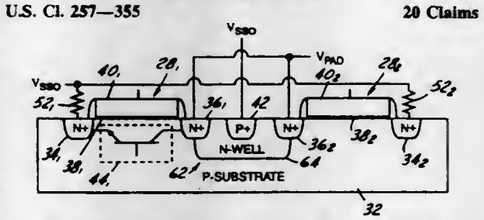
said source region, said drain region, said gate terminal region, and said channel terminal region each being provided with a respective contact.

5,623,156

ELECTROSTATIC DISCHARGE (ESD) PROTECTION CIRCUIT AND STRUCTURE FOR OUTPUT DRIVERS

Jeffrey Watt, Mountain View, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 28, 1995, Ser. No. 535,426
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—355 **20 Claims**



1. An interface structure for use with an interface pad of a semiconductor device, comprising:

a first pulldown field-effect transistor (FET) formed in a semiconductor substrate of a first conductivity type, said first pulldown FET having source and drain regions of a second conductivity type opposite said first conductivity type formed in said substrate, said source and drain regions being spaced apart to define a channel region therebetween, said drain region being connected to said interface pad;

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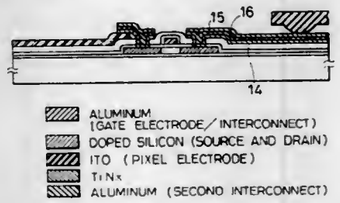
a contact region of said first conductivity type formed in said substrate and laterally spaced from said drain region, said contact being connected to a power supply bus having a first potential; and,

a well region of said second conductivity type formed in said substrate for isolating said contact from said substrate, said well region overlapping said drain region and wholly overlapping said contact region, said contact and said well defining a junction for increasing a substrate resistance between said channel and said power supply bus during an electrostatic discharge (ESD) event at said pad.

5,623,157
SEMICONDUCTOR DEVICE HAVING A LEAD INCLUDING ALUMINUM

Minoru Miyazaki; Akane Murakami; Baochun Cui, and Mutsuo Yamamoto, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 162,357, Dec. 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,049
Claims priority, application Japan, Dec. 9, 1992, 4-351916; Jan. 18, 1993, 5-23289
Int. Cl.[6] H01L *29/76;29/94;27/01;27/12*
U.S. Cl. 257—383 **11 Claims**



7. A semiconductor device comprising:

a substrate;

a thin film transistor formed over said substrate;

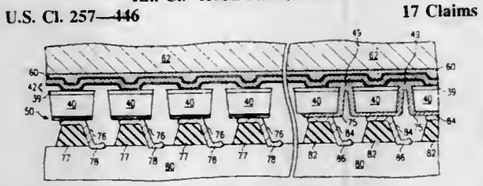
a lead electrically connected to one of source or drain regions of said thin film transistor,

wherein said lead comprises a first conductive layer in direct contact with said one of source or drain regions of the transistor, a second conductive layer laminated on said first conductive layer, and a third conductive layer laminated on said second conductive layer, said first and third conductive layers comprising titanium and second conductive layer comprising aluminum, and said second layer being interposed between said first and third conductive layers.

5,623,158
INFRARED SENSING DEVICE

Steven N. Frank, McKinney; James F. Belcher; Charles E. Stanford, both of Plano; Robert A. Owen, and Robert J. S. Kyle, both of Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 396,944, Mar. 1, 1995. This application Jun. 7, 1995, Ser. No. 483,771
Int. Cl.[6] H101L *31/00;31/0232*
U.S. Cl. 257—446 **17 Claims**



1. An infrared sensing device, said device comprising:

an optical coating;

a common electrode above a substrate and connected to said optical coating;

thermal isolation pixels in a sensing area in said substrate and below said common electrode;

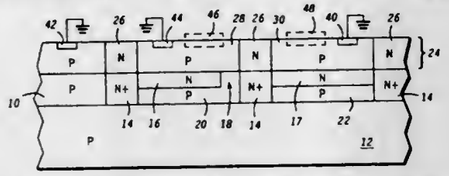
bias contact areas in said substrate around a periphery of said sensing area;

a contact metal layer below said thermal isolation pixels in said sensing area and below said bias contact areas and connecting said thermal isolation pixels and said bias contact areas to an integrated circuit (IC).

5,623,159
INTEGRATED CIRCUIT ISOLATION STRUCTURE FOR SUPPRESSING HIGH-FREQUENCY CROSS-TALK

David J. Monk, Gilbert, and Kuntal Joardar, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 317,078, Oct. 3, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 625,685
Int. Cl.[6] H01L *27/04*
U.S. Cl. 257—509 **17 Claims**



1. An isolation structure for a semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

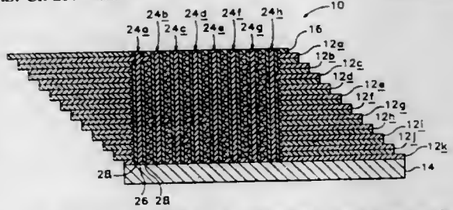
a first well of said first conductivity type disposed in said semiconductor substrate;

a first continuous plurality of regions of a second conductivity type disposed around said first well, wherein said first continuous plurality of regions fully isolates said first well from said semiconductor substrate, except that said first continuous plurality of regions comprises at least one gap of said first conductivity type that physically connects said first well and said semiconductor substrate through said first continuous plurality of regions; and wherein each of said gaps has a minor dimension and a sum of the minor dimensions of said gaps is less than about 3 microns.

5,623,160
SIGNAL-ROUTING OR INTERCONNECT SUBSTRATE, STRUCTURE AND APPARATUS

Janusz B. Liberkowski, 5884 Macadam Ct., San Jose, Calif. 95123

Filed Sep. 14, 1995, Ser. No. 527,959
Int. Cl.[6] H01L *23/48;* **H05K** *1/14;1/05*
U.S. Cl. 257—621 **21 Claims**



1. An interconnect substrate for mounting on an outer surface thereof one or more electronic devices having input and/or output I/O signal pins and for selectively interconnecting a corresponding pair of such signal pins to produce an interconnected signal node, the substrate comprising:

plural generally planar conductive expanses stacked generally normal to their planes, each of said conductive expanses corresponding with one such corresponding pair of such signal pins and thereby being dedicated to the routing of no more than one such signal node;

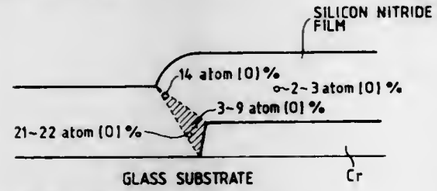
plural insulative expanses interposing adjacent ones of said conductive expanses; and

vias extending generally normal to the planes of the conductive expanses and between outer layers thereof, said vias being connectable with such signal pins of such electronic device, each of said vias having a conductive region selectively operatively connectable with a given one of said conductive expanses, whereby, with the selective connection of two or more given ones of said vias to said given one conductive expanse, said given ones of said vias are operatively connected with one another.

5,623,161
ELECTRONIC ELEMENT AND METHOD OF PRODUCING SAME

Koichi Fukuda, Sendai; Tomofumi Oba; Chisato Iwasaki, both of Miyagi-ken; Yasuhiko Kasama, Sendai, and Tadahiro Ohmi, 1-7 Yukigaya, Otsuka-Cho, Ota-ku, Tokyo, all of Japan, assignors to Frontec, Incorporated, and Tadahiro Ohmi, both of Sendai, Japan

Filed May 17, 1995, Ser. No. 442,906
Claims priority, application Japan, May 20, 1994, 6-106935
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—649 **3 Claims**



1. An electronic element comprising:

a substrate having an electrically-insulated surface;

a conductive wire pattern formed on the surface of the substrate, the wire pattern having an upper surface and side surfaces extending from the surface of the substrate to the upper surface of the wire pattern, and

an insulating layer formed over said wire pattern such that the insulating layer contacts the side surfaces and upper surface of said wire pattern,

wherein said insulating layer is composed of a silicon nitride film having a film thickness in the range of 200 to 400 nm, and

wherein an oxygen content of the silicon nitride film located adjacent the side surfaces of the wire pattern is 10 atomic percent or less.

5,623,162
LEAD FRAME HAVING CUT-OUT WING LEADS

Kenichi Kurihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,529
Claims priority, application Japan, Oct. 27, 1994, 6-287478
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **6 Claims**

1. A lead frame comprising:

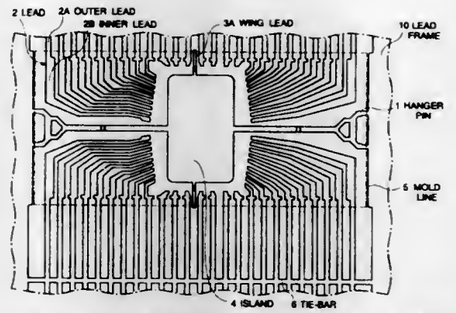
an island for bearing a semiconductor chip.

at least one hanger pin extending from said island for supporting said island,

a plurality of outwardly extending leads surrounding said island and separate from said island, each of said leads having an inner lead starting from a position separated from said island and terminating at a mold line, and an outer lead outwardly continuously extending from a terminating end of said inner lead to an outer end,

at least one tie-bar remote from said mold line and mutually tying said leads for preventing flow-out of a resin when resin packaging is carried out, and

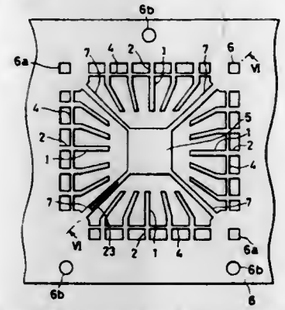
at least one wing lead outwardly extending from said island between a pair of adjacent leads and terminating separate from said tie-bar, at one of said mold line or slightly outward of said mold line.



5,623,163
LEADFRAME FOR SEMICONDUCTOR DEVICES

Atsuhiko Izumi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 307,429
Claims priority, application Japan, Sep. 20, 1993, 5-232860
Int. Cl.[6] H01L *23/495;23/28*
U.S. Cl. 257—667 **26 Claims**



1. A leadframe for semiconductor devices comprising:

(a) a body;

(b) first and second rails extending along a longitudinal axis of said body, said first and second rails being formed at each side of said body; and

(c) patterned die-mounting structures arranged along said longitudinal axis between said first and second rails;

each of said structures including:

a die pad for mounting a semiconductor device chip thereon;

die pad supports for supporting said die pad, said die pad supports being formed to extend from said body to said die pad thereby to support said die pad;

at least one of said die pad supports having a first communication path that communicates one side of said body with the other thereof, said first communication path being formed to extend along said corresponding die pad support for a designated length and a designated width;

fingers for forming inner leads and outer leads;

said outer leads being made by outer parts of said fingers, respectively, and being connected to said body;

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said inner leads being made by inner parts of said fingers, respectively and not reaching said die pad;

wherein when said leadframe is held by a molding die having a molding space in which a molding material is supplied and a gate through which said molding material is admitted during a molding process:

and wherein said die pad, said die pad supports, and said inner leads are located in said molding space to divide said space into first and second parts:

and wherein said gate is located in said first part, and said first communication path is located in the vicinity of said gate;

and wherein said molding material supplied from said gate into said first part flows through said first communication path to said second part, thereby filling said first and second parts approximately uniformly.

5,623,164

INTEGRATED SEMICONDUCTOR CIRCUIT OR MICROMECHANICAL COMPONENT AND PROCESS THEREFORE

Stephan Auer, Dachau; Armin Kohlhase, Neubiberg, and Hanno Melzner, Unterbaching, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

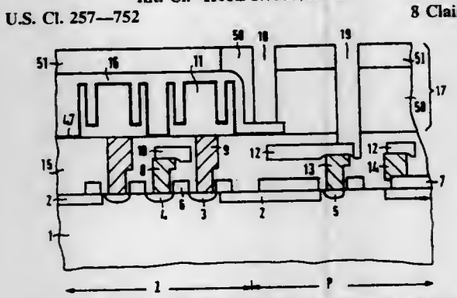
PCT No. PCT/DE93/00553, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/00876, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 24, 1993, Ser. No. 360,803

Claims priority, application Germany, Jun. 30, 1992, 42 21 432.7

Int. Cl.[6] H01L *27/108;29/92*

U.S. Cl. 257—752 **8 Claims**



7. An integrated semiconductor circuit or micromechanical component comprising: large-area regions of various heights and a step between a higher-lying region and a lower-lying region, which is globally planarized using a polishing process; on the lower-lying region a first layer and a second layer lying thereabove; on the entire higher-lying region, with the exception of a border area, only the second layer; the thickness of the first layer being predetermined by a height of the step between the higher-lying region and the lower-lying region; and the entire surface of the semiconductor arrangement assigned to the higher-lying and lower-lying regions being polished and globally planarized.

5,623,165

INSULATED GATE FIELD EFFECT SEMICONDUCTOR DEVICE AND FORMING METHOD THEREOF

Yukio Yamauchi, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

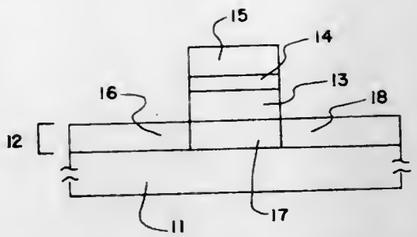
Continuation of Ser. No. 213,056, Mar. 15, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,103

Claims priority, application Japan, Mar. 16, 1993, 5-082654

Int. Cl.[6] H01L *23/48;23/52;29/40;29/76*

U.S. Cl. 257—756 **14 Claims**

1. An integrated circuit having a plurality of insulated gate field effect semiconductor devices connected with each other through a plurality of wirings, each semiconductor device comprising:



a gate insulating film; and

a gate electrode having first and second regions and comprising a semiconductor material, wherein the first region is in contact with the gate insulating film and the second region is not in contact with the gate insulating film and connected to one of said wirings,

wherein an impurity for providing one conductivity type has a first concentration in the first region of the gate electrode, and a second concentration higher than the first concentration in the second region.

5,623,166

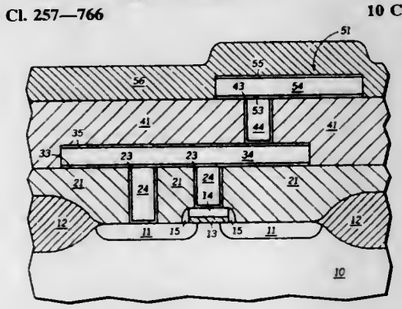
AL-NI-CR CONDUCTIVE LAYER FOR SEMICONDUCTOR DEVICES

Johnson O. Olowolafe; Hisao Kawasaki, and Chii-Chang Lee, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 150,900, Nov. 12, 1993, Pat. No. 5,393,703. This application Dec. 5, 1994, Ser. No. 349,219

Int. Cl.[6] H01L *23/532*

U.S. Cl. 257—766 **10 Claims**



1. A semiconductor device comprising:

a conductor is selected from a group consisting of a doped region lying within a semiconductor substrate, a gate electrode overlying the substrate, a silicon-containing electrode overlying the substrate, and a metal-containing member overlying the substrate;

an insulating layer overlying the conductor and including an opening, wherein at least a portion of the conductor is exposed within the opening;

a plug within the opening, wherein the plug is selected from a group consisting of a contact plug and a via plug;

an interconnecting member that includes a conductive layer that extends along all of the interconnecting member, wherein:

a portion of the interconnecting member overlies the insulating layer and another portion of the interconnecting member overlies the plug;

the interconnecting member includes a conductive layer that is an alloy that consists of aluminum, nickel, and chromium and has at least 99 weight percent aluminum, 0.1–0.5 weight percent nickel, and 0.02–0.1 weight percent chromium; and

the interconnecting member is formed such that it is electrically connected to the conductor; and

a passivation layer overlying the interconnecting member.

5,623,167

SEMICONDUCTOR DEVICE

Toshihiro Tabuchi, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

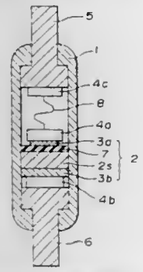
PCT No. PCT/JP93/00839, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO94/00880, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 356,389

Claims priority, application Japan, Jun. 24, 1992, 4-043893

Int. Cl.[6] H01L *23/29*

U.S. Cl. 257—794 **8 Claims**



1. A semiconductor device comprising:

a cylindrical glass container;

a semiconductor chip sealedly provided within said glass container and forming a capacitive element of an MIS structure;

first and second electrodes of titanium-tungsten formed to cover substantially all areas of front and rear surfaces of said semiconductor chip;

a first lead, one end of which is sealedly disposed within said glass container to be connected to said first electrode and the other end of which is led out from said glass container;

a second lead having multiple bent portions and sealedly disposed within said glass container to be connected to said second electrode at one end thereof; and

a third lead, one end of which is sealedly disposed within said glass container to be connected to said second lead and other end of which is led out of said glass container.

5,623,168

REDUCTION OF THE GRAIN SIZE OF CRYSTALLINE EXPLOSIVE

Gregor Fels, and Gerhard Ewald, both of Haltern, Germany, assignors to Wasagchemie Sythen GmbH, Haltern, Germany

PCT No. PCT/EP92/01990, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO93/06065, PCT Pub. Date Apr. 1, 1993

PCT Filed Aug. 28, 1992, Ser. No. 204,323

Claims priority, application Germany, Sep. 18, 1991, 41 31 072.1; Jan. 14, 1992, 42 00 743.7

Int. Cl.[6] C06B *21/00;* **A45C** *1/02*

U.S. Cl. 264—3.6 **12 Claims**

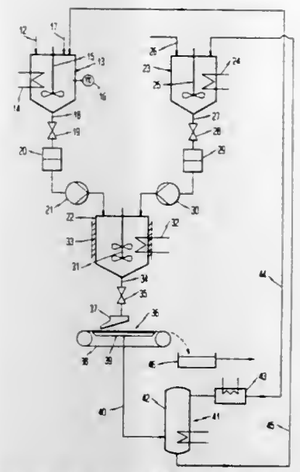
1. A method of reducing the grain size of a crystalline explosive, such as hexogen or mixtures containing hexogen, and comprising the steps of

dissolving the explosive in an organic solvent,

precipitating and crystallizing the dissolved explosive in the presence of water, then

separating the resulting precipitated explosive from the solvent and the water, and characterized in that

the dissolved explosive is precipitated by bringing the dissolved explosive together with cold water, while turbulently agitating the mixture of the explosive, water and solvent, and wherein



the precipitating step includes adding a precipitant to said mixture to retard crystal growth and which is selected from at least one of the group consisting of (1) a decomposition product of starch, (2) derivatives of starch or cellulose which are soluble in water, and (3) greatly diluted solutions of different sugars, and

the separating step includes adding a wetting agent to the mixture of the explosive, water, and solvent, before and/or during the separation to prevent agglomeration of the solid particles.

5,623,169

ELECTRICAL WIRING HARNESS STRUCTURE FOR VEHICLE

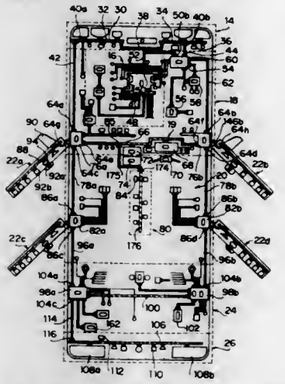
Nobuyoshi Sugimoto; Mitsuru Anma; Hideaki Masui, all of Shizuoka-ken; Osamu Michihira; Seiji Hirano, both of Hiroshima, and Masaaki Shimizu, Iwakuni, all of Japan, assignors to Yazaki Corporation, Tokyo, and Mazda Motor Corporation, Hiroshima, both of Japan

Continuation of Ser. No. 858,528, Mar. 27, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 311,443

Claims priority, application Japan, Mar. 28, 1991, 3-064332; Feb. 25, 1992, 4-037373

Int. Cl.[6] H02G *3/02;* **B60R** *16/02*

U.S. Cl. 307—10.1 **42 Claims**



1. An electrical wiring harness structure for a multiplex transmission network in a vehicle, in which a vehicle body is divided into a plurality of blocks, electrical components are mounted in

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units of the blocks to constitute modules, and the modules are combined to complete a vehicle body, the electrical wiring harness structure comprising:

main block control nodes which are respectively provided in modules abutting each other in the vehicle;

trunk wiring harnesses arranged in a front-rear direction of the vehicle connecting main block control nodes, and forming a transmission path for performing communications among said main block control nodes;

first connectors for connecting said trunk wiring harnesses and said main block control nodes;

branch wiring harnesses branched from said main block control nodes in a transverse direction of the vehicle;

subordinate block control nodes connected to said main block control nodes by said branch wiring harnesses; and

second connectors for connecting said branch wiring harnesses and said subordinate block control nodes,

wherein said vehicle body is divided into at least an engine room block, a passenger room block, and a rear block,

wherein said main block control nodes comprise right and left cowl nodes having a function of controlling communications among electrical components arranged in said engine room block, electrical components arranged in said passenger room block, and electrical components arranged behind said passenger room block, which are arranged at right and left portions, facing a passenger room, of said engine room block, and

wherein said right and left cowl nodes are connected through a branch wiring harness.

5,623,170

LOCK SYSTEM FOR A MOTOR VEHICLE WITH MULTIPLEXING

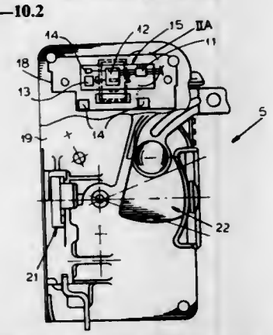
Peter Bartel, Hattingen, Germany, assignor to Kiekert Aktiengesellschaft, Heiligenhaus, Germany

Filed Jul. 25, 1995, Ser. No. 506,470

Claims priority, application Germany, Jul. 30, 1994, 44 27 253.7

Int. Cl.[6] E05B *65/36*

U.S. Cl. 307—10.2 **7 Claims**



1. A centralized lock system for an automotive vehicle having a plurality of doors, said lock system comprising:

a respective vehicle door lock at each door of the vehicle, each of said door locks comprising:

a lock housing individual to the respective door locks,

an electric servomotor in said housing,

a lock mechanism in said housing operatively connected to said electric servomotor for locking and unlocking a respective one of said doors in response to electrical commands fed to the respective lock,

a printed circuit board in said housing provided with dust and moisture excluding encapsulation,

a microcontroller individual to the respective door lock encapsulated on said printed circuit board and a driver circuit connected to said microcontroller and encapsulated on said printed circuit board and responsive to said commands for controlling said servomotor,

at least one control sensor in said housing for monitoring lock operation and producing sensor signals indicating said lock operation, and

a bidirectional multiplexing element individual to the respective door lock encapsulated on said printed circuit board and connected to said microcontroller for receiving binary signals and producing said commands therefrom and for receiving said sensor signals and generating binary signals therefrom;

a bus system interconnecting all of said multiplexing elements for transmission of binary signals to and receipt of binary signals from said multiplexing elements; and

a central control and monitoring circuit having a central multiplexer and responsive to the control sensors of the locks connected to said bus system for operating said locks in accordance with information applied to said bus system in the form of binary signals.

5,623,171

HIGH-VOLTAGE PULSE GENERATING CIRCUIT AND ELECTROSTATIC RECIPITATOR CONTAINING IT

Shin Nakajima, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

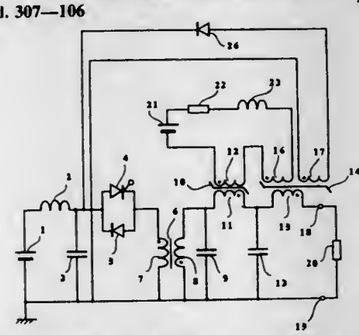
Continuation of Ser. No. 58,073, Sep. 14, 1990, abandoned.

This application Dec. 18, 1995, Ser. No. 573,863

Claims priority, application Japan, Sep. 14, 1989, 1-239170

Int. Cl.[6] H03K *3/30;* **B03C** *3/02*

U.S. Cl. 307—106 **7 Claims**



1. A high-voltage pulse generating circuit of a charge transfer-type comprising:

a main capacitor for storing input energy,

a transformer, having a primary winding and a secondary winding, connected between said main capacitor and a load,

at least one magnetic pulse compression circuit comprising a saturable reactor, and an energy recovery circuit for returning unconsumed pulse energy from said load to said main capacitor,

said saturable reactor being connected to an output winding of said at least one magnetic pulse compression circuit, to said secondary winding of said transformer, and to an energy recovery winding, said energy recovery winding being connected in parallel to said main capacitor, and

a rectifying element inserted between said energy recovery winding and said main capacitor.

5,623,172

TWO WIRE PIR OCCUPANCY SENSOR UTILIZING A RECHARGEABLE ENERGY STORAGE DEVICE

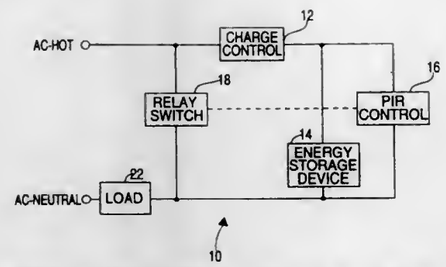
Albert Zaretsky, Brooklyn, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jul. 3, 1995, Ser. No. 498,039

Int. Cl.[6] H01H *35/00*

U.S. Cl. 307—117 **16 Claims**

1. A two-wire sensor device, comprising:



switching means for switching between a low and a high impedance state in response to a detection signal and connecting/disconnecting an AC power source to/from an electrical load, said switching means connected between a first leg of said AC source and a first terminal of said electrical load, wherein a second terminal of said load is connected to a second leg of said AC source;

energy storage means electrically coupled at a first end to said first leg of said AC source and at a second end to said first terminal of said electrical load;

charge control means interposed between said first end of said energy storage means and said first leg of said AC source for limiting, filtering and controlling a voltage across said energy storage means; and

sensor means electrically connected across said energy storage means for sensing a condition being monitored and generating a command signal based thereon.

5,623,173

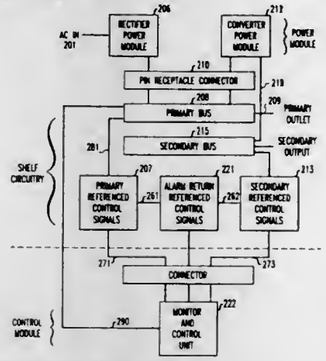
BUS STRUCTURE FOR POWER SYSTEM

Greg H. Fasullo, Dallas, and A. S. Herbert, Richardson, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 18, 1994, Ser. No. 210,213

Int. Cl.[6] H02J *7/00*

U.S. Cl. 307—150 **11 Claims**



1. A power plant system, comprising:

a shelf including a backplane, the backplane having a pin receptacle connector, the pin receptacle connector having primary and secondary buses connected thereto;

a source of primary referenced control signals connected to the primary bus and a source of secondary referenced control signals connected to the secondary bus;

the pin receptacle connector also providing one or more modular plug-in locations, the shelf further disposed to receive plug-in power processing modules, each of said modules, when received, disposed to plug in to one of said plug-in locations;

each of said plug-in locations disposed to connect a module received therein to the primary and secondary buses in a first pinout arrangement if said received module is a rectifier; and

each of said plug-in locations further disposed to connect a module received therein to the primary and secondary buses in a second pinout arrangement if said received module is a converter.

5,623,174

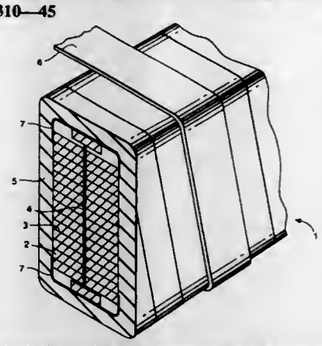
INTERNAL GRADING OF GENERATOR STATOR BARS WITH ELECTRICALLY CONDUCTING THERMOPLASTIC PAINTS

Mark Markovitz, Schenectady; James J. Grant, Niskayuna, and William E. Tomak, Scotia, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,629

Int. Cl.[6] H02K *15/02;15/12;* **H01B** *1/24*

U.S. Cl. 310—45 **8 Claims**



1. A method of reducing the dissipation factor tip-up in electrical generator stator bars comprising applying between at least a portion of the conductive core of said stator bar and the surrounding insulating layer of said stator bar an electrically conductive paint composition composed of a thermoplastic resin binder and a carbon filler selected from the group consisting of graphite, carbon black, and mixtures thereof.

5,623,175

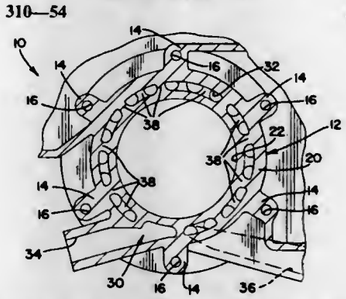
THERMALLY EFFICIENT, LIQUID COOLED HOUSING FOR DYNAMOELECTRIC MACHINE

Jeffrey J. Ronning, Fishers, and Michael D. Obermeyer, Middletown, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1996, Ser. No. 618,102

Int. Cl.[6] H02K *5/24*

U.S. Cl. 310—54 **4 Claims**



1. An annular, cast housing for a dynamoelectric machine, the housing defining a single internal, circumferential, liquid coolant circulation passage between inner and outer annular walls, the inner annular wall receiving heat from the dynamoelectric machine, the liquid circulation passage comprising a main portion of flat, rectangular cross-section having a width extending axially

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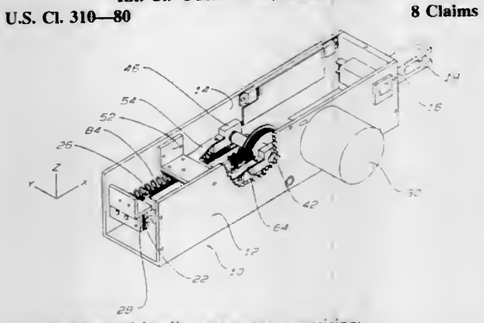
across the housing and a length extending circumferentially around a majority of the housing and, at opposite ends of the main portion, transitional portions narrowing in width from opposite axial sides to an inlet and an outlet, respectively, so that the transitional portions pass each other on the narrowing sides and smoothly convert from the flat, rectangular cross-section to a circular cross-section at the inlet and outlet, the transitional portions ending in conduits substantially aligned with each other and oriented in substantially opposite directions, the housing providing, through at least the main portion of the liquid circulation passage, an array of radial pillars connecting the inner and outer annular walls so as to improve the efficiency of heat transfer from the walls to the liquid coolant by (1) increasing the conduction of heat from the inner annular wall to the outer annular wall, where heat transfer to the liquid coolant is more efficient due to higher liquid coolant velocity in circumferential circulation, (2) providing increased surface area for heat transfer to the liquid coolant, and (3) obstructing straight-through fluid flow paths to perturb fluid thermal boundary layers.

5,623,176

HIGH PRECISION/LOW HYSTERESIS LINEAR ACTUATOR

Robert O. Brandt, Jr., P.O. Box 5606 Hanover Center, Wilmington, N.C. 28403

Filed Dec. 21, 1993, Ser. No. 171,915
Int. Cl.[6] F16H *19/04;* **H02K** *7/06*
U.S. Cl. 310—80 **8 Claims**



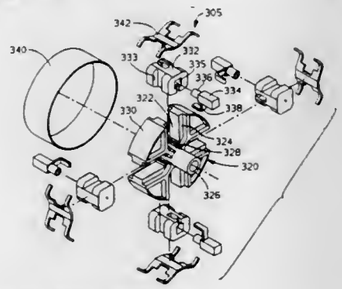
1. A high precision linear actuator comprising:
a housing defining a cavity;
an elongate linearly movable drive shaft positioned for reciprocating movement into and out of said housing;
a drive pad means connected to said drive shaft and mounting a rack gear means;
a motor drive means adapted to receive a voltage input signal and to convert said voltage input signal into rotation of a motor drive shaft;
a drive means operatively associated with said motor drive shaft, said drive means comprising a motor pulley mounted to said motor drive shaft, a drive pulley operatively associated with said rack gear means, a timing belt connected between said motor pulley and said drive pulley, and a drive pinion operatively associated with said drive pulley, said drive pinion being in cooperating contacting relation with said rack gear means;
means for maintaining the drive means and the rack gear means in compression, said means comprising a spring having one end connected to said housing and the other end being cantilevered such that the free end of said spring is in contact with and exerts a compressive force on said rack gear means such that said drive means and the rack gear means are continuously urged into compressive contacting relation;
whereby when a voltage signal is applied to the motor drive means, the motor drive shaft rotates thereby causing rotation of corresponding movement of the drive means and movement of the drive pad and linear translation of the drive shaft.

5,623,177

ELECTRIC MOTOR WITH BRUSHES SLIDABLE IN RESPONSE TO CENTRIFUGAL FORCE

Michael A. Dimatteo, Kettering, and Gary C. Fulks, Spring Valley, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 397,675, Mar. 2, 1995, Pat. No. 5,496,102. This application May 24, 1995, Ser. No. 449,314
Int. Cl.[6] H02K *13/00;* **H01R** *39/38*
U.S. Cl. 310—242 **15 Claims**



1. An electric motor comprising:
a rotatably mounted rotor;
a commutator brush retainer mounted fixedly with respect to the rotor, wherein the commutator brush retainer rotates with the rotor;
at least one brush slidably mounted to the commutator brush retainer, wherein the brush is slidable in a radial direction, with respect to an axis of rotation of the rotor, between a radially retracted position and a radially extended position;
a spring connected to the commutator brush retainer and to said one brush, wherein the spring biases the one brush to the radially retracted position and wherein, during rotational movement of the motor, centrifugal force moves the one brush toward the radially extended position, wherein, as a rotational velocity of the rotor increases, the one brush moves closer to the radially extended position;
a commutator plate mounted fixedly in relation to a housing of the motor, wherein the rotor rotates in relation to the commutator plate;
an annular portion of the commutator plate coaxial with the rotor, the annular portion having an inner radius engaging the one brush when the one brush is in the radially retracted position, the annular portion having an outer radius engaging the one brush when the one brush is in the radially extended position; and
a plurality of contactors in the annular portion of the commutator plate, the contactors extending from the inner radius to the outer radius.

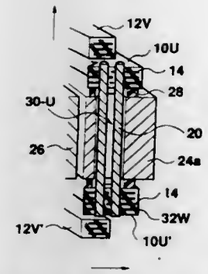
5,623,178

COIL STRUCTURE FOR ELECTRIC MOTOR

Yasutomo Kawabata, Aichi-ken; Eiji Yamada, Owariasahi, and Tetsuya Miura, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 5, 1994, Ser. No. 266,869
Claims priority, application Japan, Jul. 19, 1993, 5-178331
Int. Cl.[6] H02K *3/28;3/46;3/50*
U.S. Cl. 310—260 **11 Claims**

1. A multi-phase driving electric motor having a stator and a rotor arranged so as to confront the stator, said stator comprising:



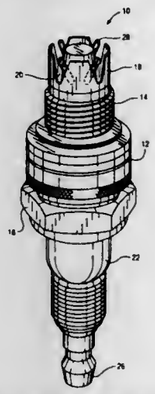
(a) a stator core provided with a plurality of slots facing toward the rotor in a direction parallel with a rotating shaft of the rotor, and
(b) a coil having:
(b-1) a plurality of molded coil pieces inserted in to each slot, and
(b-2) a plurality of connecting members connecting the molded coil pieces in the slot to the molded coil pieces in another slot having the same phase as the former coil pieces, said connecting members being arranged on two edges of the stator in the direction parallel with rotating shaft of the rotor, and having an integral structure of plurality of conductive members laminated via insulating layers and said conductive members and insulating layers being perpendicular to the rotating shaft and layered in the direction of the rotating shaft.

5,623,179

MULTI FIRE SPARK PLUG

Richard Buhl, 1702 Stardust La., Arnold, Mo. 63010

Filed Dec. 4, 1995, Ser. No. 566,672
Int. Cl.[6] H01T *13/46;13/22*
U.S. Cl. 313—141 **8 Claims**



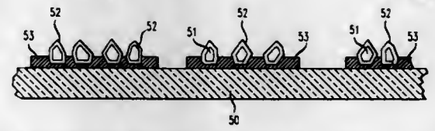
1. A spark plug for an internal combustion engine comprising, a metal body having a threaded portion for engagement with the cylinder head of the engine and having an extended skirt as a ground element, said skirt having a plurality of apertures; a cylindrical ceramic insulator secured within the body; and an electrode extending through the center of the insulator, the electrode transforming into a plurality of oblique oriented projections which extend into and intersect said skirt through the apertures, whereby a spark generated by said electrode can be conveyed along any of said projections and passed to a lateral edge of any of said apertures, whereby deterioration of spark gap distance is minimized between said projections and said skirt ground element.

5,623,180

ELECTRON FIELD EMITTERS COMPRISING PARTICLES COOLED WITH LOW VOLTAGE EMITTING MATERIAL

Sungho Jin, Millington; Gregory P. Kochanski, Dunellen, and Wei Zhu, North Plainfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 31, 1994, Ser. No. 332,179
Int. Cl.[6] H01J *1/30*
U.S. Cl. 313—310 **8 Claims**



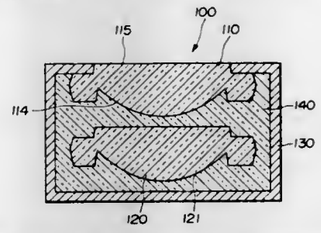
1. A field emitter for emitting electrons at low voltage comprising:
a plurality of substrate particles having maximum dimensions in the range 0.1–100 μm;
each particle of said plurality coated with a layer of low voltage emitting material for emitting electrons at an applied field of 25 V/μm or less, said field emitter emitting a current density of at least 0.1 mA/mm^2, said low voltage emitting material comprising defect—containing diamond characterized by a diamond peak at 1332 cm^{-1} in Raman spectroscopy broadened to a full width at half maximum ≧5 cm^{-1}.

5,623,181

MULTI-LAYER TYPE LIGHT EMITTING DEVICE

Yoshinobu Suehiro; Shigeru Yamazaki, and Takashi Sato, all of Gyoda, Japan, assignors to Iwasaki Electric Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,099
Int. Cl.[6] H01J *1/62;5/16;* **H01L** *33/00*
U.S. Cl. 313—512 **21 Claims**



1. A multi-layer type light emitting device, comprising:
at least two light emitting sources, successively disposed along a light-transmitting path, including a rearmost source at a rear end of the path and a front source at a front end of the path, for transmitting rays of light along the path, the rearmost source emitting rays of light in a forward direction from the rear end toward the front end; and
means defining a respective optical surface for each source except the rearmost source, disposed along the path between the front source and the rearmost source, for reflecting in the forward direction rays of light emitted by each source except the rearmost source, and for transmitting therethrough in the forward direction rays of light emitted by the rearmost source.

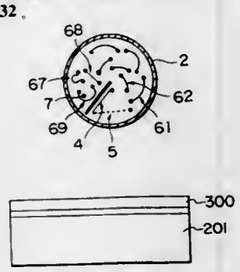
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5,623,182

REFLECTIONS MODE ALKALI PHOTOCATHODE AND PHOTOMULTIPLIER USING THE SAME

Kazuyoshi Okano; Takehiro Iida; Tetsuo Murata; Nobuharu Suzuki; Hiroaki Washiyama, and Yasusbi Watase, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation of Ser. No. 121,903, Sep. 16, 1993, abandoned.
This application Apr. 10, 1996, Ser. No. 630,729
Claims priority, application Japan, Jun. 11, 1992, 4-152094; Feb. 2, 1993, 5-015530; Jun. 3, 1993, 5-133668
Int. Cl.[6] H01J *1/34;43/08*
U.S. Cl. 313—532 2 Claims



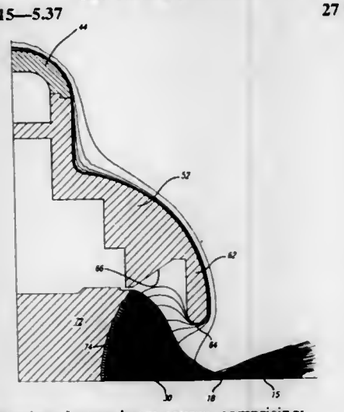
1. A reflection mode alkali photocathode comprising:
a Ni substrate; and
a plurality of alkali metals and antimony disposed directly on said Ni substrate, wherein a deposition weight of said antimony is greater than 30 μg/cm^2 and less than 100 μg/cm^2.

5,623,183

DIVERGING BEAM ELECTRON GUN FOR A TOXIC REMEDIATION DEVICE WITH A DOME-SHAPED FOCUSING ELECTRODE

Curtis G. Allen, Hayward, and Richard B. True, Sunnyvale, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Mar. 22, 1995, Ser. No. 408,210
Int. Cl.[6] H01J *37/063*
U.S. Cl. 315—5.37 27 Claims



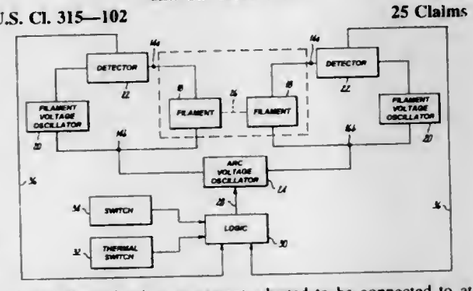
1. A diverging electron beam source, comprising:
an electron emitter having an emitting surface;
a focusing electrode concentrically surrounding said emitting surface and having a convex, dome-shaped outer surface with an inwardly protruding lip portion that extends at least partially into a beam focusing region defined in front of said emitting surface; and
a target spaced from said emitter and means for applying a negative voltage between said emitting surface and said target;
wherein, an electron beam provided by said emitting surface in response to said negative voltage is crossed-over by said focusing electrode to provide a broad diverging beam impacting uniformly on said target.

5,623,184

LAMP CIRCUIT WITH FILAMENT CURRENT FAULT MONITORING MEANS

Robert E. Rector, McKinney, Tex., assignor to Gulton Industries, Inc., Plano, Tex.

Continuation of Ser. No. 397,785, Mar. 3, 1995, abandoned.
This application May 14, 1996, Ser. No. 645,049
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—102 25 Claims



1. A ballast circuit arrangement adapted to be connected to at least one fluorescent lamp, each lamp having two ends and a filament at each end, each filament having two terminals, said circuit arrangement comprising:
a filament voltage oscillator connectable across the two filament terminals at each lamp end for providing a filament current through the filaments of the at least one fluorescent lamp;
a separate arc voltage oscillator connectable to each of said fluorescent lamps between a first filament terminal at one of its two lamp ends and another filament terminal at the other of its two lamp ends for providing an arc voltage across each connected lamp, said arc voltage having either a first voltage value that is sufficient to induce an arc discharge in each connected lamp, or a second voltage value that is insufficient to induce or maintain an arc discharge in each connected lamp;
control means for causing said arc voltage oscillator to have either of the first and second voltage values; and
a detector circuit connected to each lamp filament for providing signals to said control means that change in response to a change in the filament current of any one of said filaments to which the detector is connected,
said control means being responsive to said signals from said detector circuit to cause said arc voltage oscillator to not have the first voltage value until after said detector circuit has detected the filament current.

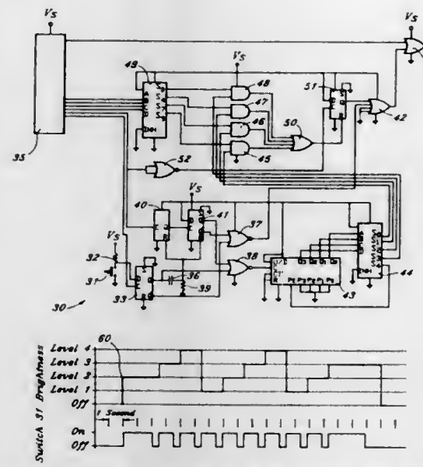
5,623,185

ADJUSTABLE DRIVE CIRCUIT FOR CAPACITIVE ELECTROLUMINESCENT LAMPS

Bruce H. Kamens, Thomaston, and Victor E. Shiff, Wolcott, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Apr. 24, 1995, Ser. No. 427,319
Int. Cl.[6] G04B *19/30;* H05B *37/00*
U.S. Cl. 315—169.3 13 Claims

1. An improved drive circuit for driving a capacitive electroluminescent lamp of the type having a converter coupled to a power supply source and a signal generating means to produce current pulses, and a charging switching means coupled to the signal generating means, the capacitive electroluminescent lamp and the converter for switching successive current pulses to the capacitive electroluminescent lamp to produce light, wherein the improvement comprises:
a control means coupled to the power supply source, the signal generating means and the converter for controlling the charging switching means to provide at least two sets of successive current pulses to the capacitive electroluminescent lamp, where each set comprises a different predetermined number of successive current pulses; and
the control means including a switch, the actuation of which selects the set of successive current pulses to be provided to the capacitive electroluminescent lamp, and wherein the control means further includes a delay means coupled to the switch for delaying deactivation of the charging switching means for a predetermined period of time when the switch is opened, said control means switch being adapted to select a different set of successive current pulses if said switch is closed during said predetermined period of time.

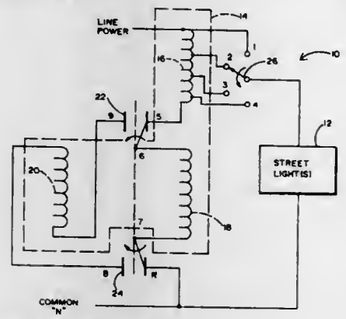


5,623,186

POWER SAVING VOLTAGE REDUCTION SYSTEM FOR HIGH INTENSITY DISCHARGE LIGHTING SYSTEMS

James M. Archdekin, 1721 Normandy Pl., Santa Ana, Calif. 92705

Division of Ser. No. 379,171, Jan. 27, 1995, Pat. No. 5,508,589.
This application Jan. 16, 1996, Ser. No. 585,940
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—276 2 Claims



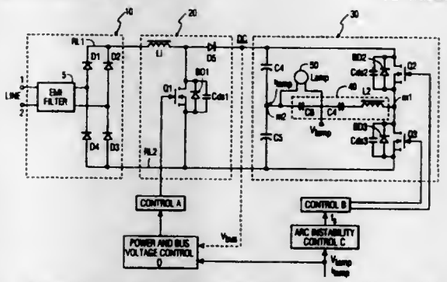
1. A street light comprising:
a high intensity discharge light source;
an ambient light sensor connected to activate said light source upon reduction of ambient light below a selected threshold;
a voltage reduction circuit connected to said light source to selectively reduce the voltage applied thereto; and
a timer connected to said sensor and to said voltage reduction circuit, said timer being configured to begin timing upon activation of said light source by said sensor and to terminate timing upon passage of a selected period of time after said activation of said light source;
said voltage reduction circuit having a switch responsive to said timer for reducing the voltage applied to said light source upon said termination of timing.

5,623,187

CONTROLLER FOR A GAS DISCHARGE LAMP WITH VARIABLE INVERTER FREQUENCY AND WITH LAMP POWER AND BUS VOLTAGE CONTROL

Paulo Caldeira, Scarsdale, N.Y.; Lawrence Bourdillion, New Milford, Conn.; Antonius H. Holtslag, Eindhoven, Netherlands, and Jinrong Qian, Blacksburg, Va., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 28, 1994, Ser. No. 366,337
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—307 12 Claims



1. A lamp controller for controlling a gas discharge lamp, comprising:
means for providing a DC voltage at a pair of DC terminals;
boost means for boosting the level of the DC voltage;
inverter and ballasting means fed by said boost means for powering said discharge lamp at a preselected lamp power level;
frequency varying means for varying the operating frequency of said inverting and ballasting means, the power delivered to said discharge lamp varying with the operating frequency; and
boost control means for controlling said boost means to vary the level of the DC voltage fed to said inverter and ballasting means to maintain a substantially constant lamp power despite changes in the operating frequency of said inverting and ballasting means, said boost control means comprising
means for sensing the lamp voltage and lamp current;
means for multiplying the sensed lamp voltage and lamp current to obtain a lamp power signal corresponding to the actual lamp power;
means for comparing said signal representing lamp power with a reference power signal; and
means for increasing the DC voltage level output by said boost means if the lamp power signal is less than the reference power signal and for decreasing the DC voltage level output by said boost means if the power signal is greater than the reference power signal.

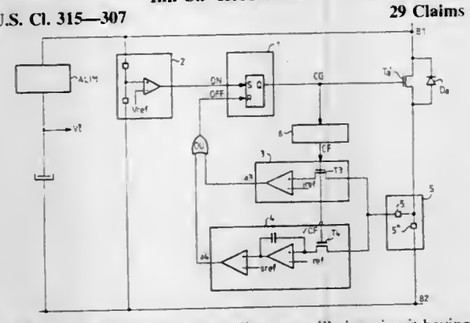
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5,623,188

METHOD AND APPARATUS FOR CONTROLLING AN OSCILLATING CIRCUIT OF A LOW PRESSURE FLUORESCENT LAMP

Marco Bildgen, Aix-en-Provence, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Jun. 14, 1995, Ser. No. 490,462
Claims priority, application France, Jun. 15, 1994, 94 07330
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—307 **29 Claims**



28. A control device for controlling an oscillating circuit having a frequency of operation, the control device comprising:

a transistor having first and second electrodes and a gate, the transistor having an on state and an off state, at least one of the first and second electrodes of the transistor being connectable to the oscillating circuit to receive a current from the oscillating circuit when the transistor is in the on state;

a switching control circuit that controls the frequency of operation of the oscillating circuit, the switching control circuit having an input coupled to the oscillating circuit to detect the current from the oscillating circuit, and having an output coupled to the gate of the transistor to provide a control signal having a first value that activates the on state of the transistor and a second value that activates the off state of the transistor;

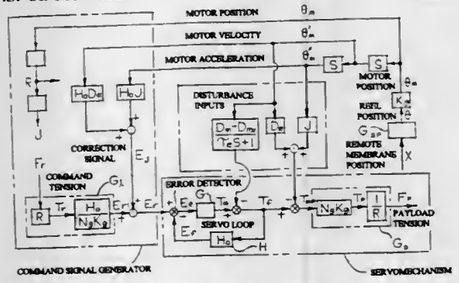
a detection circuit that detects a characteristic of the control signal to determine the frequency of operation of the oscillating circuit, the detection circuit having an input coupled to the gate of the transistor to receive the control signal and having an output that provides an indication signal having a value indicative of the frequency of operation of the oscillating circuit.

5,623,189

AUTOMATIC CONTROL OF TORQUE OR FORCE AT MOVING LOADS

Ferdinand J. Hemmer, 740 N. Riverside Dr., Crownsville, Md. 21032

Filed Aug. 19, 1994, Ser. No. 293,039
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—432 **7 Claims**



TENSION CONTROL SYSTEM BLOCK DIAGRAM

1. A control system for controlling force or torque at a movable payload where the motion is caused by an external force or torque and said motion is substantially independent of said force or torque control system, said control system being comprised of:

(a) a servomechanism comprised of:

a motor which has a frame that has a fixed position with respect to said movable payload and a movable element that is connected to and applies force or torque to said movable payload,

a torque or force detector located at said fixed motor frame for sensing the steady state output torque or force of said motor to produce a feedback signal,

an error detector for calculating an error signal equal to a corrected force or torque command signal value minus said feedback signal value,

an amplifier that supplies power to said motor proportional to said error signal,

(b) a command signal generator comprised of:

a means for detecting velocity and acceleration of said movable element of said motor,

a computer or microprocessor for computing command correction signals that are proportional to the product of external damping and velocity and the product of system inertia and acceleration which are added to a force or torque command signal to produce said corrected force or torque command signal, and

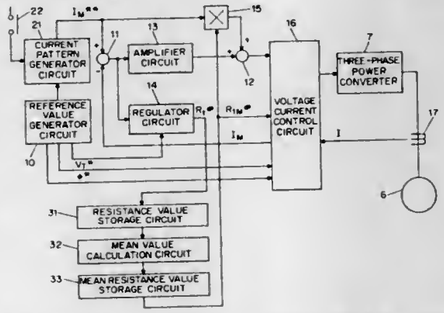
an input/output circuit board to receive said force or torque command signal and said detected velocity and acceleration signals for said computor and to send said corrected command signal to said error detector of said servomechanism.

5,623,190

METHOD AND APPARATUS FOR CONTROLLING AN AC MOTOR AND DETECTING MALFUNCTIONS

Hirokazu Tajima, and Hidetoshi Umida, both of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,895
Claims priority, application Japan, Sep. 17, 1993, 5-230648; May 11, 1994, 6-097089
Int. Cl.[6] H02P *5/00*
U.S. Cl. 318—800 **13 Claims**



1. A method for controlling an AC motor driven by a power converter, comprising the steps of:

resolving a detected value of a current flowing through said AC motor into a magnetizing current component parallel to a magnetic flux of said AC motor and a torque current component perpendicular to said magnetic flux;

executing a control operation for equalizing said magnetizing current component to a predetermined reference magnetizing current value;

calculating at least one estimated resistance value from one of an integral operation and a proportional-plus-integral operation on deviation of said magnetizing current component from said reference magnetizing current value;

obtaining an estimated voltage drop attributable to primary resistance of the AC motor;

obtaining a reference magnetizing voltage value by adding said estimated voltage drop and result of said control operation;

controlling the power converter with said reference magnetizing voltage value; and

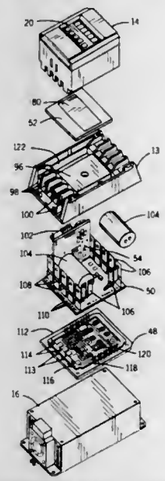
driving said AC motor at a desired speed with AC electric power output from said power converter controlled with said reference magnetizing voltage value and a reference torque voltage value.

5,623,191

CIRCUIT BOARD ARCHITECTURE FOR A MOTOR CONTROLLER

Christopher J. Wieloch, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 12, 1995, Ser. No. 420,469
Int. Cl.[6] H05K *7/14*
U.S. Cl. 318—801 **15 Claims**



1. A controller for driving an electric motor comprising:

a power substrate module including a rectifying circuit for converting alternating current power to direct current power and an inverting circuit coupled to the rectifying circuit for generating controlled alternating current power for driving the motor in response to drive control signals;

a control circuit supported on a control circuit board physically separate from the power substrate module and coupled to the power substrate module via a plurality of conductors, the control circuit generating the drive control signals for driving the inverting circuit, the control circuit board being supported on the power substrate module by the plurality of conductors;

a logic circuit coupled to the control circuit, the logic circuit controlling operation of the control circuit in accordance with a predetermined control routine; and

a power supply circuit coupled to the control circuit and to the logic circuit for powering the control and logic circuits.

6. A circuit board assembly for a motor controller of the type including a rectifying circuit for converting AC power from a source to DC power, an inverting circuit coupled to the rectifying circuit for converting the DC power to controlled AC power to drive a motor in response to control signals and a control circuit for generating the control signals in accordance with a predetermined control routine, the circuit board assembly comprising:

a power substrate module including at least the rectifying and inverting circuits; and

a control circuit board physically separate from the power substrate module, the control circuit board being supported immediately adjacent to the power substrate module and coupled to the power substrate module via a plurality of conductors, the control circuit board including at least a drive command circuit for generating drive command signals for controlling operation of the inverting circuit in response to the control signals from the control circuit.

11. A power substrate module for a power electronic controller including a rectifying circuit for converting AC power from a source to DC power, an inverting circuit coupled to the rectifying circuit for converting the DC power to controlled AC power in response to control signals and a control circuit for generating the control signals in accordance with a predetermined control routine, the power substrate module comprising:

power circuitry including at least a portion of the rectifying and inverting circuits; and

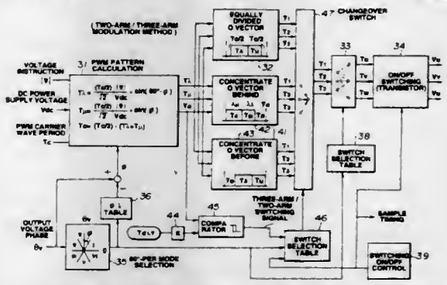
a plurality of contact pads adjacent to a periphery thereof, the contact pads being configured to receive contacting pins for electrically coupling the power substrate module to at least one other circuit board and for at least partially supporting the at least one other circuit board.

5,623,192

APPARATUS FOR CARRYING OUT CURRENT CONTROL FOR VARIABLE SPEED DRIVER AND METHOD FOR CARRYING OUT CURRENT CONTROL THEREFOR

Yasuhiro Yamamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

PCT No. PCT/JP93/00986, § 371 Date Mar. 3, 1994, § 102(e) Date Mar. 3, 1994, PCT Pub. No. WO95/02921, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 16, 1993, Ser. No. 193,052
Int. Cl.[6] H02P *5/28*
U.S. Cl. 318—811 **5 Claims**



1. An apparatus for carrying out a current control including a PWM inverter, comprising:

a) a PWM pattern calculation section which calculates a three-phase PWM pattern and voltage vector times from a voltage instruction of a current control section and from an output voltage phase;

b) a three-arm modulation time point data preparing section which prepares a three-arm modulation time point data from the voltage vector times including an 0 vector time calculated by the PWM pattern calculation section;

c) a time changeover switch which performs a switching between the time point data from respective phase times;

d) a two-arm modulation time point data preparing section which prepares a two-arm modulation time point data from said voltage vector times;

e) a comparator which receives said 0 vector time and a set value in time of a dead time compensation and which produces three-arm and two-arm switching signals when the 0 vector time is less than the set value; and

f) a modulation changeover switch which serves to switch said three-arm modulation time point data and said two-arm modulation time point data in response to the switching signal of said comparator and serves to output a signal indicative of the modulation switching to said time changeover switch, whereby the three-arm and two-arm modulation methods can be switched according to a magnitude of the voltage instruction derived through the current control section.

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5,623,193
APPARATUS FOR CONTROLLING BATTERY DISCHARGE

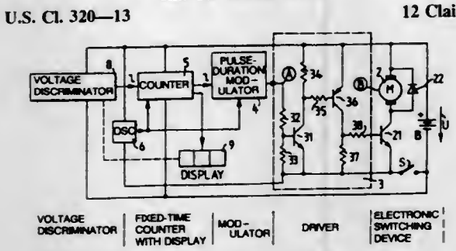
Gerhard Lang, Altweilnau, and Jürgen Wolf, Kriftel, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Continuation of Ser. No. 211,011, Mar. 16, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,076

Claims priority, application Germany, Sep. 26, 1991, 41 31 981.8

Int. Cl.[6] H01M *10/48*

U.S. Cl. 320—13 **12 Claims**



1. Electrical device such as an electrical shaver or hair cutter comprising a DC motor adapted to be driven by a battery, an electronic switching device, and time measurement means for evaluating the time when said DC motor is connected to said battery, said electronic switching device, in response to said time measurement means indicating that a defined connecting time of said DC motor to said battery has elapsed, gradually reducing a current supplied to said DC motor so that a rotational frequency of said motor is reduced in steps or continually down to zero prior to deep discharge of said battery to limit risk that hairs could be snagged.

5,623,194
APPARATUS FOR MONITORING AND CONTROLLING CHARGING OF A BATTERY FOR A HYBRID OR ELECTRIC VEHICLE

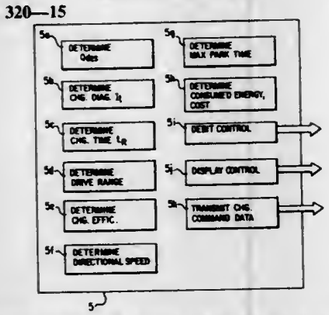
Wolf Boll, Weinstadt; Günther Knörzer, Sachsenheim, and Leopold Mikulic, Aichwald, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 27, 1994, Ser. No. 364,209

Claims priority, application Germany, Dec. 24, 1993, 43 44 368.0

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—15 **15 Claims**



1. Charge information system for an electric or hybrid vehicle having a vehicle battery, comprising:

a battery charger;

a unit for determining charge condition of said battery;

an input unit for entering charging and operating parameters of the charging operation; and

a computing unit coupled to receive inputs from said battery charger and said unit for determining charge condition, as well as charging and operating parameters from said input unit, said computing unit comprising:

means for determining a desired charge Q_{des}, as a function of the input charging parameters;

means for determining a charging diagram I_i for the course of a charging current I over time, based on the input charging parameters and an actual charge condition Q_{act};

means for determining a required remaining charging time t_R for the implementation of the charging operation, based on the selected charging diagram I_i; and

means for controlling a display unit by means of a signal for the remaining charging time t_R.

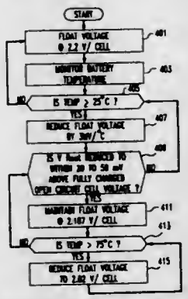
5,623,195
APPARATUS AND METHOD FOR CONTROLLING A CHARGING VOLTAGE OF A BATTERY BASED ON BATTERY TEMPERATURE

Norma K. Bullock, Rockwall; Douglas G. Fent, Mesquite, and Trung V. Nguyen, Dallas, all of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 22, 1994, Ser. No. 263,971

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—22 **17 Claims**



1. In a voltage sensitive battery charging system for recharging a battery comprising one or more cells said battery being susceptible to thermal runaway during charging due to internal resistance decreases caused by battery temperature increases, said battery having a characteristic discharge threshold voltage, and each cell having a characteristic open circuit voltage when fully charged, said system comprising:

a DC charging voltage source connected to terminals of said battery,

battery temperature monitoring means, and

voltage sensing means for monitoring voltage on said terminals during charging,

a process for linearly regulating said charging voltage to maintain battery temperature below the point of thermal runaway, comprising the steps of:

setting said charge voltage to a first constant voltage level in response to detected battery temperatures within a first predetermined range;

in response to detected battery temperatures within a second predetermined range above said first range, setting said charge voltage to a value that decreases as a linear function from said first constant voltage level to a second constant voltage level;

in response to detected battery temperatures within a third predetermined range above said second range and having a predetermined upper bound, maintaining said voltage charge at said second constant voltage level; and

reducing said charge voltage from said second constant level to a trickle charge level sufficient to maintain said battery at a partial but not full state of charge if said battery temperature exceeds said upper bound of said third temperature range.

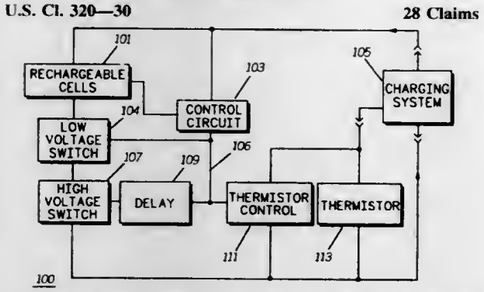
5,623,196
APPARATUS AND METHOD OF SIMULATING HIGH BATTERY TEMPERATURE IN A RECHARGEABLE BATTERY

José M. Fernandez, Sunrise, Fla.; Vernon Meadows, Lilburn, Ga.; Venus D. Desai; Scott M. Garrett, both of Lawrenceville, Ga.; Dao N. Lam, Plantation, Fla.; James F. Kamke, Rancho Santa Marguerita, Calif., and Joseph Patino, Pembroke Pines, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1994, Ser. No. 364,582

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—30 **28 Claims**



1. A rechargeable battery system which is charged by a charging network which is not intended for use with said rechargeable battery system, said charging network having a first mode of operation and a second mode of operation, said rechargeable battery system comprising:

at least one rechargeable cell;

at least one temperature sensor having a first state and a second state for measuring an operating temperature of said at least one rechargeable cell;

a first control means for detecting a voltage potential of said at least one rechargeable cell;

a second control means actuated by said first control means for changing said at least one temperature sensor from said first state to said second state; and

whereby said second control means is actuated based on said voltage potential for simulating a high temperature condition of said at least one rechargeable cell to enable said charging network to change from said first mode of operation to said second mode of operation.

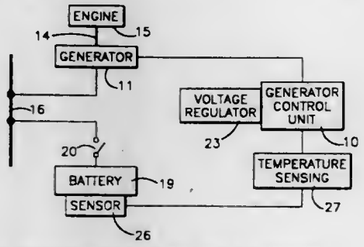
5,623,197
ACTIVE CONTROL OF BATTERY CHARGING PROFILE BY GENERATOR CONTROL UNIT

Ronald W. Roseman, Walton Hills, and Kevin E. Rice, Stow, both of Ohio, assignors to Lucas Aerospace Power Equipment Corporation, Aurora, Ohio

Filed Apr. 25, 1994, Ser. No. 232,704

Int. Cl.[6] H02J *7/14*

U.S. Cl. 320—61 **23 Claims**



13. An aircraft electrical system, which comprises:

an engine;

a starter/generator connected to the engine to generate electrical energy when the engine operates and to provide torque to the engine to start the engine when the engine is stopped;

an electrical bus connected to the starter/generator to supply electrical energy therefrom;

a voltage regulator connected to the bus to control the voltage of the electrical energy on the bus;

a battery connected to the bus, the battery supplying electrical energy to the starter/generator to start the engine and the battery being discharged thereby, the battery receiving electrical energy on the bus to be recharged; and

a generator control unit connected to operate the voltage regulator, the generator control unit directing the voltage regulator to change the voltage on the bus according to a preset battery charging profile, the generator control unit capable of causing the voltage regulator to decrease the voltage on the bus after the battery has supplied electrical energy to the starter/generator to avoid a large battery inrush current transient, the generator control unit capable of causing the voltage regulator to increase the voltage on the bus to a level above normal battery charging level to increase the battery charging rate, the generator control unit then reducing the voltage level on the bus following battery charging to the normal battery charging level to maintain battery charge.

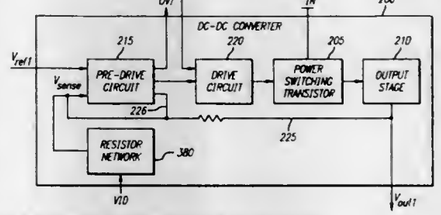
5,623,198
APPARATUS AND METHOD FOR PROVIDING A PROGRAMMABLE DC VOLTAGE

Harold L. Massie, W. Linn, and G. Mark Johnston, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 576,465

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—282 **27 Claims**



1. A switching regulator circuit comprising:

an output stage that produces an output voltage having an oscillating ripple voltage along a feedback line;

a switching transistor coupled to said output stage, said switching transistor supplies an input voltage to said output stage when said switching transistor is activated;

a drive circuit coupled to said switching transistor, said drive circuit regulates said output voltage by generating a series of drive pulses to activate and alternatively deactivate said switching transistor; and

a pre-drive circuit coupled to said drive circuit and said feedback line, said pre-drive circuit including a comparator which utilizes a hysteresis voltage applied to a first input of said comparator in order to adjust a duty cycle and frequency of said series of drive pulses to regulate said output voltage.

5,623,199
DEVICE FOR INSPECTING WIRING HARNESS

Yoshikazu Taniguchi, and Katsutoshi Kato, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Nov. 16, 1995, Ser. No. 558,699

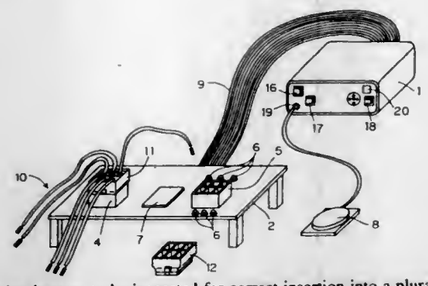
Claims priority, application Japan, Nov. 28, 1994, 6-292739

Int. Cl.[6] G01R *31/02;19/00*

U.S. Cl. 324—66 **6 Claims**

1. A wiring harness inspecting device for inspecting a plurality of terminals mounted on opposite ends of a plurality of cables of a

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wiring harness to be inspected for correct insertion into a plurality of corresponding terminal receiving holes of a connector, said wiring harness inspecting device comprising:

an inspecting device body, and

a work table,

said wiring harness inspecting device being operated in a storage mode, an indication mode, and an inspection mode,

wherein, in said storage mode, there is provided a model wiring harness including a plurality of cables and a pair of model connectors mounted on opposite ends of said cables, and the insertion condition of terminals on opposite ends of said cables into terminal receiving holes of said pair of model connectors is stored as reference data,

wherein, in said indication mode, there is provided a target wiring harness including a plurality of cables and a first connector mounted on a first end of said cables, and an indication of insertion of terminals on a second end of said cables of said target wiring harness into terminal receiving holes of a second connector to be connected is given on the basis of said reference data, and

wherein, in said inspection mode, the terminals on the second end of said cables of said target wiring harness are inserted into the terminal receiving holes of said second connector indicated in said indication mode to provide a wiring harness to be inspected, and an inspection is made on the basis of said reference data to see if the insertion condition of said cables of said wiring harness to be inspected into the terminal receiving holes of said first and second connectors on opposite ends of said cables matches the insertion condition of said model wiring harness,

said inspecting device body including:

an input terminal group having a plurality of input terminals;

a signal output portion for outputting an inspection signal to said input terminals in order;

an output terminal group having a plurality of output terminals;

a signal input portion for receiving a signal through said output terminals;

a connection terminal group having a plurality of connection terminals;

a reference data memory portion for storing therein the reference data indicative of the insertion condition of said model wiring harness in said storage mode;

a light emitting element lighting drive portion for outputting a lighting drive signal to a predetermined one of said connection terminals on the basis of said reference data in said indication mode;

an inspection data memory portion for storing therein inspection data indicative of the insertion condition of said wiring harness to be inspected in said inspection mode;

a comparing and determining portion for comparing said inspection data with said reference data in said inspection mode, said comparing and determining portion outputting an abnormal condition signal when a failure occurs in said inspection data; and

a flashing drive portion for outputting a flashing drive signal to one of said connection terminals which corresponds to the failure portion in response to said abnormal condition signal in said inspection mode,

said work table including:

an input connector connected to said input terminals in said input terminal group of said inspecting device body, said input connector being connected to one of said model connectors of said model wiring harness in said storage mode, to said first connector of said target wiring harness in said indication mode, and to said first connector of said wiring harness to be inspected in said inspection mode;

an output connector connected to said output terminals in said output terminal group of said inspecting device body, said output connector being connected to the other model connector of said model wiring harness in said storage mode, and to said second connector of said wiring harness to be inspected in said inspection mode;

a plurality of light emitting elements located adjacent respective terminal receiving holes of said output connector and connected to said connection terminals in said connection terminal group of said inspecting device body for flashing in response to said flashing drive signal in said inspection mode to indicate a failure and terminal insertion; and

specifying means, upon selection of one of the terminals on the second end of said target wiring harness having said first connector connected to said input connector, for specifying one of said connection terminals to light up one of said light emitting elements adjacent the terminal receiving hole in said reference data which corresponds to said selected terminal.

5,623,200

PARTICLE MEASURING APPARATUS AND PARTICLE MEASURING METHOD BY THE APPARATUS

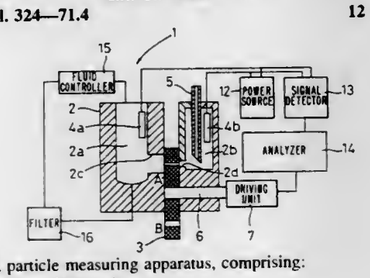
Shinichi Ogino, Kobe, Japan, assignor to Toa Medical Electronics Co., Ltd., Hyogo-ken, Japan

Filed May 8, 1995, Ser. No. 436,568

Claims priority, application Japan, May 9, 1994, 6-095206

Int. Cl.[6] G01N *15/02*

U.S. Cl. 324—71.4 **12 Claims**



1. A particle measuring apparatus, comprising:

a first sample vessel;

a second sample vessel;

a slide plate having at least one first through-hole having a first diameter and at least one second through-hole having a second diameter, said slide plate being selectively movable at least between a first position connecting said first and second sample vessels through said at least one first through-hole and a second position connecting said first and second sample vessels through said at least one second through-hole; and

electrodes arranged in said first and second sample vessels, said electrodes contacting with a sample suspension in said first and second sample vessels to measure an electrical impedance generated when the sample suspension passes through selected one of said first and second through-holes and to measure particles in the sample suspension based on the detected electrical impedance.

5,623,201

3-PHASE POWER METER HAVING A DISPLAY BOARD

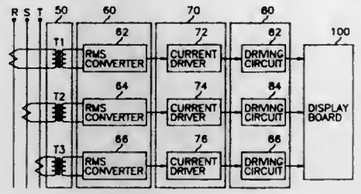
Hyo-Jeong Park, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

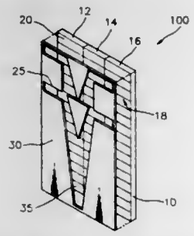
Continuation-in-part of Ser. No. 274,823, Jul. 14, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 593,630

Claims priority, application Rep. of Korea, Sep. 28, 1993, 93-20244

Int. Cl.[6] G01R *19/00*

U.S. Cl. 324—107 **2 Claims**





1. A 3-phase power meter for simultaneously measuring and displaying a set of physical quantities of R-, S- and T-phase electric power generated by a 3-phase AC alternator, which comprises:

a display unit for displaying the set of measured physical quantities of R-, S- and T-phase electric power, the display unit having three display arrays integrally formed therein, each of the display arrays having a plurality of thin and elongated display elements closely stacked in a column to produce a bar-type graph, each of the display arrays serving to indicate each one of the levels of the measured physical quantities of the R-, S- and T-phase electric power in a discrete manner, respectively;

a screen attached on the surface of the display unit and having an opening through which the individual levels of the measured physical quantities indicated by the display arrays are made visible all together wherein the opening has a guideline indicating a boundary between a normal state and an abnormal state of the individual levels;

a transformer module having a set of three transformers, each of the three transformers detecting an AC voltage of each one of the R-, S- and T-phase electric power, respectively;

an effective value conversion module having a set of three root mean square converters, each of the converters converting the AC voltage of each of the R-, S- and T-phase electric power to a DC voltage level, respectively;

a current driving circuit module having a set of three current drivers, each of the current drivers, in respond to each of the DC voltage levels converted by its correspondmg converter, producing an electrical current value corresponding to each of the DC voltage levels, respectively; and

a display driving circuit having a set of three display drivers, each of the display drivers driving the display elements within each of the display arrays in a step-by-step manner in accordance with the electrical current value from each of the current drivers, respectively.

5,623,202

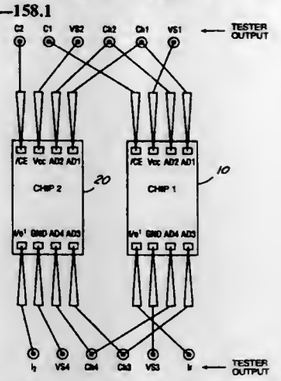
TESTING MULTIPLE IC IN PARALLEL BY A SINGLE IC TESTER

C. Y. Yung, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 26, 1994, Ser. No. 311,809

Int. Cl.[6] G01R *1/04*

U.S. Cl. 324—158.1 **9 Claims**



9. A method of testing multiple IC chips by a single IC testing machine, comprising the steps of:

providing at least two removable integrated circuit chips on a single IC testing machine,

connecting the same address input pins of said at least two removeable IC chips in parallel into a first connection,

connecting thereafter said first connection with an address input line of a testing machine,

connecting data I/O pins of said at least two IC chips with data I/O pins of said testing machine,

connecting thereafter a voltage input terminal and a ground terminal of said at least two IC chips to separate voltage sources,

performing thereafter at least two tests on each of said at least two removable integrated circuit chips selected from the group consisting of a broken circuit/short circuit test, a cell function test, and a direct current test, transferring from one test to another test of said at least two tests being performed if at least one of said IC chips has passed said one of said at least two tests, and

removing said at least two removable integrated circuit chips from said single IC testing machine.

5,623,203

REMOTE FIELD FLAW SENSOR INCLUDING AN ENERGIZING COIL, FIRST AND SECOND RECEIVING COIL GROUPS ORIENTED PERPENDICULAR AND A THIRD RECEIVING COIL ORIENTED PARALLEL TO PIPE

Yasuharu Hosohara, Yokohama; Yoshikazu Chiba, Toride; Akira Kinoshita, Matsubara; Masanori Akita, Aichi-ken; Takashi Sumi, Tokai, and Tosbihide Kawabe, Kure, all of Japan, assignors to Tokyo Gas Co., Ltd.; Osaka Gas Co., Ltd.; Toho Gas Co., Ltd., and CXR Corporation, all of Japan

Filed Jul. 26, 1995, Ser. No. 506,759

Claims priority, application Japan, Aug. 1, 1994, 6-180108

Int. Cl.[6] G01N *27/72;33/12*

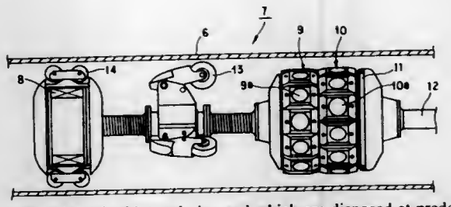
U.S. Cl. 324—220 **4 Claims**

1. A flaw sensor for metal pipes, comprising:

an exciting coil for generating a remote field eddy current in a metal pipe when an exciting signal is applied thereto;

a first receiving coil group comprising a plurality of first receiving coils which are separated from said exciting coil by a predetermined distance in the longitudinal direction of said metal pipe, whose axes are perpendicular to the longitudinal

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direction of said metal pipe and which are disposed at predetermined intervals in the circumferential direction of said metal pipe to receive reception signals caused by said remote field eddy current in a defective portion of said metal pipe;

a second receiving coil group comprising a plurality of second receiving coils which are separated from said exciting coil and said first receiving coil group by predetermined distances, whose axes are perpendicular to the longitudinal direction of said metal pipe and which are disposed at predetermined intervals in the circumferential direction of said pipe in positions staggered from said first receiving coils to receive reception signals caused by said remote field eddy current in a defective portion of said metal pipe; and

a third receiving coil disposed coaxially with said metal pipe, said third receiving coil being not substantially affected by the existence of a defective portion of the pipe and receiving a constant reception signal of the magnetic field generated from the exciting coil and propagating through the thickness of the pipe regardless of the existence of a defective portion of the pipe.

5,623,204

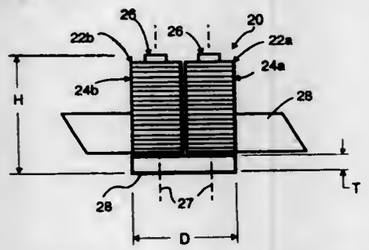
EDDY CURRENT PROBE

Brian Wilkerson, 14837 - 72nd Pl. NE., Bothell, Wash. 98011

Continuation-in-part of Ser. No. 62,589, May 17, 1993, abandoned. This application May 16, 1995, Ser. No. 442,332

Int. Cl.[6] G01N *27/90;* **H01H** *85/165*

U.S. Cl. 324—228 **21 Claims**



15. An eddy current probe for non-destructive testing of alloys, comprising:

a probe housing with a longitudinal axis;

an induction enhancing member,

an axial test coil member having an radial outer envelope and with first and second ends mounted in the probe housing with the coil axis in a plane transverse to the probe longitudinal axis to generate eddy currents in a test specimen of one of the alloys to be tested with the first coil end directed radially inward toward and the second coil end directed radially away from the probe longitudinal axis such that the second coil end is positionable proximate and normal to the tested alloy to generate eddy currents in the alloy, the eddy currents being generated upon excitation by an alternating current, the coil comprising a core with first and second ends around which the coil is wrapped, the coil having first and second ends terminating at corresponding core first and second ends, coil and core first ends substantially terminating in a first common plane transverse to the axes so that a test article can be passed in close proximity to coil and core first ends with coil and core second ends substantially terminating in a second common plane transverse to the coil axis; and

an inductance enhancing member attached immediately adjacent to and substantially covering the core and coil second ends in the second common plane and terminating radially at the outer envelope of the coils, the inductance enhancing member having a permeability selected so that the depth of penetration of the test eddy currents is optimized for the alloys to be tested.

5,623,205

METHOD AND APPARATUS FOR MEASURING A MAGNETIC FIELD USING A MAGNETIC FORCE MICROSCOPE BY MAGNETIZING A PROBE AND CORRECTING A DETECTED MAGNETIC FIELD

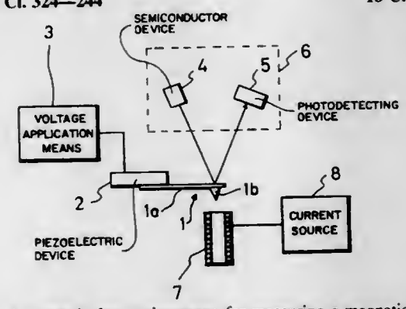
Eisuke Tomita, and Masatoshi Yasutake, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Aug. 24, 1994, Ser. No. 295,236

Claims priority, application Japan, Sep. 2, 1993, 5-218776

Int. Cl.[6] G01R *33/02*

U.S. Cl. 324—244 **18 Claims**



1. A magnetic force microscope for measuring a magnetic field near a surface of a magnetic sample, the magnetic force microscope comprising: a cantilever having a ferromagnetic probe at an end portion thereof and receiving a magnetic force from the surface of the magnetic sample during use of the magnetic force microscope; oscillation means for oscillating the cantilever; voltage applying means for applying an alternating voltage to the oscillation means; deflection detecting means for detecting an oscillation state of the cantilever; magnetic field generating means for generating a magnetic field near the ferromagnetic probe to allow measurement of an absolute value of the magnetic field on the surface of the magnetic sample and magnetization of the ferromagnetic probe to increase the magnetic sensitivity of the ferromagnetic probe; and current supply means for supplying a control current to the magnetic field generating means.

5,623,206

NUCLEAR MAGNETIC RESONANCE (NMR) IMAGING

Peter J. McDonald, Surrey, and Timothy B. Benson, Derby, both of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB94/01640, § 371 Date Dec. 29, 1995, § 102(e) Date Dec. 29, 1995, PCT Pub. No. WO95/04288, PCT Pub. Date Feb. 9, 1995

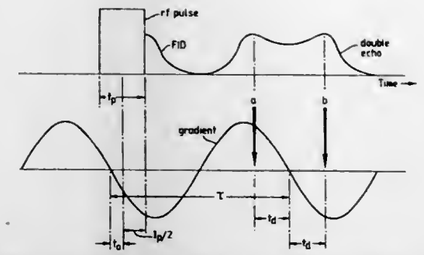
PCT Filed Jul. 29, 1994, Ser. No. 571,955

Claims priority, application United Kingdom, Jul. 30, 1993, 9315876

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—309 **9 Claims**

1. A method of NMR imaging comprising the steps of: applying a static magnetic field and a rapidly oscillating magnetic field gradient, for generating gradient echoes, to a solid object to be imaged, said gradient oscillating sinusoidally in amplitude about a zero value; applying a radio frequency (rf) pulse away from a zero



gradient crossing, and rotating the phase of the resulting profile by an amount which is dependent upon the spatial coordinates, gradient period, gradient amplitude, pulse length and pulse offset.

5,623,207

METHOD FOR AVOIDING IMAGE OCCLUSIONS IN NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS THAT ARE OPERATED WITH MULTI-ECHO SEQUENCES

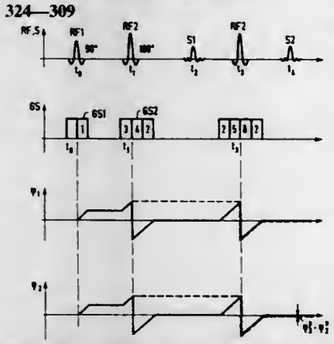
Volker Weissenberger, Moehrendorf, and Peter Heubes, Poxdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 20, 1996, Ser. No. 650,639

Claims priority, application Germany, Jun. 1, 1995, 195 20 203.1

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **6 Claims**



1. A method for avoiding image occlusions in a nuclear magnetic resonance tomography apparatus operated with a multi-echo sequence comprises the steps of:

generating a cross-magnetization of spins in an examination subject at a time t_0 with an excitation radio-frequency pulse, resulting in nuclear magnetic resonance signals in said examination subject;

emitting at least two refocusing radio-frequency pulses following said excitation radio-frequency pulse at time $t_1,t_3,t_5 \ldots$ to re-phase the cross-magnetization;

activating gradients G(t) which satisfy the following condition in at least one direction:

$$\int_{t_0}^{t_1} G^2(t)dt = \frac{1}{2}\int_{t_1}^{t_3} G^2(t)dt =$$

$$\frac{1}{2}\int_{t_3}^{t_5} G^2(t)dt = \ldots = \frac{1}{2}\int_{t_{2n-3}}^{t_{2n-1}} G^2(t)dt$$

wherein n is a natural number;

reading out the resulting nuclear magnetic resonance signals at times $t_2,t_4,t_6 \ldots$

5,623,208

Z-AXIS MAGNETIC FIELD GRADIENT COIL STRUCTURE FOR MAGNETIC RESONANCE SYSTEM

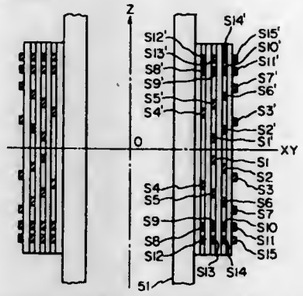
Kenichi Hasegawa, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Apr. 14, 1994, Ser. No. 228,681

Claims priority, application Japan, Apr. 14, 1993, 5-087350

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—318 **8 Claims**



1. A Z-axis magnetic field gradient coil structure for producing a Z-axis gradient magnetic field responsive to flow of an electrical current I, said coil structure comprising:

a single flexible insulative substrate sheet wound a plurality of times substantially into the form of a cylinder such that said substrate sheet forms multiple layers on said cylinder each wrapping completely around said cylinder;

a coil pattern formed on said multiple layers of said wound substrate sheet and comprising a plurality of pairs of elongated conductive strips and interconnecting means formed on said sheet for causing said current I to flow into a first one of said strips so that the current then flows through each strip successively and flows out of a final one of said strips; and

wherein, the conductive strips of each said pair, when said strips are wound with said substrate sheet into a substantially cylindrical form, have a length permitting them to make one revolution around said cylinder, the conductive strips of each said pair being interconnected through said interconnecting means to pairs located on adjacent layers of said substrate sheet, the conductive strips of each said pair being substantially parallel to a central cross-sectional plane perpendicular to a central axis of said cylinder, the conductive strips of each said pair being arranged symmetrically with respect to said central cross-sectional plane such that the electrical current I flows through them in opposite senses, and acts to produce a magnetic field along said Z-axis, said magnetic field produced by the conductive strips of each said pair combining with fields produced by pairs located on all layers of said substrate sheet to form said Z-axis gradient magnetic field.

5,623,209

DIAGNOSTIC SYSTEM FOR CAPACITIVE DISCHARGE IGNITION SYSTEM

Joseph M. Lepley, Girard, Ohio, and Gary A. Kleinfelder, Mercer, Pa., assignors to Altronic, Inc., Girard, Ohio

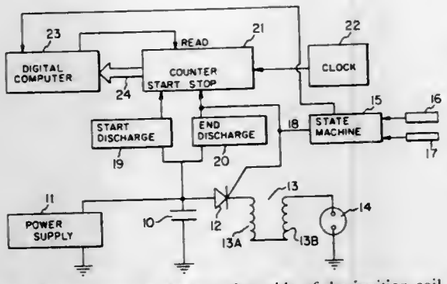
Filed Dec. 7, 1995, Ser. No. 568,492

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—382 **7 Claims**

1. In a capacitive discharge ignition system having at least one spark plug circuit comprising a storage capacitor, an ignition coil and a spark plug and electrical connections therebetween and wherein energy stored on said storage capacitor is, in response to a trigger pulse, switched to the primary side of said ignition coil to

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induce high voltage in the secondary side of the ignition coil to generate a spark in said spark plug connected in series with the secondary side of the ignition coil, the improvement comprising:

first circuit means detecting the voltage across the storage capacitor crossing through a first threshold voltage for marking the onset of discharge of the storage capacitor,

second circuit means detecting the voltage across the storage capacitor crossing through a second threshold voltage for marking the substantially complete discharge of the storage capacitor,

third circuit means for measuring the time between the events marked by the first and second circuit means, and

fourth circuit means for analyzing the measured time to determine the conditions of the primary and secondary circuits of the ignition coil including the spark plug circuit.

5,623,210

CURRENT DETECTOR FOR DETECTING BATTERY CHARGE REMAINING

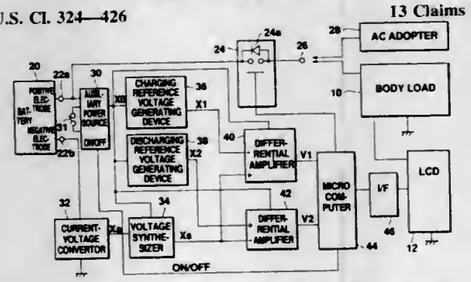
Norinobu Sakamoto, Ora-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 8, 1995, Ser. No. 403,309

Claims priority, application Japan, Mar. 23, 1994, 6-051877

Int. Cl.[6] H02J *7/00*

U.S. Cl. 324—426 **13 Claims**



1. A current detector, for detecting a battery charge remaining by detecting charged and discharged currents of a battery, comprising:

a current-voltage convertor which is serially connected to the negative electrode side of the battery, and outputs a value of a current passing through the battery during charging and discharging of the battery as an output voltage signal,

a voltage synthesizer which adds a predetermined positive voltage to the output voltage or the current-voltage convertor to output a sample voltage, and

a current signal generator which generates a signal for the charged and discharged currents of the battery on the basis of said sample voltage.

5,623,211

DEVICE AND A METHOD FOR TESTING DISCONNECTION BY GROUPING BUS LINES OF A SEMICONDUCTOR DEVICE

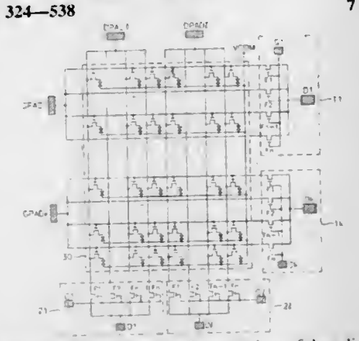
Sihyoung Lee, Namyangju-kun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 1, 1995, Ser. No. 384,532

Claims priority, application Rep. of Korea, Feb. 2, 1994, 94-1896

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—538 **7 Claims**



1. A device for testing for disconnection of bus lines in a semiconductor device, comprising:

switching means connected to one end of a group of n of said bus lines of said semiconductor device, said switching means having current ratios formed in a geometric series;

at least one testing electrode connected to said switching means; and

at least one power electrode connected to said group of n of said bus lines for applying electric power to said group of n of said bus line, such that a disconnection of one or more of said bus lines can be determined according to a current flowing through said testing electrode.

5,623,212

ODOR CONCENTRATION MEASUREMENT METHOD AND APPARATUS FOR USE IN FIRE DETECTION

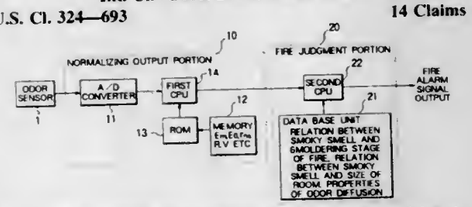
Shigeo Yamanaka, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 404,096

Claims priority, application Japan, Mar. 23, 1994, 6-052214

Int. Cl.[6] G01R *27/08*; **G01N** *27/04*

U.S. Cl. 324—693 **14 Claims**



1. An odor concentration measurement method comprising the steps of:

energizing an odor sensor connected across a power supply through a load resistance, wherein a total resistance of said odor sensor includes a parallel connection of a first resistive component having a value according to a surrounding environment including at least one of temperature and humidity and a second resistive component having a value according to an odor concentration, and a saturation resistive component connected in series with said parallel connection of said first and second resistive components; and

measuring the odor concentration by obtaining the value of said second resistive component from an output E of said odor sensor which is a voltage across said load resistance, in accordance with

$$rn = R \cdot V(Em-E)(Em-Eo)/Em^2(E-Eo)$$

where rn is the value of said second resistive component, R is a value of said load resistance, V is a value of a voltage supplied from said power supply, Em is a saturation level of the output of said odor sensor when the output is saturated, and Eo is a base level of the output of said odor sensor when there is zero odor concentration.

5,623,213

MEMBRANE PROBING OF CIRCUITS

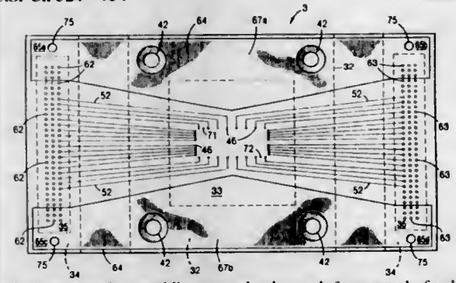
Ken K. F. Liu, Saratoga; Byoung-Youl Min, Cupertino; Robert J. Moti, San Jose, and Syed A. Husain, Milpitas, all of Calif., assignors to MicroModule Systems, Cupertino, Calif.

Continuation of Ser. No. 303,498, Sep. 9. 1994, abandoned.

This application May 6, 1996, Ser. No. 643,740

Int. Cl.[6] G01R *31/02; 1/073*

U.S. Cl. 324—754 **12 Claims**



1. Apparatus for providing a conductive path from a pad of a die under test to a pad of a tester structure, said apparatus comprising:

a flexible substrate having surfaces and bearing a conductive run;

a first electrically conductive bump exposed on one of said surfaces and electrically connected at a first position along said conductive run;

said first bump oriented for contact with said pad of said die under test;

a second electrically conductive bump exposed on one of said surfaces and electrically connected at a second position along said conductive run;

said second bump oriented for contact with said pad of said tester structure;

said first bump and said second bump being exposed on the same one of said surfaces;

a first frame bonded to said substrate, said frame enclosing only a portion of said substrate containing said first bump; and

a second frame bonded to said substrate, said frame enclosing only a portion of said substrate containing said second bump.

5,623,214

MULTIPORT MEMBRANE PROBE FOR FULL-WAFER TESTING

John Pasiecznik, Jr., Malibu, Calif., assignor to Hughes Aircraft Company

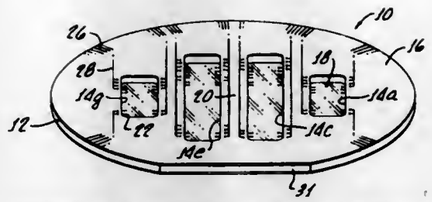
Continuation of Ser. No. 323,290, Oct. 14, 1994, abandoned.

This application Sep. 4, 1996, Ser. No. 708,360

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **20 Claims**

1. A probe for simultaneously testing a grouping of integrated circuit chips formed adjacent one another in said grouping on a semiconductor wafer, each chip having a longitudinal dimension and a transverse dimension, said probe comprising:



a substantially rigid substrate having at least one elongated port formed therein, said port having a width not greater than one and one half times said transverse dimension;

a flexible transparent membrane carried by said substrate, at least a segment of said membrane extending across said elongated port;

a plurality of electrically conductive traces formed on said membrane and

a plurality of contact pads formed on selected ones of said traces, said contact pads disposed within said membrane segment.

5,623,215

TESTING OF SEMICONDUCTOR DEVICES

Michael J. Maytum, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

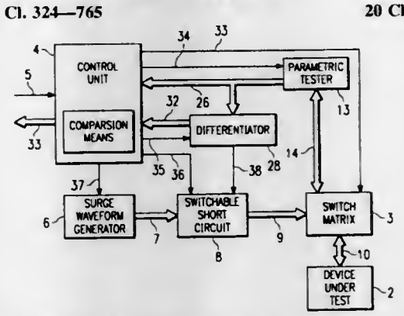
Continuation of Ser. No. 353,484, Dec. 9, 1994, abandoned.

This application May 8, 1996, Ser. No. 646,469

Claims priority, application United Kingdom, Dec. 10, 1993, 9325281

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—765 **20 Claims**



1. A method of testing a semiconductor device, comprising the steps of:

during a first period, applying a thermal stress test electrical signal to the semiconductor device tending to heat it towards destruction;

truncating the thermal stress test electrical signal at a predetermined truncation time t_T selected to substantially thermally stress the semiconductor device but avoid permanent damage to it if well made as designed;

during a cooling period beginning at the truncation time t_T, applying a measuring waveform to the semiconductor (i) for inducing a time-changing, temperature-dependent parameter signal indicating the semiconductor's instantaneous temperature at successive times (t_1, t_2, t_3, . . .) shortly after the truncation time t_T, and (ii) for sampling the parameter signal to obtain parameter samples ($p(t_1)$, $p(t_2)$, $p(t_3)$, . . .) at such successive times;

extrapolating backwards in time from the parameter samples ($p(t_1)$, $p(t_2)$, $p(t_3)$, . . .) to obtain the value of an estimated parameter signal $p(t_T)$ at the truncation time t_T;

generating a "passed" signal only if the estimated parameter signal $p(t_T)$ indicates a semiconductor device temperature less than a predetermined no-pass temperature indicating incipient failure of the semiconductor device.

VOL 11 97 ISS 4 APR 22 1997 UMI

5,623,216

OUTPUT BUFFER CURRENT SLEW RATE CONTROL INTEGRATED CIRCUIT

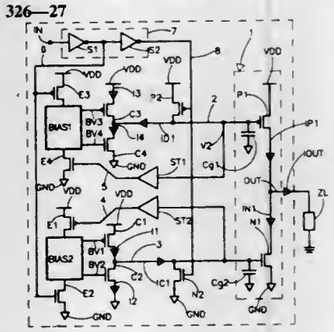
Luigi Penza, Vimercate, and Calogero Timineri, Milan, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza (MI), Italy

Filed Apr. 19, 1995, Ser. No. 425,000

Claims priority, application European Pat. Off., Apr. 24, 1994, 94830190

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—27 **13 Claims**



1. An output buffer current slew rate control integrated circuit comprising:

an output buffer including first MOS-type transistor means for supplying a current to a load impedance;

current generator means generating a constant current, the current generator means being activated upon switching of an input signal of the output buffer between two logic states and driving a control input of said first transistor means with a driving voltage having a slew rate determined by said constant current, the current generator means including:

second transistor means connected to said control input of the first transistor means; and

biasing circuit means activated upon switching of the input signal of the output buffer for biasing said second transistor means in a constant current working region; and

control circuit means for deactivating the biasing circuit means when the driving voltage of the first transistor means reaches a prescribed value.

5,623,217

FIELD PROGRAMMABLE GATE ARRAY WITH WRITE-PORT ENABLED MEMORY

Barry K. Britton, Schnecksville; Kai-Kit Ngai, Allentown, and Satwant Singh, Macungie, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

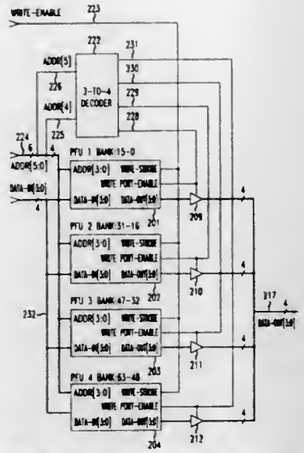
Filed Feb. 26, 1996, Ser. No. 606,702

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—40 **11 Claims**

1. An integrated circuit comprising a field programmable gate array comprising an array of programmable function units that each comprise an array of memory cells that can be user-configured as either a look-up table for performing logic functions, or alternatively as a random access memory,

Characterized in that said programmable function units each comprise a write-strobe input and a write-port enable input, wherein data may be written into said random access memory



when both said write-strobe input and said write-port enable input are active.

5,623,218

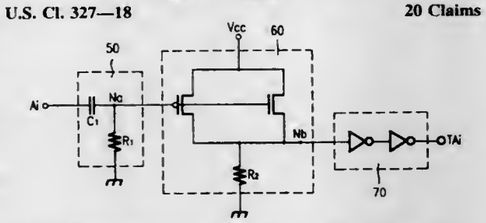
ADDRESS TRANSITION SIGNAL DETECTING CIRCUIT

Doe-Cook Kim, Daeku-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jul. 10, 1995, Ser. No. 499,992

Int. Cl.[6] H03K *5/19*

U.S. Cl. 327—18 **20 Claims**



1. An address transition signal detecting circuit comprising:

a differentiator for receiving and differentiating an address input signal; and

a pulse signal forming portion for receiving the signal differentiated in the differentiator to thereby form an address transition signal;

wherein the pulse signal forming portion comprises a grounded resistor connected to a parallel-connected P-channel MOSFET and N-channel MOSFET, each of the P-channel MOSFET and N-channel MOSFET having a source, and a predetermined voltage is coupled to the sources of the P-channel MOSFET and the N-channel MOSFET.

5,623,219

MAXIMAL VOLTAGE THREE-PHASE PWM WITHOUT THIRD HARMONIC INJECTION

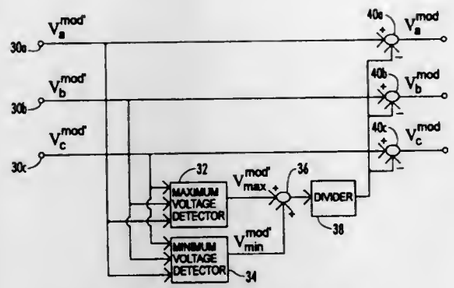
Douglas W. Karraker, S. 67 W. 14570 Gaulke Ct., Muskego, Wis. 53150

Filed Nov. 7, 1995, Ser. No. 551,779

Int. Cl.[6] H03D *1/00*

U.S. Cl. 327—50 **6 Claims**

1. A control circuit form actuating first, second, and third switching means in a three-phase inverter, such that the switching means provide, respectively, first, second, and third outputs that approximate corresponding three-phase input sinusoidal waveforms, the circuit comprising:



Adjustment for maximal voltage output

pulse width modulation means for receiving the three-phase modulating waveforms as an input and, for each of the three input waveforms, determining the intersection of the input waveform with a high-frequency carrier waveform and switching the switching means associated with the input waveform on or off depending upon whether the input waveform is above or below the carrier waveform, such that the average voltage of the inverter output during a period of the carrier waveform depends upon the duty cycle of the output of the pulse width modulation means within that period,

the control circuit further including means for maximizing the line-to-line voltages of the outputs of the pulse width modulation means, the maximizing means including

means for determining, at a given time, the maximum voltage of the three waveforms;

means for determining, at the same time, the minimum voltage of the three waveforms;

means for summing the maximum and minimum voltages;

means for dividing the summed voltages by an averaging factor to produce an average voltage;

means for subtracting the average voltage from each of the modulating waveforms, thereby adjusting the voltages of the three waveforms, while preserving the line-to-line relationships among the three waveforms; and

means for providing the three adjusted modulating waveforms as an input to the pulse width modulation means.

5,623,220

OFFSET REDUCTION IN A ZERO-DETECT CIRCUIT

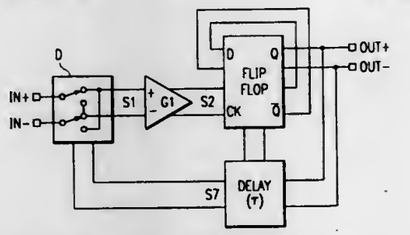
Giorgio Betti, Milan; Paolo Gadducci, Tirrenia, and David Moloney, Cornaredo, all of Italy, assignors to SGS-Thomson Microelectonics, S.r.l., Agrate Brianza, Italy

Filed Sep. 13, 1994, Ser. No. 305,460

Claims priority, application European Pat. Off., Sep. 14, 1993, 93830379

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—79 **15 Claims**



1. A zero-crossing detector circuit comprising:

a comparator having differential input connections;

a delay circuit, operatively connected to an output of the circuit and connected to propagate an output signal with a defined delay that is a fraction of the minimum interval of time between any two successive zero-crossings of a signal fed to the inputs of said comparator;

a deviator, controlled by said delayed output signal, capable of inverting the inputs of said comparator after a transition of the output signal, so that said comparator receives a differential input signal with either reversed or non-reversed polarity, selectably;

a bistable circuit, sensitive to transitions in one of either a rising or a falling direction of the signal produced by said comparator fed to an input of the bistable circuit, and having an output operatively connected to provide the output of the zero-crossing detector circuit.

5,623,221

LOW NOISE MOSFET EMPLOYING SELECTIVE DRIVE SIGNALS

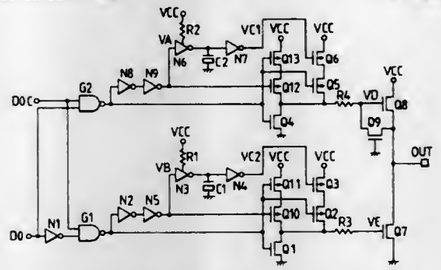
Jun Miyake, Musashino, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 15,417, Feb. 9, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,292

Claims priority, application Japan, Feb. 28, 1992, 4-078419

Int. Cl.[6] H03K *17/04;19/094*

U.S. Cl. 327—108 **18 Claims**



1. A semiconductor integrated circuit device comprising:

a first MOSFET having a source-drain path provided between a first voltage terminal and an output terminal;

a second MOSFET having a source-drain path provided between said first voltage terminal and said gate of said first MOSFET and supplying a first drive signal to said gate of said first MOSFET in response to a first control signal;

a third MOSFET having a source-drain path provided between said first voltage terminal and said gate of said first MOSFET and supplying a second drive signal to said gate of said first MOSFET in response to a second control signal;

a fourth MOSFET having a source-drain path connected to said source-drain path of said third MOSFET in series;

an input terminal for receiving a control input signal coupled to a gate of said second MOSFET; and,

a first delay circuit provided between said input terminal and a gate of said third MOSFET;

wherein one of said first and second drive signals is supplied to said gate of said first MOSFET during a period;

wherein, following to said period, both of said first and second drive signals are so supplied to said gate of said first MOSFET that conductance of said first MOSFET increases; and,

wherein a gate of said fourth MOSFET is connected to said gate of said second MOSFET.

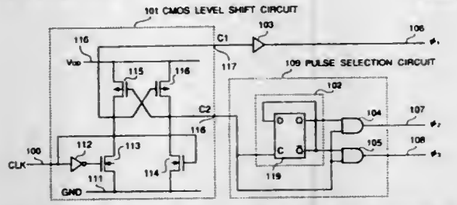
VOL 1197 ISS 4 AP 22 1997 UMI

5,623,222

VOLTAGE CONVERTING CIRCUIT AND MULTIPHASE CLOCK GENERATING CIRCUIT USED FOR DRIVING THE SAME

Akio Tamagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 438,655, May 9, 1995, Pat. No. 5,532,916, which is a division of Ser. No. 115,210, Sep. 2, 1993, Pat. No. 5,461,557. This application Nov. 8, 1995, Ser. No. 555,179
Claims priority, application Japan, Sep. 2, 1992, 4-234387
Int. Cl.[6] H03H *11/22*
U.S. Cl. 327—259 **3 Claims**



1. A multiphase clock generating circuit providing a plurality of non-overlapping clock signals, comprising:

a CMOS level shift circuit having a predetermined delay time and receiving an input clock and generating a non-inverted output clock and an inverted output clock of different phases, and

a pulse selection circuit receiving one of said non-inverted output clock and said inverted output clock and generating a plurality of output signals which have a phase different from each other and which have a frequency obtained by dividing the frequency of the received clock by the number of said plurality of output signals,

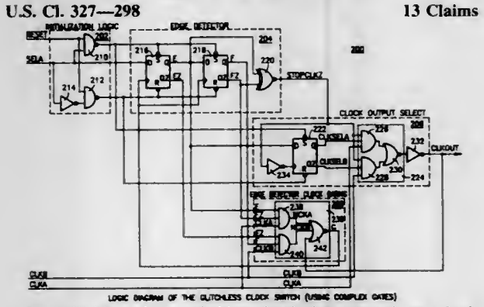
wherein the other of said non-inverted output clock and said inverted output clock being outputted as one of said non-overlapping clock signals.

5,623,223

GLITCHLESS CLOCK SWITCHING CIRCUIT

Ronald Pasqualini, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 321,749, Oct. 12, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,635
Int. Cl.[6] H03K *17/00*
U.S. Cl. 327—298 **13 Claims**



1. A glitchless clock switching circuit that responds to a logic transition of a clock select input signal from a first logic state to a second logic state by switching a clock output signal from providing a first input clock signal to providing a second input clock signal, the glitchless clock switching circuit comprising:

(a) edge detector circuitry that responds to the logic transitions of the clock select input signal by generating a logic transition on a stop-clock signal upon a logic state transition of an edge detector drive signal provided as an input to the edge detector circuitry;

(b) clock output select circuitry that receives the first and second clock input signals and the stop-clock signal, and when the stop-clock signal is in an inactive logic state, provides the first clock input signal or the second clock input signal as the clock output signal, and when the stop-clock signal is in an active logic state, holds the clock output signal in an inactive logic state, thereby disabling the clock output signal;

and wherein the edge detector circuitry includes

(i) a first flip-flop that receives the clock select input signal at its data input and the edge detector drive signal at its clock input, and that provides a data output and a complementary data output;

(ii) a second flip-flop that receives the data output of the first flip-flop at its data input and the edge detector drive signal at its clock input, and that provides a data output and a complementary data output; and

(iii) an XOR gate that receives the data output of the first flip-flop and the complementary data output of the second flip-flop as inputs and provides the stop-clock signal as an output; and

(c) edge detector clock gating circuitry that includes

(i) a first AND gate that receives the data output of the first flip-flop, the complementary data output of the second flip-flop and the first clock input signals as inputs and provides a first AND gate output;

(ii) a second AND gate that receives the complementary data output of the first flip-flop, the data output of the second flip-flip and the second clock input signal as inputs and provides a second AND gate output; and

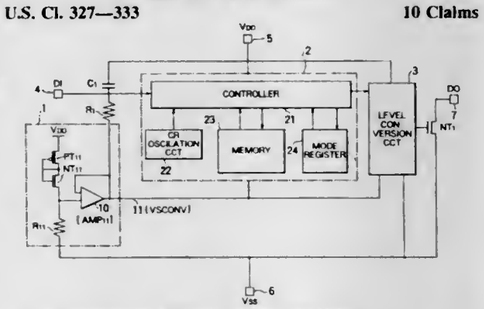
(iii) a first NOR gate that receives the first and second AND gate outputs and the clock output signal as inputs and provides the edge detector drive signal as an output.

5,623,224

COMMUNICATION CIRCUIT WITH VOLTAGE DROP CIRCUIT AND LOW VOLTAGE DRIVE CIRCUIT

Takaaki Yamada, and Yasushi Nakamoto, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 227,463, Apr. 14, 1994, abandoned. This application Aug. 24, 1995, Ser. No. 524,118
Claims priority, application Japan, Apr. 30, 1993, 5-104672; Apr. 30, 1993, 5-104767
Int. Cl.[6] G05F *3/24;1/56*
U.S. Cl. 327—333 **10 Claims**



1. A communication circuit system comprising:

a voltage drop circuit which comprises a complementary type transistor circuit including a p-channel transistor and an n-channel resistor connected together, said complementary type transistor circuit being connected to a power source whereby the occurrence of punch-through current is prevented;

a low voltage drive circuit means;

a resistor having a first end connected to an output of said voltage drop circuit and a second end connected to an input of said low voltage drive circuit means; and

a capacitor having a first end connected to said second end of said resistor and a second end connected to said power source,

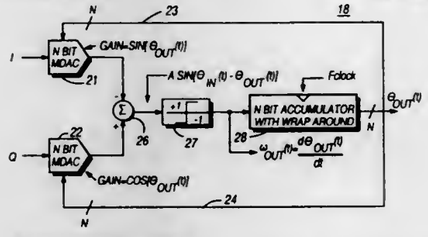
wherein said voltage drop circuit generates a combined voltage corresponding to a sum of the threshold voltages of the p-channel transistor and n-channel transistor and supplies the combined voltage to said low voltage drive circuit means.

5,623,225

QUADRATURE SIGNAL DEMODULATION USING QUANTIZING AND ACCUMULATING

Kevin B. Traylor, North Richland, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1995, Ser. No. 577,079
Int. Cl.[6] H07L *27/14*
U.S. Cl. 329—302 **16 Claims**



1. A demodulator comprising:

first converter means for converting a first digital signal to a first analog signal;

second converter means for converting a second digital signal to a second analog signal;

combining means for combining said first and second analog signals into a combined analog signal;

quantizing means for converting said combined analog signal into a plurality of normalized signals; and

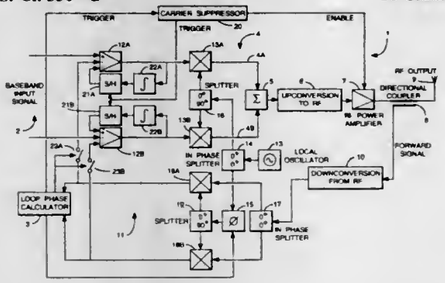
accumulator means for accumulating said plurality of normalized signals.

5,623,226

AUTOMATIC CALIBRATION OF CARRIER SUPPRESSION AND LOOP PHASE IN A CARTESIAN AMPLIFIER

William J. Whitmarsh, Bristol, and Simon M. Whittle, Bath, both of United Kingdom, assignors to Linear Modulation Technology Limited, United Kingdom

Filed Oct. 2, 1995, Ser. No. 538,083
Claims priority, application United Kingdom, Oct. 3, 1994, 9419915
Int. Cl.[6] H03F *1/34*
U.S. Cl. 330—2 **16 Claims**



1. A transmitter comprising an input terminal for receiving a signal to be amplified, a forward amplification path having a power amplifier output stage and a feedback path used to improve linearity, having two modes of operation, namely a first calibration mode in which the transmitter is conditioned for operation in a second transmission mode in which the transmitter is used for transmission of signals applied to the input, the transmitter being arranged to operate in the first and second modes as follows:

A) during the first mode of operation:

i) the DC conditions within the transmitter are measured with the output of the power amplifier stage disabled and the results are used to minimize carrier output from the transmitter;

ii) the phase shift around the feedback loop required to achieve negative feedback is measured;

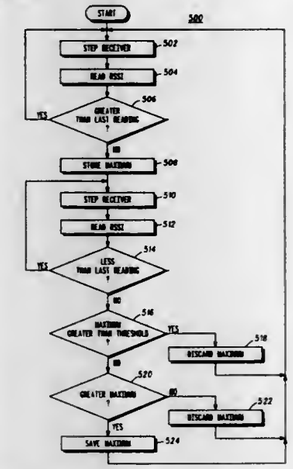
B) during the second mode of operation, the measurement of phase shift is used to ensure negative feedback by applying phase compensation.

5,623,227

AMPLIFIER CIRCUIT AND METHOD OF CONTROLLING AN AMPLIFIER FOR USE IN A RADIO FREQUENCY COMMUNICATION SYSTEM

Paul Everline, Wildwood, and Mark Obermann, Niles, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1995, Ser. No. 544,049
Int. Cl.[6] H03F *1/32*
U.S. Cl. 330—2 **20 Claims**



11. A method of adjusting an amplitude and phase adjustment circuit coupled to a feed-forward amplifier circuit, said method comprising the steps of:

(a) taking a plurality of signal strength measurements, each measurement taken at a different frequency within a measured frequency band in order to determine a local maxima;

(b) comparing the local maxima with a predetermined carrier threshold value;

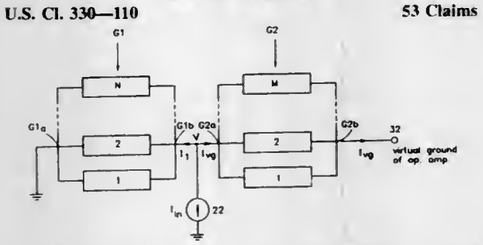
(c) discarding measurements that exceed the threshold;

(d) selecting a first maximum measured value by picking a highest measured value from the remaining local maxima; and

(e) adjusting the amplitude and phase adjustment circuit based on the first maximum measured value.

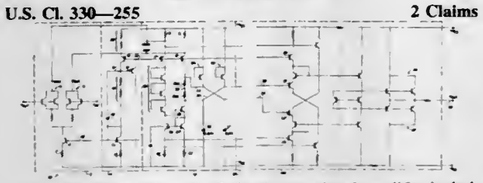
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5,623,228
NON-LINEAR FEEDBACK NETWORK PROVIDING A LINEAR TRANSFER FUNCTION
Arieh Arbel, Haifa, Israel, assignor to Dan Inbar, Haifa, Israel
Continuation-in-part of Ser. No. 61,559, May 17, 1993, Pat. No. 5,410,271. This application Apr. 19, 1995, Ser. No. 423,442
Int. Cl.[6] H03F *1/34*
U.S. Cl. 330—110 **53 Claims**



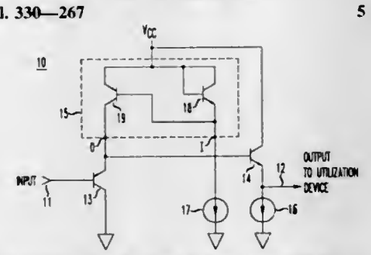
25. A circuit comprising a current source feeding a current dividing network comprising a plurality, N+M, of substantially identical non-linear elements connected in two parallel connected groups of N and M elements each, wherein one of the parallel groups of elements has one end thereof connected to ground or virtual ground to provide a linear current attenuation of M/(N+M) wherein at least one of N and M are greater than 1.

5,623,229
COMPENSATION CIRCUIT FOR INPUT STAGE OF HIGH SPEED OPERATIONAL AMPLIFIER
Kenneth W. Murray, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.
Continuation of Ser. No. 533,000, Sep. 25, 1995. This application Aug. 16, 1996, Ser. No. 696,574
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—255 **2 Claims**



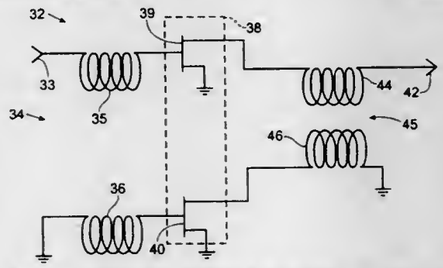
1. In a high speed integrated circuit operational amplifier including
i. an input stage having first and second outputs,
ii. first and second PNP cascode transistors, an emitter of one of the first PNP cascode transistors being coupled to the first output and an emitter of the other of the first and second PNP cascode transistors being coupled to the second output,
iii. an NPN transistor having a base electrode coupled to a collector of the first PNP cascode transistor,
iv. a resistive circuit coupled between a collector of the second PNP cascode transistor and a collector of the NPN transistor, and
v. a diamond follower output buffer having a first, input coupled to the collector of the second PNP cascode transistor and a second input coupled to the collector of the NPN transistor,
the improvement comprising in combination:
(a) a first compensation capacitor coupled between a small signal ground voltage and the collector of the NPN transistor; and
(b) a second compensation capacitor coupled between the small signal ground voltage and the collector of the second PNP cascode transistor,
to prevent instability of an output voltage of the diamond follower buffer circuit for high and low levels of the output voltage.

5,623,230
LOW-OFFSET, BUFFER AMPLIFIER
David C. Goldthorp, Reiffton, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Sep. 7, 1995, Ser. No. 524,559
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—267 **5 Claims**



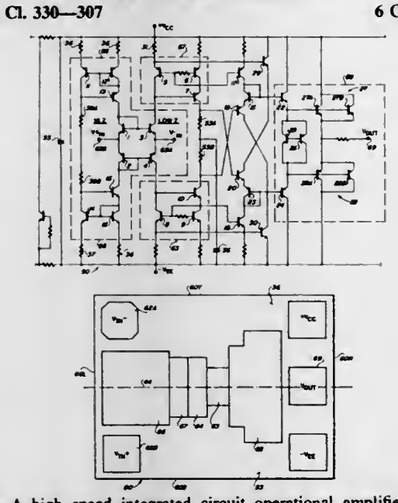
1. An amplifier with an input and an output, having:
a first transistor of a first conductivity type, with an emitter, a base coupling to the input, and a collector coupling to a first voltage source;
a second transistor of a second conductivity type, with an emitter coupling to the output, a base coupling to the emitter of the first transistor, and a collector coupling to a second voltage source;
CHARACTERIZED BY:
an independent current source coupling to the emitter of the second transistor; and
a current mirror, the current mirror having:
a third transistor having an emitter coupling to the second voltage source, a base, and a collector coupling to the emitter of the first transistor; and
a fourth transistor having an emitter coupling to the base of the third transistor and to a different independent current source, and a base and a collector connected to the second voltage source.

5,623,231
PUSH-PULL POWER AMPLIFIER
Clifford A. Mohwinkel, San Jose, and Mark Van Ness Faulkner, Boulder Creek, both of Calif., assignors to Endgate Corporation, Sunnyvale, Calif.
Division of Ser. No. 400,025, Mar. 6, 1995, which is a continuation-in-part of Ser. No. 313,927, Sep. 26, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,131
Int. Cl.[6] H03F *3/26*
U.S. Cl. 330—276 **17 Claims**



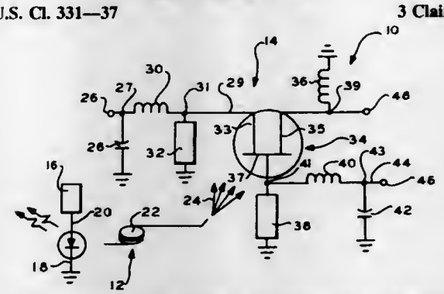
1. A push-pull power amplifier for amplifying an input radio frequency signal, comprising;
an input terminal for receiving an input radio-frequency signal;
an output terminal for outputting an amplified radio-frequency signal;
an integrated circuit chip having a first pair of active devices, the chip having a control terminal and at least one current-carrying terminal associated with each active device, the currents flowing through the current-carrying terminals depending upon the signals applied to the control terminals;
a substrate having a plurality of terminals, the chip being mounted with each chip terminal flip mounted onto a corresponding substrate terminal;
an input electromagnetic coupling means formed on the substrate and having an input primary conductor electrically coupled between the input terminal and the substrate terminal corresponding to the control terminal of a first one of the pair of active devices, and an input secondary conductor electromagnetically coupled to the input primary conductor and electrically coupled between an input reference potential and the substrate terminal corresponding to the control terminal of a second one of the pair of active devices; and
an output electromagnetic coupling means also formed on the substrate and having a primary conductor electrically coupled between the substrate terminal corresponding to one of the current-carrying terminals of the first active device and the output terminal, and an output secondary conductor mutually electromagnetically coupled to the output primary conductor and electrically coupled between the substrate terminal corresponding to one of the current-carrying terminals of the second active device and an output reference potential;
the signal on the output terminal being a combination of the signals being conducted by the pair of active devices.

5,623,232
TOPOGRAPHY FOR INTEGRATED CIRCUIT OPERATIONAL AMPLIFIER HAVING LOW IMPEDANCE INPUT FOR CURRENT FEEDBACK
Joel M. Halbert; Kenneth W. Murray, and Dan Yuan, all of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.
Filed Sep. 26, 1995, Ser. No. 534,046
Int. Cl.[6] H03F *1/30;3/213*
U.S. Cl. 330—307 **6 Claims**



6. A high speed integrated circuit operational amplifier chip including first, second, third and fourth edges and first, second, third and fourth corners, the operational amplifier chip comprising in combination:
(a) a plurality of bonding pads, including first, second, third and fourth bonding pads located in the first, second, third and fourth corners, respectively;
approximately equal size first and second half sections of the operational amplifier chip being located on opposite sides of a thermal centerline parallel to the second and fourth edges;
(b) an output driver circuit located adjacent to the third edge and disposed approximately symmetrically about the thermal centerline to provide approximately balanced differential heating of the operational amplifier chip relative to the thermal centerline, wherein the output driver circuit includes first and second parallel-connected NPN output transistor sections and first and second parallel-connected PNP output transistor sections, the first and second PNP output transistor sections being symmetrically disposed immediately adjacent to and on opposite sides of the thermal centerline, the first and second NPN output transistor sections being disposed symmetrically about the thermal centerline immediately adjacent to the first and second PNP output transistor sections, respectively, the first and second parallel-connected NPN output transistor sections and the first and second parallel-connected PNP output transistor sections being symmetrically aligned along a line perpendicular to the thermal centerline so as to both minimize the size of the chip and minimize thermal instability of the operational amplifier thereon;
(c) a low gain differential input circuit located in a left portion of the operational amplifier chip and disposed approximately symmetrically about the thermal centerline to provide approximately balanced responses of various matched transistors in the low gain differential input circuit to isotherms produced by the balanced differential heating; and
(d) a plurality of transistors located adjacent to the low gain differential input circuit and disposed symmetrically along and on opposite sides of the thermal centerline to provide approximately balanced response of the plurality of transistors to the balanced differential heating.

5,623,233
PULSED OPTICALLY INJECTION LOCKED MESFET OSCILLATOR
Thomas P. Higgins; Dana J. Sturzebecher, both of Tinton Falls, and Vladimir G. Gelnovatch, Manasquan, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 153,594, Nov. 10, 1993, abandoned. This application May 19, 1995, Ser. No. 444,470
Int. Cl.[6] H03B *17/00*
U.S. Cl. 331—37 **3 Claims**



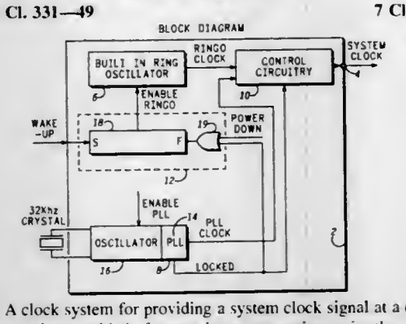
1. An injection locked pulsed oscillator in a microwave monolithic integrated circuit comprising:
an intensity modulated optical signal delivery system;
oscillator circuitry comprising means to provide a dc pulsed voltage, the oscillator circuitry being electrically integrated in the microwave monolithic integrated circuit; and
a metal-semiconductor field effect transistor (MESFET) biased by the dc pulsed voltage via a gate electrode to a pulsed free-running frequency, the MESFET having source and drain electrodes which are separated by a space large enough such that when an optical signal, which is matched to the pulsed free-running frequency of the MESFET, is directed to the space between the source and the drain electrodes, the MESFET has an injection locking bandwidth which is at least twice as large as a chirp bandwidth of the MESFET.

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5,623,234
CLOCK SYSTEM

Yehuda Shaik, Ramat Gan; Moti Kurnick, Tel Aviv; Alick Einav, Nathanya, and Stefania Gandal, Herzlia Bet, all of Israel, assignors to Motorola, Schaumburg, Ill.

Filed Mar. 4, 1996, Ser. No. 610,503
Int. Cl.[6] G06F *1/08*
U.S. Cl. 331—49 7 Claims

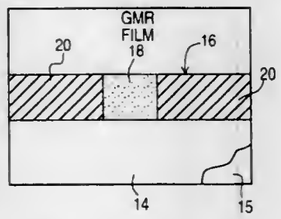


1. A clock system for providing a system clock signal at a clock output, when enabled, for use by a processing unit, the clock system being enabled in response to a wake up signal provided by the processing unit, the clock system comprising:
- first oscillator circuit being enabled in response to the wake up signal to provide a first clock signal at an output;
- second oscillator circuit comprising a PLL and an oscillator, the second oscillator circuit when enabled providing a second clock signal and a lock signal at first and second outputs respectively when the PLL is locked;
- control circuitry coupled to the output of the first oscillator circuit and to the first and second outputs of the second oscillator circuit for coupling the first clock signal to the clock output to provide the system clock signal or for coupling the second clock signal and not the first clock signal to the clock output to provide the system clock signal when the control circuitry receives the lock signal.

5,623,235
WIDE-BANDWIDTH VARIABLE ATTENUATOR/ MODULATOR USING GIANT MAGNETORISTANCE TECHNOLOGY

Mehran Matloubian, Encino, and Mark Lui, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 22, 1995, Ser. No. 532,062
Int. Cl.[6] H01P *1/23*
U.S. Cl. 333—81 A 24 Claims

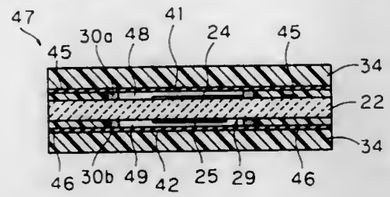


1. A variable attenuator whose attenuation is responsive to a magnetic field, comprising:
- planar transmission line having:
  - a composite signal line which includes;
    - a) an electrically-conductive portion; and
    - b) a magnetoresistive portion whose resistance is responsive to said magnetic field and which is serially joined with said electrically-conductive portion; and
  - a ground plane spaced from said composite signal line.

5,623,236
CHIP-TYPE PIEZOELECTRIC-RESONATOR AND METHOD OF MANUFACTURING THE SAME

Takashi Yoshinaga, and Motohide Yonemura, both of Kynto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 375,255, Jan. 19, 1995, abandoned, which is a continuation of Ser. No. 138,358, Oct. 18, 1993, abandoned. This application Jan. 25, 1996, Ser. No. 590,039
Claims priority, application Japan, Oct. 19, 1992, 4-280008
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—187 17 Claims

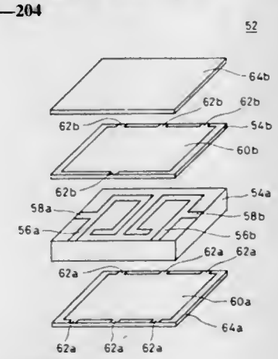


1. A chip-type piezoelectric-resonator comprising:
- a piezoelectric resonance element including a piezoelectric substrate, vibrating electrodes that are opposite to each other through said piezoelectric substrate, and terminal electrodes that are connected with said vibrating electrodes, respectively;
- peripheral walls of adhesive layers provided on respective major surfaces of said piezoelectric substrate so as to enclose a vibrating region of said piezoelectric resonance element;
- cover sheets having outer and inner major surfaces, said inner major surfaces being arranged on respective said adhesive layers for defining cavities between the cover sheets and said vibrating region, each said cavity having a periphery and a thickness corresponding to a thickness of said respective adhesive layers thereby providing spaces for vibration of said vibrating region; and
- protective resin members in contact with and extending into a space defined between said cover sheets and said major surfaces of said piezoelectric substrate outside said adhesive layers and along the entire periphery of each said cavity, said protective resin members thereby sealing said cavities.

5,623,237
RESONATOR AND FILTER WITH A SPACED AWAY GROUND ELECTRODE CONNECTION STRIPLINE

Hisatake Okamura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 11, 1995, Ser. No. 419,809
Claims priority, application Japan, Apr. 13, 1994, 6-100571
Int. Cl.[6] H01P *1/203;7/08*
U.S. Cl. 333—204 16 Claims



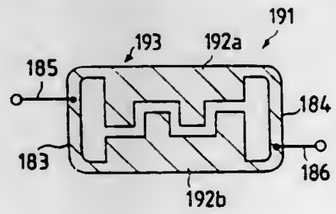
9. A filter comprising:
- a first protection layer,

- a first ground electrode formed on said first protection layer,
- a first dielectric layer formed on said first ground electrode,
- plural quarter wavelength line electrodes formed separately on said first dielectric layer and coupled electromagnetically with each other,
- two input/output terminals connected respectively to intermediate portions of two of said plural line electrodes,
- a second dielectric layer formed on said plural line electrodes and said input/output terminals,
- a second ground electrode formed on said second dielectric layer,
- a second protection layer formed on said second ground electrode,
- ground terminals connected at respective connecting points to respective first ends of said plural line electrodes and to said first ground electrode, and not connected directly to said second ground electrode, and
- a connecting electrode having impedance that is connected to said first ground electrode and said second ground electrode at a location spaced away from said connecting points of said plural line electrodes and said first ground electrode.

5,623,238
STRIP LINE FILTER HAVING DUAL MODE LOOP RESONATORS

Kazuaki Takahashi, Kawasaki; Makoto Hasegawa, Tokyo; Mitsuo Makimoto, Yokohama, and Munenori Fujimura, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 348,169, Aug. 26, 1994, Pat. No. 5,497,131, which is a division of Ser. No. 53,535, Apr. 29, 1993, Pat. No. 5,369,383. This application Oct. 26, 1995, Ser. No. 548,841
Claims priority, application Japan, Apr. 30, 1992, 4-111127; May 11, 1992, 4-117111; Jun. 12, 1992, 4-153238; Sep. 14, 1992, 4-244374
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—204 12 Claims

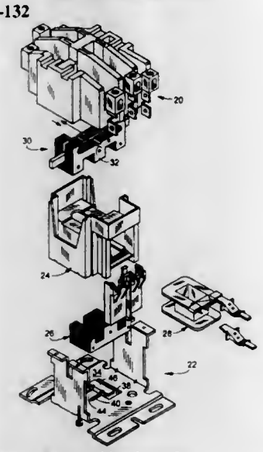


1. A strip dual mode loop resonator in which a microwave is resonated, comprising:
- a loop-shaped strip line having an electric length θ_L=360 degrees equivalent to a wavelength of the microwave to resonate the microwave circulated therein in two difference directions according to a line impedance thereof, the loop-shaped strip line comprising
- a pair of parallel lines which are arranged in parallel to each other and are coupled to each other in electromagnetic coupling, the parallel lines respectively having an electric length θ1 degrees (θ1<90 degrees) and a line impedance Z1.
- a first side strip line through which first side ends of the parallel lines are connected, the first side strip line having an electric length θ2 degrees (θ2>90 degrees) and a line impedance Z2 differing from the line impedance Z1. and
- a second side strip line through which second side ends of the parallel lines are connected, the second side strip line having an electric length θ3 degrees (θ3=360−2*θ1−θ2) and a line impedance Z3 differing from the line impedance Z1;
- an input strip line in which the microwave is transmitted;
- an input impedance element for coupling the input strip line to the first side strip line of the loop-shaped strip line in electromagnetic coupling to transfer the microwave from the input strip line to an input point of the first side strip line;
- an output strip line in which the microwave resonated in the loop-shaped strip line is transmitted; and
- an output impedance element for coupling the output strip line to the first side strip line of the loop-shaped strip line in electromagnetic coupling to transfer the microwave from an output point of the first side strip line to the output strip line, the output point of the first side strip line being spaced 90 degrees in the electric length apart from the input point of the first side strip line.

5,623,239
ELECTRICAL CONTACTOR SPRING

Clem P. Sitar, Addison, Ill., assignor to Furnas Electric Co., Batavia, Ill.

Filed Jan. 17, 1996, Ser. No. 587,639
Int. Cl.[6] H01M *67/02*
U.S. Cl. 335—132 12 Claims



1. In a contactor, the combination of:
- a base;
- a contactor assembly, including electrical contacts movable between circuit making and circuit breaking positions;
- a magnetic core mounted on said base;
- an armature assembly mounted on said base and having an armature movable in proximity to said core and operable to cause said contacts to move between said positions;
- a spring interposed between said core and said base to control bounce of said contacts by dissipating kinetic energy imparted to said armature, said core or both;
- said base being made of a resilient material and said spring including an integral projection formed from said base and extending therefrom into engagement with said core.

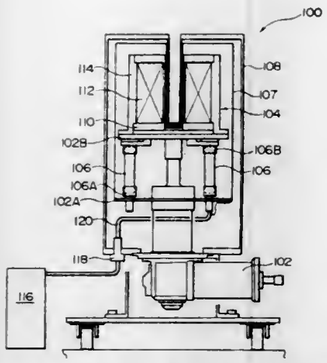
5,623,240
COMPACT SUPERCONDUCTING MAGNET SYSTEM FREE FROM LIQUID HELIUM

Junji Sakuraba; Fumiaki Hata; Chong C. Kung; Yutaka Yamada; Kazunori Jikibara; Tsuginori Hasebe, and Kazuo Watanabe, all of Kanagawa, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,173
Claims priority, application Japan, Oct. 20, 1992, 4-281710; Oct. 20, 1992, 4-306295; Oct. 20, 1992, 4-306296; Oct. 22, 1992, 4-073753 U; Oct. 22, 1992, 4-284460; Oct. 23, 1992, 4-309639; Jan. 12, 1993, 4-003071 U
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 23 Claims

1. A superconducting magnet system comprising:
- a cryocooler which has a cooling stage cooled down to a predetermined temperature;

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a superconducting coil member which is kept in contact with said cooling stage to thereby be cooled to said predetermined temperature by said cryocooler; and

a ceramic current lead of a cylindrical shape having first and second end portions for supplying an electric current to said superconducting coil member; and

at least one of said first end portion and said second end portion being a free end.

5,623,241

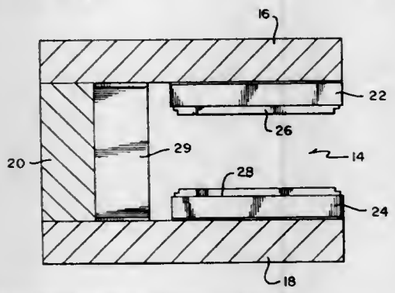
PERMANENT MAGNETIC STRUCTURE

Lawrence A. Minkoff, Lattingtown, N.Y., assignor to Magna-Lab, Inc., Hicksville, N.Y.

Continuation of Ser. No. 943,860, Sep. 11, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 424,246

Int. Cl.[6] H01F *1/00;7/02;* **G01V** *3/00*

U.S. Cl. 335—296 **4 Claims**



1. A permanent magnet structure comprising:

a generally U-shaped frame having spaced-apart arms in opposed to relationship and a cross-element connecting the arms at one end, the arms having opposing surfaces which face each other;

a permanent magnet mounted to each of the opposing surfaces to form a gap therebetween, the permanent magnets having opposite polarity and being spaced sufficiently far from said cross-element to avoid inducing any substantial eddy currents during imaging therein; and

a separating member made of a non-magnetic, non-conductive material disposed intermediate the cross-element and the permanent magnets so as to be in contact with said opposing surfaces, the separating member being so positioned that the effect of forces resulting from the magnetic field produced by said magnets is counterbalanced at the top and bottom of said separating member.

5,623,242

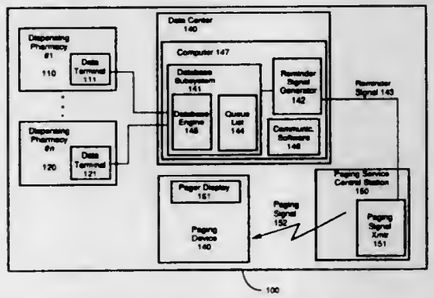
PRESCRIPTION REMINDER SYSTEM AND METHOD

Howard W. Dawson, Jr., Clifton, Va., and Gregory Bryan, San Diego, Calif., assignors to Anteon Corporation, Fairfax, Va.

Continuation of Ser. No. 429,078, Apr. 26, 1995, abandoned. This application Aug. 9, 1996, Ser. No. 694,832

Int. Cl.[6] H04Q *1/30*

U.S. Cl. 340—311.1 **7 Claims**



1. A prescription reminder system, comprising:

a first data terminal into which patient and prescription information is entered;

a database subsystem communicating with the data terminal and accepting as input from said first data terminal signals corresponding to said patient and prescription information, the database subsystem disposed remotely from said first data terminal;

a reminder signal generator, operatively coupled to the database subsystem and configured to generate reminder signals responsive to the patient and prescription information;

a paging signal transmitter, operatively coupled to the reminder signal generator and configured to transmit a paging signal responsive to the reminder signal to convey to a patient information concerning a prescription, the paging signal transmitter being disposed remotely from where said patient may comply with said prescription; and

a portable patient pager device configured to receive the paging signal and to convey to said patient said information concerning said prescription.

5,623,243

SEMICONDUCTOR DEVICE HAVING POLYCRYSTALLINE SILICON LAYER WITH UNEVEN SURFACE DEFINED BY HEMISPHERICAL OR MUSHROOM LIKE SHAPE SILICON GRAIN

Hirohito Watanabe, and Toru Tatsumi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

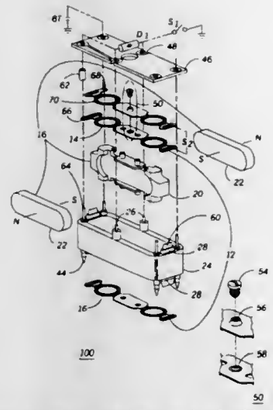
Division of Ser. No. 177,995, Jan. 6, 1994, which is a division of Ser. No. 672,073, Mar. 19, 1991, Pat. No. 5,366,917. This application May 23, 1995, Ser. No. 447,678

Claims priority, application Japan, Mar. 20, 1990, 2-72462; Sep. 19, 1990, 2-249154; Nov. 28, 1990, 2-327069

Int. Cl.[6] H01L *29/68;27/108;24/04*

U.S. Cl. 257—309 **15 Claims**

1. A semiconductor device comprising a polycrystalline silicon layer, a dielectric layer formed on said polycrystalline silicon layer, and a conductive layer formed on said dielectric layer, said polycrystalline silicon layer having a top surface and a side surface, both of said top surface and said side surface being made uneven



with a plurality of convex portions, each of said convex portions being defined by a hemispherical like shape silicon grain.

5,623,244

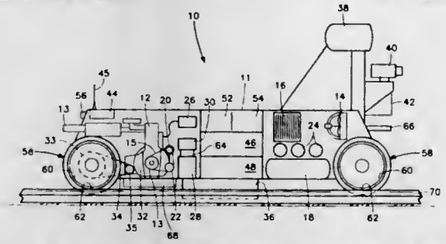
PILOT VEHICLE WHICH IS USEFUL FOR MONITORING HAZARDOUS CONDITIONS ON RAILROAD TRACKS

Guy F. Cooper, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 644,464, May 10, 1996. This application Sep. 9, 1996, Ser. No. 709,590

Int. Cl.[6] B60R *25/00*

U.S. Cl. 340—425.5 **20 Claims**



1. A pilot vehicle for surveying railway tracks ahead of a train, said pilot vehicle traveling along said railway tracks ahead of said train, said pilot vehicle comprising:

drive means for propelling said pilot vehicle along said railway tracks;

processing means for receiving position information and control signals transmitted by said train, said processing means processing said position information and control signals to determine a safe distance said pilot vehicle is to be disposed ahead of said train;

drive control means operatively connected to said processing means and said drive means for maintaining said pilot vehicle at said safe distance ahead of said train;

television camera means mounted on said pilot vehicle at a front end of said pilot vehicle, said television camera means monitoring a visual scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks, said television camera means generating a video signal representative of said visual scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks;

transmitter/receiver means connected to said television camera means to receive said video signal from said television camera means, said transmitter/receiver means including modulating means for modulating a first radio frequency signal responsive to said video signal and an antenna for transmitting said first radio frequency signal to said train;

magnetic signature sensing means mounted on an underside of said pilot vehicle in proximity with a pair of rails of said railway tracks, said magnetic signature sensing means measuring a magnetic field generated by a current flowing through at least one of said pair of rails of said railway track, said magnetic signature sensing means generating a first electrical signal proportional to an intensity of said magnetic field;

said processing means receiving said first electrical signal from said magnetic signature sensing means, said processing means generating a warning message whenever a voltage level of said first electrical signal decreases below a predetermined voltage level;

said modulating means modulating a second radio frequency signal responsive to said warning message;

said antenna transmitting said second radio frequency signal to said train;

orientation monitoring means positioned on said pilot vehicle for monitoring an orientation of said pilot vehicle with respect to the direction of the force of gravity of the earth;

said processing means generating a second electrical signal;

braking means connected to said processing means to receive said second electrical signal, said braking means, responsive to said second electrical signal bringing said pilot vehicle to an immediate stop.

5,623,245

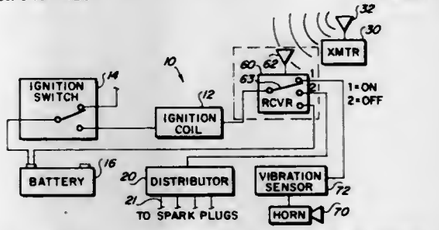
REMOTELY ACTIVATED VEHICLE ANTI-THEFT AND ANTI-CARJACKING DEVICE

Jack R. Gilmore, 19201 N. 17th Dr., Phoenix, Ariz. 85027

Filed Jul. 31, 1995, Ser. No. 509,046

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **10 Claims**



1. An anti-theft system adapted to be connected in the ignition system of an engine powered vehicle of the type having an electrical system including a battery, coil, distributor and horn, said apparatus operative to selectively disrupt the electrical system and to disable the vehicle comprising:

(a) a remotely actuable, interrupter device interposed in the ignition between the coil and distributor, said interrupter having at least a first and second position, said second position maintaining electrical continuity between the coil and distributor and said first position interrupting electrical continuity between the distributor and coil and connecting said vehicle horn to said battery; and

(b) a remote control device including a transmitter which is adapted to be carried by the person of the driver of the vehicle and operable to send a broadcast signal to remotely actuate said interrupter to move said interrupter from said second to said first position thereby disrupting the electrical circuit of the vehicle to disable the vehicle and to actuate the horn.

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5,623,246

VEHICLE IMPACT SENSOR ARRANGEMENT FOR DETECTING A SIDE IMPACT

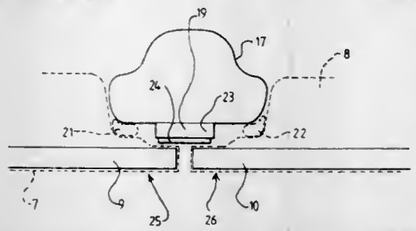
Dion Kruse, Alingsas, and Yngve Haland, Falsterbo, both of Sweden, assignors to Autoliv Development AB, Vargarda, Sweden

Continuation-in-part of Ser. No. 45,533, Apr. 12, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 409,824

Claims priority, application United Kingdom, Apr. 16, 1992, 9208458

Int. Cl.[6] B60R *21/22*

U.S. Cl. 340—438 **21 Claims**



1. A vehicle impact sensor arrangement for sensing a side impact on a motor vehicle, said motor vehicle having a monocoque shell comprising at least a floor, a door cill and a B-post, and a door mounted on the monocoque shell, the sensor arrangement comprising at least one sensor which is directly or indirectly fixed to the B-post of the monocoque shell and which is responsive to a compressional force exerted on the sensor, the sensor arrangement further comprising a movable element constituted by a reinforcing element present in the door and which is separate from the monocoque shell, said movable element being initially located adjacent the sensor and being arranged and located to move relative to the monocoque shell to contact the sensor and exert a compressive force on the sensor, compressing the sensor between said movable element and said part of the monocoque shell to which the sensor is fixed, in response to an inward movement of a part of the door with respect to said part of the monocoque shell.

5,623,247

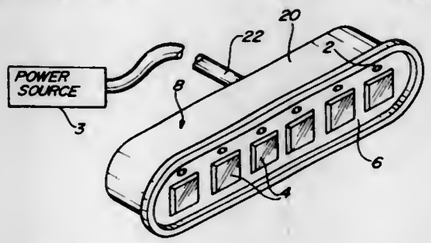
MAINTENANCE ALERT CLUSTER

Alfredo Cardillo, 16751 Curtis, Roseville, Mich. 48066

Filed Aug. 11, 1994, Ser. No. 288,915

Int. Cl.[6] G08B *19/00*

U.S. Cl. 340—457.4 **9 Claims**



1. A device for visually alerting an operator to perform at least one preventative maintenance task on a mobile or immobile object in order to extend the life-span thereof, said device comprising:

an etongated face plate member including a series of light displays and a corresponding series of independent data set buttons, each light display of said series of light displays providing a visual indication of a preventative maintenance task to be performed;

programmable means for programming the desired alert time, said programmable means associated with each said data set button and each said light display such that an individual data set button programs only a corresponding dedicated light display such that upon expiration of said desired alert time for the dedicated light display, said light display is activated;

an elongated body shell secured to said face plate and having an interior space for receiving and housing said programmable means through an opening, said opening there sealed off by said face plate;

a wiring harness having a plurality of leads, one of said plurality of leads for connection to a direct current power source for providing power to said programmable means; and

means for fixing said device to a surface suitable for providing said operator with a visual alert recognition from said series of light displays.

5,623,248

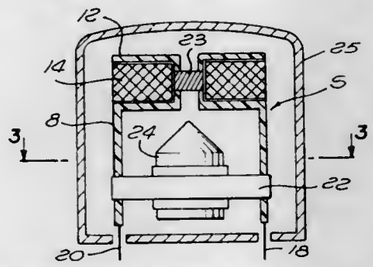
MINIATURE ELECTROMAGNETIC IMPACT SENSOR

Byung W. Min, 930 De Linda La., La Canada, Calif. 91011

Filed Jun. 6, 1995, Ser. No. 471,399

Int. Cl.[6] G08B *13/02*

U.S. Cl. 340—540 **32 Claims**



32. An impact sensor for sensing an impact applied through an external structure, comprising:

a frame of substantially non-magnetic material comprising a top end and a plurality of legs for attachment to the external structure;

a permanent magnet affixed to said frame adjacent said top end, serving as a source of magnetic flux;

a conductive coil affixed to said frame adjacent said top end and coaxial with said permanent magnet, exposed to at least a portion of said magnetic flux;

a resilient structure comprising a plurality of generally radial elastic supports disposed circumferentially and mountable to said legs;

a non-ferromagnetic metallic body having a high absolute susceptibility, an axially symmetrical profile, and a tapered portion proximate to said permanent magnet terminating in a flat surface, mounted by said resilient structure for damped movement with respect to said frame in response to an impact, to alter said portion of said magnetic flux and induce an electrical potential across said coil; and

at least one signal processing circuit, capable of providing an output pulse when said electrical potential exceeds a threshold level.

5,623,249

VIDEO MONITOR MOTION SENSOR

Arthur J. Camire, Calumet City, Ill., assignor to New Product Development, Inc., Orland Park, Ill.

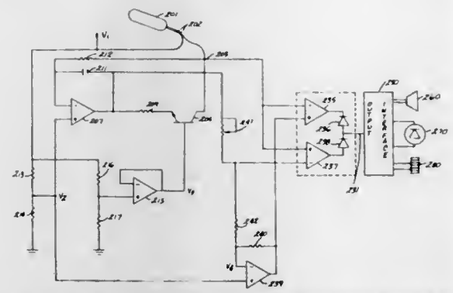
Filed Jan. 26, 1995, Ser. No. 379,686

Int. Cl.[6] G08B *13/18*

U.S. Cl. 340—555 **10 Claims**

1. Motion sensing apparatus for use with a surveillance device having a light emitting surface, the apparatus comprising:

a photoelectric sensor attachable to the light emitting surface and generating an electrical output signal indicative of intensity of light emitted from a portion of the light emitting surface; and



an input node electrically connected to the sensor and a first circuit element connected to the node and responsive to a change in potential at the node to restore the node to a predefined potential level and a second circuit element connected to the node and responsive to a change in potential at the node of a magnitude greater than a predetermined magnitude to generate an alarm signal.

5,623,250

Patent Not Issued For This Number

5,623,251

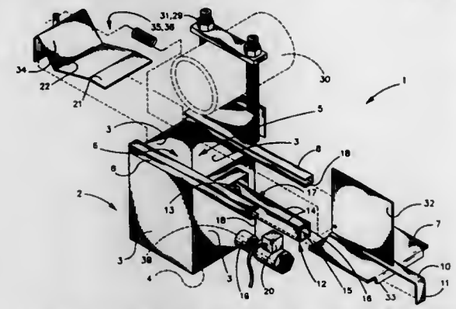
DEVICE TO VERIFY THE IDENTITY OF A FLUID FOR PROPER SELECTION OF STORAGE VESSEL

John H. Clark, P.O. Box 1144, Ponchatoula, La. 70454

Filed May 10, 1995, Ser. No. 438,505

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—603 **10 Claims**



1. A device to verify the identity of a selected fluid before permitting said fluid to be introduced into a storage vessel containing a liquid of known specific gravity, comprising:

(a) a container constructed from connecting walls to form a chamber, one of said walls having an opening through which said selected fluid may be introduced;

(b) a first means positioned in said container for generating a first signal when contacted by a fluid having a specific gravity greater than a first predetermined amount;

(c) a second means positioned in said container for generating a second signal in the presence of a fluid having a specific gravity greater than a second predetermined amount, where said first predetermined amount is less than said second predetermined amount, said second means being responsive to said first signal;

(d) a lid, said lid closing said opening and removably connected to said container, said lid of said container further having a flange mounted perpendicularly thereon, said flange obstructing a fill line only when said lid closes said opening; and

(e) a means for generating a third signal upon removal of said lid from said opening, said means for generating a first signal being responsive to said third signal.

5,623,252

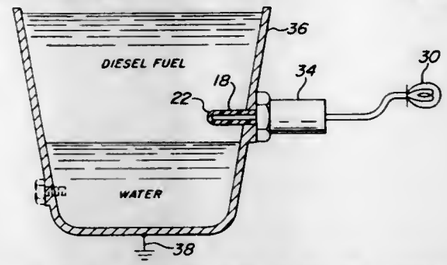
LIQUID LEVEL DETECTOR USING AUDIO FREQUENCIES

John A. Cacciola, and Randal J. Cacciola, both of 505 Pine Tree Dr., Severna Park, Md. 21146

Filed May 22, 1995, Ser. No. 447,293

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—618 **7 Claims**



1. A liquid level detecting system for detecting a conductive liquid level in a container, comprising:

a conductive element having an insulative coating mounted in said container;

means for applying circuit ground potential to any conductive liquid in said container;

capacitance between said element and ground changing by a factor of greater than 80:1 when said conductive element with its insulative coating becomes immersed in said conductive liquid;

an oscillator producing an output having an audio frequency;

a pair of series resistors, said conductive element being connected to a point between said series resistors;

said oscillator output being fed through said series resistors to an active detector, said oscillator output fed to said active detector having an amplitude inversely proportional to the capacitance between said element and ground;

wherein said output of said oscillator fed to said active detector drops below a predetermined level when said conductive element becomes immersed in the conductive liquid.

5,623,253

PROJECTED BEAM-TYPE SMOKE DETECTOR

Junichi Narumiya, Fujisawa, and Mariko Ishida, Yokohama, both of Japan, assignors to Hockiki Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1995, Ser. No. 454,831

Claims priority, application Japan, May 31, 1994, 6-117906; Jul. 1, 1994, 6-150723; Jul. 4, 1994, 6-151845

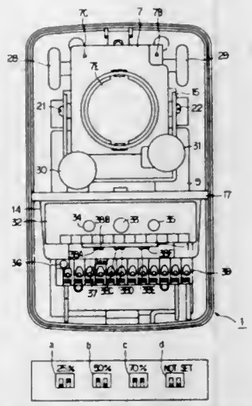
Int. Cl.[6] G08B *17/10*

U.S. Cl. 340—630 **15 Claims**

1. A projected beam-type smoke detector of the type in which a light emitter having a light emitting element is separately mounted from a light receiver having a light pickup element in order to detect a fire by an attenuation in the level of light which the light receiver receives from the light emitter, said attenuation being due to the presence of smoke between the light emitter and the light receiver, comprising:

in the light receiver, cover status sensor means for sensing the closing or opening state of a cover that is closed or opened to allow at least optical axis adjustment, and a predetermined sensitivity setting for light input; and a control block for controlling each section of the light receiver,

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whereby the control block sets the adjustment mode to each section of the light receiver when the control block receives a cover open-state signal indicative of the opening of the cover from cover status sensor means.

5,623,254

DRIVE CIRCUIT FAULT DETECTION DRIVE

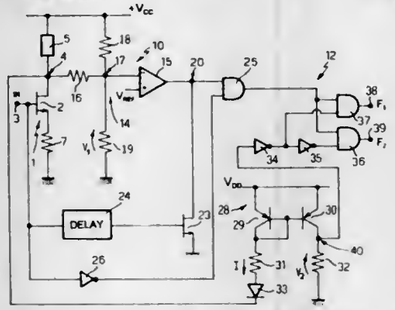
Massimiliano Brambilla, Sesto San Giovanni, and Giampietro Maggioni, Cornaredo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 922,019, Jul. 29, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 367,746

Claims priority, application Italy, Jul. 31, 1991, TO91A0609

Int. Cl.[6] **B60Q** *1/00*

U.S. Cl. 340—644 **11 Claims**



1. A fault detection device for a drive circuit having a control terminal that receives a control signal, an output terminal capable of establishing a connection to a load, and a third terminal coupled to a ground reference, the fault detection device comprising:

a fault discriminating circuit that determines whether a fault exists in the connection between the drive circuit and the load, the fault discriminating circuit having:

an input coupled to the output terminal of the drive circuit, and an output providing a condition signal indicative of a condition of the connection between the drive circuit and the load when the drive circuit is disabled to prevent current from passing through the drive circuit;

a voltage generator for generating a voltage representing the condition of the connection between the drive circuit and the load;

a comparator, coupled to and responsive to the voltage generated by the voltage generator, that compares the voltage generated by the voltage generator with a reference voltage and that provides the output signal, at least a portion of the voltage generator and the comparator forming a short-to-ground detector that detects a short circuit between the output terminal and the ground reference; and

an AND circuit having a first input responsive to the output signal of the comparator, a second input, responsive to the drive circuit control signal, and an output, responsive to the signals at the first and second inputs, providing the condition signal only when the drive circuit control signal is at a level that disables the drive circuit;

a fault identification circuit, coupled to the output of the fault discriminating circuit including circuitry responsive to the condition signal provided by the fault discriminating circuit that provides a type signal indicative of a type of fault detected by the fault discriminating circuit, and a combinatorial circuit generating a binary-coded output signal having a first state when the drive circuit and the load are connected, a second state when the output terminal of the drive circuit is short-circuited to the ground reference, and a third state when the drive circuit and the load are disconnected.

5,623,255

TESTING WRISTLET SEAT

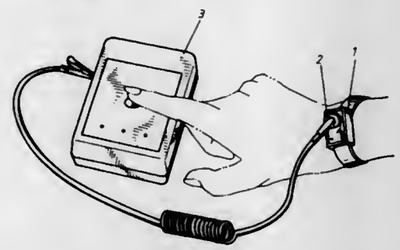
Shin-Ming Yang, 3F., No. 15, Sec. 4, Shing-Long Rd., Taipei, Taiwan

Filed Feb. 13, 1996, Ser. No. 600,778

Claims priority, application China, Mar. 10, 1995, 95 2 04173.1

Int. Cl.[6] **G08B** *21/00*

U.S. Cl. 340—649 **2 Claims**



1. A testing wristlet seat comprising:

a top cover made of staticproof material and formed with two recesses on two lateral sides, two button holes being disposed in the recesses, a display screen frame being disposed on a front portion of the top cover, a convex lead insertion seat being formed on a rear portion of the top cover, a lead insertion hole being formed on the lead insertion seat;

a wristlet core located under the top cover and formed with two recesses on two lateral sides, two time-adjusting buttons being disposed in the recesses for setting time, the buttons being inserted in the button holes of the top cover, a display screen frame being disposed on a front portion of the wristlet core for installing a display screen therein, several screw locking columns being disposed under a bottom of the wristlet core;

a circuit board disposed in the top cover, a display screen being connected on a front face of the circuit board, the lead insertion seat of the top cover being electrically connected with the front face of the circuit board, a buzzer being connected on a back face of the circuit board, a controlling circuit being disposed in the circuit board for testing whether the static grounding lead is broken;

a conductive board serving as a bottom board of the top cover and contacting with human skin, the lead insertion seat of the top cover being electrically connected with the conductive board, pivot lugs being disposed respectively on a front and a rear edges of the conductive board for pivotally connecting with a wristlet belt for a user to wear the wristlet seat, the conductive board being formed with thread holes corresponding to the screw locking columns of the wristlet core; and

a grounding lead having a first plug at one end for inserting into the lead insertion hole of the top cover, and a second plug at the other end for connecting with a banana plug which connects with an alligator clip, said wristlet seat being characterized in that the display screen and the circuit board are locked in the wristlet core by screws and the wristlet core is placed into the top cover and then the buzzer and the conductive board are installed into the top cover with wristlet belt pivotally connected to the conductive board, the alligator clip of the lead being connected to a public grounding system or the ground so that the controlling circuit and the public grounding system or the ground form a circuit for discharging the static electricity of human body to the ground and testing whether the lead is broken.

5,623,256

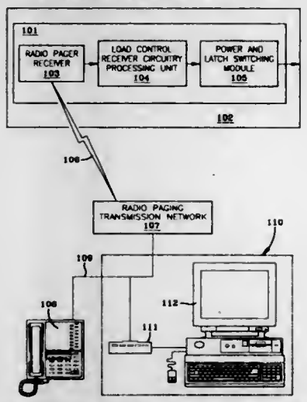
RADIO PAGING ELECTRICAL LOAD CONTROL SYSTEM AND DEVICE

Paul A. Marcoux, 34 Lincoln Ave., Central Falls, R.I. 02863

Filed Dec. 15, 1994, Ser. No. 356,665

Int. Cl.[6] **G08C** *19/00*; **H05B** *37/00*

U.S. Cl. 340—825.69 **24 Claims**



1. A radio paging electrical load control device, connected to and located within or nearby an electrical light fixture for controlling the operational state of an electrical light fixture or groups of fixtures, comprising:

a. a receiving mechanism located within or nearby an electrical light fixture for accepting coded digital commands;

b. a processing mechanism connected to the receiving mechanism for decoding received commands;

c. a lighting control mechanism connected to the processing mechanism and to the lighting unit for accepting the decoded command and performing the command operation on the electrical light or device;

d. a power supply connected to the receiving, processing and lighting control mechanisms;

e. the digital commands received by the receiving mechanism and processed by the processing mechanism can remotely control the operational state of a single electrical light fixture;

f. the digital commands received by the receiving mechanism and processed by the processing mechanism can remotely program and reprogram the electrical light fixtures into groups;

g. the digital commands received by the receiving mechanism and processed by the processing mechanism can remotely control the operational state of a group of electrical light fixtures with one command while still being able to individually control the state of any single light fixture even while the fixture is part of the larger group of electrical light fixtures; and

h. said control of the operational state of a light fixture, a group of light fixtures and light fixtures within a group, and remote programming and reprogramming of the electrical light fixtures into groups is independent of signal and power connections.

5,623,257

METHOD AND APPARATUS FOR SUPPLYING POWER TO THE RECEIVER OF A MOTOR VEHICLE LOCKING SYSTEM

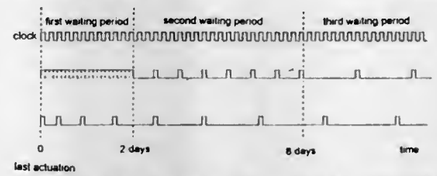
Anton Bachhuber, Ahornstrasse 8, 84085 Langquaid, Germany

Continuation-in-part of Ser. No. 29,024, Mar. 10, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 392,079

Claims priority, application European Pat. Off., Mar. 10, 1992, 92104084

Int. Cl.[6] **G08C** *19/00*; **H04B** *1/16*

U.S. Cl. 340—825.69 **21 Claims**



1. In a process for operating an electronic motor vehicle locking system including a receiver being mounted in the motor vehicle, being supplied by a battery power supply, and being remote-controlled by a handheld transmitter supplying coded control signals, and an operating switch for turning the power supply to the receiver on and off, a method for the clocked actuation of the operating switch, which comprises:

operating the operating switch during a first waiting period with given intervals between turn-ons of the power supply, during which given intervals no power is supplied to the receiver; and

subsequently, if the receiver received no control signals during the first waiting period, operating the operating switch in a clocked fashion during a second waiting period with intervals between the turn-ons of the power supply being longer than the given intervals in the first waiting period.

5,623,258

MULTI-STATION DATA CAPTURE SYSTEM

Bertrand Dorfman, 444 E. 82nd St.-Apartment 7B, New York, N.Y. 10028

Continuation of Ser. No. 480, Jan. 5, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,689

Int. Cl.[6] **G07C** *1/20*; **G08B** *25/10*; **G06K** *5/00*

U.S. Cl. 340—825.08 **14 Claims**

1. A multi-station, multiple building personnel tour supervision and verification system comprising:

a system control center,

a plurality of building site units, one of said units being located at each of a plurality of building sites,

a plurality of tour station units at each of said sites, each of said tour station units including a first memory for retaining an individual tour station identification code,

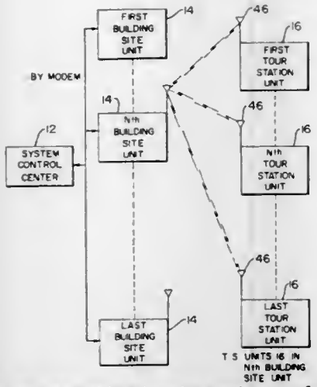
each of said tour station units at a building site being substantially interchangeable except for said tour station identification code,

each of said tour station units being mounted for ready replacement,

a plurality of personnel identification passive element cards, each of said cards having a separate personnel identification code,

each of said tour station units including a card reader and a first transceiver, said first transceiver being a radio broadcast trans-

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ceiver, said card reader adapted to receive any of said personnel identification cards and to read said personnel identification code on the card received,

each of said building site units including a second transceiver, said second transceiver being a radio broadcast transceiver adapted to communicate with each of said first transceivers at the associated building site,

each of said first transceivers being coupled to a separate one of said card readers to transmit information including said personnel identification code in association with said tour station identification code to the one of said second transceivers at the associated one of said building site units,

each of said building site units including a storage unit to store said information transmitted from each of said first transceivers in the associated building,

each of said building site units including a third transceiver, said third transceiver being adapted to transmit said information stored in said storage unit,

a fourth transceiver at said system control, said fourth transceiver adapted to communicate with each of said third transceivers at each of said building site units to receive transmissions from each of said building site units of said stored information,

each of said tour station units being responsive to a polling signal transmitted to said first transceiver to provide an indication of tour station operability,

each of said tour station units having a write element to write a station identification code in said first memory at said tour station unit,

said building site units responding to receipt of a tour station code transmitted from said system control unit to retransmit said tour station identification code to said write element at an uncoded tour station unit,

replacement of a defective one of said tour station units with an uncoded tour station unit permitting writing of a tour station identification code into said uncoded tour station unit under control of said system control center.

5,623,260

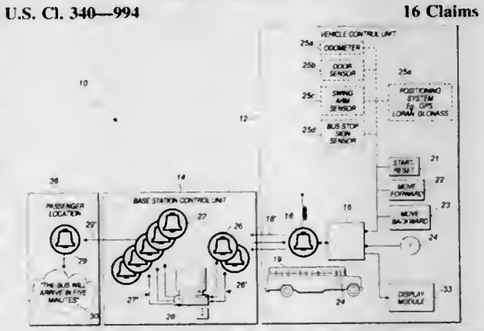
ADVANCE NOTIFICATION SYSTEM AND METHOD UTILIZING PASSENGER-DEFINABLE NOTIFICATION TIME PERIOD

Martin K. Jones, Dalton, Ga., assignor to Global Research Systems, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 407,319, Mar. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 63,533, May 18, 1993, Pat. No. 5,400,020. This application May 2, 1995, Ser. No. 434,049

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—994 **16 Claims**



1. A method for an advance notification system, the method for allowing a passenger to define a preset notification time period when the passenger is to receive a telephone call prior to arrival of a vehicle at a vehicle stop to thereby indicate impending arrival, the advance notification system comprising (a) a passenger telephone associated with said passenger, (b) system control for monitoring travel of said vehicle in relation to the vehicle stop, and (c) a system telephone interface for establishing a telephone connection between said system control and said passenger telephone when said vehicle is at a location that corresponds with the preset notification time period from said vehicle stop, the method comprising the steps of:

(a) permitting said passenger to define said preset notification time period by the following steps:

(1) establishing a telephone communication link with said system telephone interface; and

(2) providing said preset notification time period to said system control during said telephone communication link.

5,623,259

MOTION DETECTOR SENSOR SYSTEM FOR POSITIONING VEHICLE

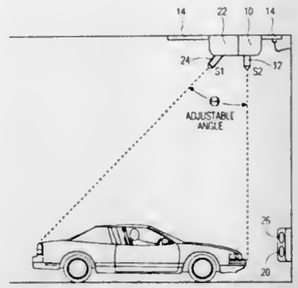
John Giangardella, #3 Calle Del Apice, San Clemente, Calif. 92672

Continuation-in-part of Ser. No. 145,000, Oct. 29, 1993. This application Mar. 24, 1995, Ser. No. 410,222

Int. Cl.[6] B60Q *1/48;1/00;* **G08B** *79/00*

U.S. Cl. 340—932.2 **13 Claims**

1. Apparatus for positioning a vehicle on a supporting surface within an enclosure, said apparatus comprising a first infrared motion sensor for sensing simultaneous changes in temperature and motion and means responsive to an output from said sensor for providing a signal to a driver of said vehicle that the vehicle has



arrived at a predesignated position, said apparatus including a shroud coupled to said sensor and operative to confine the field of view of said sensor to said predesignated position, said apparatus also including control means for inhibiting said sensor from producing an output pulse responsive to temperature changes and motion changes outside of a range of less than about three degrees and one foot per second.

5,623,261

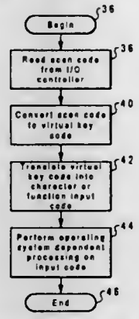
METHOD AND SYSTEM FOR TRANSLATING KEYED INPUT WITHIN A DATA PROCESSING SYSTEM

Robert A. Rose, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1995, Ser. No. 422,969

Int. Cl.[6] H03M *11/00*

U.S. Cl. 341—26 **13 Claims**



1. A method of processing input to a data processing system having a memory and an input device having a plurality of keys, wherein each of said plurality of keys represents an associated character or function, said method comprising:

creating a translation table within said memory for translating a plurality of virtual key codes into a corresponding plurality of input codes independently of an operating system of said data processing system, wherein a particular virtual key code among said plurality of virtual key codes specifies a relative position of an associated one of said plurality of keys and wherein each of said plurality of input codes is associated with a character or function;

detecting a selection of a key among said plurality of keys;

in response to said selection, determining a scan code representing said selected key;

converting said scan code representing said selected key into a virtual key code;

translating said virtual key code into an input code utilizing said translation table; and

receiving said input code for processing within said data processing system, wherein said translation table may be utilized by a plurality of data processing systems having diverse operating systems and input devices.

5,623,262

MULTI-WORD VARIABLE LENGTH ENCODING AND DECODING

James O. Normile, Woodside; Katherine Shu-wei Wang, San Jose; Ke-Chiang Chu, Saratoga; Dulce B. Ponceleon, Palo Alto, and Hsi-Jung Wu, Sunnyvale, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 17, 1994, Ser. No. 291,655

Int. Cl.[6] H03M *7/40*

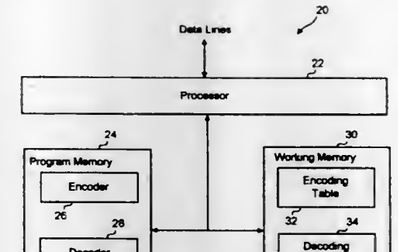
U.S. Cl. 341—67 **36 Claims**

1. A method for decoding a data stream, comprising the steps of:

receiving a data stream;

testing at least a portion of said data stream to determine whether said portion contains an index comprising a plurality of data strings and associated with an entry in a table; and

in response to a determination that said portion contains an index, decoding each data string contained in the index into a



corresponding data word by retrieving the corresponding data words from the entry.

5,623,263

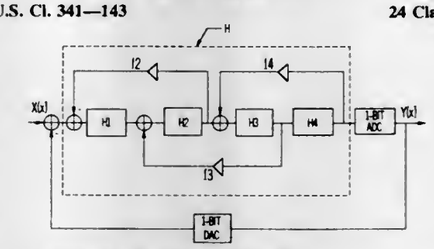
4TH-ORDER SIGMA-DELTA MODULATOR WITH LEAPFROG TOPOLOGY

Tai-Haur Kuo; Wen-Bin Lin; Chun-Hsien Su; Jhy-Rong Chen, and Wen-Chyi Wang, all of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Oct. 20, 1995, Ser. No. 546,494

Int. Cl.[6] H03M *3/00*

U.S. Cl. 341—143 **24 Claims**



1. A sigma-delta modulator comprising:

a first backward type integrator for integrating a first error signal and providing an output signal;

a second backward type integrator for integrating a second error signal and providing an output signal;

a third backward type integrator for integrating a third error signal and providing an output signal;

a first forward type integrator for integrating the output signal of the third backward type integrator and providing an output signal;

an A/D converter for quantizing the output signal of the first forward type integrator and providing digital output codes;

a D/A converter for converting the digital output codes of the A/D converter into a reference signal;

a first loop coefficient control member for weighting the output signal of the second backward type integrator by a first loop coefficient f_2;

a second loop coefficient control member for weighting the output signal of the third backward type integrator by a second loop coefficient f_3; and

a third loop coefficient control member for weighting the output signal of the first forward type integrator by a third loop coefficient f_4;

wherein the first error signal is obtained by subtracting the reference signal converted by said D/A converter and the output signal of the second backward type integrator which is weighted by the first loop coefficient f_2 from an input signal, the second error signal is obtained by subtracting the output signal of the third backward type integrator which is weighted by the second loop coefficient f_3 from the output signal of the first backward type integrator, and the third error signal is obtained by subtracting the output signal of the first forward type integrator which is

VOL 1197 ISS 4 AP 22 1997 UMI

weighted by the third loop coefficient f_4 from the output signal of the second backward type integrator.

5,623,264

VIDEO DIGITAL/ANALOG SIGNAL CONVERTER

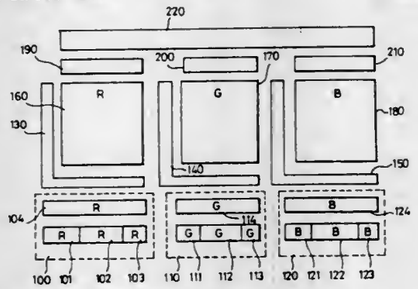
Yong-In Park, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Nov. 4, 1994, Ser. No. 336,686

Claims priority, application Rep. of Korea, Nov. 5, 1993, 5-023449

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—144 **19 Claims**



I. A video digital/analog converter, comprising:

a Red(R)-decoder group, a Green(G)-decoder group, and a Blue(B)-decoder group for decoding digital data of R, G, and B color channels, respectively, which are inputted in a state synchronized to R, G, and B clocks for controlling digital data of R, G, and B color channels;

a plurality of data buses for transferring digital data of the R, G, and B color channels decoded at the R, G, and B decoder groups;

first R, G, and B current cell matrixes for generating current in response to decoded digital data of the R, G, and B color data inputted from the data buses;

second R, G, and B current cell matrixes for generating current in response to decoded digital data of the R, G, and B color channel inputted through the data buses; and

bias circuit for transferring biases to the first R, G, and B current cell matrixes and the second R, G, and B current cell matrixes.

5,623,265

FLASH ANALOG-TO-DIGITAL CONVERTER AND METHOD OF OPERATION

Vivek J. Pawar, Bangalore, India, and William R. Krenik, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 28, 1994, Ser. No. 188,299

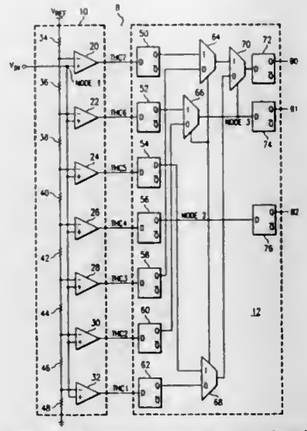
Int. Cl.[6] H03M *1/36*

U.S. Cl. 341—160 **20 Claims**

1. A flash analog-to-digital converter comprising;

a comparator array having a first input and a first plurality of outputs, the comparator array operable to provide a digital thermometer code on the first plurality of outputs representing a magnitude of an analog voltage signal applied to the first input; and

a bisection-search encoder having a first plurality of inputs and a second plurality of outputs, the first plurality of inputs coupled to the first plurality of outputs, wherein the bisection-search encoder is operable to provide a binary code on the



second plurality of outputs responsive to a bisection-search of the thermometer code, the binary code representing the magnitude of the analog voltage signal.

5,623,266

CONTIGUOUS SUBCARRIER BARRAGE JAMMING METHOD AND APPARATUS

John L. Grigsby, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1968, Ser. No. 721,125

Int. Cl.[6] G01S *7/38;* **H04K** *3/00*

U.S. Cl. 342—14 **1 Claim**

1. An apparatus to Jam preselected radar receivers comprising a voltage-tunable oscillator, means to generate a noise signal, first means to low pass filter said noise signal, second means to bandpass filter the low pass filtered signal, means to video amplify the bandpass signal at a predetermined magnitude, the combination of said noise generator, said first low pass filter, and said second bandpass filter and said video amplifier providing a predetermined small-amplitude random waveform, means to generate a predetermined large amplitude, periodic sawtooth waveform of a preselected fundamental frequency, a voltage-tunable magnetron being simultaneously modulated by said predetermined, small-amplitude random waveform and said predetermined large amplitude waveform, said predetermined large amplitude waveform contributing a series of subcarriers of nearly uniform amplitude over a frequency range proportional to the peak-to-peak sawtooth amplitude with the spacing between adjacent subcarriers being equal to said fundamental sawtooth frequency, said predetermined small-amplitude random waveform contributing random frequency modulation of each of said subcarriers with the predetermined small-amplitude of said random waveform being selected to Just fill in the gaps between said subcarriers to produce a continuous power spectrum between the frequency limits determined by the amplitude of the sawtooth modulation spectrum, and means to direct the output of said voltage-tunable magnetron toward said preselected radar receivers to be jammed.

5,623,267

WIDE-ANGLE MULTIPLE-DOPPLER RADAR NETWORK

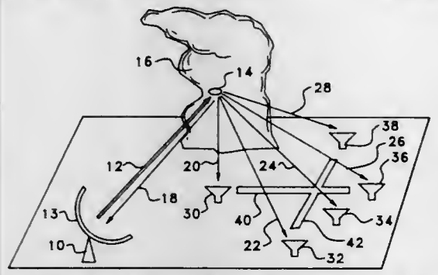
Joshua M. A. R. Wurman, 3001 Oak Tree Ave., Apt. 1-2, Norman, Okla. 73072

Filed Nov. 30, 1993, Ser. No. 169,561

The portion of the term of this patent subsequent to Nov. 30, 2013, has been disclaimed.

Int. Cl.[6] G01S *13/00*

U.S. Cl. 342—26 **34 Claims**



1. In a Doppler-radar weather network for scanning the sky, said network having a transmitting station with a transmitting antenna and a receiving station with a receiving antenna, apparatus for measuring the velocity of particles suspended in air comprising the steps of:

means for transmitting a radar pulse of electromagnetic radiation from a transmitting antenna at a first radar station, said radar pulse transmitted along a beam path defined by the transmitting antenna;

means for receiving an echo signal of the radar pulse with a receiving antenna at a second radar station, said receiving antenna has a viewing angle wide enough to receive echo signals from particles along the length of the beam path as the particles are illuminated by the radar pulse traveling down the beam path;

means for sampling the echo signal to define echo signal samples of particles at different locations along the beam path; and

means for synchronizing the sampling of the echo signal at the receiving station with the transmission of radar pulses at the transmitting station to define the location of the particles along the beam path for each echo signal sample.

5,623,268

DEVICE FOR PROTECTING SSR TRANSPONDERS AGAINST UNINTENDED TRIGGERING ON AN AIRPORT WITH VERY LIMITED MUTING ACTIVITY IN VERTICAL DIRECTION

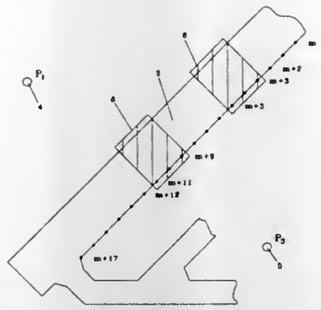
Frans H. De Haan, Lochem, Netherlands, assignor to British Technology Group Ltd., London, England

Filed Oct. 6, 1994, Ser. No. 319,019

Int. Cl.[6] G01S *13/87;13/93*

U.S. Cl. 342—32 **9 Claims**

1. A system for localizing SSR transponders at an airport, said system comprising a plurality of transmitters for transmitting an interrogation signal, a plurality of receivers for receiving a response signal of an SSR transponder in response to said interrogation signal, the airport being divided in a plurality of divisional regions, and said transmitters transmitting interrogating signals suitable to cause an SSR transponder present in a predetermined divisional region to respond, means for controlling said transmitters such that transmitters interrogating different divisional regions transmit, successively, pulses which, in different divisional regions are received as interrogating signals P1, P3, said interrogating signals comprising a first pulse P1, a second pulse P2 of smaller reception strength than the first pulse and transmitted after a first predetermined time period and a third pulse P3 transmitted a second predetermined period after the time allotted to the second pulse, said SSR transponders being muted during a time period



longer than the sum of said first and second periods after reception of a second pulse of a strength at least equal to the first pulse, means for providing transmission into at least one temporary inactive divisional region, spaced from an active divisional region or regions, of, successively, a first pulse P1 having in said at least one temporary inactive divisional region, a first strength and, after said first predetermined period, a second pulse P2 having, in said at least one temporary inactive region, a second strength at least equal to said first strength, said transmission being repeated at intervals of a duration less than the sum of said predetermined first period and said predetermined second period.

5,623,269

MOBILE COMMUNICATION SATELLITE PAYLOAD

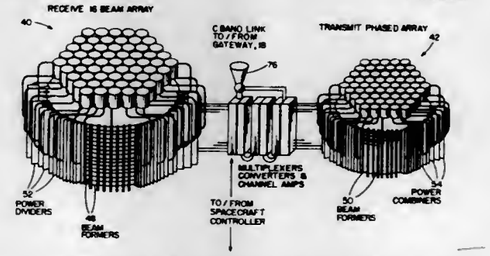
Edward Hirshfield, Cupertino, and Chich-Hsing A. Tsao, Saratoga, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Division of Ser. No. 60,207, May 7, 1993, Pat. No. 5,422,647.

This application Feb. 2, 1995, Ser. No. 382,884

Int. Cl.[6] H04B *7/185;* **H01Q** *3/22*

U.S. Cl. 342—354 **4 Claims**



1. A satellite payload for use with a communication system, the payload comprising:

a phased array receiving antenna assembly having n receiver elements for receiving RF signals within a first band of frequencies;

first beam forming means comprising power divider means and having an input coupled to each of said n receiver elements for forming m uplink beams from RF signals received by said phased array receiving antenna assembly, wherein n is greater than one, and wherein m is less than n;

ground station communication means, having an input coupled an output of said first beam forming means, for converting said m uplink beams into RF signals within a second band of frequencies and for transmitting RF signals to and for receiving RF signals from a ground station, the transmitted and received RF signals being within said second band of frequencies;

second beam forming means comprising power combining means and having an input coupled to an output of said ground station communication means for forming m downlink

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beams from the RF signals received from said ground station, said m downlink beams being formed within a third band of frequencies; and

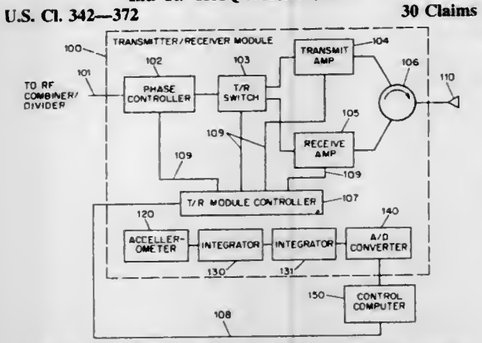
a phased array transmitting antenna assembly having n transmitter elements for transmitting said m downlink beams as RF signals within said third band of frequencies, each of said n transmitter elements having a power amplifier means associated therewith, each of said power amplifier means having an input coupled to an output of said second beam forming means and an output coupled to one of said transmitter elements, wherein each of said n transmitter elements transmits RF energy for each of said m downlink beams.

5,623,270

PHASED ARRAY ANTENNA

Michael A. Kempkes, Westford, and Melvyn I. Wiener, Lexington, both of Mass., assignors to Riverside Research Institute, New York, N.Y.

Filed Oct. 12, 1994, Ser. No. 321,784
Int. Cl.[6] H01Q *3/22;3/24;3/26*
U.S. Cl. 342—372 **30 Claims**



1. In an antenna system having a plurality of antenna elements, each for radiating and receiving electromagnetic signals, said system including means for providing signals to said antenna elements for radiation therefrom, means for detecting signals received by said antenna elements and means for controlling the phase of said radiated and said received signals, the improvement comprising:

means, including a position detector for determining the relative physical position of at least one of said antenna elements with respect to a nominal relative position for said antenna element in said antenna system;

means for computing a phase correction associated with the difference between said relative physical position and said nominal relative position; and

means for operating said phase control means to compensate for said computed phase correction.

5,623,271

LOW FREQUENCY PLANAR ANTENNA WITH LARGE REAL INPUT IMPEDANCE

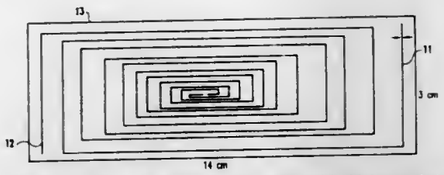
Saila Ponnapalli, Fishkill, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 334,293, Nov. 4, 1994, abandoned.
This application Apr. 18, 1996, Ser. No. 634,368
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 **2 Claims**

1. A low power planar antenna for resonating at low radio frequencies and operating in near field applications, comprising:

a top layer of conductor consisting of two interwound spiral conductors, each conductor being approximately one quarter wavelength long at a center radio frequency of approximately 50 MHz;

a center layer of dielectric having dimensions of approximately 3 cm by 14 cm, a dielectric constant of approximately 4 and a



thickness of approximately 125 mil, said thickness being much less than one quarter wavelength; and

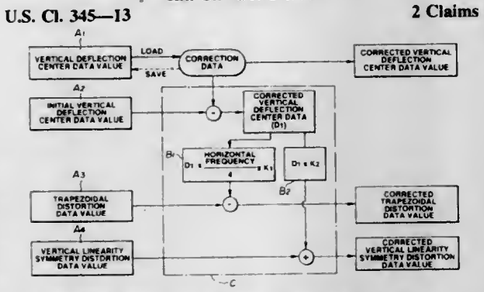
a bottom layer of conductor which is a solid conducting plane, said antenna having a high, real impedance, wherein the real impedance of the antenna is approximately 80 ohms, while an imaginary part of the antenna impedance is substantially negligible, the thickness of said antenna forcing the antenna to operated only in the near field.

5,623,272

ELECTRONIC APPARATUS WITH CIRCUITRY FOR ADJUSTING RELATIONAL EXPRESSIONS REPRESENTING RELATION OF DISPLAY ADJUSTMENT DATA TO OTHER CLOSELY RELATED DISPLAY ADJUSTMENT DATA

Yasunori Mori, Kanagawa; Yuki Inoue, Tokyo, and Yoshihisa Narui, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 407,289
Claims priority, application Japan, Mar. 22, 1994, 6-049639
Int. Cl.[6] G09G *1/08*
U.S. Cl. 345—13 **2 Claims**



1. An image signal display device comprising:

program data read-out means by which at least one second adjustment data not to be adjusted takes a predetermined value relative to a first adjustment data to be adjusted, in accordance with a predetermined relational expression;

data calculating means for calculating said second adjustment data in accordance with said predetermined relational expression, in response to a change in said first adjustment data;

data changing means for changing said second adjustment data together with said first adjustment data;

memory means for storing Whole relational expressions, wherein said memory means can be read out from and written to;

digital/analog conversion means for converting an output signal from said memory means into an analog signal; and

a display for representing an output signal from said digital/analog conversion means as an image, said display having a deflecting circuit,

wherein each of said adjustment data is correction data of linearity and trapezoidal distortions for application to said deflection circuit of said display,

wherein said correction data includes a vertical deflection center correction data, a trapezoidal deflection correction data, and a vertical linearity symmetry distortion correction data, and

wherein said image signal display device further comprises

a first arithmetic circuit to which said vertical deflection center data and a predetermined correction data are input, and

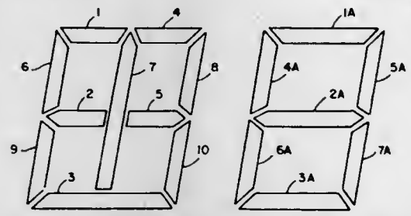
a second arithmetic circuit to which a result from a calculation output from said first arithmetic circuit and said trapezoidal deflection data are input to output a corrected trapezoidal deflection data value, thereby producing a corrected vertical linearity symmetry distortion value in accordance with said result from the calculation output from said first arithmetic circuit and said vertical linearity symmetry distortion value.

5,623,273

WEEK-DAY AND/OR TIME DISPLAY SYSTEM FOR A DATA DISPLAY RADIO PAGER

Takayuki Asai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 827,391, Jan. 29, 1992, abandoned.
This application Dec. 9, 1994, Ser. No. 353,155
Claims priority, application Japan, Jan. 30, 1991, 3-010041
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—33 **11 Claims**



1. A device for displaying week-days, or Sunday to Saturday, by a first character and a second character which follows said first character, comprising:

first display means having ten linear segments, each of said ten linear segments being disposed either substantially parallel to or orthogonally with respect to each of all others of said ten linear segments, for representing said first character by ten segments, wherein a predetermined first number of said ten linear segments defines a first parallelogram, wherein a predetermined second number of said ten linear segments divides said first parallelogram into second through fifth parallelograms, wherein the sum of said first and said second numbers is ten (10), and wherein one of second number of said ten linear segments is common to all of said second through said fifth parallelograms; and

second display means having seven segments, each of said seven segments being disposed either substantially parallel to or orthogonally to with respect to all other said seven segments, for representing said second character by seven or less segments.

5,623,274

FRONT-PANEL INDICATOR USING A SERIAL LINK FOR A PC

Arockiyaswamy Venkidu, Milpitas; Larry Jones, Palo Alto, and Sreenath Mambakkam, San Jose, all of Calif., assignors to OnSpec Electronic, Inc., Santa Clara, Calif.

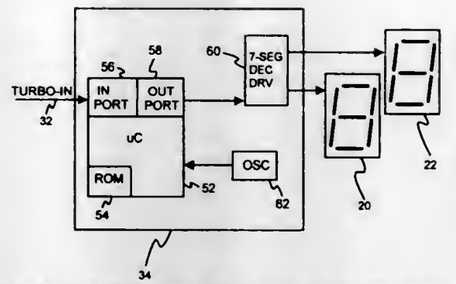
Filed Feb. 17, 1995, Ser. No. 390,680
Int. Cl.[6] G09G *3/04*
U.S. Cl. 345—34 **20 Claims**

1. A front-panel display system for a personal computer (PC) having a motherboard, the front-panel display system comprising:

a turbo indicator for indicating that the PC is operating in a slowed-down de-turbo mode;

a cable from the motherboard to a front-panel display, the cable having a turbo indicator line;

a digit display having a plurality of selectably-illuminated segments; and



a serial-to parallel converter, for converting serial data sent over the turbo indicator line into parallel data, the parallel data being sent to the digit display,

whereby serial data from the motherboard is sent over the turbo indicator line to the front panel for display by the digit display.

5,623,275

ARTICULATED MESSAGE DISPLAY MATRIX

Paul A. Miller, 336 Webster St., Marshfield, Mass. 02050

Filed Oct. 31, 1994, Ser. No. 331,989
Int. Cl.[6] G09G *3/14*
U.S. Cl. 345—46 **17 Claims**

1. Display apparatus having first and second display matrix cells, said apparatus comprising:

first and second display planes, respectively, each display plane including a respective display matrix in each cell, each display matrix having a respective plurality of electrical display elements;

a respective enclosure for each cell, said respective enclosure having a backwall opposite the display plane, and a first and a second plate connecting opposite edges of the backwall to corresponding edges of the display matrix, respectively;

a hinge connecting the cells, said hinge defining a hinge axis orthogonal to said corresponding edges of said display matrix; and

a first and a second edge on said first and said second plate of each respective enclosure on respective sides of said hinge, said first and second edges defining unequal first and second angles, respectively, with said corresponding edges of the display matrix, respectively, said first and second angles providing clearance for rotating the cells about the hinge so that the angle between the cells can be varied, whereby said cells form a flexible array of display matrix cells which appears to

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be continuous but which is rugged and can be mounted on irregular surfaces.

5,623,276

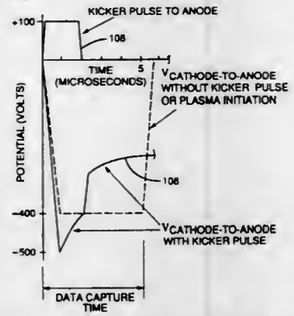
KICKER PULSE CIRCUIT FOR AN ADDRESSING STRUCTURE USING AN IONIZABLE GASEOUS MEDIUM

John S. Moore, and Kevin J. Ilcisin, both of Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 26,366, Mar. 4, 1993, abandoned. This application Aug. 19, 1994, Ser. No. 293,107

Int. Cl.[6] G09G *3/28*

U.S. Cl. 345—60 **19 Claims**



1. An addressable electro-optic system having multiple light pattern data storage elements, comprising:

a first substrate supporting on a major surface thereof plural nonoverlapping first electrodes that extend in a first direction;

a second substrate having plural nonintersecting channels that extend along a major surface thereof in a second direction, each of the channels containing an ionizable gaseous medium and having one of plural second electrodes and one of plural reference electrodes extending along a substantial portion of the length of the channel;

the first and second substrates being disposed face-to-face and spaced-apart with the first direction transverse to the second direction to define overlapping regions of the first electrodes and the channels;

a layer of electro-optic material having optical properties responsive to a difference in voltage across it positioned between the first and second substrates, the layer of electro-optic material and the overlapping regions defining plural light pattern data storage elements that selectively store an image field representing typically nonuniform light pattern information carded by the first electrodes;

first means for providing first electrical signals to the first electrodes and second means for providing second electrical signals to the second electrodes, the first and second means providing in each of successive image fields the coincident application of respective first and second electrical signals to each of the storage elements to effect ionization of the gas associated with the storage elements and to change in response to the first electrical signal the electro-optical properties of the regions of the layer associated with the storage elements; and

third means for providing to the reference electrode positioned in a selected one of the channels a third electrical signal at a time coincident to the application of the second electrical signal to the second electrode positioned in the selected channel, the third electrical signal cooperating with the second electrical signal to cause ionization of the gaseous medium in the selected channel within a predetermined discharge initiation delay time tolerance.

5,623,277

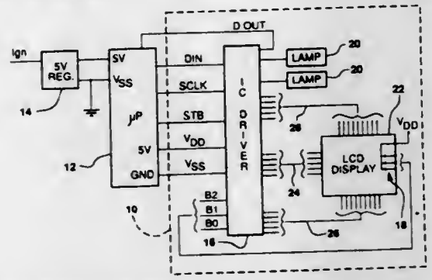
LIQUID CRYSTAL DISPLAY WITH IMAGE STORAGE ROM

Raymond Lippmann, Ann Arbor; Michael J. Schnars, Clarkston; James E. Nelson, North Branch, and Mark J. Miller, Grand Blanc, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 29, 1996, Ser. No. 593,029

Int. Cl.[6] G06F *12/00;* **G12B** *9/10*

U.S. Cl. 345—87 **6 Claims**



1. A liquid crystal display (LCD) system comprising

an LCD cell physically and electrically coupled to a circuit board;

an IC driver mounted on the circuit board to supply drive voltages to the LCD cell;

a ROM in the IC driver for permanently storing a plurality of bit-mapped images;

means in the IC driver responsive to an image command for selecting a stored image for display on the LCD;

a serial peripheral interface in the IC driver; and

a remote control circuit coupled to the IC driver via the serial peripheral interface for supplying an image command to the IC driver.

5,623,278

DRIVE CIRCUIT FOR A DISPLAY APPARATUS

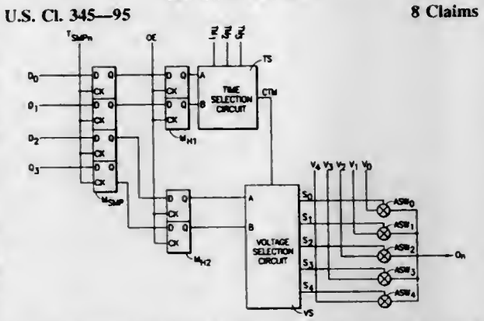
Hisao Okada, Ikoma-gun; Shigeyuki Uehira, Kashihara; Katumi Miki, Inukami-gun; Kuniaki Tanaka, and Toshihiro Yanagi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 316,821, Oct. 3, 1994, which is a continuation of Ser. No. 768,051, Sep. 27, 1991, abandoned. This application Apr. 5, 1995, Ser. No. 416,645

Claims priority, application Japan, Sep. 28, 1990, 2-261471; Sep. 28, 1990, 2-261478; Sep. 28, 1990, 2-261483; Oct. 1, 1990, 2-264576

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—95 **8 Claims**



1. A drive circuit for a display apparatus into which a digital video signal is input and in which a plurality of parallel signal electrodes are provided, comprising:

voltage supplying means for supplying a plurality of signal voltages, the levels of said signal voltages being different from each other;

time control means for receiving one portion of said digital video signal, and for producing a time division signal indicative of two or more divided periods of one signal output period in accordance with said one portion of said digital video signal; and

voltage selecting means, connected to said voltage supplying means and said time control means, for receiving said digital video signal, for, in accordance with said time division signal and the remaining portion of said digital video signal, outputting one of said signal voltages in one of said divided periods, and for outputting another one of said signal voltages in another of said divided periods.

5,623,279

CAPACITIVE LOAD DRIVING CIRCUIT INCLUDING INPUT SELECTION CIRCUIT AND LIQUID CRYSTAL DISPLAY DEVICE USING THE DRIVING CIRCUIT

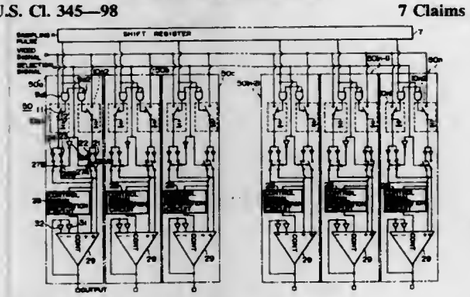
Tetsuro Itakura, Fujisawa, and Takeshi Shima, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1994, Ser. No. 304,544

Claims priority, application Japan, Sep. 10, 1993, 5-225284; Feb. 14, 1994, 6-017140

Int. Cl.[6] G09G *3/36;3/34*

U.S. Cl. 345—98 **7 Claims**



1. A capacitive load driving circuit comprising:

first through n-th input terminals for respectively receiving first through n-th input signals, where n is an integer greater than or equal to two;

first through n-th source followers formed by first through n-th field effect transistors (FET) each having an input terminal which is respectively connected to said first through n-th input terminals and formed of a first conductive type semiconductor;

(n+1)-th through 2n-th source followers formed by (n+1)-th through 2n-th FET each having an input terminal which is respectively connected to said first through n-th input terminals and formed of a second conductive type semiconductor;

a differential amplifier circuit having two pairs of positive inputs and negative inputs, namely, a first positive input, a first negative input, a second positive input and a second negative input, and for operating by a signal supplied to any pair of positive and negative inputs by a control signal;

a (2n+1)-th source follower formed by the first conductive type semiconductor FET and inputting an output of said differential amplifier circuit to said first negative input;

a (2n+2)-th source follower formed by the second conductive type semiconductor FET and inputting said output of said differential amplifier circuit to said second negative input;

first switch means for selecting any of outputs from said first through n-th source followers formed by the first conductive type FET on the basis of a selection signal;

second switch means for selecting any of outputs from said (n+1)-th through 2n-th source followers formed by the second conductive type FET on the basis of said selection signal; and

control signal generation means for generating said control signal on the basis of an operation potential after inputting any of outputs from said first switch means and said second switch means,

wherein said output of said first switch means is supplied to said first positive input of said differential amplifier circuit, said output of said second switch means is supplied to said second positive input of said differential amplifier circuit, said output of said (2n+1)-th source follower is supplied to said first negative input of said differential amplifier circuit, and said output of said (2n+2)-th source follower is supplied to said second negative input of said differential amplifier circuit.

5,623,280

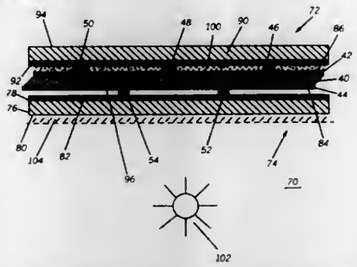
FLEXIBLE LIQUID CRYSTAL DISPLAY WITH TOUCH SENSITIVE SCREENS

Robert B. Akins, Coral Springs; Robert Pennisi, Boca Raton, and Joaquin Barreto, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 262,128, Jun. 17, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 538,170

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—104 **5 Claims**



1. A touch sensitive liquid crystal display device having a viewer proximal side and a viewer distal side, said device comprising:

a first substrate having first and second surfaces, and having a layer of electrically conductive material disposed on the first surface thereof, said second surface comprising the viewer distal side of said device;

a second substrate having first and second surfaces and formed of a flexible polymeric material, said second substrate further including a plurality of raised ridge members formed on both said first and said second surfaces, and having a layer of electrically conductive material on both of said surfaces in the areas between said raised ridge members, said first surface of said first substrate being arranged in spaced, parallel, facing relationship with the first surface of said second substrate;

a third substrate having first and second surface and formed of a flexible polymeric material, and having a layer of electrically conductive material disposed on the first side thereof, said first surface of said third substrate being arranged in spaced, parallel, facing relationship with the second surface of said second substrate, and said second surface of said third substrate comprising the viewer proximal side of said device; and

a layer of twisted nematic liquid crystal material disposed between said second and third substrates.

5,623,281

ERROR DIFFUSION FILTER FOR DMD DISPLAY

Vishal Markandey, Dallas, and Gregory S. Pettitt, Rowlett, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

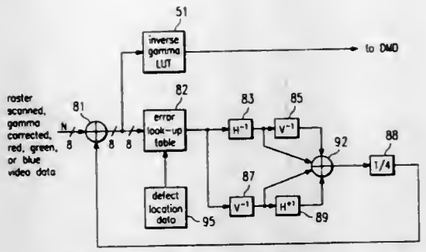
Filed Sep. 30, 1994, Ser. No. 315,744

Int. Cl.[6] G09G *3/34;3/36*

U.S. Cl. 345—108 **11 Claims**

6. An error diffusion filter for a DMD display comprising:

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an inverse gamma look-up table responsive to raster scanned, gamma corrected video data for providing a pixel data intensity level to a given DMD device that is at a closest achievable pixel data intensity level to an exact inverse gamma intensity level;

an error look-up table responsive to said video data for providing an error output value corresponding to the difference between said exact inverse gamma intensity level and said closest immediately achievable intensity level; and

a summer coupled to DMD devices neighboring said given DMD device and responsive to said error output value for summing said error output value with the pixel data intensity levels for said neighboring DMD devices to visually achieve said exact inverse gamma intensity level.

5,623,282

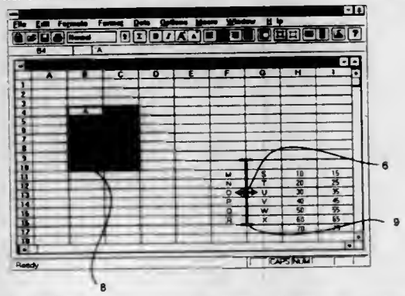
METHOD AND SYSTEM FOR THE DIRECT MANIPULATION OF CELLS IN AN ELECTRONIC SPREADSHEET PROGRAM OR THE LIKE

Christopher E. Graham, Redmond; Ross A. Hunter, Woodinville, and Lisa R. James, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 815,656, Dec. 31, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 219,868

Int. Cl.[6] G06F *7/00*

U.S. Cl. 345—121 **19 Claims**



1. A method of manipulating data in a computer system, the computer system having a display device and a user controllable pointer positioning device with signal generating means, the pointer positioning device controlling movement of a pointer displayed on the display device, wherein a program is operating on the computer system, the program using a worksheet to store and manipulate data, the worksheet consisting of a grid of intersecting columns and rows, wherein the intersection of each column and row is a cell capable of containing data manipulable by the program, the method comprising the steps of:

in response to input, selecting a cell or a plurality of cells in the worksheet;

displaying a border around the selected cell or plurality of cells;

in response to movement of the pointer positioning device, positioning the pointer over the border of the cell selection;

activating a drag mode in response to both the selection of the cells and the activation of the signal generating means while the pointer is positioned over the border, and without further user input or interaction;

in response to movement of the pointer positioning device while the drag mode is activated, positioning the border over a new area of the worksheet;

in response to deactivation of the signal generating means, deactivating the drag mode; and

in response to deactivation of the drag mode and without further user input or interaction, moving the data contained in the selected cell or plurality of cells to the cells in the new area of the worksheet surrounded by the border thereby enabling the program to modify the moved data.

5,623,283

DYNAMIC IMAGE DISPLAY DEVICE

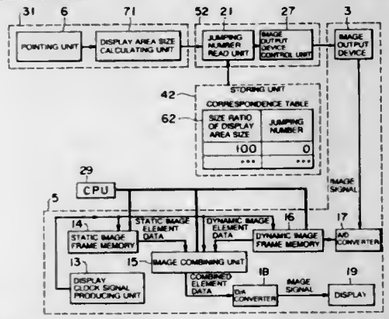
Yu Minakuchi; Satoshi Okuyama; Toshimitsu Suzuki, and Katsutoshi Yano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 269,779, Jul. 1, 1994. This application Jun. 5, 1995, Ser. No. 465,338

Claims priority, application Japan, Jul. 22, 1993, 5-181678

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—127 **3 Claims**



1. A dynamic image display device which reads out each of a plurality of frames from dynamic image data stored as successive frames every predetermined number of skipped frames to display each of said plurality of frames at each predetermined display period on a window of a display device, said predetermined number of skipped frames and a display area size of said window being changeable, said dynamic image display device comprising:

display area size input means for inputting the display area size of said window;

a storage device having a definition correlating said display area size with said predetermined number of skipped frames;

means for reading out from said storage device said predetermined number of skipped frames corresponding to said display area size of said window inputted by said display area size input means; and

means for displaying each of said plurality of frames on said window of said display device every said read predetermined number of skipped frames.

5,623,284

INPUT DEVICE CONTROLLER

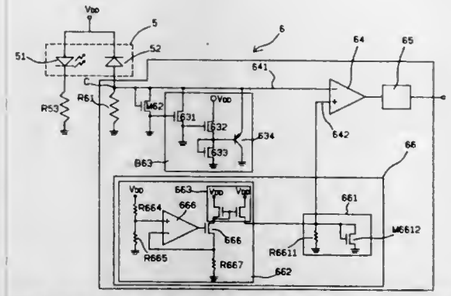
Kuo-Yuan Hsu, and Jyn-Guo Hwang, both of Hsin-Chu, Taiwan, assignors to Elan Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Apr. 18, 1995, Ser. No. 423,686

Int. Cl.[6] G08C *21/00*

U.S. Cl. 345—166 **25 Claims**

1. An input device controller to be used with an input device having a photo coupler generating an induce current in response to a received quantum of light comprising:



a first resistor means electrically connected to said photo coupler in order that said photo coupler has an output voltage in response to said induced current;

a second resistor means electrically connected to said photo coupler and having the resistance thereof varying with said output voltage for preventing said photo couple from being overcharged; and

a controlling means electrically connected to said photo coupler for controlling a cursor on a monitor in response to said output voltage, wherein said controlling means includes a constant current generator and dynamic impedance input circuit, together generating a reference voltage for comparison with said output voltage.

5,623,285

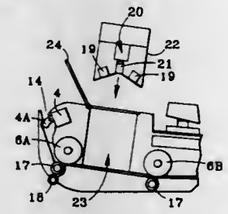
METHOD OF AND STATION FOR INTEGRATED TYPED DATA AND OPTICALLY SCANNED DATA CAPTURE FOR COMPUTER INTERFACING AND THE LIKE

Ophira R. Aharonson, and Dov Aharonson, both of 9 Fessenden Way, Lexington, Mass. 02173

Division of Ser. No. 251,743, May 31, 1994, Pat. No. 5,477,238, which is a continuation-in-part of Ser. No. 835,229, Feb. 13, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,573

Int. Cl.[6] H04N *1/04*

U.S. Cl. 345—168 **7 Claims**



1. An integrated typed data and optically scanned data capture station for computer interfacing and the like, having in combination, a single frame housing mounting and containing both a keyboard and an electro-optical scanner mounted rearwardly of the keyboard on the housing; the scanner having a document insertion guide provided with a slot-opening near the rear and upper portion of the housing beyond the top of the keyboard for introducing a document-to-be-scanned; electronic control and signal processing circuits contained within the housing for controlling the electronic data developed by typing upon the keyboard and the electronic signal data generated by the optical scanning, and interfacing such data with an external computer; wherein means is provided for scanning the documents introduced to the document guide slot within the housing and exiting externally of the housing after scanning.

5,623,286

POWER SOURCE CONTROL APPARATUS FOR DISPLAY UNIT

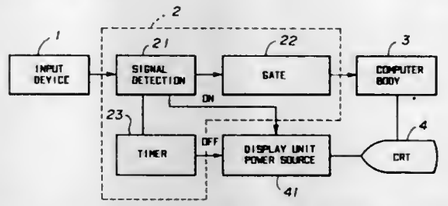
Masayuki Morimoto; Yoshiyuki Asahina; Takehiko Tanaka, and Mikita Matsuo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 985,636, Dec. 3, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,392

Claims priority, application Japan, Dec. 4, 1991, 3-320593

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—212 **17 Claims**



1. A power source control apparatus for independently controlling a power source of a display unit of a system which includes an input device and a computer body, said power source control apparatus being connected to the input device, said input device being coupled to the computer body via said power source control apparatus, said power source control apparatus comprising:

first means for detecting an input signal which is output from the input device, and for turning ON the power source of the display unit independently from said computer body based on the detection of a first signal in a state where the power source is OFF;

second means, coupled to said first means, for independently turning OFF the power source of the display unit without affecting operations of said computer body if said first means detects no input signal for a predetermined time; and

third means, coupled to said first means, for blocking said first input signal and transmitting to the computer body subsequent input signals detected by said first means only when the power source of the display unit is ON,

said first, second and third means being independent of the computer body.

5,623,287

INK CONTAINER WITH A CONTROLLED INK DISTRIBUTION THEREIN, AND METHOD OF FILLING THE SAME

Hideo Saikawa, Kawasaki; Seiichiro Karita, Yokohama; Toshio Kashino, Chigasaki; Akio Saito, Hadano; Hiroshi Nakagomi, Yamato; Teruo Arashima, Yokohama; Makiko Kimura, Sagamihara; Hiroshi Sugitani, Machida; Yoshifumi Hattori, Yamato; Masami Ikeda, Tokyo; Masaaki Izumida; Shigeaki Tanaka, both of Kawasaki; Nobuyuki Kuwabara, Tokyo; Asao Saito, Yokohama; Kazuaki Masuda, Sagamihara, and Tsuyoshi Orikasa, Kasukabe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 121,195, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 719,151, Jun. 21, 1991, Pat. No. 5,280,299, which is a division of Ser. No. 583,136, Sep. 17, 1990, Pat. No. 5,237,342. This application May 30, 1995, Ser. No. 453,253

Claims priority, application Japan, Sep. 18, 1989, 1-241043; Sep. 18, 1989, 1-241044; Feb. 28, 1990, 2-048177

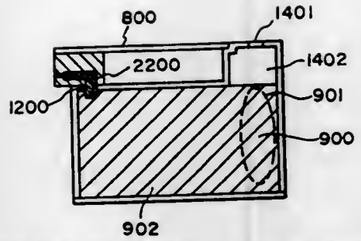
Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **4 Claims**

1. An ink container comprising:

an ink absorbing material, of substantially rectangular parallelopipedal shape, for retaining an ink;

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a casing for accommodating said ink absorbing material;

an ink supply port through which the ink is withdrawn from the ink absorbing material;

an air vent providing fluid communication between an inside of said casing and ambience, wherein said air vent and said ink supply port are each provided adjacent to different longitudinal halves of said ink absorbing material;

wherein said casing is initially filled with an amount of the ink which is larger than a quantity of the ink which can be retained by said ink absorbing material, whereafter the ink adjacent to said air vent is removed to such an extent that said casing contains the quantity of the ink which said ink absorbing material can retain, and wherein the ink is retained at a higher density adjacent to the ink supply port than adjacent to the air vent.

5,623,288

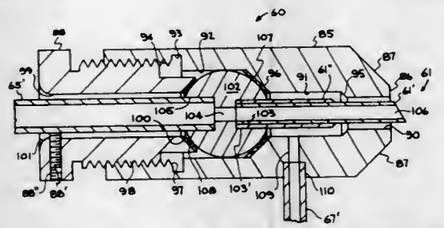
IMAGE FORMING SYSTEM AND PROCESS

Arthur D. Thomas, Salt Lake City, and Timothy S. Fullmer, Sandy, both of Utah, assignors to Vision Graphic Technologies, Inc., Salt Lake City, Utah

Filed Apr. 29, 1994, Ser. No. 236,527

Int. Cl.[6] B41J *2/135;2/145*

U.S. Cl. 347—3 **56 Claims**



1. A system for producing an image including computer controlled means for generating control signals to a spray head and to a mechanism for moving a recording medium, the improvement including:

at least one spray head movably mounted to pass along a recording medium for directing deposition medium onto at least one side of the recording medium and including a coaxial nozzle arrangement for deposition medium and air,

means for directing deposition medium on opposite sides of the recording medium,

said means for directing deposition medium including means for changing direction of movement of the recording medium, and

at least one additional spray head including a coaxial nozzle arrangement for directing deposition medium on an opposite side of the recording medium,

said coaxial nozzle arrangement being provided with at least air flow control means, and means for providing and maintaining concentricity thereof.

5,623,289

FACSIMILE APPARATUS WITH INK EJECTION RECORDING MEANS RECOVERABLE PRIOR TO TRANSMISSION OF IMAGE DATA BY ANOTHER FACSIMILE APPARATUS

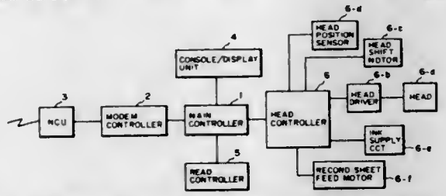
Takeshi Ono, and Fumihiko Watanabe, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 78,069, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 882,763, May 11, 1992, abandoned, which is a continuation of Ser. No. 531,710, Jun. 1, 1990, abandoned. This application Nov. 9, 1994, Ser. No. 338,210

Claims priority, application Japan, Jun. 2, 1989, 1-139316

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—3 **17 Claims**



1. An image communication apparatus which records on a recording member an image according to received data by using a recording head having a plurality of recording elements for ejecting ink droplets from an ink outlet portion of said recording head, comprising:

communication means for communicating image data and protocol signals relating to communication with a partner station;

first control means for controlling a communication operation of said communication means, said first control means being adapted to receive the image data after receiving a call and then transmitting a predetermined protocol signal to the partner station;

recovery means for performing a recovery operation for recovering an ink ejection condition of said recording head;

preservation means for performing a preservation operation of the ink outlet portion; and

second control means for controlling the recovery operation of said recovery means, said second control means causing said recording head to be set from a preservation position for the preservation operation to a recovery position for the recovery operation after transmission of the predetermined protocol signal, causing said recovery means to perform said recovery operation of the ink ejection condition of said recording head and causing said recording head to be set at a predetermined position for recording after completion of the recovery operation by said recovery means, wherein the recovery operation of said recovery means is performed before reception of the image data.

5,623,290

RECORDING APPARATUS AND SUPPLY SYSTEM HAVING RESIDUAL INK QUANTITY DETECTION

Hiroshi Iida, Machida; Minoru Nozawa, and Akihiro Yamanaka, both of Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

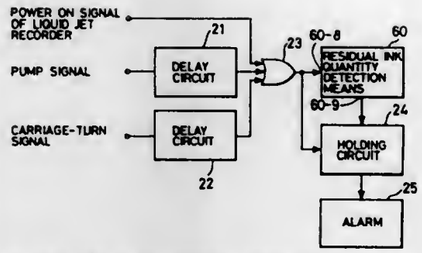
Continuation of Ser. No. 880,713, May 8, 1992, abandoned, which is a continuation of Ser. No. 622,187, Dec. 5, 1990, Pat. No. 5,136,309, which is a continuation of Ser. No. 304,898, Feb. 1, 1989, abandoned, which is a continuation of Ser. No. 27,198, Mar. 17, 1987, abandoned. This application Feb. 9, 1994, Ser. No. 193,900

Claims priority, application Japan, Mar. 19, 1986, 61-59559; Apr. 8, 1986, 61-79209; Jul. 3, 1986, 61-155186; Jul. 3, 1986, 61-155187; Jul. 3, 1986, 61-155188; Aug. 28, 1986, 61-200154

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—7 **29 Claims**

1. A recording apparatus comprising:



a recording head for recording by discharging ink onto a recording medium;

scan means for reciprocally scanning said recording head along a main scan direction;

a supply system provided at a position not scanned by said scan means in said recording apparatus and containing an amount of the ink therein, said supply system being operable in connection with the supply of ink to said recording head;

control means for controlling an operation including a switch of said scan means in the scan direction thereof;

residual ink quantity detecting means for detecting a residual ink quantity in said supply system, said detecting means including a deviation member connected to an ink supply path of said ink supply system to form a part thereof, said deviation member being deviated upon a change in pressure in the ink supply path, thereby detecting a residual ink quantity by detecting a deviation of the deviation member;

output means for outputting a signal relating the operation control of the scan direction switch of said scan means by said control means with a predetermined time delay; and

residual ink quantity detection control means for causing said residual ink quantity detecting means to perform a residual ink quantity detection based on the signal outputted from said output means.

5,623,291

MEASURING APPARATUS FOR THE INK-LEVEL IN INK-JET PRINTING UNIT

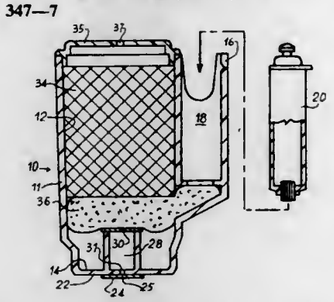
Roberto Morandotti, Mercenasco, and Alessandro Scardovi, Ivrea, both of Italy, assignors to Olivetti-Canon Industriale S.p.A., Ivrea, Italy

Filed Dec. 6, 1994, Ser. No. 354,028

Claims priority, application Italy, Dec. 16, 1993, TO93A0953

Int. Cl.[6] B41J *2/195;2/175*

U.S. Cl. 347—7 **11 Claims**



1. Apparatus for measuring ink level in an ink-jet printing unit, comprising:

a print-head;

a container integral with said print-head containing a volume of ink of a typical resistivity, said container including a pair of opposite walls separated by a distance; and

a pair of electrodes located inside said container, each electrode of said pair of electrodes comprising a flat plate secured to a corresponding wall of said pair of opposite walls, said plate being made of an electrically conductive and chemically inert material with reference to said ink, whereby said pair of electrodes is separated by said distance.

5,623,292

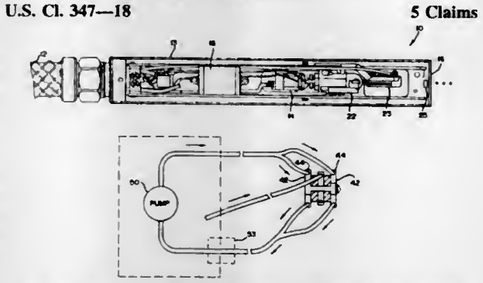
TEMPERATURE CONTROLLER FOR INK JET PRINTING

Dilip K. Shrivastava, Wheeling, and Richard Sutera, Schaumburg, both of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Dec. 17, 1993, Ser. No. 169,669

Int. Cl.[6] B41J *29/377*

U.S. Cl. 347—18 **5 Claims**



1. In an ink jet printer having a control cabinet, an ink supply in said cabinet and a remotely located printhead connected to said cabinet by an umbilical cord for supplying ink and control signals to said printhead the improvement comprising:

a) heat pump means comprising at least one thermoelectric device (TED) (**40**) disposed in said remotely located printhead (**10**) for transferring heat to or from said ink as a function of the polarity of the electric current applied to said TED;

b) means (**20**) for measuring an ink temperature in said printhead (**10**);

c) means (**70**) for comparing said ink temperature with a desired temperature range and for operating said TED to alter said ink temperature;

d) heat exchange means (**42**) in said printhead in thermal relation with said TED (**40**) for transferring heat to or from said TED to enhance the ability of said TED to maintain said ink temperature within said desired range;

e) said heat exchange means including a passageway (**32, 34, 36**) running therethrough for circulating a heat exchange liquid and;

f) means (**50**) for circulating said heat exchange liquid through said heat exchange means.

5,623,293

CONTACT ELECTRODE CONNECTOR

Nobuo Aoki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 27, 1994, Ser. No. 249,965

Claims priority, application Japan, May 28, 1993, 5-127399; Oct. 26, 1993, 5-266907

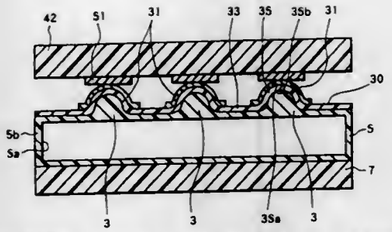
Int. Cl.[6] B41J *2/14*

U.S. Cl. 347—50 **32 Claims**

1. A contact electrode connector comprising:

a first electrode portion having a first electrode surface, a cam surface, and an aperture surface, the first electrode surface and the cam surface being on opposite sides of the first electrode portion, the aperture surface defining an aperture in the first electrode portion and connecting the first electrode surface and the cam surface;

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a first plurality of electrodes provided at first electrode positions on the first electrode surface;

a cam provided on the cam surface;

a second electrode portion having a second electrode surface;

a cam follower member having a shaft and a cam follower, the shaft having an end and an opposite end, the end of the shaft being attached to the second electrode surface, the cam follower being attached to the opposite end of the shaft, the cam follower member being shaped so that the cam follower is insertable through the aperture when the first electrode portion and the second electrode portion are in an insertion posture, and so that, after insertion through the aperture, the cam follower will follow a surface of the cam when the first electrode portion and the second electrode portion are moved from the insertion posture to a coupled posture, the first electrode surface moving towards the second electrode surface as the cam follower follows the surface of the cam; and

a second plurality of electrodes provided on the second electrode surface at second electrode positions that correspond to the first electrode positions when the first electrode portion and the first electrode portion are in a coupled posture, each electrode of the second plurality electrodes rubbingly coming into contact with a corresponding electrode of the second plurality of electrodes when the first electrode portion and the second electrode portion move into the coupled posture.

5,623,294

INK-JET RECORDING PROCESS, AND INK SET AND INK-JET RECORDING INSTRUMENT FOR USE IN SUCH PROCESS

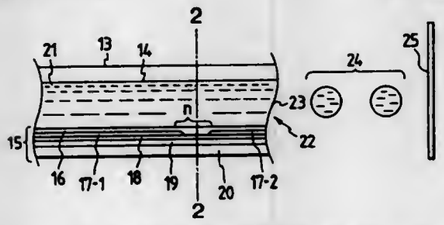
Yoshihisa Takizawa, Kawasaki; Makoto Aoki, and Yutaka Kurabayashi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,219

Claims priority, application Japan, Jul. 17, 1992, 4-190947; Sep. 1, 1992, 4-233693; Dec. 28, 1992, 4-348639

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—98 **24 Claims**



1. An ink-jet recording process comprising the steps of providing a recording medium, applying a colorless liquid comprising a water-soluble resin having at least one carboxyl group or anhydride thereof, or sulfonic group per molecule to the recording medium and then applying an ink comprising water, an organic solvent, a dye, an alkali-soluble resin and an alkali to portions of the recording medium where the colorless liquid was applied, thereby forming an image.

5,623,295

INFORMATION RECORDING REPRODUCING APPARATUS USING PROBE

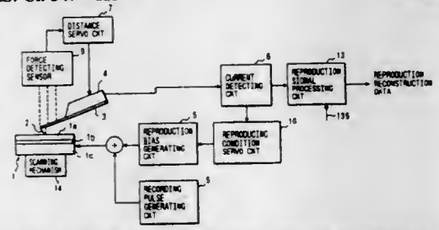
Etsuro Kishi, Sagamihara; Hisaaki Kawade, Yokohama; Kiyoshi Takimoto, Isehara, and Koji Yano, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 201,909

Claims priority, application Japan, Mar. 1, 1993, 5-040183

Int. Cl.[6] G01D *15/06*

U.S. Cl. 347—111 **4 Claims**



1. An information recording and/or reproducing apparatus for effecting at least one of recording information on and reproducing information from a recording medium by using a probe, said apparatus comprising:

detecting means for detecting a physical characteristic which occurs between the probe and the recording medium;

reproducing means for reproducing recording bits formed on the recording medium by utilizing said detecting means under a predetermined reproducing condition;

state detecting means for detecting a state of the recording medium in accordance with the detected physical characteristic, before said reproducing means reproduces the recording bits; and

correcting means for correcting a reproducing condition of said reproducing means in accordance with the detected state of the recording medium.

5,623,296

INTERMEDIATE TRANSFER INK JET RECORDING METHOD

Makoto Fujino; Toshio Kumagai; Michinari Tsukahara; Yoshie Hosono; Hiroto Nakamura; Yoshiyuki Koike; Makoto Matsuzaki; Fumie Uehara, and Osamu Ishibashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-To, Japan

PCT No. PCT/JP93/00914, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO94/01283, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 2, 1993, Ser. No. 199,129

Claims priority, application Japan, Jul. 2, 1992, 4-175384; Jul. 2, 1992, 4-175385; Jul. 2, 1992, 4-175386; Jul. 2, 1992, 4-175387; Oct. 16, 1992, 4-278938; Nov. 5, 1992, 4-296109; Nov. 5, 1992, 4-296110; Nov. 5, 1992, 4-296111; Jan. 6, 1993, 5-000665

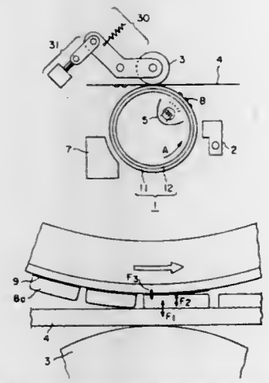
Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—103 **20 Claims**

1. An intermediate transfer ink jet recording method comprising the steps of:

ejecting an ink composition comprising water, a thermoplastic resin, a colorant and a water-soluble organic solvent on an intermediate transfer medium to form an ink image having a first shape;

heating said ink image to a heated state at or above the softening or melting temperature of said thermoplastic resin so as to bring the ink image on the intermediate transfer medium into



the form of a film having a surface that is viscous, whereby the ink image in the heated state has a second shape, said second shape having a thickness of 2–10 microns; and

interfacially transferring said ink image in the heated state on said transfer medium to a recording medium so as substantially to maintain said second shape.

5,623,297

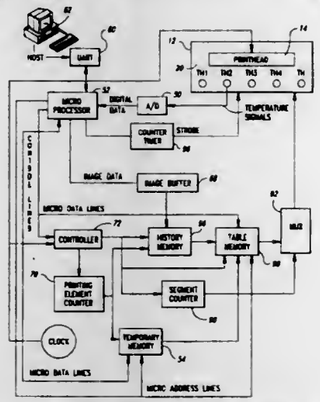
METHOD AND APPARATUS FOR CONTROLLING A THERMAL PRINTHEAD

Pixie A. Austin, Everett; Edward M. Millet, Seattle, and Christopher A. Wiklof, Everett, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Jul. 7, 1993, Ser. No. 88,846

Int. Cl.[6] B41J *2/36;2/365*

U.S. Cl. 347—194 **45 Claims**



23. A system for thermally printing an image on a media, comprising:

a thermal printhead having a plurality of thermal printing elements arranged in a predetermined pattern, said printhead further including a plurality of temperature sensors each of which generates a respective temperature signal that is indicative of a temperature of a portion of the printhead containing at least one of said plurality of temperature sensors;

a first processor connected to said temperature sensors, said first processor determining the approximate temperature of each of said printing elements as a function of the temperature signals generated by said temperature sensors and their spatial relationship to said printing elements;

a temperature memory connected to said first processor, said temperature memory receiving and storing data corresponding to the approximate temperature of each of said printing elements;

a history memory containing data corresponding to whether each of said printing elements is to contribute to the printing of said image during a scan line;

a printing element counter sequentially selecting each of a plurality of printing elements by outputting a respective data byte corresponding thereto, said printing element counter addressing said temperature memory and said history memory so that said temperature memory and said history memory sequentially output respective temperature bytes and history bytes corresponding to the approximate temperature of said selected printing element and whether said selected printing element is to contribute to the printing of said image during said scan line; and

a table memory containing a plurality of data bytes each of which corresponding to the energy that is to be added to a printing element as a function of the approximate temperature of said printing element and the manner in which said printing element contributes to the printing of said image, said table memory being sequentially addressed by respective addresses each of which is formed from a temperature byte and a history byte corresponding to one of said selected printing elements, said table memory applying to said printhead the data byte stored therein at a location designated by said address so that said data byte controls the heating of said selected printing element as a function of time during said scan line.

5,623,298

GLAZED LAYER FOR A THERMAL PRINT HEAD

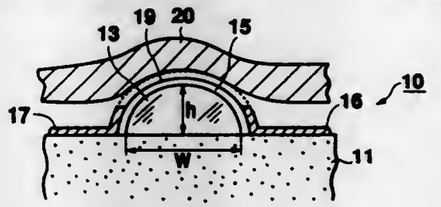
Kunio Motoyama; Masatoshi Nakanishi; Takaya Nagahata, and Hiroaki Onishi, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 29, 1994, Ser. No. 268,051

Claims priority, application Japan, Jun. 30, 1993, 5-162765

Int. Cl.[6] B41J *2/335*

U.S. Cl. 347—202 **8 Claims**



1. A thermal print head comprising:

(a) an insulating substrate;

(b) a partial glazed layer formed on a portion of said insulating substrate and having a conical cross-sectional shape;

(c) a heat generating resistor covering both said insulating substrate and said partial glazed layer;

(d) a common electrode and discrete electrodes formed on said heat generating resistor;

(e) a heat generating section in which said heat generating resistor generates heat, said heat generating section being formed on said partial glazed layer; and

(f) a protective layer covering said common electrode, said discrete electrodes and said heat generating section;

(g) a lowest part of said partial glazed layer having a width of 0.1 to 0.4 mm, and said partial glazed layer having a peak height of 15 to 25 μm.

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5,623,299

THERMAL TRANSFER RECORDING APPARATUS WITH INK SHEET AND RECORDING MEDIUM TRANSPORTED BY PREDETERMINED AMOUNTS

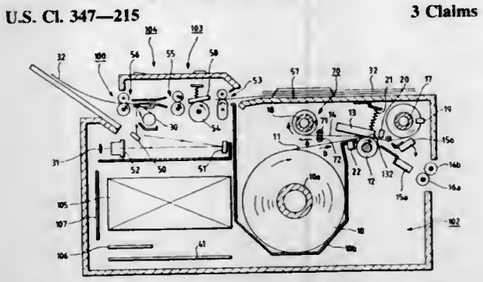
Takehiro Yoshida, Tokyo; Takeshi Ono, Yokohama; Satoshi Wada, Kawasaki; Tomoyuki Takeda, Yokohama; Masaya Kondo, Tokyo; Makoto Kobayashi, Tama; Takahiro Kato; Takashi Awai, both of Yokohama; Yasushi Ishida, Tokyo; Akihiro Tomoda, Yokohama; Minoru Yokoyama, Yokohama, and Masakatsu Yamada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 647,259, Jan. 29, 1991, Pat. No. 5,266,971. This application Feb. 18, 1993, Ser. No. 19,283

Claims priority, application Japan, Feb. 1, 1990, 2-20402

Int. Cl.[6] B41J *11/44;11/42*

U.S. Cl. 347—215 **3 Claims**



1. A thermal transfer recording apparatus for recording an image on a recording medium by transferring ink thereto from an ink sheet, comprising:

first transport means for transporting the recording medium of a continuous web form;

second transport means for transporting said ink sheet in a first direction and in a second direction opposed to said first direction with respect to the recording medium;

recording means for acting on said ink sheet transported by said second transport means and for recording an image on the recording medium, wherein said recording medium and said ink sheet are transported at an image recording with respective amounts of transportation satisfying a first relationship;

cutter means for cutting the recording medium after said image recording;

first control means for controlling said first transport means so as to transport the recording medium by a first predetermined amount for cutting thereof; and

second control means for controlling said second transport means so as to transport said ink sheet in said first direction by a second predetermined amount after said image recording, said second predetermined amount being a predetermined fraction less than unity of said first predetermined amount, and so as to transport said ink sheet by a third predetermined amount in said second direction after the recording medium is cut by said cutter means, said third predetermined amount being less than said second predetermined amount.

5,623,300

PRINT HEAD WITH LIGHT-EMITTING ELEMENT DRIVING CORRECTION

Tetsuya Itoh, Okazaki; Munehiro Nakatani, Toyohashi, and Nobuo Kamei, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1993, Ser. No. 100,168

Claims priority, application Japan, Aug. 4, 1992, 4-207875

Int. Cl.[6] B41J *2/435;2/45;2/47*

U.S. Cl. 347—237 **4 Claims**

1. A print head comprising:

a D/A converter which converts digital image data to analog signals, the digital image data comprising pixels, wherein each pixel of the digital image data comprises a plurality of bits representing an optical density of the pixel;

a first analog shift register which receives the analog signals from said D/A converter and which shifts the analog signals received from said D/A converter;

a second analog shift register which receives the analog signals from said first analog shift register and which holds a line of analog signals received from said first analog shift register;

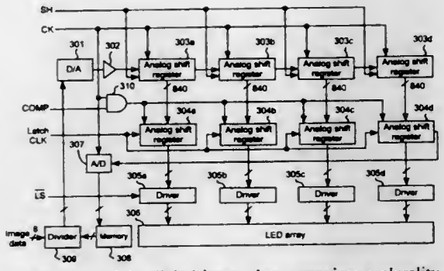
an A/D converter which receives a serial shift output from said second analog shift register and which converts the serial shift output received from said second analog shift register to a digital signal when a standard value is input to said D/A converter;

a line memory which receives the digital signal from said A/D converter and which stores the digital signal;

a divider which receives the digital signal from said line memory and which receives digital image data and which divides the digital image data by the digital signal received from said line memory to produce corrected data and which sends the corrected data to said D/A converter, wherein after being converted by said D/A converter, the corrected data are transmitted to the first analog shift register, shifted in said first analog shift register, and held in said second analog shift register;

a light-emitting array comprising a line of light-emitting elements; and

a driver which receives the corrected data from said second analog shift register and which drives the light-emitting elements in said light-emitting array according to the corrected data received from said second analog shift register.



5,623,301

DIGITAL COPIER WITH MEMORY OCCUPANCY CALCULATION

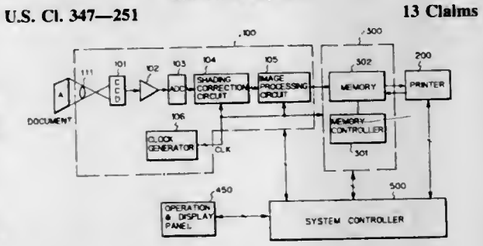
Morihiko Okimoto, Yokohama; Masahito Obata, Tokyo; Hidefumi Nishitsuji, and Takanobu Saito, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 11, 1994, Ser. No. 272,585

Claims priority, application Japan, Jul. 12, 1993, 5-171535

Int. Cl.[6] B41J *2/39*

U.S. Cl. 347—251 **13 Claims**



1. A digital copier comprising:

reading means for reading an image of a document digitally;

storing means for storing image data read by said reading means;

write control means for writing the image data read by said reading means in said storing means;

read control means for reading the image data out of said storing means; and

image forming means for forming a document image on a recording medium on the basis of the image read out of said storing means by said read control means;

said write control means comprising:

document length detecting means for detecting a length, in a subscanning direction, of the document read by said reading means;

line counting means for counting write lines of said storing means over the length of the document detected by said document length detecting means;

address setting means for setting a write address for said storing means on the basis of a count output from said line counting means; and

calculating means for calculating an occupancy of said storing means on the basis of the write address set by said address setting means, wherein said calculating means calculates the occupancy of said storing means when said read control means has fully read out the image data on a document basis.

5,623,302

Patent Not Issued For This Number

5,623,303

APPARATUS FOR REPRODUCING PHOTOGRAPHED IMAGES

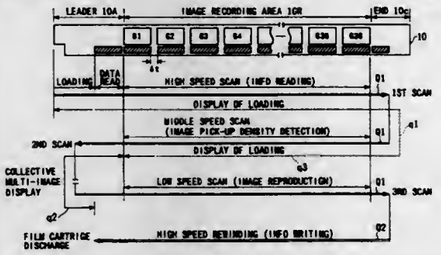
Manabu Inoue, Kobe; Hirokazu Yagura, Sakai; Katsuyuki Nanba, Sakai; Tsutomu Honda, Sakai; Toru Ishii, Hirakata; Hideki Nagata, Sakai; Hiroaki Kubo, Kyoto; Gen Sasaki, Toyonaka, and Hiroshi Ootsuka, Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Feb. 27, 1995, Ser. No. 394,760

Claims priority, application Japan, Feb. 28, 1994, 6-030547; Feb. 28, 1994, 6-030560; Feb. 28, 1994, 6-030588; Mar. 14, 1994, 6-042665

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—96 **28 Claims**



1. An apparatus for reproducing images recorded on successive frames of a film recorded with information, the apparatus comprising:

a film feeder which feeds the film in a first direction and a second direction opposite to the first direction;

an information reader which reads the recorded information;

a density detector which detects a density of each image; and

a controller which places into operation:

the information reader when the film is fed in the first direction; and

the density detector when the film is fed in the second direction.

5,623,304

CCTV SYSTEM USING MULTIPLEXED SIGNALS TO REDUCE REQUIRED CABLES

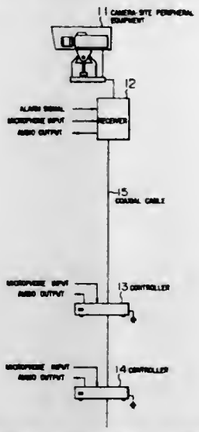
Kazuo Ota, Sagamihara; Satoshi Soma, Yokohama; Hajime Matsumoto, Yokohama, and Takayuki Kimura, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 586,962, Sep. 24, 1990, abandoned. This application Sep. 23, 1994, Ser. No. 311,702

Claims priority, application Japan, Sep. 28, 1989, 1-250679

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—143 **10 Claims**



10. A closed circuit television system comprising:

camera-site equipment having at least one video camera for generating a video signal in the NTSC standard;

at least one control-site means including control means for producing a control signal to control said video camera and audio input/output means including an FM modem for modulating/demodulating an audio signal; and

a single cable for operatively connecting said camera-site equipment and said control-site means to transmit therethrough and therebetween the video signal in the NTSC standard generated by said camera;

wherein:

said camera site equipment comprises means for receiving a first composite signal, detecting said digital control signal and generating a confirmation signal, in response to said control signal, to confirm that said control signal has been properly received and transmitting through said cable said confirmation signal in a first predetermined time area of a vertical blanking period, and

said control means produces a composite video signal by multiplexing said control signal in a second predetermined time area of said blanking period of the video signal in the NTSC standard transmitted through said cable to provide a resultant multiplexed video signal and by multiplexing said resultant multiplexed video signal with said audio signal modulated by said FM modem to produce said composite video signal for transmission through said cable between said control-site means and said camera-site equipment.

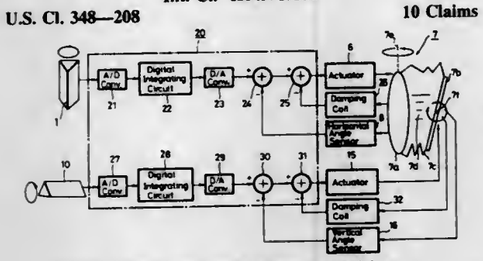
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5,623,305

CAMERA SHAKE CORRECTING APPARATUS HAVING DAMPING COILS FOR YAW AND PITCH

Shigeki Ishizuka, Kanagawa; Koichi Sato, Tokyo; Akira Nikami, and Mitsuru Sato, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 12,052, Jan. 29, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,339
Claims priority, application Japan, Jan. 31, 1992, 4-016968; Mar. 19, 1992, 4-063905
Int. Cl.[6] H04N *5/228*
U.S. Cl. 348—208 **10 Claims**



1. A camera shake correcting apparatus comprising:

a variable angular prism including yaw and pitch glass plates in spaced relation with a light transmission medium sealingly arranged therebetween for changing a refracting angle of said prism by changing a relative angle between said glass plates in response to yaw and pitch angular prism drive signals to thereby change a refraction angle of light passing through said prism;

prism angle position detecting means for detecting a horizontal angular position of said yaw glass plate and producing a yaw position signal and a vertical angular position of said pitch glass plate and producing a pitch position signal;

camera shake amount detecting means for detecting an amount of camera shake of at least a horizontal and a vertical motion of a camera and producing yaw and pitch motion signals;

damping coil means attached respectively to said yaw and pitch glass plates for producing yaw and pitch damping signals;

calculating means for calculating said yaw and pitch angular prism drive signals based on said yaw and pitch motion signals produced by said camera shake detecting means, said yaw and pitch position signals produced by said prism angle position detecting means, and said yaw and pitch damping signals produced by said damping coil means, and generating said yaw and pitch angular prism drive signals;

variable angular prism drive means for driving said prism by rotationally driving said yaw and pitch glass plates in response to said yaw and pitch angular prism drive signals; and

a differentiating loop connect between an an output and an input of said variable angular prism drive means for reducing interference between said variable angular prism drive means and said damping coils, said differentiating loop including a differentiating circuit and an amplifying circuit.

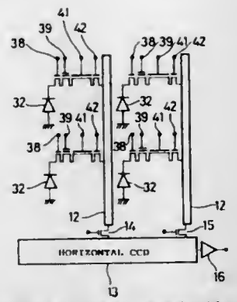
5,623,306

DARK CURRENT SUPPRESSION FOR SOLID STATE IMAGE SENSING DEVICE

Nobuyuki Kajihara; Gen Sudo; Kenji Arinaga; Koji Fujiwara, and Hiroko Nakamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 235,717, Apr. 29, 1994, abandoned. This application Jun. 26, 1995, Ser. No. 494,758
Claims priority, application Japan, May 21, 1993, 5-120191
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—243 **18 Claims**

18. A solid state image sensing device having a plurality of pixels each of which outputs to a transmission portion signal electric charge corresponding to an amount of light projected



thereon, the signal electric charge transmitted by said transmission portion being output as an image signal for each pixel from said solid state image sensing device, each pixel comprising:

a plurality of photo-diodes;

storage means, operably coupled to said plurality of photo-diodes, for integrating electric charges corresponding to currents output from said plurality of photo-diodes onto which lights are projected and for storing integrated electric charge;

transfer means, operably coupled to said storage means, for transferring the integrated electric charge stored by said storage means to said transmission portion; and

control means, operably coupled to said transfer means, for controlling, in accordance with characteristics of said plurality of photo-diodes, an amount of integrated signal electric charge to be received by said transmission portion,

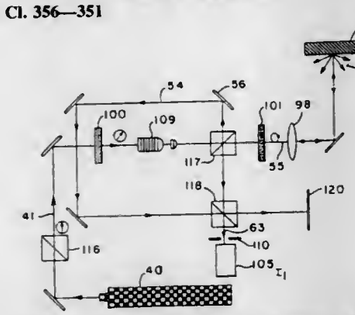
wherein the amount of electric charge supplied to said storage means is controlled by said control means based on a dark current characteristic of said photo-diode.

5,623,307

APPARATUS FOR MEASURING SURFACE MOVEMENT OF AN OBJECT THAT IS SUBJECTED TO EXTERNAL VIBRATIONS

Petros A. Kotidis, Waban; Jaime A. Woodroffe, North Reading, and Peter S. Rostler, Newton, all of Mass., assignors to Textron Defense Systems, Division of Avco Corporation, Wilmington, Mass.

Division of Ser. No. 160,279, Dec. 2, 1993, Pat. No. 5,410,405, which is a division of Ser. No. 785,787, Oct. 31, 1991, Pat. No. 5,286,313. This application Jan. 31, 1995, Ser. No. 381,201
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—351 **6 Claims**



1. Apparatus for measuring surface movement of an object in response to a plurality of periodically spaced externally generated sound waves traveling in said object, said object subjected to externally generated vibrations of a lower frequency than said sound waves, said apparatus comprising;

optical homodyne interferometer means that comprises,

a) a source of light which is linearly polarized;

b) means for splitting said light from said source into a signal beam directed to and from said object and a reference beam;

c) means for generally elliptically polarizing at least one of said signal beam and said reference beam;

d) means for combining said signal beam and said reference beam into a resultant beam to produce an interference light pattern;

e) means for periodically measuring the intensity of said resultant beam and generating a plurality of signals, each signal indicative of the phase of said signal beam in said resultant beam; and

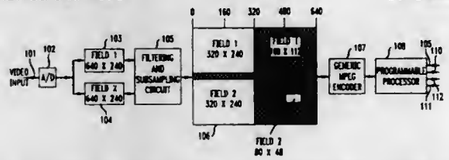
f) signal conditioning means for squaring, summing and averaging said signals to produce a signal indicative of the speed of said sound waves in said object and to also compensate for a variation in an operating point of said optical homodyne interferometer means due to said externally generated vibrations.

5,623,308

MULTIPLE RESOLUTION, MULTI-STREAM VIDEO SYSTEM USING A SINGLE STANDARD CODER

Mehmet R. Civanlar, Middletown, and Robert D. Gaglianello, Little Silver, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 7, 1995, Ser. No. 499,700
Int. Cl.[6] H04N *7/46*
U.S. Cl. 348—392 **25 Claims**



1. A video encoding system for simultaneously coding and compressing an input video signal in a frame format of pixel data having a predetermined resolution into a plurality of coded and compressed bitstreams representing the input video signal at different resolutions, the system comprising:

a single standard coder which converts to a coded and compressed output bitstream, pixel data from a frame of an input video signal having a predetermined resolution that is inputted to the coder in a raster scan order and processed by the coder in macroblocks of pixels, said output bitstream comprising a plurality slices which represent the coded and compressed pixel data in one or more macroblocks in a common row of macroblocks in the frame of the input video signal, each slice having an identifiable delineating slice start code (SSC) which identifies a row of the slice in the frame, and the first macroblock in each slice having an identifiable macroblock address increment (MAI) which identifies the position of that first macroblock in the slice relative to a fixed position in the frame and which can be retrieved from the coded and compressed pixel data in the slice in the output bitstream without decoding the slice;

means for converting a frame of pixel data of the input video signal of said predetermined resolution into a plurality of frames of pixel data having the different resolutions;

frame buffering means for commonly storing a frame of each of the plurality of frames of pixel data having different resolutions, wherein each of the plurality of frames of pixel data having the different resolutions are separated in said frame buffering means by a guard band;

means for supplying macroblocks of pixel data in a raster scanned order from said commonly stored frame in said frame buffering means to said single standard coder, said single standard coder outputting a single bitstream comprising a plurality of successive slices each of which contains the coded and compressed pixel data in at least one macroblock of pixel data in said commonly stored frame, the SSC of each slice being numbered according to the row of the associated pixel data of the slice in the commonly stored frame and the MAI of the first macroblock in each slice being numbered according to the relative position of the first macroblock in the slice in the commonly stored frame, wherein each slice is constrained to contain coded and compressed pixel data from no more than one of the frames of the different resolutions stored within said commonly stored frame; and

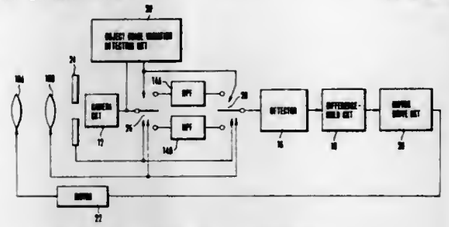
processing means for demultiplexing in accordance with their SSCs and MAIs the slices in the output bitstream of said single standard coder and forming separate bitstreams that are associated with each resolution, said processing means renumbering as is necessary the SSCs of the slices and the MAIs in the first macroblock of the slices in each resolution bitstream according to the resolution of each bitstream.

5,623,309

AUTOMATIC FOCUSING DEVICE WITH ADAPTIVE SIGNAL FILTERING

Katsuji Yoshimura; Masamichi Toyama; Akihiro Fujiwara, all of Kanagawa-ken; Kunihiko Yamada, Tokyo, and Hirofumi Suda, Kananawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,557, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 65,459, May 20, 1993, abandoned, which is a continuation of Ser. No. 793,249, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 452,288, Jan. 31, 1990, abandoned, which is a division of Ser. No. 154,078, Feb. 9, 1988, abandoned. This application Aug. 4, 1994, Ser. No. 285,893
Claims priority, application Japan, Feb. 12, 1987, 62-030276; Jul. 10, 1987, 62-171065; Jul. 10, 1987, 62-171066
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—355 **33 Claims**



1. An automatic focusing device comprising:

(A) image pickup means for converting an object image formed on an image pickup plane to an electrical signal;

(B) extracting means for extracting a picked-up image signal of a predetermined frequency component from the picked-up image signal from said image pickup means in passing therethrough;

(C) object image variation detecting means for comparing said picked-up image signal with that produced a predetermined period before to detect a variation of the object image on said image pickup plane; and

(D) characteristic varying means for varying a pass band of frequency of said extracting means depending on the detection result of said object image variation detecting means; and

(E) focus control means for adjusting a focus condition on the basis of an output of said extracting means.

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5,623,310

APPARATUS FOR ENCODING A VIDEO SIGNAL EMPLOYING A HIERARCHICAL IMAGE SEGMENTATION TECHNIQUE

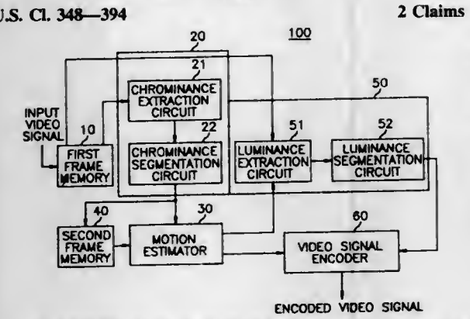
Jin-Hun Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 29, 1996, Ser. No. 623,763

Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7314

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—394 **2 Claims**



1. An apparatus for encoding an input video signal, wherein the input video signal includes a sequence of image frames, each of the image frames having a predetermined number of pixels and each of the pixels being represented by a luminance level and a chrominance level, which comprises:

means for extracting chrominance levels for pixels contained in a current image frame of the input video signal to generate a current chrominance image;

segmentation means for deriving a plurality of segmented current chrominance regions by using the generated current chrominance image to produce contour and texture information of each segmented current chrominance region, wherein the contour information represents the shape and location of said each segmented current chrominance region and the texture information represents a mean chrominance level of all pixels contained in said each segmented current chrominance region;

means for storing and delaying the contour and texture information for the plurality of segmented current chrominance regions to provide the delayed information as contour and texture information for segmented previous chrominance regions;

means for calculating differences between texture information of each segmented current chrominance region and that of each of the segmented previous chrominance regions to select one of the segmented previous chrominance regions which yields a minimum difference, and for generating search region information representing positions of all pixels contained in said each segmented current chrominance region, motion information denoting the selected segmented previous chrominance region and difference information representing a difference between the texture information of said each segmented current chrominance region and that of the selected segmented previous chrominance region;

means, in response to the search region information, for extracting its corresponding segmented luminance region having luminance levels from the current image frame and for deriving a multiplicity of sub-segmented luminance regions by using the luminance levels included in the segmented luminance region to provide contour and texture information of each sub-segmented luminance region, wherein the contour information represents the shape and location of said each sub-segmented luminance region and the texture information represents a mean luminance level of all pixels in said each sub-segmented luminance region; and

means for encoding the contour and texture information, the motion information, the difference information for each segmented current chrominance region, and the contour and texture information for each sub-segmented luminance region to provide an encoded video signal.

5,623,311

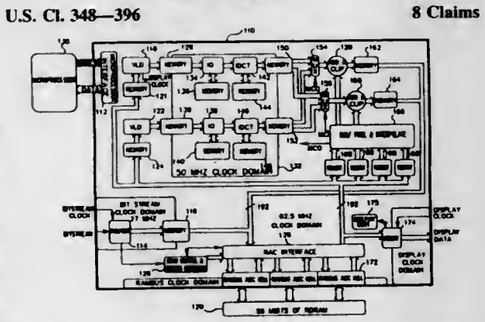
MPEG VIDEO DECODER HAVING A HIGH BANDWIDTH MEMORY

Larry Phillips, Collingswood; Shuji Inoue, Mount Holly, both of N.J., and Edwin R. Meyer, Bensalem, Pa., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Oct. 28, 1994, Ser. No. 330,579

Int. Cl.[6] H04N *7/12*

U.S. Cl. 348—396 **8 Claims**



1. Apparatus for decoding a data stream including a plurality of variable length encoded data values representing an image where the data stream represents video signals having luminance components and chrominance components, the apparatus comprising:

a memory for storing image data where the memory has a single memory port which includes first and second channels, arranged in parallel, wherein each memory operation to the single memory port concurrently transfers data via the first and second channels and the image data is arranged in the memory to allow image data representing corresponding chrominance and luminance components to be accessed concurrently using the first and second channels, respectively, and to allow image data representing first and second contiguous luminance components to be accessed concurrently using the first and second channels, respectively;

means for receiving the data stream and for storing the data stream into a buffer area of the memory via the single memory port;

decoding means including:

(a) means for fetching the variable length encoded data stream from the memory via the single memory port;

(b) means for processing the fetched variable length encoded data stream to produce first decoded values;

(c) means for fetching reference image data from the memory via the single memory port;

(d) means for combining the fetched reference image data with the first decoded values to produce second decoded values; and

(e) means for storing the second decoded values in the memory via the single memory port; and

means for fetching image data from the memory, via the single memory port, for display.

5,623,312

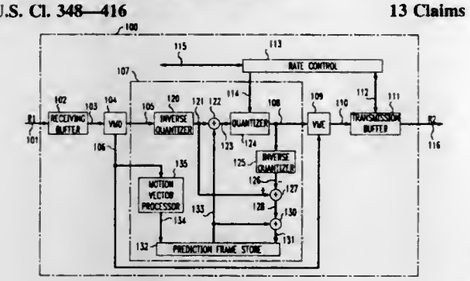
COMPRESSED-DOMAIN BIT RATE REDUCTION SYSTEM

Li Yan, Holmdel, and Barin G. Haskell, Tinton Falls, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 361,929

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—416 **13 Claims**



1. A bit rate reduction apparatus including:

(a) a first inverse quantizer having an input and an output:

(b) a second inverse quantizer having an input and an output;

(c) a prediction frame store;

(d) a quantizer having an input and an output;

(e) processor means for performing computations on a plurality of motion vectors; each motion vector being represented by an X value and a Y value:

(f) motion vector memory means for storing a plurality of motion vectors, the plurality of motion vectors corresponding to at least one video image frame, the video image frame containing a plurality of macro blocks, each macro block being associated with a motion vector: and

(g) first, second, and third summing devices; each summing device having a first input, a second input, and an output;

the first inverse quantizer adapted to accept an input signal including quantized DCT coefficients and quantization parameters, such that an output signal of reconstructed DCT coefficients is generated;

the processor means adapted to accept an input signal including motion vectors; such that an output signal of processed motion vectors is generated in response to the input signal of motion vectors;

the output signal being coupled to the prediction frame store;

the first inverse quantizer output signal coupled to the first input of the first summing device;

the prediction frame store generating an output signal including a motion-compensated drift error signal; the motion-compensated drift error signal being coupled to the second input of the first summing device;

the output of the first summing device being coupled to the quantizer input; the quantizer output being coupled to the second inverse quantizer input; the second inverse quantizer output being inverted and then coupled to the first input of the second summing device; the first inverse quantizer output being coupled to the second input of the second summing device; the output of the second summing device being coupled to the first input of the third summing device; the second input of the third summing device being coupled to the output signal of the prediction frame store; the output of the third summing device being coupled to the prediction frame store; the output of the quantizer comprising re-quantized DCT coefficients and new quantization parameters.

5,623,313

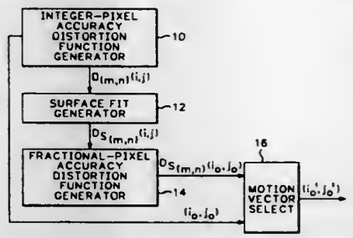
FRACTIONAL PIXEL MOTION ESTIMATION OF VIDEO SIGNALS

T. Naveen, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Sep. 22, 1995, Ser. No. 532,325

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—416 **1 Claim**



1. An improved method of fractional pixel motion estimation for a video compression signal encoder wherein a block of pixels in a current video image of an input video signal is compared with displaced blocks of pixels at different locations in a reference video image to provide a compressed video signal by generating a distortion function for each location and selecting a displacement vector that gives a minimum value of the distortion function as a motion vector for the block of pixels, the motion vector being used by the video compression signal encoder to predict the reference video image, the improvement comprising the steps of:

fitting a general surface to the distortion function so that the fitted surface equals the distortion function at integer pixel locations surrounding a center pixel of the block having the minimum value of the distortion function;

estimating the distortion function at fractional pixel locations surrounding the center pixel; and

selecting, as the motion vector, the displacement vector that gives a minimum value for the fractional pixel distortion function from among the center pixel and the fractional pixel locations surrounding the center pixel, the selected motion vector being transmitted as part of the compressed video for the block of pixels.

5,623,314

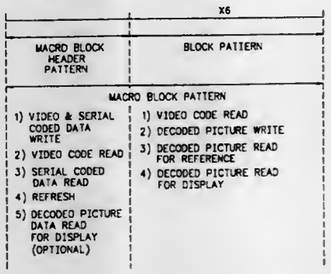
MPEG DECODER MEMORY DATA STORAGE AND TRANSFER

Refael Retter, Haifa; Moshe Bublil, Netanya; Gad Shavit, Givat Ella, and Aharon Gill, Haifa, all of Israel, assignors to Zoran Microelectronics Ltd., Haifa, Israel

Filed May 18, 1994, Ser. No. 245,740

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—423 **7 Claims**



1. In an MPEG decoder, a method of picture data transfer from a DRAM memory and processing comprising the steps of

a) decoding a sequence header for each picture data having a plurality of macroblocks,

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b) decoding a macroblock header at the beginning of each macroblock, and

c) executing a fixed plurality of repetitions of block decoding after each macroblock beader decoding.

5,623,315

COMPUTER SYSTEM FOR PROCESSING SOUND DATA

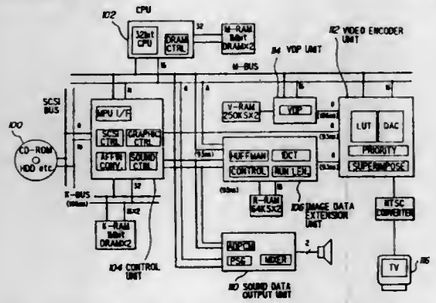
Katsunori Takahashi, and Masahide Tomita, both of Hokkaido, Japan, assignors to Hudson Soft Co., Ltd., Hokkaido, Japan

Division of Ser. No. 128,288, Sep. 29, 1993. This application Oct. 27, 1995, Ser. No. 549,297

Claims priority, application Japan, Sep. 30, 1992, 4-285154; Oct. 1, 1992, 4-284981; Oct. 2, 1992, 4-289634; Oct. 2, 1992, 4-289635; Oct. 7, 1992, 4-293769; Oct. 9, 1992, 4-298070

Int. Cl.[6] H04N *9/475*

U.S. Cl. 348—515 **1 Claim**



1. A computer system for processing sound data comprising:

a generator for generating ADPCM (Adaptive Difference Pulse Code Modulation) sound data, said generator having a register;

an ADPCM decoder for reproducing original sound from said ADPCM sound data, said ADPCM decoder having register;

means for storing the same data in the registers of said generator and said ADPCM decoder to specify a predetermined sampling frequency; and

a control unit for synchronizing the operations of said generator and said ADPCM decoder with each other in correspondence with said predetermined sampling frequency.

5,623,316

ON-SCREEN DISPLAY APPARATUS AND ON-SCREEN DISPLAY METHOD

Masahiro Naito; Yoshiteru Suzuki, and Kouji Minami, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,766

Claims priority, application Japan, Oct. 5, 1994, 6-241290; Oct. 7, 1994, 6-244065; Apr. 28, 1995, 7-105319

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—569 **9 Claims**

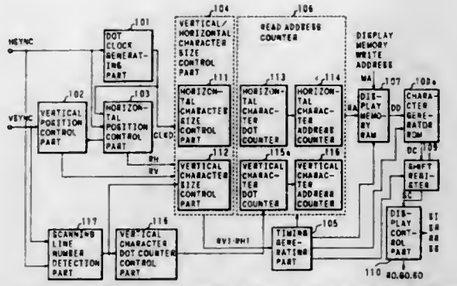
1. An on-screen display apparatus, comprising:

a memory means for storing font data including face data and a blank portion for each character in the font data;

a counter for counting synchronizing signals corresponding to a number of scanning lines in a character to be displayed;

a detection means for detecting a number of scanning lines in one screen from an input signal; and

a vertical dot count control means for determining a vertical dot number of the character to be displayed from said memory



means in accordance with the number of scanning lines detected by said detection means, said vertical dot count control means outputting to said counter a signal which controls the number of scanning lines to be counted by said counter,

wherein the character having the vertical dot number of said blank portion adjusted in accordance with the number of scanning lines counted by said counter are outputted from said memory means.

5,623,317

ALIAS DETECTION AND AVOIDANCE PROCESS USED IN THE PROCESSING OF VIDEO SIGNALS

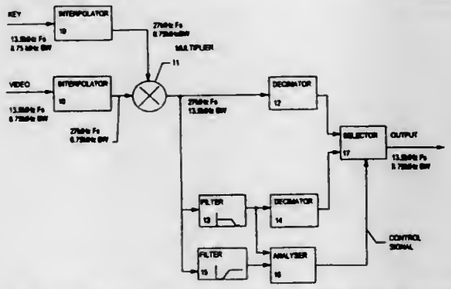
Roger Robinson; Alan Cosgrove; David Leftley, and Wynn Rees, all of c/o Vistek Electronics Ltd., Unit C, Wessex Road, Bourne End, Buckinghamshire SL8 5DT, United Kingdom

Filed Jan. 12, 1995, Ser. No. 371,705

Claims priority, application United Kingdom, Jan. 12, 1994, 9400438

Int. Cl.[6] H04N *5/265*

U.S. Cl. 348—584 **5 Claims**



1. A circuit for mixing a video signal Fv and a key signal Fk comprising:

an interpolator for receiving and upsampling the video signal Fv;

a multiplier for receiving the key signal Fk and multiplying it with the upsampled video signal to provide an upsampled keyed video signal.

a first downsampler for downsampling the upsampled keyed video signal;

a low pass filter for filtering the upsampled keyed video signal;

a second downsampler for downsampling the filtered signal; and

means for detecting the presence of high frequency components in the upsampled keyed video signal to provide a control signal for switching between outputs of the first and second downsampler.

5,623,318

GHOST CANCELLING METHOD AND APPARATUS USING CANONICAL SIGNED DIGIT CODES

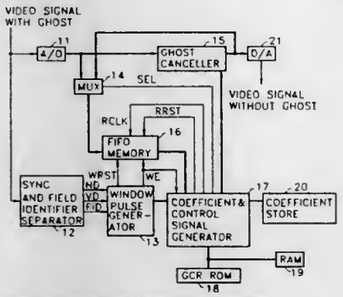
Myeong-hwan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 7, 1995, Ser. No. 528,652

Claims priority, application Rep. of Korea, Sep. 7, 1994, 94-22512

Int. Cl.[6] H04N *5/213*

U.S. Cl. 348—614 **15 Claims**



1. A ghost cancelling apparatus comprising:

an input end for receiving a ghost-containing video signal;

means for separating a transmitted ghost cancelling reference (GCR) signal from the video signal received via said input end, and storing the separated transmitted GCR signal therein;

control means for receiving the transmitted GCR signal stored in said separating and storing means to detect a characteristic of a channel through which the video signal is transmitted, and generating canonical signed digit (CSD) filter coefficient values represented in the form of CSD codes on the basis of the detected channel characteristic; and

filter means for cancelling a ghost component contained in the video signal received via said input end on the basis of the CSD filter coefficient values generated by said control means, and outputting a ghost-cancelled video signal.

5,623,319

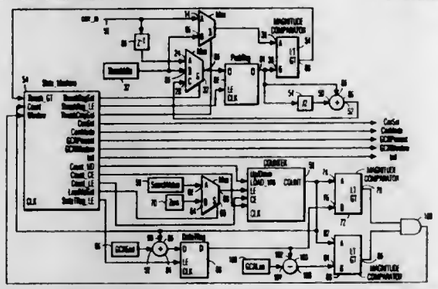
GHOST CANCELLATION REFERENCE SIGNAL DETECTION AND SYNCHRONIZATION CIRCUIT

Rae L. Hill, Jefferson City, and Chris L. Spearman, Knoxville, both of Tenn., assignors to Philips Electronics North American Corp., New York, N.Y.

Filed Oct. 5, 1995, Ser. No. 539,567

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—614 **5 Claims**



1. A circuit for detecting and synchronizing a ghost cancellation reference (GCR) signal in a television video signal, comprising:

means for receiving at least one field of an input video signal;

means for finding a maximum correlation peak value in a field of said input video signal;

means for scaling said maximum correlation peak value to a lower predetermined value for detection and for forming a scaled peak value;

means for synchronizing a next field of said video signal using said scaled peak value; and

means for predicting a future position of the GCR signal.

5,623,320

GHOST PREVENTION APPARATUS FOR TELEVISION

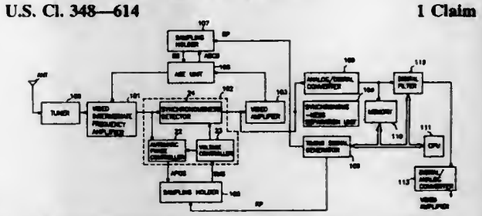
Seong S. Rim, Kyungsangbook-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,390

Claims priority, application Rep. of Korea, Nov. 30, 1994, 31931-1994

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—614 **1 Claim**



1. A ghost prevention apparatus for a television, comprising:

synchronous separation means for separating horizontal and vertical synchronous signals, respectively, from a combined picture signal detected by picture wave detection means;

timing signal generating means for generating a key pulse in a horizontal synchronous range in accordance with a horizontal synchronous signal outputted from said synchronous separation means and for generating a vertical blanking signal in a vertical synchronous range in accordance with a vertical synchronous signal;

first sampling holder means for sample-holding a phase control signal outputted from said picture wave detection means, outputting the thusly sample-holden phase control signal to the picture wave detection means in accordance with a key pulse outputted from said timing signal generating means, and enabling the picture wave detection means; and

second sampling holder means for sample-holding an AGC wave detection signal outputted from an AGC circuit, disabling said AGC circuit in accordance with a vertical blanking signal outputted from the timing signal generation means.

5,623,321

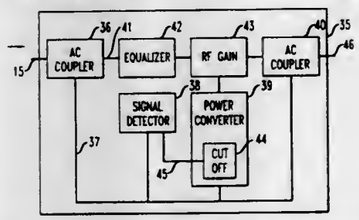
CIRCUIT FOR CUTTING OFF POWER TO AN ACTIVE RF COMPONENT

Stephen R. Harsanyi, Roxbury Township, Morris County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 18, 1995, Ser. No. 573,645

Int. Cl.[6] H04N *5/63*

U.S. Cl. 348—730 **14 Claims**



1. A circuit for cutting off power to an active RF component comprising:

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a coupler for receiving at an input a combined power, monitoring signal, and video signal and for separating the power and monitoring signal from the video signal; and

means for detecting the monitoring signal supplied to the input and means for cutting off the power to at least a portion of the component when the monitoring signal is not detected while permitting the power to be conducted to an output of the component.

5,623,322

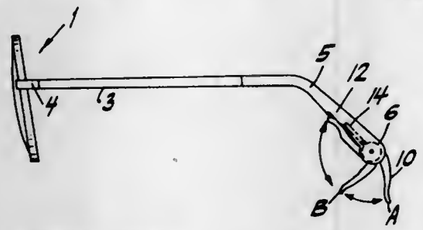
PULL DOWN MEMBER ON TEMPLE OF EYEGLASSES

Jason Hirschman, Arlington, Va.; Chul W. Shin, Masan, Rep. of Korea; Chang W. Kang, Masan, Rep. of Korea, and Ji W. Kim, Masan, Rep. of Korea, assignors to Hudson Optical Corporation, Bohemia, N.Y.

Filed Dec. 4, 1995, Ser. No. 567,139

Int. Cl.[6] G02C *5/14*

U.S. Cl. 351—119 **29 Claims**



1. Eyeglasses, comprising:

lens frame adapted for accommodating lenses;

a pair of temples, each attached at one end to said lens frame and having an end-piece at an opposite end thereof, said end-piece being configured to wrap partially around an ear of a wearer of said eyeglasses;

an elongated pull-down member ratchetably and pivotably attached to a distal end of each end-piece, said elongated pull-down member oriented at any of a series of pivoted positions relative to said end-piece to provide the eyeglasses with a secure fit on a wearer by resting adjacent an ear of the wearer.

5,623,323

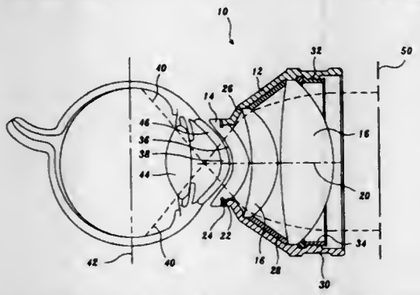
EXTRA WIDE FIELD OPHTHALMIC LENS

Robert D. Johnson; Janet L. Crossman, both of Bellevue, Wash., and Martin A. Mainster, Leawood, Kans., assignors to Ocular Instruments, Inc., Bellevue, Wash.

Filed Oct. 26, 1994, Ser. No. 329,712

Int. Cl.[6] A61B *3/00;* **G02C** *7/04*

U.S. Cl. 351—219 **8 Claims**



1. A contact-type ophthalmic lens for use in diagnosis and treatment of the eye comprising:

a contact lens having a posterior surface and an anterior surface, the posterior surface having a curvature approximating the curvature of the cornea and adapted to contact the cornea, the anterior surface being convex and having a relatively high power,

an entry lens positioned anterior to and substantially coincident with the optical axis of the contact lens, the entry lens having a convex posterior surface and a convex anterior surface, both the anterior surface and the posterior surface having a predetermined curvature, the anterior surface of the entry lens having a power significantly greater than the posterior surface over its entire radial extent, and

an intermediate meniscus lens positioned intermediate the contact lens and the entry lens and positioned substantially coincident with the optical axis of the contact lens, the intermediate lens having a concave posterior surface and a convex anterior surface, each of the surfaces having a predetermined curvature,

the lenses in combination receiving and refracting rays emanating from the fundus of the eye, including regions anterior to the equator of the eye, to form a very wide field, aerial image of the fundus of the eye anterior to and in close proximity to the anterior surface of the entry lens.

5,623,324

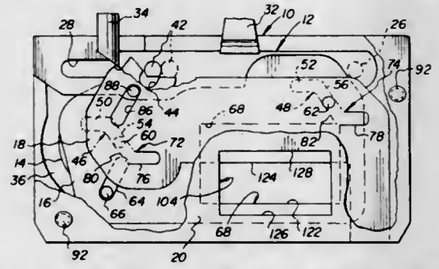
VARIABLE VIEWFINDER MASK ASSEMBLY

William F. Dassero, and Anthony DiRisio, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1995, Ser. No. 448,944

Int. Cl.[6] G03B *13/10;13/02*

U.S. Cl. 396—380 **4 Claims**



1. A variable mask device for the viewfinder of a camera, characterized by:

an aperture plate provided with a rectangular aperture;

first and second movable mask blades; and

adjusting means for selectively adjusting said mask blades to a first setting in which said blades are located beyond said aperture so that said aperture defines a first rectangular mask opening, a second setting in which said blades overlap the respective ends of said aperture so that said blades and said aperture define a rectangular second mask opening the same height as but narrower than said first mask opening, and a third setting in which said blades overlap the respective upper and lower edges of said aperture so that said blades and said aperture define a third mask opening the same width as but of less height than said first opening; including,

means for moving said blades horizontally in opposite directions between said first and second settings and diagonally in opposite directions between said first and third settings; and

blade support pins extending through cam slots in said blades to support said blades for such horizontal and diagonal movement.

5,623,325

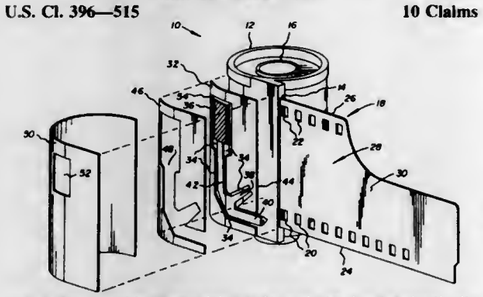
FILM CARTRIDGE WITH VISUAL FILM MOTION INDICATOR FOR VERIFYING FILM LOADING IN CAMERA

Joseph A. Manico; Richard S. Keirsbilck; John A. Agostinelli, all of Rochester, and Edgar G. Earnhart, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 9, 1996, Ser. No. 629,699

Int. Cl.[6] G03B *17/26*

U.S. Cl. 396—515 **10 Claims**



1. A film cartridge comprising a filmstrip having longitudinally successive perforations, and a housing for said filmstrip having a film passage slit through which the filmstrip can be moved into or out of said housing, is characterized by:

an indicator flag;

means supporting said indicator flag for reciprocating movement; and

actuator means positioned for engagement and disengagement with each perforation of said filmstrip as the filmstrip is moved through said slit to move said indicator flag forward and backward alternately, whereby a visible motion-indication is provided that the filmstrip is moving through the slit.

5,623,326

CAMERA-SHAKE CORRECTION APPARATUS

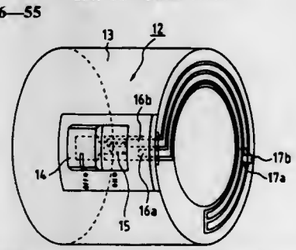
Hiroshi Okano, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 215,661, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 104,555, Aug. 11, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,434

Claims priority, application Japan, Aug. 14, 1992, 4-062851 U

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—55 **11 Claims**



1. A camera-shake correction apparatus comprising:

externally operable operation means for focusing a phototaking lens or changing a phototaking magnification of a phototaking lens upon being operated;

camera-shake detecting means for detecting a camera-shake amount as a displacement of a camera or said phototaking lens with respect to an optical axis, and outputting camera-shake information based on the detected camera-shake amount;

camera-shake correction means for reducing the camera-shake amount detected by said camera-shake detecting means; and

externally operable setting means for allowing an operation of said camera-shake correction means upon being operated,

wherein said setting means is arranged on said operation means.

5,623,327

CAMERA HAVING MEMORY DEVICE WHICH STORES TIMER VALUES USED IN THE COMPUTATION OF VELOCITY OF AN IMAGE BLUR SUPPRESSION LENS

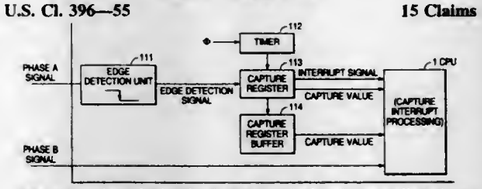
Sueyuki Ohishi, Tokyo, and Nobuhiko Terui, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 469,819

Claims priority, application Japan, Jun. 6, 1994, 6-147162

Int. Cl.[6] G03B *7/08*

U.S. Cl. 396—55 **15 Claims**



14. An optical device having an optical axis extending therethrough, comprising:

a lens movable in directions perpendicular to the optical axis to suppress image blur affecting the optical device;

an interrupter to detect the position of the lens and producing a position detection signal having change points occurring to indicate the position of the lens;

a timer to produce a count value;

a first memory device to store the count value of the timer when a change point occurs in the position detection signal; and

a control device to determine the displacement velocity of the lens from the count value stored in the first memory device, wherein

first and second change points occur in the position detection signal, the timer produces first and second count values corresponding, respectively, to the first and second change points, and the first memory device stores the first count value of the timer upon the occurrence of the first change point, and

the optical device further comprises a second memory device to receive the first count value from the first memory device upon the occurrence of the second change point, the first memory device then receiving the second count value from the timer, and the control device receiving the first count value from the second memory device and the second count value from the first memory device and determining the displacement velocity of the movable member in accordance with the first and second count values.

5,623,328

PROCESS CARTRIDGE AND IMAGE FORMING SYSTEM ON WHICH PROCESS CARTRIDGE IS MOUNTABLE

Tadayuki Tsuda; Kazumi Sekine; Isao Ikemoto, all of Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago, Tokyo; Shinya Noda, Yokohama; Kazunori Kobayashi, Kawasaki; Kazuhiko Ishiwata, Tokyo; Kazuo Shishido; Kanji Yano, both of Kawasaki; Hiroyuki Shirai; Makoto Tanaka, both of Tokyo; Shinichi Sasaki, Fujisawa; Yoshiya Nomura, and Toshiyuki Karakama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 952,650, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,517, Apr. 23, 1991, and Ser. No. 785,401, Oct. 30, 1991. This application Dec. 12, 1994, Ser. No. 356,779

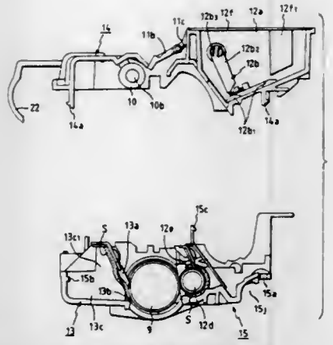
Claims priority, application Japan, Apr. 27, 1990, 2-110613; Nov. 6, 1990, 2-301779; Mar. 19, 1991, 3-54446; Jun. 30, 1992, 4-194662

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—111 **45 Claims**

1. A process cartridge removably mountable onto a main body of an electrophotographic image forming apparatus, said process cartridge comprising:

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an electrophotographic photosensitive drum;

a developing roller supplying toner to said electrophotographic photosensitive drum by rotation thereof for developing a latent image formed on said electrophotographic photosensitive drum;

a charge roller abutted to said electrophotographic photosensitive drum for charging said electrophotographic photosensitive drum;

a cleaning blade abutted to said electrophotographic photosensitive drum for removing toner remaining thereon;

a lower frame supporting said electrophotographic photosensitive drum, said developing roller, and said cleaning blade, said lower frame having a transfer opening for transferring the developed image formed on said electrophotographic photosensitive drum to a recording medium when said process cartridge is mounted on the main body of the electrophotographic image forming apparatus, and said lower frame being located at a lower position when said process cartridge is mounted in a predetermined position of the main body of the electrophotographic image forming apparatus;

an upper frame supporting said charge roller and a toner container unit for containing the toner to be used by said developing roller therein, said upper frame having an exposure aperture disposed between said charge roller and said toner container unit for irradiating a light corresponding to image information from the main body of the electrophotographic image forming apparatus when said process cartridge is mounted onto the main body, and said upper frame being located at an upper position when said process cartridge is mounted in the predetermined position of the main body of the electrophotographic image forming apparatus, said upper frame being separably connected with said lower frame, and said charge roller being attached to said upper frame and being movable toward said electrophotographic photosensitive drum and urged thereto by a spring, to followingly rotate with said electrophotographic photosensitive drum.

5,623,329

TRANSFER DEVICE FOR AN IMAGE FORMING APPARATUS

Kouichi Yamauchi; Hiroshi Tachiki, both of Yamatokoriyama; Hiromu Yoshimoto, Yamabe-gun; Atsuyuki Katoh, Tenri; Yuhi Akagawa, Ikoma; Takayuki Ohno, Yamatokoriyama; Yoshinobu Tateishi, Shiki-gun; Keizo Fukunaga, Ikoma; Mitsuyoshi Terada, Nara; Fumio Shimazu, Chiba; Takuya Abe, Chiba, and Kiyoshi Toizumi, Chiba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1995, Ser. No. 383,732

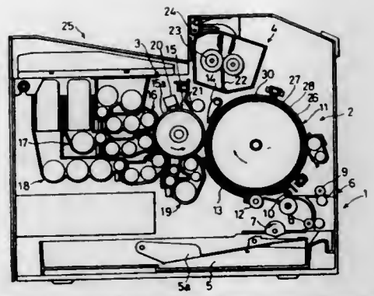
Claims priority, application Japan, Feb. 4, 1994, 6-012964; Feb. 4, 1994, 6-012965; Feb. 4, 1994, 6-012968; Nov. 29, 1994, 6-295194

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—314 **36 Claims**

1. An image forming apparatus comprising:

an image-carrying body on which a toner image is formed;



transfer means for transferring the toner image, formed on said image-carrying body, to transfer paper by bringing the transfer paper into contact with, said image-carrying body, said transfer means having a dielectric layer, a semi-conductive layer, and a conductive layer laminated in this order from a contact surface side of the transfer paper;

voltage applying means, connected to said conductive layer, for applying a predetermined voltage to said conductive layer, and

potential-difference-producing means for pressing supplied transfer paper against a surface of the dielectric layer, and for producing a potential difference between said conductive layer, to which the voltage has been applied, and the transfer paper,

wherein said conductive layer is formed into a cylindrical shape as a base member of said transfer means,

said semi-conductive layer is formed into a sheet form and is wound around said conductive layer, and

said dielectric layer is formed into a sheet form and is wound around said semi-conductive layer.

5,623,330

IMAGE FORMING APPARATUS

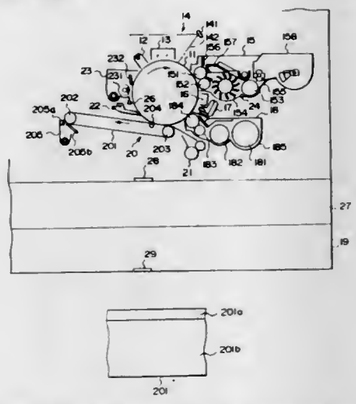
Hitoshi Ishibashi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,142

Claims priority, application Japan, Apr. 14, 1995, 7-089090

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—310 **20 Claims**



1. An image forming apparatus in which a toner image is formed on an image carrier, a voltage is applied to a transfer conveying unit employed as a contact type transferring unit from a high-voltage power source, a transfer material is conveyed by said transfer conveying unit, and said toner image formed on said image carrier is transferred onto said transfer material,

wherein said transfer conveying unit comprises:

a first layer having a surface resistance rate of $1 \cdot 10^{10} \sim 1 \cdot 10^{16}$; and

a second layer having a surface resistance rate of $1 \cdot 10^{7} \sim 1 \cdot 10^{11}$; and

wherein said second layer is constructed with a rubber material having a temperature/humidity variation of electric resistance which is larger than a temperature/humidity variation of electric resistance of said first layer.

5,623,331

HIGH-SPEED ELECTROPHOTOGRAPHIC FIXING UNIT

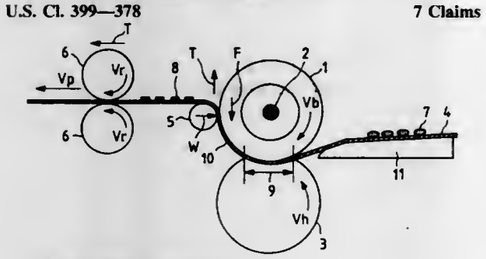
Tadahiro Kaneko; Takao Umeda; Tsutomu Maekawa, and Teruaki Mitsuya, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., and Hitachi Ltd., both of Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,565

Claims priority, application Japan, May 27, 1994, 6-114936

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—378 **7 Claims**



1. A fixing unit, comprising:

a fixing roller;

a pressure roller forming a nipper in cooperation with said fixing roller, said nipper conveying a recording material on which an unfixed image is formed while nipping said recording material;

a recording material pressing roller for pressing said recording material toward said fixing roller in a region, except for a nipping region where said nipper nips said recording material, to form a region where said recording material is wound around said fixing roller; and

tension applying means for applying tension to said recording material while said recording material is being nipped,

wherein said recording material pressing roller has a winding angle of said recording material to said fixing roller and a pressing force of pressing said recording material toward said fixing roller, said winding angle and said pressing force being changeable according to a thickness of said recording material.

5,623,332

APPARATUS AND METHOD FOR FORMING AN IMAGE UTILIZING A BIAS VOLTAGE APPLIED TO A PREDETERMINED AREA OF A PAPER GUIDE

Taiichi Kawaguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 24, 1994, Ser. No. 329,428

Claims priority, application Japan, Dec. 20, 1993, 5-319805

Int. Cl.[6] G03G *21/00;15/14*

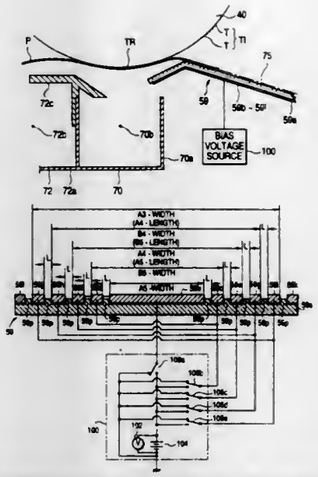
U.S. Cl. 399—388 **13 Claims**

5. An image-forming apparatus for forming an image on a sheet-like material, comprising:

means for forming a toner image on an image-bearing member;

means for electrostatically transferring the toner image from the image-bearing member to a sheet-like material by applying an electric charge of a predetermined polarity to the sheet-like material at a transfer region;

means for transporting the sheet-like material so as to pass the transfer region, the transporting means having a conductive



guide member which contacts the sheet-like material when the transferring means transfers the toner image; and

means for applying a bias voltage to a predetermined area of the conductive guide member, a polarity of the bias voltage being approximately the same as the predetermined polarity, the predetermined area being an area which contacts the sheet-like material when the transporting means transports the sheet-like material and corresponds to a size of the sheet-like material.

5,623,333

IMAGE FORMING APPARATUS HAVING A SEPARATION MECHANISM BETWEEN IMAGE BEARING MEMBER AND TRANSFER MEMBER BEARING MEMBER

Toshiki Nagase, Hoya, and Akira Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

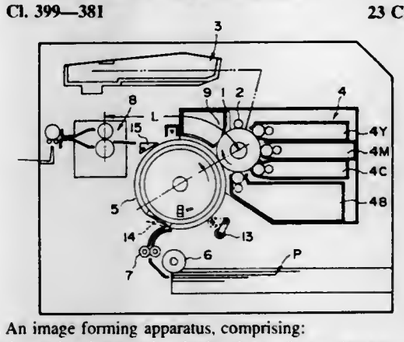
Continuation of Ser. No. 80,500, Jun. 24, 1993, abandoned.

This application Jun. 19, 1995, Ser. No. 491,802

Claims priority, application Japan, Jun. 29, 1992, 4-194750

Int. Cl.[6] G03G *21/00;15/00*

U.S. Cl. 399—381 **23 Claims**



1. An image forming apparatus, comprising:

an image bearing member for bearing an image thereon;

a transfer material bearing member for carrying a transfer material to a transfer position repeatedly, said transfer material bearing member carrying the transfer material to the transfer position so that the image on the image bearing member can be transferred onto the transfer material;

fixing means for fixing the transferred image onto the transfer material, said fixing means having a fixing speed which is selectable between a first speed or a second speed which is slower than the first speed; and

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moving speed control means for controlling a moving speed of said transfer material bearing member, said moving speed control means controlling the moving speed of the transfer material after completion of an image transfer operation so as to correspond the fixing speed,

wherein, in the case the second speed is selected as the fixing speed, after completion of image transfer operation said transfer material bearing member re-conveys the transfer material which has an image transferred thereon to the transfer position, and, after completion of image transfer operation and before the transfer material reaches to the fixing position of said fixing means, the moving speed of the transfer material carried by said transfer material bearing member is controlled to correspond to the second speed, and wherein, when the transfer material is being re-conveyed and is being positioned at the transfer position, the transfer material carried on said transfer material bearing member is being separated from said image bearing member.

5,623,334

OPTICAL DISTANCE MEASUREMENT APPARATUS AND METHOD USING CLEANING DEVICE

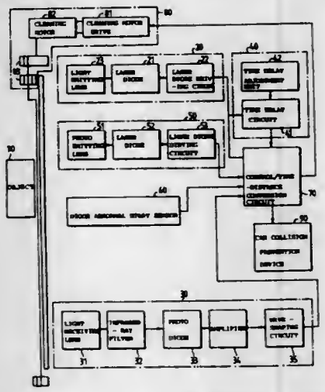
Jung S. Cho, and Deog S. Cho, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungi-do, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,916

Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30542; Dec. 29, 1993, 93-30571; May 9, 1994, 94-10157; May 9, 1994, 94-10158

Int. Cl.[6] B60T *7/16;* **G01C** *3/08*

U.S. Cl. 356—4.02 **12 Claims**



1. An optical distance measurement apparatus comprising:

light emitting means for emitting a high-power pulse light beam as a distance measuring medium to an object;

light receiving means for receiving a light beam reflected from the object;

trigger signal generation means, coupled to said light emitting means, for generating a trigger signal indicative of a start time point for measurement of a light moving time;

pollution sensing means for receiving a part of the light beam which is emitted from said light emitting means and then reflected from a protecting glass mounted on a front side of the apparatus, to sense a variation in a reflectivity of said protecting glass, and discriminating pollution on a front surface of said protecting glass in accordance with the sensed result;

diode abnormal state sensing means for receiving the part of the light beam which is emitted from said light emitting means and then reflected from said protecting glass, to sense an abnormal state of a light emitting laser diode in said light emitting means, and emitting a light beam to said light receiving means through said protecting glass to sense whether a light receiving photo diode in said light receiving means is in a normal or abnormal state and to output an output signal indicating whether or not the reflected light signal has been detected;

control/time-distance conversion means, coupled to said light emitting means, said light receiving means, said trigger generation means, said pollution sensing means, and said diode abnormal state sensing means, for controlling the entire operation of the apparatus in response to an output signal from said pollution sensing means and said output signal from said diode abnormal state sensing means, measuring the light moving time in response to the trigger signal from said trigger signal generation means and an output signal from said light receiving means and converting the measured light moving time into a distance to the object;

cleaning means for removing the pollution on the front surface of said protecting glass under the control of said control/time-distance conversion means; and

car collision prevention means for giving an alarm to the user and accelerating or decelerating a car under the control of said control/time-distance conversion means when a dangerous situation occurs in traveling of the car.

5,623,335

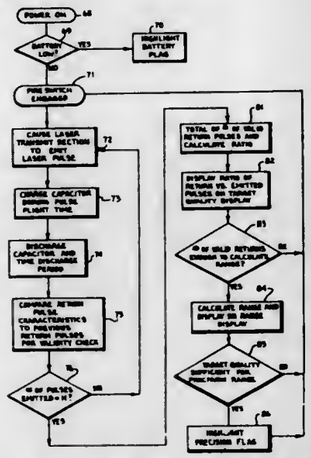
LASER RANGE FINDER WITH TARGET QUALITY DISPLAY

Stephen J. Bamberger, Lenexa, Kans., assignor to Bushnell Corporation, Overland Park, Kans.

Filed May 4, 1995, Ser. No. 433,749

Int. Cl.[6] G01C *3/08;* **G01B** *11/26*

U.S. Cl. 356—5.01 **20 Claims**



1. In a laser range finder, said range finder including a laser transmit section for emitting laser pulses directed toward a target, a laser receive section for receiving laser pulses reflected from said target, timing means for timing a flight time for each said pulse from a time of emission of said pulse to a time of reception of said reflected pulse, calculating means for calculating a range to said target based upon said pulse flight times, the improvement comprising:

a. calculating means for evaluating the reflective quality of said target based upon the number of detected reflected laser pulses and/or the ratio of detected reflected laser pulses vs. the number of emitted laser pulses; and

b. target quality display means for displaying said reflective quality of said target.

5,623,336

METHOD AND APPARATUS FOR ANALYZING OPTICAL FIBERS BY INDUCING BRILLOUIN SPECTROSCOPY

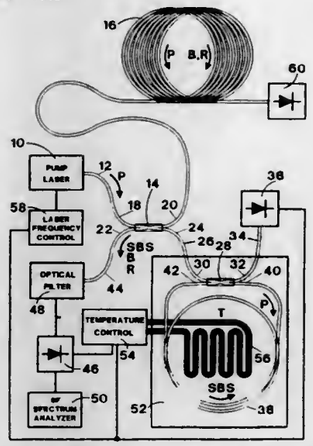
Michael Raab, Weildorfer Hardt 9, Salem 1, Germany

Filed Apr. 29, 1994, Ser. No. 235,466

Claims priority, application Germany, Apr. 30, 1993, 43 14 189.7

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—73.1 **26 Claims**



10. An apparatus for analyzing optical fiber lines by means of heterodyne Brillouin spectroscopy comprising a pumplaser for deriving a plurality of light, a first portion of said light being directed into one end of the optical fiber to be analyzed by inducing spontaneous Brillouin backscattering of the first portion of light in the optical fiber line, a ring resonator connected to the pumplaser for receiving a second portion of the light derived from the pumplaser and for generating stimulated Brillouin scattering of the second portion of light, the second portion of light scattered from the ring resonator being superimposed with the backscattered first portion of light, a first detector connected to the pumplaser and the ring resonator for receiving the first and second backscattered portions of light and for outputting corresponding signals, a spectrum analyzer connected to the first detector for receiving and analyzing the signals.

5,623,337

METHOD CAPABLE OF QUICKLY ADJUSTING AN OPTICAL AXIS OF AN OPTICAL FIBER

Hiroko Iori, and Akio Ukita, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,824

Claims priority, application Japan, Sep. 28, 1994, 6-233350; Mar. 22, 1995, 7-062823

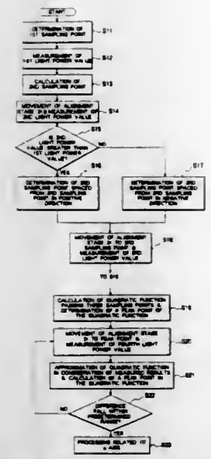
Int. Cl.[6] G01B *11/26;* **G02B** *6/42*

U.S. Cl. 356—153 **15 Claims**

1. A method of adjusting an optical fiber to an optical element to align an optical axis of said optical fiber with a beam axis of a light beam emitted from said optical element, said optical fiber having a first end adjacent to said optical element and a second end remote from said optical element, the method comprising the steps of:

relatively moving said optical fiber and said optical element so that the light beam is transmitted through said optical fiber from the first end to the second end and has a light distribution on the second end;

selecting a convex function which approximates said light distribution and which has a peak value when said light distribution has a maximum value at a maximum value position;



measuring said light beam transmitted through the optical fiber at a plurality of positions on the second end to obtain measured results of the light beam at the respective positions;

determining a set of coefficients of the convex function such that the convex function passes through the measured points;

determining a specific position of the peak value of the convex function by substituting said measured results into said convex function;

relatively moving said optical fiber and said optical element to the specific position;

measuring the light beam at the specific position of the peak value to obtain a specific measured result measured at the specific position;

modifying the set of coefficients of the convex function and the specific position to determine a modified specific position on the basis of the specific position, the specific measured result, and the measured results; and

aligning the optical axis of the fiber with the beam axis of the optical element with reference to said modified specific position.

5,623,338

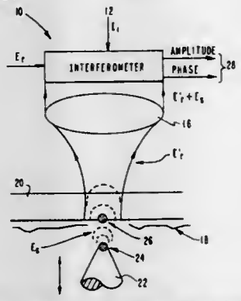
INTERFEROMETRIC NEAR-FIELD APPARATUS BASED ON MULTI-POLE SENSING

Hemantha K. Wickramasinghe, Chappaqua; Frederic Zenhausern, Mohegan Lake; Yves Martin, Ossining, and Martin P. O'Boyle, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1995, Ser. No. 511,169

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—357 **24 Claims**



1. An apparatus suitable for providing near-field measurements of a workpiece, said apparatus comprising:

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1) a source of electromagnetic radiation for generating an incident wave;
2) means for directing at least a portion of the incident wave to the workpiece;
3) a probe tip acting as an antenna and capable of re-radiating a signal wave, said signal wave developing as an interactive coupling between said workpiece and said probe tip;
4) means for creating an interference signal based on the signal wave and a reference wave;
5) a detector for interrogating at least one of the phase and amplitude of the interference signal;

and

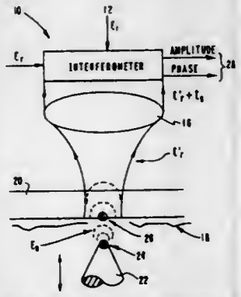
means for positioning at least one of the probe tip and the workpiece in close proximity such that the distance between the probe tip and the workpiece can create a multi-pole coupling interaction.

5,623,339

INTERFEROMETRIC MEASURING METHOD BASED ON MULTI-POLE SENSING

Hemantha K. Wickramasinghe, Chappaqua; Frederic Zenhausern, Mohegan Lake, and Martin P. O'Boyle, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1995, Ser. No. 511,579
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—357 **14 Claims**



1. A method for deriving physical properties of a workpiece, the method comprising the steps of:

1) sampling an electromagnetic wave packet representative of workpiece properties and comprising encoded wave information derivable from a multi-pole interactive coupling between a probe and the workpiece;
2) decoding said electromagnetic wave packet by interrogating at least one of its phase and amplitude information using an interference reference wave;

and

3) correlating this information to referent physical-chemical properties of the workpiece.

5,623,340

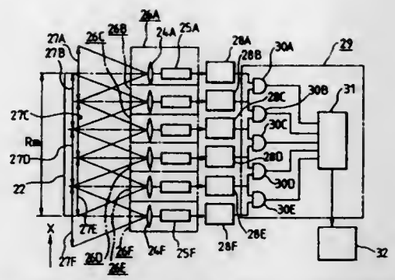
FOREIGN PARTICLE INSPECTION APPARATUS

Kenji Yamamoto, Kawasaki; Fuminori Hayano, Tokyo; Tsuneyuki Hagiwara, Kawasaki, and Hideyuki Tashiro, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,602
Claims priority, application Japan, Feb. 22, 1994, 6-023997
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—237 **22 Claims**

1. A foreign particle inspection apparatus, comprising:

an illuminating system for irradiating an inspection area on a specimen with inspecting light;



plural light-receiving systems adapted to condense scattered light generated by a foreign particle in said inspection area irradiated with said inspecting light, said light-receiving systems having respective light-receiving areas on said specimen, each smaller than said inspection area, wherein each of the light-receiving areas of said plural light-receiving systems overlaps partially with at least one of the other light-receiving areas, and said plural light-receiving systems are so arranged that every point in said inspection area is positioned in an overlapping region of a plurality of said light-receiving areas; and

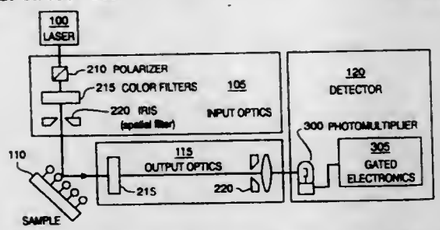
a foreign particle detection system for detecting the foreign particle in said inspection area, based on outputs of said plural light-receiving systems, wherein said foreign particle detection system is adapted to identify a presence of a foreign particle in said overlapping region only when scattered light exceeding a predetermined level is received by the light-receiving systems corresponding to all of the plurality of light-receiving areas overlapped in said overlapping region.

5,623,341

METHOD OF MONITORING A SURFACE USING SURFACE SPECTROSCOPY

Jeffrey H. Hunt, Chatsworth, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 22, 1994, Ser. No. 200,100
Int. Cl.[6] G01J *3/00*; G01N *21/00*
U.S. Cl. 356—300 **19 Claims**



1. A method of detecting a surface contamination of an engine component, comprising:

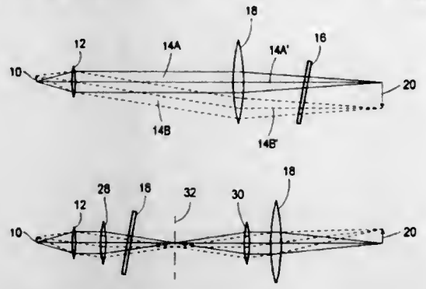
(a) directing at least two laser beams to an area of the engine component, wherein each of said at least two laser beam is directed through an input filter which attenuates frequencies higher than a fundamental frequency of a specified one of said at least two laser beams;
(b) passing a respective reflection of each of said at least two laser beams from said engine component through an output filter which attenuates frequencies lower than a sum frequency of said at least two laser beams; and
(c) monitoring the intensity of said sum frequency.

5,623,342

RAMAN MICROSCOPE

Kurt J. Baldwin; Chunwei Cheng, both of Leeds; Ian P. Hayward, York, and David N. Batchelder, Leeds, all of United Kingdom, assignors to Renishaw plc., Gloucestershire, United Kingdom

Filed May 31, 1996, Ser. No. 656,691
Claims priority, application United Kingdom, Jun. 7, 1995, 9511490
Int. Cl.[6] G01J *3/44*; G01N *21/65*
U.S. Cl. 356—301 **9 Claims**



1. Spectroscopic apparatus comprising:

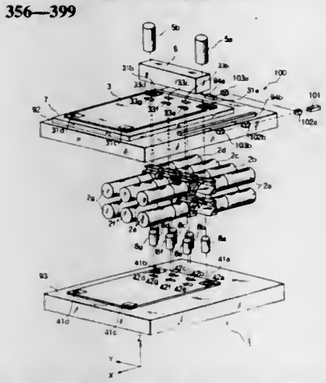
an objective for collecting a spectrum of scattered light from an illuminated area of a sample and producing therefrom a collimated beam;
a filter for selecting a part of the spectrum and rejecting the remainder of the spectrum, the filter being sensitive to the angle of incidence of the light thereon;
a lens or mirror for focusing an image of the illuminated area in the selected scattered light onto an image plane; and
a detector in the image plane for detecting the image of the illuminated area;
wherein an optical path from the sample to the detector comprises at least a first portion in which the light is in said collimated beam, and a second portion in which the light is not collimated;
and wherein said filter is located in said second, non-collimated portion of the optical path.

5,623,343

EXPOSURE METHOD AND APPARATUS

Kei Nara; Masamitsu Yanagihara, and Seiji Miyazaki, all of Yokohama, Japan, assignors to Nikon Corporation, Japan

Filed Oct. 26, 1995, Ser. No. 548,402
Claims priority, application Japan, Oct. 28, 1994, 6-289153
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—399 **23 Claims**



19. An exposure apparatus for exposing a pattern of a photomask on a photosensitive substrate, comprising:

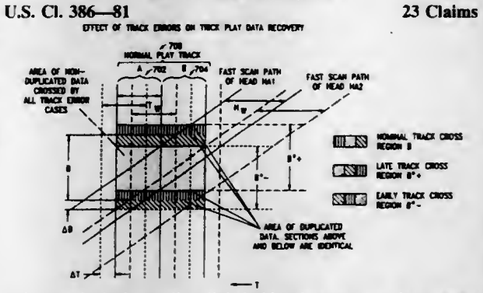
a plurality of projection optical systems which project an image of said pattern onto said photosensitive substrate;
a mobile mechanism which holds said photomask and said photosensitive substrate and relatively moves with respect to said plurality of projection optical systems;
a stage mechanism which relatively moves said photomask and said photosensitive substrate;
an imaging characteristic adjustment mechanism which is arranged between said photomask and said substrate and adjusts imaging characteristic of at least one projection optical system of said plurality of projection optical systems;
a first measurement system which measures positional relationships between a plurality of mask marks formed on said photomask and a plurality of substrate marks formed on said photosensitive substrate in correspondence with said plurality of mask marks;
a control unit which controls operations of said stage mechanism and said imaging characteristic adjustment mechanism on the basis of the result measured by said first measurement system; and
a second measurement system which measures the positional relationships between said plurality of mask marks and said plurality of substrate marks in correspondence with a control by said control unit.

5,623,344

DIGITAL VIDEO RECORDING DEVICE WITH TRICK PLAY CAPABILITY

Frank A. Lane, Medford Lakes; Joseph E. Augenbraun, Princeton; Jill M. Boyce, Manalapan; Jack S. Fuhrer, Princeton Junction; John G. N. Henderson, Princeton, all of N.J.; Katsuo Mohri, Yokosuka, Japan; Masafumi Nakamura, Yokohama, Japan; Takaharu Noguchi, Yokohama, Japan; Hiroo Okamoto, Yokohama, Japan; Masuo Oku, Kamakura, Japan, and Michael A. Plotnick, Southampton, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y., and Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 3,930, Jan. 13, 1993, abandoned, and a continuation of Ser. No. 3,887, Jan. 13, 1993, abandoned, and a continuation-in-part of Ser. No. 109,236, Aug. 19, 1993, abandoned. This application Aug. 19, 1994, Ser. No. 293,639
Claims priority, application Japan, Sep. 1, 1992, 4-233340; Sep. 1, 1992, 4-233341; Sep. 7, 1992, 4-238031
Int. Cl.[6] H04N *5/76*; *5/78*
U.S. Cl. 386—81 **23 Claims**



1. A method of recording digital video data on a tape in a pattern that permits sufficient data, to generate recognizable portions of images, to be read from the tape by a video tape recorder playback device operating in any one of a plurality of playback modes including a normal playback mode and a trick play playback mode, wherein the tape moves at a normal tape speed during normal playback mode and at a tape speed of N times the normal playback speed during the trick play playback mode, wherein N is a positive number, the method comprising the step of:

recording digital video data on the tape to form a series of consecutive tracks of alternating azimuths on the tape that cross the tape on a diagonal relative to the length of the tape, the step of recording digital video data including:

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i. recording data intended to be read from the tape during normal playback operation in a first set of tape locations;

ii. recording data intended to be read from the tape during trick playback operation in a second set of tape locations, the same data being recorded in at least two of the second set of tape locations, each one of said second set of tape locations being located in a different one of said consecutive tracks of the same azimuth, said set of second tape locations being arranged to form a series of tape locations that runs approximately parallel to the length of the tape; and

iii. recording data intended to be read from the tape during trick playback operation in a third set of tape locations, the same data being recorded in at least two of the third set of tape locations, each one of said third set of tape locations being located in a different one of said consecutive tracks of the same azimuth, said set of third tape locations being arranged to form a series of tape locations that runs approximately parallel to the length of the tape and the second set of tape locations.

5,623,345

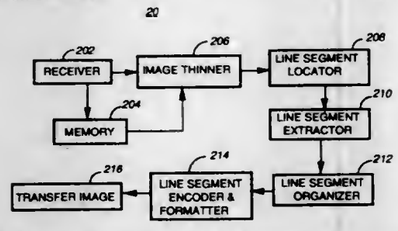
FACSIMILE COMMUNICATION WITH A SELECTIVE CALL SYSTEM AND METHOD THEREOF

Zaffer Merchant, Lantana, Fla., and Ali Saidl, Atlanta, Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1995, Ser. No. 399,024

Int. Cl.[6] H04N *1/40;1/41;* **G06K** *9/00*

U.S. Cl. 358—407 **20 Claims**



8. A selective call communication system for receiving hand written information from a facsimile machine to be delivered to a plurality of selective receivers capable of receiving information, comprising:

the facsimile machine for retrieving the hand written information from a source document; the facsimile machine further comprising:

an encoder for encoding and compressing the hand written information; and

a modem, coupled to said encoder, for transferring the hand written information to a selective call terminal; the selective call terminal, comprising:

a receiver for receiving the hand written information;

a processor, coupled to said receiver, for processing the hand written information, the processor further comprising:

an image thinner for thinning the hand written information;

a line segment locator for locating lines of the hand written information having end points and lines of hand written information having no end points:

a line segment extractor for extracting the lines of the hand written information by erasing pixels as an ordered sequence of (x,y) co-ordinates between end points;

a line segment organizer for organizing line segments to recover the hand written information; and

a transmitter for transmitting the lines of hand written information to an at least one selective call receiver capable of receiving facsimile information.

16. A method for extracting segments from a scanned image, comprising the steps of:

(a) receiving the scanned image;

(b) thinning the scanned image;

(c) locating the segments of the scanned image having end points and segments having no end points;

(d) extracting the segments by erasing pixels as an ordered sequence of (x,y) co-ordinates between end points;

(e) organizing the segments to recover the scanned image;

(f) transmitting the segments to an at least one selective call receiver.

5,623,346

SYNCHRONIZATION SIGNAL SHARING CIRCUIT OF DIGITAL VCR

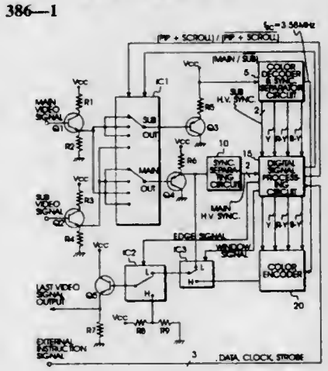
Jum H. Bae, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 457,860, Dec. 27, 1989, abandoned. This application Aug. 9, 1994, Ser. No. 288,251

Claims priority, application Rep. of Korea, May 26, 1989, 7062/1989

Int. Cl.[6] H04N *5/782;5/45*

U.S. Cl. 386—1 **26 Claims**



1. A picture-in-picture video signal generating circuit, said circuit comprising:

a first dual four channel multiplexer for providing input video signals as a main video signal and a sub video signal according to logic signals;

a synchronization separation circuit for separating main video signal horizontal and vertical synchronization information from said main video signal;

a color decoder and synchronization separation circuit for decoding said sub video signal and separating sub video signal vertical and horizontal synchronization information from sub video signal color and luminance information:

a digital signal processing circuit for generating said logic signals, and for processing and storing said sub video signal color and luminance information in a memory without storing said sub video signal vertical and horizontal information in said memory, said sub video signal color and luminance information being stored in said memory in synchronization with said sub video signal vertical and horizontal synchronization information, said digital signal processing circuit synchronously providing said sub video signal color and luminance information during a read operation in synchronization with said main video signal horizontal and vertical synchronization information;

a color encoder for encoding said sub video signal color and luminance information processed by said digital signal processing circuit: and

a second multiplexer for providing said main video signal combined with said sub video signal color and luminance information encoded by said color encoder.

5,623,347

HOLOGRAMS FOR SECURITY MARKINGS

David J. Pizzanelli, London, England, assignor to Light Impressions Europe PLC, Leatherhead, England

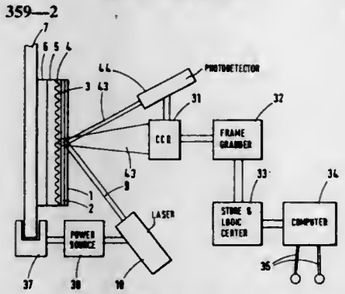
PCT No. PCT/GB92/01115, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO93/00224, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 19, 1992, Ser. No. 167,997

Claims priority, application United Kingdom, Jun. 21, 1991, 9113462

Int. Cl.[6] G03H *1/00*

U.S. Cl. 359—2 **9 Claims**



1. An apparatus for reading light reflected from a hologram and a hologram for security markings comprising a laser transmission hologram known per se formed as a surface relief pattern embossed into an embossable material, said laser transmission hologram being formed by sequential layers of a carrier layer, an embossable thermo-plastic lacquer into which the hologram is formed, and a layer for adhesively bonding the hologram to a substrate, a thin metallic layer coated onto said thermo-plastic lacquer whereby the laser transmission characteristics of the hologram are transformed into laser reflection characteristics capable of reflecting light from a laser, said apparatus comprising a laser light source for projecting a laser light beam onto the hologram to be read, and means located on the same side as the laser light source for recognising a real image of the hologram, said hologram having an information image and a triggering image, said information image being a series of light reflective portions and light non-reflective portions, together forming a binary code, said triggering image being formed to indicate the presence of an information image area and so as to reflect the laser light beam at a different angle to that reflected by said information image, and a light detector provided for receiving said information image and a further light detector provided for receiving said triggering image, whereby said light detector is activated only when triggered by a signal from said further light detector indicating the presence of a light reflective portion.

5,623,348

HIGH EFFICIENCY COLOR LIQUID CRYSTAL DISPLAY

Masanori Ogino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 104,479

Claims priority, application Japan, Feb. 26, 1993, 5-037824

Int. Cl.[6] G02F *1/1335;* **G03B** *21/00*

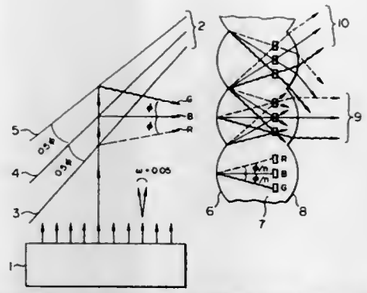
U.S. Cl. 349—5 **21 Claims**

1. A liquid crystal display including light source means and liquid crystal panel means, the liquid crystal panel means including picture elements corresponding to three primary colors, the liquid crystal display comprising:

three-direction means for receiving light from the light source means, and emitting rays of the three primary colors having three respective mutually different propagation directions;

first lens group means, disposed before the picture elements of the liquid crystal panel means, for receiving the rays of the three primary colors from the three-direction means, and directing rays of the three primary colors into respective ones of the picture elements corresponding to the three primary colors of the liquid crystal panel means; and

second lens group means, disposed after the first lens group means and having a focal plane disposed outside the liquid crystal panel means, for receiving rays of the three primary colors having three respective mutually different propagation directions from one of (1) the first lens group means and (2) the picture elements of the liquid crystal panel means, and emitting rays of the three primary colors having three respective propagation directions substantially coinciding with one another.



5,623,349

LIQUID CRYSTAL PROJECTION SYSTEM HAVING THREE DIFFERENT COLOR BEAMS PASS THROUGH SUBSTANTIALLY SEPARATE AREAS AND FILTER AT LIQUID CRYSTAL PANEL OUTPUT

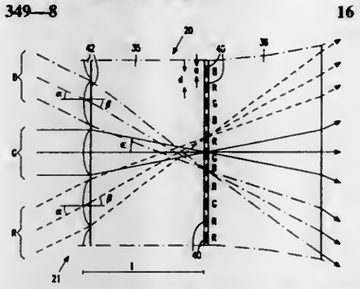
John A. Clarke, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 27, 1995, Ser. No. 495,129

Claims priority, application United Kingdom, Jul. 9, 1994, 9413883

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—8 **16 Claims**



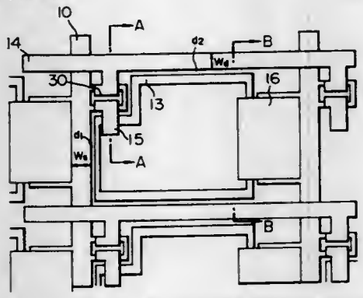
1. A colour liquid crystal projection display system comprising a liquid crystal panel having a row and column array of display elements for modulating light to produce a display output, illuminating means for directing three differently-coloured light illuminating beams onto the panel such that they are incident on the panel from mutually different directions, the panel being provided with a microlens array at its input side for directing the three different colours of input light onto respective sets of the display elements in the array, each microlens element overlying a group of three display elements, and a projection lens for collecting the display output from the panel and projecting the display output onto a screen, characterised in that the directions of the three differently-coloured illuminating beams incident on the panel are selected with respect to one another and to the microlens elements of the microlens array such that at a position spaced from the output side of the panel the three beams pass respectively through substantially spatially separate areas and in that filter means are provided at said position for removing at each area light of a colour other than that of the beam associated with that area.

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5,623,350
LIQUID CRYSTAL DISPLAY WITH SUPPLEMENTAL CAPACITORS AND METHOD FOR MANUFACTURING THE SAME

Genshiro Kawachi; Etsuko Kimura, both of Hitachi; Kikuo Ono; Yoko Wakui, both of Ibaraki-ken, and Akira Sasano, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 942,998, Sep. 10, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 367,929
Claims priority, application Japan, Sep. 11, 1991, 3-231495
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—38 **31 Claims**



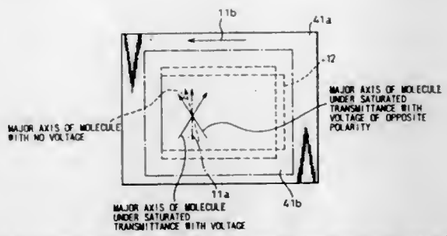
1. An active matrix type liquid crystal display device comprising:
a pair of substrates;
a liquid crystal layer held between said pair of substrates; wherein
one substrate of said pair of substrates has formed thereon:
a plurality of parallel scanning gate electrodes;
a first insulator film covering surfaces and sides of said scanning gate electrodes;
a plurality of first pixel electrodes made of transparent conductors arranged in the same plane as, and between, said scanning gate electrodes;
a second insulator film formed on at least a portion of said scanning gate electrodes and said first pixel electrodes;
a plurality of video signal electrodes formed substantially perpendicularly to said scanning gate electrodes on said second insulator film;
second pixel electrodes having first ends thereof formed on top of and being electrically connected to said first pixel electrodes, said second pixel electrodes at least partially overlapping said scanning gate electrodes and being electrically isolated from said scanning gate electrodes by said first insulator film and said second insulator film, so that an additional capacitor is formed therebetween; and
a plurality of transistors electrically connected to said scanning gate electrodes, said first pixel electrodes and said video signal electrodes.

5,623,351
ANTIFERROELECTRIC LIQUID CRYSTAL PANEL CAPABLE OF DISPLAYING IMAGES WITHOUT FLICKERING

Shinya Kondoh, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 477,593
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—100 **1 Claim**

1. A liquid crystal panel, comprising:
a pair of substrates positioned to have faces opposing each other;
antiferroelectric liquid crystal material held between the substrates;
electrodes formed at each of the opposing faces of the substrate; and

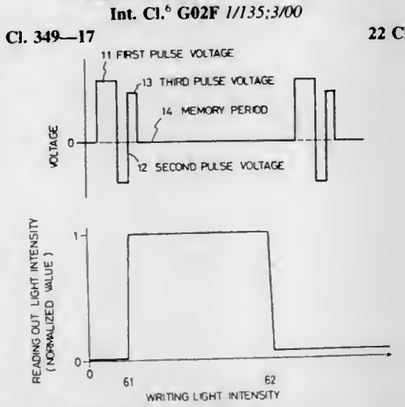


two polarizer plates embracing faces of the substrates opposite the opposing faces and holding the pair of substrates between said plates,
the two polarizer plates each having a polarization axis orthogonal to one another,
one of the polarization axes being parallel with a line that halves an angle formed by two positions of a major axis of a liquid crystal molecule, each position being defined by one of two saturated states of light transmittance of the liquid crystal material,
one of said saturated states occurring under a voltage of one polarity, the other of said saturated states occurring under a voltage of opposite polarity.

5,623,352
FERROELECTRIC LIQUID CRYSTAL SPATIAL LIGHT MODULATOR WITH TWO THRESHOLD CHARACTERISTICS

Naoki Kato; Teruo Ebihara; Rieko Sekura, and Shuhei Yamamoto, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jul. 16, 1993, Ser. No. 93,351
Int. Cl.[6] G02F *1/135;3/00*
U.S. Cl. 349—17 **22 Claims**

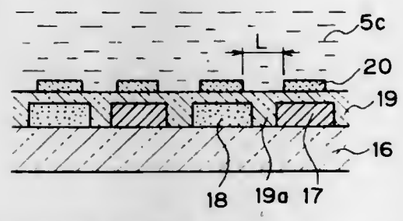


1. A method for driving a spatial light modulator comprising:
projecting a light onto a writing surface of a spatial light modulator and applying thereto a waveform having a series of consecutive pulse voltages, including a first pulse voltage for erasing an optical modulation layer of the spatial light modulator, a second pulse voltage having an opposite polarity to the first pulse voltage, and a third pulse voltage having the same polarity as the first pulse voltage; wherein the intensity of the projected light is greater than a first threshold value during application of the second pulse voltage and is greater than a second threshold value which is greater than the first threshold value during application of the third pulse voltage, and wherein the first threshold value and the second threshold value of the light intensity are set according to the voltage level of the second and the third pulse voltages.

5,623,353
COLOR LIQUID CRYSTAL DEVICE HAVING THICKNESS CONTROLLING LAYERS DISPOSED AT PIXEL PORTIONS

Akihiko Kanemoto, Yokohama, and Yasuyuki Takiguchi, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 168,402, Dec. 17, 1993, Pat. No. 5,493,429, which is a continuation of Ser. No. 766,133, Sep. 27, 1991, abandoned. This application May 17, 1995, Ser. No. 443,159
Claims priority, application Japan, Oct. 26, 1990, 2-290218
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 349—122 **6 Claims**



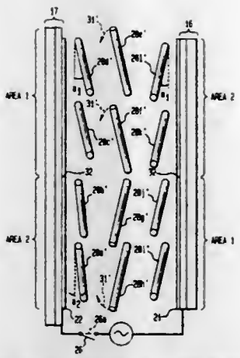
1. A color liquid crystal device, comprising:
a pair of polarizers opposed to each other and spaced apart from each other;
a pair of transparent substrates disposed on an inner surface of each of said polarizers so as to be opposed to each other;
a liquid crystal layer disposed between said substrates;
a plurality of first color filters disposed on an inner surface of one of said substrates and spaced apart from each other;
a plurality of second color filters each disposed between two of said first color filters adjacent to each other such that each of said second color filters is spaced apart from each of said two adjacent first color filters;
thickness controlling layers each disposed so as to project from a surface of said first and second color filters facing said liquid crystal layer into said liquid crystal layer and to produce a difference in magnitudes of retardation in phase between a portion of said liquid crystal layer constituting a non-pixel portion and another portion of said liquid crystal layer constituting a pixel portion, said non-pixel portion corresponding to each of regions between said first and second color filters, said pixel portion corresponding to each of said first and second color filters, to thereby make a transmittance of said non-pixel portion smaller than that of said pixel portion; and
a pair of electrodes, one of which is disposed on said first and second color filters and said thickness controlling layers and the other of which is disposed on an inner surface of the other of said substrates, for applying an electric field to said liquid crystal layer thereby to vary a state of molecular orientation of said liquid crystal layer to perform a light modulation,
said thickness controlling layers being each disposed on said first and second color filters.

5,623,354
LIQUID CRYSTAL DISPLAY WITH MULTI-DOMAINS

Shui-Chih A. Lien, Briarcliff Manor; Richard A. John, Yorktown Heights, and Marie Angelopoulos, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1994, Ser. No. 194,239
Int. Cl.[6] G02F *1/1337;1/1333*
U.S. Cl. 349—124 **30 Claims**

1. A multi-domain liquid crystal display having an array of pixels comprising:

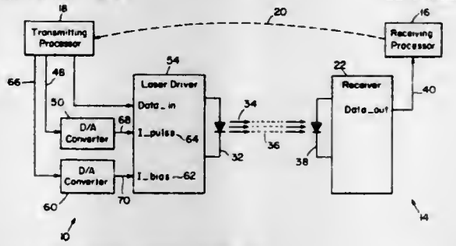


two alignment layers disposed on transparent electrodes and each having an ability of inducing a predetermined pre-tilt angle on liquid crystal molecules, at least one of said alignment layers having been selectively altered so that said alignment layer comprises at least one altered area said altered area having an ability to induce a predetermined pre-tilt angle on the liquid crystal molecules which differs in magnitude of pre-tilt angle from the ability of the unaltered areas to induce said predetermined pre-tilt angle on said molecules, said one alignment layer having only one alignment direction and comprising the same bulk material for inducing the pre-tilt angles in both the altered and unaltered areas of said layer;
a liquid crystal layer of liquid crystal molecules disposed between said alignment layers;
a polarized light source for irradiating the liquid crystal molecules; and
means for applying voltage across the transparent electrodes in the altered and unaltered areas of said one alignment layer whereby more than one domain is formed.

5,623,355
ERROR-RATE-BASED LASER DRIVE CONTROL

James J. Olsen, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 125,534, Sep. 22, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 397,738
Int. Cl.[6] H04B *10/08*
U.S. Cl. 359—110 **22 Claims**



1. A data transfer system comprising:
a transmitter having a laser for transmitting data, said data being encoded for error correction;
a communication link;
a receiver for detecting light from the laser through the communication link; and
a processor for detecting data with error correction and for detecting data error rate in data transmitted by the laser light, the processor communicating with the transmitter such that

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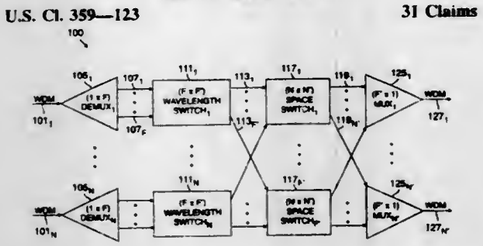
the data error rate controls drive current to the laser during data transmission.

5,623,356

COMBINED WAVELENGTH ROUTER AND SWITCH APPARATUS FOR USE IN A WAVELENGTH DIVISION MULTIPLEXED OPTICAL COMMUNICATION SYSTEM

Ivan P. Kaminow, Holmdel, and Hisashi Kobayashi, Princeton, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 9, 1995, Ser. No. 386,239
Int. Cl.[6] H04J *14/00*
U.S. Cl. 359—123 **31 Claims**



1. A combined optical signal wavelength router and switch apparatus comprising;
an array of N optical signal wavelength-domain demultiplexers each of which includes an input and a set of F output ports;
an array of N optical signal wavelength division switches, each of which is coupled optically to a respective one of said sets of F output ports and each of which includes a set of F' output ports, wherein each of the optical signal wavelength division switches in said array of N optical signal wavelength division switches comprises:
(i) an array of F optical signal wavelength converters each of which includes an output,
(ii) an optical signal combiner coupled optically to the output of each of said F optical signal wavelength converters, and
(iii) an optical signal wavelength-domain demultiplexer coupled optically to said optical signal combiner;
an array of F' optical signal space division switches, each of which is coupled optically to respective one of said F' output ports from each of said N optical signal wavelength division switches, and each of which includes a set of N' output ports; and
an array of N' optical signal wavelength-domain multiplexers, each of which is coupled optically to a respective one of said set of N' output ports from each of said F' optical signal space division switches, and each of which includes an output.

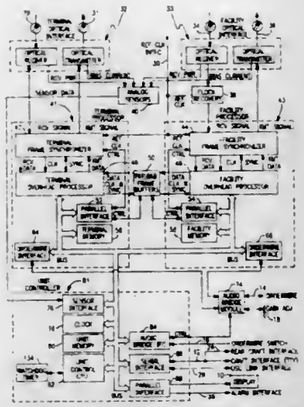
5,623,357

METHOD AND APPARATUS FOR THE MONITORING AND DEMARCATION OF SYNCHRONOUS DIGITAL HIERARCHY NETWORKS

William D. Kight, Ellicott City, and Robert E. Pfister, Mount Airy, both of Md., assignors to GRC International, Inc., Vienna, Va.

Continuation of Ser. No. 108,338, Aug. 8, 1993, Pat. No. 5,355,238. This application Jun. 7, 1995, Ser. No. 475,529
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—135 **14 Claims**

8. A communications network device, comprising: p1 means for receiving a signal;



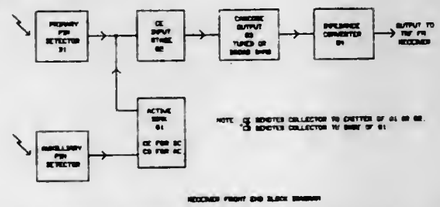
means for separating the signal into a payload component and an overhead component;
means for monitoring the overhead component to identify any prohibited information in the overhead component;
means for restricting the overhead component to exclude any identified prohibited information;
first signal transmitting means for transmitting a restricted signal comprising the payload component and the restricted overhead component; and
second signal transmitting means for transmitting an acknowledge signal indicating that the monitoring means has identified prohibited information in the overhead component.

5,623,358

DISCRIMINATING INFRARED SIGNAL DETECTOR AND SYSTEMS UTILIZING THE SAME

Julius M. J. Madey, 601 Country Rte. 21, Hillsdale, N.Y. 12529

Filed Jun. 30, 1995, Ser. No. 496,970
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—172 **9 Claims**



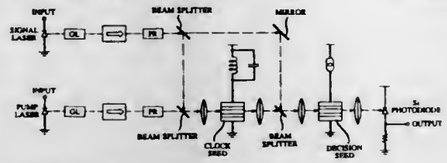
1. A portable directional receiver which comprises a non-visual communicator, a self-contained source of electrical energy, a detector for receiving a sensed continuous frequency modulated infrared signal, and electronics comprising an active sink for ambient light-induced steady state detector photocurrent, a primary PIN photodiode operated in the photoresistive mode, and a secondary PIN photodiode operated in the photovoltaic mode, said electronics converting said sensed signal into intelligible non-visual communication emanating from said communicator both in the presence and in the absence of an ambient background of light energy, and said receiver being effective as said sensed signal approaches the shot noise detection limit of said primary PIN photodiode in the presence of a steady state photocurrent.

5,623,359

OPTICAL COMMUNICATION BY INJECTION-LOCKING TO A SIGNAL WHICH MODULATES AN OPTICAL CARRIER

Clinton R. Giles, Middletown; Tingye Li, Rumson, and Thomas H. Wood, Highlands, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 27,263, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 807,973, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 373,670, Jun. 28, 1989, Pat. No. 5,073,981, which is a continuation of Ser. No. 146,918, Jan. 22, 1988, abandoned. This application May 5, 1995, Ser. No. 435,245
Int. Cl.[6] H04B *10/04*
U.S. Cl. 359—180 **2 Claims**



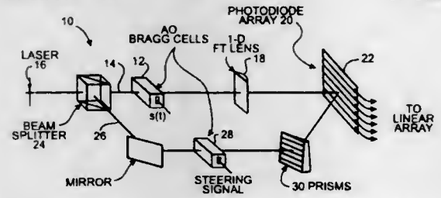
1. A device comprising:
a self electro-optic effect device biased to operate as an all-optical pulser,
a first source of continuous wave optical energy,
a second source of optical energy, modulated by a signal, and
means for directing, into said self electro-optic effect device,
said continuous wave optical energy and said optical energy modulated by a signal.

5,623,360

TIME DELAY BEAM FORMATION

Leslie H. Gesell, and Terry M. Turpin, both of Columbia, Md., assignors to Essex Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 45,062, Apr. 12, 1993, Pat. No. 5,390,046, which is a continuation-in-part of Ser. No. 806,697, Dec. 12, 1991, Pat. No. 5,202,776. This application Feb. 13, 1995, Ser. No. 387,414
Int. Cl.[6] G02F *1/11*
U.S. Cl. 359—287 **17 Claims**



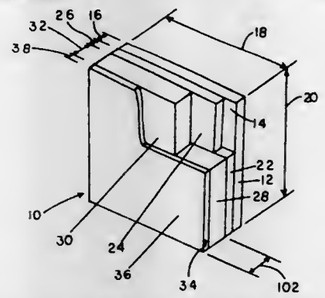
1. A system for generating at least one time delay signal from an input signal, comprising the elements A-H:
A) a source of coherent light,
B) divider means for dividing the light into at least a first leg and a second leg,
C) modulation means for modulating light in the first leg by a signal,
D) optical isolator means for preventing light in the first leg from being reflected back towards the source of coherent light,
E) signal channelizer means for dividing modulated light in the first leg into a plurality of spectral components,
F) signal control means for dividing light in the second leg into a plurality of paths and for shifting the phase of light in each of the plurality of paths to thereby generate a plurality of phase-shifted optical reference signals, each one of the plurality of phase-shifted optical reference signals corresponding to one of the plurality of spectral components,
G) detection means for detecting each one of the plurality of phase-shifted optical reference signals together with a corresponding one of the spectral components and for generating an output signal, and
H) summation means for summing output signals generated by the detection means.

5,623,361

ENHANCED WAVEFRONT PHASE MODULATOR DEVICE

Craig D. Engle, 336 Cline Ave., Griffith, Ind. 46319

Continuation-in-part of Ser. No. 370,021, Jan. 9, 1995. This application Feb. 17, 1995, Ser. No. 390,690
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—291 **20 Claims**



1. A surface deformation type wavefront phase modulator component comprising:
a substrate,
transmissive electrostatically deformable media means comprising a single layer of material,
said single layer of material further includes a first surface facing said substrate and a second surface opposite thereof,
transmissive deformable conductor means affixed to said second surface of said single layer of material,
reflective means continguous with said first surface of said single layer of said material,
said media means is integrally associated with said substrate,
said second surface of said single layer of material is opposite said reflective means.

5,623,362

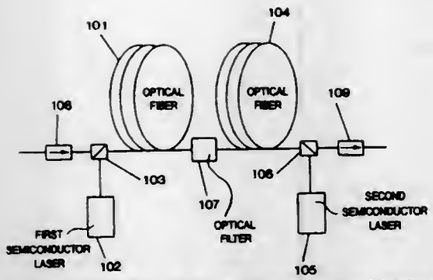
ERBIUM-DOPED FIBER AMPLIFIER AND AN OPTICAL FIBER COMMUNICATION SYSTEM

Masahiro Mitsuda, Kyoto, and Jun Ohya, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 240,324, May 10, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 693,859
Claims priority, application Japan, May 10, 1993, 5-108028
Int. Cl.[6] G02B *6/28;* **H01S** *3/30;3/094*
U.S. Cl. 359—341 **26 Claims**

1. An erbium-doped fiber amplifier for amplifying signal light, comprising:
a first optical fiber doped with erbium ions and having an input portion and an output portion, the first optical fiber being pumped by 0.98 μm band light and amplifying the signal light;
a first pump light source for producing the 0.98 μm band light;
a first optical coupler for receiving the 0.98 μm band light from the first pump light source, and coupling the 0.98 μm band light with the signal light at the input portion of the first optical fiber;

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a second optical fiber doped with erbium ions and having an input portion and an output portion, the second optical fiber being pumped by 1.48 μm band light and amplifying the signal light;

a second pump light source for producing the 1.48 μm band light; and

a second optical coupler for receiving the 1.48 μm band light from the second pump light source, and coupling the 1.48 μm band light with the signal light at the output portion of the second optical fiber;

wherein a pump light isolator is installed between the output portion of the first optical fiber and the input portion of the second optical fiber, and

the pump light isolator blocks the passing of the 1.48 μm band light from the input portion of the second optical fiber to the output portion of the first optical fiber so that the intensity of the 1.48 μm band light is less than that of the signal light in the first optical fiber, while the pump light isolator allows the passing of the signal light from the output portion of the first optical fiber to the input portion of the second optical fiber.

5,623,363

SEMICONDUCTOR LIGHT SOURCE HAVING A SPECTRALLY BROAD, HIGH POWER OPTICAL OUTPUT

Kang-Yih Liou, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 27, 1995, Ser. No. 395,219

Int. Cl.[6] A01S *3/00*; G02B *6/12*

U.S. Cl. 359—344 **48 Claims**



1. A semiconductor light source comprising:

a light emitting diode;

an optical fiber having a first end coupled to the output of the light emitting diode; and

a single transverse mode optical semiconductor amplifier having an input coupled to a second end of the optical fiber.

5,623,364

VIBRATION-PROOF OPTICAL SYSTEM

Masaru Morooka, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 473,772

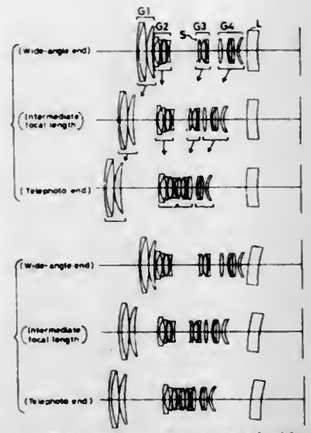
Claims priority, application Japan, Jun. 7, 1994, 6-124959

Int. Cl.[6] G02B *27/64*; *15/14*

U.S. Cl. 359—557 **8 Claims**

1. A vibration-proof optical system comprising:

a principal lens system including a plurality of lenses and having an overall positive refracting power;



a blur compensating lens located in a rear of said principal lens system, said blur compensating lens consisting of a single lens of meniscus shape and having a concave surface on an image side thereof;

a photographic receiving element located to said image side of said blur compensating lens; and

driving means for tilting and decentering said blur compensating lens to compensate for an image blur caused by an inclination of said principal lens system.

5,623,365

DIFFRACTIVE OPTICAL ELEMENT FOR USE WITHIN A PROJECTION LENS SYSTEM

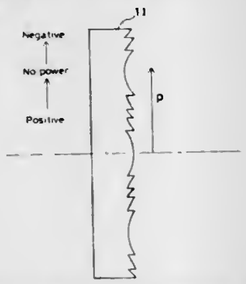
Keiichi Kuba, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 18, 1994, Ser. No. 245,554

Claims priority, application Japan, May 19, 1993, 5-116791

Int. Cl.[6] G02B *27/44*; *13/18*

U.S. Cl. 359—569 **28 Claims**



1. A diffractive optical element comprising, in order from an optical axis thereof toward a periphery thereof:

a first positive power region;

a second positive power region less powerful than said first positive power region;

a third positive power region more powerful than said second positive power region;

a no-power portion; and

a negative power region;

said first positive power region, said second positive power region, said third positive power region, said no-power portion, and said negative power region being concentric.

5,623,366

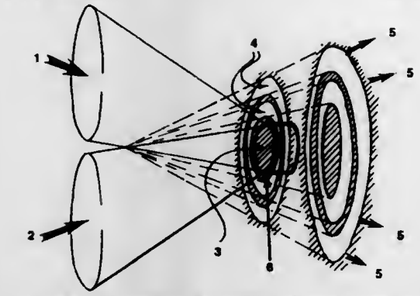
PHOTONIC SIGNAL PROCESSING AMPLIFICATION, AND COMPUTING USING SPECIAL INTERFERENCE

John N. Hait, Missoula, Mont., assignor to Rocky Mountain Research Center, Missoula, Mont.

Filed Dec. 16, 1994, Ser. No. 357,460

Int. Cl.[6] G06G *7/00*; G06E *1/04*

U.S. Cl. 359—577 **33 Claims**



1. A method of controlling a plurality of energy beam sets with at least one set of said plurality of energy beam sets comprising the steps of:

producing a plurality of input beam sets including a first beam set having at least one input beam of energy, and a second beam set having at least one input beam of energy modulated with controlling information, wherein said first and second beam sets are directed to at least one first location;

producing interference with said plurality of input beam sets at said at least one first location, diverting energy proportional to said second beam set from said plurality of input beam sets to at least one second location,

whereby energy from said plurality of input beam sets is absent from said at least one second location when either or both of said first and second beam sets are off and when said first beam set is in phase with said second beam set, and

separating energy from said at least one second location to provide at least one output,

thereby producing an energy beam controller.

5,623,367

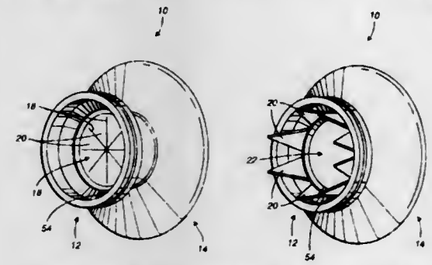
EYEGUARD WITH AUTOMATIC DIAPHRAGM

John M. Immel, Richardson, Tex., assignor to CMI Rubber Company, Inc., Garland, Tex.

Filed May 19, 1995, Ser. No. 445,429

Int. Cl.[6] G02B *21/00*

U.S. Cl. 359—600 **27 Claims**



1. An eyeguard for use with an optical instrument by a person, said eyeguard comprising:

an instrument-end member, a hinge member, an eye-end member, and a diaphragm;

a) said instrument-end member having a first continuous side wall and a first passage therethrough;

said first passage having a first longitudinal axis;

said first side wall including first and second annular end portions and having a first principal wall thickness;

said first end portion being adapted for connection to said optical instrument; said second end portion being connected to said hinge member and having a second end diameter;

b) said hinge member being connected between said instrument-end member and said eye-end member and having a second continuous side wall and a second passage therethrough;

said second passage having a second longitudinal axis generally collinear with said first longitudinal axis;

said second side wall including third and fourth annular end portions and having an annular diaphragm attachment line located along said second passage between said third and fourth end portions;

said third end portion being connected to said second end portion of said instrument-end member;

said fourth end portion being connected to said eye-end member;

said second side wall having a first annular hinge portion disposed between said third end portion and said diaphragm attachment line;

said first hinge portion having a first hinge thickness and a first hinge length;

said second side wall having a second annular hinge portion disposed between said diaphragm attachment line and said fourth end portion;

said second hinge portion having a second hinge thickness and a second hinge length;

c) said eye-end member being connected to said fourth end portion of said hinge member and having a third continuous side wall and a third passage therethrough;

said third passage having a third longitudinal axis generally collinear with said first and second longitudinal axes;

said third side wall including fifth and sixth annular end portions and having a second principal wall thickness;

said fifth end portion being connected to said fourth end portion of said hinge member and having a fifth end diameter, said fifth end diameter being smaller than said second end diameter of said second end portion;

said sixth end portion adapted to interface with a periocular area of the person's face;

d) said first hinge thickness being reduced in comparison to said first principal wall thickness, and said second hinge thickness being reduced in comparison to said second principal wall thickness, to elastically bend said second side wall at said hinge portions upon longitudinal relative movement of said eye-end member toward said instrument-end member; and

e) said diaphragm comprising a plurality of segments connected to a region of said second side wall of said hinge member facing said second passage along said annular diaphragm attachment line;

each of said segments having a diaphragm thickness;

said segments being movable between a closed position, when said second side wall is not elastically bent at said hinge portions, and an open position, when said second side wall is elastically bent at said hinge portions to position said second hinge portion longitudinally between said first end portion of said instrument-end member and said first hinge portion;

wherein, when in said closed position, said segments are disposed in a common plane intersecting said second side wall along said diaphragm attachment line, thereby blocking the passage of light rays through said second passage; and

wherein, when in said open position, said segments are disposed outwardly from said second longitudinal axis in a non-planar array to allow the passage of light rays through said second passage.

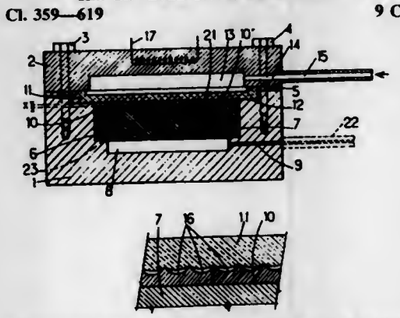
VOL 1197 ISS 4 APR 22 1997 UMI

5,623,368

PROCESS AND APPARATUS FOR MANUFACTURING NETWORKS OF OPTICAL MICROLENSES

Pierre V. Calderini, Montigny sur Loing; Thierry L. A. Dannoux, Avon; Gilbert D. Pujol, Dammarie les Lys, and Jean-Pierre Themont, Montigny sur Loing, all of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Jun. 29, 1995, Ser. No. 497,380
Claims priority, application France, Jul. 7, 1994, 94 08420
Int. Cl.[6] G02B 27/10; B29D 11/00
U.S. Cl. 359—619 **9 Claims**



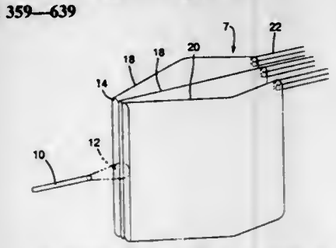
1. A process for manufacturing a network of optical microlenses, according to which a plate (11) of a deformable optical material is pressed against an undeformable surface (10') furrowed with a congruent network of alveoli (16) deeper than the thickness of the convex part of the microlenses formed therein by permanent deformation of the plate against the alveolate surface (10), comprising, using a pressing device, pressing the material against the alveolate surface (10') by subjecting the two faces of the plate (11) to fluid pressure of different values, the pressure on the face opposite the alveolate surface (10) being less than the pressure on the other face of that plate (11), said pressing device comprising a) at least one fluid-tight chamber (13; 13';21), b) means of support (12, 7) of the plate (11) of optical material and a sheet (10) with alveolate surface (10'), parallel and close to each other, the plate comprising a component of the wall of the chamber, and c) means (15; 20; 23) for establishing in the chamber a fluid pressure of a value different from the pressure prevailing on the face of the plate (11) opposite the one that defines the chamber so that the plate is pressed against the alveolate surface when said pressurizing means are activated.

5,623,369

OPTICAL SPLITTER

Mark A. Lynn; Kurt L. Jennings, both of Warren, Ohio, and Ernest E. Helms, Farmington Hills, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1996, Ser. No. 617,312
Int. Cl.[6] G02B 27/12
U.S. Cl. 359—639 **3 Claims**



1. An optical splitter arrangement for accepting a light from at least one input and providing multiple light outputs of four or more, a light intensity of the outputs differing from one another no more than two dB, and a light intensity of the cumulative outputs differing no more than three dB from the light intensity of the input, the arrangement comprising:

at least one input optical fiber having a diameter (I) and a numerical aperture (NA), the input optical fiber providing a light input and projecting the light input into a spot sized to a diameter (D);

at least two intermediate ribbon mixing elements, the ribbon mixing elements having a generally constant thickness and height cross-sectional areas with each ribbon mixing element with a cross-sectional endface exposed to the projected spot of input optical fiber, each such ribbon mixing element being exposed to a generally equal area to the spot, and a total thickness of the ribbon mixing elements being approximately equal to D, the endface of the ribbon mixing elements being spaced approximately (D–I)/(2×tan theta) wherein theta equals $\sin^{-1}$ (NA); and

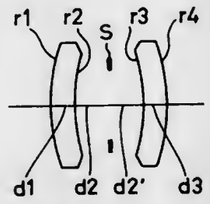
a C number of output optical fibers abutting an end of each ribbon mixing element opposite the input optical fiber(s) wherein C is at least two.

5,623,370

GRADIENT INDEX LENS SYSTEM

Toshihiko Ueda; Satoshi Iwasaki, both of Toyokawa, Japan; Sanae Watanabe, Storrs, Conn.; Kazuharu Kagoshima, and Keijiro Sakamoto, both of Toyokwa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 73,753, Jun. 8, 1993, abandoned.
This application Aug. 10, 1995, Ser. No. 513,415
Claims priority, application Japan, Jun. 11, 1992, 4-175956; Apr. 23, 1993, 5-119311
Int. Cl.[6] G02B 3/00
U.S. Cl. 359—654 **24 Claims**



1. A radial gradient index lens system having a refractive index distribution where a refractive index decreases from an optical axis along a height, said gradient index lens system being of a completely symmetrical type, about an aperture stop, comprising

two meniscus lens elements having a refractive index distribution where a refractive index decreases from an optical axis along a height, whose convex surfaces have a larger radius of curvature than concave surfaces, said meniscus lens elements being arranged symmetrically with respect to the aperture stop so that the convex surfaces thereof face an object side and an image side, respectively, wherein both of said two meniscus lens elements fulfill the following condition:

$$v0<v1d$$

where

v0 represents an axial Abbe number of the lens element; and where v1d is equal to

$$\frac{N1d}{N1F-N1C}$$

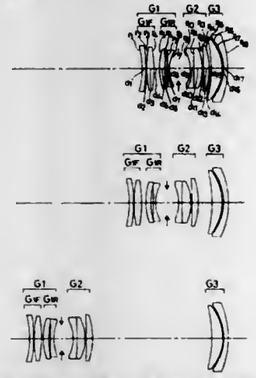
where N1d represents a secondary gradient index coefficient of d-line, N1F represents a secondary gradient index coefficient of F-line and N1C represents a secondary gradient index coefficient of C-line.

5,623,371

MACRO LENS SYSTEM

Masashi Hankawa, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,109
Claims priority, application Japan, Jun. 29, 1994, 6-147413
Int. Cl.[6] G02B 9/12
U.S. Cl. 359—693 **17 Claims**



1. A photographic macro lens system capable of close-up photography, which consists of, in order from an object side:

a first lens group having a positive refracting power;

a second lens group having a positive refracting power; and

a third lens group having a positive refracting power, characterized in that said macro lens system is focused from an object point at infinity to an object point at a shorter distance by moving said first and second lens groups farther away from said third lens group;

wherein said third lens group is fixed with respect to an image plane;

wherein said first and said second lens groups are moved such that a space reserved therebetween is varied, and

said macro lens system complies with the following conditions:

$$0.8<\phi 1/\phi 1MOD<1.8 \quad (1)$$

$$0.5<\phi 2/\phi<1.5 \quad (2)$$

$$0.5<\beta 3<1.5 \quad (3)$$

where

ϕ is refracting power of the overall system when focused at infinity,

$\phi 1$ is refracting power of the first lens group of said macro lens system when focused at infinity,

$\phi 1MOD$ is refracting power of the first lens group of said macro lens system when focused to a shortest possible distance,

$\phi 2$ is a refracting power of the second lens group of said macro lens system when focused at infinity, and

$\beta 3$ magnification of the third lens of said macro lens system when focused at infinity.

5,623,372

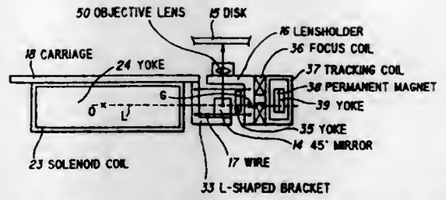
THIN TYPE OPTICAL HEAD

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 14, 1995, Ser. No. 490,235
Claims priority, application Japan, Jun. 14, 1994, 6-131515
Int. Cl.[6] G02B 7/02
U.S. Cl. 359—814 **5 Claims**

4. A thin type optical head, comprising:

a linear motor including an armature member and a stator member, said stator member being provided to extend between inner and outer radii of an optical disk, and said armature member moving on said stator member;



a carriage fixed to said armature member to move on said stator member;

a reflection mirror carried by said carriage, said reflection mirror receiving a collimated light from an externally provided optical system;

a lens holder for holding an objective lens, said lens holder being fixed to one ends of a plurality of wires to be arranged on one side of said carriage, other ends of said plurality of wires being fixed to said carriage, and said objective lens focusing said collimated light reflected by said reflection mirror on said optical disk;

focusing and tracking coils fixed to said lens holder; and

a magnetic circuit for generating a magnetic field acting on said focusing and tracking coils to correct focusing and tracking errors, said magnetic circuit being provided to extend between inner and outer radii of said disk;

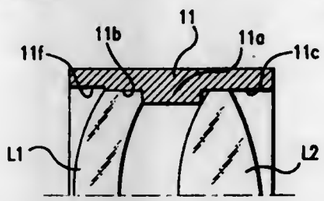
wherein a drive center of said linear motor, a gravity center of said lens holder fixed with said focusing and tracking coils, and a focus drive point of said focusing coil are positioned on a common horizontal line.

5,623,373

LENS BARREL AND METALLIC MOLD FOR MOLDING THE SAME

Hiroshi Okano, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 2, 1996, Ser. No. 597,456
Claims priority, application Japan, Mar. 3, 1995, 7-044061
Int. Cl.[6] G02B 7/02
U.S. Cl. 359—819 **14 Claims**



1. A lens barrel comprising:

a cylindrical body defining an axis and having an inner circumference;

abutting joint components formed along the inner circumference;

concave components formed along the inner circumference, each said concave component formed between each said abutting joint component in a circumferential direction of the cylindrical body;

first lens holding components, each said first lens holding component positioned along the inner circumference on each concave component on one side of the abutting joint components in an axial direction of the cylindrical body;

second lens holding components, each said second lens holding component positioned along the inner circumference between each concave component, on another side of the abutting joint components in the axial direction of the cylindrical body; and

a release component formed between each of said first lens holding components along the inner circumference, wherein

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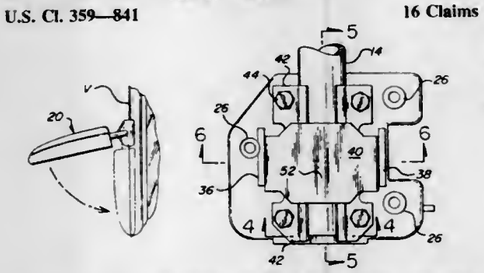
an inner diameter of each said release component is greater than an inner diameter of each of said first lens holding components.

5,623,374

SPRING DETENT FOR FOLDABLE SIDE MOUNT REAR VIEW MIRROR

Norman B. Montanbault, St. Clair Sbores, Mich., assignor to ADAC Plastics, Inc., Grand Rapids, Mich.

Filed Mar. 15, 1994, Ser. No. 212,872
Int. Cl.[6] B60R *1/06*
U.S. Cl. 359—841 **16 Claims**



1. A side-mounted vehicular rear view mirror of the type which comprises a hollow gooseneck support arm secured to a bodyside mount which permits the gooseneck arm and a mirror assembly carried outboard of the vehicle thereby to be folded from a predetermined, mechanically detented viewing position toward the vehicle bodyside, the gooseneck arm having a first, essentially upright length which is adapted to be secured to said mount and, integral therewith but angularly displaced relative thereto, a second outwardly extending length adapted to carry said mirror assembly wherein the improvement comprises:

a longitudinal detent structure formed in the side wall of the upright length of said gooseneck arm;

a semi-cylindrical bearing surface formed in said body mount to receive and support said upright length for rotation therein: and

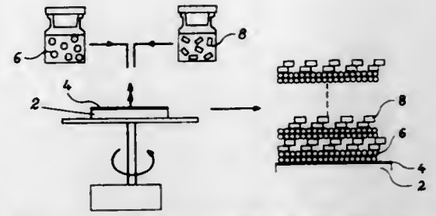
a spring clamp having opposed feet secured to said bodyside mount on opposite sides of said surface, a resilient spring portion clamping said upright length into said surface, and flexor portions interconnecting the spring portion and said feet, said spring portion having a detent structure formed therein which is cooperable with said gooseneck arm detent structure to yieldably maintain said gooseneck arm in said viewing position and to yield as permitted by said flexor portions to permit the folding of said arm relative to said vehicle body side.

5,623,375

INTERNATIONAL DIELECTRIC MIRROR AND PRODUCTION PROCESS FOR SUCH A MIRROR

Hervé Floch, Brunoy, and Michel Berger, Seyssinet, both of France, assignors to Commissariat A L'energie Atomique, Paris, France

PCT No. PCT/FR92/00962, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO93/08490, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 13, 1992, Ser. No. 211,750
Claims priority, application France, Oct. 15, 1991, 91 12685
Int. Cl.[6] G02B *27/00;7/182;5/08;* **C08G** *77/04*
U.S. Cl. 359—883 **17 Claims**



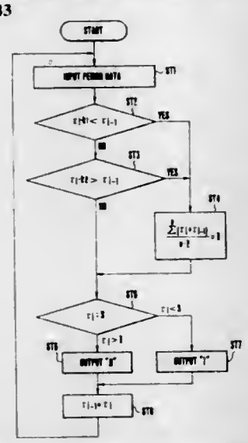
1. An interferential dielectric mirror comprising a planar, ground substrate (2), whose surface has been replicated with a thermal plastic resin (4), said resin being chosen from the group consisting of epoxy, bisphenol diglycidyl-ether, glycidyl-ester, glycidyl-amide, glycidyl-amine, silicone-glycidyl, thioglycidyl and fluoro-glycidyl resins, said substrate being covered with at least one first layer (6) of colloids and at least one second layer (8) of colloids, the first layer (6) having a refractive index below that of the second layer (8) and said two types of layers (6, 8) being arranged on the substrate in an alternating manner.

5,623,376

DIGITAL INFORMATION RESTORING DEVICE INCLUDING PERIOD DETECTOR

Shingo Ikeda, and Shinichi Yamashita, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 859,882, Mar. 30, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,536
Claims priority, application Japan, Apr. 3, 1991, 3-070852; Jun. 24, 1991, 3-178738
Int. Cl.[6] G11B *5/09;20/14;20/16*
U.S. Cl. 360—43 **15 Claims**



1. A digital information restoring device comprising:

(a) input means for inputting a digital signal which indicates digital information by means of variations in its period;

(b) period detecting means for detecting a time at a transition point of pulse-width of the digital signal and outputting period data;

(c) computing means including first averaging means for calculating an average value of at least two period data among the period data outputted from said period detecting means, said computing means further including second averaging means for calculating an average of average values calculated by said first averaging means; and

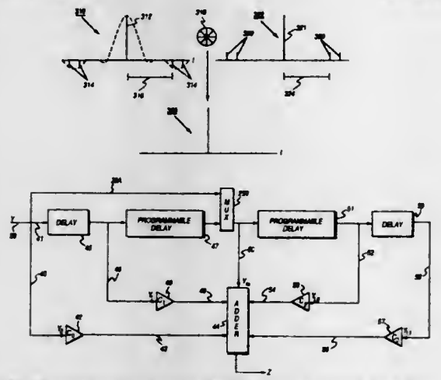
(d) restoring means for comparing the average value calculated by said second averaging means with the period data and restoring the digital information.

5,623,377

FILTERING A READ SIGNAL TO ATTENUATE SECONDARY PULSES CAUSED BY POLE TIPS OF A THIN FILM MAGNETIC READ HEAD

Richard T. Behrens, Louisville; Neal Glover, Broomfield; Trent O. Dudley, Littleton; Alan J. Armstrong, Broomfield; Christopher P. Zook, Longmont, and William G. Bliss, Thornton, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 43,662, Apr. 6, 1993, abandoned. This application Apr. 4, 1994, Ser. No. 222,666
Int. Cl.[6] G11B *5/035;5/09*
U.S. Cl. 360—65 **38 Claims**



19. An apparatus for storing and retrieving digital data from a magnetic medium, comprising:

(a) a magnetic read head for sensing magnetic transitions on the magnetic medium to generate an analog read signal comprising main pulses and precursor and post-cursor secondary pulses;

(b) a sampling device for sampling the analog read signal to generate a discrete time input signal; and

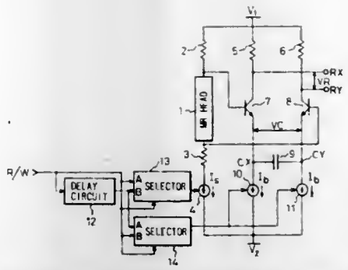
(c) a discrete time filter for filtering the discrete time input signal to attenuate the pre-cursive and post-cursive secondary pulses, said discrete time filter comprising a plurality of compensation taps to generate an impulse response having a predetermined number of compensation coefficients delayed from a center coefficient by a period approximately equal to the period between the main and secondary pulse samples in the discrete time input signal such that at least one of the secondary pulses is attenuated when the discrete time input signal is convolved with the impulse response of the filter, wherein the discrete time filter comprises a number of unit delay elements greater than nine.

5,623,378

SIGNAL REPRODUCING CIRCUIT ADOPTED FOR HEAD UTILIZING MAGNETO-RESISTIVE EFFECT WITH CONTROL FOR REDUCING TRANSIENT PERIOD BETWEEN READ AND WRITE STATES

Hidekazu Shibasaki, Higashine, and Hiroaki Ueno, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1994, Ser. No. 306,210
Claims priority, application Japan, Dec. 14, 1993, 5-313447
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—67 **5 Claims**



1. A signal reproducing circuit comprising:

first and second power supply lines having different potentials;

a magneto-resistive effect head, having one end thereof operatively coupled to the first power supply line, for reproducing data recorded on a magnetic recording medium in a read operation;

a first constant current source, operatively coupled between a second end of the magneto-resistive effect head and the second power supply line, for supplying the magneto-resistive effect head with a sense current in the read operation;

first and second transistors having collectors thereof operatively coupled to the first power supply line, respectively, and responsive to voltage signals obtained from the one end and the second end of the magneto-resistive effect head, respectively;

second and third constant current sources coupled between each emitter of the first and second transistors and the second power supply line, respectively, for supplying the first and second transistors with a predetermined constant current, respectively, in the read operation;

a capacitor connected between the emitter of the first transistor and the emitter of the second transistor; and

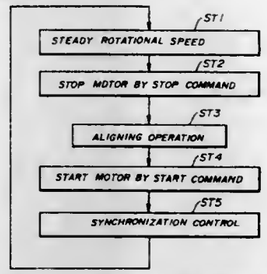
a control circuit responsive to a read/write control signal, for controlling ON/OFF timings of the first to the third constant current sources, respectively, during a transition from a read state to a write state and from the write state to the read state, said control circuit controlling the first constant current source to be turned OFF after controlling the second and third constant current sources to be turned OFF in the transition from the read state to the write state, and the control circuit controlling the second and third constant current sources to be turned ON after controlling the first constant current source to be turned ON in the transition from the write state to the read state.

5,623,379

METHOD OF CONTROLLING A START-UP OF A MOTOR USED FOR A DISK APPARATUS

Kazuo Nishimura, and Tatsuro Sasamoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 7, 1995, Ser. No. 384,959
Claims priority, application Japan, Feb. 14, 1994, 6-017549
Int. Cl.[6] G11B *15/48*
U.S. Cl. 360—74.1 **6 Claims**



1. A method of controlling start-up of a brushless and sensorless motor used in a disk apparatus, the motor being used for rotating a disk on which information is recorded, the motor having no sensor for sensing an angular position of a rotor relative to a stator of the motor, the method comprising the steps of:

a) stopping said motor being operated at a steady rotational speed by supplying a stop command;

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b) performing an aligning operation immediately after said motor is stopped, the aligning operation being performed to rotate said rotor to a predetermined angular position relative to said stator of said motor; and

c) operating said motor at a steady speed by a synchronization control when an operation of said motor is started by supplying a start command.

5,623,380

CIRCUIT AND METHOD FOR CONTROLLING HEAD TRACKING BASED ON AN AVERAGE OF REPRODUCED PILOT SIGNALS FROM EACH RECORDING UNIT

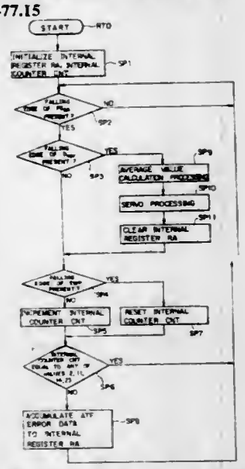
Masayoshi Noguchi, Chiba, and Makoto Yamada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 200,930, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 37,705, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 608,002, Nov. 1, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,066

Claims priority, application Japan, Dec. 15, 1989, 1-324993

Int. Cl.[6] G11B *15/467*

U.S. Cl. 360—77.15 **6 Claims**



1. A tracking control circuit for a magnetic recording/reproducing apparatus of the type having rotary drum mounted, first and second rotary heads having different azimuth angles from each other for scanning a magnetic tape and reproducing recorded data from a set of first recording tracks recorded on the magnetic tape at a first azimuth angle and a set of second recording tracks recorded on the magnetic tape at a second azimuth angle and inbetween the set of first recording tracks, the first azimuth angle and the second azimuth angle being in different oblique directions relative to the running direction of the magnetic tape, wherein the improvement comprises:

means for reproducing ATF synchronizing signals from a given second recording track and ATF pilot signals recorded in two locations on each of the first recording tracks on opposite sides of the given second recording track, generating plural tracking error information data from the reproduced ATF pilot signals by digitally sampling and converting the reproduced ATF pilot signals by means of the reproduced ATF synchronizing signals into digital ATF pilot data, subtracting the digital ATF pilot data from the corresponding two locations of the first recording tracks on opposite sides of the given second recording track, and repeating these steps for at least the next recording track after the given second recording track; and

tracking control means supplied with the plural tracking error information data for controlling the feed speed of the magnetic tape relative to the first and second rotary heads dependent on an average value of the plural tracking error information data, wherein the tracking control means includes:

means for generating drum frequency signal pulses for representing a rotating frequency of a rotary drum;

an internal counter supplied with the drum frequency signal pulses for counting incrementally at the timing of each drum frequency signal pulse;

an internal register for accumulating the plural tracking error information data at intervals each time the internal counter counts up to a predetermined value; and

calculating means for calculating an average of the accumulated value of the plural tracking error information data after both the first recording track and the second recording track have been scanned during one complete rotation of the first rotary head or the second rotary head.

5,623,381

DISK DRIVE

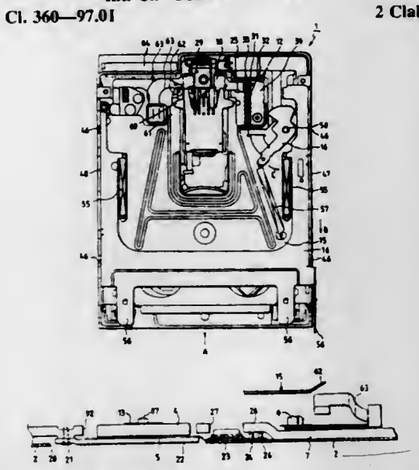
Toru Sawada, Furukawa; Takuya Nagai, Sendai; Shinkichi Sasaki, and Takuya Wakayama, both of Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 297,669, Aug. 29, 1994, abandoned, which is a continuation of Ser. No. 63,179, May 17, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,814

Claims priority, application Japan, May 18, 1992, 4-124916; May 18, 1992, 4-124917

Int. Cl.[6] G11B *5/012;17/04*

U.S. Cl. 360—97.01 **2 Claims**



1. A disk drive comprising:

a lower cover having upper surface and including a first opening;

a chassis having a lower surface mounted on said lower cover, the chassis also including a projecting portion which is spaced from the lower cover, thereby forming a retaining area, the projecting portion including a second opening which is aligned with the first opening, the chassis and the lower cover being separate members;

a back yoke fixedly connected to the lower surface of the projecting portion of the chassis such that the back yoke covers a portion of the first opening of the lower cover, the first opening being larger than the back yoke;

a disk driving motor mounted on said back yoke, for rotating a magnetic disk which is inserted and loaded into the disk drive, a portion of said disk driving motor extending through the second opening of said projecting portion of the chassis; and

a flexible printed circuit board integrally formed from a single sheet, the flexible printed circuit board including a first portion connected to said disk driving motor and to said back yoke, said flexible printed circuit board being received in a space formed between the projecting portion of said chassis and said lower cover, said flexible printed circuit board including a second portion located on said lower cover upon which is mounted an integrated circuit component, said integrated circuit component being received in the second opening of the chassis, the second opening being larger than a combination of the integrated circuit component and the disk driving motor;

wherein said back yoke is assembled to said disk drive by being inserted into the opening of said lower cover.

5,623,382

DISK DRIVING APPARATUS

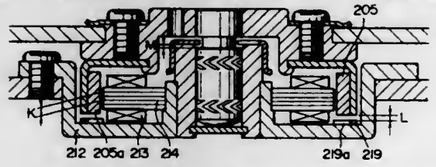
Norishige Moritan, Tottori-ken; Minoru Kuroda, Sakaiminato, and Hideshi Fukutani, Yonago, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 92,795, Jul. 19, 1993, abandoned. This application May 23, 1995, Ser. No. 445,558

Claims priority, application Japan, Jan. 29, 1993, 5-014039

Int. Cl.[6] G11B *17/02;* **H02K** *5/24;7/08*

U.S. Cl. 360—99.08 **28 Claims**



1. A disk driving apparatus for driving a disk, the disk driving apparatus comprising:

a rotor adapted to rotate;

a hydrodynamic bearing mechanism for rotatably supporting the rotor;

a thrust bearing mechanism for axially supporting said rotor, the thrust bearing mechanism comprising a load support portion which comprises a rotation-side end surface and a fixation-side end surface, closely opposing each other, and a lubricating fluid;

a driving mechanism for driving and rotating said rotor;

means for generating an axial magnetic attraction force in order to press said rotation-side end surface and said fixation-side end surface of said thrust bearing mechanism toward each other;

means for limiting an amount of axial movement of the rotor in a direction of separation of said rotation-side end surface and said fixation-side end surface; and

means for canceling variations in said axial magnetic attraction force through phase inversions of said variations so as to cancel vibrations of said rotor caused by said variations in said axial magnetic attraction force.

5,623,383

MAGNETIC SLIDER DESIGN FOR PRECISION WEAR-IN

Thomas A. Gregory, Rochester, Minn., and Christopher G. Keller, Albany, Calif., assignors to International Business Machines, Armonk, N.Y.

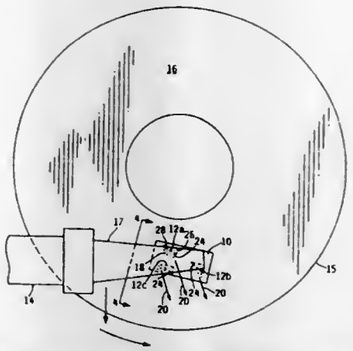
Filed Jun. 30, 1994, Ser. No. 269,869

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **14 Claims**

1. The method of adapting, after assembly, the head-disk interface, in a magnetic disk storage system utilizing at least one hard disk, said hard disk including a plurality of tracks, including inner tracks and outer tracks, said method to provide an increased head disk spacing and a smoother disk surface comprising the steps of:

a. positioning an actuator arm supporting a slider over the inner tracks while rotating a heavily lubricated hard disk at a normal operating speed, each of said slider having a plurality of support pads including leading edges positioned at an angle facing outwardly relative to said plurality of tracks, and having inwardly beveled sides terminating in a disk facing surface having an area at a first time;



b. holding said actuator arm over a given track for a period of time sufficient to erode the remaining asperities from said disk surface and displace debris from said eroded asperities outwardly toward the outer tracks of the disk; and

c. successively positioning said actuator arm over tracks in ascending order from the innermost track of said plurality of tracks to the outermost track of said plurality of tracks while rotating said disk at normal operating speed to remove asperities from the tracks on the disk and to produce a disk facing surface having an area at a second time which is greater than the disk facing surface at the first time; and

d. reading and writing information to selected tracks of said plurality of tracks with said slider which includes a transducer.

5,623,384

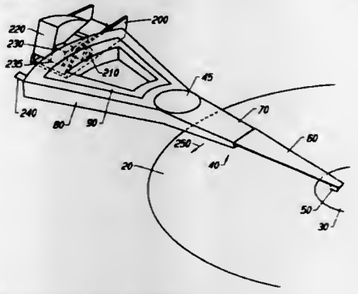
LANDING ZONE INERTIAL LATCH

Thomas A. Hickox, Scotts Valley, and Lawrence W. Gollbach, Felton, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 182,246, Jan. 13, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 578,449

Int. Cl.[6] G11B *5/54;21/22*

U.S. Cl. 360—105 **1 Claim**



1. A disc drive system comprising:

a housing;

a motor fixed within said housing;

a fixed disc which records data and has a landing zone where no data is located rotatably coupled to said motor;

an actuator arm assembly further comprising

voice coil magnets attached to said housing;

an actuator arm with a voice coil attached to the rear of the actuator arm that is magnetically attracted to said voice coil

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magnets such that said voice coil magnets move said actuator arm in response to electrical current moving through said voice coil;

a flexure rigidly fixed to said actuator arm;

a transducer fixed to an end of said flexure opposite the end connected to said actuator arm; and

a landing zone inertial latch means located below the latch pin of the actuator arm for preventing said transducer from leaving the landing zone of said fixed disc when an external shock is applied to said housing by rotating upward to block said latch pin;

said landing zone inertial latch means including a u-shaped support piece having two sides and a center section connecting said two sides;

a pin attached between said two sides to span said u-shaped support piece;

an inertial mass which rotates about said pin in response to a shock;

an impact member which rotates about said pin in response to the shock to block the path of the latch pin;

said inertial mass and said impact member being biased into a storage position by a bias spring such that said inertial mass and said impact member overcome said bias force and rotate in response to the shock to prevent movement of the transducer out of said landing zone.

5,623,385

ROTARY SCANNING DEVICE

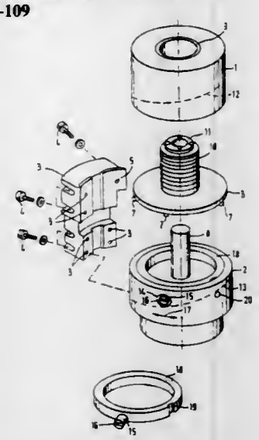
Peter Gunschmann, Darmstadt; Peter Lameli, Lampertheim; Hartmut Willmann, Gross Zimmern, and Werner Maack, Seeheim, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 371,662, Jan. 11, 1995, abandoned, which is a continuation of Ser. No. 68,808, May 27, 1993, abandoned. This application Sep. 9, 1996, Ser. No. 709,614

Claims priority, application Germany, Jul. 2, 1992, 42 21 729.6

Int. Cl.[6] G11B *5/56;21/24*

U.S. Cl. 360—109 **7 Claims**



1. A rotary scanning device, comprising:

a) a tape guide drum having an outer surface for receiving a magnetic tape along a helical path, said tape guide drum including an aperture wall defining an aperture at said outer surface, the aperture having (i) a geometric center and (ii) a diametral dimension extending as a geometric cord at said outer surface of said tape guide drum and generally transverse to radii of the tape guide drum within said aperture;

b) a servo track magnetic head arranged for scanning a servo track on the magnetic tape, said servo track magnetic head being arranged in said aperture at a distance from the helical path and having clearance with said aperture wall;

c) a head disc rotatable with respect to said tape guide drum about an axis of rotation, said head disc including scanning magnetic heads for scanning recorded tracks adjacent to the servo track on the magnetic tape; and

d) mounting means for mounting said servo track magnetic head, without movement of said head disc along said axis of rotation, for translation of the servo track magnetic head within said aperture to (i) adjust the translational distance along the diametral dimension of the servo track magnetic head relative to the center of the aperture, (ii) the angular position of said servo track magnetic head about said axis of rotation within said aperture, (iii) the relative angular positions of the servo head and the scanning magnetic heads about said axis of rotation and (iv) the distance between the servo head and the helical path.

5,623,386

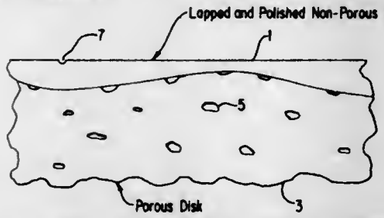
MAGNETIC RECORDING COMPONENT

Thomas M. Sullivan, 499 Park 800 Dr., Suites E and F, Greenwood, Ind. 46143

Filed Oct. 31, 1994, Ser. No. 332,419

Int. Cl.[6] G11B *5/82*

U.S. Cl. 360—135 **9 Claims**



1. A magnetic memory recording component comprising:

a) a substrate made of silicon carbide of a magnetic memory storage medium coating, said substrate comprising:

i) a silicon carbide ceramic outer surface, a depression in the silicon carbide ceramic outer surface having a maximum dimension of 0.0001 inch, and

ii) wherein said silicon carbide ceramic has no non-stoichiometric silicon and no carbon other than that which is residual from a process of making said silicon carbide ceramic material, said silicon carbide ceramic outer surface receiving said magnetic memory storage medium coating,

b) spacers separating adjacent substrates which spacers are made from silicon carbide ceramic, silicon nitride ceramic, silicon metal coated with a thin film of silicon carbide not more than 0.010 inch thick, carbon or graphite coated with a thin film of silicon carbide not more than 0.010 inch thick, or carbon or graphite wherein the silicon carbide or silicon nitride materials may have up to 30% porosity by weight,

c) a shaft utilized to provide a rotational axis of said disk substrates and said spacers made from silicon carbide ceramic, silicon nitride ceramic, or silicon metal which may be coated with a silicon carbide thin film not exceeding 0.010 inch thickness,

d) a casing enclosing working parts of the magnetic memory recording device and made from silicon carbide ceramic, silicon nitride ceramic, or silicon metal which may be coated with a thin film of silicon carbide ceramic less than 0.010 inch thick wherein the silicon carbide or silicon nitride materials may have up to 30% porosity by weight, and

e) self-holding machine taper pins for attaching components of the magnetic memory recording device, said pins pressed into sockets wherein the angle of the pins is between 0.5 and 7 degrees and the pins are made from silicon carbide, silicon nitride, or silicon metal.

5,623,387

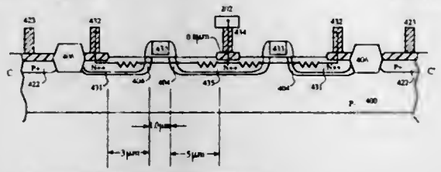
ESD PROTECTION CIRCUIT

Sheau-Suey Li; Randy T. Ong, both of Cupertino; Samuel Broydo, Los Altos Hills, and Khue Duong, San Jose, all of Calif., assignors to XILINX, Inc., San Jose, Calif.

Division of Ser. No. 58,189, May 3, 1993, Pat. No. 5,477,414. This application Jun. 5, 1995, Ser. No. 470,555

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **5 Claims**



1. An output driver circuit comprising:

a plurality of pullup transistors each comprising a source, a drain, and a channel region controlled by a gate, each source, drain, and gate having a length parallel to the direction of current flow and a width perpendicular to the direction of current flow, said width of each region being greater than said length;

said source, drain, and channel regions of said pullup transistors being surrounded by a diffusion region above which are conductive contact regions connected to said diffusion region along at least most of its width, whereby current flow through said pullup transistors during an ESD event is spread over most of the width of said pullup transistors.

5,623,388

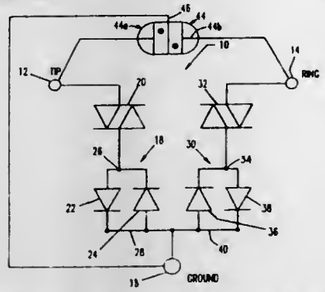
OVERVOLTAGE PROTECTION CIRCUITS

Nisar Chaudhry, West Babylon, N.J., assignor to Tii Industries, Inc., Coplague, N.Y.

Continuation of Ser. No. 438,448, May 10, 1995, abandoned, which is a continuation of Ser. No. 23,551, Feb. 26, 1993, abandoned. This application May 17, 1996, Ser. No. 649,285

Int. Cl.[6] H02H *1/04*

U.S. Cl. 361—119 **6 Claims**



1. A miniature overvoltage protection circuit for use on telephone lines having tip, ring and ground terminals, consisting of:

a) a first current path disposed between said tip terminal and said ground terminal, said first current path including a first solid state bi-directional thyristor device having two terminals, one terminal of said first thyristor device being connected to said tip terminal and the other terminal of said first thyristor device being connected in series with a parallel pair of oppositely polarized semiconductor diodes, which are connected to said ground terminal in order to reduce capacitance loading on the telephone lines; and

b) a second current path disposed between said ring terminal and said ground terminal identical with said first current path.

5,623,389

CONDUCTIVE PASTE AND MULTILAYERED CERAMIC CAPACITOR EMPLOYING THE SAME

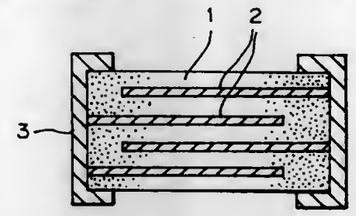
Tomoki Sanada, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 478,346

Claims priority, application Japan, Jun. 20, 1994, 6-137200

Int. Cl.[6] H01G *4/008;4/06*

U.S. Cl. 361—321.1 **12 Claims**



5. A multilayered ceramic capacitor comprising internal electrodes layers separated one another by ceramic dielectric layers, and two external electrodes connected to alternate internal electrodes, wherein said external electrodes consist essentially of conductive powder and a glass frit consisting essentially of ZnO, PbO, B_2O_3, SiO_2, Al_2O_3 and Bi_2O_3, the content of Bi_2O_3 in the glass frit being 4.0 to 30.2 percent by weight and the content of ZnO in said glass frit being 0.1% by weight or less.

5,623,390

COMPUTER HAVING NICKEL-HYDROGEN BATTERY AND VENT HOLES SEALED WITH POROUS FILM

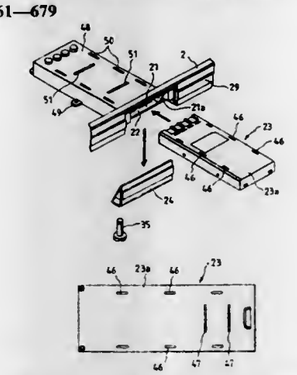
Hideaki Noda, Tamayama-mura; Hitoshi Funaki, Morioka, and Naoyoshi Sainokami, Tamayama-mura, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 353,656, Dec. 9, 1994, Pat. No. 5,583,742. This application Jun. 25, 1996, Ser. No. 673,696

Claims priority, application Japan, Dec. 15, 1993, 5-315218; Dec. 15, 1993, 5-315220; Dec. 15, 1993, 5-315221

Int. Cl.[6] H05K *5/00;* **H01M** *10/52*

U.S. Cl. 361—679 **2 Claims**



1. A computer comprising a body case incorporating a battery which produces an explosive gas during a malfunction event of the battery, the battery being sealed in a gas- and liquid-tight manner within the body case, said body case being used as a primary receptacle portion for the explosive gas produced from said battery.

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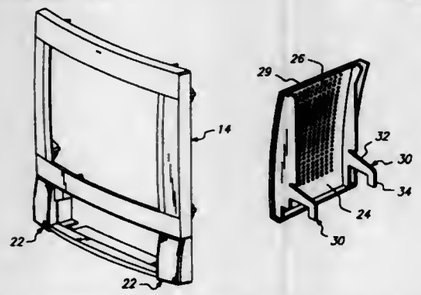
wherein vent holes are formed in the body case which communicate with the atmosphere and are sealed with a porous film which is permeable to gas but not permeable to water; and wherein said battery is a nickel-hydrogen battery.

5,623,391

SPEAKER COVER AND SNAP-IN COUPLING THEREFOR

Steven B. Chase, Cupertino, and James K. Levins, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 3, 1995, Ser. No. 415,466
Int. Cl.[6] G06F *1/16*; H05K *5/00*
U.S. Cl. 361—681 **15 Claims**



1. An appliance including a chassis encompassed by an outer housing, said housing including a section occupying a side of said chassis, a speaker mounted behind said housing section, and an apertured speaker cover lying in front of said speaker, said speaker cover constituting a separate member from said housing section and being non-releasably connected thereto by a snap-in coupling, said snap-in coupling comprising a flexible snap arm projecting from an apertured body of said speaker cover; said snap arm including a main portion joined to said body, and a lateral projection disposed at a free end of said main portion; said housing section including a slot for receiving said snap arm; said slot including a constraining surface for constraining said main portion against bending, a bending surface for elastically bending said lateral portion relative to said main portion about an axis extending along said main portion, and a locking surface situated at an end of said bending surface and behind which said lateral projection snaps upon traveling off said bending surface, to oppose removal of said speaker cover from said housing section.

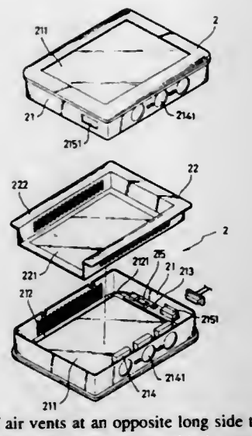
5,623,392

LCD ASSEMBLY WITH PROJECTION FUNCTION

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Rd., Taipei, Taiwan

Filed Jun. 4, 1996, Ser. No. 658,209
Int. Cl.[6] G06F *1/16*; H05K *7/10*
U.S. Cl. 361—681 **3 Claims**

1. A LCD assembly comprising:
a LCD stand having a base and a holder frame pivoted to said base, said holder frame having a light guide board;
a LCD adapted for mounting in the holder frame of said LCD stand, said LCD comprising a display screen unit, said display screen unit comprising a liquid crystal display screen at the center, a lamp tube along one long side thereof adapted for providing back light to said liquid crystal display screen, a



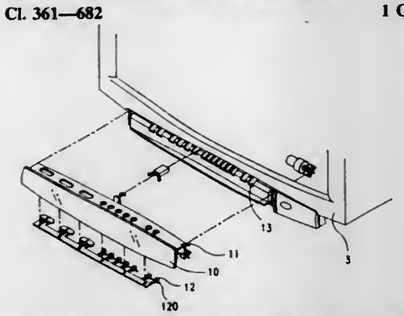
plurality of air vents at an opposite long side thereof, at least one fan on the inside adjacent to said air vents, and a circuit board along one short side thereof, said circuit board comprising a switch connected to said lamp tube and said at least one fan by electric wires for controlling their operation alternatively, and a connector adapted for connecting to a computer by a cable.

5,623,393

MONITOR CONTROL PANEL MOUNTING STRUCTURE

Yeong-Kuo Yau, 14F, No. 1, Sec. 4, Nan-King E. Rd., Taipei, Taiwan

Filed Apr. 2, 1996, Ser. No. 626,329
Int. Cl.[6] H05K *7/02*; H04N *5/64*
U.S. Cl. 361—682 **1 Claim**



1. A monitor control panel mounting structure of the type comprising a monitor housing, a main board mounted inside said monitor housing, a control panel pivoted to said monitor housing at a front side and turned about an axis, said control panel having a mount perpendicularly disposed at a back side, a set of control buttons installed in said mount for operation to control said main board, wherein said monitor housing has a plurality of tracks extending outwards; said main board has a plurality of switches respectively disposed adjacent to said tracks at an outer side; said control panel has a plurality of levers respectively extending from said control buttons and moved in said tracks, said levers being respectively moved to said switches of said main board for permitting said switches of said main board to be operated through said control buttons when said control panel is turned outwards to move said mount out of said monitor housing, said levers of said control buttons being moved away from said switches of said main board

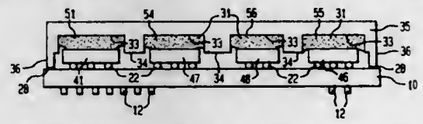
when said control panel is turned inwards to move said mount to the inside of said monitor housing.

5,623,394

APPARATUS FOR COOLING OF CHIPS USING A PLURALITY OF CUSTOMIZED THERMALLY CONDUCTIVE MATERIALS

Raed A. Sherif, Hopewell Junction; Mark G. Courtney; David L. Edwards, both of Poughkeepsie, all of N.Y.; Albert J. Fahey, Pasadena, Calif.; Gregory S. Hopper, Fishkill, N.Y.; Sushumna Iruvanti, Wappingers Falls, N.Y.; Charles F. Jones, Poughkeepsie, N.Y., and Gaetano P. Messina, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 349,232, Dec. 5, 1994. This application Aug. 2, 1996, Ser. No. 690,883
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—705 **18 Claims**



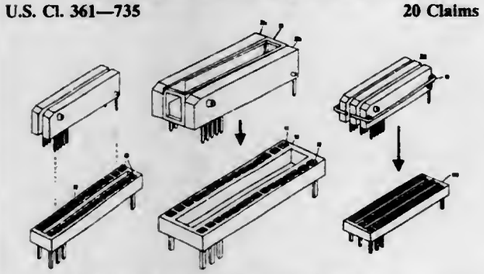
1. An apparatus to provide a direct customized thermally conductive path between at least two semiconductor elements and a thermal cap, comprising at least a first non-metallic thermally conductive material that is directly present between a first semiconductor element and said thermal cap and at least a second non-metallic thermally conductive material that is directly present between a second semiconductor element and said thermal cap, and wherein the thermal conductivity of said first thermally conductive material is different than that of said second thermally conductive material.

5,623,395

INTEGRATED CIRCUIT PACKAGE ASSEMBLY

Nour E. Deroulche, Raleigh, N.C., and Scott Jewler, Gilbert, Ariz., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Dec. 15, 1995, Ser. No. 572,922
Int. Cl.[6] H05K *7/02*;*7/12*; H01L *23/02*;*23/34*
U.S. Cl. 361—735 **20 Claims**



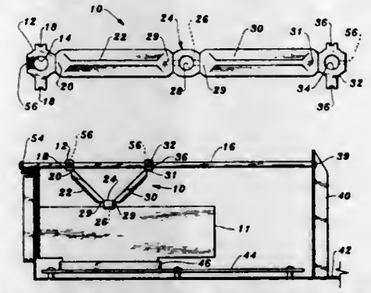
1. An electronic package assembly comprising:
a plurality of IC packages having leads arranged along, at least, one edge of each of the IC packages, and locking elements for attaching the IC packages to each other, and
a socket connector for receiving the leads to connect said plurality of IC packages with a set of external conductors,
the IC packages being rigidly oriented by said locking elements so as to establish a prescribed alignment of the IC packages with respect to each other and said connector.

5,623,396

ADJUSTABLE PRINTED WIRING BOARD FASTENER

Donald A. Blackwell, Saratoga, Calif., assignor to Digital Dynamics, Inc., Scotts Valley, Calif.

Filed Nov. 14, 1995, Ser. No. 557,849
Int. Cl.[6] H05K *7/14*; H01R *13/62*
U.S. Cl. 361—801 **15 Claims**



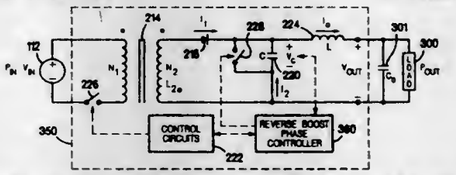
1. An adjustable printed wiring board fastener, comprising:
an elongated fastening element having a first end element secured to a first fastening section; a central fastening element being secured at one end thereof to said first fastening element and including means for attachment of said central fastening element to a printed wiring board; a second fastening section secured at one end to said central fastening element, said second fastening section including a second end element secured to the second fastening section; said first end element including means for adjustably attaching said elongated fastening element to a support element; and, said second end element including means for adjustably attaching said elongated fastening element to a said support element.

5,623,397

POWER CONVERSION IN ANTICIPATORY REVERSE BOOST MODE

Patrizio Vinciarelli, Boston, Mass., assignor to VLT Corporation, San Antonio, Tex.

Filed Jan. 27, 1994, Ser. No. 187,296
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—20 **31 Claims**



30. A method of operating a power conversion circuit of the kind comprising:
a port for connection to a power source;
a transformer having a primary winding, a secondary winding, and an effective secondary leakage inductance L2*e*;
a capacitance C connected on a secondary side of said transformer;
a unidirectional conducting device connected in series with said secondary winding and oriented to conduct during conduction by said first switching device;
an inductor connected to conduct current between said capacitance and a load;
a port for connection to said load;
a first switching device connected to be opened and closed to transfer energy from said power source via said effective leakage inductance to charge said capacitance during forward energy transfer cycles having a characteristic time scale of pi*sqrt(L2*e**C);

VOL 1197 ISS 4 APR 22 1997 UMI

control circuitry connected to cause precharging of said capacitance in anticipation of the initiation of said forward energy transfer cycle, said control circuitry including

a second switching device connected in parallel with said capacitance and in series with said inductance, and controlled to be opened in anticipation of the initiation of said forward energy transfer cycle,

a port for receiving a signal indicative of a rate of change of voltage across said capacitance, and

a port for receiving a signal indicative of the time of initiation of said forward energy transfer cycle;

said method comprising operating said circuit in a mode having a series of conversion operating cycles, each of said conversion operating cycles having a forward energy transfer cycle and a portion in which reverse current flowing from said load is available to charge said capacitance;

turning on and turning off said first switching device at times when current through said first switching device is essentially zero;

controlling the frequency of switching of said first switching device to maintain an output voltage of said circuit at a predetermined value;

controlling the opening and closing of said second switching device to route said reverse current to said capacitance to achieve precharging;

wherein a condition for turning on said second switching device is the approximate occurrence of a time during each of said operating cycles when a voltage across said capacitance is essentially zero; and

said second switching device is turned off approximately at a time during each of said operating cycles such that subsequent said forward energy transfer cycles will tend to begin when a voltage across said capacitance is at a maximum.

5,623,398

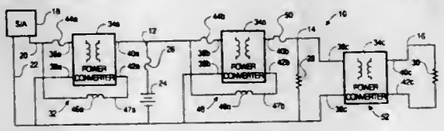
SERIES CONNECTED CONVERTER FOR CONTROL OF MULTI-BUS SPACECRAFT POWER UTILITY

Raymond F. Beach, North Olmsted, and Andy Brush, Chagrin Falls, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 30, 1995, Ser. No. 550,324

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—65 **4 Claims**



1. A power supply system comprising:

an input bus;

an output bus;

a return, said system being adapted for having a load connected between said output bus and said return;

a power converter, comprising a transformer, having a hot input connected to the input bus, a hot output connected to said output bus, a return input connected to said return, and a return output;

a bypass loop connecting the return output to the input bus;

a first pair of switches adapted for alternately connecting the hot input to the inputs of the transformer;

a second pair of switches adapted for alternately connecting the return input to the inputs of the transformer; and

an inverter control adapted for alternately closing one of each pair of said switches to alternately connect the hot input and return output to opposite inputs of said transformer.

5,623,399

INVERTER APPARATUS HAVING CAPACITORS MOUNTED PROXIMAL TO ASSOCIATED SWITCHING CIRCUITS

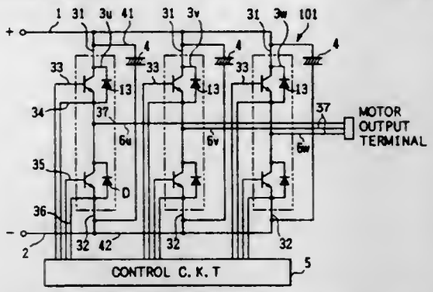
Jun Ishii, Okazaki; Koshi Torii, Iwakura, and Tatsuya Machi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1995, Ser. No. 400,110

Claims priority, application Japan, Mar. 4, 1994, 6-034457; Apr. 8, 1994, 6-070756

Int. Cl.[6] H01H *1/00*

U.S. Cl. 363—132 **13 Claims**



1. An inverter apparatus comprising:

a plurality of switching units each switching unit having a box-like casing defined by a bottom wall, side walls, and an upper wall, each switching unit also including a first switching element and a second switching element connected in series between a positive terminal and a negative terminal, the positive and negative terminals being exposed on the upper wall of the casing, the first switching element being connected to a DC power source through a positive bus line extending from the positive terminal, the second switching element being connected to the DC power source through a negative bus line extending from the negative terminal, the first and second switching elements outputting alternating current through an AC current output line;

a cooling support member having a mount surface, on which the bottom wall of each of the switching units is disposed, for cooling the switching units;

a plurality of capacitors, each capacitor in the plurality of capacitors being arranged over the upper wall of the casing of one of the switching units, each of the capacitors having a positive charge/discharge terminal and a negative charge/discharge terminal; and

a plurality of pairs of first and second conductive plates, the first conductive plate in each pair of conductive plates connecting the positive terminal on the upper wall of one of the switching units with the positive charge/discharge terminal of a corresponding one of the plurality of capacitors, the second conductive plate in each pair of conduction plates connecting the negative terminal on the upper wall of one of the switching units with the negative charge/discharge terminal of a corresponding one of the plurality of capacitors.

5,623,400

CONTROL SYSTEM FOR SMOKE EXHAUSTER

Chao-Cheng Chiang, and Chi-Shyong Chiang, both of P.O. Box 63-151, Taichung, Taiwan

Filed Apr. 28, 1995, Ser. No. 431,135

Int. Cl.[6] G05B *11/01*

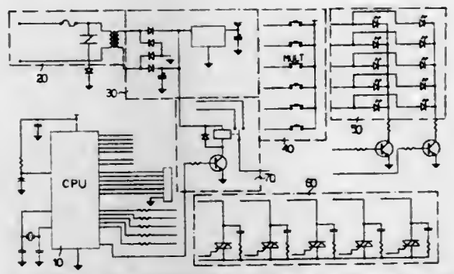
U.S. Cl. 364—140 **1 Claim**

1. A smoke exhauster having a control system, said smoke exhauster comprising:

a central processing unit,

a power supply circuit for supply electric power to said control system,

two motors coupled to said central processing unit, and



a switching circuit connected to said central processing unit and including a common contact, a first contact and a second contact, said common contact being connected to said first contact for connecting said motors in parallel and said common contact being connected to said second contact for connecting said motors in series,

said common contact being connected to said first contact for connecting said motors in parallel for supplying greater power supply to said motors and for starting said motors, and said common contact being connected to said second contact for connecting said motors in series and for reducing power supply to said motors and for reducing the rotational speed of the motors and for reducing a noise, said central processing unit connecting said common contact to said second contact after said motors are started.

5,623,401

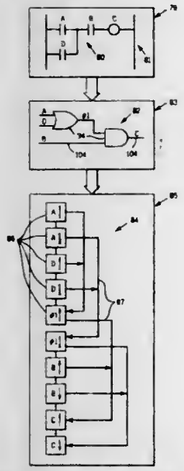
INDUSTRIAL CONTROLLER WITH OPTIMIZED EXECUTION OF RELAY LADDER LOGIC PROGRAMS

Ira D. Baxter, Austin, Tex., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Aug. 16, 1995, Ser. No. 515,877

Int. Cl.[6] G05B *11/01; G06F 9/45*

U.S. Cl. 364—147 **11 Claims**



4. A method of compiling relay ladder logic comprising the steps of:

(a) receiving a relay ladder diagram providing:

(i) a plurality of virtual contacts and coils, the virtual contacts representing data from the industrial process and the virtual coils representing data to the industrial process; and

(ii) a plurality of interconnections between contacts and coils in rungs, the interconnections representing a control logic for the industrial process;

(b) translating the relay ladder diagram into a data flow form, the data flow form providing:

(i) a plurality of Boolean elements having inputs and outputs, the Boolean elements representing the control logic for the industrial process, and;

(ii) a plurality of data paths between inputs and outputs of Boolean elements; the data paths corresponding to the data to and from the industrial process;

(c) associating each data path with a transition routine determining the effect of a transition in data of the given data path on the outputs of any directly connected Boolean elements having inputs connected to that data path;

(d) combining the transition routines of step (c) into a control program by having each given transition routine call transition routines associated with data paths connected to outputs of the given transition routine's directly connected Boolean elements.

5,623,402

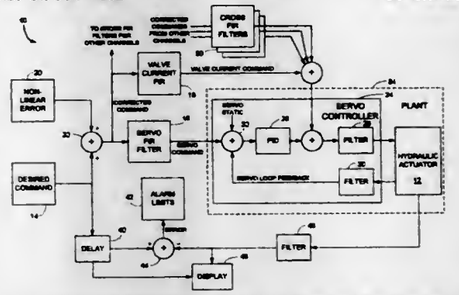
MULTI-CHANNEL INVERSE CONTROL USING ADAPTIVE FINITE IMPULSE RESPONSE FILTERS

Donald B. Johnson, Algonac, Mich., assignor to Schenck Pegasus Corporation, Troy, Mich.

Filed Feb. 10, 1994, Ser. No. 194,725

Int. Cl.[6] G05B *13/02;* **G06F** *17/10*

U.S. Cl. 364—162 **50 Claims**



1. A method of producing a time domain digital filter having a transfer function that is the inverse of a system that produces noise at frequencies outside of a frequency range within which control of the system is desired, comprising the steps of:

(a) applying an input signal to a system that provides a resultant response, the input signal including frequency components within a desired range of frequencies,

(b) filtering an electrical representation of the resultant response to remove any noise generated by the system that is outside the desired range of frequencies and to thereby provide a filtered representation of the resultant response,

(c) applying the filtered representation to an adaptive time domain digital filter, the digital filter thereby generating a digital filter output signal,

(d) delaying the input signal,

(e) determining an error using the digital filter output signal and the delayed input signal,

(f) updating the digital filter's coefficients in accordance with the error, and

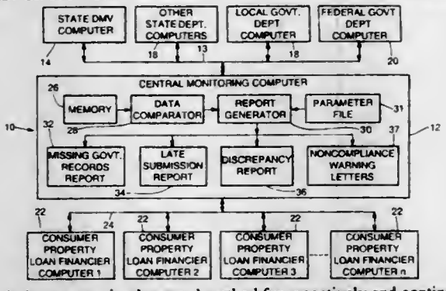
(g) iteratively repeating steps (c) through (f).

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5,623,403
SYSTEM FOR PROACTIVELY AND PERIODICALLY IDENTIFYING NONCOMPLIANCE WITH MOTOR VEHICLE REGISTRATION LAWS

Lawrence Highbloom, Wynnewood, Pa., assignor to Vintek, Inc., Wynnewood, Pa.

Filed May 11, 1995, Ser. No. 438,815
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—228 **20 Claims**



1. A computer-implemented method for proactively and continuously monitoring the compliance of property transaction agents with government laws or regulations, the property transaction agents being involved in the registration or titling of properties purchased by consumers, the government laws or regulations requiring payment of sales tax or registration fees, on the property, the method comprising the steps of:

(a) receiving on a periodic basis in a central computer,

(i) plural records of consumer property purchase data from one or more property loan financiers, the purchase data including an identification number which is unique to each property and the name of the property transaction agent associated with the property purchase, and

(ii) plural records of property registration data from one or more governmental entities, the registration data also including an identification number which is unique to the property;

(b) comparing at periodic intervals in the central computer, the plural records of the property purchase data to the plural records of the property registration data to identify the presence of any property purchase records having property identification numbers which do not correspond to property identification numbers received from the governmental entity;

(c) generating a report in the central computer of the identified records to permit action to be taken against property transaction agents who were involved in the registration or titling of properties associated with the identified records for failure to pay the sales tax or registration fees, the report including the named property transaction agent; and

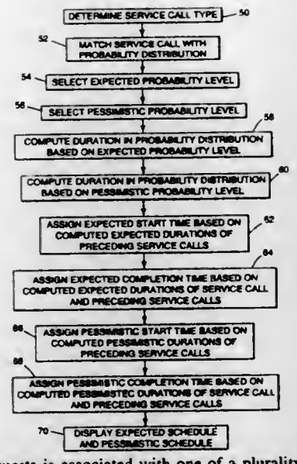
(d) defining in the central computer a set of parameters for flagging identified records which require immediate attention, wherein the step of generating the report includes automatically generating communications to the identified property transaction agents associated with the flagged records to remind the agents to pay the sales tax or registration fees.

5,623,404
SYSTEM AND METHOD FOR PRODUCING SCHEDULES OF RESOURCE REQUESTS HAVING UNCERTAIN DURATIONS

John E. Collins, Hudson, Wis., and Elizabeth M. Sisley, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 18, 1994, Ser. No. 210,678
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—209 **32 Claims**

1. A computer-implemented method for scheduling a plurality of resource requests for a resource provider, wherein each of said resource requests has an uncertain duration, and each of said



resource requests is associated with one of a plurality of different types of activities, said method comprising the steps of:

matching each of said resource requests with one of a plurality of probability distributions for a potential duration of the respective resource request based on the type of activity associated with said respective resource request;

generating a sequence of said resource requests;

generating, for each of said resource requests, a first combined probability distribution, said first combined probability distribution combining the probability distributions matched with each of the preceding resource requests in said sequence;

selecting a probability level;

computing, for each of said resource requests, a first duration in the first combined probability distribution for the respective resource request based on said probability level;

generating a first schedule of said resource requests by assigning a start time to each of said resource requests following said first one of said resource requests in said sequence based on the first duration in said first combined probability distribution computed for the respective resource request based on said probability level;

determining second durations for said resource requests, wherein the second durations are different than the first durations; and

generating a second schedule of said resource requests by assigning a second start time to each of said resource requests following said first one of said resource requests in said sequence based on a sum of the second durations determined for the preceding resource requests in said sequence.

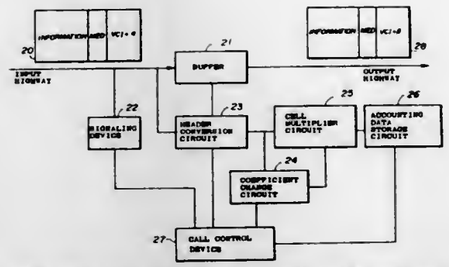
5,623,405
ACCOUNTING SYSTEM AND METHOD FOR ASYNCHRONOUS TRANSFER MODE NETWORK

Osamu Isono, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 916,261, Jul. 21, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 235,136
Claims priority, application Japan, Jul. 24, 1991, 3-184282
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—230 **28 Claims**

1. An accounting system for an asynchronous transfer mode (ATM) network carrying asynchronous transfer mode (ATM) cells from a transmitting terminal to a receiving terminal, said accounting system comprising:

first means for receiving said ATM cells carried by the ATM network, each of said ATM cells having a virtual channel identifier (VCI) field with a VCI value indicative of a route to the receiving terminal, a first field and a second field, the first field having information, the second field having information type data indicative of a medium type of the information, said



first means detecting the respective VCI value and the respective information type data contained in each said received ATM cell and generating a cell received signal each time said first means receives one of said ATM cells;

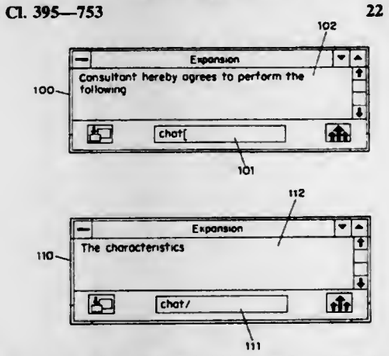
second means, coupled to said first means, for outputting an accounting coefficient indicative of an accounting rate associated with each respective said received ATM cell based upon the respective information type data detected by said first means; and

third means, coupled to said first and second means, for generating accounting data for each said ATM cell based upon the respective accounting coefficient and cell received signal and storing said accounting data based upon each said VCI value detected by said first means.

5,623,406
METHOD AND SYSTEM FOR ENTERING TEXT IN COMPUTER EQUIPMENT

Jean D. Ichbiah, 58 Lexington St., Essex, Mass. 01803, assignor to Jean D. Ichbiah, Burlington, Mass.

Filed Mar. 6, 1995, Ser. No. 398,897
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—753 **22 Claims**



1. A method for rapid entry of text into a computer, said text comprising a plurality of phrases, words and characters, each of said words including an initial corresponding to a first character in the word, said method comprising:

selecting a subject specific current glossary comprising a plurality of subject specific phrases for use by the computer;

entering a sequence of characters including a first character and at least one other subsequent character in the computer;

selecting a set of matching phrases from the current glossary by the computer wherein each said matching phrases includes a sequence of words such that

(i) the initial of a first word in said sequence of words matches the first character of the entered sequence of characters,

(ii) the entered sequence of characters is a subset of a set of characters that match the initials of the words in the sequence of words, and

(iii) the entered sequence of characters are in the same order as the initials of the matching words in the matching phrase;

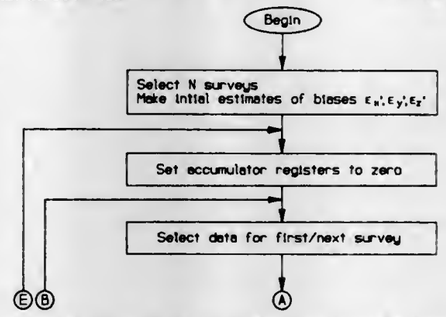
displaying the set of matching phrases; and selecting one of said phrases in the displayed set of matching phrases using a phrase selection command for use by the computer,

whereby a phrase is dynamically selected for use by the computer using less characters than that present in the phrase without the use of a predetermined abbreviation for the selected phrase.

5,623,407
METHOD OF CORRECTING AXIAL AND TRANSVERSE ERROR COMPONENTS IN MAGNETOMETER READINGS DURING WELLBORE SURVEY OPERATIONS

Andrew G. Brooks, Tomball, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 478,165
Int. Cl.[6] E21B *47/022*
U.S. Cl. 364—422 **21 Claims**



1. A method of surveying in a wellbore, comprising the method steps of:

(a) providing a drillstring;

(b) providing a sensor array including magnetic field sensors and gravitational field sensors;

(c) locating said sensor array within said drillstring;

(d) locating said drillstring in said wellbore;

(e) utilizing said drillstring to extend said wellbore;

(f) at a number of survey stations within said wellbore, utilizing said sensor array to make measurements of (a) three components of gravitational field, and (b) three components of magnetic field, with each of said three components of magnetic field possibly including a magnetic field bias error component;

(g) communicating said measurements to a processor which is programmed to execute a set of program instructions, including:

(i) instruction means for selecting for said number of survey stations within said wellbore, an initial estimate for said magnetic field bias error component for particular ones of said three components of magnetic field;

(ii) instruction means for computing, for each survey station within said wellbore, corrected values for said three components of magnetic field utilizing said initial estimate for said magnetic field bias error component for particular ones of said three components of magnetic field;

(iii) instruction means for computing, for each survey station within said wellbore a corrected magnetic field vector utilizing said corrected values for said three components of magnetic field;

(iv) instruction means for computing an improved estimate for said magnetic field bias error component for particular ones of said three components of magnetic field;

(h) establishing a preselected convergence criterion for said corrected magnetic field vector;

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(i) iteratively executing said set of program instructions in order to generate, for each survey station within said wellbore, a corrected magnetic field vector which satisfies said preselected convergence criterion and which minimizes the variance of said corrected magnetic field vector with respect to a predetermined value; and thereby

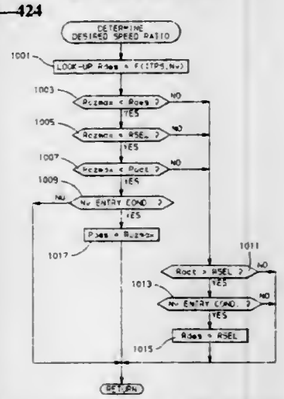
(j) providing substantially corrected magnetic field measurements for each survey station within said wellbore.

5,623,408

CRUISE CONTROL INFERENCE BASED SHIFT PATTERN CONTROL

Nader Motamedi, Santa Monica, Calif.; Larry T. Nitz, Rochester, Mich.; Susan L. Rees, Clawson, Mich., and Glenn P. O'Connell, Troy, Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Mar. 3, 1995, Ser. No. 398,599
Int. Cl.[6] B60K *41/06*
U.S. Cl. 364—424 **25 Claims**



1. A method of shift control in a vehicle having a drivetrain comprising an engine coupled to an automatic transmission having a plurality of speed ratios, said speed ratios being selected for engagement in accordance with a predetermined shift schedule, and a cruise control system enabled in a speed regulation mode to thereby regulate vehicle speed to a predetermined operator set speed, said method comprising the steps:

sensing a parameter;

comparing the parameter to a first limit value;

when the parameter exceeds the first limit value, calculating values of a plurality of inference factors;

generating a pulldown determinant value as a function of the values of said plurality of inference factors;

comparing the pulldown determinant value to a second limit value;

when the pulldown determinant value exceeds the second limit value, establishing a maximum cruise speed ratio; and

engaging the one of the plurality of speed ratios that corresponds to the lower of (a) the maximum cruise speed ratio and (b) the speed ratio selected by the predetermined shift schedule.

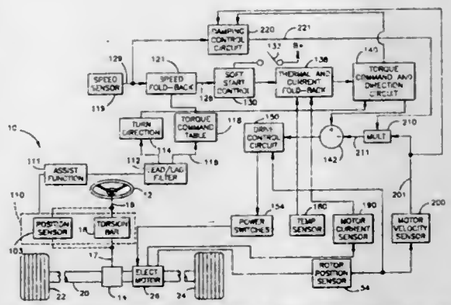
5,623,409

METHOD AND APPARATUS FOR NON-LINEAR DAMPING OF AN ELECTRIC ASSIST STEERING SYSTEM FOR VEHICLE YAW RATE CONTROL

Joseph D. Miller, Farmington Hills, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Oct. 31, 1994, Ser. No. 331,962
Int. Cl.[6] B62D *5/04*
U.S. Cl. 364—424.051 **12 Claims**

1. An electric assist steering system, comprising:



torque sensor means for sensing applied steering torque and providing a steering torque signal in response thereto;

means for providing a torque demand signal having a value functionally related to said applied steering torque;

an electric assist motor operatively connected to a steering member for, when energized, providing power assist steering;

means for providing a motor control signal in response to said torque demand signal;

motor speed sensor means for sensing speed of said electric assist motor and for providing a motor speed signal indicative thereof; and

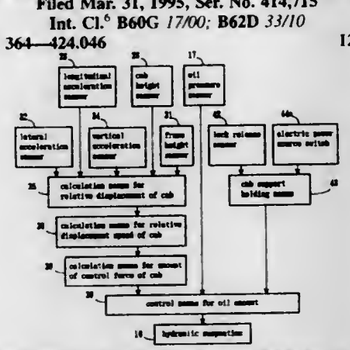
means for modifying said motor control signal in response to said motor speed signal so as to provide non-linear damping of power assist provided by said electric assist motor as a function of said motor speed signal.

5,623,410

HYDRAULIC SUSPENSION SYSTEM FOR A VEHICLE CAB

Kenichi Furihata, and Fumiaki Takei, both of Kanagawa, Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,715
Int. Cl.[6] B60G *17/00;* **B62D** *33/10*
U.S. Cl. 364—424.046 **12 Claims**



1. A road vehicle cab attitude controlling apparatus comprising:

frame means supported by wheels of the vehicle;

cab means mounted on said frame means and adapted for receiving occupants of the vehicle;

cab suspension means mounting said cab means on said frame means and allowing relative movement therebetween, said cab suspension means comprising a plurality of seats each supporting a different portion of said cab means and at least one said seat being detachable therefrom;

cab actuator means for activating said cab suspension means to adjust vertical displacements between said frame and said seats;

an engine mounted on said frame below said cab means;

auxiliary actuator means for producing pivotal movement of said cab means off of said one seat to provide access to said engine;

cab sensing means for detecting vertical displacements between said frame means and a plurality of spaced apart portions of said cab means and the vertical displacement between said frame means and said one seat; and

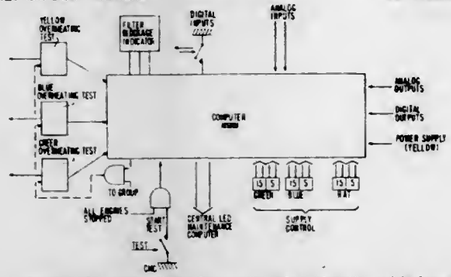
control means for controlling said cab actuator means in response to said cab sensing means, and operable with said cab means supported on said one seat to maintain a given attitude of said cab means with respect to a road surface, and operable with said cab means detached from said one seat to establish a predetermined vertical displacement between said frame and said one seat.

5,623,411

SYSTEM FOR CONTROLLING A PLURALITY OF PARALLEL HYDRAULIC CIRCUITS IN AN AIRCRAFT

Roger Morvan, Gratentour, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Jul. 28, 1994, Ser. No. 282,216
Claims priority, application France, Jul. 30, 1993, 93 09431
Int. Cl.[6] H02H *3/05*
U.S. Cl. 364—424.06 **16 Claims**



1. System for controlling, in an aircraft a plurality of independent parallel hydraulic circuits having equipments supplying said circuits, said system having a first unit for monitoring said hydraulic circuits and for controlling said equipments supplying said circuits, said first unit having wire logic circuits requiring no programmable computing member and a second unit for recording the causes of any unsatisfactory operation, said system having electric circuits corresponding to said independent parallel hydraulic circuits and being subject to advanced segregation criteria comprising:

means for forming a level **1** segregation, which is a segregation of routes, permitting the passage of said electric circuits allocated to said independent hydraulic circuits;

means for forming a level **2** segregation, which is a segregation between said independent hydraulic circuits; and

means for forming a level **3** segregation, which is a segregation between the functions of each hydraulic circuit using different components.

5,623,412

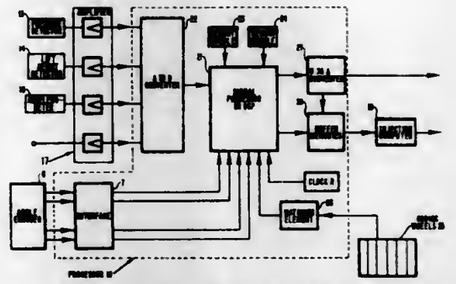
INSTANTANEOUS DATA ACQUISITION AND PROCESSING SYSTEM FOR INTERNAL-COMBUSTION ENGINE CONTROL

Olivier Masson; Philippe Pinchon, both of Rueil-Malmaison, and Michel Rivaud, Puteaux, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Oct. 12, 1994, Ser. No. 321,794
Claims priority, application France, Oct. 12, 1993, 93 12251
Int. Cl.[6] F02D *35/02;* **G01L** *23/22*
U.S. Cl. 364—431.03 **11 Claims**

1. A data acquisition and processing system for controlling running cycles of a two-stroke or four-stroke internal-combustion engine comprising:

a crankshaft and at least one combustion chamber having at least one cylinder and a piston, an angular encoding means for producing pulses indicative of angular increments of the crankshaft and cycle synchronization pulses at each revolution thereof, means for delivering angular increments at regular angular intervals, a sensor for sensing at least pressure values in each combustion chamber, a measuring signal acquisition set including means for acquisition of the pressure values, a digital processor including storage means for storing parameters of the engine, means for locating automatically a true angular position of the crankshaft within each cycle by reference to pressure variations in the at least one combustion chamber, means for phasing the synchronization pulses with the angular increments, means for calculating in real time a mean indicated pressure PMI in the at least one combustion chamber at each one of successive cycles of the engine and a control for controlling at least from the calculated mean indicated pressure PMI optimum running parameters for the engine, and angular locating means for applying to the digital processor data relative to a position of the cycle synchronization pulses with respect to top dead center of the piston.

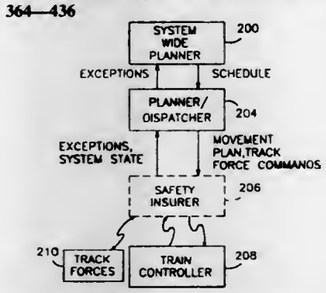


5,623,413

SCHEDULING SYSTEM AND METHOD

William L. Matheson, Palm Bay; Paul M. Julich, Indialantic; Michael S. Crone, W. Melbourne; Douglas A. Thomae, Melbourne; Thu V. Vu, W. Melbourne, and M. Scott Wills, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 1, 1994, Ser. No. 299,271
Int. Cl.[6] G06F *17/60;* **B61L** *27/00*
U.S. Cl. 364—436 **50 Claims**



1. A method of planning over a predetermined period of time the use of resources in a freight railway system to reduce the costs of the plan, comprising the steps of:

(a) developing strategic schedule constraints on train movement in a rule based inference engine based on user-defined freight railway operating rules and an optimization of proposed schedules under relaxed constraint conditions; and

(b) developing a detailed movement plan in a constraint based inference engine based upon an optimization within a predetermined tolerance of the costs of the movement plan wherein the strategic schedule constraints developed by the rule based inference engine are provided as sequencing constraints to the constraint based inference engine for development of the movement plan.

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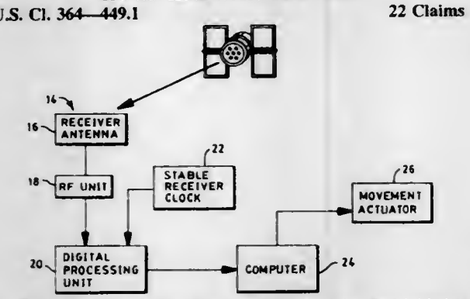
VOL 1197 ISS 4 AP 22 1997 UMI

5,623,414

CLOCK-AIDED SATELLITE NAVIGATION RECEIVER SYSTEM FOR ENHANCED POSITION ESTIMATION AND INTEGRITY MONITORING

Pratap N. Misra, 27 Hop Brook La., Sudbury, Mass. 01776

Filed Jan. 24, 1995, Ser. No. 377,413
Int. Cl.[6] H04B 7/185; G06F 19/00
U.S. Cl. 364—449.1 22 Claims



20. A navigation receiver system for determining and initiating correction of location in real time, comprising:

a movable object moving along a path;

a receiver coupled to said movable object for receiving signals representative of range measurements from a satellite navigation system;

a clock, coupled to said receiver, having a constant frequency drift rate for at least a predetermined period of time; and

a processor in signal communication with said receiver for:

(i) determining a model of bias associated with said clock using said constant frequency drift rate over said predetermined period of time and until an instantaneous time using a quadratic function,

(ii) determining a plurality of predicted clock bias estimates over said predetermined period of time and until said instantaneous time using said model,

(iii) determining a three-dimensional position estimate of said movable object using one of said predicted clock bias estimates at said instantaneous time,

(iv) measuring without the aid of the model, a clock bias estimate at said instantaneous time,

(v) comparing said one predicted clock bias estimate at said instantaneous time with said measured clock bias estimate at said instantaneous time and generating a degree of error therebetween,

(vi) determining an error in said three-dimensional position estimate using said degree of error,

(vii) determining whether said error in said three-dimensional position estimate is within a predetermined error range associated with said path of said movable object, and

(viii) changing the location of said movable object when said error is outside of said predetermined error range.

5,623,415

AUTOMATED SAMPLING AND TESTING OF BIOLOGICAL MATERIALS

David P. O'Bryan, Kennett Square, Pa.; Kevin N. Constable, Claymont, Del.; Peter J. Sagona, Pottstown, and Bingham H. Van Dyke, Jr., Gilbertsville, both of Pa., assignors to Smith-Kline Beecham Corporation, Philadelphia, Pa.

Filed Feb. 16, 1995, Ser. No. 390,463
Int. Cl.[6] G06F 19/00
U.S. Cl. 364—478.13 5 Claims

1. An automated apparatus for subjecting samples to one or more selected test procedures at respective test stations, said apparatus comprising;

a first conveyor line for transporting samples contained in uniquely labeled containers, said line having at least two lanes with means for routing containers between said lanes, at least one lane being a transport lane and at least one other lane being an accumulator lane,

loading means for loading said containers onto the apparatus,

electronic means for reading and recording the unique label information from said labels of containers,

data processing means for electronically recording, storing and processing said information,

electronic control means for routing and tracking said samples in response to said recorded information,

at least one interface means for routing containers from the first conveyor line to a spur conveyor line,

one or more spur conveyor lines for transporting said containers to one or more selectable test stations, said spur line(s) having at least two lanes, with means for routing containers between said lanes, at least one of said lanes being a transport lane and at least one of said lanes being a queue lane, and having a container interface device and a sample testing procedure located adjacent to said spur line(s),

selection means and routing means, controlled by said data processing means, for selecting containers for routing by the interface device from the first conveyor transport lane to the transport lane of a selected spur line,

selection means and routing means, controlled by said data processing means, for selecting containers and for routing selected containers from the spur transport lane to the queue lane adjacent to a selected test station,

a container interface device for presenting a container or sample from the container to a test procedure and capable of interacting with a container in the queue lane and the staging area of a test procedure,

test means for carrying out the test procedure,

means to record and store the results of the said test procedure,

means to route containers from the queue lane to the spur line transport lane,

at least one interface means for routing containers from the spur conveyor line to the first conveyor line,

off-loading means to off-load containers from the apparatus.

5,623,416

CONTACT CLOSURE DATA LOGGER

Lon O. Hocker, III, Falmouth, Mass., assignor to Onset Computer Corporation, Pocasset, Mass.

Filed Jan. 6, 1995, Ser. No. 369,687
Int. Cl.[6] G01R 19/00
U.S. Cl. 364—483 3 Claims

1. A contact closure data logger which monitors state changes which occur at a given time, comprising:

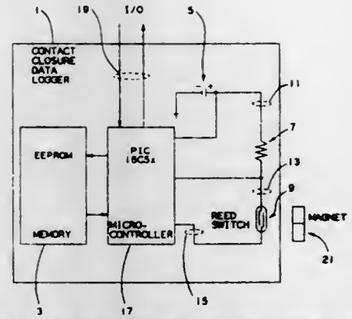
a microcontroller which executes a control program;

a memory operationally connected to said microcontroller to store data;

a switch connected between an output voltage line and a switched reference line to provide a contact closure indicative of an action being monitored, said output voltage line connecting said switch to said microcontroller and a current limiting resistor, said switched reference line connecting said switch to said microcontroller, said microcontroller providing a ground or a positive reference voltage on said switched reference line, said switch having two states; and

a battery for supplying a voltage across said switch, said battery connected to a reference voltage line, said reference voltage line connecting said battery to said microcontroller and said current limiting resistor;

wherein said control program directs said microcontroller to provide said ground on said switched reference line while further directing said microcontroller to check said output voltage line for a voltage and compare said voltage to a previous voltage on said output voltage line, and then to provide said positive reference voltage on said switched reference line for a delay period until a subsequent check of said output voltage line is made, a record of any change in state being recorded by storing the time at which such state change occurred in said memory.

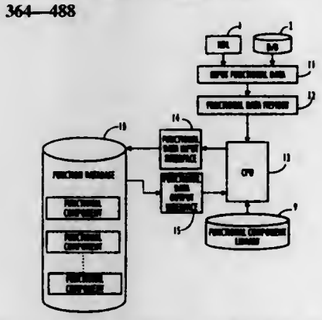


5,623,417

METHOD AND APPARATUS FOR FUNCTIONAL LEVEL DATA INTERFACE

Chie Iwasaki, Osaka, and Michiaki Muraoka, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 23, 1994, Ser. No. 294,393
Claims priority, application Japan, Aug. 24, 1993, 5-209323
Int. Cl.[6] G06F 17/50
U.S. Cl. 364—488 6 Claims



1. A functional data interface method for use in a functional design support apparatus having (i) a function database to store functional information of a logical circuit made up of data paths, state machines logical expressions, memories and submodules; and (ii) a functional component library including memory functional components, submodule functional components, state machine functional components, logical expression functional components and data transfer functional components, said functional data interface method comprising:

a functional data input process step of inputting either a file described in a hardware description language or functional data represented in any of a functional diagram representation, a state transition diagram representation, and a logical expression representation;

a functional component assignment process step of assigning said functional data, read in by said functional data input process step, to a functional component of said functional component library;

a functional data storage process step of separately storing said functional data, assigned by said functional component assignment process step, into said function databasc by said functional component;

a functional data read process step of separately reading said functional data stored in said function database by said functional component; and

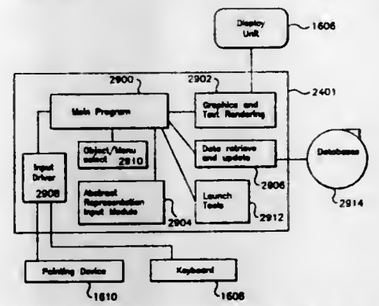
a functional data generation process step of generating arbitrary design tool data at a function level from said functional data read by said functional data read process step and assigned by said functional component.

5,623,418

SYSTEM AND METHOD FOR CREATING AND VALIDATING STRUCTURAL DESCRIPTION OF ELECTRONIC SYSTEM

Michael D. Rostoker, San Jose, and Daniel R. Watkins, Los Altos, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 77,294, Jun. 14, 1993, and Ser. No. 917,801, Jul. 20, 1992, Pat. No. 5,220,512, which is a continuation of Ser. No. 512,129, Apr. 19, 1990, abandoned, said Ser. No. 77,294is a continuation-in-part of Ser. No. 54,053, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 507,201, Apr. 6, 1990, Pat. No. 5,222,030. This application Jun. 14, 1993, Ser. No. 77,304
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] G06F 17/50
U.S. Cl. 364—489 17 Claims



1. A method of creating an electronic design on an ECAD system having a computer, a database accessible to the computer, design tools running on the computer, and a display device and one or more input devices enabling a user to interact with the computer, comprising:

displaying, on a display device of a computer, the display device having a display screen, a diagram of an electronic design, the diagram being at a given hierarchical level of abstraction, the diagram containing at least one object;

storing in the database information relating to the electronic design at various levels of abstraction;

retrieving information relating to the electronic design from a database accessible to the computer;

displaying the information contemporaneously with displaying the diagram;

providing selectable lower level representations of objects represented in the diagram; and

displaying the lower level representations of the objects contemporaneously with displaying the diagram.

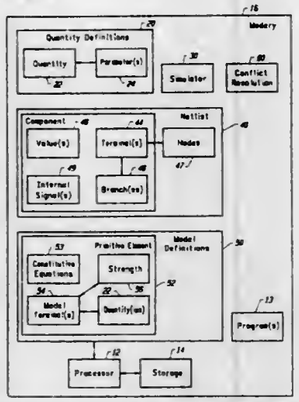
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5,623,419

MODELING OF MULTI-DISCIPLINARY SIGNALS

Kenneth S. Kundert, Belmont, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Apr. 28, 1994, Ser. No. 234,284
Int. Cl.[6] G06F *15/00;19/00*
U.S. Cl. 364—490 26 Claims



8. A method implemented on a computer system for modeling a system, comprising the steps of:

receiving a system definition including a first terminal, a first quantity, a first association strength, a second terminal, a second quantity, a second association strength, and a node;

associating the first quantity and the first association strength to the first terminal, the first association strength indicating a strength of association between the first terminal and the first quantity;

associating the second quantity and the second association strength to the second terminal, the second association strength indicating a strength of association between the second terminal and the second quantity;

associating the first terminal and a second terminal to the node;

determining when a node conflict is indicated between the first quantity associated with the first terminal, and the second quantity a associated with the second terminal;

resolving the node conflict by:

binding the first quantity to the node as a node quantity in response to the first association strength and the second association strength; and

binding the first association strength to the node as a node association strength in response to the first association strength and the second association strength, the node association strength indicating a strength of association between the node and the node quantity; and

simulating the system using the node quantity and the node association strength.

5,623,420

METHOD AND APPARATUS TO DISTRIBUTE SPARE CELLS WITHIN A STANDARD CELL REGION OF AN INTEGRATED CIRCUIT

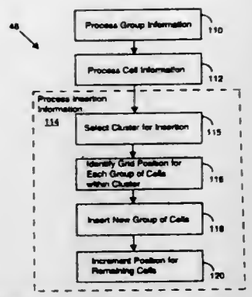
Clayton L. Yee; Sandeep Aji, both of San Francisco, and Stefan Rusu, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 16, 1994, Ser. No. 340,706
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 15 Claims

1. A method of inserting standard cells into an integrated circuit, said method comprising the steps of:

generating an initial layout of standard cells in an integrated circuit;

selecting a cluster of standard cell groups to be inserted into said initial layout of standard cells; and



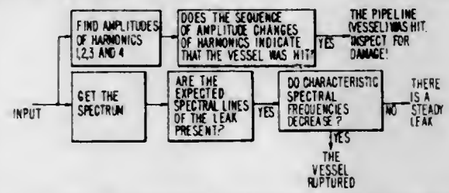
distributing said cluster of standard cell groups into said initial layout of standard cells by repeatedly inserting standard cell groups from said cluster into said initial layout of standard cells.

5,623,421

MONITORING PRESSURIZED VESSELS FOR LEAKS, RUPTURES OR HARD HITS

Michael Savic, Ballston Lake, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Nov. 3, 1995, Ser. No. 552,542
Int. Cl.[6] G01M *3/24*
U.S. Cl. 364—510 15 Claims



1. A device for monitoring a pressurized vessel for an occurrence of small leaks or ruptures or hard hits, comprising:

a plurality of acoustic transducers at spaced sensor locations on the vessel, each responsive to sounds from the vessel at each sensor location, to generate acoustic signals from each sensor location; and

a central processor connected to each of said transducers and including spectra means for repeatedly recording a frequency spectrum of the acoustic signal from each transducer, the frequency spectrum being selected to contain the dominant resonant frequencies of the vessel, the central processor including program means containing a dominant resonant frequency for the vessel and analysis means for detecting peaks in each spectra at the dominant frequency, the presence of peaks indication the existence of a small leak in the vessel.

5,623,422

METHOD FOR PRIORITIZING CHANNELS IN A COMMUNICATION SYSTEM

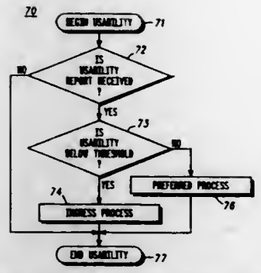
James M. Williams, Lombard, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1994, Ser. No. 361,064
Int. Cl.[6] H04H *1/00*
U.S. Cl. 364—514 C 4 Claims

1. A method comprising the steps of:

measuring a usability of a number of carriers in a communication system to determine if a usability of any of the number of carriers is below a threshold;

for each one of the number of carriers which are below the threshold, placing the one of the number of carriers on a bottom of an ingress list after it has been evaluated to be



below the threshold, wherein the bottom of the ingress list means latest in time for which ingress is detected; and

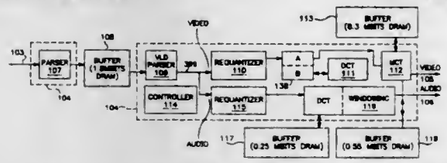
for each one of the number of carriers on the ingress list, promoting the one of the number of carriers on the ingress list to a preferred list after a time on the ingress list for that one of the number of carriers is greater than a maximum predetermined time.

5,623,423

APPARATUS AND METHOD FOR VIDEO DECODING

G. Jack Lipovski, Austin, Tex., assignor to Univ. of Texas, Austin, Tex.

Filed Dec. 12, 1994, Ser. No. 354,380
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514.12 21 Claims



1. A discrete cosine transform module for an integrated circuit for performing video decoding comprising:

(a) a binary-to-residue converter having an output;

(b) a residue-to-binary converter having an input; and

(c) a plurality of multipliers configured to represent a plurality of stages of a pipeline, each multiplier having an input and an output;

(d) wherein the inputs of the multipliers are coupled to the output of the binary-to-residue converter and the outputs of the multipliers are coupled to a residue-to-binary converter.

5,623,424

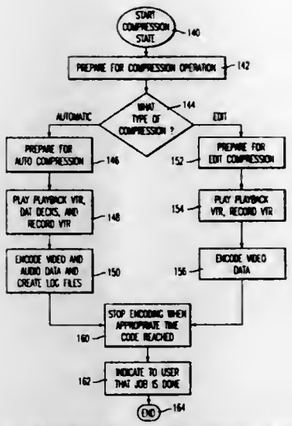
RATE-CONTROLLED DIGITAL VIDEO EDITING METHOD AND SYSTEM WHICH CONTROLS BIT ALLOCATION OF A VIDEO ENCODER BY VARYING QUANTIZATION LEVELS

Faramarz Azadegan, Waltham, Mass.; Tomoo Yamakage; Shin-ichiro Koto, both of Kawasakishi, Japan; Hiroaki Unno, Ichikawa, Japan; Hideki Mimura, Yokohama, Japan; Tetsuya Kitamura, Komea, Japan; Christopher J. Cookson, Los Angeles, Calif.; Greg B. Thagard, Redondo Beach, Calif., and Andrew D. Rosen, Canoga Park, Calif., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan, and Time Warner Entertainment Co., L.P., Burbank, Calif.

Continuation-in-part of Ser. No. 438,014, May 8, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 466,766
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R 115 Claims

1. A rate-controlled digital video editing system, comprising:

(a) means for dividing at least one video frame having an originally encoded length into a plurality of sets of macroblocks, MB(i), having respective quantization levels, q(i);



(b) means for calculating an estimated number of bits, EB(1), for a first set of macroblocks, MB(1);

(c) means for re-encoding said first set of macroblocks into a first set of re-encoded macroblocks having a first re-encoded length, GB(1);

(d) means for computing a correction factor, Δ(i), for each succeeding set of macroblocks based on an estimated number of bits, EB(i), and a number of bits of a re-encoded length, GB(i), of at least one preceding set of macroblocks;

(e) means for altering the quantization level of each succeeding set of macroblocks based on the correction factor determined by said computing means;

(f) means for re-encoding each succeeding set of macroblocks into a set of re-encoded macroblocks having a re-encoded length using an altered quantization level produced by said altering means; and

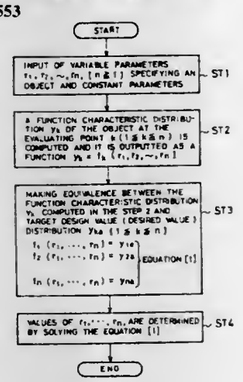
(g) means for combining said plurality of sets of re-encoded macroblocks into a digital video stream having a length equal to said originally encoded length.

5,623,425

METHOD OF MANUFACTURING, DETERMINING AND DESIGNING AN OBJECT

Kiyoshi Yoda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 978,364, Nov. 18, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,102
Claims priority, application Japan, Nov. 20, 1991, 3-329699; Nov. 11, 1992, 4-324685
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—553 6 Claims



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1. Method of manufacturing an object by calculating material parameters or shape parameters of the object which are used for selecting a material of the object or forming a shape of the object in order to realize a required physical property distribution such as magnetic field distribution, comprising the steps of:

expressing a distribution of physical property as a function of at least one of said material parameters or shape parameters;

making equations by equating said expressed physical property distribution to said required physical property distribution;

solving said equations to calculate said material or shape parameters of the object which realize said required physical property distribution;

selecting the material of the object in accordance with said calculated material parameters; and

forming the shape of the object in accordance with said calculated shape parameters.

5,623,426

FAILURE DIAGNOSING SYSTEM FOR ABSORPTION CHILLERS

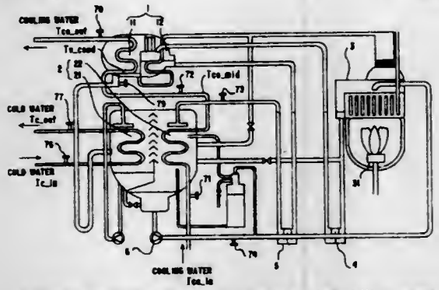
Yoshio Ozawa, Hirakata; Masashi Yasuda, Neyagawa; Yasuharu Kurogi; Kazuaki Mizukami, both of Hirakata; Hiroyuki Suzuki, Osaka; Masahiro Furukawa, and Yasushi Kamada, both of Ora-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 22, 1995, Ser. No. 392,332

Claims priority, application Japan, Feb. 23, 1994, 6-025045; May 30, 1994, 6-140855; May 30, 1994, 6-140856; May 19, 1994, 6-131404; Jul. 18, 1994, 6-187755; Jul. 18, 1994, 6-187756; Jul. 18, 1994, 6-187757

Int. Cl.[6] F25B *49/04*

U.S. Cl. 364—557 **17 Claims**



1. A failure diagnosing system for an absorption chiller comprising a plurality of heat exchange units including a regenerator, condenser, evaporator and absorber, the failure diagnosing system comprising:

temperature measuring means for measuring at least one representative temperature of each of two fluids participating in heat exchange at a specified heat exchange unit,

temperature difference data calculating means for storing a temperature difference data calculating equation comprising a linear expression containing the representative temperatures of the two fluids as its factors and using the calculating equation to calculate actual temperature difference data from the measurement data obtained by the temperature measuring means,

heat exchange amount deriving means for deriving by measuring and calculation the amount of heat exchange by the specified heat exchange unit or other amount of heat exchange which varies with said amount of heat exchange,

storage means having stored therein ideal temperature difference data for normal operation as related to the amount of heat exchange, and

abnormality identifying means for preparing abnormality data indicating an abnormality of the specified heat exchange unit by comparing the actual temperature difference data obtained by the temperature difference calculating means with the ideal temperature difference data for the same amount of heat exchange as the amount of heat exchange obtained by the deriving means.

5,623,427

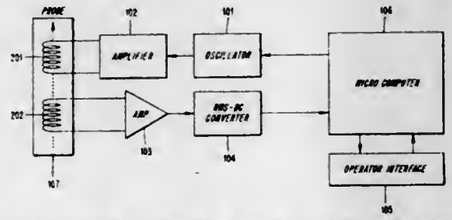
NONDESTRUCTIVE ANODIC CAPACITY GAUGE

Leon Vandervalk, Prescott, Canada, and Frank J. Koch, Ogdensburg, N.Y., assignors to DeFelsko Corporation, Ogdensburg, N.Y.

Filed Sep. 2, 1994, Ser. No. 300,188

Int. Cl.[6] G01R *27/26*

U.S. Cl. 364—563 **10 Claims**



1. A gauge for measuring an anodic capacity of a coating comprising:

an oscillator for applying a test signal at a predetermined frequency;

an amplifier for amplifying said test signal;

a probe having a primary coil for applying said amplified test signal to said coating to produce eddy currents therein and a secondary coil which measures electrical effects of said eddy currents;

a converter for receiving an output signal from said secondary coil and converting said output signal into a digital pulse stream representative of the voltage induced into said secondary coil;

a processor for receiving said digital pulse stream, said processor including:

a memory for storing data relationships between said voltage and coating thickness; and

means for transforming said digital pulse stream using said stored data relationships into units of anodic capacity which are based upon both coating thickness and a standardized density; and

an interface for outputting said anodic capacity.

5,623,428

METHOD FOR DEVELOPING COMPUTER ANIMATION

Tosiyasu Kunii, and Lining Sun, both of Tokyo, Japan, assignors to Shukyohoji, Kongo Zen Sohozan Shoriji, Kanagawaken, Japan

Continuation-in-part of Ser. No. 714,307, Jun. 12, 1991, abandoned. This application Jan. 6, 1994, Ser. No. 178,217

Claims priority, application Japan, Dec. 25, 1990, 2-418252

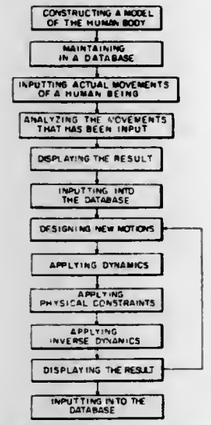
Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—578 **2 Claims**

1. A method for developing a new computer animation, comprising the steps of:

a) maintaining, in a database, data for modeling a moving body, which body has been divided into a plurality of segments, each of said segments connected by joints and each of said segments acting as a minimal unit of motion, said data relating to an inherent nature of each of said segments and physical constraints including inter-relationship of each segment and range of movements of said joints;

b) observing actual movements of a moving body, including a position of each said segment at predetermined intervals in the course of such actual movement;



c) analyzing the data as to the position of each said segment as observed during actual movements and calculating by inverse dynamics centers of gravity of each said segments and of the whole body, force and torque exerted on each of said centers of gravity and force and torque exerted on each of said joints;

d) inputting the calculated results from said calculating step into said database;

e) determining a new motion to be designed;

f) calculating by dynamics, and neglecting physical constraints, motion of each body segment, independently of the remaining body segments, based on forces corresponding to the new motion selected in said determining step using the data maintained in said database for previously analyzed motions and dynamic equations governing movement of each segment;

g) applying said physical constraints as stored in said database to check that each segment is articulated to the adjacent segment and that the movement of each joint does not exceed the range specified by said physical constraints, and adjusting the position of each segment until each of said physical constraints are met; and

h) displaying on a screen the resulting motion of the moving body as designed by said steps of calculating by dynamics and applying physical constraints.

5,623,429

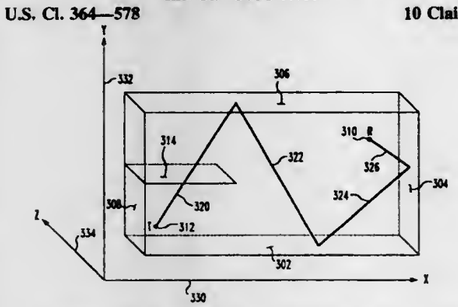
TECHNIQUES FOR EXPEDITIOUSLY PREDICTING ELECTROMAGNETIC WAVE PROPAGATION

Steven J. Fortune, Summit, and Reinaldo A. Valenzuela, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 6, 1994, Ser. No. 223,630

Int. Cl.[6] G06T *17/00*

U.S. Cl. 364—578 **10 Claims**



1. A method for optimizing the prediction of RF propagation in a three-dimensional environment comprising a plurality of surfaces, each surface having (i) a reflection coefficient specifying the ratio of reflected to incident RF energy, and (ii) a transmission coefficient specifying the ratio of RF energy transmitted through the surface to RF energy incident upon the surface, the method including the following steps:

(a) selecting a reference transmitter location within the three-dimensional environment;

(b) selecting a plurality of reference receiver locations within the three dimensional environment;

(c) for each reference receiver location, determining at least one RF propagation path between the reference receiver location and the reference transmitter location, the reference transmitter location representing a propagation path endpoint, and the reference receiver locations each representing propagation path endpoints;

(d) partitioning the three dimensional environment into a plurality of intervals along any one of the three dimensions using a plurality of parallel planes;

(e) for each interval, projecting the RF propagation paths and the surfaces within each interval into a two-dimensional cross-sectional area;

(f) inserting a plurality of line segments into each cross-sectional area to form a plurality of triangle walls, the plurality of triangle walls and the projected surfaces together forming a plurality of triangular areas;

(g) for each projected RF propagation path, tracing the projected RF propagation path through n triangular areas in the cross-sectional area by locating an nth triangular area selected from the plurality of triangular areas containing a first propagation path endpoint;

(h) for each of n triangular areas, determining the triangle wall intersecting the propagation path, and identifying an (n−1)th triangular area sharing this triangle wall;

(j) decrementing n by one, and recursively repeating the determination and identification steps set forth in (h) until a second propagation path endpoint is reached.

5,623,430

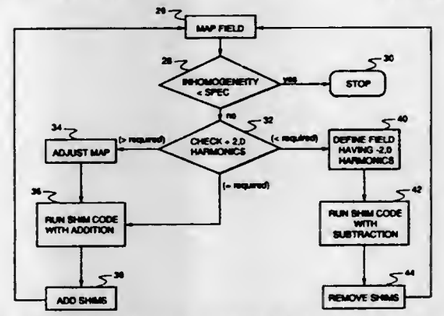
METHOD FOR PASSIVELY SHIMMING AN OPEN MAGNET

Bizhan Dorri, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,995

Int. Cl.[6] G01V *3/00;* **H01F** *3/00*

U.S. Cl. 364—578 **10 Claims**



1. A method for passively shimming an open magnet having a magnetic field with an inhomogeneity including an amount of positive 2, 0 Legendre polynomial harmonics, said method comprising the steps of:

(a) mapping the magnetic field;

(b) determining the amount of positive 2, 0 Legendre polynomial harmonics of said mapped magnetic field of step (a);

(c) defining an adjusted magnetic field equal to said mapped magnetic field of step (a) minus a nonzero portion of said

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determined amount of positive 2, 0 Legendre polynomial harmonics of step (b);

(d) running a computer shim code which calculates adding shims to reduce the inhomogeneity of said adjusted magnetic field of step (c); and

(e) adding shims to said open magnet as calculated from said running of said computer shim code of step (d).

5,623,431

ALIGNING A GIVEN SIGNAL WITH A CORRESPONDING REFERENCE SIGNAL

Richard Clemow, Gerrards Cross, Great Britain, assignor to Central Research Laboratories Limited, Middlesex, England

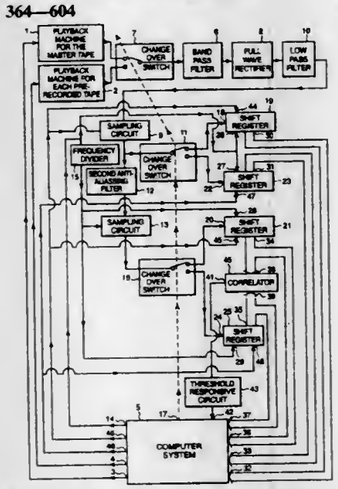
PCT No. PCT/GB93/00381, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO93/17427, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 24, 1993, Ser. No. 290,909

Claims priority, application United Kingdom, Feb. 24, 1992, 9203911

Int. Cl.[6] G06J *1/00*

U.S. Cl. 364—604 **6 Claims**



1. A method of detecting a segment of a given signal which corresponds to a reference segment, the method comprising rectifying the reference segment, deriving a first auxiliary reference segment from the rectified reference segment by anti-alias filtering and sampling at a first rate, storing said first auxiliary reference segment, rectifying the given signal, deriving a first signal from the rectified given signal by anti-alias filtering and sampling at said first rate, and performing a sliding correlation between said first signal and the stored first auxiliary reference segment to determine which segment of said first signal has at least a predetermined degree of correlation with said first auxiliary reference segment, characterized in that the method further comprises deriving a second auxiliary reference segment from the rectified reference segment by anti-alias filtering and sampling at a second rate, the second rate being greater than the first rate, storing said second auxiliary reference segment, deriving a second signal from the rectified given signal by anti-alias filtering and sampling at said second rate, and performing a sliding correlation between at least a subsegment of the stored second auxiliary reference segment and at least a subsegment of that segment of said second signal which corresponds to said segment of said first signal to determine the position of the peak correlation therebetween and thereby align the segment of the given signal with the reference segment.

5,623,432

MICROSYSTEM WITH LOW ENERGY CONSUMPTION

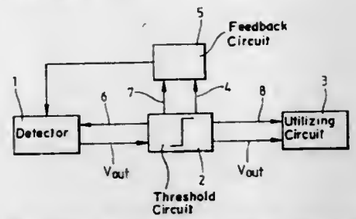
Marc Degrauwe, Chez-le-Bart, Switzerland, assignor to CSEM Centre Suisse d'Electronique et de Microtechnique, Switzerland

Filed May 11, 1995, Ser. No. 438,790

Claims priority, application Switzerland, May 11, 1994, 01473/94

Int. Cl.[6] G06F *1/00*

U.S. Cl. 364—707 **1 Claim**



1. A microsystem for analyzing or using an input signal representing a phenomenon whose evolution over time is random, said microsystem being provided with means for reducing its consumption of energy, said reducing means acting via a modification of the microsystem operating features, the result of said modification being a passage of said microsystem from an active state to at least one other state which is a stand-by state, said microsystem comprising detecting means for detecting said phenomenon and generating a representative signal which represents the evolution of said phenomenon over time, utilizing means for exploiting said representative signal, a threshold circuit connected to said detecting means and to said utilizing means for subjecting said representative signal to a comparison with a predetermined threshold and for generating a corresponding comparison signal, and feedback means which, in response to said comparison signal, acts upon said detecting means to modify its detection performance, said feedback means being capable of modifying at least one operating parameter of said microsystem, the result of this modification being a change in the energy consumption of said microsystem.

5,623,433

EXTENDED NUMERICAL KEYBOARD WITH STRUCTURED DATA-ENTRY CAPABILITY

Jaime H. Redin, 25867 McBean Pkwy. #86, Valencia, Calif. 91355

Continuation-in-part of Ser. No. 270,593, Jul. 5, 1994, abandoned, which is a continuation of Ser. No. 2,981, Jan. 11, 1993, abandoned. This application Mar. 11, 1996, Ser. No. 613,600

Int. Cl.[6] G06F *3/02*

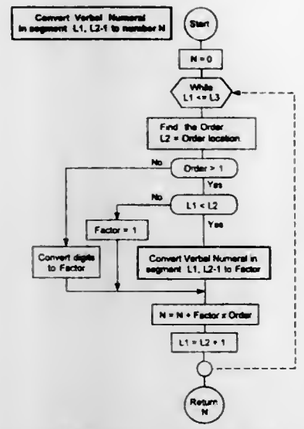
U.S. Cl. 364—709.12 **2 Claims**

1. A decoding method for converting a verbal numeral into a number, wherein said verbal numeral is the symbolic representation of the verbal numerical expression of said number, wherein said symbolical representation comprises a sequence of decimal numerals and structure symbols representing the values 100, 1,000 and 1,000,000, wherein said sequence maintains a one to one correspondence with the components of said verbal numerical expression; said decoding method comprising the steps of:

(a) finding the order structure of said verbal numeral, wherein said order structure is the right-most structure symbol with the largest absolute value in said verbal numeral;

(b) determining the order value of said verbal numeral, wherein said order value is the absolute quantity represented by said order structure;

(c) determining the factor of said verbal numeral, wherein said factor is the number represented by the left verbal numeral, wherein said left verbal numeral is 1 or the sequence of all symbols located at the left side of said order structure when said sequence exists;



Procedure to convert a verbal numeral to a number.

(d) determining the module of said verbal numeral, wherein said module is the number represented by the right verbal numeral, wherein said right verbal numeral is zero or the sequence of all symbols located at the right side of said order structure when said sequence exists;

(e) finding the value of said number by multiplying said factor by said order value, and adding to the result the value of said module.

5,623,434

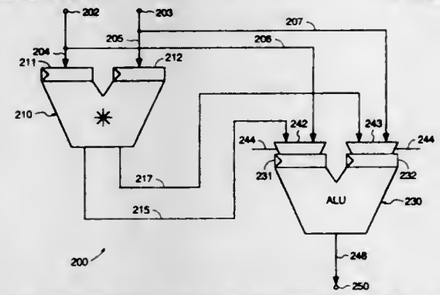
STRUCTURE AND METHOD OF USING AN ARITHMETIC AND LOGIC UNIT FOR CARRY PROPAGATION STAGE OF A MULTIPLIER

Stephen C. Purcell, Mountain View, Calif., assignor to Chromatic Research, Inc., Santa Clara County, Calif.

Filed Jul. 27, 1994, Ser. No. 281,377

Int. Cl.[6] G06F *7/52;7/50*

U.S. Cl. 364—757 **11 Claims**



1. A multiplier for use in a data processing system having an arithmetic and logic unit (ALU), said multiplier comprising:

a first input terminal for receiving a first data value;

a second input terminal for receiving a second data value;

a carry save stage coupled to said first and second terminals, wherein said carry save stage generates a carry signal and a sum signal in response to said first and second data values;

a first bus coupling said carry save stage to said ALU, wherein said first bus provides said carry signal to said ALU;

a second bus coupling said carry save stage to said ALU, wherein said second bus provides said sum signal to said ALU;

a first multiplexer coupled between said first bus and said ALU; and

a second multiplexer coupled between said second bus and said ALU, whereby said ALU is capable of adding said carry and sum signals to create a third data value equal to the product of said first and second data values.

5,623,435

ARITHMETIC UNIT CAPABLE OF PERFORMING CONCURRENT OPERATIONS FOR HIGH SPEED OPERATION

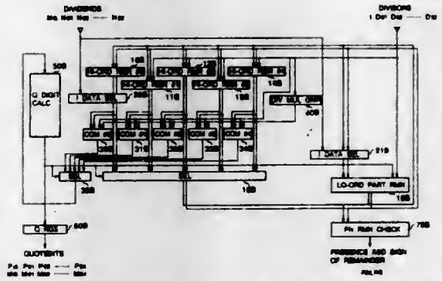
Hidehito Takewa; Hiromichi Yamada; Takashi Hotta, and Kotaro Shimamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 37,654, Mar. 17, 1993, Pat. No. 5,408,426. This application Jan. 12, 1995, Ser. No. 371,998

Claims priority, application Japan, Mar. 17, 1992, 4-060595; Jul. 24, 1992, 4-198739; Jan. 29, 1993, 5-014154

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—764 **12 Claims**



1. An iterative type high radix divider wherein a quotient of a binary number is calculated every n bits from a high-order digit thereof on the basis of a dividend and a divisor which are represented by binary numbers, comprising:

means for calculating a quotient digit of n bits;

means for previously calculating partial remainders as to all possible values to be taken as said quotient digit, in parallel with the calculation of said quotient digit;

means for previously calculating next quotient digits from previously-calculated values of said partial remainders and the divisor, in parallel with said calculation of said quotient digit;

means for selecting one of said previously-calculated values of said partial remainders corresponding to the first-mentioned quotient digit calculated;

means for selecting one of previously-calculated values of said next quotient digit corresponding to said first-mentioned quotient digit calculated;

means for saving the selected partial remainder and the selected next quotient digit; and

means for transferring said selected partial remainder and said selected next quotient digit to the corresponding calculation means in order to process next n bits.

5,623,436

METHOD AND APPARATUS FOR ADJUSTMENT AND CONTROL OF AN ITERATIVE METHOD OF RECORDING ANALOG SIGNALS WITH ON-CHIP TRIMMING TECHNIQUES

David Sowards, Fremont; Trevor Blyth, Milpitas; Sakhawat Khan, Santa Clara, and Lawrence Engh, Redwood City, all of Calif., assignors to Information Storage Devices, San Jose, Calif.

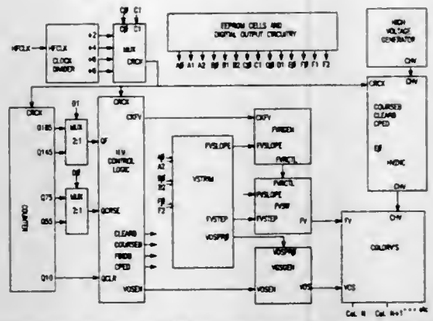
Continuation of Ser. No. 78,420, Jun. 17, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,589

Int. Cl.[6] G11C *27/00*

U.S. Cl. 365—45 **36 Claims**

1. In a floating gate analog storage device having a plurality of floating gate analog storage cells, each programmable to store an

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analog value by a multi iterative programming technique in which programming is accomplished by a series of coarse programming pulses of increasing voltage amplitude, the coarse programming pulses being terminated with respect to a particular storage cell when the storage cell reaches a desired coarse programming level, followed by a series of fine programming pulses of increasing voltage amplitude, the fine programming pulses being terminated with respect to that storage cell when the storage cell reaches a desired fine programming level, wherein voltage amplitude increments between the coarse programming pulses are larger than voltage amplitude increments between the fine programming pulses, the improvement comprising:

means for controllably programming after fabrication of the floating gate analog storage device a reduction in a programming pulse voltage for a first fine programming cycle for the storage cell relative to a voltage amplitude of the coarse programming pulse of a last coarse programming cycle for that storage cell;

means for programming after fabrication of the floating gate analog storage device, the voltage amplitude increment between each fine programming pulse;

means for programming after fabrication of the floating gate analog storage device, a pulse width of each fine programming pulse;

means for programming after fabrication of the floating gate analog storage device, the number of fine programming pulses in the series of fine programming pules;

means for programming after fabrication of the floating gate analog storage device, the voltage amplitude increment between each coarse programming pulse;

means for programming after fabrication of the floating gate analog storage device, a pulse width of each coarse programming pulse;

means for programming after fabrication of the floating gate analog storage device, the number of coarse programming pulses in the series of coarse programming pulses; and,

means for programming after fabrication of the floating gate analog storage device, an offset voltage which stops further coarse programming pulses and holds the voltage amplitude of the last coarse programming pulse as a reference for a following fine programming cycle for that storage cell.

5,623,437

CIRCUIT HAVING COMBINED LEVEL CONVERSION AND LOGIC FUNCTION

Scott G. Nogle, and Alan S. Roth, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 22, 1995, Ser. No. 532,291

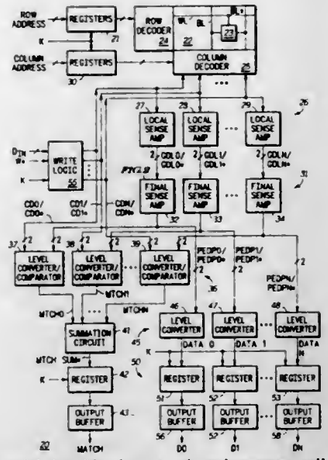
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—49 **19 Claims**

1. A cache TAG, comprising:

a plurality of memory cells;

a sense amplifier having first and second input terminals coupled to the plurality of memory cells for receiving first and second



differential data bits from a selected memory cell, the sense amplifier having first and second output terminals for providing a first and second differential data signals having a relatively small logic swing corresponding to the first and second differential data bits;

a combined level converter/comparator having first and second input terminals coupled to the first and second output terminals of the sense amplifier for receiving the first and second differential data signals, first and second input terminals for receiving first and second differential input signals having a relatively large logic swing compared to the first and second differential data signals, the combined level converter/comparator for comparing the first and second differential data signals to the first and second differential input signals, and providing a match signal at a first logic state if the first and second differential data signals and the first and second differential input signals have the same logic state, and for providing the match signal at a second logic state if the first and second differential data signals and the first and second differential input signals have different logic states, and;

a level converter, the level converter having first and second input terminals for receiving the first and second differential data signals, respectively, and an output terminal for providing a level converted output data signal corresponding to the first and second differential data signals.

5,623,438

VIRTUAL GROUND READ ONLY MEMORY CIRCUIT

Elmer H. Guritz, Roanoake, and Tsiu C. Chan, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 307,519, Sep. 16, 1994, abandoned, which is a division of Ser. No. 982,988, Nov. 30, 1992, Pat. No. 5,377,153. This application Aug. 26, 1996, Ser. No. 697,482

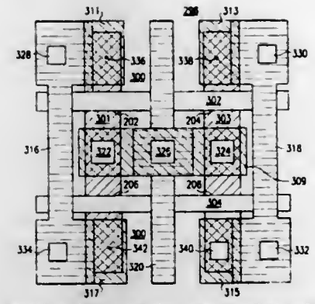
Int. Cl.[6] G11C *7/00*; **H01L** *21/8246*

U.S. Cl. 438—598 **4 Claims**

1. A method of programming a plurality of semiconductor read only memory cells having transistors with source regions and drain regions comprising:

forming a dielectric layer over the plurality of semiconductor read only memory cells;

etching holes in the dielectric layer, wherein the holes are etched over the source regions of selected transistors within the plurality of semiconductor read only memory cells;



forming metal regions over the source regions of the selected transistors, wherein the metal regions are in contact with the source regions of the selected transistors; and

forming metal lines, wherein the metal lines intersect portions of the metal regions, wherein the source regions of the selected transistors are electrically coupled to the metal lines.

5,623,439

FERROELECTRIC MEMORY DEVICE

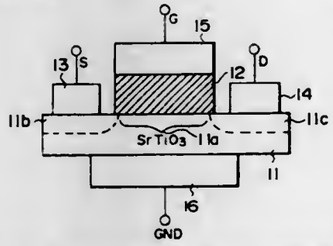
Kohtaroh Gotoh; Hirotaka Tamura, and Akira Yoshida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 12, 1995, Ser. No. 439,780

Claims priority, application Japan, Jun. 1, 1994, 6-119770

Int. Cl.[6] H01L *29/78*

U.S. Cl. 365—145 **16 Claims**



1. A ferroelectric memory device for storing information in the form of ferroelectric polarization, comprising:

a channel layer of a dielectric material containing oxygen, said channel layer causing carriers to flow therethrough;

a source electrode provided on said channel layer for injecting carriers into said channel layer;

a drain electrode provided on said channel layer with a separation from said source electrode for collecting carriers from said channel layer;

a source region defined in said channel layer in correspondence to said source electrode;

a drain region defined in said channel layer in correspondence to said drain electrode;

a channel region defined in said channel layer between said source region and said drain region as a passage of carriers;

said source region being depleted of oxygen as compared with said channel region;

said drain region being depleted of oxygen as compared with said channel region;

a ferroelectric memory layer provided adjacent to said channel layer so as to cover at least said channel region; and

write control means provided on said ferroelectric memory layer for applying an electric field to said ferroelectric memory layer.

5,623,440

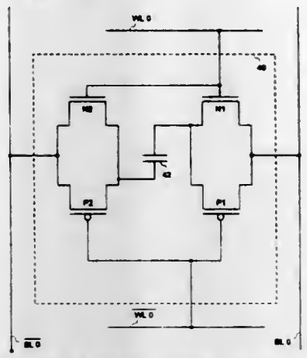
MULTIPLE-BIT RANDOM ACCESS MEMORY CELL

Tamio Saito, Redwood Shores, Calif., assignor to Solidas Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 136,161, Oct. 15, 1993, Pat. No. 5,459,686. This application Apr. 13, 1995, Ser. No. 422,142

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **15 Claims**



1. A memory cell for storing a plurality of bits of information comprising:

a storage capacitor capable of storing one of more than two different voltage levels, said capacitor having a first terminal and a second terminal:

a switching element comprising:

a first switching component, having a coupling terminal coupled to the first terminal of said capacitor, a data terminal coupled to a conductive line, and a control terminal coupled to a control line, for selectively coupling said capacitor to said conductive line, said first switching component having a threshold voltage which is positive; and

a complementary switching component, having a coupling terminal coupled to the first terminal of said capacitor, a data terminal coupled to said conductive line, and a control terminal coupled to a second control line, for selectively coupling said capacitor to said conductive line, said complementary switching component having a threshold voltage which is negative; and

a discharge element coupled to the first and second terminals of said capacitor for selectively discharging said capacitor.

5,623,441

Patent Not Issued For This Number

5,623,442

MEMORY CELLS AND MEMORY DEVICES WITH A STORAGE CAPACITOR OF PARASITIC CAPACITANCE AND INFORMATION STORING METHOD USING THE SAME

Hiroshi Gotou; Mamoru Kondo, and Hirofumi Abe, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP94/00928, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO95/02884, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 8, 1994, Ser. No. 379,480

Claims priority, application Japan, Jul. 13, 1993, 5-172956; May 17, 1994, 6-102717

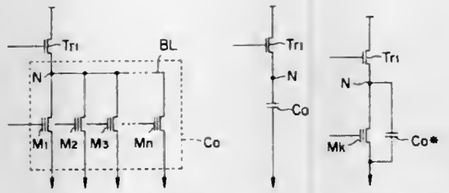
Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—185.08 **27 Claims**

9. A memory device comprising:

a main bit line:

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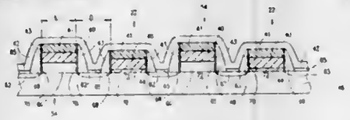
a non-volatile memory cell having a transistor with a control gate and a floating gate;
a sub bit line to which said non-volatile memory cell is connected;
a selector switch element for connecting said main bit line with said sub bit line;
a storage element including said selector switch element and a capacitor element formed of parasitic capacitance of said sub bit line; and
a transfer means for transferring data stored in said storage element to said non-volatile memory cell.

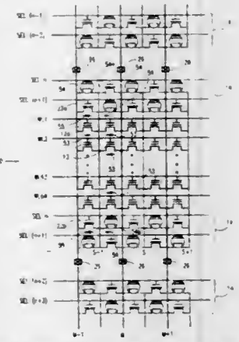
5,623,443

SCALABLE EPROM ARRAY WITH THICK AND THIN NON-FIELD OXIDE GATE INSULATORS

Reza Kazerounian, Alameda; Rustom F. Irani, Santa Clara, both of Calif., and Boaz Eltan, Ra'anana, Israel, assignors to Waferscale Integration, Inc., Fremont, Calif.

Filed Mar. 11, 1994, Ser. No. 212,165
Int. Cl.[6] G11C *16/06*
U.S. Cl. 365—185.16 **6 Claims**





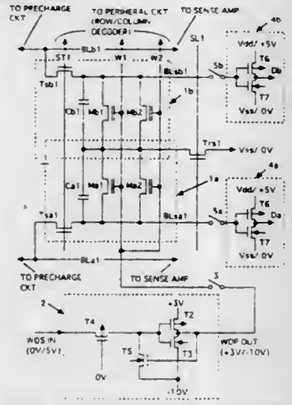
1. An alternating metal virtual ground electrically programmable read-only memory (EPROM) array comprising:
a first plurality of EPROM areas; and
a second plurality of control areas, two per EPROM area, each control area comprising at least one row and each row comprising:
a first polysilicon strip;
a second polysilicon strip lying on top of and perpendicular to said first polysilicon strip;
alternating thick, non-field oxide and thin oxide elements under said first polysilicon strip,
wherein said thick, non-field oxide and thin oxide elements are self-aligned to said first polysilicon strip,
said thin oxide and said first and second polysilicon strips form a select transistor, and
said thick, non-field oxide and said first and second polysilicon strips form a self-aligned thick oxide isolation unit.

5,623,444

ELECTRICALLY-ERASABLE ROM WITH PULSE-DRIVEN MEMORY CELL TRANSISTORS

Hiroshi Gotou, and Toshifumi Asakawa, both of c/o NKK Corporation, 1-2, 1-Chome, Marunouchi, Chiyoda-Ku, Tokyo, Japan

Filed Aug. 18, 1995, Ser. No. 516,830
Claims priority, application Japan, Aug. 25, 1994, 6-222734
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.23 **17 Claims**



1. A nonvolatile semiconductor memory comprising:
a main bit line;
a sub bit line;
a bit line selection transistor for selectively connecting said sub bit line to said main bit line;
operating means for intermittently turning on said bit line selection transistor after said sub bit line is connected to said main bit line by said bit line selection transistor;
a memory cell transistor having a floating gate for holding nonvolatile information, and a control gate for controlling writing, erasing, or reading of information held in said floating gate, said memory cell transistor being connected to said sub bit line; and
drive signal means for supplying a drive signal to said control gate of said memory cell transistor, the drive signal alternately and repeatedly having a first potential and a second potential different from the first potential.

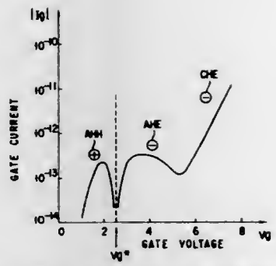
5,623,445

SEMICONDUCTOR MEMORY DEVICE HAVING DATA ERASING MECHANISM

Kiyomi Naruke; Tomoko Suzuki; Seiji Yamada, all of Tokyo; Etsushi Obi, Yokohama, and Masamitsu Oshikiri, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 903,949, Jun. 26, 1992. This application May 12, 1995, Ser. No. 440,253
Claims priority, application Japan, Jun. 27, 1991, 3-157063
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185.29 **16 Claims**

1. A nonvolatile semiconductor memory device, comprising:
a semiconductor substrate of a first conductivity type having source and drain regions of a second conductivity type which define a channel region therebetween;
a gate insulator provided on said channel region;



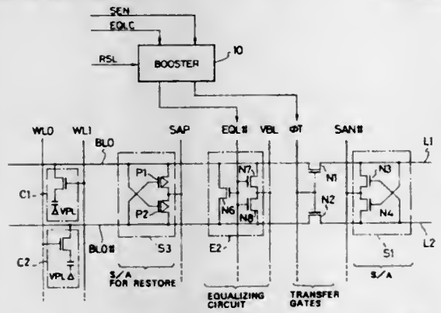
an electron-holding means provided on said gate insulator;
a control gate insulatively spaced from said electron-holding means;
means for discharging electrons held in said electron-holding means by applying a voltage between said control gate and one of said source region, said drain region, and said substrate so that said one of said source region, said drain region, and said substrate has a potential greater than the potential of said control gate;
means for injecting avalanche hot carriers into said electron-holding means to converge the potential of said electron-holding means to a predetermined value by applying a voltage between said source region and said drain region so that said source region is at a higher potential, while simultaneously applying a voltage equal to a voltage of said drain region to said control gate; and
means the injecting electrons into said electron-holding means to program data into said device by applying a voltage between said source region and said drain region so that said drain region is at a higher potential, while simultaneously applying a voltage higher than a reading voltage to said control gate.

5,623,446

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A VOLTAGE BOOSTER AND PRECHARGING CIRCUIT

Toshiki Hisada, and Hiroyuki Koinuma, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 496,035, Jun. 28, 1995, abandoned, which is a continuation of Ser. No. 286,018, Aug. 4, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,380
Claims priority, application Japan, Aug. 12, 1993, 5-200877
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.11 **72 Claims**



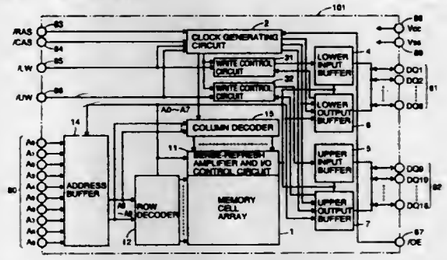
1. A semiconductor integrated circuit including a plurality of memory cells arranged in matrix, selected by a plurality of word lines and a plurality of bit lines, operable in a precharge cycle and an activation cycle, comprising:
a word line in the word lines for selecting a group of the memory cells;
a first bit line and a second bit line in the bit lines, for selecting a pair of the memory cells located between the first bit line and the second bit line;
a first node and a second node through which data to or from the pair of the memory cells is transferred;
transfer means controlled by a first control signal, for connecting the first bit line to the first node and the second bit line to the second node;
sense amplifier means controlled by a second control signal, for sensing data on the first node and second node, located between the first node and the second node;
equalizing means controlled by a third control signal, for equalizing the first node and the second node, located between the first node and the second node;
voltage booster means for boosting the first control signal and the third control signal,
wherein
the first control signal and the third control signal are set at a power source voltage potential Vcc during the precharge cycle,
the first control signal and the third control signal are boosted above the power source voltage potential V_{CC} in the activation cycle after the precharge cycle, and
the first control signal is changed to the power source voltage potential V_{CC} and the third control signal is changed to a ground potential Vss in synchronization with a selection for the word line.

5,623,447

SEMICONDUCTOR MEMORY DEVICE HAVING A PLURALITY OF I/O TERMINAL GROUPS

Masaki Shimoda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,822
Claims priority, application Japan, Feb. 28, 1995, 7-40116
Int. Cl.[6] G11C *7/00*
U.S. Cl. 364—189.04 **14 Claims**



1. A semiconductor memory device wherein an early write mode activating a write operation can be executed by changing a write designating signal for designating the write operation after change of a row address strobe signal for taking in a row address and before change of a column address strobe signal for taking in a column address, said semiconductor memory device comprising:
a plurality of data I/O terminal groups divided into a plurality of groups each forming a unit for performing input and output of data;
a plurality of write designating signal input terminals receiving a plurality of write designating signals generated correspondingly to said plurality of data I/O terminal groups for selectively designating said data I/O terminal group used for writing the data, respectively;
early write detecting means receiving said row address strobe signal, said column address strobe signal and said plurality of write designating signals, and being responsive to the

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received signals by operating for each of said data I/O terminal groups to detect designation of said early write mode using each of said data I/O terminal groups;

a plurality of write means provided correspondingly to said plurality of data I/O terminal groups, respectively, and each receiving said write designation signal for the corresponding data I/O terminal group to perform control for using the corresponding data I/O terminal group for writing the data when said received write designation signal designates the corresponding data I/O terminal group; and

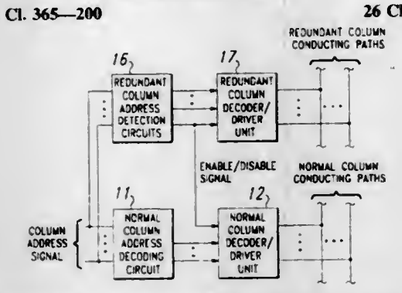
a plurality of read means provided correspondingly to said plurality of data I/O terminal groups, respectively, and each performing control for using the corresponding data I/O terminal group for reading the data when said early write detecting means does not detect the designation of said early write mode for the corresponding data I/O terminal group.

5,623,448

APPARATUS AND METHOD FOR IMPLEMENTING INTEGRATED CIRCUIT MEMORY DEVICE COMPONENT REDUNDANCY USING DYNAMIC POWER DISTRIBUTION SWITCHING

Jeffrey E. Koelling, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1995, Ser. No. 437,602
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—200 **26 Claims**



1. Apparatus responsive to a control signal for selectively applying activation signals either to a first group of electrical elements or to a second group of electrical elements, said apparatus comprising:

a plurality of first gates each coupled to an electrical element of said first group of electrical elements, each of said first gates transmitting an activation signal to said coupled first element when power is applied thereto;

at least one first buffer unit coupled to said plurality of first gates, said first buffer unit applying power to said plurality of first gates when said control signal has a first state;

at least one second gate, each second gate coupled to a second electrical element, each of said second gates transmitting an activation signal to said coupled second electrical element, each of said second electrical elements related to a first electrical element;

at least said second buffer unit coupled to said second gates, said second buffer unit applying power to said second gate when said control signal has a second logic state; and

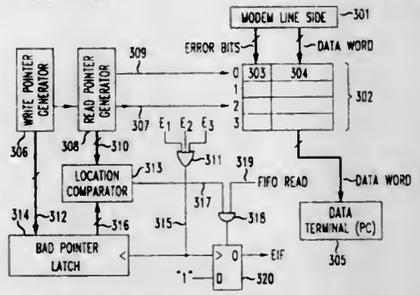
an identification circuit responsive to a group of signals related to said activation signals, said identification circuit determining when a group of first electrical elements related to a group of second electrical elements are to receive activation signals by controlling a state of said logic signal.

5,623,449

FLAG DETECTION FOR FIRST-IN-FIRST-OUT MEMORIES

Frederick H. Fischer, Macungie, and Kenneth D. Fitch, Allentown, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 11, 1995, Ser. No. 514,199
Int. Cl.[6] G11C *7/00;29/00*
U.S. Cl. 315—200 **16 Claims**



1. A first-in, first-out memory comprising:

a plurality of memory locations, each location comprising a data portion for storing a data word and an error portion for storing at least one error bit;

a read pointer for designating a location that is read from, and a write pointer for designating a location that is written to; and

an error flag for indicating that at least one error bit is stored in an error portion;

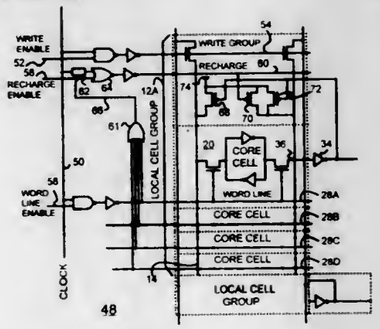
characterized in that said memory further comprises a bad pointer latch for latching the current location of said write pointer when at least one error bit is written into the error portion of said current location.

5,623,450

CONDITIONAL RECHARGE FOR DYNAMIC LOGIC

Larry B. Phillips; Robert P. Masleid, and John S. Muhich, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,444
Int. Cl.[6] G11C *7/06*
U.S. Cl. 365—203 **7 Claims**



1. A circuit for conditionally recharging dynamic logic circuits in a random access memory array, wherein a portion of the dynamic logic circuits are accessed during a previous cycle for evaluation, and the random access memory array is recharged by the activation of recharge signals, the circuit comprising:

means for determining the portion of the dynamic logic circuits that were accessed using a respective word line signal during the previous cycle, the means for determining including a latch coupled to each one of the recharge signals and to the corresponding word lines, wherein the latch is set when one of the corresponding word lines is activated; and

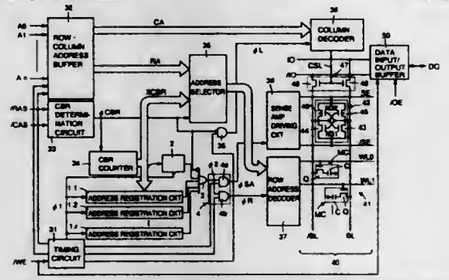
means for deactivating the recharge signals associated with the dynamic logic circuits that are not accessed, such that only the accessed dynamic logic circuits are recharged.

5,623,451

SEMICONDUCTOR MEMORY DEVICE

Tomoya Kawagoe, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 634,489
Claims priority, application Japan, Oct. 4, 1995, 7-257440
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—222 **5 Claims**



1. A semiconductor memory device in which data is refreshed in response to a refresh designating signal designating data refresh, comprising:

a memory cell array including a plurality of memory cells arranged in a matrix;

address designating means for counting said refresh designating signal for designating once in a predetermined refresh period, addresses of all rows of memory cells in said memory cell array in accordance with the counted value;

address registration means for registering an address of a row of memory cells including a memory cell requiring refreshing of data in a period shorter than m times said refreshing period, of said memory cell array;

first signal generating means for outputting a first refresh permitting signal in response to coincidence between an address designated by said address designating means and an address registered by said address registration means;

a second signal generating means for outputting a second refresh permitting signal every time an address of each row of memory cells of said memory cell array is designated m times by said address designating means; and

refreshing means responsive to said first and second refresh permitting signals output from said first and second signal generating means for refreshing data of a row of memory cells of the address designated by said address designating means.

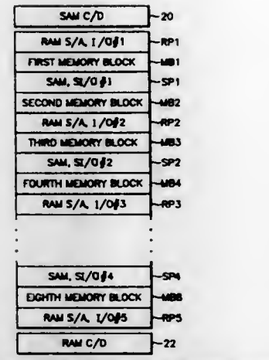
5,623,452

DUAL PORT MEMORY DEVICE

Jang-Kyu Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 17, 1994, Ser. No. 342,049
Claims priority, application Rep. of Korea, Nov. 17, 1993, 24481/1993
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.05 **18 Claims**

1. A dual port memory device having a plurality of memory blocks which are divisions of a memory cell array formed on a single substrate of a semiconductive material, said device comprising a first memory block which shares a SAM port with a second memory block adjacent to a first side of said first memory block



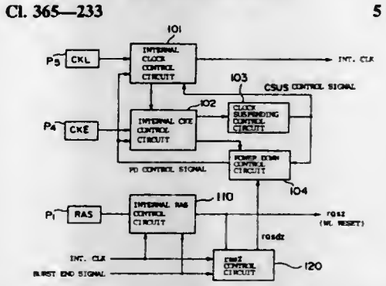
and which further shares a RAM port with a third memory block adjacent to a second side of said first memory block.

5,623,453

SYNCHRONOUS SEMICONDUCTOR DEVICE WITH DISCONTINUED FUNCTIONS AT POWER DOWN

Naoharu Shinozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 3, 1996, Ser. No. 582,389
Claims priority, application Japan, Aug. 31, 1995, 7-223785
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 **5 Claims**



1. A synchronous semiconductor device operating in synchronism with a clock signal supplied from an external unit, said synchronous semiconductor device capable of being set in a power down mode, the power down mode being a mode in which operations of predetermined circuits are inactivated, said synchronous semiconductor device comprising:

first signal generating means for receiving an input signal and for generating a first internal signal based on said input signal, said first internal signal having a first state which permits said synchronous semiconductor device to be in a state where data is output and a second state which permits said synchronous semiconductor device to be in a state where data is not output;

second signal generating means for receiving said input signal and for generating a second internal signal based on said input signal, a change of the second internal signal from a first state to a second state being delayed for a delay time from a change of the first internal signal from the first state to the second state; and

power down control means, connected to said second signal generating means, for activating the power down mode in synchronism with the clock signal based on said second internal signal when the second internal signal is in the second state, so that said synchronous semiconductor device is in the power down mode.

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SEMICONDUCTOR MEMORY DEVICE

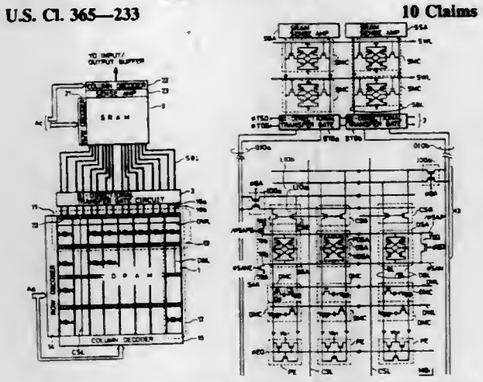
Katsumi Dosaka; Masaki Kumanoya; Kouji Hayano; Akira Yamazaki; Hisashi Iwamoto; Hideaki Abe; Yasuhiro Konishi; Katsumitsu Himukashi; Yasuhiro Ishizuka, and Tsukasa Saiki, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 465,170, Jun. 5, 1995, abandoned, which is a division of Ser. No. 869,917, Apr. 15, 1992. This application Feb. 9, 1996, Ser. No. 599,265

Claims priority, application Japan, Apr. 18, 1991, 3-85625; Aug. 23, 1991, 3-212140; Sep. 24, 1991, 3-242286; Feb. 3, 1992, 4-17809

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—233 10 Claims



1. A semiconductor memory device including a memory cell array of a plurality of memory cells, comprising:

address generating means receiving an externally applied external address signal for generating an internal address signal corresponding to the received external address signal, said external address signal designating a memory cell of said memory cell array;

setting means responsive to an externally applied address taking timing designating signal for generating a designation signal for setting a timing for taking said external address signals at said address generating means; and

timing supply means responsive to said designation signal and an external clock for supplying a timing signal for determining a timing at which said address generating means take in the external address signal.

5,623,455

APPARATUS AND METHOD FOR ACQUIRING SEISMIC DATA

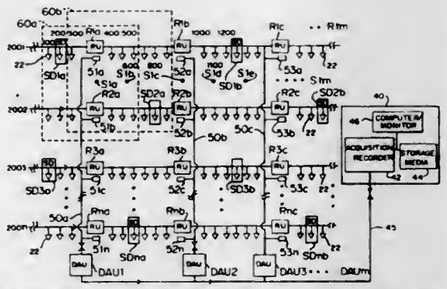
Michael W. Norris, Cypress, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed May 25, 1995, Ser. No. 450,199

Int. Cl.[6] G01V *1/22*

U.S. Cl. 367—76 17 Claims

1. A seismic data acquisition system, comprising: a remote unit coupled to a plurality of receivers placed spaced apart at known locations, said remote unit acquiring seismic data from the receivers over a separate data channel associated with each such receiver in response to an induced shock wave into the earth, said remote unit transmitting the acquired seismic data to a recorder during a data recording cycle; a signature device located at a known location for transmitting a data sequence having a time-invariant code to the recorder during the recording cycle; and said recorder utilizing the data sequence to map the seismic data associated with each said data channel corresponding to the location of its associated receiver.



5,623,456

ELECTROLUMINESCENT INDICATOR HAND

Shinichi Miyamoto, and Nobuhiro Tanaka, both of Tokyo, Japan, assignors to Seiko Clock Inc., Japan

Filed Oct. 27, 1995, Ser. No. 549,092

Claims priority, application Japan, Oct. 27, 1994, 6-264030

Int. Cl.[6] G04B *19/32;19/04*

U.S. Cl. 368—226 8 Claims



1. An electroluminescent indicator hand comprising: an annular support member; an electroluminescent member secured on the support member; and a metal contact for supplying a drive signal to the electroluminescent member; wherein the electroluminescent member comprises a laminated structure having a transparent electrode layer, a luminescent layer, an insulating layer and a rear electrode layer disposed on a light transmissive substrate having an annular section overlapping the support member, and wherein the metal contact has conductors resiliently contacting the transparent electrode layer and the rear electrode layer of the electroluminescent member.

5,623,457

PHOTOMAGNETIC DISC DRIVE SYSTEM HAVING A LOCKING MECHANISM

Hidekazu Seto, and Sunao Aoki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

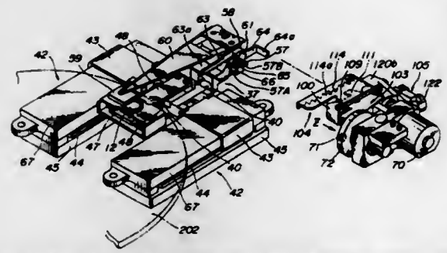
Continuation of Ser. No. 228,682, Apr. 12, 1994, abandoned. This application Oct. 12, 1995, Ser. No. 541,233

Claims priority, application Japan, Apr. 12, 1993, 5-084460; Mar. 17, 1994, 6-046747

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 18 Claims

1. An apparatus for recording and reproducing information stored on a photomagnetic disc, comprising:



a carriage carrying an objective lens and radially movable with respect to the photomagnetic disc;

a head support disposed on said carriage, said head support holding a magnetic head which applies magnetic field to the photomagnetic disc;

means for moving said head support between a loading position where said head support is placed close to the photomagnetic disc such that said magnetic head applies the magnetic field to the photomagnetic disc, and an unloading position where said head support is placed remote from the photomagnetic disc such that said magnetic head is prevented from applying the magnetic field to the photomagnetic disc;

means for retaining said head support at said loading position when said head support is moved to said loading position, and at said unloading position when said head support is moved to said unloading position, said retaining means being disposed on said carriage; and

said retaining means including a magnet disposed on said head support and a pair of opposed members made of magnetic material disposed on said carriage, one of said opposed members being selectively attracted by said magnet depending upon whether said head support is placed at said loading position or at said unloading position.

5,623,458

METHOD FOR REPRODUCING INFORMATION DATA RECORDED ON A MAGNETO-OPTICAL DEVICE HAVING PLURAL MAGNETIC LAYERS

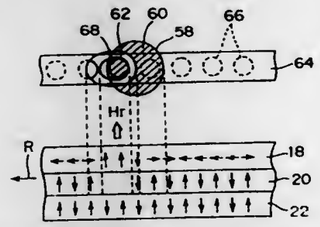
Koji Matsumoto, and Keiji Shono, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 368,611, Jan. 4, 1995. This application Jan. 24, 1996, Ser. No. 590,589

Claims priority, application Japan, Jan. 17, 1994, 6-002934; Sep. 5, 1994, 6-211103

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 5 Claims



1. A reproducing method for information recorded on a magneto-optical recording medium comprising a transparent substrate; a first magnetic layer laminated on said transparent substrate and having an easy axis of magnetization in a plane at room temperature; a second magnetic layer laminated on said first magnetic layer and having an easy axis of magnetization perpendicular to said substrate; and a third magnetic layer laminated on said second magnetic layer and having an easy axis of magnetization perpendicular to said substrate; wherein a Curie temperature Tc1 of said first magnetic layer, a Curie temperature Tc2 of said second magnetic layer, and a Curie temperature Tc3 of said third magnetic layer are related to satisfy Tc1>Tc2 and Tc3>Tc2; said reproducing method comprising the steps of:

directing a laser beam onto said recording medium as applying a bias magnetic field to heat said recording medium to temperatures lower than the Curie temperature of said third magnetic layer; and

forming a temperature distribution in a beam spot, said temperature distribution comprising a first area where the direction of magnetization of said first magnetic layer is an in-plane direction, a second area where magnetization of said third magnetic layer is transferred to said second magnetic layer and said first magnetic layer by exchange bond, and a third area where the temperature of said second magnetic layer becomes higher than its Curie temperature.

5,623,459

METHOD AND APPARATUS FOR ERROR CORRECTING REPRODUCED DATA

Ryuichi Iwamura; Shozo Masuda, both of Tokyo, and Yoshiyuki Akiyama, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

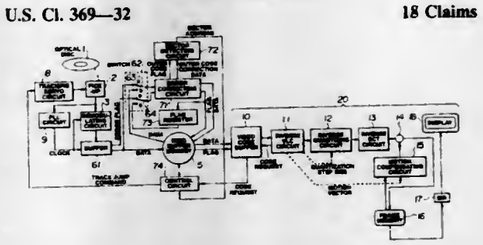
PCT No. PCT/JP94/01604, § 371 Date May 24, 1995, § 102(e) Date May 24, 1995, PCT Pub. No. WO95/09421, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 28, 1994, Ser. No. 436,437

Claims priority, application Japan, Sep. 29, 1993, 5-242532

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 18 Claims



1. A data reproducing method for reproducing data recorded on a disc as video data displayable as a picture, comprising the steps of:

reproducing said data from said disc using a pick-up, the reproduced data including two systems of error correction codes;

storing the data reproduced from said disc in a memory;

carrying out error correction of the data stored in said memory on the basis of said two systems of error correction codes;

detecting an error correction inability which indicates that error correction cannot be carried out using said two systems of error correction codes; and

track jumping said pick-up along said disc when said error correction inability for said two systems of error correction codes is detected, thereby preventing a disturbance in said picture from arising when error correction cannot be carried out.

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5,623,460

CIRCUIT AND METHOD FOR SEARCHING TRACK ON CD

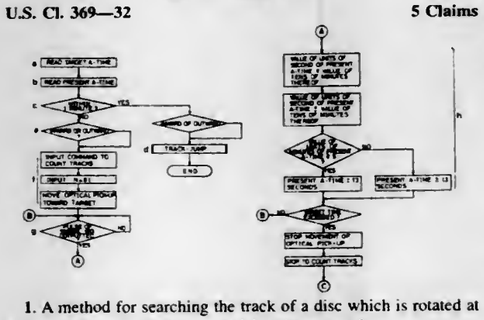
Naobumi Nagasawa, and Hiroyuki Arai, both of Gunma-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 917,895, Jul. 21, 1992, abandoned, which is a division of Ser. No. 325,255, Mar. 17, 1989, Pat. No. 5,140,570. This application Jun. 13, 1995, Ser. No. 489,249

Claims priority, application Japan, Mar. 18, 1988, 1-66343

Int. Cl.[6] G11B 17/22

U.S. Cl. 369—32 5 Claims



1. A method for searching the track of a disc which is rotated at a constant linear velocity, comprising the steps of:

dividing a real time necessary for tracing a track for said disc from a start point to an end point into a plurality of time units,

deciding a predetermined value which is common to divided time units,

evaluating average time necessary for tracing the tracks of the number of said predetermined value for each time unit,

adding said average time of the time unit to real time each time the track of said predetermined value are counted, to evaluate the real time for tracing the number of tracks, and

jumping tracks to reduce the difference between the real time in the adding step and a target value, and rereading the real time from the track.

5,623,461

OPTICAL DISK DRIVE CAPABLE OF HIGHER-SPEED SEEKING

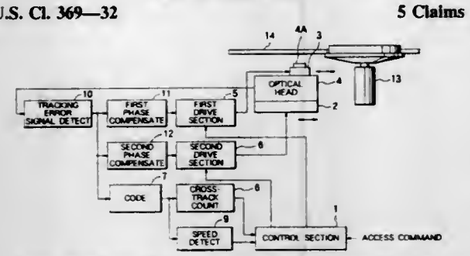
Mitoshi Sohmuta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 13, 1995, Ser. No. 571,591

Claims priority, application Japan, Dec. 15, 1994, 6-311597

Int. Cl.[6] G11B 7/08

U.S. Cl. 369—32 5 Claims



1. An optical disk drive comprising an optical head for reading optical data stored along a plurality of tracks of a disk file, a first actuator for moving said optical head with respect to the disk file in a radial direction thereof, an object lens, mounted on said optical head, for irradiating an optical spot onto the disk file, a second actuator, mounted on said optical head, for moving said object lens with respect to said optical head in said radial direction, a speed sensor for detecting a radial speed of said optical spot with respect to the disk file, an address detector for detecting a present address of said optical spot with respect to the disk file, and a calculating section for calculating a speed profile for the optical head based on a stroke between a present track before seeking and a target track, said second actuator moving said object lens in the direction opposite to the moving direction of said optical head for controlling the radial speed of said optical spot to thereby generate a stationary state of said optical spot with respect to the disk file while said first actuator moving said optical head between the present track before seeking and the target track, said address detector being activated to read a present address during said stationary state of said optical spot, said calculating section correcting the calculated speed profile based on said present address obtained during said stationary state.

5,623,462

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

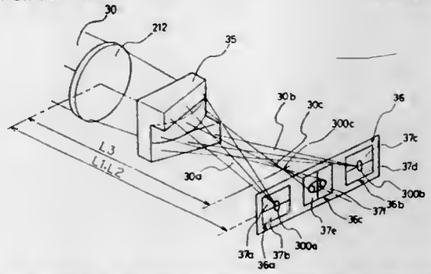
Koichi Tezuka; Kyoko Miyabe; Satoshi Itami, and Tohru Fujimaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 84,362, Jun. 30, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 513,578

Claims priority, application Japan, Jun. 21, 1993, 5-149488

Int. Cl.[6] C11B 7/00

U.S. Cl. 369—44.23 14 Claims



1. An optical information recording/reproducing apparatus which records information on and/or reproduces information from an optical recording medium and detects a tracking error and a focal error based on a reflected light beam from the optical recording medium, said optical information recording/reproducing apparatus comprising:

a single composite prism having a central portion and a pair of tapered portions disposed on both sides of said central portion, said central portion splitting the reflected light beam into at least one first beam which is used for detecting the tracking error and said tapered portions splitting the reflected light beam into at least two second beams which are used for detecting the focal error; and

photodetector means including a first photodetector which detects the first beam at a position other than an image formation point of the first beam, and second photodetectors for detecting the second beams approximately at image formation points of the second beams,

each of said second photodetectors being made up of two detector parts located about a division line which is approximately parallel to a direction in which a corresponding one of the two second beams are deflected by a corresponding one of the tapered portions of said composite prism.

5,623,463

METHOD FOR DETERMINING A FOCUSING CONTROL OPERATION POSITION IN AN OPTO-MAGNETIC DISC RECORDING/REPRODUCING APPARATUS

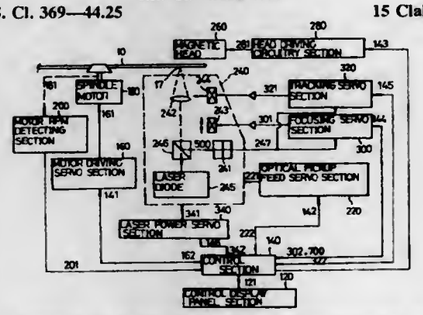
See-Wean Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 557,732

Claims priority, application Rep. of Korea, Nov. 14, 1994, 94-29779

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—44.25 15 Claims



1. A method for determining a focusing control position in an opto-magnetic disc recording/reproducing apparatus, the method comprising the steps of:

initializing an internal counter of a control section, and increasing a focusing control current applied to a focusing coil included in an optical pickup section to raise a focusing control position of an objective lens during a reproduction mode;

determining whether both a first focusing detecting signal detected by a focusing servo section upon receiving a signal of quantity of light generated by a light receiving device in the optical pickup section in response to either an inaccurate focusing control operation or an accurate focusing control operation, and a first focus zero crossing signal detected in a focus zero crossing switch section corresponding to on state of the focusing servo section are received or not, and augmenting a counting value of the counter by one when both the first focusing detecting signal and the first focus zero crossing signal are received; and

descendinng the objective lens in the optical pickup section from a current position by up to a predetermined position corresponding to a prescribed value of the counter when the counting value of the counter reaches the prescribed value to indicate a focusing state of the laser beam on a reflective layer in the opto-magnetic disc, determining inputs of a second focusing detecting signal and a second focus zero crossing signal, and executing the focusing control operation at a descended position of the objective lens when both the second focusing detecting signal and the second focus zero crossing signal are received.

5,623,464

OPTICAL DISK APPARATUS AND SEEK CONTROL METHOD

Hiroshi Tani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 480,077, Jun. 7, 1995, abandoned. This application Sep. 29, 1995, Ser. No. 535,994

Claims priority, application Japan, Sep. 29, 1994, 6-234971; Sep. 11, 1995, 7-232440

Int. Cl.[6] G11B 7/085

U.S. Cl. 369—44.28 28 Claims

1. An optical disk apparatus comprising:

an optical head for forming a light beam spot onto a medium surface of a disk medium by an objective lens, thereby optically reading or writing information;

a carriage on which said optical head is mounted and which is moved in a radial direction of the disk;

a lens actuator for driving said objective lens of said optical head on said carriage, thereby moving said light beam spot in the disk radial direction;

an acceleration measuring section for obtaining an acceleration that is peculiar to said lens actuator on the basis of a moving speed when said lens actuator is accelerated; and

a seek control section for moving the light beam spot of said optical head toward a target track by a predetermined speed control and a constant speed control of said lens actuator, for deceleration controlling said lens actuator on the basis of said measurement acceleration when said light beam spot reaches a position which is located by a predetermined number of tracks before said target track and for on-tracking said light beam spot to the target track at an end time point of said deceleration control.

5,623,465

OPTICAL DISK PLAYER WITH A DIGITAL SERVO-CONTROL CIRCUIT INCORPORATING A TIME SHARING MULTIFUNCTIONAL DIGITAL FILTER

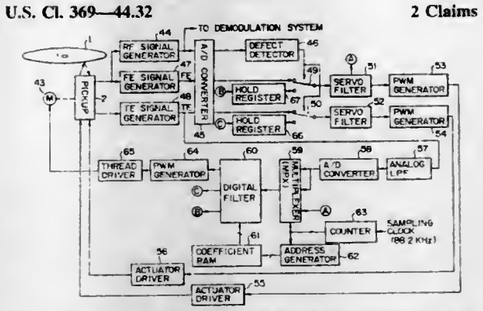
Takeshi Sasaki, and Hidenobu Noda, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 971,897, Nov. 4, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,473

Claims priority, application Japan, Nov. 6, 1991, 3-319960; Nov. 8, 1991, 3-321393

Int. Cl.[6] G11B 7/095

U.S. Cl. 369—44.32 2 Claims



1. An optical disk player controlled by a digital servo circuit, comprising:

a defect detector for detecting a defect in a signal surface of an optical disk according to a signal read from the signal surface;

a multiplexer for generating a multiplexed output signal from a tracking error signal and a focus error signal generated from the signal read from the signal surface;

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a single digital filter operative during a plurality of periods, the single digital filter for sequentially extracting from the multiplexed output signal a low-frequency component of the tracking error signal, a plurality of low-frequency components from the tracking error signal and a plurality of low-frequency components from the focus error signal on a time-sharing basis according to coefficient values set up therein, each sequential extraction occurring during only one of the plurality of periods;

coefficient setting means for sequentially setting up predetermined coefficient values in said digital filter in synchronism with its time-sharing operation, the coefficient setting means including an address generator and a coefficient memory;

a thread driver coupled to a first output of the single digital filter for controlling the position of an optical pickup in the radial direction of the disk according to the low-frequency component of said tracking error signal;

a hold register for tracking coupled to a second output of the single digital filter, for storing the plurality of low-frequency components of said tracking error signal;

a hold register for focusing coupled to a third output of the single digital filter for storing the plurality of low-frequency components of said focus error signal;

a tracking servo filter for controlling the position of an information reading light spot in the radial direction of the disk with respect to the track of the optical disk, along which the information is being read, in response to said tracking error signal and, when a defect has been detected by said defect detector, responding to the plurality of low-frequency components of said tracking error signal stored in said hold register for tracking instead of responding to the tracking error signal; and

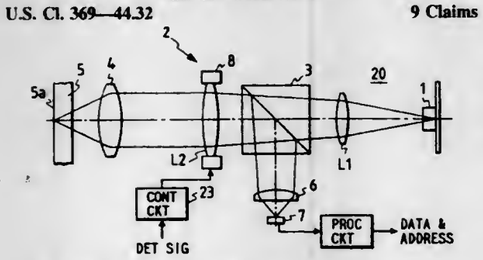
a focus servo filter for controlling an objective lens incorporated in said optical pickup responding to said focus error signal so that the distance of the objective lens from the signal surface of the optical disk remains constant and, when a defect has been detected by said defect detector, responding to the plurality of low-frequency components of said focus error signal stored in said hold register for focusing instead of responding to the focus error signal.

5,623,466

OPTICAL PICKUP APPARATUS WITH SKEW ERROR CONTROL AND OPTICAL INFORMATION RECORDING AND/OR REPRODUCING APPARATUS USING THE SAME

Makoto Itonaga, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 21, 1995, Ser. No. 408,169
Claims priority, application Japan, Mar. 25, 1994, 6-079718
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.32 **9 Claims**



1. An optical pickup apparatus comprising:

a laser light source for emitting a laser beam;

an optical collimating system, having a first optical axis and a predetermined unsatisfied degree of a Abbe's sine condition, for collimating said laser light beam;

an objective lens, having a second optical axis, for focusing said laser beam from said collimating optical system on an information holding plane of an optical disc;

a detection portion for detecting an amount and a direction of a tilt of said optical disc from a reference; and

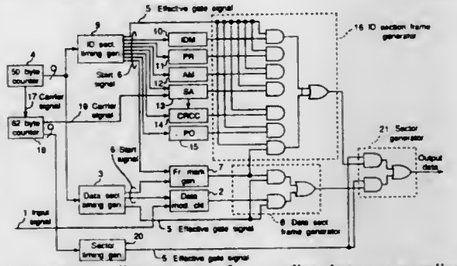
a control portion for controlling a lens of said optical collimating system, thereby changing said first optical axis with respect to said second optical axis in accordance with the detected amount and direction of said tilt.

5,623,467

DATA RECORDING APPARATUS FOR RECORDING DATA IN SECTOR UNITS

Satoshi Kato, Hirakata, and Akira Muto, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 27, 1994, Ser. No. 313,439
Claims priority, application Japan, Sep. 27, 1993, 5-239699; Sep. 27, 1993, 5-239700
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—47 **4 Claims**



1. A data recording apparatus for recording data to a recording medium in sector units, and comprising:

an ID section generation means for generating an ID section in frame units which contains information for identifying a physical position of each sector on the recording medium;

a data section generation means for generating a data section in frame units which contains input data to be recorded in said each sector as digital data;

a sector formation means for synthesizing the ID section and data section generated by said ID section generation means and data section generation means to form a sector;

a frame mark means for arranging a frame mark at a head position of each frame; and

an ID mark means for generating and arranging an ID mark for identifying each ID section using a specific pattern of zeros and ones which is different from the frame mark and cannot exist in the data section.

5,623,468

DISK APPARATUS FOR DETECTING ADDRESS MARKS FROM A RECORDING DISK HAVING DATA RECORDED IN A ZONED CONSTANT ANGULAR VELOCITY TYPE SYSTEM

Naoto Takeda, and Mitsumasa Kubo, both of Musashino, Japan, assignors to TEAC Corporation, Japan

Filed Sep. 13, 1994, Ser. No. 305,179
Claims priority, application Japan, Sep. 17, 1993, 5-231966
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **15 Claims**

1. A disc apparatus, for reading data previously written in a disc serving as a recording medium, said data being written in said disc in each of a plurality of sectors provided in said disk along a circumferential direction of said disc, said plurality of sectors being provided in a plurality of zones classified along a radius of said disc, different recording frequencies being used for the data writing for said plurality of zones, said disc being rotated at a constant angular velocity during the data writing, each sector having data written therein, each sector further having a sector-beginning mark written therein which indicates the beginning of said sector and which can be detected from an asynchronous signal reproduced from the disk; and each sector further having at least one data-beginning mark written therein which indicates the beginning of said data, said data-beginning mark being located at a position separated by an interval from said sector-beginning mark and being detectable only from a synchronous data signal using a synchronization clock signal;

wherein said disc apparatus comprises:

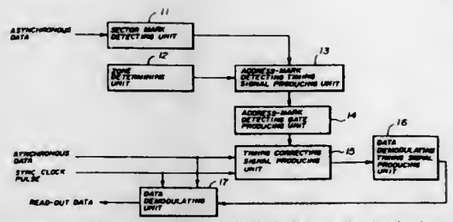
first detecting means for detecting said sector-beginning mark from said synchronous reproduced signal;

zone determining means a connected to said first detecting means, for determining which zone is currently being accessed in said disc;

clock extracting means for extracting said synchronization clock signal and said synchronous data signal from said asynchronous reproduced signal;

second detecting means, connected to said clock extracting means and starting its operation based on a detection result of said first detecting means, for detecting said data-beginning mark; and

delaying means, connected between said first detecting means and said second detecting means, for altering the timing at which said second detecting means starts its operation, based on a determination result of said zone determining means, so that a data-beginning mark occurring after said interval may be detected.



5,623,469

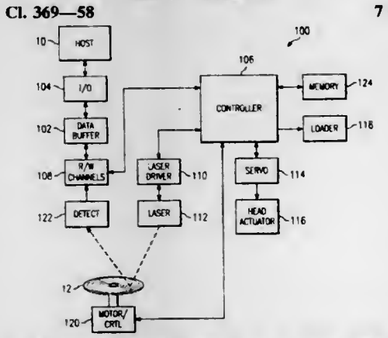
Patent Not Issued For This Number

5,623,470

REALLOCATION OF DEFECTIVE RECORDING AREAS ON CD-R OR CD-E MEDIA

Praveen Asthana, and John E. Kulakowski, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1995, Ser. No. 578,869
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—58 **7 Claims**



1. In a machine-effected method of recording data onto a CD-R/E optical storage disk, the disk capable of storing data in a plurality of variable sized recording sessions, including the machine-executed steps of:

receiving a data to be recorded;

positioning an optical head at the beginning of a first selected area on the disk to which the data is to be recorded;

opening a session by allocating lead-in and lead out areas;

recording at least a portion of the data to a first recordable unit within the first selected area;

reading the recorded data for the presence of unrecoverable errors in the first recordable unit;

if no unrecoverable errors are found in the recorded data, fixing the session by recording lead-out and lead-in areas and updating a table of contents which contains an entry indicating location of the beginning of the first recordable unit; and

if unrecoverable errors are found in the recorded data:

positioning the optical head at the beginning of a second recordable unit on the disk immediately following the first recordable unit;

re-recording the at least a portion of the data;

reading the re-recorded data for the presence of unrecoverable errors in the second recordable unit; and

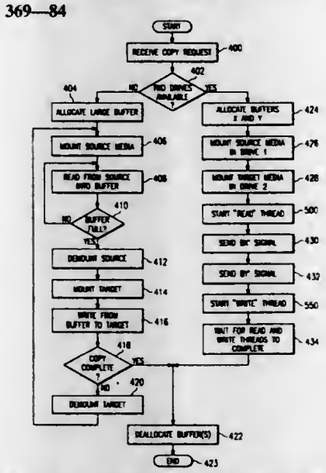
if no unrecoverable errors are found in the re-recorded data, closing the session by recording the lead-in and lead-out areas and updating the table of contents which contains an entry indicating location of the beginning of the second recordable unit and not the first recordable unit.

5,623,471

ADAPTIVE BACKUP FOR STORAGE LIBRARY

Carsten H. Prigge, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1994, Ser. No. 249,772
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—84 **13 Claims**



1. A method for copying data from a source media to a target media in an automated data storage and retrieval library, comprising the steps:

receiving a copy request from a host device;

determining the number of available drive units in the library;

performing a single-threaded copy process if the number of available drive units is one; and

performing a multi-threaded copy process if the number of available drive units is greater than one by:

allocating first and second buffers out of a memory store;

mounting the source media in a first drive unit;

mounting the target media in a second drive unit;

performing a read thread;

sending a first signal indicating that the first buffer is available;

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sending a second signal indicating that the second buffer is available;

performing a write thread concurrently with the read thread; and

when all of the data to be copied from the source media has been written to the target media, deallocating the first and second buffers.

5,623,472

METHOD AND APPARATUS FOR RECORDING SIGNALS ON A RECORD CARRIER, MEASUREMENT METHOD AND MEASUREMENT DEVICE FOR USE IN THE RECORDING METHOD AND THE RECORDING APPARATUS, AND RECORD CARRIER

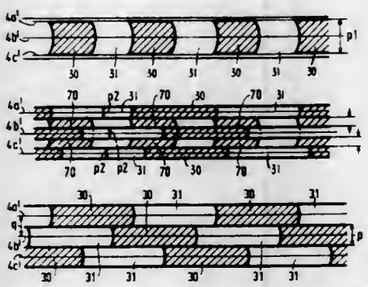
Johannes L. Bakx, and Jeroen J. L. Horikx, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y., and Philips and Du Pont Optical Co., Nieuwegeln, Netherlands

Continuation of Ser. No. 59,530, May 10, 1993, abandoned, which is a continuation of Ser. No. 925,231, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 510,912, Apr. 18, 1990, abandoned. This application Mar. 2, 1994, Ser. No. 427,781

Claims priority, application Netherlands, May 29, 1989, 8901345

Int. Cl.[6] **G11B** *7/00;7/24;3/90*

U.S. Cl. 369—116 **33 Claims**



1. A method of recording an information signal on a record carrier of a rewritable type by scanning the record carrier with a radiation beam which produces information patterns of optically detectable marks in track portions thereon having a substantially uniform track pitch in accordance with the information signal, the beam being operable at a plurality of write intensities including a maximum write intensity; the method comprising the steps of:

recording a first test signal in a first track portion at the maximum write intensity of the beam;

recording a second test signal in the first track portion over the first test signal and in opposing track portions situated adjacent to the first track portion at at least one of the write intensities;

reading-out at least one read-out signal from the first track portion which includes the second test signal and detecting whether the at least one read-out signal has first test signal components therein associated with the first test signal;

determining an optimal write intensity of the beam which causes the marks to have a dimension in a direction perpendicular to a corresponding track portion direction which is substantially the same as the track pitch by determining based on the at least one read-out signal a lowest write intensity of the beam required to substantially remove all first test signal components therefrom; and

setting the beam to the optimal write intensity for recording the information signal.

5,623,473

METHOD AND APPARATUS FOR MANUFACTURING A DIFFRACTION GRATING ZONE PLATE

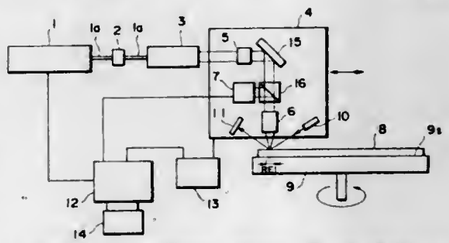
Yutaka Ichihara, Yokuhama, Japan, assignor to Nikon Corporation, Japan

Filed Jun. 29, 1995, Ser. No. 496,554

Claims priority, application Japan, Jun. 30, 1994, 6-170372; Jun. 30, 1994, 6-170373

Int. Cl.[6] **G02B** *5/18*

U.S. Cl. 369—116 **26 Claims**



1. An apparatus for drawing concentric circular patterns on a photoresist coated on a substrate placed on a rotary table by irradiating an exposure beam emitted by a light source onto the photoresist, comprising:

(a) an objective lens for guiding the exposure beam emitted by the light source toward a first region on the photoresist coated on the substrate;

(b) a lighting light source for irradiating lighting light in a direction of the first region via said objective lens;

(c) an image pickup device for picking up an image from the first region obtained via said objective lens;

(d) a deflector for changing a propagating direction of the exposure beam; and

(e) a controller for controlling said deflector on the basis of a signal input from said image pickup device.

5,623,474

DISK APPARATUS HAVING AUTOMATIC ADJUSTMENT OF ADAPTIVE FILTER EQUALIZATION PARAMETER USING TRAINING PATTERN

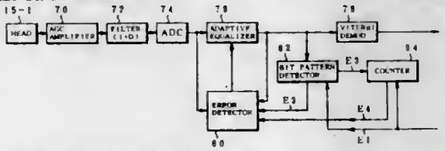
Umeo Oshio, and Yoshiyuki Nagasaka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1995, Ser. No. 513,222

Claims priority, application Japan, Jan. 20, 1995, 7-006981

Int. Cl.[6] **G11B** *7/00;5/02*

U.S. Cl. 369—124 **9 Claims**



1. A disk apparatus comprising:

a disk medium having a training pattern used for a waveform equalization preliminarily recorded thereon;

an equalizer for equalizing a waveform so as to suppress an interference between bits of a signal waveform obtained by reading said disk medium by a read head;

an error detector for executing a training to adjust an equalization amount of said equalizer so as to minimize an error due to the interference between bits of the read waveform on the basis of said training pattern read out from said disk medium;

a bit pattern detector for detecting a repeat of a predetermined bit pattern included in the read signal of said training pattern and instructing said error detector to start executing a training upon detection of said first bit pattern: and

a counter for counting the number of detection times of said bit pattern by said bit patter detector and instructing said error detector to end training when said number of detection times reaches a predetermined value.

5,623,475

METHOD OF INSCRIBING AND READOUT OF INFORMATION IN AN INFORMATION STORAGE LAYER

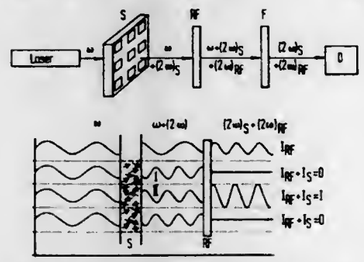
Manfred Pinnow, Teltow, and Rudi Danz, Kleinmachnow, both of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Germany

Filed Mar. 15, 1995, Ser. No. 404,725

Claims priority, application Germany, Mar. 22, 1994, 44 09 851.0

Int. Cl.[6] **G11B** *7/00*

U.S. Cl. 369—126 **20 Claims**



1. A method for inscribing information into and reading information from a layer for information storage containing polarisable polymer film, said method comprising the steps of:

a) applying an electrical field to a polymer film of a layer for information storage to orient dipoles in a unipolar direction to form a noncentro-symmetrical structure;

b) applying an opposing electrical field to the polymer film for inscribing of information by orientation of dipoles in the polymer film in an opposite direction;

c) bringing to interference optical second harmonic signals from the polymer film of the layer for information storage mad optical second harmonic signals of a reference source; and

d) detecting phase shifts of the second harmonic signals from the opposite poled areas in the polymer film of the layer for information storage by registering the interference of the optical second harmonic signals from the polymer film and from the reference source.

5,623,476

RECORDING DEVICE AND REPRODUCTION DEVICE

Ken Eguchi; Haruki Kawada, both of Atsugi; Kunihiro Sakai, Yamato; Hiroshi Matsuda, Yokohama; Yuko Morikawa, Kawasaki; Takashi Nakagiri, Tokyo; Takashi Hamamoto, Yokohama; Masaki Kuribayashi, Inagi; Hisaaki Kawade, and Yoshihiro Yanagisawa, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 740,876, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 668,399, Mar. 14, 1991, abandoned, which is a continuation of Ser. No. 136,728, Dec. 22, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 482,789

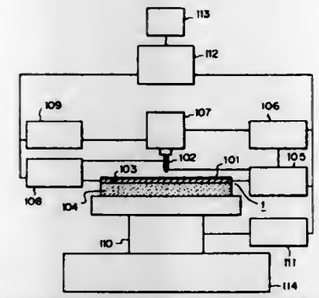
Claims priority, application Japan, Dec. 24, 1986, 61-309433; Dec. 24, 1986, 61-309434; Feb. 19, 1987, 62-36139; Mar. 11, 1987, 62-55851; Mar. 11, 1987, 62-55852; Jul. 31, 1987, 62-191862; Jul. 31, 1987, 62-191863

Int. Cl.[6] **G11B** *9/08*

U.S. Cl. 369—126 **195 Claims**

1. Data writing and storage apparatus comprising:

a memory having a surface and composed of a material which forms the surface and which is constituted by individual segments each having an atomic or molecular scale and each capable of individually undergoing a change in physical state in response to an electrical signal;



an input section for placing each segment into a physical state corresponding to the value of a respective data bit, wherein said segments constitute the sole data bit memory, said input section comprising at least one needle having a fine tip portion dimensioned to apply an electrical signal to an individual memory segment in order to control the physical state of one segment at a time; and

control means for controlling the input section, said control means comprising means for positioning the tip portion of the needle close to the surface of the memory, means for scanning the tip portion of the needle over the surface of the memory and means for controlling a distance between the tip portion of the needle and each individual segment on the surface of the memory while the tip portion of the needle scans thereover to effect change of the physical state of the individual segments to thereby write a data bit into each segment.

87. A recording-reproducing device having a recording portion comprising:

a probe electrode;

a fixed recording medium capable of at least a transition from a first state to a second state exhibiting a different electrical conductivity than the first state, said fixed recording medium being opposed to said probe electrode;

means for applying a writing voltage between said probe electrode and said fixed recording medium to cause the transition in the fixed recording medium according to information to be recorded; and

means for applying a reading voltage between said probe electrode and said fixed recording medium to detect the transition occurring in the fixed recording medium according to recorded information, said fixed recording medium constituting the sole recording portion of said recording-reproducing device.

179. A recording-reproducing device comprising:

a probe electrode;

a recording medium capable of at least a transition from a first state to a second state exhibiting a different electrical conductivity than the first state, said recording medium being opposed to said probe electrode;

means for applying a writing voltage between said probe electrode and said recording medium to cause the transition in the recording medium according to information to be recorded without transfer of atomic particles to or from the surface of the recording medium; and

means for applying a reading voltage between said probe electrode and said recording medium to detect the transition occurring in the recording medium according to recorded information, wherein said recording medium comprises a monomolecular film of an organic compound or a built-up film of the monomolecular film.

188. A recording-reproducing device comprising:

a probe electrode;

a recording medium capable of at least a transition from a first state to a second state exhibiting a different electrical conductivity than the first state, said recording medium being opposed to said probe electrode;

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means for applying a writing voltage between said probe electrode and said recording medium to cause the transition in the recording medium according to information to be recorded without transfer of atomic particles to or from the surface of the recording medium; and

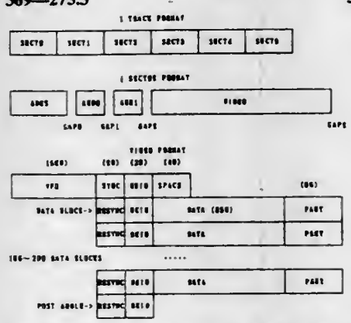
means for applying a reading voltage between said probe electrode and said recording medium to detect the transition occurring in the recording medium according to recorded information, wherein said recording medium comprises an amorphous semiconductor formed of a chalcogenide.

5,623,477

OPTICAL RECORDING DISK CAPABLE OF RESYNCHRONIZATION IN DIGITAL ENCODING AND DECODING

Toshiyuki Shimada, Kadoma, and Takeshi Nakajima, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 212,724, Mar. 14, 1994, Pat. No. 5,546,427. This application Jan. 26, 1996, Ser. No. 592,486
Claims priority, application Japan, Mar. 15, 1993, 5-054186
Int. Cl.[6] G11B *7/24*; H03M *13/00*
U.S. Cl. 369—275.3 **5 Claims**



1. An optical disk having a recording surface including first regions that represent first data and second regions that represent second data;

the first regions and the second regions together representing digital data carried by said disk and RESYNC BYTES present at a certain interval between groups of digital data on said disk;

the first regions and the second regions each having areas that represent the digital data as digital data that is encoded to satisfy a (d,k) conversion rule wherein d is a minimum number of first data and k is a maximum number of first data that separate a datum of the second data, and that represent the RESYNC BYTES as bytes that each include a RESYNC detection part that violates the (d,k) conversion rule, and a bit synchronization part that satisfies the (d,k) conversion rule.

5,623,478

APPARATUS FOR REPRODUCING AN OPTICAL RECORDING MEDIUM HAVING FIRST AND SECOND PIT STRINGS ON OPPOSITE SIDES OF EACH TRACK

Hideyoshi Horimai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 280,181, Jul. 25, 1994, Pat. No. 5,563,872. This application Jun. 5, 1996, Ser. No. 658,464
Claims priority, application Japan, Jul. 26, 1993, 5-183986
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.4 **9 Claims**

1. A reproducing apparatus for reproducing an information signal recorded on an optical recording medium having a first pit



string having a succession of pits and mirror surface sections, the first pit string being formed on one side of a track center as a reference, and a second pit string formed on an opposite side of the track center and having pits and mirror sections in an array which is the logical inverse of the pits and the mirror surface sections of the first pit string, wherein a laser beam radiated onto the track center is used to access information signals represented by the pits and the mirror surface sections, said reproducing apparatus comprising:

an optical pickup for radiating a laser beam having a spot diameter astride said first and second pit strings onto said track center and outputting a detection signal based on the volume of the reflected light,

means for calculating a push-pull signal based upon the detection signal from said optical pickup, and

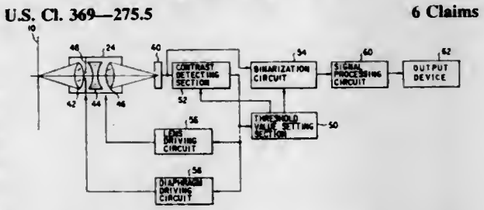
reproducing means for reproducing said information signal based upon polarity inversion of said push-pull signal from said calculating means.

5,623,479

INFORMATION RECORDING MEDIUM HAVING A PROTECTION FILM AND A READING APPARATUS FOR READING OUT INFORMATION FROM THE INFORMATION READING MEDIUM

Koichi Takahashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,249
Claims priority, application Japan, Jun. 16, 1994, 6-134174
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—275.5 **6 Claims**



1. An information recording medium comprising:

an information recording medium base member on which information is recorded by printing, said information being represented by an image formed by a dot pattern having a light refractive index different from a light refractive index of a surface of said information recording medium base member; and

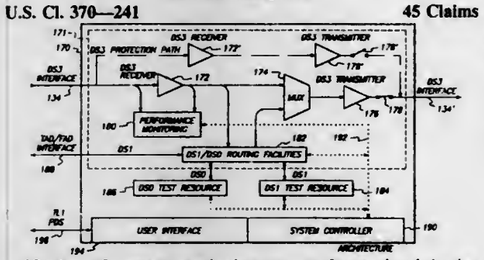
a protection film provided on the dot pattern recorded on said information recording medium base member, said protection film having an optical thickness sufficient to lower a predetermined amount of contrast of a flaw formed on said protection film or dust which has adhered to said protection film, and said protection film contacting an information reading apparatus when the information reading apparatus reads out the dot pattern recorded on said information recording medium base member.

5,623,480

SYSTEM AND METHOD FOR ACCESSING EMBEDDED CHANNELS

Paul R. Hartmann; Thomas L. Engdahl; Kevin Cadieux, all of Escondido, and Kevin Pope, Poway, all of Calif., assignors to Applied Digital Access, Inc., San Diego, Calif.

Division of Ser. No. 118,443, Sep. 7, 1993, which is a continuation-in-part of Ser. No. 862,470, Apr. 2, 1992, abandoned. This application May 26, 1995, Ser. No. 451,676
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—241 **45 Claims**



15. A performance monitoring system for a signal having embedded channels, the system comprising:

a shared resource providing access to at least a portion of the embedded channels;

means for continuously monitoring the accessed channels in the signal, wherein each channel is asynchronous to the signal;

a circuit selectively overwriting one or more bits in at least one of the accessed channels at the signal rate, wherein the bit order of the signal is maintained; and

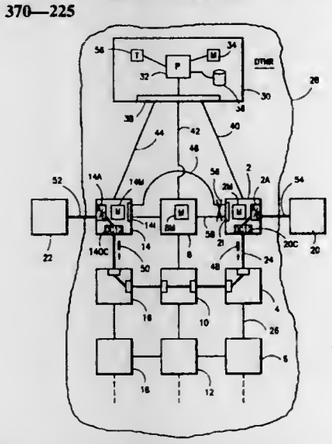
means for continuously monitoring the accessed channels simultaneously with the signal.

5,623,481

AUTOMATED PATH VERIFICATION FOR SHN-BASED RESTORATION

Will Russ, 18081 Midway Rd., #1227, Dallas, Tex. 75287, and Mark W. Sees, 1113 Green Park Dr., Plano, Tex. 75043

Filed Jun. 7, 1995, Ser. No. 483,525
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—225 **19 Claims**



11. In a telecommunications network, a method of verifying an alternate route found in a restorative process initiated in response to a failure of a communications path between two end nodes to restore traffic disrupted by said failure, comprising the steps of:

(a) forwarding one path verifying message from one of said end nodes to other of said end nodes;

(b) forwarding other path verifying message from said other end nodes to said one end node;

(c) comparing said one path verifying message with a previously stored one path verifying message;

(d) comparing said other path verifying message with a previously stored other path verifying message; and

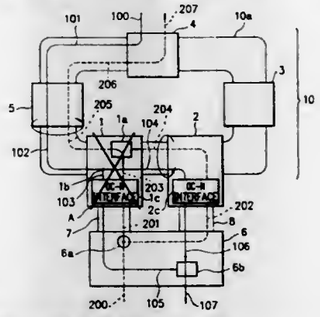
(e) confirming said communications path to be valid if no difference exists between said respective compared messages.

5,623,482

INTERLOCKING APPARATUS

Yasuyo Okanoue, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 28, 1995, Ser. No. 411,536
Int. Cl.[6] H04J *3/14*; G06F *11/16*
U.S. Cl. 370—224 **5 Claims**



1. An interlocking apparatus, comprising:

a ring network connecting a plurality of nodes including first and second nodes, each node having loop back means; and

a supplementary node connected to the first and second nodes,

the first node including:

first sending means for sending out a signal to be sent to the second node and to the supplementary node; and

first selection means for selecting a normal signal from signals sent from the second node and the supplementary node to output the selected signal to a next stage node,

the second node including:

second sending means for sending out the signal sent from the first node to the supplementary node; and

third sending means for sending out a signal sent from the supplementary node to the first node,

the supplementary node including:

fourth sending means for sending out a signal sent to the supplementary node from outside the ring network to the first and second nodes; and

second selection means for selecting a normal signal from signals sent from the first and second nodes to output the selected signal outside the ring network.

5,623,483

SYNCHRONIZATION SYSTEM FOR NETWORKED MULTIMEDIA STREAMS

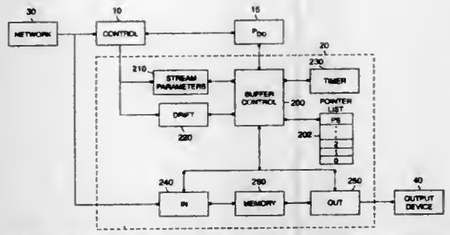
Prathima Agrawal; Balakrishnan Narendran, both of New Provideuce, N.J.; Narayanan Shivakumar, Stanford, Calif., and Cormac J. Sreenan, Green Village, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 11, 1995, Ser. No. 439,041
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—253 **37 Claims**

1. A data stream synchronization system comprising.

a configuration control circuit having an input connected to receive initialization parameters, said initialization parameters including an acceptable packet loss rate (APLR) which comprises an acceptable rate for purposefully discarding packets;

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a data buffer having a data input connected to receive data from a network and a data output connected to provide data to one or more receivers;

said configuration control circuit, having an output connected to said data buffer for sending buffer configuration signals to said data buffer;

said configuration control circuit calculates a first total end-to-end delay (TED) value as a function of said APLR and sends a first buffer configuration signal generated as a function of said first TED value to said data buffer;

said data buffer initializes a first stream buffer in response to said first buffer configuration signal;

said data comprising one or more data streams each having a first data packet and a plurality of subsequent data packets, each said data packet having a packet ID indicative of a respective position within said data stream;

said data buffer receives said data packets and outputs said data packets according to said first TED value and said packet ID, said data buffer discarding selected ones of said data packets arriving too late to be output within said TED.

5,623,484

METHOD AND APPARATUS FOR CONTROLLING SIGNAL QUALITY IN A CDMA CELLULAR TELECOMMUNICATIONS

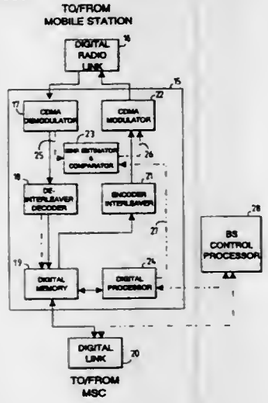
Peter Muszynski, Helsinki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI93/00386, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO95/08876, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 24, 1993, Ser. No. 307,689

Int. Cl.[6] H04J *13/04*

U.S. Cl. 370—335 **12 Claims**



1. A system for controlling the quality of radio signals on active code division multiple access (CDMA) communication links between a plurality of mobile stations and a plurality of base stations connected to a mobile switching center of a CDMA cellular telecommunications system, wherein:

each of said base stations is adapted to measure the quality of each said active CDMA communication link and to report, for each active CDMA radio communication over each said link, to said mobile switching center, each corresponding measured value of communication signal quality;

said mobile switching center is adapted to perform an averaging of said measured values of communication signal quality, for calculating a recommended quality measure threshold value;

said base stations are adapted to receive said recommended quality measure threshold value from said mobile switching center; and

said base stations are arranged to control power of their respective transmissions by said mobile stations, by an uplink closed-loop power control algorithm, for maintaining the quality of radio signals on each said active CDMA communication link maximally close to said recommended threshold value.

5,623,485

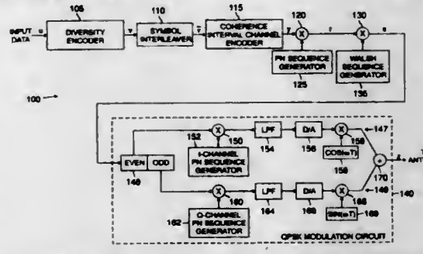
DUAL MODE CODE DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM AND METHOD

Qi Bi, Morris Plains, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 21, 1995, Ser. No. 392,014

Int. Cl.[6] H04B *7/216*; H04J *13/02*

U.S. Cl. 370—209 **48 Claims**



1. Apparatus for transmitting data signals in a CDMA spread spectrum transmission system comprising:

a coherence interval channel encoder having an input and an output, the input being operable to receive an input data signal, wherein the coherence channel encoder is capable of processing an input data signal into encoded data blocks;

an orthogonal function encoder having an input and an output, the input being connected to the channel encoder output, wherein the orthogonal function encoder combines a data signal received at its input with a particular orthogonal function sequence to form a spread data signal which is provided to the output; and

a pseudo-noise (PN) channel modulator having an input and an output, the input being connected to the orthogonal function encoder output, wherein the PN channel modulator combines the spread signal with at least one PN sequence and modulates the resulting data signal, and wherein the generated encoded data blocks are of sufficiently short length to minimize phase shift of the transmitted modulated data signal at a receiver to enable the receiver to perform coherent detection of the data signal.

5,623,486

TRANSMISSION POWER CONTROL METHOD AND APPARATUS FOR MOBILE COMMUNICATIONS USING A CDMA (CODE DIVISION MULTIPLE ACCESS) SYSTEM

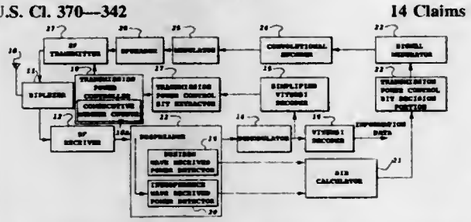
Tomohiro Dohi, Yokohama; Mamoru Sawabashi, Yokosuka, and Koji Ohno, Yokohama, all of Japan, assignors to NTT Mobile Communication Network Inc., Tokyo, Japan

Filed May 17, 1995, Ser. No. 442,955

Claims priority, application Japan, May 20, 1994, 6-106940; Apr. 3, 1995, 7-077938

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—342 **14 Claims**



8. A transmission power control apparatus for radio communications using a CDMA (Code Division Multiple Access) system, said apparatus controlling transmission power of a first transmitted signal radiated from a first station in accordance with a transmission power control signal contained in a second transmitted signal sent from a second station and received at the first station, said first and second transmitted signal being expressed in the form of convolutional codes, said apparatus comprising:

means for decoding, at the first station, said second transmitted signal by using a first Viterbi decoder including a path memory with a path history length of a first predetermined length;

means for decoding, at the first station, said second transmitted signal by using a second Viterbi decoder including a path memory with a path history length of a second predetermined length which is shorter than said first predetermined length;

means for extracting, at the first station, said transmission power control signal contained in said second transmitted signal from an output of said second Viterbi decoder;

means for controlling, at the first station, the transmission power of said first transmitted signal of said first station by using said transmission power control signal extracted from the output of said second Viterbi decoder; and

means for obtaining, at the first station, information data other than said transmission power control signal from an output of said first Viterbi decoder.

5,623,487

DOUBLY ORTHOGONAL CODE AND FREQUENCY DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM

Francis D. Natali, Pt. Townsend, Wash., assignor to Stanford Telecommunications, Inc., Sunnyvale, Calif.

Filed May 19, 1995, Ser. No. 444,749

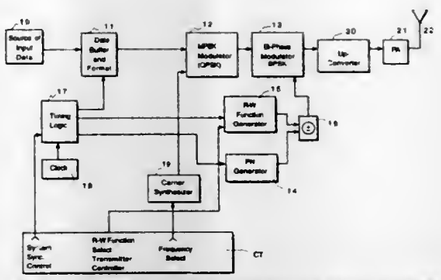
Int. Cl.[6] H04J *11/00;13/00*

U.S. Cl. 370—342 **4 Claims**

1. An orthogonal code division multiple access (OCDMA) radio communication system having at least one base station and a plurality of subscriber/user terminals, for communicating data, a transmitter means including:

MPSK modulator means connected to receive said data,

a biphase modulator (BPSK) means connected to said MPSK modulator,



an RW function set generator having means to select a given RW function set, each RW function having a predetermined RW chipping rate,

a carrier frequency synthesizer connected to said MPSK modulator generating selectable carrier frequencies which are spaced by the RW chipping rate,

a PN code generator to provide a selected PN code signal,

means for summing a selected given RW function signal set with said PN code signal and provide a spreading function signal to said biphase modulator means, said biphase modulator means outputting a composite signal of outputs from said MPSK modulator means and said spreading function signal, said selected RW function set being one member of a set binary sequences which are orthogonal over a symbol period, and

means to up-convert the composite signal from said biphase modulator to a broadcast frequency band for transmission.

5,623,488

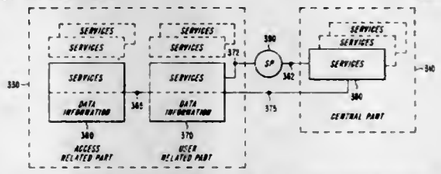
CALL SET-UP SERVER

Anders C. Svennevik, Stockholm, and Stefan R. Lundberg, Tyresö, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 29, 1995, Ser. No. 496,668

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—360 **7 Claims**



1. In a system for transferring data in a communications network, comprising network terminals and a transmission backbone a call set-up server for handling call control, the call set-up server comprising:

an access part holding information representing physical equipment in the network, which controls how a call is represented to the network by the physical equipment, and how the call is represented to the physical equipment by the network,

a user part holding information representing a user, which selects services based on the user information, independently of the information held in the access part,

a central part representing services, which orders a connection to be set up between two parties in the network independently of the information in the access part and the user part,

a service pointer which works together with the user part to select services to be performed, and communicates separately with the central part and the user part, and

interfaces connecting the access part to the user part, the user part to the central part, the user part to the service pointer, and the service pointer to the central part, for permitting interaction between the parts.

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5,623,489

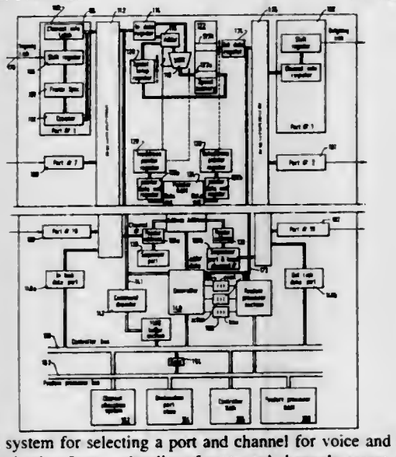
CHANNEL ALLOCATION SYSTEM FOR DISTRIBUTED DIGITAL SWITCHING NETWORK

John M. Cotton, East Norwald, and Gary V. Pieper, Wallingford, both of Conn., assignors to IPC Information Systems, Inc., Stamford, Conn.

Continuation of Ser. No. 766,062, Sep. 26, 1991, abandoned. This application Apr. 17, 1995, Ser. No. 424,587

Int. Cl.[6] H04L *12/52*

U.S. Cl. 370—381 **34 Claims**



1. A system for selecting a port and channel for voice and data communication from a plurality of ports and channels across each switch element in a multi-stage network, comprising:

means in each switch element of the multi-stage network for storing information on the free/busy state of a plurality of channels of each port thereof;

means for searching said means for storing to determine which of said plurality of channels of each port of the switch element are in the free state;

means for selecting one of said plurality of channels determined by said means for searching to be in the free state, and for providing identification of the selected channel and related port to a switching means;

wherein each stage of the multi-stage network includes a plurality of switch elements, each switch element including a plurality of ports, each port including a plurality of channels.

5,623,490

METHOD AND APPARATUS FOR MULTIPLE MEDIA DIGITAL COMMUNICATION SYSTEM

Andreas Richter, and Ogden C. Reed, Jr., both of Philadelphia, Pa., assignors to Intelligence-at-Large, Philadelphia, Pa.

Continuation of Ser. No. 73,956, Jun. 9, 1993, abandoned. This application Apr. 2, 1996, Ser. No. 626,580

Int. Cl.[6] H04L *12/56*

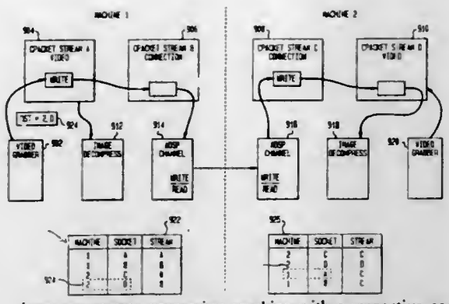
U.S. Cl. 370—263 **52 Claims**

1. A method of communicating media data packets from a first processing machine to at least one remote processing machine connected to said first processing machine over a communication system, said method comprising the steps of:

enabling at said first processing machine a respective connection processing stream for each remote processing machine with which said first processing machine communicates over said system during a connection;

enabling at said first processing machine at least one media processing stream associated with each said connection processing stream;

establishing an address table in said first processing machine which associates a media processing stream located in said at



least one remote processing machine with a respective connection processing stream in said first processing machine;

processing with said media processing stream in said first machine at least one type of media data to produce media data packets;

consulting said address table to determine a communication path for sending said media data packets to a media processing stream located at said remote processing machine; and

transmitting said media data packets to said remote processing machine through a said connection stream associated with said media processing stream in said first processing machine and with an address of said media processing stream at said remote processing machine.

5,623,491

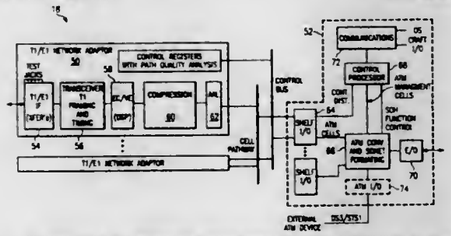
DEVICE FOR ADAPTING NARROWBAND VOICE TRAFFIC OF A LOCAL ACCESS NETWORK TO ALLOW TRANSMISSION OVER A BROADBAND ASYNCHRONOUS TRANSFER MODE NETWORK

Frederick H. Skoog, Colleyville, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Mar. 21, 1995, Ser. No. 408,698

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—397 **11 Claims**



1. A device for adapting narrowband voice traffic of a local access network to allow transmission over a broadband asynchronous transfer mode network, comprising:

a signal interface circuit operable to receive narrowband voice traffic from and send narrowband voice traffic to the local access network;

a transceiver circuit operable to provide framing and timing conversion functions to the narrowband voice traffic;

an echo canceler circuit operable to eliminate voice band echo from he narrowband voice traffic regardless of a transmission path over the broadband asynchronous transfer mode network;

a compressor circuit operable to compress and decompress the narrowband voice traffic in order to reduce a signal capacity transferred over the broadband asynchronous transfer mode network;

a cell adaptor circuit operable to convert the narrowband voice traffic to and from asynchronous transfer mode cells; and

a formatter circuit operable to transfer and receive synchronous optical network signals carrying said asynchronous transfer

mode cells to and from the broadband asynchronous transfer mode network, respectively.

5,623,492

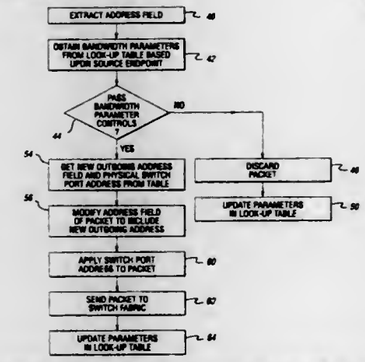
METHODS AND SYSTEMS FOR MANAGING BANDWIDTH RESOURCES IN A FAST PACKET SWITCHING NETWORK

Kari Teraslinna, Boulder, Colo., assignor to U S West Technologies, Inc., Boulder, Colo.

Filed Mar. 24, 1995, Ser. No. 410,369

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—397 **6 Claims**



1. A method of resource management in a fast packet switching network having a plurality of endpoints, the method comprising the steps of:

receiving a packet having an address field which contains a first label which identifies a source endpoint and a second label which identifies a destination endpoint;

obtaining a parameter from a look-up table indexed by the first label, wherein the parameter is indicative of a bandwidth usage associated with the source endpoint; and

enforcing a bandwidth constraint based upon the source endpoint identified by the address field, wherein the bandwidth constraint is enforced independently of the destination endpoint.

5,623,493

MULTIPLEXER DEMULTIPLEXER SWITCHING DEVICE AND NETWORK ADAPTER

Tetsuya Kagemoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,213

Claims priority, application Japan, Apr. 21, 1994, 6-083363

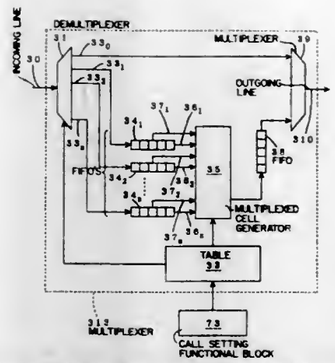
Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—397 **18 Claims**

1. A multiplexer in an asynchronous transfer mode network for multiplexing a plurality of demultiplexed virtual channels transmitting voice signals to a multiplexed virtual channel, said multiplexer comprising:

(a) a table capable of registering correspondences between virtual channel identifiers of said plurality of demultiplexed virtual channels transmitting voice signals among virtual channels being set on an incoming line and positions in an information field of a multiplexed cell belonging to said multiplexed virtual channel among virtual channels being set on an outgoing line; and

(b) cell multiplexing means for receiving demultiplexed cells being inputted from said incoming line and storing signals being stored in information fields of said demultiplexed cells belonging to a plurality of said demultiplexed virtual channels in prescribed positions of said information field of said mul-



tiplexed cell on the basis of said correspondence being register in said table for transmitting said multiplexed cell to said outgoing line.

5,623,494

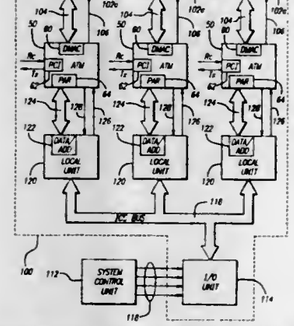
ASYNCHRONOUS TRANSFER MODE (ATM) INTERCONNECTION SYSTEM FOR MULTIPLE HOSTS INCLUDING ADVANCED PROGRAMMABLE INTERRUPT CONTROLLER (APIC)

Michael D. Rostoker, Boulder Creek, Calif.; Sushant Verman, Mississauga, Canada; Richard Egan, San Carlos, and Jerry E. Chow, Sunnyvale, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 7, 1995, Ser. No. 472,475

Int. Cl.[6] H04Q *11/04*; **H04U** *3/08*

U.S. Cl. 370—397 **46 Claims**



1. A system for connecting an electronic data network to a plurality of host units, the network transferring data in the form of cells, comprising:

(a) a plurality of termination units connected between the network and the host units respectively, each termination unit comprising:

(1) a cell memory for storing cells;

(2) a processor for converting cells between a data network format and a host format;

(3) a network interface for transferring cells in the network format between the cell memory, the processor and the network; and

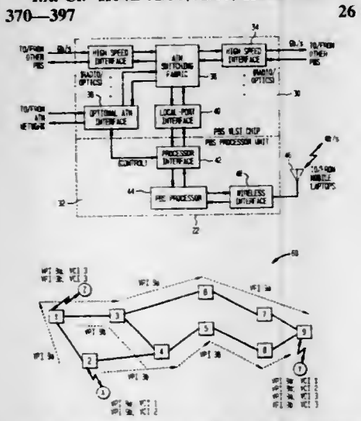
(4) a host interface for transferring cells in the host format between the cell memory, the processor and a respective host unit;

(5) each said processor comprising:

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(i) a computing unit; and
(ii) an instruction memory for storing a program for controlling the computing unit;
(b) an Advanced Programmable Interrupt Controller (APIC) system for distributing interrupts from the network to the host units, the APIC system comprising:
(1) a plurality of local units for prioritizing and passing interrupts to the termination units respectively; and
(2) an Input/Output (I/O) unit for receiving interrupts from the network, and feeding interrupts to local units corresponding to host units to which interrupts are addressed.

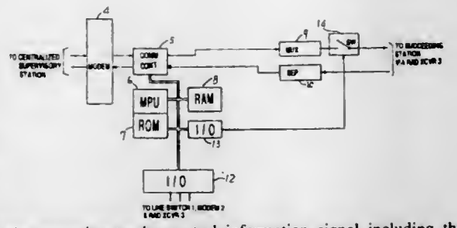
5,623,495
PORTABLE BASE STATION ARCHITECTURE FOR AN AD-HOC ATM LAN
Kal Y. Eng, Atlantic Highlands; Mark J. Karol, Fair Haven, and Clark Woodworth, Rumson, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jun. 15, 1995, Ser. No. 490,979
Int. Cl.[6] H04L *12/56;12/66;* **H04B** *7/26*
U.S. Cl. 370—397 **26 Claims**



1. A portable base station (PBS) switching apparatus for communicating ATM cells, said apparatus comprising:
one or more input ports for receiving incoming ATM cells;
one or more output ports for transmitting ATM cells; and
ATM switching fabric, said ATM switching fabric adapted for destination routing of said incoming ATM cells, said switching apparatus having a unique identification assigned thereto, wherein said switching fabric is operable to perform VPI translation on only said ATM cells having a destination VPI corresponding to said unique identification of said switching apparatus.

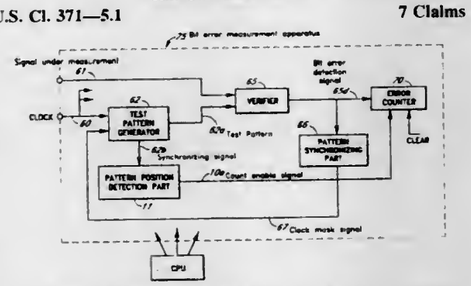
5,623,496
APPARATUS AND A METHOD FOR SETTING STATION-IDENTIFYING INFORMATION IN A STATION OF A COMMUNICATION SYSTEM
Yasuo Sagi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Jul. 28, 1995, Ser. No. 508,484
Claims priority, application Japan, Dec. 1, 1994, 6-298161
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—475 **22 Claims**

11. A method for setting station-identifying information in a first station of a communication system including a second station and a plurality of the first stations connected in series, the second station interchanging control information signal including station-identifying information with one of the first stations, the first stations interchanging the control information signal and being



each responsive to the control information signal including the same station-identifying information as previously set in the first station, for controlling the first station and adding control information to the control information signal, said method comprising the steps of:
(a) in the second station, sending to the first station, a control information signal including setting data and a command instructing the station-identifying information be set;
(b) in the first station, setting the setting data as station-identifying information based on the control information signal received by the first station; and
(c) in the first station, transferring the received control information signal to a succeeding first station.

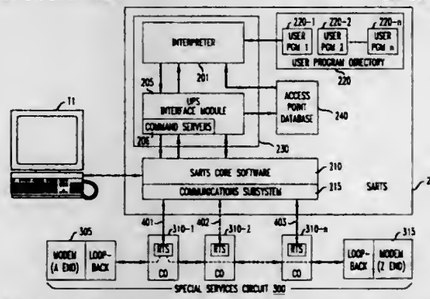
5,623,497
BIT ERROR RATE MEASUREMENT APPARATUS
Kazuhiro Shimawaki, Gyoda; Tetsuo Sotome, Tatebayashi, and Takayuki Nakajima, Gyoda, all of Japan, assignors to Advantest Corporation, Tokyo, Japan
Filed Feb. 9, 1995, Ser. No. 386,660
Claims priority, application Japan, Feb. 9, 1994, 6-036527
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.1 **7 Claims**



1. A bit error measurement apparatus which measures an error rate of an incoming signal with respect to a selected region of a test pattern, comprising:
a test pattern generator which generates a test pattern for verifying said incoming signal to be tested;
a verifier which receives said incoming signal and said test pattern and generates an error detection signal when said incoming signal and said test pattern disagree;
a pattern position detector connected to said pattern generator to detect a measurement region of said test pattern when receiving a synchronizing signal from said test pattern generator, said pattern position detector generating a count enable signal corresponding to said detected measurement region, said measurement region being determined by a lower limit value and an upper limit value stored in said pattern position detector; and
an error counter connected to said verifier to count said error detection signal, an operation of said error counter being controlled by said count enable signal from said pattern position detector;
wherein said pattern position detector comprising:

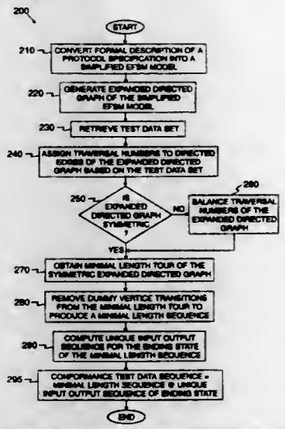
a pattern counter for receiving said synchronizing signal from said test pattern generator and counting the number of generation sequence of said test pattern by said test pattern generator;
a lower limit comparator connected to said pattern counter to receive an output value of said pattern counter representing said number of said generation sequence of said test pattern;
a lower limit register connected to said lower limit comparator to provide said lower limit value defining one end of said measurement region of said test pattern to said lower limit comparator;
said lower limit comparator comparing said output value of said pattern counter and said lower limit value from said lower limit register, said lower limit comparator generating a lower limit detection signal when said output value of said pattern counter reaches said lower limit value;
an upper limit comparator connected to said pattern counter to receive said output value of said pattern counter;
an upper limit register connected to said upper limit comparator to provide said upper limit value defining the other end of said measurement region of said test pattern to said upper limit comparator;
said upper limit comparator comparing said output value of said pattern counter and said upper limit value from said upper limit register, said upper limit comparator generating an upper limit detection signal when said output value of said pattern counter reaches said upper limit value; and
a count enable signal generator which receives output signals from said lower limit comparator and said upper limit comparator and generates said count enable signal for said error counter on the basis of said output signals from said comparators.

5,623,498
USER PROGRAMMABLE TEST ARRANGEMENT FOR A TELECOMMUNICATIONS NETWORK
L. V. Pannone, Manalapan, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.
Filed Mar. 31, 1995, Ser. No. 414,082
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.1 **10 Claims**



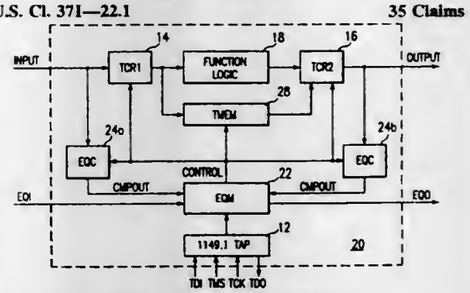
9. A system for testing a special services circuit comprising:
a program directory for storing a plurality of programs for testing respective ones of a plurality of special services circuit,
a software system for responding to a user request to test one of said special services circuit and for interfacing said special services circuit with a particular one of said programs that is designed to test said special services circuit, and
an interpreter for executing a sequence of instructions forming said one of said programs such that, responsive to executing a generic instruction, generating at least one primitive command designed to direct a remote test system to perform said testing on an associated section of said special services circuit, said primitive command being customized to perform said testing based on the type of remote test system that is associated with said section.

5,623,499
METHOD AND APPARATUS FOR GENERATING CONFORMANCE TEST DATA SEQUENCES
Ya-Tien Ko, Manalapan, and Sanjoy Paul, Atlantic Highlands, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jun. 27, 1994, Ser. No. 267,109
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—22.1 **9 Claims**



7. A method for generating an expanded directed graph for a simplified extended finite state machine for use in generating a conformance test data sequence, the method comprising the steps of:
representing each state of the simplified extended finite state machine by a state vertex connected to a dummy vertex with a directed edge; and
connecting the vertices representing each state to each other by directed edges in a manner corresponding to the operation of the simplified extended finite state machine.

5,623,500
EVENT QUALIFIED TEST ARCHITECTURE
Lee D. Whetsel, Jr., Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 563,579, Aug. 6, 1990, abandoned.
This application Oct. 13, 1995, Ser. No. 542,746
Int. Cl.[6] G06F *15/76*
U.S. Cl. 371—22.1 **35 Claims**



1. An event qualified test architecture comprising:
test circuitry for performing one or more predetermined test functions, the predetermined test functions testing function logic circuitry under test;
at least one event qualification cell having an internal memory and a compare circuit for comparing data input into the event qualification cell with data stored in said internal memory to indicate the occurrence of a predetermined event condition on

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said data input and generating a compare signal responsive to the detection of said predetermined event condition by said compare circuit; and

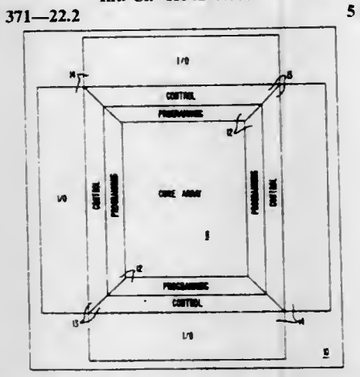
control circuitry coupled to said test circuitry for controlling the test circuitry in starting and stopping said one or more predetermined tests, said control circuitry being responsive to said compare signal.

5,623,501

PREPROGRAMMING TESTING IN A FIELD PROGRAMMABLE GATE ARRAY

Laurence H. Cooke; Christopher E. Phillips, both of San Jose, and William J. Allen, Cupertino, all of Calif., assignors to Crosspoint Solutions Inc., Santa Clara, Calif.

Division of Ser. No. 801,237, Dec. 3, 1991, Pat. No. 5,347,519.
This application Aug. 3, 1994, Ser. No. 285,544
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—22.2 **5 Claims**



1. An integrated circuit having a plurality of terminals for providing electrical paths to and from said integrated circuit, said integrated circuit comprising

an array of MOS transistors, each MOS transistor having a first source/drain, a second source/drain, and a gate;

a plurality of line segments connected to said source/drains and gate of each MOS transistor; and

means for accessing a selected MOS transistor from selected ones of said terminals responsive to address signals to others of said terminals to create a first path between a first selected one of said terminals and a first selected line segment connected to the first source/drain of said selected MOS transistor, a second path between a second selected one of said terminals and a second selected line segment connected to the second source/drain of said MOS transistor, and a third path between a third selected one of said terminals and a third selected line segment connected to the gate of said MOS transistor, so that said first, second, and third selected line segments are accessible via said first, second, and third paths respectively.

5,623,502

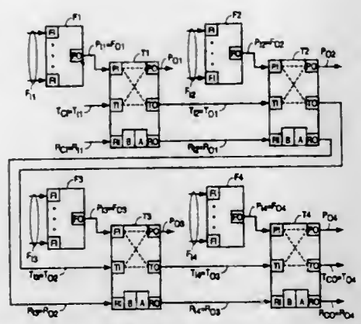
TESTING OF ELECTRONIC CIRCUITS WHICH TYPICALLY CONTAIN ASYNCHRONOUS DIGITAL CIRCUITRY

Hans H. Wang, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 15, 1994, Ser. No. 275,896
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **52 Claims**

1. An electronic circuit comprising:

a plurality of functional elements, each producing a function output signal; and



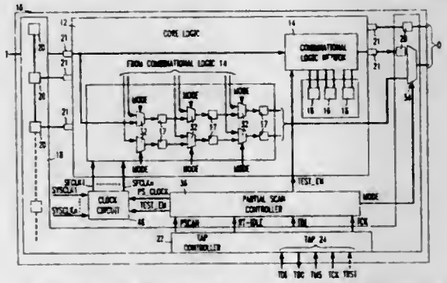
a like plurality of test elements respectively corresponding to the functional elements, each test element having (a) a primary input that receives a primary input signal as the function output signal of the corresponding functional element, (b) a test input that receives a test input signal, and (c) a test output, the test elements being arranged in series by way of their test inputs and test outputs such that the test output of each test element up to the last one is coupled to the test input of the next test element, each test element being capable of being switched between a transparent internal condition in which its test input signal is provided asynchronously to its test output and an observability internal condition in which its primary input signal is provided asynchronously to its test output.

5,623,503

METHOD AND APPARATUS FOR PARTIAL-SCAN TESTING OF A DEVICE USING ITS BOUNDARY-SCAN PORT

Paul W. Rutkowski, Bridgewater, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 188,872, Jan. 31, 1994, abandoned.
This application Jul. 2, 1996, Ser. No. 668,502
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **6 Claims**



1. A method for effecting Partial-Scan testing of a Boundary-Scan architecture integrated circuit having primary outputs and primary inputs, the circuit including a plurality of flip-flops partitioned into scan flip-flops and non-scan flip-flops, a Test Access Port (TAP) and a TAP controller, the method comprising the steps of:

loading a first Partial-Scan test instruction through the TAP of the integrated circuit to the TAP controller to place the TAP controller in a stable one of its states;

loading at least one subsequent Partial-Scan instruction through the TAP controller to a Partial-Scan controller;

executing, at the Partial-Scan controller, each subsequent Partial-Scan instruction to generate a set of Partial-Scan control signals in accordance with said subsequent Partial-Scan control instruction; and

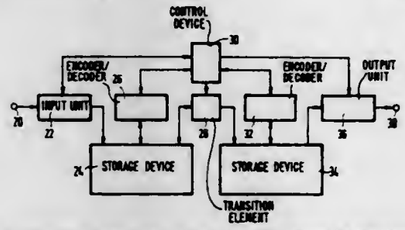
applying the Partial-Scan control signals to the integrated circuit to cause the integrated circuit to undergo Partial-Scan testing, whereupon (1) the scan flip-flops are first loaded with test data while the non-scan flip-flops are held in a constant state, (2) the integrated circuit (including the non-scan flip-flops) is rendered operative to react to the data in the scan flip-flops and to externally applied test data at the primary inputs so that new values may be present in the scan flip-flops and at the integrated circuit primary outputs depending on the defects in the integrated circuit, and (3) the data is then shifted from the scan flip-flops for comparison to a reference data stream indicative of integrated circuit operation when on defects are present.

5,623,504

METHODS AND APPARATUS FOR ENCODING AND/OR DECODING DIGITAL DATA ELEMENTS WITH DIFFERENT DEGREES OF ERROR PROTECTION IN ACCORDANCE WITH A QUASI-PRODUCT CODE

Ludovicus M. G. M. Tolhuizen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1993, Ser. No. 167,266
Claims priority, application European Pat. Off., Dec. 14, 1992, 92203891
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—37.4 **13 Claims**



1. A method for encoding digital data elements of a uniform size with at least two different degrees of error protection in a data block in accordance with a quasi-product code, the method comprising:

receiving the data elements at an input of an encoding device;

encoding the data elements in the data block by performing the following within the encoding device:

distributing the data elements upon receipt over an array of at least two dimensions, made up of lines in each of the at least two dimensions, so that at least two lines in a first one of the dimensions have a different number of data elements therein;

supplementing the data elements in the first one of the dimensions with first redundant elements of the uniform size in accordance with one or more first systematic codes so that all lines in that dimension containing one or more data elements therein have the same number of elements therein and each of those lines contains at least one separate first redundant element therein, the at least one separate first redundant element in each line in the first one of the dimensions containing one or more data elements therein providing error protection to the one or more data elements contained in that line; and

supplementing the data elements and the first redundant elements in a second one of the dimensions with second redundant elements of the uniform size in accordance with one or more second systematic codes so that all lines in that dimension containing one or more data elements and/or first redundant elements therein have the same number of elements therein and each of those lines contains at least one separate second redundant element in each line in the second one of the dimensions containing one or more data elements and/or first redundant elements therein providing error protection to the one or more data elements and/or first redundant elements contained in that line; and

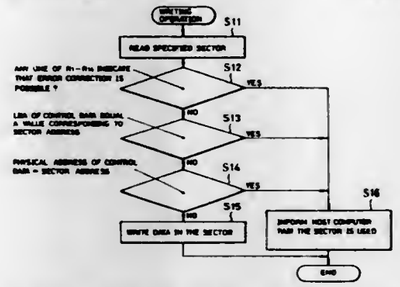
outputing the data block at an output of the encoding device.

5,623,505

APPARATUS FOR DETECTING PRESENCE OF INFORMATION DATA FOR USE IN RECORDING MEDIUM PLAYING APPARATUS

Kyota Funamoto; Takashi Morimae, and Ken Masui, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 905,390, Jun. 29, 1992, abandoned.
This application Nov. 8, 1994, Ser. No. 338,789
Claims priority, application Japan, Jan. 7, 1992, 4-001019
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—40.1 **9 Claims**



1. An information data detecting apparatus for use in a recording medium playing apparatus for executing data writing and reading to a recording medium having a plurality of sectors, sector by sector, comprising:

means for writing address data, representing an address of said specified sector, in at least one data field of a specified sector when data is written in said specified sector;

reading means for reading, upon receipt of a writing instruction indicating that additional data is to be written to said specified sector, contents of said specified sector and providing a read signal representing said contents of said specified sector, each of said sectors being identified by an address and having at least one data field;

error correcting means for extracting digital data from the read signal, performing an error-correcting operation on the extracted digital data, producing an error-correctable indicating flag when error correction is possible, and producing a non-error-correctable flag when error correction is not possible; and

means for performing the following operations:

producing a written-state signal indicating that the specified sector is used when the error-correctable indicating flag is detected;

comparing, in response to issuance of said non-error-correctable flag, first data representing the address of said specified sector with a portion of said read signal representing said address data stored in said at least one data field of said specified sector and providing an equal signal when said first data equals said stored address data; and

producing, in response to said equal signal and before said additional data is written to said specified sector, a second written-state signal indicating that data, other than said address data, is stored in said specified sector.

VOL 1197 ISS 4 APR 22 1997 UMI

5,623,506

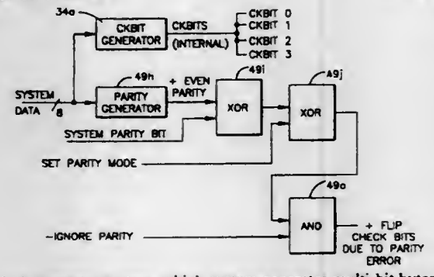
METHOD AND STRUCTURE FOR PROVIDING ERROR CORRECTION CODE WITHIN A SYSTEM HAVING SIMMS

Timothy J. Dell, Colchester, Vt., and Jimmy G. Foster, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 188,245, Jan. 28, 1994, Ser. No. 187,859, Jan. 28, 1994, Pat. No. 5,379,307, and Ser. No. 227,444, Apr. 14, 1994, which is a continuation-in-part of Ser. No. 188,245, and Ser. No. 187,859. This application Dec. 15, 1994, Ser. No. 356,098

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—40.1 **19 Claims**



1. A computer system, which system generates multi-bit bytes of data and multi-byte data words, said system comprising:

a memory controller programmed to operate at a given speed;

logic to generate check bits from and specific to each data byte written;

a memory module having RAMs to store generated data bits and generated check bits;

logic to read said data bytes and associated check bits from the memory module and generate new check bits and compare the newly-generated check bits with the stored check bits to correct and output all single-bit errors;

said system being configured to allow said RAMs to operate at least about 10 nanoseconds faster than the speed at which the memory controller is programmed to operate.

5,623,507

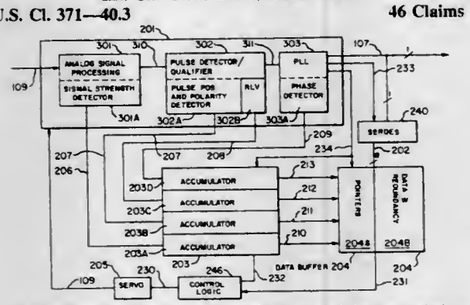
ERROR POINTERS FOR ENHANCED ERROR CORRECTION

Kenneth R. Burns, Nederland; Neal Glover, Broomfield, and Hossein F. Sevvom, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Sep. 13, 1991, Ser. No. 759,219

Int. Cl.[6] G11C *29/00*; G06F *11/00*

U.S. Cl. 371—40.3 **46 Claims**



1. Apparatus for correcting errors in corrupted data recorded on one of a plurality of drive modules, said plurality of drive modules being serviced by a common control module, said apparatus comprising:

means for applying data signals recorded on said one drive module to an input of a signal processing means,

said signal processing means being responsive upon the receipt of said data signals applied to said input for determining the binary value of each received data signal,

at least one signal quality detector in said signal processing means connected to said input for determining whether each said received data signal is of a high quality that permits said signal processing means to determine with confidence the binary value represented by said each received data signal,

said signal quality detector being responsive to each determination by said signal quality detector to generate pointer information indicating whether said signal processing means has high or low confidence in its ability to determine the binary value represented by the received data signal associated with said determination by said signal quality detector,

means for applying binary data signals to said common control module connected to an output of said signal processing means with said binary data signals representing the binary values determined by said signal processing means for a plurality of received data signals,

means connecting said signal processing means and said common control module for applying said pointer information to said common control module only when said binary data signals applied to said common control module represent corrupted received data signals for which said signal processing means has low confidence, and

said common control module being responsive to the receipt of said pointer information for correcting errors in said corrupted data signals received by said common control module.

5,623,508

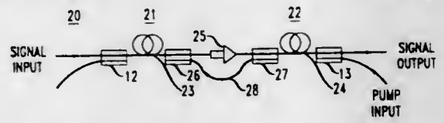
ARTICLE COMPRISING A COUNTER-PUMPED OPTICAL FIBER RAMAN AMPLIFIER

Stephen G. Grubb, Warren; Andrew J. Stentz, Scotch Plains, and Kenneth L. Walker, New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 12, 1996, Ser. No. 600,389

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—3 **10 Claims**



1. An article comprising an optical fiber Raman amplifier comprising

a) an input port;

b) an output port;

c) an optical fiber path that signal-transmissively connects said input and output ports, said optical fiber path comprising silica-based amplifier fiber; and

d) means for introducing a first pump radiation of wavelength λ_p less than a signal wavelength λ_s into said silica-based amplifier fiber such that the first pump radiation propagates in said silica-based amplifier fiber in an upstream direction towards said input port;

characterized in that

e) said silica-based amplifier fiber comprises at least a first length L_1 of amplifier fiber and a second length L_2 of amplifier fiber, with the first length being upstream of the second length, and L_1+L_2 being at least 200 m;

f) the optical fiber Raman amplifier comprises an optical isolator disposed between said first and second lengths of amplifier fiber such that passage of at least radiation of wavelength λ_s from the second to the first length of amplifier fiber is substantially blocked;

g) the optical fiber Raman amplifier further comprises a pump radiation path that is closed upon itself and includes at least a portion of said silica-based amplifier fiber, said pump radiation path selected such that said first pump radiation can circulate therein; and

h) the pump radiation path comprises means for introducing a second pump radiation of wavelength $\lambda_p<\lambda_p$ into the pump radiation path, and furthermore comprises wavelength-selective first reflective means adapted for substantially blocking passage of said second pump radiation through said first reflective means.

5,623,509

SEMICONDUCTOR LASER AND LIGHT-SENSING DEVICE USING THE SAME

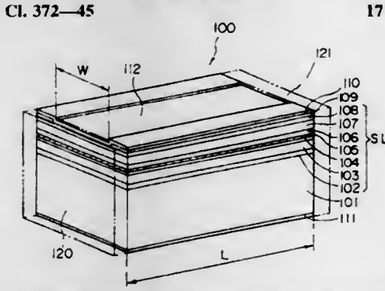
Hideaki Iwano; Osamu Yokoyama, and Hiroaki Nomura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,886

Claims priority, application Japan, Mar. 1, 1994, 6-056580

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **17 Claims**



1. A semiconductor laser comprising a substrate formed of a compound semiconductor of a first conductivity type, semiconductor layers deposited on one surface of said substrate, a current constriction layer having at least one stripe-shaped current injection region, and a pair of reflective layers formed on edge surfaces of said substrate and said semiconductor layers, wherein:

said semiconductor layers comprise:

a first cladding layer of the first conductivity type positioned on said substrate side,

a first optical waveguide layer of the first conductivity type formed on said first cladding layer,

an active layer formed on said first optical waveguide layer and having a quantum-well structure,

a second optical waveguide layer of a second conductivity type formed on said active layer,

a second cladding layer of the second conductivity type formed on said second optical waveguide layer, and

a contact layer formed on said second cladding layer, and a blocking layer formed between at least one pair of said first cladding layer and said first optical waveguide layer, and said second cladding layer and said second optical waveguide layer; and wherein

said active layer has flatness of such a degree that roughness with respect to a reference surface within a unit area of 1 mm×1 mm is no more than ±0.1 μm,

the width of said current injection region of said current constriction layer is between 100 μm to 250 μm,

the resonator length is between 500 μm to 1,000 μm;

the value of x in the $Al_xGa_{1-x}As$ of said first cladding layer and said second cladding layer is between 0.20 and 0.40; and

said blocking laayer has a film thickness of 10 to 20 nm, and the value of x in the $Al_xGa_{1-x}As$ of said blocking layer is 0.30 to 0.60.

5,623,510

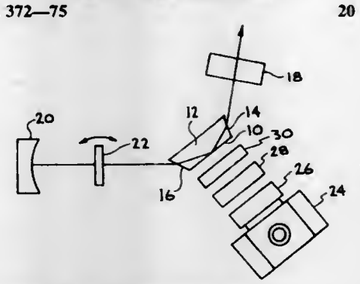
TUNABLE, DIODE SIDE-PUMPED ER: YAG LASER

Charles E. Hamilton, Bellevue, Wash., and Laurence H. Furu, Modesto, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 8, 1995, Ser. No. 436,690

Int. Cl.[6] H01S *3/091; 3/094*

U.S. Cl. 372—75 **20 Claims**



1. A tunable Er:YAG laser, comprising:

an Er:YAG gain medium;

a diode array optically aligned to side pump said gain medium;

an optical cavity comprising a high reflector and an output coupler, wherein said Er:YAG gain medium is placed within said optical cavity, wherein laser light propagating on said optical cavity undergoes total internal reflection on an internal portion of said Er:YAG gain medium, wherein pump light from said diode array is directed onto an outer portion of said Er:YAG gain medium, wherein said outer portion is adjacent to said internal portion to allow efficient coupling of the pump light from said diode array into said optical cavity; and

a tuning etalon positioned within said optical cavity.

5,623,511

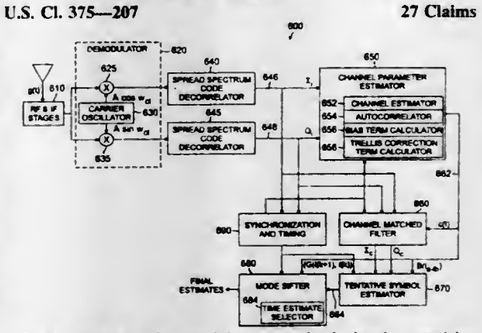
SPREAD SPECTRUM CODE PULSE POSITION MODULATED RECEIVER HAVING DELAY SPREAD COMPENSATION

Israel Bar-David, Haifa, Israel, and Rajeev Krishnamoorthy, Rotterdam, Netherlands, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 298,260, Aug. 30, 1994. This application Nov. 28, 1994, Ser. No. 345,110

Int. Cl.[6] H04K *1/00*

U.S. Cl. 375—207 **27 Claims**



1. An apparatus for receiving a received signal comprising information symbols transmitted across a communication channel, each of said symbols conveying a plurality of bits transmitted during a given symbol duration, each of said symbols being encoded using a first and a second spread spectrum code pulse position modulated signal transmitted during said associated symbol duration to a generate a spread spectrum codeword, said communication channel exhibiting delay spread characteristics, said delay spread causing residual coupling between said first and

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second spread spectrum code pulse position modulated signals of a given symbol duration and causing energy associated with a first symbol transmitted during a first symbol duration to disperse into one or more adjacent symbol durations, said receiver apparatus comprising:

a filter matched to said spread spectrum codewords;

a channel matched filter matched to said delay spread characteristics of said communication channel;

a tentative symbol estimator for sampling output signals of said channel matched filter to estimate the value of each symbol, said estimation assigning a weight to each possible value of said symbol, each of said weights taking into account said residual coupling influence between said first and second spread spectrum code pulse position modulated signals; and

a mode sifter for evaluating said weights assigned by said tentative symbol estimator to select a final estimate for said symbol value, said final estimate selection taking into account the influence of said one or more adjacent transmitted symbols on one another.

5,623,512

RATE CONVERTING DEVICE CAPABLE OF DETERMINING A TRANSMISSION RATE AS DESIRED

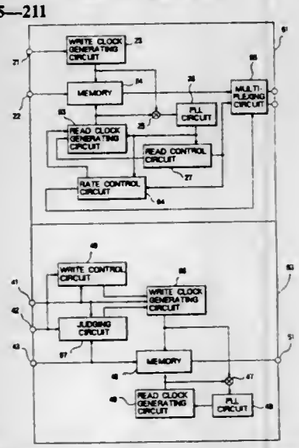
Katsuhiro Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,899

Claims priority, application Japan, Sep. 14, 1993, 5-252271

Int. Cl.[6] H04B *3/36*

U.S. Cl. 375—211 **7 Claims**



1. A rate converting device comprising a transmission rate converting section for converting a transmission input data signal into a transmission output data signal in accordance with a transmission input clock signal, said transmission input data signal having a first transmission rate, said transmission output data signal having a second transmission rate different from said first transmission rate, said transmission rate converting section comprising:

first memory means for memorizing said transmission input data signal as a first memorized data signal in accordance with a first write clock signal;

first producing means responsive to said transmission input clock signal for producing said first write clock signal;

second producing means for producing a first clock control signal in accordance with said first write clock signal and a first read clock signal;

third producing means responsive to said first clock control signal for producing a first inhibit signal and a first frame pulse signal which is representative of a transmission frame period of said transmission output data signal;

fourth producing means operable in accordance with said first clock control signal for producing a rate control signal having a predetermined pattern on the basis of said first frame pulse signal, said fourth producing means producing an additional inhibit signal in response to said rate control signal;

first generating means for generating said first read clock signal in accordance with said first clock control signal to read the first memorized data signal as a first read data signal out of said first memory means, said first read data signal having an output signal format comprising a plurality of subframes each of which has an overhead bit slot, said first generating means stopping generation of said first read clock signal in response to said first inhibit signal, said first generating means stopping generation of said first read clock signal in response to said additional inhibit signal; and

inserting means responsive to said rate control signal and said first frame pulse signal for inserting an information signal having a logic pattern into at least one of said overhead bit slots of said subframes to produce said transmission output data signal.

5,623,513

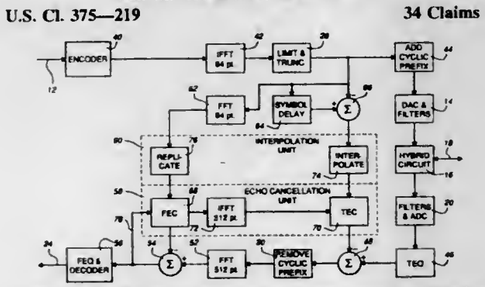
MITIGATING CLIPPING AND QUANTIZATION EFFECTS IN DIGITAL TRANSMISSION SYSTEMS

Jacky S. Chow, Mountain View; John A. C. Bingham, Palo Alto; Mark B. Flowers, Sunnyvale, and John M. Cioffi, Cupertino, all of Calif., assignors to Amati Communications Corporation, San Jose, Calif.

Filed Dec. 13, 1993, Ser. No. 165,509

Int. Cl.[6] H04L *5/16;* **H04B** *15/00*

U.S. Cl. 375—219 **34 Claims**



25. A terminal for a transmission system using multicarrier modulation, comprising:

a transmit path including an Inverse Fast Fourier Transform (IFFT) for transforming transmit signal samples from a frequency domain to a time domain, and a digital-to-analog converter (DAC) for converting transmit signal samples in the time domain to analog signals for transmission, the DAC having a predetermined digital signal range and/or digital precision which is less than that of the IFFT;

a receive path including an analog-to-digital converter for converting a receive signal into digital signal samples and a Fast Fourier Transform (FFT) for transforming the receive signal samples from the time domain to the frequency domain, the receive path further including a subtracter for subtracting an echo signal from the receive signal;

a hybrid circuit coupled to the transmit path and the receive path for coupling transmit signals to and receive signals from a bidirectional transmission path; and

an echo canceller having at least one input coupled to the transmit path and an output providing said echo signal;

wherein the transmit path further includes a limiting and/or truncation unit arranged to limit and/or truncate signal samples from the IFFT to the digital signal range and/or digital precision of the DAC, and wherein each input of the echo canceller from the transmit path is derived from the transmit path after the limiting and/or truncation unit.

5,623,514

IC CARD-TYPE MODEM AND METHOD FOR COMMUNICATING DATA BY IC CARD-TYPE MODEM

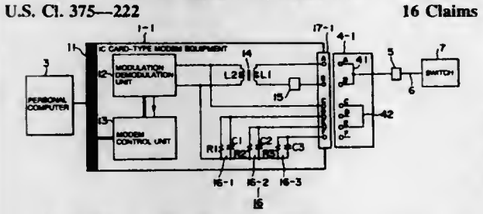
Yasuhiro Arai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1995, Ser. No. 455,572

Claims priority, application Japan, Jul. 29, 1994, 6-179338

Int. Cl.[6] H04B *1/38;* **H04M** *7/04*

U.S. Cl. 375—222 **16 Claims**



1. An IC card-type modem, comprising:

modulation demodulation means, connected to terminal equipment, for modulating and demodulating data stored in the terminal equipment;

impedance conversion means for converting impedances between said modulation demodulation means and a line;

impedance matching means including a plurality of impedance matching elements which have impedances that differ from one another;

matching selection means for selecting an impedance matching element which matches the impedance of said modulation demodulation means to the impedance of the line selectively out of the plurality of impedance meaning elements, and connecting the selected impedance matching element to said impedance conversion means;

a line connector having matching selection means for detachably connecting said matching selection means to the impedance matching element to be selected and for detachably connecting the line to said impedance conversion means.

5,623,515

DATA COMMUNICATION SYSTEM FOR REDUCING A RISK OF TRANSMISSION ERRORS

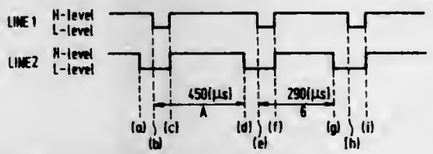
Kenichi Seto, Kanagawa-Ken, Japan, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,809

Claims priority, application Japan, Jul. 6, 1993, 5-191586

Int. Cl.[6] H04B *3/00*

U.S. Cl. 375—257 **6 Claims**



1. A data communication system comprising:

a first device having a first terminal, a second terminal and an input interrupt terminal;

a second device having a third terminal, a fourth terminal and a further input interrupt terminal;

a first interconnection between the first terminal and the third terminal; and

a second interconnection between the second and the fourth terminal, such that the input interrupt terminal and the further input terminal are connected to the second

interconnection and such that said data communication system executes the following steps:

a) the first device sets the second terminal to a device1 first level,

b) the second device sets the third terminal to a device2 first level,

c) the first device sets the second terminal to a device1 second level and the second device sets the third terminal to a device2 second level,

d) a predetermined time after step b), whose length is corresponding to a data item to be sent, the first device sets the second terminal to the device1 first level, and

e) from said length and based on preset conversion rules, the second device obtains the data item.

5,623,516

FRAME SYNCHRONIZATION FOR QAM

John D. Brownlie, and Richard G. Williams, both of Suffolk, England, assignors to British Telecommunications public limited company, London, England

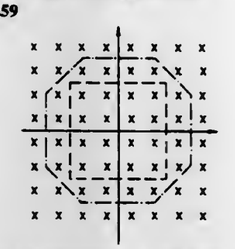
PCT No. PCT/GB92/00563, § 371 Date Sep. 28, 1993, § 102(e) Date Dec. 1, 1993, PCT Pub. No. WO92/17972, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 27, 1992, Ser. No. 122,525

Claims priority, application United Kingdom, Mar. 28, 1991, 9106658; Apr. 26, 1991, 9109006; Jun. 7, 1991, 9112316; Oct. 15, 1991, 9121881; Oct. 16, 1991, 9121985; Oct. 28, 1991, 9122822

Int. Cl.[6] H04L *27/00*

U.S. Cl. 375—259 **23 Claims**



1. An apparatus for transmission of data using quadrature amplitude modulation, said apparatus comprising:

(a) modulation means controllable to produce consecutive output symbols in each of which a carrier has selected phase and amplitude;

(b) mapping means for receiving data and controlling the modulation means in accordance with a first signal point constellation having a plurality of signal points, a first set of which, on a phase-plane plot, lie outside a predetermined boundary and a second set of which lie within said predetermined boundary, and at least one further signal point constellation which has signal points fewer in number than those of the first constellation and lying within said predetermined boundary; and

(c) frame synchronisation means operable in accordance with a predetermined framing structure so to control the mapping means that, for each symbol to be transmitted in one predetermined position of a symbol frame, a non-redundant symbol is chosen from the first constellation, remaining symbols of the same frame being chosen from the at least one further constellation.

5,623,517

TRANSMISSION SYSTEM WITH IMPROVED DECODING OF A BLOCK CODE

Volker Braun, Kirkel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1995, Ser. No. 493,035

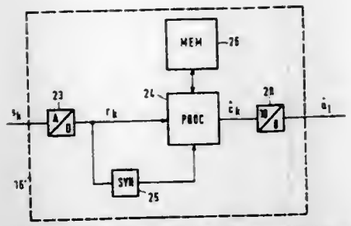
Claims priority, application European Pat. Off., Jun. 21, 1994, 94201764

Int. Cl.[6] H04L *25/34;25/49*

U.S. Cl. 375—262 **9 Claims**

1. Transmission system comprising a transmitter (2) for deriving words of coded data symbols from input data symbols, and for applying a coded signal derived from the words of coded data

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symbols to a transmission channel (**10**), a receiver (**12**) for receiving the coded signal from the transmission channel comprising a decoder (**16**) for deriving said words of coded data symbols from the received coded signal, characterised in that the decoder (**16**) is arranged for determining a most likely word of coded data by symbol wise expanding candidate words of coded data symbols using likelihood measures corresponding to each of said candidate words of coded data symbols, each likelihood measure being derived from the received coded signal, running digital sum (RDS) of the coded data symbols, produced by adding the coded data symbols, is bounded between a finite minimum (−1) and maximum value (+2), whereby said coded data symbols are binary, the value of the running digital sum always changing to a value not occurring among candidate words of coded data symbols before being expanded whereby the number of candidate words of coded data symbols equal to N/2 if N is even, and in that the number of candidate words of coded symbols is equal to (N+1)/2 if N is odd, N being the number of possible running digital sum values.

5,623,518

METHOD AND CIRCUIT ARRANGEMENT FOR TRANSMITTING BINARY DATA TRAINS

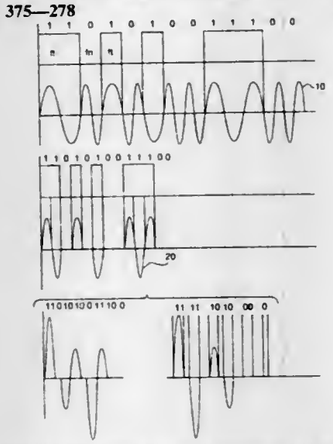
Peter Pfiffner, Wil, Switzerland, assignor to Hani Prolectron AG, Bronschhofen, Switzerland

Filed Apr. 16, 1993, Ser. No. 47,193

Claims priority, application Switzerland, Apr. 23, 1992, 01 315/92

Int. Cl.[6] **H04L** *27/10;* **H03K** *7/08*

U.S. Cl. 375—278 **28 Claims**



10. An apparatus in which a binary data train of 0 and 1 data bits is transferred over a communications network with further data equipment devices, comprising:

a data bus;

a processor connected to said data bus;

a counter that counts data received from said processor;

a pulse width modulator that transmits data received from said counter;

means for coupling said pulse width modulator to said communications network; and

a controller that controls said processor and said counter.

5,623,519

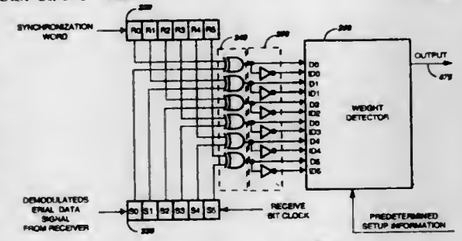
APPARATUS FOR COMPARING THE WEIGHT OF A BINARY WORD TO A NUMBER

Mark H. Babcock, Austin, and James A. Lamb, Coral Spring, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1995, Ser. No. 591,191

Int. Cl.[6] **H04B** *15/00*

U.S. Cl. 375—316 **27 Claims**



1. An apparatus for making a comparison of the number of bits having a first binary value within a binary word of M bits to a predetermined number (N), wherein each of the bits of the binary word has a first or a second binary value, and wherein M is a positive non-zero integer and N is an integer greater than or equal to zero and less than or equal to M−1, the apparatus being a logic circuit comprising:

(N+1)*(M-N) recursive elements interconnected in a matrix, the matrix being an arrangement of said recursive elements in rows, columns, and diagonals;

M data inputs for coupling the M bits of the binary word to said recursive elements;

M inverted data inputs for coupling inverted values of the M bits of the binary word to said recursive elements;

N+1 binary column setup inputs coupled to one column of said recursive elements;

M-N binary row setup inputs coupled to one row of said recursive elements; and

a logic circuit output comprising an output of one of said recursive elements, the logic circuit output having a binary value determined by a comparison of the number of bits having a first binary value within the binary word, to the predetermined number (N), the comparison being determined by the values of the binary row and column setup inputs.

5,623,520

CORRELATION DETECTOR EMPLOYING TWO LEVEL A/D CONVERSION AND ARITHMETIC SIGN CONTROL

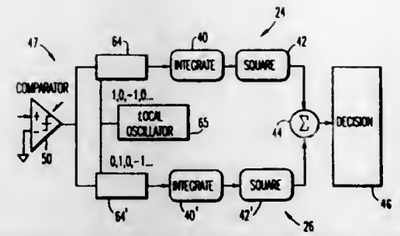
Stephen G. Kaiser, Hoffman Estates, Ill., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 263,102, Jun. 21, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,555

Int. Cl.[6] **H04L** *13/18*

U.S. Cl. 375—343 **6 Claims**

1. A correlation detector, in which an analog sinusoidal input signal having an SNR less than 1 is applied, after digitizing into a digitized input signal, to a first path and a second path, each of which paths has an output and is provided with a correlated sinusoidal signal for combination with said digitized input signal to produce combined signals and has a portion for integrating and a portion for squaring said combined signals, and wherein the outputs of said first and second paths are summed in a summer portion having an output and a threshold comparator compares the output of said summer portion to a predetermined limit, which correlation detector comprises:



limiter/comparator means for digitizing said analog sinusoidal input signal by performing a two level A/D conversion on said analog sinusoidal input signal to produce a digitized two level input signal having a value of either +1 or −1 for application to said first and second paths;

means for producing a sine output and a cosine output, said sine output being in electrical communication with said first path, and said cosine output being in electrical communication with said second path, said sine and cosine outputs comprising said correlated sinusoidal signals and each having one of the values of −1, or 0, or +1; and

a first arithmetic sign control device disposed in said first path before said portion for integrating, and a second arithmetic sign control device disposed in said second path before said portion for integrating, each of said first and second arithmetic sign control devices receiving respective inputs with one of the values of −1, or 0, or +1, from said means for producing a sine output and a cosine output, when acting to combine said digitized two level input signal respectively with said correlated sinusoidal signals, whereby said combined signals comprise an inverted value, or a null value, or the same value, respectively, as the value of said two level digitized input signal.

5,623,521

DIGITAL GAIN CONTROLLER AND GAIN CONTROL METHOD

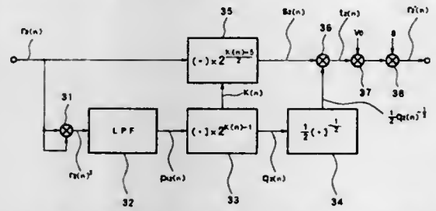
Tatsuya Yaguchi, Yokohama, and Koichi Tanaka, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,522

Claims priority, application Japan, Sep. 11, 1991, 3-231510

Int. Cl.[6] **H04L** *27/08*

U.S. Cl. 375—345 **47 Claims**



1. A digital gain controller comprising: operation means for calculating a mean power of an input signal;

first signal generation means for generating a normalized power signal by multiplying the mean power by 2^N (N is an integer), said normalized power signal having a value in the range of ½ to 1;

second signal generation means for generating a gain correction signal based on the normalized power signal;

third signal generation means for generating an amplification signal by multiplying the input signal by $2^{(N/2)-2}$ (N is an integer); and

fourth signal generation means for generating an output signal by multiplying the amplification signal by both the gain correction signal and a predetermined constant.

5,623,522

ASYNCHRONOUS SERIAL DATA RECEIVING DEVICE

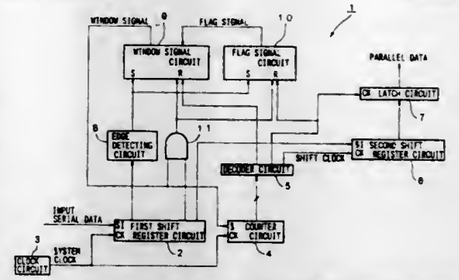
Masahiro Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 21, 1995, Ser. No. 561,355

Claims priority, application Japan, Nov. 21, 1994, 6-286515

Int. Cl.[6] **H04L** *25/38*

U.S. Cl. 375—369 **3 Claims**



1. An asynchronous serial data receiving device which receives serial data, containing main data of bits sandwiched between a start bit and a stop bit, in an asynchronous manner, the asynchronous serial data receiving device comprising:

a shift register circuit for receiving the serial data;

a clock circuit for producing high-speed clocks whose speed is higher than transmission rate of each bit of the serial data;

an edge detecting circuit for detecting a leading edge or a trailing edge of the serial data which are received by the shift register circuit;

a window signal circuit for producing a window signal when the edge detecting circuit detects the leading edge or the trailing edge;

a counter circuit to which an initial number is set by the window signal, the counter circuit counting number of the high-speed clocks outputted from the clock circuit;

start-bit-decision means for monitoring whether or not the serial data vary in a duration in which the window signal is outputted, the start-bit-decision means deciding that the start bit does not exist if the serial data vary in a decision time in which a count number of the counter circuit increases from the initial number to a predetermined number, the start-bit-decision means deciding that the start bit exists if the serial data do not vary in the decision time, the start-bit-decision means resetting the window signal when decision process thereof completes; and

means for producing clocks based on the count number of the counter circuit, the clocks being used for extraction of the bits.

5,623,523

METHOD AND APPARATUS FOR INCREASING VOLTAGE IN A CHARGE PUMP USED IN A PHASE LOCKED LOOP

James H. Gehrke, Lake in the Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1994, Ser. No. 335,014

Int. Cl.[6] **H03D** *3/24*

U.S. Cl. 375—376 **10 Claims**

1. A synthesizer charge pump network comprising:

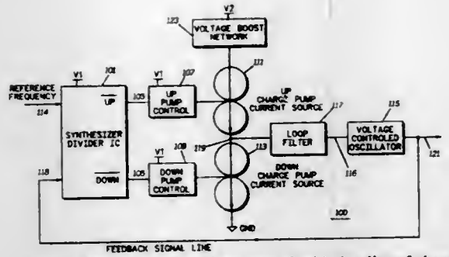
a synthesizer means for providing a range of first control signals;

a voltage controlled oscillator for producing a range of second control signals for controlling said synthesizer means and an output signal at a predetermined frequency;

a plurality of charge pump means connected to said voltage controlled oscillator for providing a plurality of current sources;

a voltage boost means serially connected between at least one of said plurality of charge pump means and a first predetermined supply voltage for increasing said first predetermined supply

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voltage, applied to said at least one of said plurality of charge pump means, to a second predetermined voltage;

a plurality of charge pump control means controlled by said range of first control signals, where at least one of said plurality of charge pump control means is connected to a respective one of said plurality of charge pump means and said voltage boost means for control information for said at least one of said plurality of charge pump means and said voltage boost means; and

wherein a single control signal generated by the synthesizer means is used for maintaining operation of both said voltage boost means and said plurality of charge pump control means in a synchronized manner and further wherein said voltage boost means is actuated by said at least one of said plurality of charge pump control means so as the actuation of said voltage boost means and said at least one of said plurality of charge pump means are substantially synchronized and further wherein said network operates using a limited duty cycle of said plurality of charge pump means to provide a non-steady state boost voltage from said voltage boost means.

5,623,524

METHOD AND APPARATUS FOR MEASURING THE DEPTH OF AN UNDERWATER TARGET

Benjamin F. L. Weiss; Allen G. Findeisen, and Jackson C. Humphrey, all of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1967, Ser. No. 620,588
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—99 **11 Claims**

1. An underwater system for determining the location of a target relative to the water surface comprising:

sonar means for periodically radiating impulse signals in the water in a conical-shell shaped beam pattern and for receiving target and water surface reflections of the radiated signals,

means responsive to the doppler frequency shift of said reflections of said radiated signals for generating diverse output signals indicative of a target reflection and a water surface reflection within the beam pattern,

means for generating diverse triggering signals in response to said diverse output signals exceeding particular threshold levels,

a plurality of means for indicating diverse target locations upon receipt of an initiation signal,

a plurality of multivibrator circuit means responsive to one of said diverse triggering signals for generating an individual initiating signal for respective ones of said target location indicating means upon being activated by a gated signal,

a plurality of gating circuit means for sequentially generating gating signals to sequentially actuate respective ones of said multivibrator circuit means in response to the other of said diverse triggering signals,

Circuit means responsive to the sequentially generated gating signals for developing an inhibition signal to render said gating circuits responsive to only one of said other diverse triggering signals after activation of said gating circuits, and

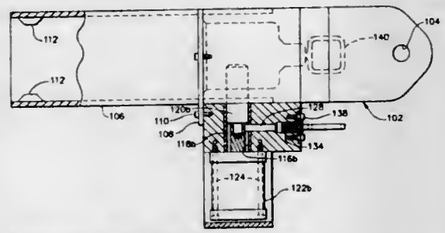
circuit means for producing a reset signal to inactivate all activated ones of said gating circuit means and said multivibrator circuit means in response to each occurrence of a radiated impulse signal by said sonar means.

5,623,525

TOOL FOR LIFTING TIE ROD DURING SHROUD REPAIR

Grant C. Jensen, Morgan Hill, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,190
Int. Cl.[6] G21C *19/20*
U.S. Cl. 376—260 **16 Claims**



1. A tool for lifting a tie rod, comprising:

a frame having an axial recess shaped to receive an uppermost portion of a tie rod, a first hole for receiving a locking pin, and a second hole for receiving a latch, said second hole communicating with said first hole, said frame further comprising a coupling mechanism;

a first locking pin slidably mounted in said first hole in said frame, said first locking pin being slidable between a locking position whereat said first locking pin penetrates said axial recess and engages the tie rod and an unlocking position whereat said first locking pin does not penetrate said axial recess and does not engage the tie rod;

a first fluid-actuated cylinder attached to said frame, said first locking pin having one end connected to a piston of said first fluid-actuated cylinder, said piston being retracted in response to the supply of pressurized fluid into said first fluid-actuated cylinder, said first fluid-actuated cylinder having a spring return which extends said piston in the absence of pressurized fluid into said first fluid-actuated cylinder, said first locking pin being slided from said locking position to said unlocking position when said piston is retracted; and

a first latch slidably mounted in said second hole in said frame, said first latch being slidable between a latching position whereat said first latch blocks sliding of said first locking pin and an unlatching position whereat said first latch does not block sliding of said first locking pin, wherein when pressurized fluid is supplied to said cylinder for retracting said piston, said first latch in said latching position prevents retraction of said piston.

5,623,526

METHOD AND APPARATUS FOR REPAIR OF NUCLEAR REACTOR SHROUD

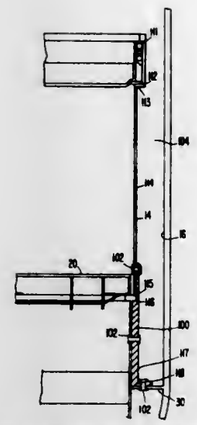
Adrian P. Wivagg, Tolland, Conn., assignor to Combustion Engineering, Inc., Del.

Filed Jul. 21, 1995, Ser. No. 505,785
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—288 **9 Claims**

1. A method of repairing a nuclear reactor which includes a plurality of fuel rods and a shroud which is disposed about said fuel rods comprising the steps of:

placing a strap against the external surface of a nuclear reactor shroud so as to span at least one weld formed in said shroud;

forming holes at each end of said strap and in said shroud so that a hole in said strap is precisely aligned with a hole formed in said shroud, and in a manner wherein at least one of the holes which are aligned is formed in situ; and



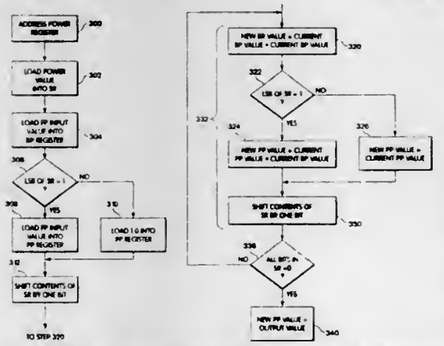
securing said strap to said shroud by inserting fastening means into said holes.

5,623,527

METHOD AND APPARATUS FOR DETERMINING AN INTEGER POWER OF A FLOATING POINT NUMBER

Noel D. Scott, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 30, 1996, Ser. No. 593,105
Int. Cl.[6] G11C *19/00*
U.S. Cl. 377—72 **12 Claims**



1. Apparatus for determining an integer power of a floating point number, comprising:

a shift register having an LSB;

a register file having a partial product register and a binary power register;

a multiplier coupled to said register file for performing floating point multiply operations; and

a state machine for controlling said shift register, said register file and said multiplier, said state machine comprising:

means for loading an integer power value into said shift register and for loading a floating point input value into said binary power register;

means for loading said floating point input value into said partial product register if the LSB of said shift register is active and for loading an initial value of 1 into said partial product register if the LSB of said shift register is inactive;

means for shifting the contents of said shift register one bit toward the LSB following loading of said binary power register and said partial product register;

means for executing an integer power routine, including determining a new binary power value by causing the multiplier to multiply the contents of the binary power register by itself, determining a new partial product value by causing the multiplier to multiply the contents of the partial product register by the contents of the binary power register if the LSB of said shift register is active, determining a new partial product value equal to the contents of the partial product register if the LSB of said shift register is inactive, and shifting the contents of said shift register one bit toward the LSB following the steps of determining a new binary power value and determining a new partial product value; and

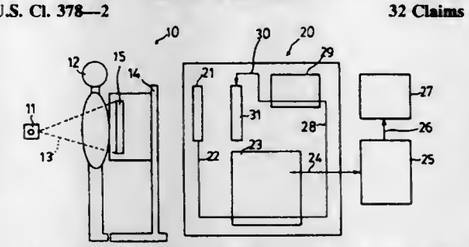
means for executing said integer power routine up to N-1 times, where N is the number of bits in the integer power value, the contents of the partial product %register representing the integer power of said floating point input value after the integer power routine is executed N-1 times.

5,623,528

METHOD FOR GENERATING 3-DIMENSIONAL IMAGES

Shiro Takeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 9, 1994, Ser. No. 207,669
Claims priority, application Japan, Mar. 24, 1993, 5-065278
Int. Cl.[6] G01N *23/00*
U.S. Cl. 378—2 **32 Claims**



1. A method for generating 3-dimensional radiation images comprising a step for obtaining at least one 2-dimensional radiation image of a subject carried by a radiant ray which has passed through a subject is obtained by irradiating a radiant ray from a plurality of positions, which differ from one another, toward said subject; a step for obtaining 2-dimensional pixel data which denotes pixel values at respective points on said 2-dimensional radiation image by repeatedly scanning an image in a main scanning direction which intersects a sub-scanning direction while sequentially moving in said specified sub-scanning direction on this 2-dimensional radiation image; and a step for obtaining 3-dimensional pixel data which denotes the pixel values corresponding to 3-dimensional points inside said subject based on the 2-dimensional pixel data,

wherein said 2-dimensional radiation image is one 2-dimensional radiation image obtained by simultaneously irradiating a radiant ray toward said subject from a plurality of irradiating positions which differ from one another.

5,623,529

SOR EXPOSURE SYSTEM AND MASK MANUFACTURED THEREBY

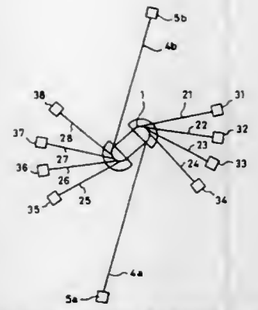
Ryuichi Ebinuma, Machida, and Yutaka Watanabe, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 237,052, May 3, 1994, abandoned.
This application Aug. 26, 1996, Ser. No. 702,862
Claims priority, application Japan, Jun. 30, 1993, 5-161954; Aug. 23, 1993, 5-207830; Feb. 22, 1994, 6-024206
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—34 **14 Claims**

1. An SOR exposure system, comprising:

a synchrotron radiation source; and

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a plurality of X-ray exposure apparatuses, connected to said synchrotron radiation source by a plurality of beam lines, for manufacturing semiconductor devices,

wherein one of said plurality of exposure apparatuses comprises a duplicating exposure apparatus for duplicating an original mask to form a duplicated mask by exposing the original mask and a substrate disposed proximate to each other with the synchrotron radiation to transfer a pattern of the original mask to the substrate to form the duplicated mask, and wherein a divergence angle of illumination radiation introduced into said duplicating exposure apparatus for duplicating the original mask is less than that introduced into the other exposure apparatuses.

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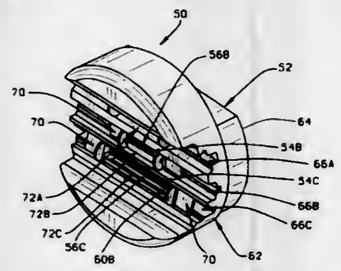
CATHODE CUP ASSEMBLY FOR AN X-RAY TUBE

Quan N. Lu, and Stephen S. Waite, both of Milwaukee, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 17, 1996, Ser. No. 710,422

Int. Cl.[6] H01J *35/06*

U.S. Cl. 378—136 **16 Claims**



1. A cathode cup assembly for an x-ray tube, said cathode cup assembly comprising:

a cathode cup comprising a filament coil receiving portion and a filament lead extension portion, said filament coil receiving portion comprising a plurality of filament receiving channels; and

a focus tab comprising a plate having a filament aligning aperture, said focus tab configured to cooperate with said cathode cup so that said focus tab at least partially covers said channels.

5,623,531

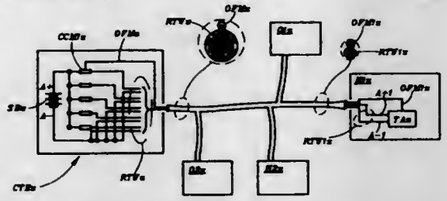
AUXILIARY POWER FOR TELEPHONE DISTRIBUTION SYSTEM

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 181,833, Jan. 8, 1994, which is a continuation-in-part of Ser. No. 4,598, Jan. 14, 1993, which is a continuation-in-part of Ser. No. 860,234, Mar. 27, 1992, Pat. No. 5,210,788, which is a continuation of Ser. No. 627,189, Dec. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 562,897, Aug. 6, 1990, Pat. No. 5,068,890, which is a continuation-in-part of Ser. No. 397,266, Aug. 23, 1989, Pat. No. 5,070,522, which is a continuation-in-part of Ser. No. 136,505, Dec. 23, 1987, Pat. No. 4,866,757, which is a continuation of Ser. No. 921,381, Oct. 22, 1986, abandoned. This application Jun. 22, 1994, Ser. No. 263,453

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—56 **12 Claims**



1. An arrangement comprising:

a central telephone exchange having a pair of source terminals across which is provided a source voltage; the central telephone exchange also being characterized by having a central optic connect means operative to connect with an optic fiber means;

plural pairs of ordinary telephone wires, each one pair being connected with the source terminals by way of a current control means exclusively dedicated to said one pair of telephone wires and functional to prevent more than a certain maximum magnitude of current from being supplied thereto;

optic fiber means connected with the central optic connect means and extending to each of plural locations outside of the central telephone exhange; and

at each of said plural locations, a telephone-type apparatus connected with one of the plural pairs of telephone wires and characterized by having a local optic connect means connected with the optic fiber means; the telephone-type apparatus being further characterized by: (i) being functional to convert electronic signals to optic signals and/or vice versa; (ii) being functional to receive and/or transmit telephone signals and/or other information signals along the optic fiber means; and (iii) drawing electric power from said one of the plural pairs of telephone wires for use in the process of converting electronic signals to optic signals and/or vice versa.

5,623,532

HARDWARE AND DATA REDUNDANT ARCHITECTURE FOR NODES IN A COMMUNICATIONS SYSTEM

Michel Houde, St. Laurent, and Luc Mayrand, Pierrefouds, both of Canada, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

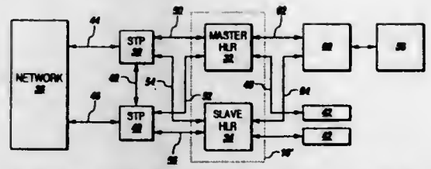
Filed Jan. 12, 1995, Ser. No. 372,074

Int. Cl.[6] H04Q *7/24;7/34*

U.S. Cl. 379—58 **40 Claims**

5. A method for redundant processing of service request communications in a telecommunications network including a master processing node platform and a slave processing node platform that is a redundant back-up to the master processing node platform, said method comprising the steps of:

routing service request communications to the master processing node platform for processing to perform the requested service and result in modification of data stored therein; and



forwarding said routed service request communications also to the slave processing node platform for processing therein to perform the requested service and conforming modification of the data stored in the slave processing node platform to match the data stored in the master processing node platform.

5,623,533

MOBILE COMMUNICATION END DEVICE WITH LOW POWER OPERATION MODE

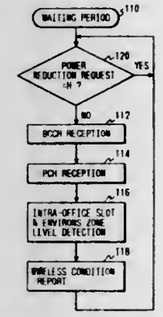
Takafumi Kikuchi; Yuji Hatano, both of Kodaira; Koichi Seki, Hino; Masanori Otsuka, Konosu; Masao Hotta, Han-no, and Yasuyuki Murakami, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 107,318, Aug. 17, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 621,896

Claims priority, application Japan, Aug. 18, 1992, 4-218917; Sep. 3, 1992, 4-235625

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 379—58 **20 Claims**



1. A mobile communication end device having an electric power source including a cell, and a signal processing part and a transmitting-receiving part, to which electric power is applied from said electric power source, wherein said signal processing part and said transmitting-receiving part have a normal operation mode operating at normal electric power and a low power operation mode operating at electric power lower than the normal operation mode, said mobile communication end device comprising:

operation mode setting means for setting in response to an input signal an operation mode of said signal processing part and said transmitting-receiving part of said mobile communication end device to said normal operation mode or said low power operation mode;

said operation mode setting means includes means for reducing the number of bits of a signal processed by said signal processing part, thereby reducing resolution of said signal, when said low power operation mode has been set by said operation mode setting means and when operating said signal processing port and said transmitting-receiving part of said mobile communication end device in said low power operation mode;

said electric power source having observing means for observing the voltage of said cell and for generating a low power operation request signal when said voltage becomes a prescribed value or less; and

means for changing said signal processing part and said transmitting-receiving part into said low power operation mode, when the low power operation mode is set by said operation mode setting means and when the low power operation request signal is generated by said observing means.

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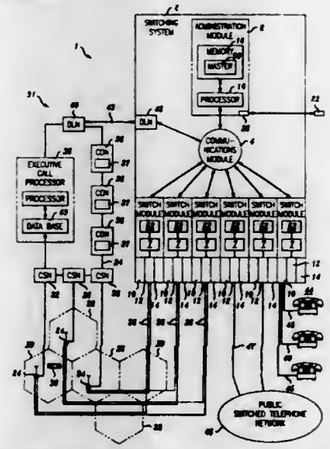
METHOD AND APPARATUS FOR EXCHANGING ADMINISTRATIVE INFORMATION BETWEEN LOCAL AREA NETWORKS

Bhupesh J. Desai, Aurora; E-Ling Lou, Naperville; Albert J. Sawyer, Wheaton, and James J. Sowa, Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 7, 1995, Ser. No. 418,728

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **18 Claims**



1. In a telecommunications network including a switching system having a plurality of switch modules, at least one of the switch modules hosting a trunk group consisting of a plurality of trunk members, said trunk members being connected to the switch modules at predetermined physical locations and a cellular communications system including a plurality of cell sites connected to said switching system by selected ones of the trunk members, said cell site including voice channels for communicating with customer stations, a method for routing calls comprising the steps of:

storing data in said switching system including master information identifying the physical location of all of said trunk members hosted by said switching system;

storing data in said cellular communications system including a mapping of the voice channels to the physical location of the selected ones of the trunk members;

assigning a particular voice channel to serve a call;

providing routing information to said switching system from said mapping identifying a likely location of the selected ones of the trunk member mapped to said particular voice channel;

determining if the routing information is usable by the switching system to route the call;

if the routing information is usable, routing the call using said information;

if the routing information is not usable, determining the actual physical location of the selected ones of the trunk member using the master information;

routing the call using the correct routing information; and

correcting the routing information in said cellular communications system by updating said mapping.

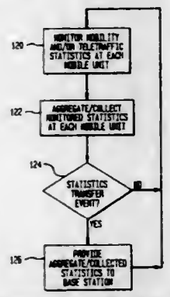
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5,623,535

OPERATIONS OF CELLULAR COMMUNICATIONS SYSTEMS BASED ON MOBILITY AND TELETRAFFIC STATISTICS COLLECTED BY MOBILE UNITS

Kin K. Leung, Edison; Sanjiv Nanda, Plainsboro, both of N.J., and Kwan L. Yeung, Ngau Chi Wan, Hong Kong, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 8, 1994, Ser. No. 303,299
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—60 **40 Claims**



1. A method of operating a cellular communications system wherein distributed base stations couple a plurality of mobile units to a fixed switching network, said cellular communications system comprising a layered cellular mobile network having macrocells each of which overlies a plurality of microcells, said method comprising the steps of:

controlling the connections of said plurality of mobile units from said distributed base stations based on measurable mobility and teletraffic statistics of each of said plurality of mobile units;

measuring microcell sojourn times at each of said plurality of mobile units as one of said measurable mobility and teletraffic statistics;

aggregating measured microcell sojourn times representative of mobile unit mobility at each of said plurality of mobile units; and

transmitting aggregated microcell sojourn times from said plurality of mobile units to said distributed base stations.

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ANONYMOUS INTERACTIVE TELEPHONE SYSTEM

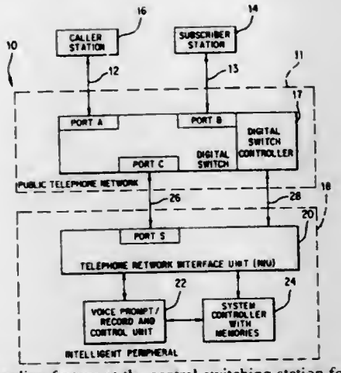
Merrill Solomon, Washington, D.C.; John Kimball, Germantown, and Dana L. Goldstein, Rockville, both of Md., assignors to The Telephone Connection, Inc., Rockville, Md.

Division of Ser. No. 774,963, Oct. 11, 1991, Pat. No. 5,361,295, which is a continuation-in-part of Ser. No. 448,110, Dec. 12, 1989, Pat. No. 5,058,152. This application Jun. 27, 1994, Ser. No. 265,865
Int. Cl.[6] H04M *1/64;1/66;3/42*
U.S. Cl. 379—67 **27 Claims**

1. A telephone communication method for enabling a subscriber at a subscriber station to anonymously communicate with a caller at a caller station via public telephone lines controlled by a public telephone company central switching station having call forwarding capabilities, the method including the steps of:

storing at a system controller station data that is received from a plurality of subscribers at a plurality of subscriber stations, such data including the telephone number of each of said subscriber stations, a corresponding reference number for each of the subscriber stations and information related to the availability times and non-availability times of each of the subscribers;

accessing the central switching station for activating the call forwarding feature at the central switching station for each of said subscribers according to the availability times for forwarding calls directly to each of said subscribers at the respective subscriber stations and for de-activating the call



forwarding feature at the central switching station for each of said subscribers according to the non-availability times of each subscriber for allowing calls to pass to the system controller station;

receiving a plurality of calls to said system controller station and a particular reference number corresponding to a particular subscriber at a corresponding particular subscriber station, the particular reference number being included within a published telephone number, calls received by the system controller station corresponding to calls not forwarded by the central switching station; and

matching said particular reference number with the corresponding telephone number of said particular subscriber station.

27. A method for anonymously connecting a subscriber at one of first and second locations, said second location having an unpublished telephone number, with a caller via public telephone lines, said method comprising the steps of:

publishing a telephone number of said first location;

storing data from the subscriber at a station intermediate with respect to stations of said first and second locations, said data including information designating times during which calls to said subscriber directed to a first station are to be transferred to said intermediate station, subscriber identifier information and the telephone number of said second location;

commanding a central office of the public telephone company, from said intermediate station, to forward calls directed to the first station to said intermediate station according to said data stored at said intermediate station;

receiving at said intermediate station calls for said subscriber directed to said first station depending on the data stored at said intermediate station;

recording respective messages of callers in communication with said intermediate station and receiving subscriber identifier information corresponding to the identification of said subscriber;

calling said subscriber at said second location based upon said subscriber identifier information;

playing at least part of a message recorded by one of said callers to said subscriber; and

connecting said one caller and said subscriber upon authorization of said subscriber.

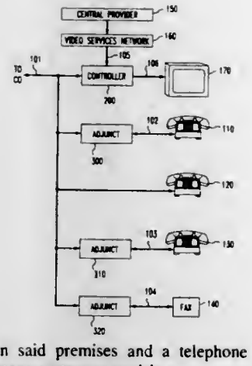
5,623,537

TELEPHONE MESSAGE CENTER

Myra L. Ensor, Summit; Anthony J. Grewe, Holmdel, and Howard M. Singer, Marlboro, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 366,946
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—67 **32 Claims**

1. A telephone message system for use at a subscriber's premises, adapted to be parallel connected onto a wire-pair that



extends between said premises and a telephone line switching system, the message system comprising:

controller means connected onto said wire-pair for receiving the identity of a preselected calling station over said wire-pair in a first frequency band, said controller means including memory means for storing the identity of the preselected calling station and an indication of a special service treatment to be given to calls received from said preselected calling station, said special service treatment performed by means for assigning said calls from the preselected calling station to a mailbox of a specific called party from among multiple mailboxes respectively associated with parties commonly located at said subscriber premises;

a plurality of adjunct units operatively responsive to the controller means, each one of the plurality of adjunct units being commonly connected onto said wire-pair and communicating with said controller means over said wire-pair in a second frequency band different from said first frequency band; and

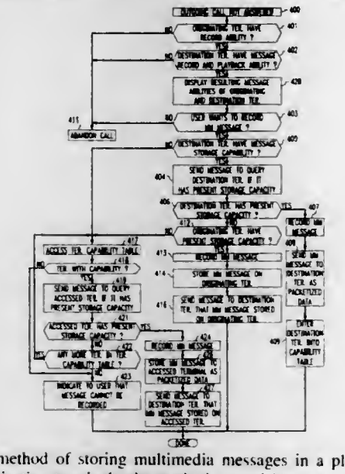
means in at least one of said adjunct units for providing said special service treatment to be given to said calls received from said preselected calling station.

5,623,538

SHARED DISTRIBUTION OF INTERNAL MESSAGE STORAGE FACILITIES BY A PLURALITY OF COMMUNICATION TERMINALS

Norman W. Petty, Boulder, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 30, 1995, Ser. No. 520,910
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **42 Claims**



1. A method of storing multimedia messages in a plurality of communication terminals, the method comprising:

placing a telecommunication call by an originating one of the plurality of communication terminals to a destination one of the plurality of communication terminals;

recording a multimedia message by the originating one of the plurality of communication terminals;

identifying another one of the plurality of communication terminals that has present capacity to store the multimedia message upon the destination and originating ones of the plurality of communication terminals not having present capacity to store the multimedia message; and

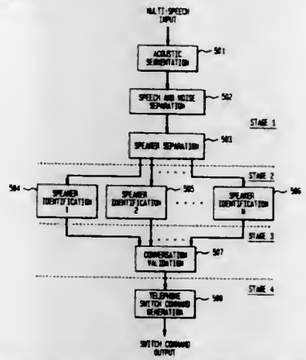
storing the multimedia message in the identified one of the plurality of communication terminals.

5,623,539

USING VOICE SIGNAL ANALYSIS TO IDENTIFY AUTHORIZED USERS OF A TELEPHONE SYSTEM

Charles S. Bassenyemukasa, Tinton Falls, and Randolph J. Pilc, Toms River, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 27, 1994, Ser. No. 189,003
Int. Cl.[6] H04M *1/66*
U.S. Cl. 379—88 **25 Claims**



1. An apparatus for determining whether at least one of a plurality of users of a telephone line is an authorized user of said telephone line, said apparatus comprising:

a memory for storing an authorized voice pattern for each of a plurality of authorized users of the telephone line;

a voice segregator for receiving voice information obtained from the telephone line, said voice information corresponding to voice patterns of a plurality of users of the telephone line, said voice segregator segregating said received voice information into a plurality of segregated voice patterns, each said segregated voice pattern corresponding to one of said plurality of users of the telephone line; and

a comparator for receiving said segregated voice patterns from said voice segregator and comparing each said segregated voice pattern to said authorized voice patterns stored in said memory to determine whether one of said plurality of users of the telephone line is an authorized user.

5,623,540

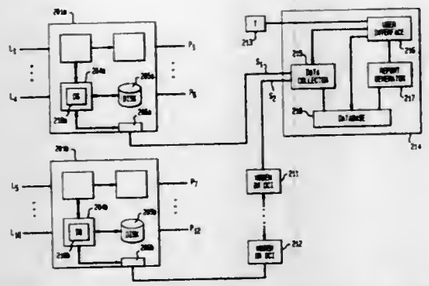
PBX DATA RETRIEVAL AND REPORTING SYSTEM AND METHOD

David Morrison, San Jose; Gale Marinelli, Los Gatos, and Barbara Chin, Santa Clara, all of Calif., assignors to Siemens Rolm Communications, Inc., Santa Clara, Calif.

Filed Oct. 5, 1994, Ser. No. 318,317
Int. Cl.[6] H04M *15/00;3/00;5/00*
U.S. Cl. 379—115 **46 Claims**

1. A method of collecting information from a computerized branch exchange (CBX) for receipt by a collection computer coupled to the CBX, the CBX having a statistics database comprising a plurality of statistics records each containing telephone call

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measurements relating to telephone lines serviced by said CBX, the method comprising the steps of:

(1) specifying a data collection schedule for collecting one or more of said plurality of statistics records from said statistics database;

(2) generating, from said collection computer, a database selection command for selecting a subset of said plurality of statistics records and transmitting, in accordance with said data collection schedule, said database selection command from said collection computer to said CBX;

(3) receiving at said collection computer one or more of said plurality of statistics records from said CBX in response to said database selection command transmitted from said collection computer;

(4) storing said one or more received statistics records into a collection database on said collection computer;

(5) providing an organizational hierarchy which defines a plurality of accumulation levels over which statistics records from said collection database will be accumulated;

(6) accumulating, in accordance with a first one of said accumulation levels in said organizational hierarchy data values from a plurality of said statistics records from said collection database into a first accumulated record and storing said first accumulated record on said collection computer; and

(7) accumulating, in accordance with a second one of said accumulation levels in said organizational hierarchy, data values from said plurality of said statistics records from said collection database into a second accumulated record and storing said second accumulated record on said collection computer.

5,623,541

APPARATUS TO MANIPULATE AND EXAMINE THE DATA STRUCTURE THAT SUPPORTS DIGIT ANALYSIS IN TELECOMMUNICATIONS CALL PROCESSING

Valerie Y. Boyle, Wheaton, Ill.; Daryl C. Lu, Freehold; George L. Sicherman, Ocean, both of N.J., and Robert A. Swanson, Naperville, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 17, 1995, Ser. No. 344,438

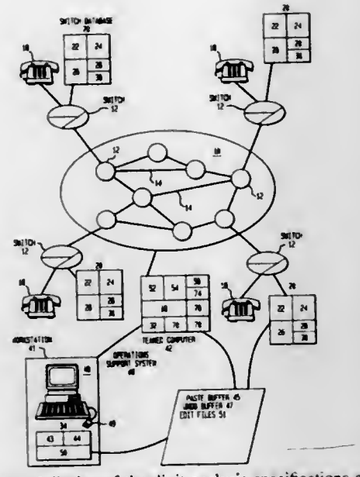
Int. Cl.[6] H04M *15/00;3/42;7/00;* **H04J** *3/24*

U.S. Cl. 379—136 **31 Claims**

1. An apparatus for manipulating and examining digit analysis specifications, including routing table indexes, routing table references, serving switch information, coding information and charging information, associated with dialed digit nodes, that supports digit analysis in telecommunications call processing through stored program switches comprising:

means for displaying a dialed digit node of interest, the nodes representing the lineage of the node of interest, and the nodes representing the children of the node of interest visually as a subtree consisting of symbols representing the nodes; and

means for transferring the digit analysis specifications associated with one displayed node to another displayed node in the absence of display of the digit analysis specifications associated with either node.



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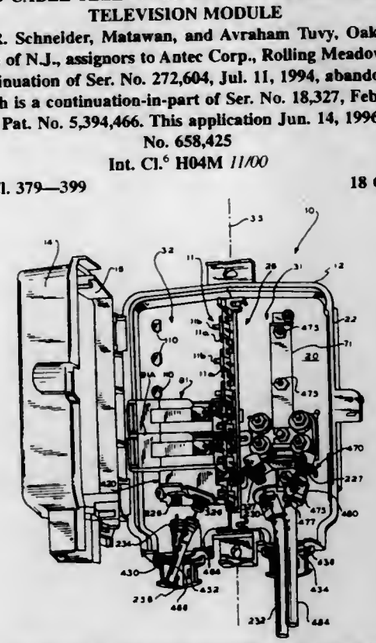
COMBINATION TELEPHONE NETWORK INTERFACE AND CABLE TELEVISION APPARATUS AND CABLE TELEVISION MODULE

Pina R. Schneider, Matawan, and Avraham Tuvy, Oakhurst, both of N.J., assignors to Antec Corp., Rolling Meadows, Ill.

Continuation of Ser. No. 272,604, Jul. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 18,327, Feb. 16, 1993, Pat. No. 5,394,466. This application Jun. 14, 1996, Ser. No. 658,425

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—399 **18 Claims**



13. Combination apparatus for connecting at least one incoming telephone line to at least one telephone subscriber premises line and for interconnecting incoming cable television signals to at least one television set, comprising:

telephone network interface apparatus for connecting at least one incoming telephone line to said at least one telephone subscriber's line, said telephone network interface apparatus including a telephone company compartment portion, a telephone subscriber compartment portion, first coaxial cable access means for permitting at least a first coaxial cable carrying said incoming cable television signals to be inserted therethrough and into said telephone company compartment portion, and second coaxial cable access means for permitting at least a second coaxial cable connected to said at least one television set to be inserted therethrough and into said telephone subscriber compartment portion, said second coaxial cable for carrying said incoming cable television signals to said television set;

cable television module means mounted to said telephone interface apparatus and including a first module portion and a second module portion, said first module portion generally residing in said telephone compartment portion and disposed generally adjacent to and spaced from said first cable access means, and said second module portion generally residing in said telephone subscriber compartment portion and disposed generally adjacent to and spaced from said second cable access means;

said module means further including at least first coaxial cable connector means mounted to said first module portion and for being connected to said first coaxial cable, and at least second coaxial cable connector means mounted to said second module portion and for being connected to said second coaxial cable;

interconnecting means provided in said module and interconnecting said first coaxial cable connector means to said second coaxial cable connector means to carry said incoming cable television signals from said first coaxial cable connector means to said second coaxial cable connector means;

said first and second module portions disposed angularly with respect to each other at an included angle to facilitate connection of at least said first coaxial cable to said first coaxial cable connector means; and

mounting means for mounting said cable television module means to said telephone network interface apparatus.

5,623,543

TWO PORT SIGNALLING VOLTAGES FILTER ARRANGEMENT

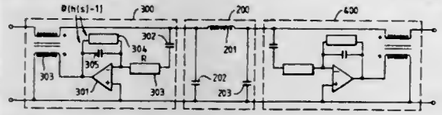
John W. Cook, Suffolk, England, assignor to British Telecommunications public limited company, London, England

Filed Mar. 24, 1994, Ser. No. 216,875

Claims priority, application European Pat. Off., Feb. 1, 1994, 94300735

Int. Cl.[6] H04B *3/16;* **H04M** *9/00*

U.S. Cl. 379—402 **8 Claims**



8. A filter for connection to a source or load having a frequency-dependent impedance, comprising a passive filter and an impedance conversion arrangement having two ports of which one is connected to the filter and the other is for connection to a source or load;

the impedance conversion arrangement comprising a conductive path between the two ports so as to be substantially transparent to d.c. and to pulse and ringing components exceeding a predetermined amplitude, and an amplifier connected to receive signals from the conductive path and to deliver to the conductive path a current or a voltage that is a frequency-dependent function of the received signals.

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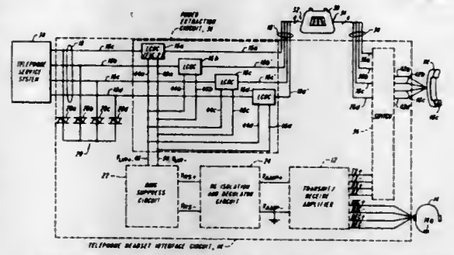
TELEPHONE HEADSET INTERFACE CIRCUIT

Costas Papadopoulos, Acton, Mass., assignor to VXI Corporation, Rollinsford, N.H.

Filed May 17, 1993, Ser. No. 62,595

Int. Cl.[6] H04M *9/00*

U.S. Cl. 379—413 **27 Claims**



1. A telephone interface for use with a telephone, said telephone having a first connector for connection to a telephone line presenting a DC voltage and a second connector adapted for connection to a telephone handset, said interface comprising:

a power circuit adapted for coupling to said telephone line and operative to provide a predetermined constant output voltage in response to any telephone line voltage within the range of 5.0 to 50.0 volts DC only when said telephone draws loop current from said telephone line; and

an amplifier coupled to said second connector, wherein said predetermined constant output voltage is coupled to said amplifier to power said amplifier.

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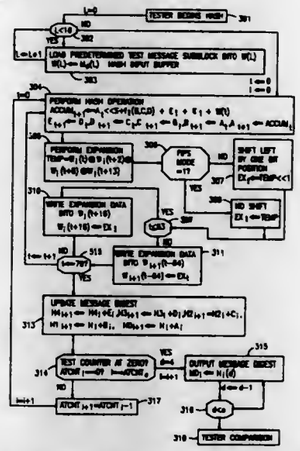
AUTOMATIC DATA GENERATION FOR SELF-TEST OF CRYPTOGRAPHIC HASH ALGORITHMS IN PERSONAL SECURITY DEVICES

Matthew H. Childs, and Thomas M. Norcross, both of Arlington, Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 31, 1995, Ser. No. 521,794

Int. Cl.[6] H04K *1/00;* **H04L** *9/28*

U.S. Cl. 380—2 **21 Claims**



1. A method of testing a hash circuit taking T M-bit message blocks serially as input and producing an H-bit message digest as output, the hash circuit including a data expansion circuit taking the M-bit message block as input and producing an E-bit expanded message block as output, the method comprising the steps of:

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(a) loading a predetermined input M-bit test message block MB(1) into the hash circuit;

for each i between 1 and T, inclusive;

(b) performing an expansion by using the data expansion circuit taking an ith M-bit test message block MB (i) as input and producing an ith E-bit expanded test message block as output;

(c) performing a bash by using the hash circuit taking the ith E-bit expanded test message block EMB (i) as input and producing an ith H-bit message digest MD(i) as output; and

(d) using the data expansion circuit taking a portion of the ith E-bit expanded test message block as input to generate: an i+1th M-bit test message block MB (i+1) as output; and

(e) outputting, by the hash circuit, the Tth H-bit message digest.

5,623,546

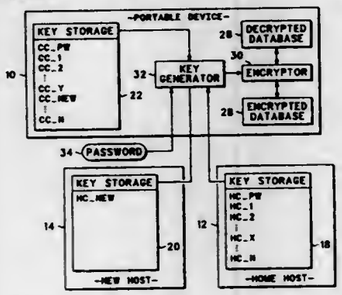
ENCRYPTION METHOD AND SYSTEM FOR PORTABLE DATA

Douglas A. Hardy, Mesa; Craig R. Fossey, Scottsdale; Craig R. Balogh, Mesa, and Steven R. Tugenberg, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 23, 1995, Ser. No. 494,129

Int. Cl.[6] H04L *9/32*; **G06F** *3/06*

U.S. Cl. 380—4 **18 Claims**



1. A method for providing access through a new host to encrypted data using an encryption key, wherein a first split of a password-modified key is stored in a portable encryption device, and a second split of said password-modified key is stored elsewhere, said method comprising the steps of:

a) connecting said portable encryption device to said new host;

b) providing a password;

c) obtaining said second split of said password-modified key; and

d) recreating said encryption key with said password to produce a recreated encryption key, first split of said password-modified key, and said second split of said password-modified key.

5,623,547

VALUE TRANSFER SYSTEM

Timothy L. Jones, East Sussex, and Graham R. L. Higgins, Avon, both of England, assignors to Jonhig Limited, London, England

Continuation of Ser. No. 804,654, Dec. 11, 1991, abandoned. This application Mar. 6, 1995, Ser. No. 400,003

Claims priority, application United Kingdom, Apr. 12, 1990, 9008362

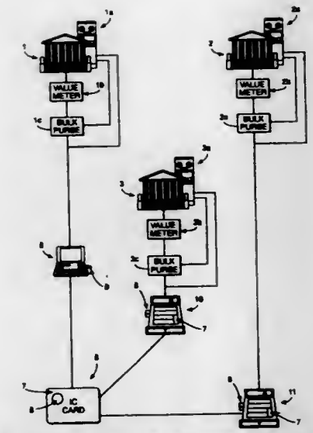
Int. Cl.[6] H04L *9/00*; *9/32*; *9/30*; *9/06*

U.S. Cl. 380—24 **27 Claims**

13. A value transfer system, said system comprising:

a computer system;

a plurality of electronic purses;



exchange devices comprising means for communication between said purses and for transferring value between said purses in transactions which are off-line from the computer system;

draw-down means for loading said purses with a value under control of the computer system;

redemption means for redeeming a value from said purses under control of the computer system;

a value meter system; and

at least one of said purses comprising a bulk purse, said value meter system including means for loading and redeeming value in said bulk purse, the value meter system including means for recording at least one float value record containing information of a net value released to said at least one purse, said net value comprising the difference between a total of values drawn down to said at least one purse and a total of values redeemed from said at least one purse, said at least one float value record comprising non-specific value information with regard to individual transactions.

5,623,548

TRANSFORMATION PATTERN GENERATING DEVICE AND ENCRYPTION FUNCTION DEVICE

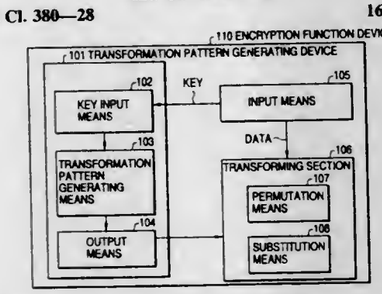
Ryota Akiyama; Naoya Torii; Noboru Iwayama, and Kenichi Utsumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 10, 1995, Ser. No. 370,881

Claims priority, application Japan, Jan. 10, 1994, 6-000997; Dec. 19, 1994, 6-314879; Dec. 21, 1994, 6-318221

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—28 **16 Claims**



1. An encryption function device, comprising:

key input means for inputting a key for encryption;

transformation pattern generating means for using the key as a key number sequence and for generating a transformation pattern using at least one of the key number sequence and a pseudo-random number sequence generated by a random number generator using the key number sequence as a seed; and

transformation means for transforming data in accordance with the transformation pattern generated by said transformation pattern generating means,

wherein the transformation pattern includes m substitution tables and a permutation circuit having m input terminals and m output terminals,

wherein said transformation means includes:

m input switches, where m is an even number;

m output destination switches;

m exclusive-OR circuits; and

a bit rotate shift mechanism having m input terminals and m output terminals; and

wherein a j-th input switch in one switching state outputs a j-th mini-block which is one of m mini-blocks into which input data is divided, and the j-th input switch in another switching state outputs a mini-block sent from a j-th output destination switch;

the j-th output destination switch in one switching state outputs the j-th mini-block of tbe bit rotate shift means, and the j-th output destination switch in another switching state outputs the j-th mini-block of the bit rotate shift means to the j-th input switch;

an output of a k-th input switch is input to an address of a k-th substitution table, where k is between 1 and m/2;

an output of the k-th substitution table and an output of an (i+k−1)-th substitution table are input to a k-th exclusive-OR-circuit;

an output of an (i+k−1)-th exclusive-OR circuit is input to an address of the (i+k−1)-th substitution table;

an output of an (i+k−1)-th input switch and the output of the k-th substitution table are input to the (i+k−1)-th exclusive-OR circuit;

an output of the k-th exclusive-OR circuit is input to a k-th input terminal of the permutation circuit;

the output of the (i+k−1)-th substitution table is applied to an (i+k−1)-th input terminal of the permutation circuit;

a j-th output of the permutation circuit is input to a j-th input terminal of the bit rotation shift means; and

the bit rotate shift means rotatively shifts entire data input to first to m-th input terminals.

5,623,549

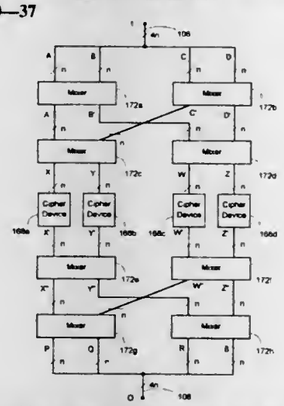
CIPHER MECHANISMS WITH FENCING AND BALANCED BLOCK MIXING

Terry F. Ritter, 2609 Choctaw Trail, Austin, Tex. 78745

Filed Jan. 30, 1995, Ser. No. 380,960

Int. Cl.[6] H04L *9/18*

U.S. Cl. 380—37 **10 Claims**



2. A balanced block mixer mechanism for the invertible mixing of two input blocks of some block size n in bits into two output blocks of said block size n, comprising:

A first latin square mixing mechanism of order 2 to the power n for combining said two input blocks into the first of said two output blocks; and

A second latin square mixing mechanism of order 2 to the power n, orthogonal to said first latin square mixing mechanism, for combining said two input blocks into the second of said two output blocks.

5,623,550

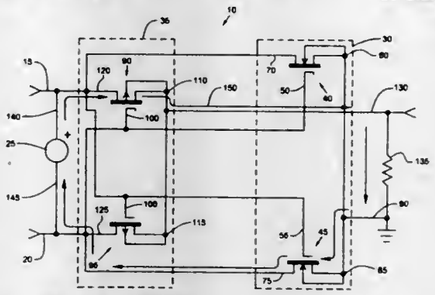
BATTERY POWER SUPPLY CIRCUIT WHICH SUPPLIES CORRECT POWER POLARITY IRRESPECTIVE OF BATTERY ORIENTATION

Mead Killion, Elk Grove Village, Ill., assignor to Etymotic Research, Inc., Elk Grove Village, Ill.

Filed Mar. 8, 1995, Ser. No. 400,876

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—69.2 **16 Claims**



1. A hearing aid comprising:

a microphone for transducing audio waves into electronic signals;

an amplifier for amplifying the electronic signals;

a receiver for transducing the amplified electronic signals to sound waves;

a battery for supplying power to the amplifier; and

battery switch means including first and second battery terminals in electrical contact with the battery for supplying power of correct polarity to the amplifier irrespective of battery polarity orientation, the battery switch means comprising

a first transistor switching circuit connected between the first and second battery terminals and responsive to voltage from the battery to through-connect a negative polarity power signal therethrough, the first transistor switching circuit comprising

a first n-channel MOSFET having gate terminal, a drain terminal, and a source terminal, the drain terminal being connected to the first battery terminal the gate terminal being connected to the second battery terminal,

a second n-channel MOSFET having a gate terminal, a drain terminal, and a source terminal, the drain terminal being connected to the second battery terminal, the gate terminal being connected to the first batten/terminal, the source terminal of the first n-channel MOSFET being connected to the source terminal of the second n-channel MOSFET and supplying the negative polarity power signal, and

a voltage divider circuit disposed between the first and second battery terminals and connected to the source terminals of the first and second n-channel MOSFETs, the voltage divider circuit comprising

a first resistor having a first terminal connected to the first battery terminal, and a second terminal, and

a second resistor having a first terminal connected to the second battery terminal, and a second terminal connected to the second terminal of the first resistor, the second terminals of the first and second resistors being connected to the source terminals of the first and second n-channel MOSFETs, and

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a second transistor switching circuit connected between the first and second battery terminals and responsive to voltage from the battery to through-connect a positive polarity power signal therethrough.

5,623,551

LINEAR CONTROL ARRANGEMENTS

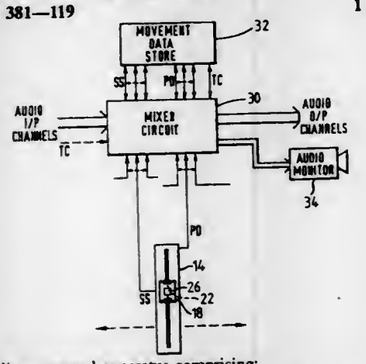
John W. East, Witney, and Paul Frindle, Charlbury, both of England, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,550

Claims priority, application United Kingdom, Jul. 20, 1992, 9215401

Int. Cl.[6] H04B 1/00

U.S. Cl. 381—119 **1 Claim**



1. A linear control apparatus comprising:

a plurality of linear potentiometers each having a knob movable throughout a plurality of positions in which each of the positions represents a value of a respective parameter;

mixer means for receiving a plurality of channels of input data having the parameters represented by the linear potentiometers and for mixing the received input data;

storage means operable in a recording mode for recording data of at least one of said linear potentiometers in which the recorded data of a respective linear potentiometer is representative of a data profile which corresponds to the positions of the respective knob over a predetermined period of time, said storage means being further operable in an amending mode for amending a desired portion of the data profile in which the desired portion represents a portion less than the data profile such that a revised data profile is obtained in the amending mode which includes a portion having the recorded data and another portion having amended data and in which the amended data of the desired portion is recorded in the amending mode such that the current recorded data represents the revised data profile; and

a plurality of switches each disposed within a respective one of said knobs for selectively enabling and disabling a selected one of the recording and amending modes.

5,623,552

SELF-AUTHENTICATING IDENTIFICATION CARD WITH FINGERPRINT IDENTIFICATION

William F. Lane, Wilson, N.C., assignor to CardGuard International, Inc., Wilson, N.C.

Continuation of Ser. No. 184,686, Jan. 21, 1994, abandoned. This application Aug. 15, 1995, Ser. No. 515,151

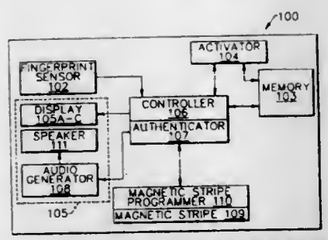
Int. Cl.[6] G06K 9/00

U.S. Cl. 382—124 **29 Claims**

1. An identification card for a card user comprising:

a substrate;

fingerprint sensing means, carried by the substrate, for sensing information related to a fingerprint;



memory means internal to said substrate and electrically connected to said fingerprint sensing means, for storing information related to a fingerprint of the card user;

activation means, electrically connected to said fingerprint sensing means and said internal memory means, for initiating internal storage of the information related to a fingerprint of the card user upon activation thereof for a first time;

controller means internal to said substrate and responsive to said activation means, for independently programming said internal memory means with the information related to a fingerprint of the card user by generating an internal control signal to initiate transfer of the information related to a fingerprint of the card user to said internal memory means for storage therein, upon activation of said activation means for the first time;

verification means, electrically connected to said internal memory means, for indicating that the information related to a fingerprint of the card user has been successfully stored in said internal memory means upon activation of said activation means for the first time; and

authentication means, responsive to said fingerprint sensing means, said internal memory means and said activation means, for comparing information related to a sensed fingerprint with the stored fingerprint information of the card user and for producing an authentication signal if the sensed fingerprint information matches the stored fingerprint information of the card user.

5,623,553

HIGH CONTRAST FINGERPRINT IMAGE DETECTOR

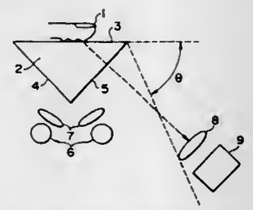
Takaomi Sekiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 259,977, Jun. 17, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 525,069

Claims priority, application Japan, Jun. 21, 1993, 5-148774

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—127 **15 Claims**



1. A fingerprint input apparatus used to detect an image of a fingerprint, comprising:

an optical transparent block having an index of refraction which is greater than an index of refraction of a medium surrounding said optical transparent block, said optical transparent block having an image detecting surface, wherein the finger is placed on at least a portion of said image detecting surface:

light emitting means for emitting light towards said image detecting surface, said light emitting means being positioned such that light emitted by said emitting means is incident on said image detecting surface at an angle less than a critical angle from within said optical transparent blocks; and

image sensing means for receiving only light diffused at said image detecting surface and directed to said image sensing means without internal reflection in said optical transparent block, wherein said image sensing means are positioned so that said light diffused at said image detecting surface only reaches said image sensing means when diffused at an angle greater than said critical angle and when undeflected internally within said optical transparent block;

said optical transparent block further comprising at least two other surfaces, said image sensing means facing one of said at least two other surfaces;

an additional light emitting means, said optical transparent block comprising a triangular prism, said light emitting means being positioned such that light is incident on said one of said at least two other surfaces, and is then incident on said image detecting surface, and said additional light emitting means being positioned such that light is incident on said other of said at least two surfaces, and is then incident on said image detecting surface.

5,623,554

Patent Not Issued For This Number

5,623,555

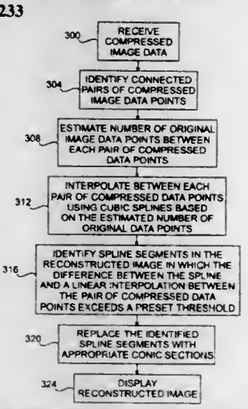
METHOD AND APPARATUS FOR HANDWRITING DECOMPRESSION USING ESTIMATED TIMING INFORMATION

Winston L. Nelson, Morristown, and William Turin, East Brunswick, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 18, 1994, Ser. No. 228,823

Int. Cl.[6] G06K 9/36;9/46

U.S. Cl. 382—233 **26 Claims**



1. A method of generating a reconstructed image from a compressed image having a plurality of compressed image data points, said method comprising the steps of:

identifying pairs of said compressed image data points having a connection therebetween in a linear segment approximation of said reconstructed image;

estimating a number of original image data points between each of said connected pairs of said compressed image data points;

fitting a cubic polynomial curve segment to each of said pairs of compressed image data points and said estimated number of original image data points corresponding thereto, such that said curve segments in combination form said reconstructed image;

identifying at least one of said cubic polynomial curve segments in said reconstructed image which produces an undesirable deviation in said reconstructed image; and

replacing said identified cubic polynomial curve segment with a conic section segment having a continuous derivative at said pair of compressed image data points to which said curve segment is fitted, in order to smooth said reconstructed image.

5,623,556

SYSTEM AND METHOD OF EXTRACTING BINARY IMAGE DATA

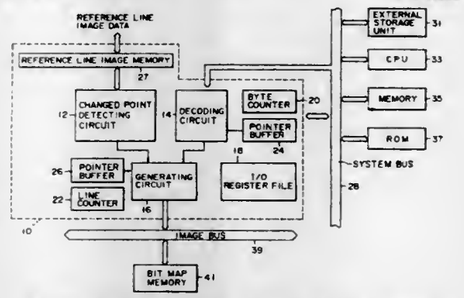
Masayoshi Murayama; Shigehiro Kajihara, and Fumitaka Sato, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 108,292, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 737,030, Jul. 29, 1991, abandoned. This application Jan. 4, 1995, Ser. No. 368,719

Claims priority, application Japan, Jul. 31, 1990, 2-201539

Int. Cl.[6] G06T 9/00

U.S. Cl. 382—233 **5 Claims**



1. A system which sequentially updates one of a plurality of lines of a binary image, which is part of an entire binary image, as a line for processing and generates an image of the line on the basis of relationships between the line and a reference line which immediately precedes the line in the binary image, said system comprising:

expanding means for expanding code data to produce the binary image based on binary image data of a reference line corresponding to a line to be expanded and based on data indicating a start position of the code data to be processed, the code data being a result of a compression of the entire binary image;

an intermediate start table for storing a plurality of data pairs, each of which is made up of image data of a reference line corresponding to a start line of one of a plurality of segments and coding position data corresponding to a head position of said one of the plurality of segments, the plurality of segments being obtained by dividing the entire binary image into a plurality of lines, the coding position data indicating a head coding position corresponding to a head position of each of the segments included in the code data obtained when the entire binary image is compressed;

code data storing means for storing the obtained code data; and

control means for transferring a pair of the binary image data of the reference line and the coding position data, both of which are stored in said intermediate start table, to said expanding means and for causing said expanding means to expand the code data, which corresponds to the segments stored in the code data storing means.

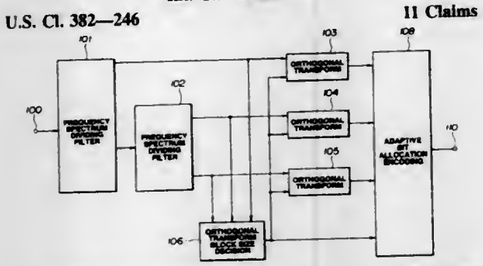
VOL 1197 ISS 4 AP 22 1997 UMI

5,623,557

METHOD AND APPARATUS FOR DATA ENCODING AND DATA RECORDING MEDIUM

Osamu Shimoyoshi, Kanagawa; Mito Sonohara, Tokyo, and Kyoya Tsutsui, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,395
Claims priority, application Japan, Apr. 1, 1994, 6-064856
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—246 11 Claims



1. A method of determining a total data string code length resulting from a selected variable-length encoding corresponding to a number of allocated bits of an input data string having a plurality of normalized high-precision input words, wherein the variable-length encoding translates each normalized high-precision input word into a code having a code length selected from among a plurality of code lengths, wherein the plurality of code lengths correspond to a plurality of ranges of normalized high-precision input word values, wherein the plurality of ranges are separated by a corresponding plurality of boundary values, the method comprising the steps of:

(a) testing whether a next sequential normalized high-precision input word is less than a lowest boundary value not previously tested against the normalized high-precision input word by retrieving the lowest boundary value not previously tested against the normalized high-precision input word from a table memory circuit which stores the boundary values and corresponding code lengths for all quantization and variable-length encodings corresponding to all different numbers of allocated bits, wherein at least one of the plurality of ranges of the selected variable-length encoding corresponds to a plurality of different codes;

(b) returning to step (a), if step (a) determined that the high-precision input word was less than the boundary value, whereby, upon returning to step (a), the lowest boundary value not previously tested against the normalized high-precision input word will be greater than the boundary value already used in step (a);

(c) adding a code length retrieved from the table memory circuit corresponding to the boundary value used in step (a) to a partial data string code length if step (a) determined that the normalized high-precision input word was not less than the boundary value;

(d) determining whether the input data string has been entirely processed by testing whether all of the plurality of high-precision input words have been tested by step (a);

(e) returning to step (a) if step (d) determined that the input data string has not been entirely processed, whereby, upon returning to step (a), the next sequential normalized high-precision input word will be a normalized high-precision input word subsequent to the normalized high-precision input word previously used in step (a); and

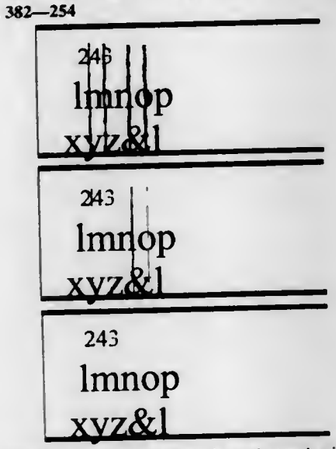
(f) outputting the partial data string code length as the total data string code length if step (d) determined that the input data string has been entirely processed.

5,623,558

RESTORATION OF IMAGES WITH UNDEFINED PIXEL VALUES

Nazneen Billawala, Cupertino; Peter Hart, and Mark Peairs, both of Menlo Park, all of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, Menlo Park, Calif.

Continuation of Ser. No. 45,954, Apr. 12, 1993, abandoned.
This application Nov. 7, 1994, Ser. No. 335,515
Int. Cl.[6] G06K 9/40
U.S. Cl. 382—254 13 Claims



1. A method for restoring pixels in an image having pixels of known values and pixels to be restored having unknown values, the method comprising the steps of:

(a) obtaining, external to the image, an indication of which pixels have unknown values;

(b) specifying a threshold value and a neighborhood configuration, the neighborhood configuration defining a window;

(c) restoring each pixel having an unknown value, by the steps of:

(1) positioning the window relative to the pixel being restored;

(2) counting the number of pixels of known value in the window to obtain a known pixel count;

(3) if the known pixel count exceeds the threshold value, determining a restored pixel value as a function of the pixel values for pixels in the window which have known values;

(4) if the known pixel count exceeds the threshold value, assigning the restored pixel value to the pixel being restored; and

(5) repeating the above steps (1)–(4) until at least a selected number of pixels of unknown value are assigned restored pixel values; and

(d) adjusting the threshold value if desired and repeating step (c) above until no more than a desired quantity of pixels of unknown value remain.

5,623,559

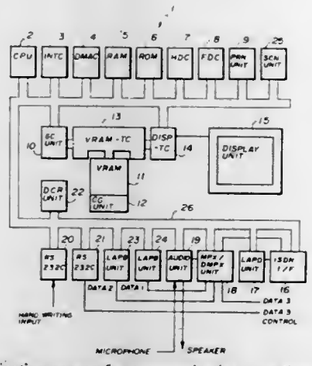
COMMUNICATION TERMINAL TRANSMITTING FIRST AND SECOND COORDINATE DATA IN FIRST AND SECOND MODES

Fusakichi Okouchi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,520
Claims priority, application Japan, Jan. 24, 1992, 4-010531
Int. Cl.[6] H04N 1/387; H04M 11/00; G09G 5/00
U.S. Cl. 382—293 6 Claims

1. A communication terminal apparatus comprising:

displaying means for displaying an image representing at least a portion of a document;



communicating means for communicating coordinate data concerning said image to another communication terminal apparatus; and

mode selecting means for selecting one of a plurality of modes;

wherein, in a first tele-writing mode of said plurality of modes, said coordinate data is communicated to the other communication terminal apparatus through a logical coordinate system of displayed coordinates of the image displayed on the display means based on a size of said image so that a same size image as displayed on the display means is communicated to the other communication terminal;

wherein, in a second document mode of said plurality of modes, said coordinate data is communicated to said other communication terminal apparatus through a document coordinate system of document coordinates within the document based on a size of said document so that an image of a different size as displayed on the display means may be communicated to the other communication terminal, and

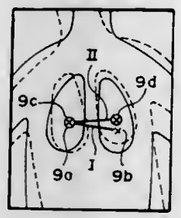
wherein the communications are accomplished in real-time.

5,623,560

METHOD FOR ADJUSTING POSITIONS OF RADIATION IMAGES

Nobuyoshi Nakajima, and Daigo Ezuka, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 158,875, Nov. 29, 1993, abandoned.
This application Jul. 25, 1995, Ser. No. 507,022
Claims priority, application Japan, Nov. 27, 1992, 4-318533; Nov. 27, 1992, 4-318534; Jan. 19, 1993, 5-006645
Int. Cl.[6] G06K 9/32
U.S. Cl. 382—295 13 Claims



1. A method for adjusting positions of radiation images, wherein the positions of a plurality of radiation images are matched to one another such that the radiation images may be subjected to superposition processing or subtraction processing,

the method comprising the steps of:

i) setting at least two regions of interest in each of the radiation images, such that each region of interest in each radiation image is approximately common to a region of interest in each of the other radiation images, the regions of interest in a radiation image which serves as a reference among the radiation images being taken as reference regions, the regions of interest in the other radiation images being taken as template regions,

ii) defining an orthogonal coordinate system on each of the radiation images,

iii) carrying out a first template matching in order to match the template regions to corresponding reference regions,

iv) calculating values of coordinates of corresponding points in the plurality of the radiation images, at least two corresponding points being taken in each of the radiation images,

v) calculating factors of a first affine transformation for transforming values of coordinates in the radiation images which contain the template regions, into values of coordinates in the radiation image which contains the reference regions, such that said corresponding points in the plurality of the radiation images may coincide with one another, said affine transformation being represented by the formula

$$\begin{pmatrix} u \\ v \end{pmatrix} = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \cdot \begin{pmatrix} x \\ y \end{pmatrix} + \begin{pmatrix} e \\ f \end{pmatrix}$$

wherein u and v represent the coordinates of the reference region, x and y represents the coordinates of the specific region, a, b, c, and d are the factors representing correction with a rotating operation and correction with an enlargement or reduction factor, and e and f are the factors representing correction with parallel translation,

vi) carrying out said first affine transformation, in which the calculated factors of said first affine transformation are used and in which at least the correction with the rotating operation and the correction with the enlargement or reduction factor are carried out on the radiation images containing the template regions,

vii) carrying out a second template matching on the radiation images which have been obtained from the first affine transformation,

viii) calculating the factors of a second affine transformation, which is represented by said formula, and

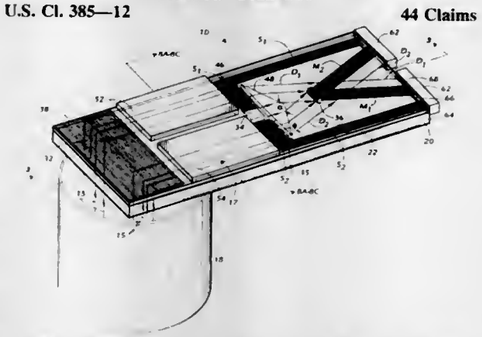
ix) carrying out said second affine transformation, in which the factors of said second affine transformation having been calculated after the second template matching are used, and in which the correction with the rotating operation, the correction with the enlargement or reduction factor, and the correction with the parallel translation are carried out on the radiation images containing the template regions.

5,623,561

INTEGRATED OPTIC INTERFEROMETRIC SENSOR

Nile F. Hartman, Stone Mountain, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Sep. 29, 1995, Ser. No. 535,569
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—12 44 Claims



1. An apparatus for detecting a property of an environment, comprising:

a. means for producing a beam of coherent radiation;

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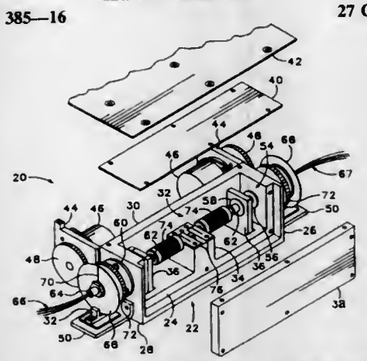
b. a planar waveguide, comprising:
i. a first region that allows radiation to propagate therethrough as a first function of exposure to the property of the environment; and
ii. a second region, distinct from the first region, that allows radiation to propagate therethrough as a second function of exposure to the property of the environment, the second function being different from the first function;
c. means for coupling the beam into the planar waveguide; and
d. means for determining a phase difference between a first part of the beam after having propagated through the first region and a second part of the beam after having propagated through the second region,
the apparatus having a structural feature that restricts transmission of the beam through the planar waveguide to only a single mode of the beam.

5,623,562

METHOD OF ALIGNING OPPOSING OPTICAL TRANSMISSION PATHS IN A MECHANICAL OPTICAL SWITCH

Duwayne R. Anderson; Steve U. Reinhold, both of Redmond; Lorimer L. Twigg, Sisters, and Mark D. Marineau, Redmond, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 393,583, Feb. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,298, Apr. 5, 1994, Pat. No. 5,438,638. This application Jun. 7, 1995, Ser. No. 478,174
Int. Cl.[6] G02B *6/40*
U.S. Cl. 385—16 **27 Claims**



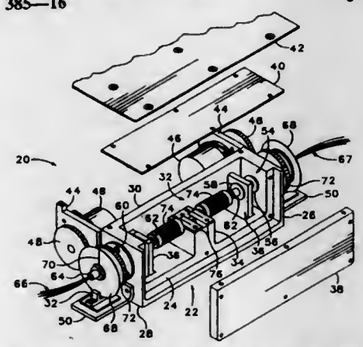
1. In an optical switch having first and second optical transmission paths in opposing relationship forming an optical interface and rotating about respective first and second independent and offset rotational axes for positioning the respective transmission paths on first and second closed curves with the closed curves being laterally offset from each other for establishing intersecting points on the closed curves and means for storing angular coordinates representative of the position of the respective transmission paths at the intersecting points of the first and second closed curves and drive motors for selectively rotating the first and second optical transmissions paths relative to each other about their respective independent and offset rotational axes, a method for axially aligning the opposing optical transmission paths comprising the steps of:
(1) rotating the first optical transmission path on the first closed curve to one of the intersecting points in response to the angular coordinate representative of the position of the first optical transmission path at the intersecting point on the first closed curve; and
(2) simultaneously rotating the second optical transmission path on the second closed curve to the intersecting point corresponding to the intersecting point in step (1) in response to the angular coordinate representative of the position of the second optical transmission path at the intersecting point on the second closed curve.

5,623,563

METHOD OF DETERMINING ANGULAR COORDINATES OF OPPOSING OPTICAL FIBERS IN A MECHANICAL OPTICAL SWITCH

Duwayne R. Anderson, and Mark D. Marineau, both of Redmond, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 223,298, Apr. 5, 1994, Pat. No. 5,438,638. This application Jun. 7, 1995, Ser. No. 481,002
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—16 **5 Claims**



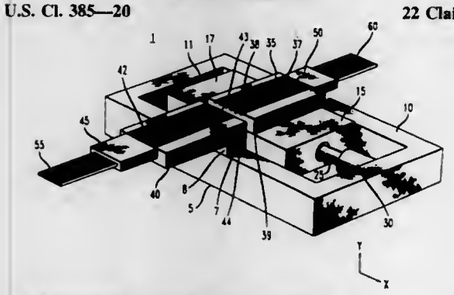
1. In an optical switch having at least a first optical fiber disposed within a first mounting member rotating about a first independent rotational axis with the first optical fiber positioned within the mounting member to move on a first closed curve and a plurality of optical fibers disposed within a second mounting member with the plurality of optical fibers within the second mounting member rotating about a second independent and offset rotational axis with the plurality of optical fibers positioned within the second mounting member to move on closed curves, the first and second mounting members having end faces in opposing relationship forming an optical interface between the first optical fiber and the plurality of optical fibers, with the first and second rotational axes being laterally offset from each other for offsetting the first closed curve from the closed curves of the plurality of optical fibers for establishing intersecting points between the closed curves of the plurality of optical fibers within the second mounting member and the closed curve of the first optical fiber, a method for determining the angular coordinates representative of the intersecting points on the closed curves of the first optical fiber and the plurality of optical fibers comprising the steps of:
a) determining relative angular coordinates of intersecting points between each of the closed curves of the plurality of optical fibers and the closed curve of the first optical fiber as a function of imaging the respective end faces of the first and second mounting members for determining the locations of the optical fibers in the respective mounting members and at least one reference point within one of the mounting members, the respective axes of rotation of the mounting members and coordinates of the optical fibers relative to the axis of rotation of the respective mounting members and using the coordinates of the optical fibers in conjunction with the offset of the first and second mounting members;
b) adjusting the relative angular coordinates of intersecting points between each of the closed curves of the plurality of optical fibers and the closed curve of the first optical fiber as a function of aligning the first optical fiber with the reference point;
c) optimally aligning one of the plurality of optical fibers with the first optical fiber at one of the intersecting points on the closed curves using the adjusted relative angular coordinates as the starting angular coordinates;
d) readjusting the relative angular coordinates of intersecting points between each of the closed curves of the remaining plurality of optical fibers and the closed curve of the first optical fiber and the offset of the first and second mounting members;
e) optimally aligning the remaining plurality of optical fibers with the first optical fiber at their respective intersecting points using the readjusted relative angular coordinates as the starting angular coordinates; and
f) storing the angular coordinates of the intersecting points of the optimally aligned first optical fiber and each of the plurality of optical fibers.

5,623,564

SELF-ALIGNED MECHANICAL OPTICAL SWITCH

Herman M. Presby, Highland Park, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 475,708
Int. Cl.[6] C02B *6/26*
U.S. Cl. 385—20 **22 Claims**



1. An optical mechanical switch comprising:
a fixed base; and
first and second silica optical structures cleaved from a monolithic silica optical structure, each of the first and second silica optical structures having a corresponding cleaved edge and containing at least one waveguide, a surface of the first structure being coupled to a surface of the fixed base, a corresponding surface of the second structure being coupled to a surface in a common plane with said fixed base surface, and the cleaved edge of the second structure being arranged adjacent to and facing the first structure's cleaved edge, wherein the second structure is moveable in a direction along the cleaved edges to selectively provide connections and alignment of the waveguides of the respective structures.

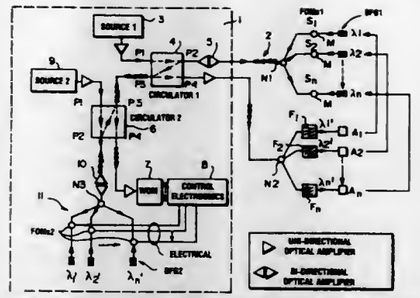
5,623,565

OPTICAL SENSOR/ACTUATOR COMMUNICATION SYSTEM WITH COMMON CONTROL SITE INDEPENDENTLY RESPONDING TO INPUTS FROM SENSORS AND CONTROLLING ASSOCIATED ACTUATORS

Loudon T. Blair; Stephen A. Cassidy; Paul Urquhart, and Colin A. Millar, all of Suffolk, United Kingdom, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB93/01130, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO93/25020, PCT Pub. Date Dec. 9, 1994
PCT Filed May 28, 1993, Ser. No. 347,299
Claims priority, application European Pat. Off., Jun. 1, 1992, 92305011; Aug. 14, 1992, 92307130
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—24 **19 Claims**

1. An optical communications system comprising:
a head-end station;
an optical fibre network; and



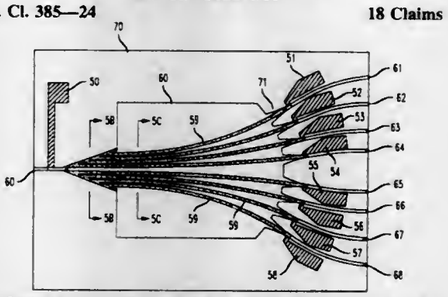
a plurality of sensors and a plurality of actuators, each actuator being local to and associated with a respective one of the plurality of sensors, the sensors and actuators being arranged to communicate data via the network at a plurality of different wavelengths characteristic of different respective sensors and actuators;
the head-end station including:
an optical source;
means for outputting an optical signal from the source onto the network;
means for detecting narrowband components of the optical signal modulated by the sensors and returned via the network to the head-end station;
optical modulator means for selectively modulating different narrowband optical signals and means for outputting the resulting modulated signals onto the network for transmission to the actuators; and
control means responsive to incoming data carried by the detected narrowband components and arranged to output outgoing data to the optical modulator means.

5,623,566

NETWORK WITH THERMALLY INDUCED WAVEGUIDE

Hyung J. Lee, and Weyl-kuo Wang, both of Westfield, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 19, 1995, Ser. No. 444,949
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—24 **18 Claims**



1. Optical network for operation at a system wavelength, λ_s, the network comprising a plurality of fixed waveguides including input and output waveguides, together with heating means for inducing a thermo-optic waveguide for providing selective coupling between at least two fixed waveguides,
CHARACTERIZED IN THAT
the thermo-optic waveguide is induced in a structure comprising an upper clad layer, a core layer, and a lower clad layer, in order to produce a "TI" waveguide, in which the TI waveguide, over a substantial part of its length, is embraced within the core layer, the width of the TI waveguide being defined as the heated portion of the core layer including the position of attained peak temperature increase, and bounded by positions of 50% of the peak temperature increase, wherein the upper cladding layer, core layer and lower clad layer are

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all composed of silica based glass, and wherein the thickness of the core layer is a single mode dimension for λ_s.

5,623,567

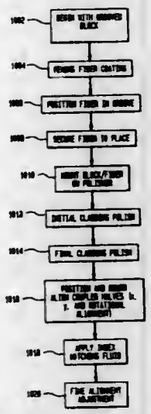
METHOD FOR MAKING AN EVANESCENT FIELD COUPLER

Yvonne L. Barberio, Neshanic; Donald W. Dahringer, Glen Ridge; Jon W. Engelberth, Denville, and Arthur E. Neeves, Morristown, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 366,931, Dec. 30, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,283

Int. Cl.[6] G02B *6/245*

U.S. Cl. 385—30 **14 Claims**



1. A method for preparing optical fibers of an evanescent field coupler, comprising the steps of:

a. forming a groove along a top surface of a substrate block, wherein said groove is formed shallower than the diameter of a stripped fiber;

b. positioning an optical fiber in said groove, wherein a center portion of said optical fiber is stripped of its coating;

c. gluing said optical fiber in said groove;

d. polishing said optical fiber to remove a portion of its cladding to form a coupling region, without polishing said top surface of said substrate block;

e. applying an optical signal to an end of said optical fiber;

f. monitoring loss of said optical signal at said coupling region said loss being monitored at a location on said coupling region; and

g. repeating steps d through f until a desired loss value is reached.

5,623,568

COMPACT AND FABRICATION TOLERANT HIGH SPEED DIGITAL OPTICAL Y-SWITCHES

Mujibun N. Khan, Freehold, and Jane E. Zucker, Aberdeen, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 15, 1995, Ser. No. 528,823

Int. Cl.[6] G02B *6/26*

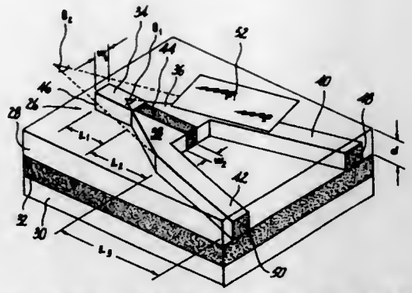
U.S. Cl. 385—45 **27 Claims**

1. An optical switch comprising:

a first waveguide portion;

a plurality of intermediate waveguide portions connected to the first waveguide portion and associated with a first angle θ_1, wherein the first angle θ_1 is less than about 2.0°; and

a plurality of branch waveguide portions connected to a respective intermediate waveguide portion and associated with a



second angle θ_2, wherein the second angle θ_2 is less than θ_1 and is less than about 0.3°;

wherein each of the intermediate waveguide portions and branch waveguide portions has an associated length, wherein the first and second angles and the associated lengths provide about 3 dB electrical bandwidth of about 10 GHz.

5,623,569

OPTICAL FIBRE TERMINATION WITH SKEWED TRANSFER FACE

Robert W. Musk, Ashbocking, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

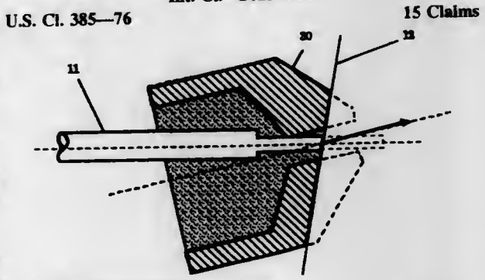
PCT No. PCT/GB93/02648, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/15233, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 23, 1993, Ser. No. 481,446

Claims priority, application United Kingdom, Dec. 29, 1992, 9227040

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—76 **15 Claims**



1. A fibre termination comprising:

a tubular housing for protecting the end portion of an optical fibre,

the optical fibre comprising a filament inside a protective sheath, the end portion of said sheath being removed to expose said filament;

the tubular housing comprising a nose-piece having a control tube substantially larger than said filament through which the exposed portion of the filament passes;

said termination providing an external optical path orientated in a predetermined direction, said fibre ending in a transfer face which provides optical connection for optical signals to pass between the core of the fibre and its external path;

wherein the direction of the core at the transfer face is skewed to both:

(a) the external path, and

(b) the normal to the transfer face,

the angles of skew in both (a) and (b) being matched so that refraction at the transfer face causes the external path to be oriented in said predetermined direction, and

wherein the length and diameter of the control tube is such that the angle between the filament and the geometrical axis of the nose-piece is the angle defined in (a).

5,623,570

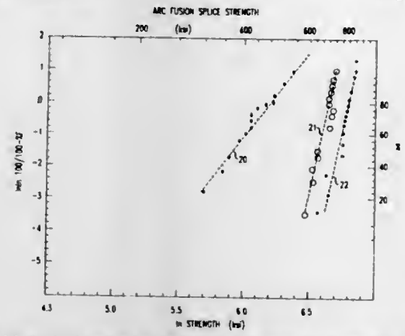
METHOD OF FUSION-SPLICING OPTICAL FIBER

John T. Krause, New Providence, N.J., and Dimitrios Stroumbakis, Bayside, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 22, 1996, Ser. No. 589,314

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—95 **9 Claims**



1. Method of making an article that comprises a first length of polymer-coated silica-based optical fiber that is fusion spliced to second length of polymer-coated silica-based optical fiber, the method comprising

a) providing the first and second lengths of polymer-coated fibers;

b) contacting an end portion of each of said first and second lengths of polymer-coated fibers with a chemical polymer remover such that the polymer coating is removed from a portion of each of said first and second lengths of fiber, said portions to be referred to as the "stripped" portions; and

c) heating the stripped portions and butt-splicing the stripped portions;

characterized in that

d) step b) is carried out such that the stripped portions are covered during at least a major portion of the time from removal of the polymer to at least the beginning of step c), with a film of material that comprises said chemical polymer remover.

5,623,571

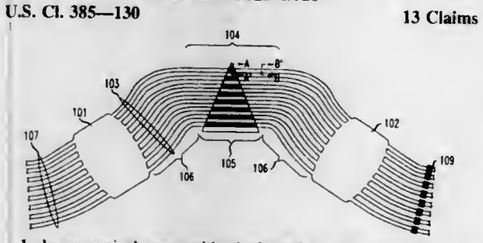
POLARIZATION COMPENSATED WAVEGUIDE GRATING ROUTER

Patrick C. Chou, Cambridge, Mass.; Charles H. Joyner, and Martin Zirngibl, both of Middletown, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 29, 1995, Ser. No. 521,099

Int. Cl.[6] G02B *6/126*

U.S. Cl. 385—130 **13 Claims**



1. In an optical waveguide device of the type comprising a substrate wafer, a cladding layer and a guiding layer disposed on the wafer, an elongated cross-section waveguide core, embedded within the cladding layer and having a refractive index higher than the indices of surrounding cladding material, for transmitting light along a length of the core, said waveguide device characterized by the capacity to transmit light in a plurality of optical modes having different states of polarization and exhibiting different effective indices of refraction for said different states of polarization, the improvement comprising

a first segment along the length of the core having a thickness of cladding located over the core which is substantially less than the thickness of the cladding located over the core of a second segment along the length of the core, the cladding over the first segment providing an increased birefringence of the first segment relative to the birefringence of the second segment.

5,623,572

DOUBLE-DECK VIDEOCASSETTE RECORDER

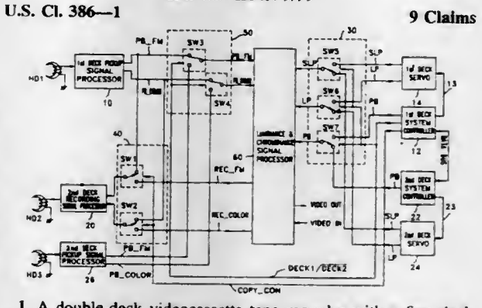
Sang-ook Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 24, 1996, Ser. No. 639,112

Claims priority, application Rep. of Korea, Apr. 27, 1995, 95-10116

Int. Cl.[6] H04N *9/79*

U.S. Cl. 386—1 **9 Claims**



1. A double-deck videocassette tape recorder with a first deck and a second deck, said double-deck videocassette tape recorder comprising:

first deck system controller for outputting a first playback mode signal for controlling said first deck, a first control signal and a second control signal;

second deck system controller for outputting a second playback mode signal for controlling said second decks, respectively;

first servo for outputting first playback mode control signals for determining a tape playback mode of said first deck in accordance with said first playback mode signal output from said first deck system controller;

second servo for outputting second playback mode control signals for determining a tape playback mode of said second deck in accordance with said second playback mode signal output from said second deck system controller;

a first deck playback head;

a second deck playback head;

a second deck recording head;

a luminance/chrominance signal processing unit for demodulating playback luminance and color signals to output a composite video signal, and for, alternatively, modulating an input composite video signal, to output luminance and color signals for recording;

a first switching unit for selecting either said first playback mode control signals or said second playback mode control signals as selected playback mode control signals, and for selecting either said first playback mode signal or said second playback mode signal as a selected playback mode signal, to then supply the selected playback mode control signals and the selected playback mode signal to said luminance/chrominance signal processing unit, wherein the selecting by said first switching unit is done according to said second control signal output from said first deck system controller;

a second switching unit for selecting either playback luminance and color signals produced by said first deck playback head, or said luminance and color signals for recording, output from said luminance/chrominance signal processing unit, as a second switch unit selected signal, to then supply the second

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switch unit selected signal to said second deck recording head, wherein the selecting by the second switching unit is done according to said first control signal output from said first deck system controller; and

a third switching unit for selecting either said playback luminance and color signals produced by said first deck playback head, or playback and color signals produced by said second deck playback head, as a third switching unit selected signal, to then supply the third switching unit selected signal to said luminance/chrominance signal processing unit, wherein the selecting by the third switching unit is done according to said second control signal output from said first deck system controller.

5,623,573

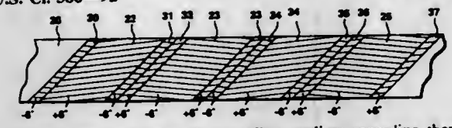
BACKWARD COMPATIBLE HDTV RECORDING/ REPRODUCING SYSTEM

Christopher H. Strolle, Glenside, Pa., and Jung W. Ko, Lawrenceville, N.J., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 899,305, Jun. 16, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 157,340

Int. Cl.[6] H04N *5/78;5/782*

U.S. Cl. 386—92 **29 Claims**



27. An improved magnetic recording medium recording therewithin signals of first and second types in accordance with a recording format, for reproduction by a signal reproducer apparatus capable of reproducing signals of at least said first and second types, said recording format comprising:

a plurality of regularly spaced, parallel slant tracks of a first-type recorded with said signal of first type on the magnetic recording medium, each said slant track of said first type having a predetermined spacing from each of closest neighboring others of said slant tracks of said first type, having a first track width, and having a respective prescribed azimuth angle, at least some of which prescribed azimuth angles have a first value;

a respective pair of slant tracks of a second type flanking opposite sides of each said slant track of said first type and being recorded with said signal of second type on the magnetic recording medium, both slant tracks of each said respective pair being recorded with a similar segment of said signal of second type, the width of each said slant track of said second type of tracks being substantially one-half the predetermined spacing between the slant tracks of said first type, so that a respective two said slant tracks of said second type are positioned for filling each predetermined spacing; and

the improvement wherein said signal of second type is descriptive of digital samples of at least video portions of a sequence of images, said digital samples being arranged, together with synchronizing data and identification codes, in blocks within said signal of second type.

5,623,574

HEATED WATER APPARATUS

John T. Knepler, Chatham, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Sep. 25, 1995, Ser. No. 533,637

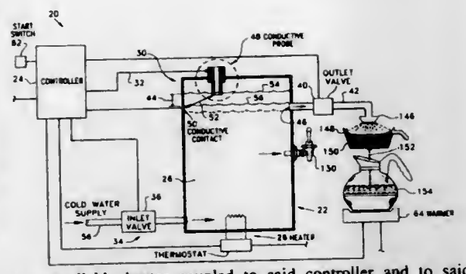
Int. Cl.[6] F24H *1/20;* **A47J** *31/56*

U.S. Cl. 392—451 **5 Claims**

1. A heated water apparatus comprising:

a reservoir for retaining a quantity of water;

a controller for controlling said heated water apparatus;



a controllable heater coupled to said controller and to said reservoir for controllably heating said water retained in said reservoir;

an electrical water detector assembly having a conductive sensor assembly coupled to said reservoir and to said controller for conductively detecting the presence and absence of a desired quantity of water in said reservoir and providing a signal to said controller;

a controllable inlet valve communicating with said reservoir and coupled to said controller for controlling the flow of water from a water source to said reservoir; and

a controllable outlet valve communicating with said reservoir and coupled to said controller for controllably dispensing water from said reservoir;

said controller controllably operating said inlet valve and said outlet valve to control the flow of water through said outlet valve in response to the presence and absence of water in said reservoir as detected by said water detector assembly, said controller periodically sensing the level of water in said reservoir and operating said inlet valve to add water to said reservoir when a low level is detected, said controller closing said outlet valve upon detecting the absence of water at a predetermined level in said reservoir, said controller controllably cycling said outlet valve when said outlet valve is activated and a low water level is detected to replenish said reservoir while dispensing therefrom, said controllable outlet valve being opened for a predetermined period of time and closed for a predetermined period of time while maintaining said inlet valve in an open condition, periodically sensing the presence of water in said reservoir at a desired level while cycling said controllable outlet valve opened and closed.

5,623,575

EXCITATION SYNCHRONOUS TIME ENCODING VOCODER AND METHOD

Bruce A. Fette, Mesa; Chad S. Bergstrom, and Sean S. You, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 68,918, May 28, 1993, Pat. No. 5,479,559. This application Jul. 17, 1995, Ser. No. 502,990

Int. Cl.[6] G10L *3/00*

U.S. Cl. 395—2.74 **20 Claims**

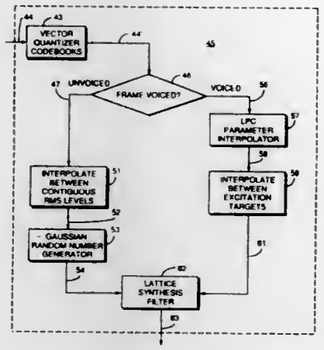
12. An apparatus for excitation synchronous time decoding of digital signals to provide speech signals, said apparatus comprising:

an input for receiving digital signals representing encoded speech;

an encoder coupled to said input, said encoder for providing quantized signals from said digital signals;

a frame voicing decision apparatus coupled to said encoder for determining when said quantized signals represent voiced speech and when said quantized signals represent unvoiced speech;

a first interpolator coupled to said frame voicing decision apparatus, said first interpolator for interpolating between contiguous root-mean-square signal levels representative of unvoiced excitation;



a random noise generator coupled to said first interpolater, said random noise generator for providing noise signals modulated to a level determined by said first interpolater; and

a lattice synthesis filter coupled to said random noise generator for synthesizing unvoiced speech from said modulated noise signals.

5,623,576

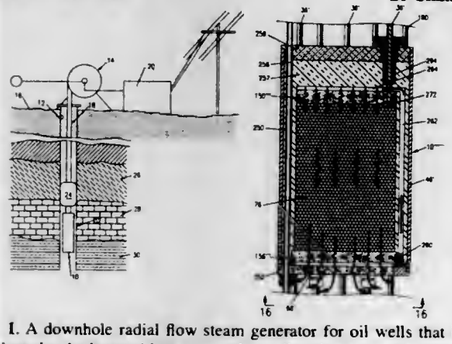
DOWNHOLE RADIAL FLOW STEAM GENERATOR FOR OIL WELLS

Harry A. Deans, Laramie, Wyo., assignor to Meshekow Oil Recovery Corporation, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 96,377, Jul. 26, 1993, abandoned. This application Jul. 26, 1994, Ser. No. 280,739

Int. Cl.[6] E21B *36/04;* **F22B** *1/30;* **H05B** *3/60*

U.S. Cl. 392—303 **20 Claims**



1. A downhole radial flow steam generator for oil wells that is adapted to be inserted into an annular well casing having openings therethrough, said generator adapted to be suspended from a flexible cable that carries water and electricity to said generator from above ground comprising:

an outer casing of a diameter less than interior diameter of aid annular well casing and having a construction to allow steam generated therein to radially pass therethrough and through said well casing;

at least two spaced apart electrodes adapted to be chargeable from said flexible cable forming a part of said generator, to convert water therebetween supplied from said flexible cable to steam; and

a non-conductive porous medium packed in said outer casing between electrodes and of such a construction adapted to allow steam and brine to pass through said outer casing, said medium is of such a configuration as to provide circuitous passages to allow flow resistance to water and steam and said medium is capable of receiving water to wet, said medium allowing a path for electric current while also allowing steam to pass therethrough.

5,623,577

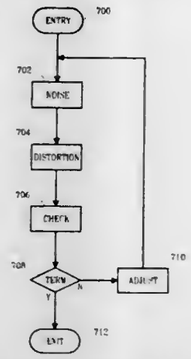
COMPUTATIONALLY EFFICIENT ADAPTIVE BIT ALLOCATION FOR ENCODING METHOD AND APPARATUS WITH ALLOWANCE FOR DECODER SPECTRAL DISTORTIONS

Louis D. Fielder, Millbrae, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 145,975, Nov. 1, 1993, which is a continuation-in-part of Ser. No. 92,269, Jul. 16, 1993, abandoned. This application Jan. 28, 1994, Ser. No. 190,655

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.38 **24 Claims**



1. An encoding method for constructing an encoded representation of an input signal for decoding by a decoding method that comprises applying a plurality of synthesis filters, said encoding method comprising

generating subband signals by applying a plurality of analysis filters to said input signal;

producing, in response to said subband signals, encoded information having lower informational requirements than said subband signals, wherein said lower information requirements are achieved using a masking threshold established according to psycho-perceptual principles and by allowing for spectral distortions introduced by said decoding method, said allowing for spectral distortions being responsive to rate of rolloff of said masking threshold and rate of rolloff of frequency response of said plurality of synthesis filters; and

assembling said encoded information into said encoded representation.

5,623,578

SPEECH RECOGNITION SYSTEM ALLOWS NEW VOCABULARY WORDS TO BE ADDED WITHOUT REQUIRING SPOKEN SAMPLES OF THE WORDS

Rajendra P. Mikkilineni, Gahanna, Ohio, assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 28, 1993, Ser. No. 144,961

Int. Cl.[6] G10L *5/06;9/00*

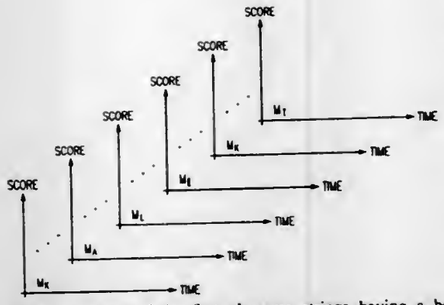
U.S. Cl. 395—2.64 **18 Claims**

1. In a computer system, a speech recognition method comprising the steps of:

a) receiving a user spoken word (USW);

b) generating score parameters for each of a plurality of first phoneme strings by comparing output values of each against the USW;

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c) selecting one of the first phoneme strings having a best correlation to the USW based on said score parameters, said one phoneme string corresponding to a first word in a stored database;

d) generating a decision field having a first region that contains a first set of response signals and a second region that contains to a second set of response signals, said first set of response signals including response signals obtained by exciting said one phoneme string, said second set of response signals obtained by exciting a second string of phonemes that differs from said one phoneme string;

e) generating a third response signal based on exciting said one phoneme string with the USW;

f) determining whether said USW is a valid input of the first word based on a comparison of said third response signal to said decision field, said USW comprising a valid input of the first word if said third response signal is within said first region and an invalid input of the first word if said third response signal is within said second region.

5,623,579

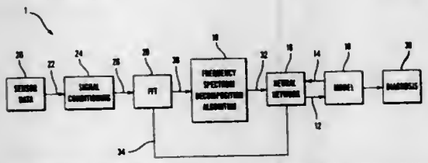
AUTOMATED METHOD FOR THE SYSTEMATIC INTERPRETATION OF RESONANCE PEAKS IN SPECTRUM DATA

Brian Damiano, and Richard T. Wood, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 67,922, May 27, 1993, abandoned. This application May 17, 1995, Ser. No. 443,292

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—22 **20 Claims**



1. A method for spectral signature interpretation comprising the steps of:

measuring and transforming raw sensor signals of a system into frequency spectra;

isolating from said frequency spectra a plurality of resonance frequencies corresponding to operating conditions of components within the system;

developing a neural network from a mathematical model based on modeled resonant frequencies of components of said system, the resonant frequencies being adjusted to characterize the steady state condition of the system;

feeding the plurality of resonance frequencies into the neural network; and

outputting from the neural network a diagnosis of the actual physical conditions of said components of the system.

5,623,580

PLANNING METHOD AND SYSTEM

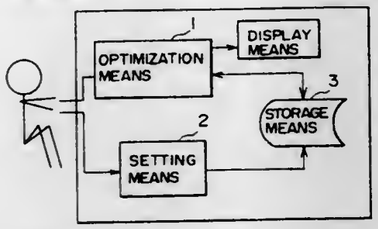
Haruki Inoue, Katsuta; Hiroyuki Ichikawa, Iwaki; Hideo Yoshida, Takahagi; Yasuhiro Terada, Hitachi; Noboru Abe, Hitachi; Yoshiyuki Satoh, Hitachi; Masakazu Yahiro, Hitachi, and Akemi Ohtsuki, Kiyose, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki-ken, both of Japan

Filed Jul. 12, 1994, Ser. No. 274,016

Claims priority, application Japan, Jul. 12, 1993, 5-171765

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—51 **7 Claims**



1. A planning system, comprising:

setting means for accepting, at least, a given planning problem, and values of a variable required for solving the problem;

optimization means for creating an objective function which expresses an item intended for either of minimization or maximization in the planning problem, and for forming a plan which affords either of minimum or maximum values of the created objective function; and

storage means for storing therein, at least, a preset variable required for forming the plan;

said optimization means including calculation means for calculating a difference value between values of said objective function assumed in a last formed plan and a newly formed plan, and replanning means for comparing the difference value of said objective function with a value of the preset variable in said storage means, and for substituting the last formed plan with the newly formed plan and setting the latter as a candidate for an optimum plan, on condition that said difference value of said objective function is smaller than the value of the preset variable, wherein said value of the preset variable is determined randomly, at each time the plan is formed, within a range which decreases as a number of times of planning increase.

5,623,581

DIRECT VIEW INTERACTIVE PHOTO KIOSK AND IMAGE FORMING PROCESS FOR SAME

Samuel S. Attenberg, Washington, D.C., assignor to APBI Interactive Kiosk Systems, Alexandria, Va.

Filed Jan. 22, 1996, Ser. No. 589,124

Int. Cl.[6] G06K *15/00;* **H04N** *7/18*

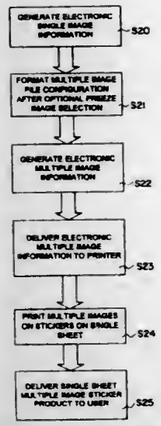
U.S. Cl. 395—106 **14 Claims**

1. A direct view photo kiosk for automatically taking, processing and delivering to a user in response to user activated controls photographic images of the user posed at the photo kiosk comprising:

an electronic imaging device for electronically forming, in response to a signal activated by a user, first electronic imaging information representative of an image of the user posed in a region provided at the photo kiosk for the user to pose;

optical reflection means positioned between the region provided for the user to pose and said electronic imaging device for reflecting the image of the user within said kiosk to form a folded and extended length optical path to narrow the depth of field within said region provided for the user to pose;

an electronic processor for electronically processing said first electronic imaging information to form second electronic



imaging information representative of multiple images of the image represented by said first electronic imaging information;

said second electronic imaging information representing said multiple images being arranged in a preselected pattern for being produced in hard copy form on a single sheet;

a printer for printing out hard copy images responsive to electronic imaging information delivered thereto;

said electronic processor including means for delivering said second electronic imaging information to said printer for printing out from said printer on a single multilayer hard copy sheet said multiple images represented by said second electronic information;

said single multilayer hard copy sheet being formed of a base sheet layer and an imaging sheet layer which are removably adhered together and formatted such that each of said multiple. images can be separately peeled off from said supporting base sheet layer on which all of said multiple images are adhesively secured; and

delivery means for automatically delivering to said user said single multilayer hard copy sheet containing said multiple images.

5,623,582

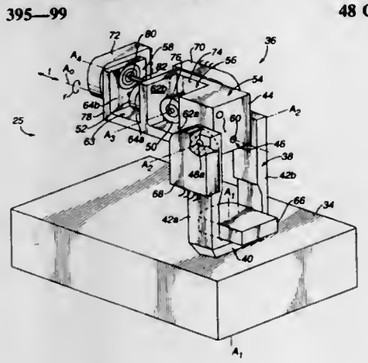
COMPUTER INTERFACE OR CONTROL INPUT DEVICE FOR LAPAROSCOPIC SURGICAL INSTRUMENT AND OTHER ELONGATED MECHANICAL OBJECTS

Louis B. Rosenberg, Mountain View, Calif., assignor to Immersion Human Interface Corporation, Palo Alto, Calif.

Filed Jul. 14, 1994, Ser. No. 275,120

Int. Cl.[6] G05B *15/00*

U.S. Cl. 395—99 **48 Claims**



14. A control input device for interfacing the motion of an elongated cylindrical mechanical object with a digital processing system comprising:

a support;

a gimbal mechanism including:

a) a U shaped base portion having a base and a pair of substantially parallel legs extending therefrom, wherein said base of said U shaped base portion is rotatably coupled to said support; and

b) an elongated object receiving portion provided with an aperture extending therethrough which defines an object axis for an elongated cylindrical object, where said receiving portion is at least partially disposed between said legs of said U shaped base portion and is pivotally coupled thereto, said receiving portion further including a translation interface and a rotation interface, both disposed proximate to said object axis such that they engage said elongated cylindrical object when it is engaged with said aperture;

wherein said base portion rotates around a first axis and said object receiving portion rotates around a second axis substantially perpendicular to said first axis, and wherein said object axis defines a radius in a spherical coordinate system having an origin at an intersection of said first axis and said second axis;

a first input transducer arranged to transduce motion between said support and said U shaped base portion to produce a first input electrical signal representative of a sensed position of said U shaped base portion relative to said support;

a second input transducer arranged to transduce motion between said U shaped base portion and said object receiving portion to produce a second input electrical signal representative of a sensed position of said object receiving portion relative to said U shaped base portion;

a third input transducer coupled to said translation interface to produce a third input electrical signal representative of a sensed translation of said elongated cylindrical object relative to said object receiving portion without causing substantial translational motion of said object receiving portion with respect to said support; and

a fourth input transducer coupled to said rotation interface and said object to produce a fourth input electrical signal representative of a sensed rotation of said elongated cylindrical object relative to said object receiving portion without causing substantial rotational motion of said object receiving portion with respect to said support.

5,623,583

THREE-DIMENSIONAL MODEL CROSS-SECTION INSTRUCTION SYSTEM

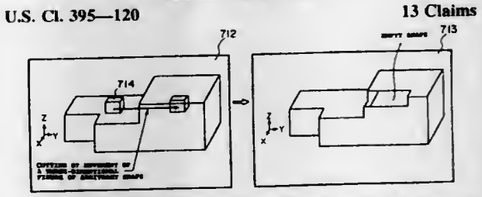
Sekiji Nishino, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,618

Claims priority, application Japan, Mar. 16, 1994, 6-046120

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—120 **13 Claims**



1. A three-dimensional model cross-section specification system having a CPU (central processor unit), external memory device, mouse and graphic display, for displaying three-dimensional figure

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data corresponding to a three-dimensional figure in a three-dimensional coordinate system with X, Y and Z axes on a graphic display, comprising:

figure data read-in processing means for reading in and storing three-dimensional figure data stored in said external memory device;

graphic control means for displaying the three-dimensional figure data stored in said figure data read-in processing means on a graphic display;

mouse control means for permitting a user to specify an arbitrary cross-section in, and to arbitrarily move and rotate, said three-dimensional figure displayed on the graphic display by said graphic control means using said mouse, and for creating information specified by the user;

cross-section shape processing means for computing the geometrical shape of a specified cross-section of said figure; and

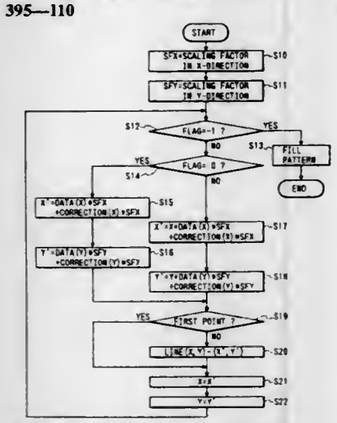
figure data editing means for distinguishing data that are not to be displayed as a consequence of the cutting from the three-dimensional figure data that are to be displayed so that only data to be displayed are read into said graphic control means;

thereby permitting specification and display of the cross-section of said figure located in an interior of a three-dimensional structure expressed by said three-dimensional model.

5,623,584
OUTPUT METHOD AND APPARATUS

Tsuneaki Kurumida, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 868,683, Apr. 15, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 378,936
Claims priority, application Japan, Apr. 23, 1991, 3-092287
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—110 **15 Claims**



1. A character processing apparatus comprising:

first memory means for storing coordinate point information for expressing a character pattern;

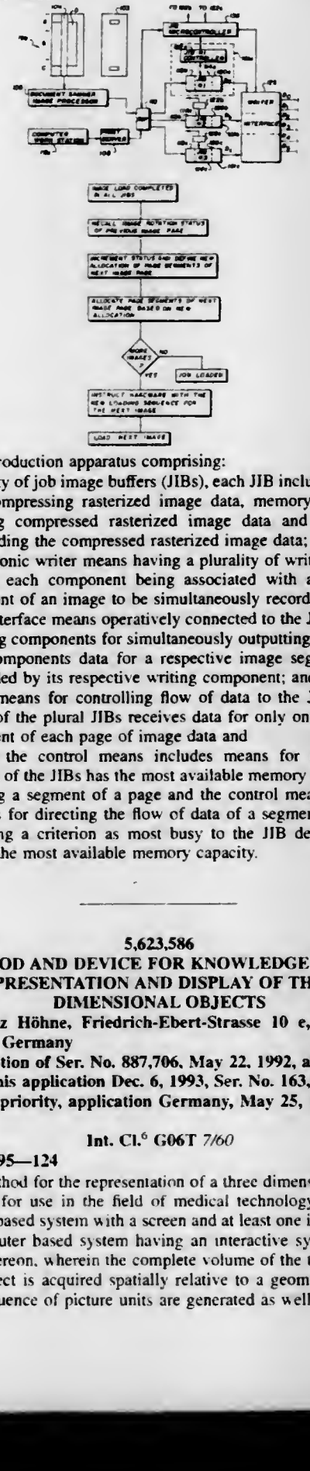
second memory means for storing correction information for expressing a character pattern including at least two lines which slightly differ in width from each other; and

generating means for using the coordinate point information stored in said first memory means and the correction information stored in said second memory means to generate a character pattern including at least two lines which slightly differ in width from each other, if the character pattern to be generated is larger than a predetermined size, and for that information to generate a character pattern those at least two lines are equal in width to each other, if the character pattern to be generated is smaller than a predetermined size.

5,623,585
METHOD AND APPARATUS FOR PARALLEL PROCESSING OF A DOCUMENT IMAGE

Luis A. Matias, and Raymond E. Maslinski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 15, 1994, Ser. No. 276,063
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—115 **25 Claims**



1. A reproduction apparatus comprising:

a plurality of job image buffers (JIBs), each JIB including means for compressing rasterized image data, memory means for storing compressed rasterized image data and means for expanding the compressed rasterized image data;

an electronic writer means having a plurality of writing components, each component being associated with a respective segment of an image to be simultaneously recorded;

writer interface means operatively connected to the JIBs and the writing components for simultaneously outputting to the writing components data for a respective image segment to be recorded by its respective writing component; and

control means for controlling flow of data to the JIBs so that each of the plural JIBs receives data for only one respective segment of each page of image data and

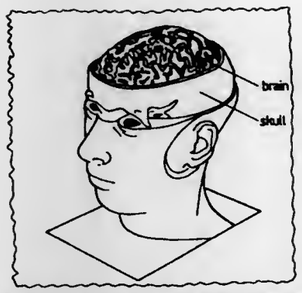
wherein the control means includes means for determining which of the JIBs has the most available memory capacity for storing a segment of a page and the control means includes means for directing the flow of data of a segment of a page meeting a criterion as most busy to the JIB determined to have the most available memory capacity.

5,623,586
METHOD AND DEVICE FOR KNOWLEDGE BASED REPRESENTATION AND DISPLAY OF THREE DIMENSIONAL OBJECTS

Karl-Heinz Höhne, Friedrich-Ebert-Strasse 10 e, 2080 Pinneberg, Germany

Continuation of Ser. No. 887,706, May 22, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 163,585
Claims priority, application Germany, May 25, 1991, 41 17 117.9
Int. Cl.[6] G06T *7/60*
U.S. Cl. 395—124 **24 Claims**

1. A method for the representation of a three dimensional object especially for use in the field of medical technology utilizing a computer based system with a screen and at least one input device, said computer based system having an interactive system implemented thereon, wherein the complete volume of the three dimensional object is acquired spatially relative to a geometric parameter, a sequence of picture units are generated as well as a spatial



coordination of the parameter and are stored in a storage device and fed to a representation device for visualization, said interactive system enabling the selection of at least one part of a displayed picture unit and said system being able to display said selected part of said picture without displaying other parts of said picture in the same way as said selected part, said method of representation comprising after acquisition, subdividing the complete volume assigned to an object into volume elements, assigning at least one attribute defining each of said volume elements thereto, said attribute corresponding to one biological characteristic of said volume elements, all volume elements of the selected part of said displayed picture unit having at least one identical attribute, each of said volume elements being filled and the complete content of each volume element having the same attribute and the coordinates of each of the volume elements and storing said attribute characterizing each of the volume elements and subsequently carrying out an assignment of the volume elements to recombine selected volume elements to create spatial substructures of the object as well as for visualization of a selectable coordination of the volume elements realized dependent on at least one selected attribute, said recombination of said volume elements being a function of selecting at least one free selectable attribute, said at least one free selectable attribute being selected by an analysis of readable text selected by the user, said selected readable text defining the meaning of said attributes, combining all volume elements defined by said selected attribute for said recombination within the complete content of the object, assigning and storing meanings of each of said attributes, displaying said meanings of said attributes as readable text after selection of one portion of the object, whereby the recombination of said selected volume elements creates a visualization of a selected portion of a real biological object, said interactive system also being able to automatically combine said selected part of said picture with said meanings of said attributes as readable text on said screen.

5,623,587
METHOD AND APPARATUS FOR PRODUCING AN ELECTRONIC IMAGE

Richard L. Bulman, New York, N.Y., assignor to Kideo Productions, Inc., New York, N.Y.

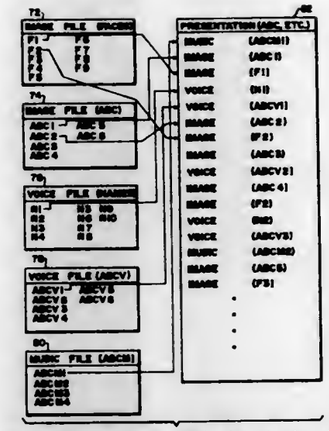
Continuation-in-part of Ser. No. 138,531, Oct. 15, 1993, abandoned. This application Jun. 12, 1995, Ser. No. 489,564
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **36 Claims**

1. A method of producing an electronic image of a subject, said method comprising the steps of:

(a) electronically inputting a first image of at least a portion of said subject and storing a set of first digital representations defining said first image in a foreground electronic image frame;

(b) generating a plurality of second images of a picture containing a remainder portion of said subject and storing a plurality of sets of second digital representations, each set defining one of said second images in a background electronic image frame;

(c) producing a set of third digital representations associated with said foreground frame defining (1) a first reference point



on said foreground frame indicating the location of said subject portion in said foreground frame, and (2) the size of said subject portion in said foreground frame;

(d) producing a set of fourth digital representations associated with each of said background frames defining (1) a second reference point on each respective background frame specifying the desired position of said subject portion in said background frame, and (2) the desired size of said subject portion in each respective background frame;

(e) converting said set of first representations of said first image into a plurality of sets of fifth representations, in dependence upon the size information defined by said set of third representations and said plurality of sets of fourth representations, each set of said fifth representations defining said foreground frame with said subject portion scaled to said desired size and located at said desired position in a respective one of said background frames;

(f) combining said set of fifth representations defining said foreground frame upon said set of second representations defining said background frame such that said first and second reference points substantially coincide, to produce a plurality of sets of sixth digital representations, each defining a respective final electronic image frame containing said subject portion disposed upon said remainder of said subject at said desired position and with said desired size; and

(g) storing said plurality of said sets of said sixth digital representations to provide a sequence of said final frames.

5,623,588
COMPUTER USER INTERFACE WITH NON-SALIENCE DEEMPHASIS

Eric J. Gould, New York, N.Y., assignor to New York University, New York, N.Y.

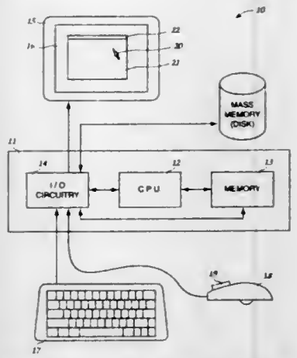
Filed Dec. 14, 1992, Ser. No. 990,339
Int. Cl.[6] G06F *15/00*; **G09G** *5/34*;*5/08*
U.S. Cl. 395—326 **4 Claims**

1. In a computerized system having a computer storage means for information represented by a sequence of displayable objects, a display for displaying such objects, and a user control device for said computer, said computer having means for accessing the storage means and for causing the display to display certain of the objects under control of the control device, the improvement comprising:

(a) first means in the computer responsive to the user control device for selectively shrinking the display of a first segment of the objects displayed to emphasize the display of a second segment of the displayed objects;

(b) second means for displaying alongside the displayed objects a scroll bar as part of the control device, said scroll bar including a controller button;

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(c) third means connecting the second means to the first means such that transformation of the object display into shrunken and non-shrunken segments causes a corresponding change in the appearance of those scroll bar portions located in proportion to the shrunken or non-shrunken object segments in the document;

(d) fourth means for producing a cursor on the display, the position of said cursor being controlled by the control device;

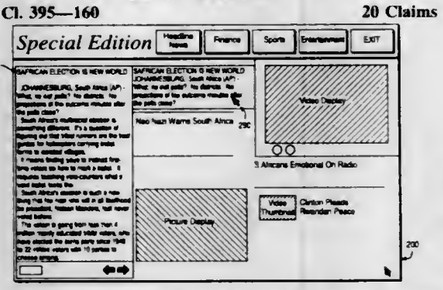
(e) fifth means such that when the cursor is adjacent the controller button and the user activates a switch on the control device, sixth means are activated for controlling the level of emphasis of the second segment, wherein the sixth means includes means for displaying a cursor whose size or appearance indicates the level of emphasis.

5,623,589

METHOD AND APPARATUS FOR INCREMENTALLY BROWSING LEVELS OF STORIES

Bradford H. Needham, Hillsboro, and Edward R. Harrison, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1995, Ser. No. 414,446
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—160 **20 Claims**



1. A method of displaying information in a computer system, said computer system including a processor coupled to a memory, said computer system including a display coupled to said processor, said memory storing a plurality of stories, said method comprising the steps of:

displaying a plurality of first levels of information corresponding to said plurality of stories in a first area of said display;

displaying a first level of information of a first story of said plurality of stories in a first subarea of said first area;

detecting a selector within said first subarea;

displaying a second level of information of said first story within said first subarea responsive to said detecting said selector within said first subarea;

detecting a selection within said first subarea; and

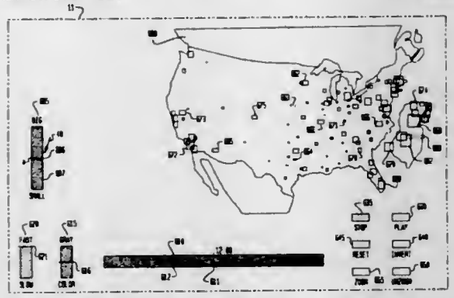
displaying a third level of information of said first story within said first area.

5,623,590

DYNAMIC GRAPHICS ARRANGEMENT FOR DISPLAYING SPATIAL-TIME-SERIES DATA

Richard A. Becker, Watchung; Stephen G. Eick, Edison; Eileen O. Miller, Short Hills, and Allan R. Wilks, Scotch Plains, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 390,549, Aug. 7, 1989, abandoned. This application Sep. 7, 1993, Ser. No. 125,612
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—326 **23 Claims**



1. A dynamic graphics arrangement for use in a computer having a display, said display being employed to display data occurring at respective points in time, said arrangement comprising

means responsive to receipt of a predetermined request inputted by a user of said computer for displaying on said display a plurality of multidimensional symbols representing respective nodes, said dimensions being indicative of the levels of respective data associated with its respective one of said nodes at a particular point in time, and

means for displaying on said display a tool representing individual points in time at which said data occurred and, responsive to said user interacting with said tool so as to cause said tool to move to an individual one of said points, for adjusting the dimensions of each of said symbols so that said dimensions represent the levels of said associated data that occurred at the point in time represented by the current position of said displayed tool.

5,623,591

SYSTEM AND METHODS FOR BUILDING SPREADSHEET APPLICATIONS

Istvan Cseri, Scotts Valley, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 866,658, Apr. 8, 1992, Pat. No. 5,416,895. This application Sep. 10, 1993, Ser. No. 120,329
Int. Cl.[6] G06F *17/40*
U.S. Cl. 395—326 **18 Claims**



1. In an electronic spreadsheet system having a memory and a storage device for storing data in a plurality of cell objects, each of said cell objects having a set of properties including a value property, each of the set of properties have associated values, a method for defining selected user interaction with a given cell object, the method comprising:

in response to first user input, generating a user interface object of a predefined type distinct from cell objects, said user interface object having a set of properties including a value property;

in response to second user input, linking said value property of the given cell object with said value property of said user interface ojbect;

displaying said user interface object with a value of said value property corresponding to the value of said value property of the given cell object; and

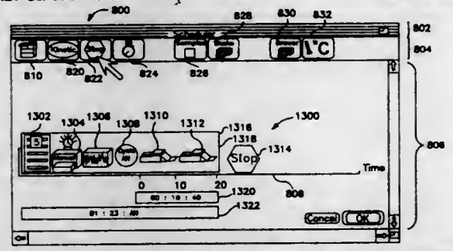
in response to end-user input that effects a change in the value of said value property of said user interface object, propagating the change to the given cell object so that the given cell object has its value of said value property set to said changed value of said value property of said user interface object.

5,623,592

METHOD AND APPARATUS FOR CONSTRUCTING AN ICONIC SEQUENCE TO OPERATE EXTERNAL DEVICES

Jeffrey D. Carlson, Sunnyvale, and Jorge M. Fernandes, Newark, both of Calif., assignors to Molecular Dynamics, Sunnyvale, Calif.

Filed Oct. 18, 1994, Ser. No. 325,043
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—348 **24 Claims**



1. A method for causing a computer to operate an external device, said computer having a display device, the method comprising the steps of:

causing said computer to display on said display device a device icon, said device icon representing said external device;

causing said computer to display on said display device an operation icon, said operation icon representing an operation performable by said external device;

constructing an icon sequence, said icon sequence including said device icon and said operation icon; and

causing said computer to generate control signals responsive to said icon sequence, said control signals including a control signal for causing said external device to perform said operation;

wherein said external device is a first external device of a plurality of external devices and said device icon is a first device icon of a plurality of device icons, each device icon of said plurality of device icons representing a corresponding external device of said plurality of external devices, wherein said step of constructing said icon sequence includes inserting said plurality of device icons into said icon sequence;

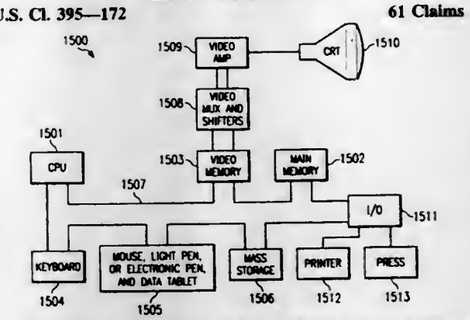
and wherein said step of constructing said icon sequence includes inserting a plurality of operation icons into said icon sequence, wherein said plurality of operation icons represent a plurality of operations, wherein said step of causing said computer to generate control signals includes causing said computer to generate control signals to cause said plurality of operations to be performed by said plurality of external devices, wherein the one or more devices of said plurality of external devices which performs a given operation of said plurality of operations is determined based upon a plurality of relative positions of said plurality of device icons and said plurality of operation icons in said icon sequence.

5,623,593

SYSTEM AND METHOD FOR AUTOMATICALLY SPACING CHARACTERS

Henry D. Spells, III, Plano, Tex., assignor to Macromedia, Inc., San Francisco, Calif.

Filed Jun. 27, 1994, Ser. No. 266,229
Int. Cl.[6] G06F *17/21*
U.S. Cl. 395—172 **61 Claims**



1. A method for spacing characters displayed by an output device, said method comprising the steps of:

identifying character pairs;

receiving input comprising relative spacing information between characters of each identified character pair;

computing a width for each of said characters as a function of said relative spacing information; and

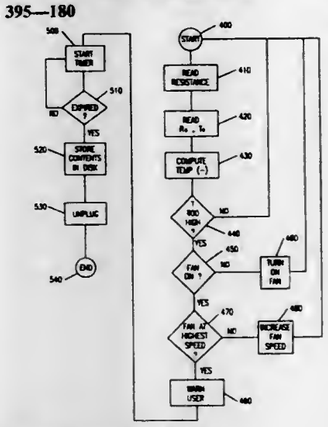
outputting to said output device selected ones of said characters including said selected ones of said characters' widths.

5,623,594

EMBEDDED THERMISTOR FOR ON-BOARD THERMAL MONITORING OF ELECTRICAL COMPONENTS

Deepak Swamy, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 200,267, Feb. 23, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,152
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—180 **27 Claims**



1. A computer system comprising:

a microprocessor;

a circuit board for supporting and coupling to said microprocessor;

an electrically conductive flat trace of predetermined shape formed on said circuit board, said trace having a temperature dependent electrical property;

means for mounting said microprocessor on said board adjacent to said trace;

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temperature detection circuit coupled to said trace for measuring said electrical property of said trace;

means, coupled to said detection circuit, for providing a signal to indicate that said temperature of said trace has exceeded a predetermined level; and

means for modifying the operation of said computer system in response to said overtemperature signal.

5,623,595

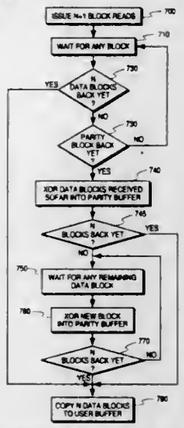
METHOD AND APPARATUS FOR TRANSPARENT, REAL TIME RECONSTRUCTION OF CORRUPTED DATA IN A REDUNDANT ARRAY DATA STORAGE SYSTEM

William Bailey, Palo Alto, Calif., assignor to Oracle Corporation, Redwood Shores, Calif.

Filed Sep. 26, 1994, Ser. No. 312,509

Int. Cl.[6] G06F *11/00;* **G11C** *29/00*

U.S. Cl. 395—182.04 **32 Claims**



1. A computer-implemented method for providing real time reconstruction of corrupted data from a redundant array storage system containing "N+1" data storage units, comprising the steps of:

storing a first stripe of data comprising "N" blocks of data and one block of redundancy information on said "N+1" data storage units such that one of each of said "N" blocks of data is stored on each of "N" of said "N+1" data storage units and said block of redundancy information is stored on a remaining one of said data storage units;

issuing simultaneous read requests during normal system operation for all "N+1" blocks of said first stripe when any of said data stored in said first stripe is retrieved; and

reconstructing an "N+1st" block of said first stripe from contents of a first "N" blocks received in response to said simultaneous read requests, said reconstructing step being performed only if after a predetermined amount of time, said "N+1st" block has not yet been received and one of said first "N" blocks received comprises said block of redundancy information.

5,623,596

POWER FAULT PROTECTION IN A COMPUTER SYSTEM HAVING MULTIPLE POWER SUPPLIES

David B. Townsley, Cupertino, and James J. Blanc, San Mateo, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

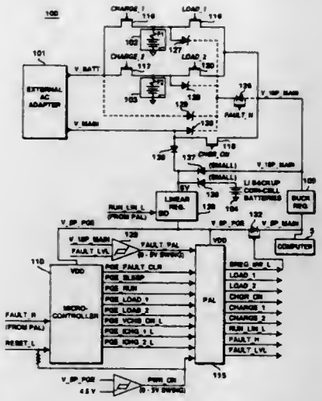
Filed May 9, 1994, Ser. No. 239,748

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—182.12 **8 Claims**

1. A computer system comprising:

a processing unit;



a memory bus coupled to the processing unit, the memory bus conveys instructions and data to and from the processing unit;

a memory subsystem coupled to the memory bus, the memory subsystem contains the instructions and data; and

a power system which proyides operating power to the computer system, the power system including:

a plurality of available power supplies which supply an operating voltage to the computer system, the plurality of available power supplies includes

an AC adapter selectively chosen by the power system for providing the operating voltage to the computer system,

a first battery selectively chosen by the power system for providing the operating voltage to the computer system, and

a second battery selectively chosen by the power system for providing the operating voltage to the computer system,

wherein during normal operation of the computer system only one of the plurality of power supplies is selectively chosen by the power system for providing the operating voltage to the computer system,

power fault detection circuitry to detect a power system fault condition, and

power supply bridging circuitry, responsive to the power fault detection circuitry to operatively couple the plurality of available power supplies together to supply power to the computer system when said power system fault condition exists.

5,623,597

SECURE DATA STORAGE SYSTEM FOR A COMPUTER WHEREIN A HEAT TRANSFER APPARATUS COOLS A DATA STORAGE UNIT IN A FIREPROOF SAFE IN ABSENCE OF A FIRE AND CEASES TRANSFER IN THE EVENT OF A FIRE

Dan Kikinis, Saratoga, Calif., assignor to Elonex IP Holdings Ltd., London, United Kingdom

Filed Jun. 15, 1995, Ser. No. 490,625

Int. Cl.[6] G06F *11/00;* **H01H** *71/08;37/02;* **G11B** *33/14*

U.S. Cl. 395—186 **12 Claims**

1. A secure data storage system for a computer, comprising:

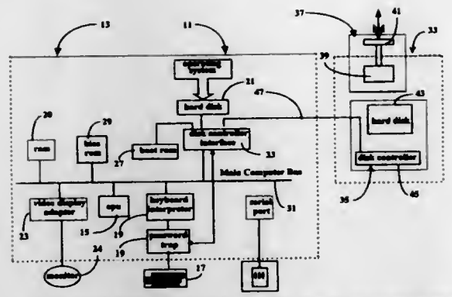
an enclosure with a metal wall, the enclosure having insulation within adapted to protect contents of the enclosure from fire;

a heat sink structure within the enclosure, positioned in an opening in the insulation to contact the metal wall;

a data storage unit within the safe, mounted to the heat sink structure, and connectable by a data link through the enclosure to an external computer;

a thermostat controller mounted outside the enclosure;

translation apparatus attached to the heat sink structure, connected to the thermostat controller by an activation link, and adapted for translating the heat sink structure away from the metal wall; and



insulation injection apparatus adapted to inject insulating material into the opening in the insulation occupied by the heat sink structure;

wherein, the thermostat controller, detecting a temperature outside the safe indicative of a fire, signals the translation apparatus to translate the heat sink structure away from the one metal wall it contacts, and signals the insulation injection apparatus to inject insulation into the space occupied by the heat sink before translation, providing thereby a fireproof enclosure for the data storage unit.

5,623,598

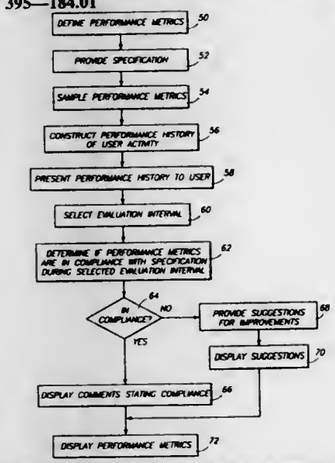
METHOD FOR IDENTIFYING WAYS TO IMPROVE PERFORMANCE IN COMPUTER DATA STORAGE SYSTEMS

Douglas L. Voigt; Marvin D. Nelson, and Wade A. Dolphin, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1994, Ser. No. 343,809

Int. Cl.[6] G06F *11/32;11/34*

U.S. Cl. 395—184.01 **16 Claims**



9. A method for identifying areas for performance improvement in a data storage system, the method comprising the following steps:

defining multiple performance metrics that can be measured during operation of the data storage system;

providing a specification for the performance metrics whereby the data storage system is operating at optimal performance when the performance metrics are in compliance with the specification;

sampling the performance metrics during operation of the data storage system;

constructing a performance history that is indicative of how the data storage system is performing over a period of time based upon storage demands imposed by a user;

presenting the performance history to the user;

enabling the user to select an evaluation interval of the performance history;

determining whether any performance metric is not in compliance with the specification for the selected evaluation interval; and

in the event that one or more performance metrics are not in compliance with the specification, providing suggestions that would help improve performance of the data storage system based upon which of the one or more performance metrics are not in compliance with the specification for the selected evaluation interval.

5,623,599

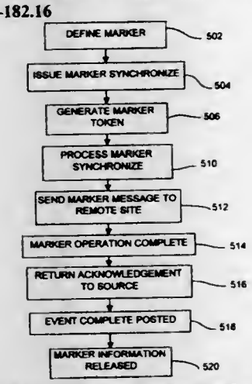
METHOD AND APPARATUS FOR PROCESSING A SYNCHRONIZING MARKER FOR AN ASYNCHRONOUS REMOTE DATA COPY

Robert W. Shomler, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 36,017, Oct. 12, 1994, Pat. No. 5,446,871. This application Jul. 29, 1994, Ser. No. 282,944

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.16 **29 Claims**



7. A system for assuring the occurrence of an event at a site remote from a source of asynchronous sequence of write operations, the asynchronous sequence of write operations including a sequential number of special purpose messages, each special purpose message including a numerically ordered token that is in an ordered event sequence, the system comprising:

means for providing in the asynchronous sequence of write operations at the source a marker request which includes a token with an event value exceeding in magnitude an event value of a previous token;

means responsive to the marker request providing means for transmitting the asynchronous sequence of write operations with the marker request to the remote site; and

means responsive to the transmitting means for sending a reply from the remote site to the source after the marker request is received at the remote site, the reply indicating that the event at the remote site is complete.

5,623,600

VIRUS DETECTION AND REMOVAL APPARATUS FOR COMPUTER NETWORKS

Shuang Ji, Foster City, and Eva Chen, Cupertino, both of Calif., assignors to Trend Micro, Incorporated, Cupertino, Calif.

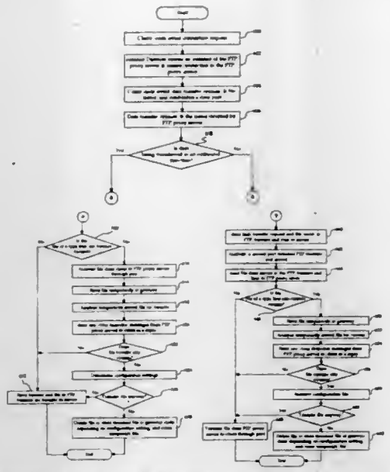
Filed Sep. 26, 1995, Ser. No. 533,706

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—187.01 **22 Claims**

1. A system for detecting and selectively removing viruses in data transfers, the system comprising:

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a memory for storing data and routines, the memory having inputs and outputs, the memory including a server for scanning data for a virus and specifying data handling actions dependent on an existence of the virus;

a communications unit for receiving and sending data in response to control signals, the communications unit having an input and an output;

a processing unit for receiving signals from the memory and the communications unit and for sending signals to the memory and communications unit; the processing unit having inputs and outputs; the inputs of the processing unit coupled to the outputs of memory and the output of the communications unit; the outputs of the processing unit coupled to the inputs of memory, the input of the communications unit, the processor controlling and processing data transmitted through the communications unit to detect viruses and selectively transfer data depending on the existence of viruses in the data being transmitted;

a proxy server for receiving data to be transferred, the proxy server scanning the data to be transferred for viruses and controlling transmission of the data to be transferred according to preset handing instructions and the presence of viruses, the proxy server having a data input a data output and a control output the data input coupled to receive the data to be transferred; and

a daemon for transferring data from the proxy server in response to control signals from the proxy server, the daemon having a control input, a data input and a data output the control input of the daemon coupled to the control output of the proxy server for receiving control signals, and the data input of the daemon coupled to the data output of the proxy server for receiving the data to be transferred.

5,623,601

APPARATUS AND METHOD FOR PROVIDING A SECURE GATEWAY FOR COMMUNICATION AND DATA EXCHANGES BETWEEN NETWORKS

Hung T. Vu, Ottawa, Canada, assignor to Milkway Networks Corporation, Ottawa, Canada

Filed Nov. 21, 1994, Ser. No. 342,772
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—187.01 **41 Claims**

1. A method of providing a secure gateway between a private network and a potentially hostile network, comprising the steps of:

(a) addressing communications packets directly to a host on the potentially hostile network as if there were a communications path to the host, but encapulating the packets with a hardware destination address that matches a device address of the gateway;

(b) accepting at the gateway communications packets from either network that are encapsulated with a hardware destination address which matches the device address of the gateway;

(c) determining at the gateway whether there is a process bound to a destination port number of an accepted communications packet;

(d) establishing transparently at the gateway a first communications session with a source address/source port of the accepted communications packet if there is a process bound to the destination port number, else dropping the packet;

(e) establishing transparently at the gateway a second communications session with a destination address/destination port of the accepted communications packet if a first communications session is established; and

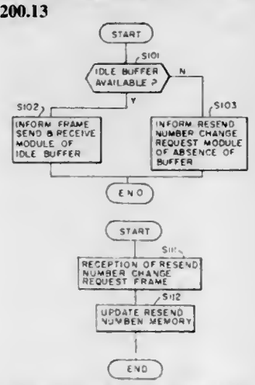
(f) transparently moving data associated with each subsequent communications packet between the respective first and second communications sessions, whereby the first session communicates with the source and the second session communicates with the destination using the data moved between the first and second sessions.

5,623,602

DATA TRANSMISSION CONFIRMATION BY SENDING FRAME WITH COMMAND TO CHANGE TRANSMITTER'S RESEND COUNTER WHEN RECEIVER'S BUFFER IS FULL

Toshihiro Nakashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,485
Claims priority, application Japan, Apr. 9, 1992, 4-115210
Int. Cl.[6] G06F *13/00;13/12;13/42*
U.S. Cl. 395—200.13 **16 Claims**



1. A computer network system for sending and receiving data by a frame synchronization system, comprising:

a plurality of computers; and

a network connected to said plurality of computers for sending and receiving data;

said plurality of computers each comprising:

a data send module comprising means for sending a data frame to said network in response to a data send request, resend number storing means for storing a resend limit defining a maximum number of times that the data frame may be resent following an unsuccessful sending of the data frame, and means for updating a content of said resend number storing means upon receiving a frame comprising an instruction for changing the resend limit; and

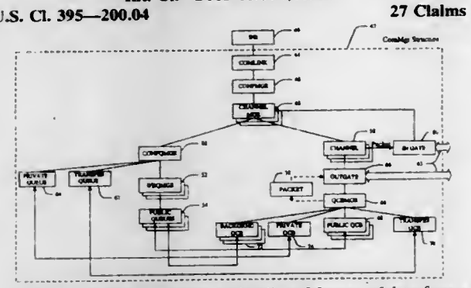
a data receive module comprising a receive buffer for storing the data frame received from said network, and means for sending, when said receive buffer is full, the frame comprising the instruction for changing the resend limit.

5,623,603

METHOD OF TRANSFERRING DATA AT ADJUSTABLE LEVELS OF PRIORITIES TO PROVIDE OPTIMUM RESPONSE TO USER DEMANDS

Barclay R. Jiang, Sunnyvale, and Min Zhu, Los Altos, both of Calif., assignors to FLS Acquistion Corporation, Marina Del Rey, Calif.

Filed Nov. 2, 1994, Ser. No. 333,560
Int. Cl.[6] G06F *13/374;13/42*
U.S. Cl. 395—200.04 **27 Claims**



1. A method of transmitting a plurality of frames of data from a host computer to a plurality of remote computers via a plurality of communication links, said plurality of frames of data being stored in queues, each of the queues having a queue control block associated with each of the communication links, the plurality of queue control blocks associated with each communication link being placed in a public QCB list corresponding to the particular communication link, wherein the queue control block contains at least a pointer to the queue and a pointer to the next data position for transmission by the communication link, and wherein each of the communication links has an associated current-queue-pointer, comprising the steps of:

a) setting the current-queue-pointer to point to a queue control block in the public QCB list of the particular communication link, the queue being pointed to by said queue control block containing a frame of data;

b) setting the current-queue-pointer to point to a queue control block from the background QCB list of the particular communication link and removing said queue control block now pointed to by the current-queue-pointer from the background QCB list, if the particular communication link is available for transmission of data, if the queue being pointed to by the current-queue-pointer is empty, and if the background QCB list for the particular communication link is not empty;

c) setting the current-queue-pointer to point to a queue control block from the public QCB list and removing said queue control block now pointed to by the current-queue-pointer from the public QCB list, if the particular communication link is available for transmission of data, if the queue being pointed to by the current-queue-pointer is empty, and if the public QCB list is not empty;

d) extracting a data packet from the queue being pointed to by the queue control block being pointed to by the current-queue-pointer and transmitting said data packet to the remote computer connected via the particular communication link, if the particular communication link is available for transmission of data, and if the queue being pointed to by the current-queue-pointer is not empty;

e) if the user requests a specific frame of data, placing the queue control block being pointed to by said current-queue-pointer at a first location within a particular QCB list and setting the current-queue-pointer to point to the queue control block pointing to the queue storing said specific frame of data;

f) if the user creates a new frame of data, placing the new frame of data into a queue, establishing a queue-control block for the queue of the new frame of data, placing the queue control block being pointed to by said current-queue-pointer at a first location within a particular list of QCBs, and setting the current-queue-pointer to the queue control block pointing to the queue storing the new frame of data; and

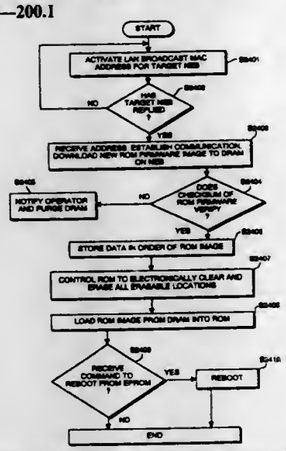
g) repeating steps b, c, d, e, and f for each communication link until all data in said queues have been transmitted to said plurality of remote computers via said plurality of communication links.

5,623,604

METHOD AND APPARATUS FOR REMOTELY ALTERING PROGRAMMABLE FIRMWARE STORED IN AN INTERACTIVE NETWORK BOARD COUPLED TO A NETWORK PERIPHERAL

William C. Russell, Laguna Hills; George A. Kalwitz, Costa Mesa, and Lorraine F. Barrett, Yorba Linda, all of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Nov. 18, 1992, Ser. No. 978,411
Int. Cl.[6] G06F *13/38;11/22;9/445*
U.S. Cl. 395—200.1 **23 Claims**



1. In a local area network, a method for remotely updating an old ROM firmware image stored in a PROM disposed on a designated interactive network board having a local area network interface, said method comprising the steps of:

activating a local area network communication program, said communication program operating (i) to broadcast an inquiry through the local area network for the designated interactive network board, (ii) to receive location information of the designated interactive network board in response to the broadcast inquiry, and (iii) to establish communication with the designated interactive network board via the local area network interface;

downloading, over the local area network interface, a new ROM firmware image into a RAM on the designated interactive network board;

verifying that the new ROM firmware image stored in the RAM is valid prior to loading the new ROM firmware image from the RAM into the PROM;

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updating firmware of the PROM, in a case where the new ROM firmware image is valid, by (i) storing a predesignated portion of the old ROM firmware image in the RAM, (ii) erasing predetermined PROM storage locations, and (iii) loading the new ROM firmware image and the predesignated portion of the old ROM firmware image from the RAM into the PROM; and

re-initializing the designated interactive network board, in a case where the new ROM firmware image is valid, using the new ROM firmware image and the predesignated portion of the old ROM firmware image loaded in the PROM.

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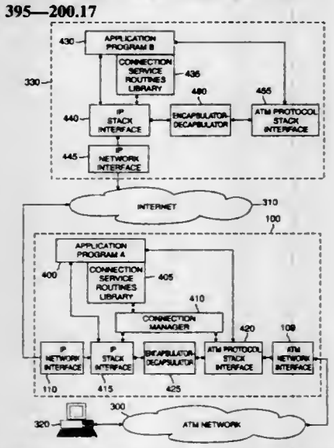
METHODS AND SYSTEMS FOR INTERPROCESS COMMUNICATION AND INTER-NETWORK DATA TRANSFER

Srinivasan Keshav, Berkeley Heights, N.J., and Rosen Sharma, Stanford, Calif., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 29, 1994, Ser. No. 297,209

Int. Cl.[6] G06F *13/38*; H04J *3/26*

U.S. Cl. 395—200.17 **22 Claims**



1. A method for transferring data between a source routine operating in a source device on a first network and a destination routine operating in a destination device, the source and destination routines generating and receiving asynchronous transfer mode ("ATM") formatted frames and the first network transmitting Internet Protocol ("IP") packets, the method comprising the steps of:

a) generating an intermediate data format header containing source, destination and ATM routing information;

b) appending the generated intermediate data format header to an ATM-formatted frame to form an intermediate format data packet, the ATM-formatted frame being generated by the source routine;

c) encapsulating the intermediate format data packet in a data portion of an IP packet;

d) transmitting the IP packet on the first network;

e) decapsulating the IP packet to retrieve the intermediate format data packet;

f) retrieving the ATM-formatted frame and intermediate data format header from the decapsulated intermediate format data packet;

g) forming an ATM cell based on the retrieved ATM-formatted frame and the ATM routing information in the retrieved intermediate data format header; and

h) routing the formed ATM cell.

5,623,606

COMMUNICATION CONTROL METHOD AND APPARATUS FOR PERFORMING HIGH SPEED TRANSFER OF DATA BY CONTROLLING TRANSFER STARTING TIMES

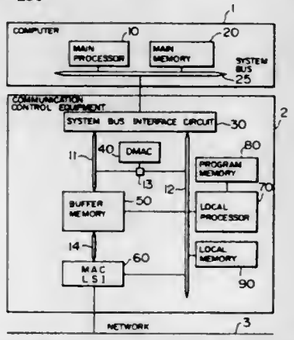
Tatsuya Yokoyama, Machida; Tetsuhiko Hirata, Yokohama, and Mika Mizutani, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,589

Claims priority, application Japan, Oct. 31, 1991, 3-285975

Int. Cl.[6] G06F *13/00*; H04J *3/14*

U.S. Cl. 395—250 **16 Claims**



1. A communication control equipment for transmitting data in an external predetermined memory to a network, comprising:

buffer memory means for temporarily holding data transferred thereto;

data transfer means for transferring data between said predetermined memory and said buffer memory means;

means for executing a protocol processing with regard to said data held in said buffer memory means;

control means for controlling a transmission of said data processed by said protocol processing to said network;

means for producing a transmission start instruction at a start time instant within a range from a time instant when transfer of one packet of data from said predetermined memory to said buffer memory means is commenced until a time instant when said one packet of data transfer is accomplished, wherein the lower a data transfer speed from said predetermined memory to said buffer memory means is relative to a transmission speed of said network, the later said start time instant is set; and

means for causing said control means to commence transmission of said data processed by said protocol processing to said network at a time instant in between a time instant when said transmission start instruction is produced and a time instant when said protocol processing is terminated;

wherein said transmission start instruction producing means comprises:

means for receiving data amount information indicative of an amount of data included in said one packet of data,

means for obtaining remaining data amount information indicative of an amount of data of said one packet of data which has not yet been transferred to said buffer memory means,

means for obtaining reference data amount information indicative of a reference amount of data less than or equal to said amount of data included in said one packet of data, wherein the lower said data transfer speed from said predetermined memory to said buffer memory means is relative to said transmission speed of said network, the less said reference data amount information is, and

means for comparing said remaining data amount information with said reference data amount information and for producing said transmission start instruction when said remaining data amount information is less than or equal to said reference data amount information.

5,623,607

DATA TRANSFER CONTROL METHOD FOR CONTROLLING TRANSFER OF DATA THROUGH A BUFFER WITHOUT CAUSING THE BUFFER TO BECOME EMPTY OR OVERFLOW

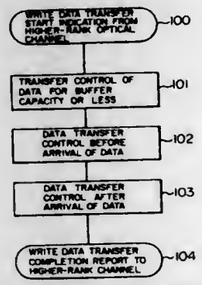
Satoshi Kodama, Yokohama; Mikito Ogata, Minamiashigara; Shigeru Kaga, Odawara, and Shinjiro Shiraki, Kanagawa-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Computer Engineering Co., Ltd., and Hitachi Computer Peripherals Co., Ltd., both of Kanagawa-ken, all of Japan

Filed Sep. 29, 1994, Ser. No. 314,782

Claims priority, application Japan, Oct. 5, 1993, 5-249077

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **10 Claims**



1. A data transfer control method for a data transfer apparatus which controls data transfer, through a buffer in said data transfer apparatus, between data processing apparatuses having different data transfer speeds, comprising:

a first transfer control step of transmitting data transfer requests from said data transfer apparatus to a first data processing apparatus, which supplies data, so as to transfer an initial quantity of data less than the data storing capacity of said buffer, in predetermined unit amounts, from said first data processing apparatus to said buffer in said data transfer apparatus;

a second transfer control step of transmitting further data transfer requests for a subsequent quantity of data from said data transfer apparatus to said first data processing apparatus to transfer a predetermined unit amount of data each time a sweep-out time has elapsed until data requested by the first transfer control step has arrived at the buffer, said sweep-out time being a time required for receiving and sweeping out a predetermined unit amount of data from said buffer to a second data processing apparatus, which receives data from said buffer, wherein transmitting said further data transfer request after said sweep-out time has elapsed prevents said buffer from ever reaching an empty an overflow condition; and

a third transfer control step of transmitting at least one other data transfer request for transferring predetermined unit amounts of data to said first data processing apparatus, after the data requested by said first transfer control step has arrived at the buffer, and after a predetermined unit amount of data transferred to said buffer has been transmitted from the buffer to the second processing apparatus.

5,623,608

METHOD AND APPARATUS FOR ADAPTIVE CIRCULAR PREDICTIVE BUFFER MANAGEMENT

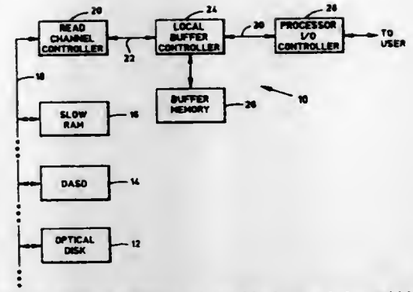
Spencer W.-F. Ng, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1994, Ser. No. 338,919

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **19 Claims**

1. A method for adaptively operating a buffer memory by adjusting management of said buffer memory to optimize buffer memory hits in a data storage system having a primary storage



means for storing a sequence of data blocks coupled to said buffer memory through a controller means for reading and storing in said buffer memory each of one or more said data blocks requested by a data access request (DAR) from a processor input/output (I/O) means wherein said DAR is the latest of an uninterruptedly consecutive DAR sequence having an access pattern, said controller means having means for prefetching a consecutive plurality of said data blocks stored in said primary storage means subsequently to said one or more requested data blocks and having means for storing said consecutive data block plurality in said buffer memory in either a block overwrite mode (BOM) or a circular overwrite mode (COM), said method comprising the steps of:

(a) detecting either a sequential said access pattern (SAP) or a nonsequential said access pattern (NAP) in said DAR sequence;

(b) switching said buffer memory storing means to said circular overwrite mode (COM) responsive to a detection of said SAP; and

(c) switching said buffer memory storing means to said block overwrite mode (BOM) responsive to a detection of said NAP.

5,623,609

COMPUTER SYSTEM AND COMPUTER-IMPLEMENTED PROCESS FOR PHONOLOGY-BASED AUTOMATIC SPEECH RECOGNITION

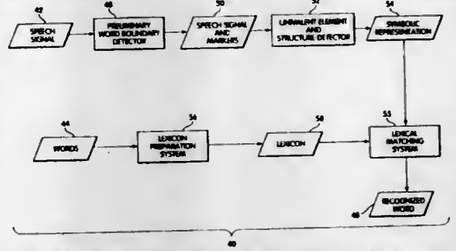
Jonathan Kaye, London, and Geoffrey Williams, Chelmsford Essex, both of United Kingdom, assignors to HAL Trust, L.L.C., Radnor, Pa.

Continuation of Ser. No. 76,734, Jun. 14, 1993, abandoned. This application Sep. 2, 1994, Ser. No. 300,929

Claims priority, application United Kingdom, Apr. 11, 1994, 94/07108

Int. Cl.[6] G10L *5/06*; *9/00*

U.S. Cl. 395—263 **16 Claims**



1. A machine-implemented process for recognition of a spoken word in an utterance, comprising the steps of:

receiving a speech signal containing the utterance;

detecting acoustic cues in the speech signal;

detecting, using the detected acoustic cues, the presence of one or more of a set of a small number of phonological elements, wherein a phonological element is a language independent atomic unit derived from one or more acoustic cues;

identifying, using the detected acoustic cues, a location of one or more sub-word units in the speech signal, each sub-word unit

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consisting of a pair of structural units, each structural unit having at most two positions to which a combination of one or more phonological elements may be associated;

associating each of the detected phonological elements with a position in one of the identified sub-word units and generating a representation of the spoken word in the speech signal indicating the sub-word units and the combination of phonological elements associated with each position in the sub-word units; and

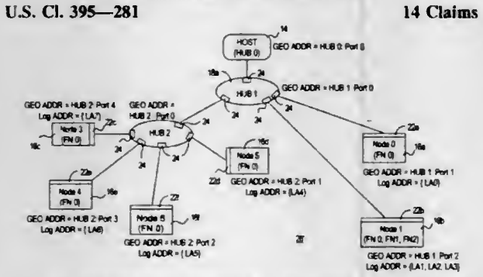
comparing the representation to a lexicon of predetermined representations of words to identify a best match, thereby recognizing the spoken word.

5,623,610

SYSTEM FOR ASSIGNING GEOGRAPHICAL ADDRESSES IN A HIERARCHICAL SERIAL BUS BY ENABLING UPSTREAM PORT AND SELECTIVELY ENABLING DISABLED PORTS AT POWER ON/RESET

Shaun Knoll, Portland, Oreg.; Jeff C. Morriss, Boulder Creek, Calif.; Shelagh Callahan, Beaverton, Oreg.; Ajay V. Bhatt, El Dorado Hills, Calif., and Sudarshan B. Cadambi, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 31, 1994, Ser. No. 332,375
Int. Cl.[6] G06F *12/00;12/02;13/38*
U.S. Cl. 395—281 **14 Claims**



1. An apparatus for dynamically determining and managing connection topology of a serial bus assembly including a bus controller, one or more bus signal distributors, and one or more bus interfaces for hierarchically interconnecting one or more peripherals to a system unit of a computer system, each bus interface being coupled to a bus signal distributor, which in turn is coupled to another bus signal distributor, except for one bus signal distributor, which is coupled to the bus controller, said apparatus comprising:

first circuitry for initializing each bus signal distributor and each bus interface with a predetermined default common geographical address at power on/reset, and for subsequently replacing the common geographical address with a unique geographical address assigned by the bus controller that is reflective of the one or more bus signal distributors and the one or more bus interfaces' topological positions in the serial bus assembly;

second circuitry for enabling an upstream port and disabling all other ports of each bus signal distributor at power on/reset, and for selectively enabling the disabled ports as instructed by the bus controller; and

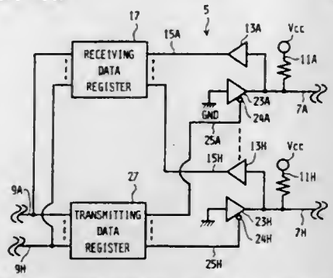
third circuitry and complementary logic, coupled to the first and second circuitry, for facilitating the bus controller to employ a logical hierarchical view of the serial bus assembly to selectively instructing the disabled ports of the bus signal distributors to be enabled, one disabled port at a time, to incrementally detect the presence of each bus signal distributor/bus interface, and assign a unique geographical address to each detected bus signal distributor/bus interface, in a systematic manner, at power on/reset and periodically during operation.

5,623,611

DATA PROCESSING APPARATUS HAVING A BIDIRECTIONAL INTERFACE WITH RECEIVING BUFFERS, THREE-STATE BUFFERS, AND ENABLE TERMINALS FOR AUTOMATICALLY SWITCHING THE DIRECTION OF DATA TRANSMISSION AND RECEPTION

Koji Matsukawa, Nagoya, and Toshiki Narukawa, Kasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 27, 1994, Ser. No. 265,825
Claims priority, application Japan, Aug. 6, 1993, 5-196485
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 **18 Claims**



1. A data processing apparatus having a bidirectional interface capable of transmitting and receiving data signals to and from an external device, said bidirectional interface comprising:

a plurality of transmitting bus lines for transmitting a data signal to the external device;

a plurality of receiving bus lines for receiving a data signal from the external device; and

switching means, connected to said transmitting and said receiving bus lines, for automatically switching the direction of data transmission and reception by use of the data signal carried by any one of said transmitting and said receiving bus lines, wherein said switching means is normally in a receiving mode for receiving data signals from the external device and comprises:

a plurality of receiving buffers, a receiving buffer connected to each one of said plurality of receiving bus lines at an output side and to an external device communication data bus line at an input side;

a plurality of three-state buffers, each three state buffer connected to a transmitting bus line at an input side and one of said external device communication data bus lines at an output side; and

a plurality of enable terminals, one enable terminal associated with each transmitting bus line and connected to one of said three-state buffers.

5,623,612

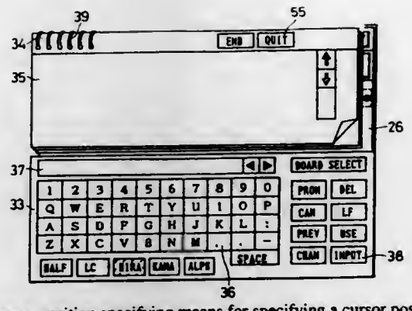
DATA PROCESSING APPARATUS PROVIDING CHARACTER STRING COPYING

Isamu Haneda, Kyoto, and Katsunori Okuda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 98,901, Jul. 29, 1993, abandoned.
This application Feb. 22, 1996, Ser. No. 605,650
Claims priority, application Japan, Jul. 30, 1992, 4-203490
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—326 **21 Claims**

1. A data processing apparatus comprising:

display means for displaying information of plural screens on one display screen, one of the plural screens being a copy source screen and another of the plural screens being a copy destination screen;



cursor position specifying means for specifying a cursor position in a copying area of the copy destination screen;

means for storing a character string of the copy source screen;

copying character string designating means for designating a portion of the character string; and

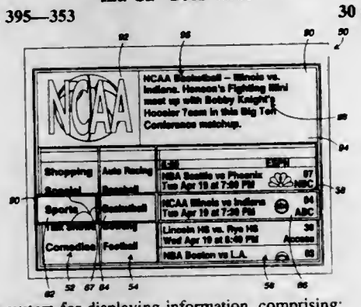
means for copying the designated character string portion into the specified cursor position of the copy destination screen in response to solely the specifying of the cursor position by said cursor position specifying means, and without intermediate user input into said apparatus between said designating of the character string portion and said copying.

5,623,613

SYSTEM FOR DISPLAYING PROGRAMMING INFORMATION

Keith Rowe; Frank Lawler, both of Seattle, and Joseph H. Matthews, III, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 29, 1994, Ser. No. 346,422
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—353 **30 Claims**



11. A system for displaying information, comprising:

a category display for displaying an array of category tiles representing categories of said information;

a subcategory display for displaying an array of subcategory tiles representing subcategories, each of said subcategories associated with at least one of said categories, said subcategory display located adjacent to said category display;

a program display for displaying an array of program tiles, each of said programs associated with at least one of said subcategories, said program display located adjacent to said subcategory display;

a viewing panel extending along a portion of each of said category display, said subcategory display, and said program display for displaying one each of said category tiles, subcategory tiles, and program tiles; and

a focus frame, movable along said viewing panel, responsive to placement proximate to one of said category display, said subcategory display, and said program display, to enable control of the display one of said category tiles, subcategory tiles, and program tiles,

wherein said subcategory display, responsive to one of said category tiles representing a selected category appearing within said viewing panel, displays at least one of said subcategory tiles representing one of said subcategories associated with said selected category, and

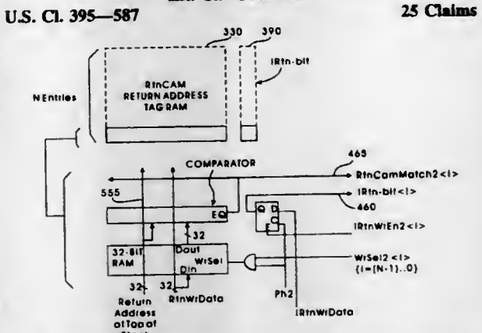
said program display, responsive to one of said subcategory tiles representing a selected subcategory appearing within said viewing panel, displays at least one of said program tiles representing an available one of said programs associated with said selected subcategory.

5,623,614

BRANCH PREDICTION CACHE WITH MULTIPLE ENTRIES FOR RETURNS HAVING MULTIPLE CALLERS

Korbin S. Van Dyke, Fremont; Larry Widigen, Salinas, and David L. Puziol, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 17, 1993, Ser. No. 122,922
Int. Cl.[6] G06F *9/42*
U.S. Cl. 395—587 **25 Claims**



19. A method of managing a branch prediction cache, comprising the steps of:

(a) creating an entry for a branch instruction;

(b) preventing the subsequent creation of additional entries for said branch instruction, if said branch instruction is not a return; and

(c) subsequently creating additional entries for said branch instruction, if said branch instruction is a return having multiple callers.

5,623,615

CIRCUIT AND METHOD FOR REDUCING PREFETCH CYCLES ON MICROPROCESSORS

Gaby J. Salem, Coral Springs, and Terry L. Weakley, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1994, Ser. No. 285,785
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—585 **19 Claims**

1. A microprocessor for use in a computer system having a system memory comprising:

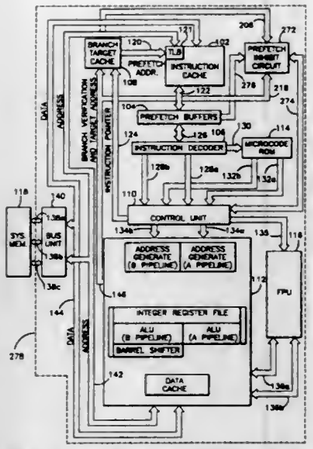
(a) an instruction decoder configured to decode processor instructions into codes suitable for causing execution of the instructions by said microprocessor;

(b) a branch target cache configured to store branch target information and further configured to present branch target information responsive to said instruction decoder determining that an instruction is a branching instruction having a branch target;

(c) an instruction cache in circuit communication with said branch target cache and configured to store at least one block of code comprised of a plurality of instruction lines wherein each instruction line comprises at least one instruction read from the system memory;

(d) a prefetch buffer in circuit communication with said instruction decoder and said instruction cache and configured to

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store at least a first processor instruction line and a second processor instruction line copied from either said instruction cache or the system memory;

(e) a control circuit in circuit communication with said instruction decoder and configured to prefetch blocks of code from said system memory to said instruction cache and further configured to copy instructions from said instruction cache to said prefetch buffer; and

(f) a prefetch inhibit circuit in circuit communication with said prefetch buffer, said branch target cache, said control circuit, and an execution circuit and configured to generate a prefetch inhibit signal responsive to the contents of said prefetch buffer and branch target information determining that the branch target information is in one of said instructions in said prefetch buffer;

wherein said control circuit is further configured to inhibit prefetches from the instruction cache to the prefetch buffer responsive to said prefetch inhibit signal generated by said prefetch inhibit circuit while allowing the execution circuit to continue executing instructions from the prefetch buffer.

5,623,616

FLOATING POINT OPERATON THROUGHPUT CONTROL

Philip L. Vitale, Santa Clara, Calif., and William L. Walker, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 96,584, Jul. 22, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 327,130

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—563 **18 Claims**

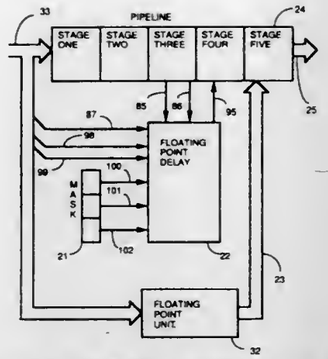
1. A computing system comprising:

a main processor;

a floating point processor, coupled to the main processor, which processes floating point operations;

mask means for permanently holding a first value, the mask means permanently storing the value utilizing a storage technology from the group consisting of fusible links, internal bonding pad selection, read-only memory cells, separate metal layers, ion milling, laser evaporation and external programming pins; and,

a floating point delay circuit coupled to the main processor, the mask means and the floating point processor, the floating point delay circuit degrading performance of the computing system when the floating point processor processes a floating



point operation, the floating point delay circuit degrading performance of the computing system by preventing the main processor from executing instructions during a delay period, a length of the delay period being dependent upon the first value;

wherein the floating point processor and the main processor operate in synchronization when there is no delay period so that the introduction of the delay period results in degrading performance of the computing system.

5,623,617

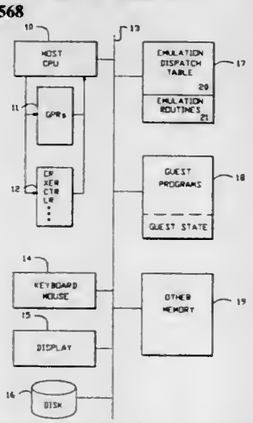
METHOD FOR DECODING SEQUENCES OF GUEST INSTRUCTIONS FOR A HOST COMPUTER

Gary G. Davidian, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 287,715, Aug. 9, 1994, abandoned, which is a continuation of Ser. No. 59,215, May 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,426

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—568 **18 Claims**



1. A computer system that decodes guest instructions for emulation, comprising:

host processor that executes host instructions;

guest program store accessible by said host processor, said guest program store containing a program sequence of said guest instructions for emulation by said host processor;

emulation routine store accessible by said host processor, said emulation routine store containing a set of emulation routines each corresponding to a particular one of said quest instructions, said emulation routines for execution by said host processor during emulation of said program sequence, each emulation routine having dispatch logic for handling a next guest instruction after said particular one of said guest instructions in said program sequence wherein said dispatch logic handles said next guest instruction by initially determining whether said particular one of said guest instructions followed by said next guest instruction correspond to a predefined opcode sequence, said dispatch logic then emulating said next guest instruction for said predefined opcode sequence without dispatching to said emulation routine that corresponds to said next guest instruction if said particular one of said guest instructions followed by said next guest instruction correspond to said predefined opcode sequence, and wherein said dispatch logic handles said next guest instruction by dipatching to said emulation routine that corresponds to said next guest instruction if said particular one of said guest instructions followed by said next guest instruction do not correspond to said predefined opcode sequence.

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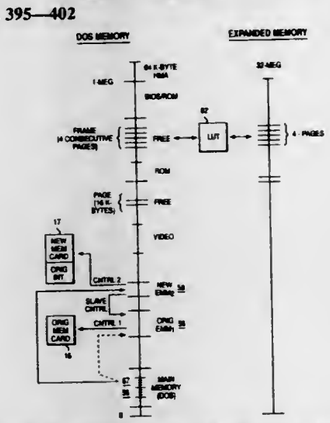
INSTALLATION AND USE OF PLURAL EXPANDED MEMORY MANAGERS

James A. Brewer, Leander; Paul R. Habermehl, and James M. Stafford, both of Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 971,032, Nov. 3, 1992, Pat. No. 5,455,919. This application Jun. 7, 1995, Ser. No. 476,165

Int. Cl.[6] G06F *12/00;9/46*

U.S. Cl. 395—402 **5 Claims**



1. A computer program product for use with a data processing system, said computer program product comprising:

a computer usable medium having computer readable program code means embodied therein for causing a first expanded memory device and a second expanded memory device to operate in conjunction with one another within a data processing system executing an Operating System, thereby providing the data processing system with available expanded memory, said computer readable program code means comprising:

means for installing said first expanded memory device and a first device driver for controlling mapping functions of said first expanded memory device within said operating system;

means for installing said second expanded memory device and a second device driver for controlling mapping functions of said second expanded memory device and said first expanded memory device within said operating system;

means for assigning the mapping functions of said first device driver to said second device driver; and

means for transmitting commands from said second device driver to said first device driver upon the receipt of a request for information stored within said first expanded memory device.

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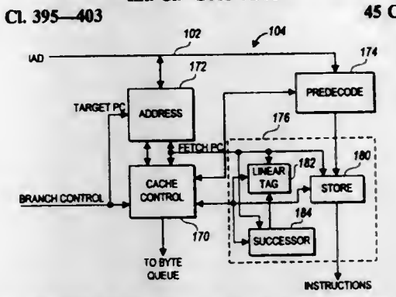
LINEARLY ADDRESSABLE MICROPROCESSOR CACHE

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 146,381, Oct. 29, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,509

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—403 **45 Claims**



1. A processor for processing information, the processor interacting with a device external to the processor using physical addresses, the processor comprising:

a functional unit, said functional unit being addressed using logical addresses;

a cache for temporarily storing information for use by said functional unit, said cache being addressed using linear addresses;

a first translation circuit for translating physical addresses to linear addresses and linear addresses to physical addresses to allow the device external to the processor to communicate with said cache, said first translation circuit being coupled between said cache and the device external to the processor;

a second translation circuit for translating linear addresses to logical addresses and logical addresses to linear addresses to allow said functional unit to communicate with said cache, said second translation circuit being coupled between said functional units and said cache.

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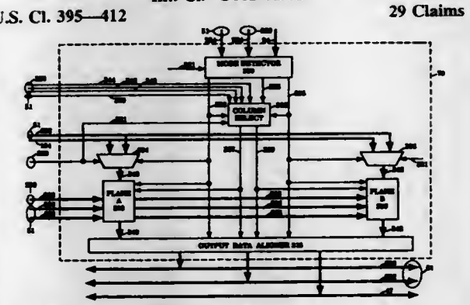
SPECIAL TEST MODES FOR A PAGE BUFFER SHARED RESOURCE IN A MEMORY DEVICE

Mickey L. Fandrich, Placerville; Salim B. Fedel, Folsom; Ranjeet Alexis, Citrus Heights, and Mamun Rashid, Fairfield, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,542

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—412 **29 Claims**



1. A flash memory device, comprising:

flash array controller circuit for performing a program or erase operation on a flash cell array of the flash memory device;

page buffer circuit comprising a plurality of page planes, each page plane comprising a static random access memory array, the page buffer circuit further comprising a mode control circuit coupled to receive an extended mode signal and a control store mode signal, the extended mode signal causing

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the mode control circuit to map the page planes as a contiguous memory space accessible over a host bus, the control store mode signal causing the mode control circuit to map the page planes as a control store for the flash array controller accessible over an instruction bus.

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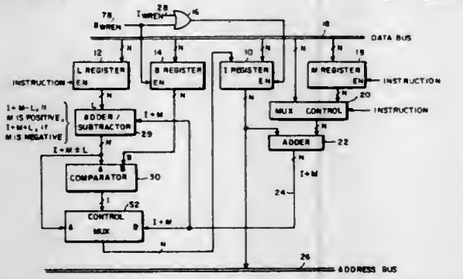
APPARATUS FOR GENERATING TARGET ADDRESSES WITHIN A CIRCULAR BUFFER INCLUDING A REGISTER FOR STORING POSITION AND SIZE OF THE CIRCULAR BUFFER

Douglas Garde, Dover, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 368,365, Nov. 2, 1990, abandoned. This application Sep. 1, 1993, Ser. No. 115,915

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—421.1 **17 Claims**



1. An apparatus for generating target addresses within a circular buffer extending in a memory between bounds defined by a base address and an end address, the base address being any predetermined location in the memory, responsive to the next previous address accessed within said buffer, I, and a specified offset, M, comprising:

a first register for storing the previous address accessed within said buffer, I;

a second register means for storing information which defines the position and size of said circular buffer in memory;

a first logic circuit for generating an absolute address by calculating the value of I+M;

a second logic circuit for generating a wrapped address by modifying the value I+M by the length of the buffer;

a comparator for comparing one of the absolute address and wrapped address with a boundary of said circular buffer to determine which one of said absolute address and said wrapped address is between the bounds of the circular buffer; and

means for loading said first register with the one of the absolute address and the wrapped address which is within the bounds of the circular buffer.

5,623,622

MEMORY ACCESS CONTROL SYSTEM WHICH PROHIBITS A MEMORY ACCESS REQUEST TO ALLOW A CENTRAL CONTROL UNIT TO PERFORM SOFTWARE OPERATIONS

Keiko Yuki; Yoso Igi, and Fumiaki Tahira, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

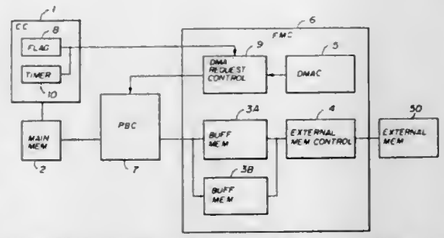
Filed Sep. 30, 1992, Ser. No. 953,965

Claims priority, application Japan, Oct. 8, 1991, 3-260271

Int. Cl.[6] G06F *13/20*

U.S. Cl. 395—427 **10 Claims**

1. A memory access control system which performs a DMA transfer, the memory access control system being responsive to a specific software operation and comprising:



a central control unit which includes a flag and runs the specific software operation, the central control unit setting the flag after the running of the specific software operation is completed;

a main memory which is coupled to the central control unit;

a file memory control unit which comprises

first and second buffer memories, the DMA transfer including a first phase and a second phase, the first phase being a first transfer between the main memory and the first buffer memory and then a successive, second transfer between the main memory and the second buffer memory, the second phase being a transfer between a respective buffer memory of the first and second buffer memories and an external memory, the second phase being performed for a respective buffer memory after a transfer between the main memory and the respective buffer memory in the first phase,

an external memory controller for controlling the external memory,

a first DMA controller for requesting the first phase of a DMA transfer and for controlling the second phase, the first DMA controller controlling the transfer of the second phase from a respective buffer memory when a transfer of the first phase from the main memory to the respective buffer memory ends, and prohibiting a request for the first phase when the first transfer ends during a transfer of the second phase from the second buffer memory, and

a DMA request controller which is coupled to the first DMA controller and controls the request for the first phase by the first DMA controller, the DMA request controller prohibiting a request for the first phase by the first DMA controller when the second transfer of the first phase ends and cancelling the prohibition of a request for the first phase when the flag of the central control unit is set; and

an external bus control unit, coupled between the main memory and the first and second buffer memories, which, in response to a request for the first phase, halts the operation of the central control unit and performs the first and second transfers of the first phase, and stops halting the operation of the central control unit when a request for the first phase is prohibited.

5,623,623

DIGITAL STORAGE SYSTEM ADOPTING SEMICONDUCTOR MEMORY DEVICE

Suk-ki Kim; Hyeong-keon An, both of Pucheon; Tae-sik Joo, and Suk-jung Lee, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 942,059, Sep. 9, 1992, Pat. No. 5,535,356. This application May 11, 1995, Ser. No. 439,070

Claims priority, application Rep. of Korea, Sep. 9, 1991, 91-15669; Feb. 14, 1992, 92-2220

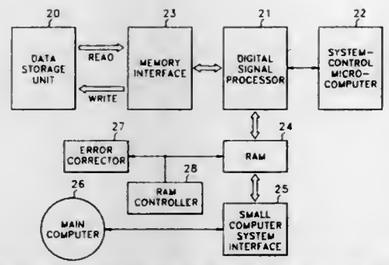
Int. Cl.[6] G06F *12/00*.

U.S. Cl. 395—430 **16 Claims**

1. A digital data storage system, comprising:

a first semiconductor digital data storage device having an input/output terminal;

a system control microcomputer adapted to generate control signals for controlling operation of said system;



a second semiconductor digital data storage device having a first input/output terminal means and a second input/output terminal means;

a main computer having an input/output terminal means;

a computer interface having a first portion connected to said second input/output terminal means of said second semiconductor digital data storage device and a second portion connected to said input/output terminal means of said main computer;

digital signal processing means having a first input/output terminal means;

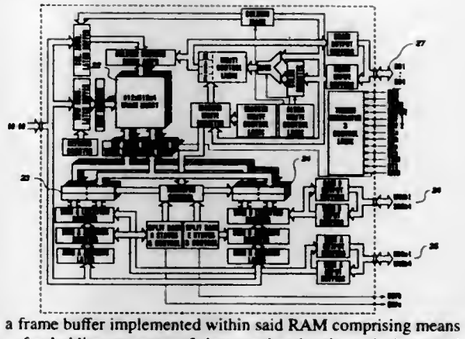
memory interface means having a first portion connected to said input/output terminal means of said first semiconductor digital data storage device and a second portion connected to said first input/output terminal means of said digital signal processing means;

wherein said digital signal processing means is responsive to said control signals to selectively execute a playback operation or a record operation;

wherein, during said playback operation, said digital signal processing means functions to read digital data from said first semiconductor digital data storage device via said memory interface means, which functions to buffer said digital data read from said first semiconductor digital data storage device, and further, to transfer said digital data read from said first semiconductor digital data storage device to said second semiconductor digital data storage device;

a memory controller which functions, during said playback operation, to read out said digital data from said second semiconductor digital data storage device to said main computer, via said computer interface, and, during said record operation, functions to control the transfer of digital data to be recorded from said main computer to said second digital data storage device, via said computer interface; and,

wherein, during said record operation, said digital signal processing means functions to transfer said digital data to be recorded from said second digital data storage device to said first digital data storage device, via said memory interface means, for storage therein.



a frame buffer implemented within said RAM comprising means for holding an array of data-words wherein each data-word comprises a specified number of data-units wherein each data-unit comprises a specified number of bits;

means for performing a Bit-block transfer (BitBLT) comprising:

means for choosing from said frame buffer a subset of data to be transferred;

said subset comprising a plurality of said data-units in said frame buffer;

said subset having a leftmost data-unit;

said leftmost data-unit having a source address;

means for choosing a destination address;

said source address corresponding to a first memory location in said frame buffer;

said destination address corresponding to a second memory location in said frame buffer;

means for loading said first SAM register with said subset;

means for calculating a left shift from said source and destination addresses;

means for transferring said subset from said SAM to said frame buffer beginning at said destination address;

wherein said means for transferring said subset from said SAM to said frame buffer comprises:

means for clocking out specific data-units from said SAM into a transfer word;

a serial clock mask having control of said means for clocking out data-units from said SAM, wherein a first of said data-units occupying a portion of said SAM will or will not be clocked out according to a value of a corresponding portion of said serial clock mask;

means for shifting the data-units within said transfer word by said left shift;

means for generating a write enable mask;

means for writing those data-units enabled by said write enable mask within said transfer word to a destination word.

5,623,624

MEMORY CONTROL ARCHITECTURE FOR HIGH SPEED TRANSFER OPTIONS

Stephen Holland, and Gregory L. Tucker, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 12,094, Feb. 1, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 360,865

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—432 **18 Claims**

1. A memory access architecture which comprises:

a random access memory (RAM) array;

a random access port for accessing said RAM;

a first serial access memory register (SAM) for reading said RAM, said first SAM having a dedicated first serial port;

a controller having means for clocking data into and out of components in said architecture;

5,623,625

COMPUTER NETWORK SERVER BACKUP WITH POSTED WRITE CACHE DISK CONTROLLERS

Mark J. Thompson, and Randy D. Schneider, both of Spring, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 13, 1995, Ser. No. 527,649

Int. Cl.[6] G06F *11/28*

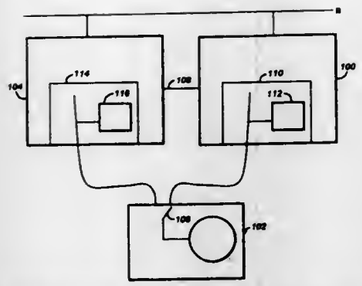
U.S. Cl. 395—440 **7 Claims**

1. A storage system controller for use with a computer and a mass storage subsystem, the storage system controller comprising:

means for determining whether the mass storage subsystem has been written to since a most recent writing of data to the mass storage subsystem; and

a posted write cache for holding data from the computer intended for storage in the mass storage subsystem, the posted write cache including cache flush logic that flushes the cache

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in response to said means determining that the mass storage subsystem has been written to.

5,623,626

LOGICAL CACHE MEMORY FOR MULTI-PROCESSOR SYSTEM

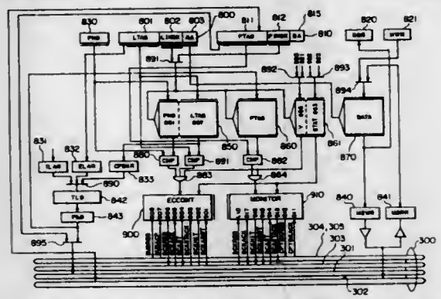
Michio Morioka, Hitachi; Tadaaki Bandoh, Tohkai-mura, and Masayuki Tanji, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 293,335, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 41,873, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 159,222, Feb. 13, 1988, abandoned. This application May 15, 1995, Ser. No. 440,692

Claims priority, application Japan, Feb. 27, 1987, 62-42962; Dec. 7, 1987, 62-307551

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—445 **3 Claims**



1. A logical cache memory for a multiprocessor system having a main storage accessed from a plurality of arithmetic units, wherein the logical cache memory is accessed by a logical address from one of the arithmetic processing units, said logical cache memory comprising:

address converting means for converting a logical address received from said one arithmetic processing unit into a corresponding physical address, which is used to access said main storage;

a logical address register for storing a logical address of data to be accessed, wherein said logical address is composed of a most significant bit portion and an intermediate bit portion and a least significant bit portion said most significant bit portion and said intermediate bit portion are affected by said address converting means, said least significant bit portion is not affected by said address converting means;

a physical address register for storing a physical address to be checked, wherein said physical address is composed of a most significant bit portion and a least significant bit portion, said most significant bit portion is affected by said address converting means, said least significant bit portion is not affected by said address converting means;

a data storage portion, which is addressed by said intermediate bit portion and said least significant bit portion of said received logical address register, for holding a part of the data stored in said main storage,

a logical tag memory, which is addressed by said intermediate bit portion and said least significant bit portion of said received logical address register, for holding the most significant bit portion of said logical address corresponding to data stored in said data storage portion;

a plurality of physical tag memories, which are addressed by a least significant bit portion of a physical address received in said physical address register, for holding said least significant bit portion of said physical address corresponding to data stored in said data storage portion, wherein said plurality of physical tag memories are accessed in parallel;

first judgement means for judging whether requested data exists in said data storage portion by comparing a selected most significant bit portion in said logical tag memory with said most significant bit portion in said logical address register; and

second judgement means for judging whether or not requested data exists in said data storage portion by comparing a selected most significant bit portions in said plurality of physical tag memories with said most significant bit portion in said physical address register.

5,623,627

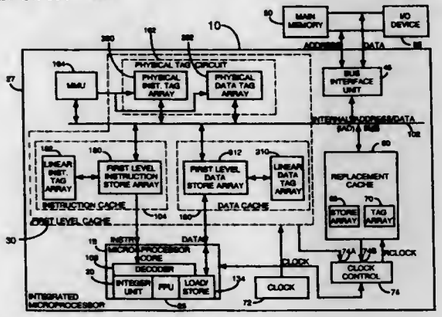
COMPUTER MEMORY ARCHITECTURE INCLUDING A REPLACEMENT CACHE

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 9, 1993, Ser. No. 164,246

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—449 **21 Claims**



1. A microprocessor comprising:

a semiconductor die;

a microprocessor core situated on said semiconductor die;

a first level set associative cache situated on said semiconductor die and coupled to said microprocessor core, said first level cache having a predetermined byte size, said first level cache storing a predetermined number of information entries;

a replacement cache situated on said semiconductor die and coupled to said first level cache, said replacement cache storing information entries which are discarded from said first level cache as a result of first level cache misses, said replacement cache being at least as large as approximately one half the size of said first level cache;

a clock controller supplying a clocking signal to the replacement cache when the replacement cache is accessed and terminating the clocking signal to the replacement cache when accessing of the replacement cache is finished so that power is conserved, a clocking signal being supplied to the microprocessor core and the first level set associative cache whether the clocking signal to the replacement cache is supplied or terminated.

5,623,628

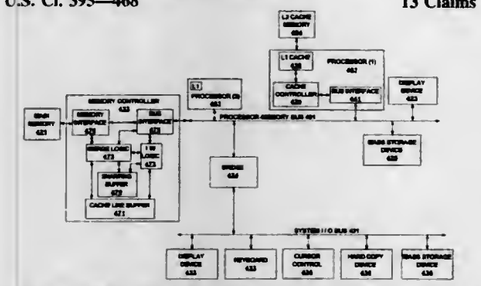
COMPUTER SYSTEM AND METHOD FOR MAINTAINING MEMORY CONSISTENCY IN A PIPELINED, NON-BLOCKING CACHING BUS REQUEST QUEUE

James M. Brayton; Michael W. Rhodehamel; Nitin V. Sarangdhar, all of Beaverton, and Glenn J. Hinton, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 2, 1994, Ser. No. 205,040

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—468 **13 Claims**



3. A method of operating a computer system to maintain memory consistency, the computer system including a pipelined external bus, one or more CPUs coupled to the external bus and including an external bus request queue, a memory system including a main memory and one or more levels of cache and coupled to the external bus, the method comprising the steps of:

executing a program on the CPU, the program including a plurality of memory data requests which the program expects will be serviced according to a predetermined ordering, wherein the plurality of memory data requests includes both read and write requests;

issuing the plurality of data requests onto the external bus in a pipelined ordering;

queuing the issued data requests in entries of the external bus request queue to monitor status information regarding each issued data request; and

updating the entries to maintain memory consistency, ensure that each request receives current data, and service requests according to the predetermined ordering.

5,623,629

APPARATUS FOR MAINTAINING COHERENCY OF CACHE MEMORY DATA

Toshiaki Suzuki, Kanagawa-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 741,661, Aug. 6, 1991, abandoned. This application Oct. 14, 1994, Ser. No. 323,501

Claims priority, application Japan, Aug. 8, 1990, 2-209663

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—468 **33 Claims**

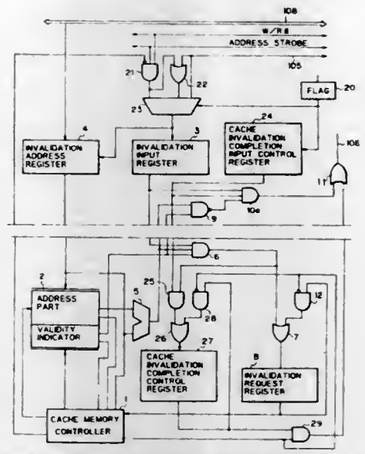
1. A main processor to be used in a data processor system having a main memory, and at least one subprocessor, said main memory and said at least one subprocessor being interconnected through a bus network having at least a first bus, said main processor connected to said first bus and comprising:

a cache memory,

first means for detecting a store request on said first bus to store data in said main memory at a memory address, said means for detecting providing a first output upon such detection;

second means for receiving a cache invalidating signal, said means for receiving providing a second output upon such reception;

means for selecting said first output, said second output or both, said means for selecting being responsive to an operation mode; and



means for invalidating an entry of said cache memory at a cache address corresponding to said memory address if the entry holds valid data, said means for invalidating being responsive to the means for selecting.

5,623,630

DATA PROCESSOR WITH APPLICATION PROGRAM BUFFER TO CACHE BUFFER COPY CAPABILITY TO PREVENT MISMATCHES

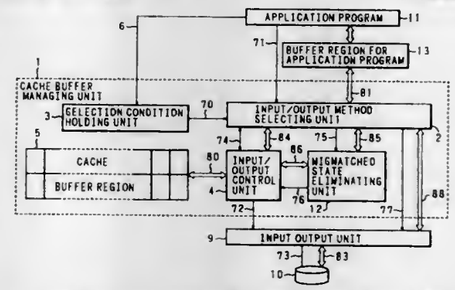
Yasuhisa Kisuki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1994, Ser. No. 353,249

Claims priority, application Japan, Dec. 6, 1993, 5-305294

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—468 **5 Claims**



1. A data processor connecting a block type memory device capable of inputting and outputting data in block units through inputting/outputting means responding to a request from an application program, and having a cache buffer region for holding data corresponding to blocks existing on said memory device, and having a buffer region for said application program, comprising:

input/output controlling means for judging whether all of the blocks corresponding to the blocks on said memory device to which input or output has been requested by said application program are present or not in said cache buffer region, for allocating new blocks to said cache buffer region, and for inputting or outputting data between said cache buffer region and said buffer region for said application program;

selection condition holding means for holding as a selection condition the number of blocks which can be inputted or outputted in one processing;

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input/output method selecting means for inquiring to said input/output controlling means whether all blocks to which input or output processing has been requested by said application program are present in said cache buffer region, and for selecting whether or not to allocate new blocks to said cache buffer region according to the selection condition held by said selection condition holding means when none of the blocks to which input or output processing has been requested by said application program is present in said cache buffer region; and

mismatched state eliminating means for eliminating a mismatched state occurring between said buffer region for said application program and said cache buffer region due to the input or output processing of the data by said inputting/outputting means;

wherein said input/output controlling means also stores the data inputted or outputted by said inputting/outputting means in the blocks newly allocated to said cache buffer region when new blocks are allocated to said cache buffer region, and

said mismatched state eliminating means copies the content of blocks between the buffer region for said application program and said cache buffer region when said input/output controlling means judges that blocks corresponding to the blocks inputted or outputted by said inputting/outputting means existed in said cache buffer region before start of processing of the data corresponding to the request from said application program.

5,623,631

LIMITING MODIFICATION OF CACHE ENTRIES IN A WRITE-BACK CACHE BASED UPON THE AMOUNT OF DIRTY LINES IN THE CACHE

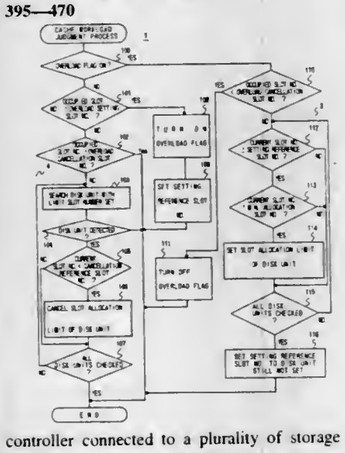
Toshiaki Tsuboi, Kawasaki; Akira Yamamoto, Sagamihara; Shigeo Honma; Yoshihiro Asaka, both of Odawara; Koji Ozawa, Hiratsuka; Hiroyuki Kitajima, Yokohama, and Michio Miyazaki, Odawara, all of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System, Ltd., both of Tokyo, Japan

Division of Ser. No. 187,500, Jan. 28, 1994, Pat. No. 5,418,929, which is a continuation of Ser. No. 833,129, Feb. 10, 1992, Pat. No. 5,307,473. This application Feb. 3, 1995, Ser. No. 383,093

Claims priority, application Japan, Feb. 20, 1991, 3-025994

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—470 **7 Claims**



2. A controller connected to a plurality of storage units, and having a cache memory, comprising:

means for inputting a write data corresponding to a write request from a processing unit to said cache memory;

means for outputting said write data from said cache memory to each of the plurality of storage units;

means for detecting an amount of said write data stored in said cache memory and not yet outputted to each of the plurality of storage units; and

means for pending inputting said write data to said cache memory based on a detecting result from said means for detecting.

5,623,632

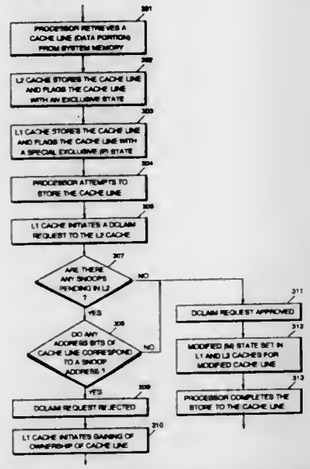
SYSTEM AND METHOD FOR IMPROVING MULTILEVEL CACHE PERFORMANCE IN A MULTIPROCESSING SYSTEM

Peichun P. Liu; Michael J. Mayfield, and Robert J. Reese, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1995, Ser. No. 442,740

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—471 **16 Claims**



1. In a multiprocessor system comprising a plurality of bus devices coupled to a storage device via a bus, wherein said plurality of bus devices have a snoop capability, wherein said plurality of bus device have primary and secondary caches, and wherein said plurality of bus devices utilize a modified MESI data coherency protocol, a method comprising the steps of:

reading a data portion from said storage device into one of said plurality of bus devices, wherein said primary cache associated with said one of said plurality of bus devices associates a special exclusive state with said data portion, and wherein said secondary cache associated with said one of said plurality of bus devices associates an exclusive state with said data portion;

initiating, by said one of said plurality of bus devices, a write-back operation with respect to said data portion;

determining if there are any pending snoop requests in said secondary cache; and

changeing said special exclusive state to a modified state in said primary cache if there are no said pending snoop requests in said secondary cache, wherein said special exclusive state indicates that said data portion is held in said primary cache in a shared state and indicates said data portion is held in said secondary cache in an exclusive state.

5,623,633

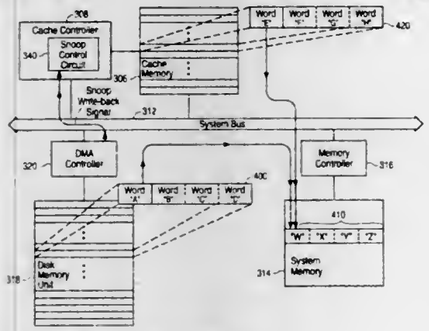
CACHE-BASED COMPUTER SYSTEM EMPLOYING A SNOOP CONTROL CIRCUIT WITH WRITE-BACK SUPPRESSION

Charles P. Zeller, and Darius D. Gaskins, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jul. 27, 1993, Ser. No. 98,173

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—473 **8 Claims**



1. A computer system comprising:

a system bus;

a cache memory coupled to said system bus;

a microprocessor coupled to said cache memory;

a system memory;

a system memory controller coupled to said system bus and to said system memory for controlling the storage and retrieval of data within said system memory;

an alternate bus master device coupled to said system bus, wherein said alternate bus master device is configured to assert a snoop write-back signal if a complete line of data is not being transferred to said system memory from said alternate bus master during a given burst write cycle and is configured to deassert said snoop write-back signal if a complete line of data is being transferred to said system memory from said alternate bus master device during said burst write cycle; and

cache controller coupled to said cache memory and to said system bus for controlling the storage and retrieval of data within said cache memory, wherein said cache controller includes a snoop control circuit for controlling the write-back to said system memory of dirty data in the associated hit line stored within said cache memory if said snoop write-back signal is asserted when a DMA write operation occurs to said system memory from said alternate bus master device, and wherein said snoop control circuit inhibits the write-back of said dirty data to said system memory if said snoop write-back signal is deasserted when said DMA write operation occurs.

5,623,634

RESOURCE ALLOCATION WITH PARAMETER COUNTER IN MULTIPLE REQUESTER SYSTEM

Jonathan Liu, Milpitas, Calif., assignor to S3, Incorporated, Santa Clara, Calif.

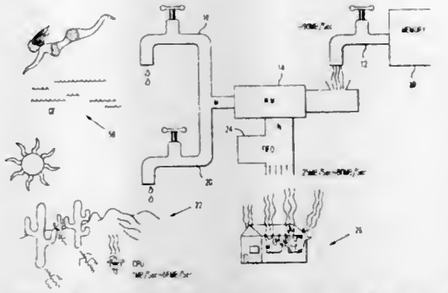
Continuation of Ser. No. 946,274, Sep. 15, 1992, abandoned. This application May 23, 1995, Ser. No. 448,003

Int. Cl.[6] G06F *13/376*

U.S. Cl. 395—478 **10 Claims**

1. An arbitration duty cycle method for controlling flow of data from a data source to at least first and second data requesters, the data source providing the data in cycles, each cycle having a particular duration, comprising the steps of:

establishing first and second programmable parameters associated respectively with the first and second data requesters;



allowing the data to flow from the data source to the first data requester only for a number of the cycles determined by the first programmable parameter;

then subsequently allowing the data to flow from the source to the second data requester for a number of the cycles determined by the second programmable parameter;

changing at least one of the first and second programmable parameters so that a memory associated with at least one of the data requesters is never empty; and

wherein the flow of data is devoted to each of the first and second requesters in a duty cycle pattern in accordance with respectively the first and second programmable parameters.

5,623,635

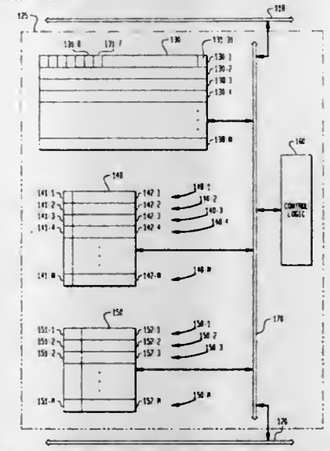
MEMORY CONSISTENT PRE-OWNERSHIP METHOD AND SYSTEM FOR TRANSFERRING DATA BETWEEN AND I/O DEVICE AND A MAIN MEMORY

Chang-Lun Chen, Hsinchu; Allen S. C. Wang, and Wei-Wen Chang, both of Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation of Ser. No. 71,721, Jun. 4, 1993, abandoned. This application Sep. 17, 1996, Ser. No. 714,888

Int. Cl.[6] G06F *12/14;13/20*

U.S. Cl. 395—479 **17 Claims**



1. In a computer system, an I/O bridge for transferring a sequence of data words from an I/O device to sequential addresses in a main memory which is organized into contiguous data lines, each data line having a unique line address and a fixed number of data words, said sequence of data words including one or more contiguous subsequences of data words, said one or more subsequences of data words each containing data words destined for a subsequence of addresses in said main memory, at which data words contained in only one data line are stored, said I/O bridge comprising:

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control logic which, while receiving a first subsequence of data words destined for contiguous addresses in which data words of a first data line currently owned by said I/O bridge are stored, but prior to receiving a command from said I/O device to transfer a second subsequence of data words, attempts to claim ownership of one or more successive data lines next to said first data line, at least one of said one or more successive data lines including subsequences of data words stored at subsequences of addresses for which said second subsequence of data words, to be transferred from said I/O device after said received subsequence of data words, are destined; and

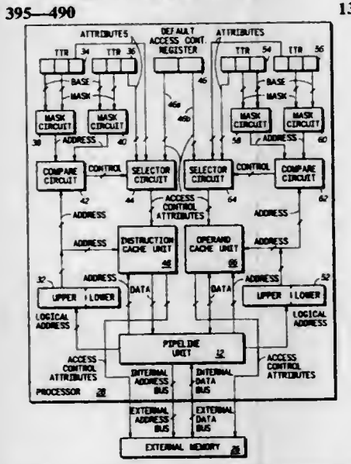
a buffer memory including a plurality of data line storage locations, each data line storage location for storing one of said one or more subsequences of said sequence of data words received from said I/O device.

5,623,636

DATA PROCESSING SYSTEM AND METHOD FOR PROVIDING MEMORY ACCESS PROTECTION USING TRANSPARENT TRANSLATION REGISTERS AND DEFAULT ATTRIBUTE BITS

Juan G. Revilla, Austin, Tex., and Art Parmet, Burlington, Mass., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 9, 1993, Ser. No. 149,496
Int. Cl.[6] G06F *12/08;12/14*
U.S. Cl. 395—490 **13 Claims**



1. A data processor having a memory management unit with at least two modes of operation, one mode of operation being a normal mode of operation and a second mode of operation being a default mode of operation, the data processor having two privilege modes wherein the two privileged modes provide data protection, the data processor comprising:

circuitry within the data processor for providing to the memory management unit a logical address;

a first transparent translation register, within the memory management unit;

a second transparent translation register, within the memory management unit;

compare circuitry for receiving the logical address, the compare circuitry coupled to both the first transparent translation register and the second transparent translation register, the compare circuitry comparing a predetermined number of bits in the logical address to a predetermined number of bits in each of the first and second transparent translation register and asserting a control signal if the predetermined number of bits in the logical address equal the predetermined number of bits in one of the first and second transparent translation register, the compare circuitry functioning in the default mode of operation;

a default storage location, within the memory management unit, for storing a plurality of attribute bits used to provide write access information for data protection, the default storage location having an output for providing the plurality of attribute bits regardless of the privilege mode; and

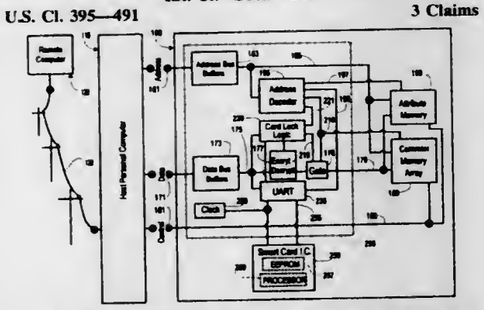
a selector circuit having a first input for receiving a predetermined number of attribute bits from the first transparent translation register used to provide write access information for data protection, having a second input for receiving a predetermined number of attribute bits from the second transparent translation register used to provide write access information for data protection, and having a third input coupled to the output of the default storage location, the selector circuit being coupled to the control signal wherein the control signal is used to determine an output of the selector circuit wherein the output of the selector circuit is the bits of one of either the first input, the second input, or the third input, the selector circuit functioning in the default mode of operation.

5,623,637

ENCRYPTED DATA STORAGE CARD INCLUDING SMARTCARD INTEGRATED CIRCUIT FOR STORING AN ACCESS PASSWORD AND ENCRYPTION KEYS

Michael F. Jones, Nashua, N.H., and Arthur Zachai, Swampscott, Mass., assignors to Telequip Corporation, Hollis, N.H.

Continuation of Ser. No. 161,854, Dec. 6, 1993, abandoned.
This application May 17, 1996, Ser. No. 651,205
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—491 **3 Claims**



1. A removable memory card including external interface terminals for establishing data, address, control and power pathways between said card and corresponding socket terminals of a host computer, said memory card comprising:

a smartcard integrated circuit including a local processor and a substorage memory unit for storing a first password value and an encryption key value,

a non-volatile data storage memory,

gating means having a control input, said gating means being connected to establish a data pathway between said interface terminals and said data storage memory only when an authorization signal is applied to said control input, and

card lock logic means coupled to said smartcard integrated circuit for receiving a second password value from said host computer via said interface terminals, said card lock logic means including:

means for applying said authorization signal to said control input of said gating means only when said second password value bears a predetermined relation to said first password value stored in said substorage memory of said smartcard integrated circuit,

means for encrypting data transferred to said data storage memory via said gating means by combining data from said interface terminals with said encryption key value from said smartcard integrated circuit,

means for decrypting previously encrypted data transferred from said data storage means in response to said authorization signal by combining said encrypted data with said encryption key value stored in said substorage memory of said smartcard integrated circuit, and

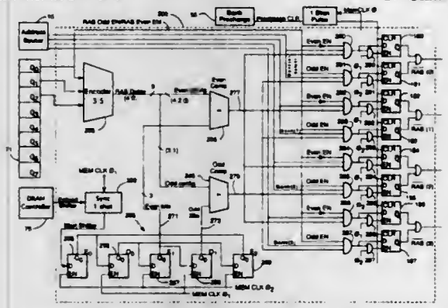
means for preventing the transfer of said encryption key value from said substorage memory of said smartcard integrated circuit when said second password value does not bear said predetermined relation to said first password value.

5,623,638

MEMORY CONTROL UNIT WITH PROGRAMMABLE EDGE GENERATOR TO MINIMIZE DELAY PERIODS FOR CRITICAL DRAM TIMING PARAMETERS

Victor F. Andrade, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 22, 1994, Ser. No. 343,225
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—494 **17 Claims**



1. A memory control unit for controlling memory transactions to a memory array, comprising:

a programmable edge generator for generating control signals with desired delay periods, said control signals including row address strobe (RAS) signals;

a controller for enabling said edge generator; and

a configuration register including dedicated bits for establishing said desired delay periods;

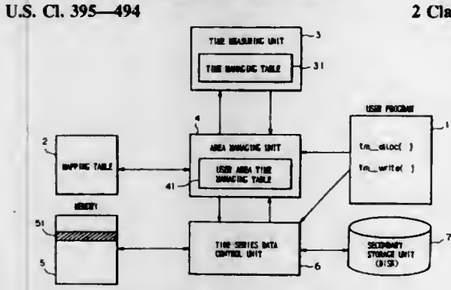
wherein said programmable edge generator comprises a RAS shifter circuit, said RAS shifter circuit including an encoder connected to said configuration register to produce an encoded output signal on a RAS delay line bus.

5,623,639

MEMORY MANAGEMENT SYSTEM FOR THE TIME-WISE MANAGEMENT OF MEMORY

Masatomo Yazaki, and Jun Nakajima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 946,834, Sep. 21, 1992, abandoned.
This application Jun. 6, 1995, Ser. No. 468,185
Claims priority, application Japan, Sep. 20, 1991, 3-240772
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—494 **2 Claims**



1. A time management system for a memory comprising,

a memory unit;

a time measuring unit including a time managing table having at least time-out information and acquisition/release information to manage timing for acquisition and release of an area in the memory unit; and

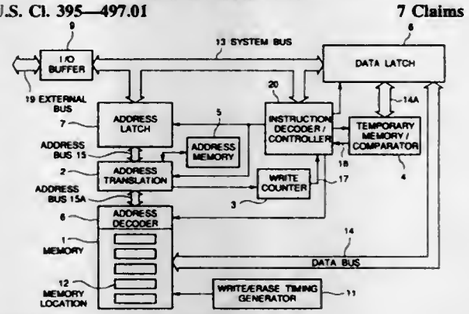
an area managing unit including a user area time managing table having at least address and required size information of a memory area to manage the memory unit on a timewise basis in accordance with the time managing table, the time measuring unit directing an acquisition request for the memory unit to the area managing unit when the time-out information indicates time-out status and the acquisition/release information indicates acquisition status, and directing a release request for the memory unit to the area managing unit when the time-out information indicates time-out status and the acquisition/release information indicates release status, the time managing table generating an error signal when a request for an area of memory overlaps, on a timewise basis, with another request for the area of memory.

5,623,640

DATA MEMORY SYSTEM THAT EXCHANGES DATA IN DATA LOCATIONS WITH OTHER DATA LOCATIONS BASED ON THE NUMBER OF WRITES TO THE MEMORY

Takeshi Nakabo, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 207,153
Claims priority, application Japan, Mar. 8, 1993, 5-46199
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—497.01 **7 Claims**



1. A data memory system comprising:

a memory including a plurality of memory locations from which stored data is readable and to which data is writable;

an input means for receiving and holding a memory location designation information designating a memory location to be accessed within said memory;

a selection means receiving said memory location designation information held in said input means, for designating, from said plurality of memory locations, an "m"th memory location when said selection means receives a first memory location designation information designating said "m"th memory location, and an "n"th memory location which is different from said "m"th memory location, and which stores the same data as that stored in said "m"th memory location, when said selection means receives a second memory location designation information designating said "n"th memory location, where "m" and "n" are positive integers different from each other;

a count means for counting a number of writings performed to said "m"th memory location; and

a region exchanging means coupled to said selection means and said count means, for controlling said selection means when a count value of said count means reaches a predetermined value, to cause said selection means to designate said "n"th memory location when said selection means receives said first memory location designation information designating said "m"th memory location, and for designating said "m"th

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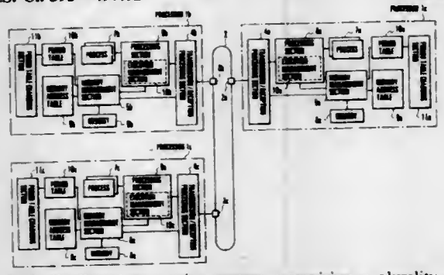
memory location when said selection means receives said second memory location designation information designating said "n"th memory location.

5,623,641

DISTRIBUTED PROCESSING SYSTEM FOR PERFORMING MEMORY ASSIGNMENT

Naozoh Kadoyashiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,729
Claims priority, application Japan, Oct. 26, 1994, 6-262366
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—497.02 **8 Claims**



1. A distributed processing system comprising a plurality of processors connected to a transmission line and adapted to respectively execute assigned processes,

each of said processors including

data transmission/reception means for transmitting data to or receiving data from other processors through said transmission line,

a first memory used during execution of a process,

a first memory management means for managing said first memory, said first memory management means ensuring an available area in another memory managed by another memory management means of at least one of the remaining processors through said data transmission/reception means when a capacity shortage occurs in said first memory at the start of a process, and ensuring an available area in said first memory instead of the available area in said other memory of said at least one of the remaining processors when the available area occurs in said first memory during execution of the process, and

processing means for executing a process by using the available areas in said first memory and said other memory of said at least one of the remaining processors which are respectively ensured by said first memory management means and said other memory management means.

5,623,642

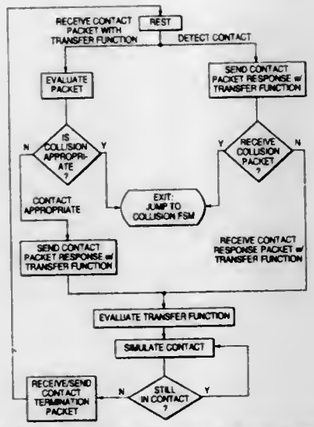
METHOD FOR SIMULATING NEWTONIAN INTERACTIONS OVER A COMPUTER NETWORK

Warren J. Katz, Cambridge; Darrin Taylor, Malden, and John Morrison, Bedford, all of Mass., assignors to Mäk Technologies, Inc., Cambridge, Mass.

Filed Apr. 6, 1994, Ser. No. 223,604
Int. Cl.[6] G06F *3/00;* **G06G** *7/48*
U.S. Cl. 395—500 **16 Claims**

1. A computer-implemented method for use in a distributed interactive simulation (DIS) type network protocol for simulating sustained contact of first and second computer implemented objects on each other in a virtual environment comprising the steps of:

providing a computer system comprising said first and second computer implemented objects;



storing in the computer system contact packets comprising data representative of the kinematic state of each of said first and second computer-implemented objects;

pre-programming said computer system to implement a transfer function describing said sustained contact of said first and second computer implemented objects on each other; and

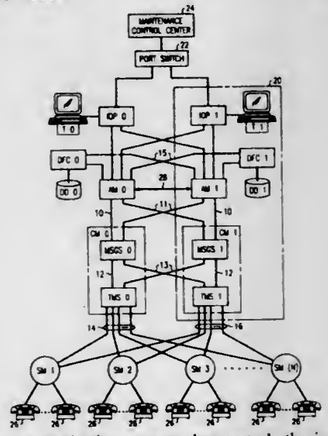
applying said transfer function to said first and second computer implemented objects based on the kinematic state data in said contact packets, thereby enabling said first and second computer implemented objects to simulate said sustained contract each will have on the other in the virtual environment of said DIS-type network protocol.

5,623,643

TELECOMMUNICATION SYSTEM WITH IMPROVED RECONFIGURATION FLEXIBILITY HAVING FIRST AND SECOND COMMUNICATION MODULES WHERE NEW OPERATING SYSTEM IS TESTED WITH ISOLATED SECOND COMMUNICATION MODULES

Paul E. Janssen, Naperville; Keith W. Johnson, Sugar Grove, and Gary L. Postiglione, Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 976,622, Nov. 16, 1992, abandoned.
This application Jan. 29, 1996, Ser. No. 593,192
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—500 **11 Claims**



1. A telecommunications system that controls the interconnection of communication channels, the system comprising:,

a first set of telecommunication devices;

a second set of telecommunication devices arranged to substantially mirror said first set of devices; said first and second set of devices coupled to said communication channels;

said first and second set of devices comprising first and second computer modules, respectively, said first and second computer modules each being physically independent and capable of providing operating system control for said telecommunications system, said first and second computer modules initially operating with the same operating system, said first and second computer modules connected and providing control instructions to first and second communication modules, respectively;

means for selecting one of said first and second computer modules to control said communication system, only said one of said first and second computer modules controlling said communication channels at any given time;

means for isolating said one of said first and second computer modules and a corresponding one of said first and second communication modules from the other of said computer modules and communication modules;

means for inhibiting said other computer module and other communication modules from communicating with said communication channels;

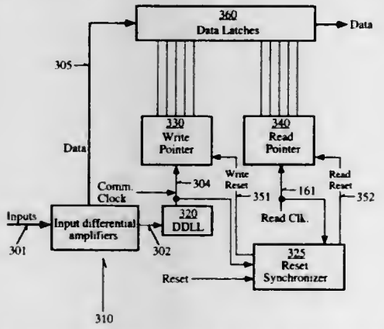
means for loading the other computer module with a new operating system and testing the operation of the new operating system by having the other computer module operate and communicate information with said isolated other communication modules, uninterrupted control of said communication channels by said one communication modules being maintained while interaction of said new operating system with said isolated communication modules is tested.

5,623,644

POINT-TO-POINT PHASE-TOLERANT COMMUNICATION

Keith-Michael W. Self, Aloha; Shekhar Y. Borkar, Portland; Jerry G. Jex, Forest Grove; Edward A. Burton, Hillsboro; Stephen R. Mooney, Beaverton, and Prantik K. Nag, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1994, Ser. No. 296,019
Int. Cl.[6] G06F *13/00;15/16*
U.S. Cl. 395—558 **15 Claims**



15. A processor including a unidirectional point-to-point communication apparatus coupled to pins of said processor for receiving signals transmitted by a transmitter to said processor irrespective of the phase of said signals, and length of a communication path between said transmitter and said processor, said processor comprising:

a. a high speed communication bus for coupling said transmitter to said processor to receive said signals transmitted from said transmitter to said processor, said bus including a line for carrying a communication clock signal generated by a high speed communication clock coupled to said bus and said processor for timing said signals transmitted on said high speed communication bus between transmitter and said processor, said high speed communication clock having an unknown phase relationship relative to an internal clock of said processor;

b. a buffer coupled to said high speed communication bus and said processor for receiving and storing signals transmitted between said transmitter and said processor;

c. a buffer accessing circuit coupled to said buffer for referencing write locations to store said signals received from said transmitter over said communication bus, and for referencing read locations for reading said signals out of said buffer by said processor; and

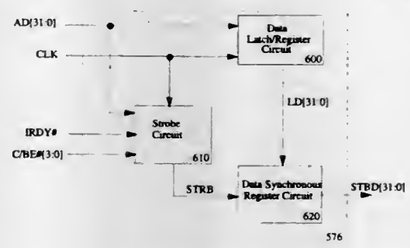
d. a delay locked loop circuit coupled to said communication bus, said buffer accessing circuit and said buffer, said delay locked loop circuit for detecting said phase of said signals transmitted on said communication bus from said transmitter and providing proper set-up and latch time requirements for storing said signals in said processor.

5,623,645

METHOD AND APPARATUS FOR ACQUIRING BUS TRANSACTION DATA WITH NO MORE THAN ZERO-HOLD-TIME

Thomas C. Yip, Los Gatos, and Hemanth G. Kanekal, San Jose, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Aug. 10, 1995, Ser. No. 513,374
Int. Cl.[6] G06F *13/38*
U.S. Cl. 395—551 **14 Claims**



1. An apparatus for acquiring data information from a synchronous bus transaction which operates with no more than zero hold-time, comprising:

register means coupled to a system bus, said register means responsive to a predetermined logic state of a system clock signal for acquiring information provided by said synchronous bus transaction;

signal generating means coupled to said system bus and receiving said system clock signal as input, said signal generating means generates a synchronous signal indicating whether said information acquired is valid data information; and

synchronous register means coupled to said register means and said signal generating means, said synchronous register means responsive to a predetermined edge of said indicating signal for registering valid data information acquired by said register means.

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5,623,646

CONTROLLING PROCESSING CLOCK SIGNALS

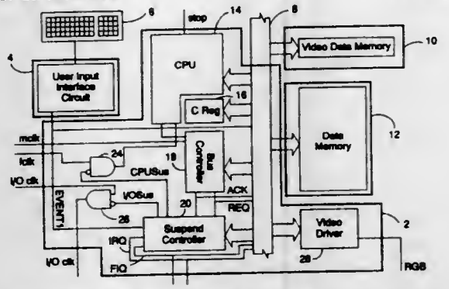
Keith S. P. Clarke, Papworth Everard, United Kingdom, assignor to Advanced RISC Machines Limited, Cambridge, United Kingdom

Filed Sep. 12, 1995, Ser. No. 528,475

Claims priority, application United Kingdom, May 9, 1995, 9510205

Int. Cl.[6] G06F 1/10

U.S. Cl. 395—560 15 Claims



1. Apparatus for processing data, said apparatus comprising:

(i) a central processing unit core driven by a central processing unit clock signal for performing data processing in response to program instructions;

(ii) an asynchronous signal input coupled to said central processing unit core for receiving asynchronous input signals;

(iii) a signal bus for transferring signals between said central processing unit core, data storage means and one or more further circuits all coupled to said signal bus;

(iv) a bus controller for controlling access to said signal bus by said central processing unit, said data storage means and said one or more further circuits and for supplying said central processing unit clock signal to said central processing unit core; (v) clock suspending means responsive to a program instruction initiated write request by said central processing unit core to a predetermined address in said data storage means for issuing a request signal to said bus controller such that said bus controller suspends driving of said central processing unit core by said central processing unit clock signal whilst allowing said data storage means and said one or more further circuits to continue to communicate via said signal bus; and

(vi) clock resuming means responsive to an asynchronous input signal applied to said asynchronous signal input issuing an acknowledge signal to said bus controller such that said bus controller resumes driving of said central processing unit core by said central processing unit clock signal.

5,623,647

APPLICATION SPECIFIC CLOCK THROTTLING

Amit K. Maitra, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 7, 1995, Ser. No. 400,040

Int. Cl.[6] G06F 1/08

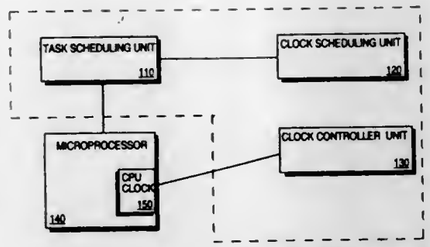
U.S. Cl. 395—556 37 Claims

1. An apparatus for managing a microprocessor's operating speed, comprising:

A) a task scheduling unit that schedules a time when an application is run by the microprocessor;

B) a clock scheduling unit, coupled to the task scheduling unit, that determines a computing requirement of the application, comprising

1) a task switch detection unit that communicates with the task scheduling unit and determines the time when the application is scheduled to run,



2) an application characterization unit coupled to the task switch detection unit that prepares an initialization file with computing requirement data of the application, and

3) a clock programming unit coupled to the application characterization unit that programs the clock controller unit to throttle a clock in the microprocessor according to the computing requirement data in the initialization file; and

C) a clock controller unit, coupled to the clock scheduling unit, that adjusts the microprocessor's operating speed to meet the computing requirement of the application.

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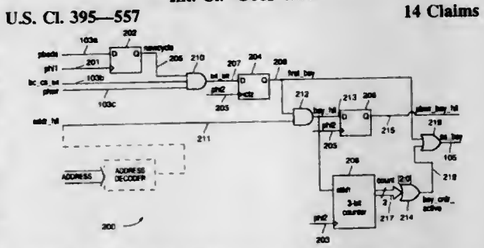
CONTROLLER FOR INITIATING INSERTION OF WAIT STATES ON A SIGNAL BUS

Matthew H. Childs, Arlington, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 30, 1995, Ser. No. 521,212

Int. Cl.[6] G06F 1/04

U.S. Cl. 395—557 14 Claims



1. An apparatus including a controller for initiating an insertion of one or more wait states on a signal bus, said controller comprising:

a first circuit for connecting to a signal bus and receiving therefrom a plurality of addressing signals corresponding to a plurality of logic circuits and providing in accordance therewith a first output signal which corresponds to an initiation of a wait state on said signal bus; and

a second circuit, coupled to said first circuit, for receiving said first output signal and a second addressing signal corresponding to a selected logic circuit among said plurality of logic circuits and in accordance therewith providing a second output signal which corresponds to an initiation of one or more wait states on said signal bus.

5,623,649

METHOD AND APPARATUS FOR PASSING A BUS CLOCK SIGNAL FROM A COMPUTER TO AN EXPANSION CHASSIS

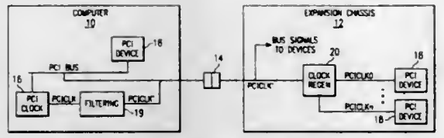
Gary J. Verdun, Belton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1995, Ser. No. 551,189

Int. Cl.[6] G06F 1/10

U.S. Cl. 395—558 20 Claims

1. A system for passing a clock signal from a computer to an expansion chassis comprising:



a clock for generating a bus clock signal in the computer;

a filter coupled to said clock for generating a filtered bus clock signal;

a clock regeneration circuit in said expansion chassis for generating one or more expansion chassis clock signals substantially in phase with said bus clock signal responsive to said filtered bus clock signal.

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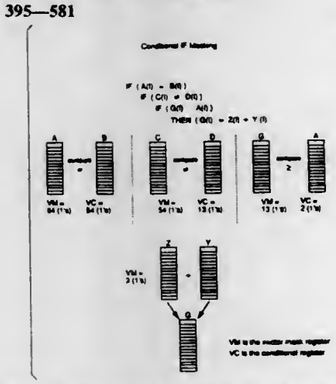
METHOD OF PROCESSING A SEQUENCE OF CONDITIONAL VECTOR IF STATEMENTS

Douglas R. Beard, Eleva; Andrew E. Phelps; Michael A. Woodmansee, both of Eau Claire; Richard G. Blewett, Altoona; Jeffrey A. Lohman, Eau Claire; Alexander A. Silbey, Eau Claire; George A. Spix, Eau Claire; Frederick J. Simmons, Neillsville, all of Wis., and Don A. Van Dyke, Pleasanton, Calif., assignors to Cray Research, Inc., Eagan, Minn.

Continuation-in-part of Ser. No. 459,083, Dec. 29, 1989, Pat. No. 5,197,130, and a continuation of Ser. No. 395,320, Feb. 28, 1995, which is a continuation of Ser. No. 536,409, Jun. 11, 1990, Pat. No. 5,430,884. This application Jun. 7, 1995, Ser. No. 484,124

Int. Cl.[6] G06F 9/00

U.S. Cl. 395—581 4 Claims



1. A method of processing a sequence of conditional vector IF statements by employing a mask register having contents represented by n bits and a condition register having contents represented by n bits wherein each conditional vector IF statement is performed on a selected vector register set, wherein each selected set includes at least one vector register having a plurality of vector elements, the method comprising the steps of:

(a) processing a first conditional vector IF statement in the sequence for those vector elements of a first vector register set corresponding to selected bits of the n bits of the mask register being set;

(b) setting certain bits of the n bits of the condition register to reflect those vector elements of the first vector register set which correspond to the selected bits of the mask register being set and the conditional vector IF statement being satisfied;

(c) moving the contents of the condition register into the mask register;

(d) processing a next conditional vector IF statement in the sequence for those vector elements of a next vector register set corresponding to bits of the n bits of the mask register being set in the new contents of the mask register resulting from step (c); and

(e) setting certain bits of the n bits of the condition register to reflect those vector elements of the next vector register set which correspond to the bits of the mask register being set and the conditional vector IF statement being satisfied.

5,623,651

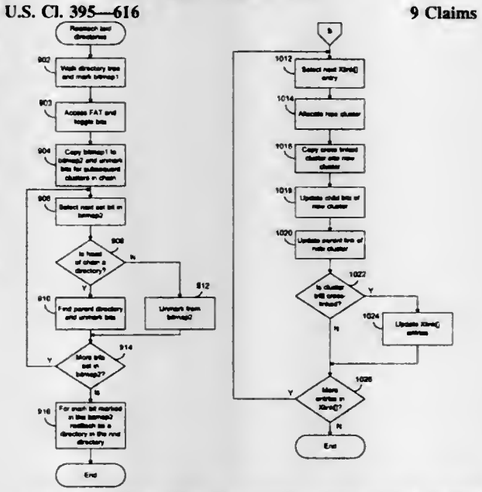
METHOD AND SYSTEM FOR REPAIRING CROSS-LINKED CLUSTERS AND REATTACHING LOST DIRECTORIES ON A STORAGE DEVICE

Richard P. Jernigan, IV, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 21, 1994, Ser. No. 263,204

Int. Cl.[6] G06F 12/00

U.S. Cl. 395—616 9 Claims



1. In a computer system, the computer system having a storage device containing clusters, each cluster being a part of a cluster chain, a method for uncrossing cross-linked clusters comprising the computer-implemented steps of:

determining when a first of the cluster chains and a second of the cluster chains contain a common cluster:

duplicating the common cluster; and

updaring the first cluster chain to refer to the duplicated cluster, wherein the second cluster chain continues to refer to the common cluster.

6. A method in a computer system for reattaching lost directories to a directory hierarchy, comprising:

identifying a plurality of lost directories;

for each of the plurality of the identified lost directories,

determining whether the identified lost directory points to a parent directory that is also a lost directory; and

when the identified lost directory does not point to a parent directory that is also a lost directory, creating an entry in a non-lost directory for the identified lost directory and storing a reference to the identified lost directory in the created entry whereby an identified lost directory that points to a parent directory that is also a lost directory has no entry created for it, but rather is accessible through the entry created for its parent directory.

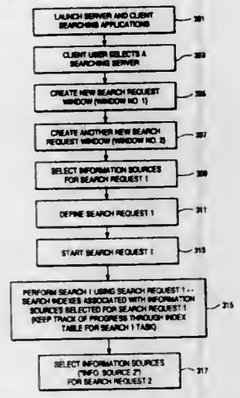
VOL 1197 ISS 4 AP 22 1997 UMI

5,623,652

METHOD AND APPARATUS FOR SEARCHING FOR INFORMATION IN A NETWORK AND FOR CONTROLLING THE DISPLAY OF SEARCHABLE INFORMATION ON DISPLAY DEVICES IN THE NETWORK

Kumar A. Vora, San Jose; Gregory B. Vaughan, Santa Cruz; Kenneth C. McLeod, Santa Clara, and David Casseres, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 25, 1994, Ser. No. 280,274
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—610 **2 Claims**



1. An apparatus for searching for information in a network of data processing systems, said apparatus comprising:

a first processor having a first display device and being coupled to an information storage device having information stored in at least one information source, said first processor being coupled to said network;

an input devices coupled to said first processor, said input device for selecting said at least one information source to provide a selected information source which is to be unavailable for searching;

a second processor having a second display device for displaying an indicia of said at least one information source, said indicia representing said at least one information source, said second display device displaying said indicia of said at least one information source when said at least one information source is not selected, said second processor being coupled to said network to communicate with said first processor, said indicia, after said at least one information source is selected, not being displayed on said second display device;

wherein said first processor performs at least one maintenance operation on said information source while said information source is not available for searching and wherein said indicia, as displayed on said second display, does not comprise said at least one information source, and

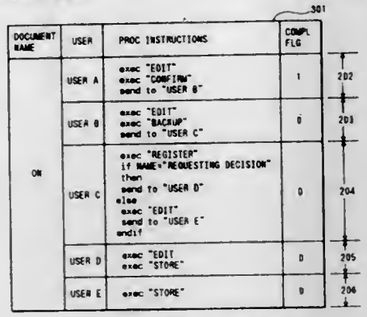
wherein said information comprises a plurality of documents having data in character format and wherein said information is stored in a plurality of information sources, each comprising a group of documents within a file directory; and wherein said maintenance operation comprises one of: (a) indexing said plurality of documents to create an indexed list of words; (b) adding additional documents to said plurality of documents; (c) removing certain documents from said plurality of documents; (d) compressing an indexed list of words; (e) adding additional documents to said plurality of documents and thereafter indexing said plurality of documents; and (f) removing certain documents from said plurality of documents and thereafter indexing said plurality of documents.

5,623,653

DOCUMENT CONTROL, ROUTING, AND PROCESSING APPARATUS

Toshihiro Matsuno, Kawasaki; Hiromi Sakushima, Fujisawa, and Hayashi Ito, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 25, 1994, Ser. No. 283,681
Claims priority, application Japan, Jul. 27, 1993, 5-184795
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—609 **3 Claims**



1. A document processing apparatus comprising:

storing means for storing document data;

instruction generation means for generating a first set of instructions and second sets of instructions with regard to said document data in response to a first user, wherein each of said second sets of instructions is assigned to each of second users;

automatic processing control means for sequentially changing a person who can have access to said document data from one of second users to another of said second users and for controlling of execution of said second sets of instructions for said person; and

detection means for detecting a stop command from said first user, wherein said automatic processing control means stops said execution of said second sets of instructions for said person in response to said stop command.

5,623,654

FAST FRAGMENTATION FREE MEMORY MANAGER USING MULTIPLE FREE BLOCK SIZE ACCESS TABLE FOR A FREE LIST

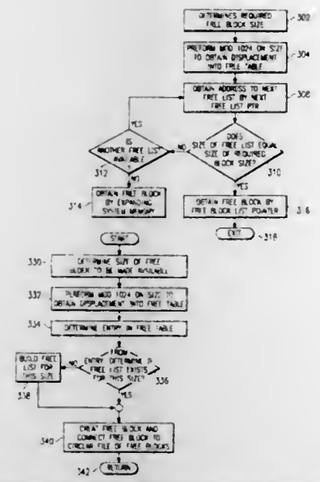
Jim Peterman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1994, Ser. No. 298,990
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—622 **14 Claims**

1. A method for operating a memory computing system, said method comprising the steps of determining a free block size of a free block of a system memory to be used by an application program:

determining an entry in a table having a table size less than a system size of said system memory and having a plurality of entries, said entry being obtained by said free block size such that said entry may be accessed by at least two different free block sizes to provide an address for the free areas for each of said at least two different free block sizes and each of said entries of said table having substantially the same number of free blocks accessing said table;

accessing a free list through said entry in said table, said free list being associated with said free blocks being of said at least two different free block size;



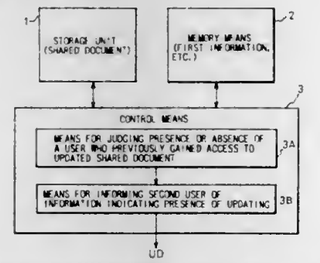
requesting one of said free blocks of said at least two different free block size for an application to use in said memory system.

5,623,655

DATA PROCESSING SYSTEM THAT MANAGES SHARED DOCUMENTS

Toshiyuki Chisaka, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Oct. 20, 1994, Ser. No. 326,489
Claims priority, application Japan, Feb. 24, 1994, 6-026835
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—608 **5 Claims**



1. A data processing system for storing and managing at least one shared document in a storage unit, comprising:

memory means for storing first information that indicates update levels comparable to frequencies of access to shared documents in one-to-one correspondence with users; and

control means for controlling access to said memory means and storage and management of said shared documents, and control means including,

means for retrieving a latest update level of said shared document accessed from said first information when a first user accesses any of said shared documents so as to update it and for determining, on the basis of the result of said retrieval, whether there is a second user who has accessed said shared document before said first user; and

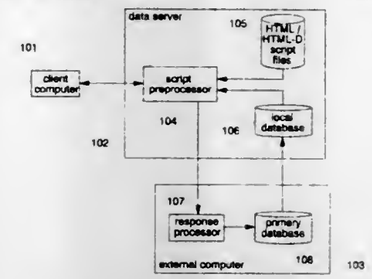
means for notifying said second user of the fact that said shared document has been updated by said first user when the result of said determination reveals that there is a second user.

5,623,656

SCRIPT-BASED DATA COMMUNICATION SYSTEM AND METHOD UTILIZING STATE MEMORY

Kenneth B. Lyons, Lebanon, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 15, 1994, Ser. No. 356,095
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—610 **11 Claims**



1. A method for performing data communications within a script-based system, comprising the steps of:

receiving script-based information containing embedded variables from a client node;

retrieving, in response to said received script-based information and the embedded variables contained therein, data representing at least one particular script file, and modifying said retrieved data as a function of said variables contained in said received script-based data;

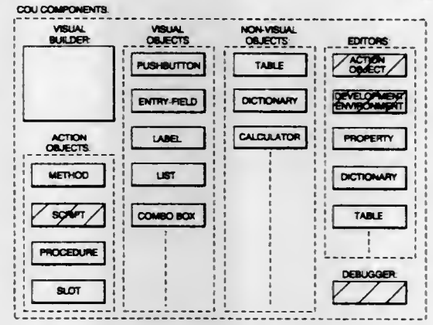
transmitting said modified retrieved data to said client node, thereby providing said client node with information reflective of the previous state of a said script-based system.

5,623,657

SYSTEM FOR PROCESSING APPLICATION PROGRAMS INCLUDING A LANGUAGE INDEPENDENT CONTEXT MANAGEMENT TECHNIQUE

Michael H. Conner, and Nurcan Coskun, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 176,000, Dec. 30, 1993, abandoned.
This application Feb. 28, 1995, Ser. No. 396,368
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—683 **12 Claims**



1. An information handling system for executing application programs having one or more objects, comprising:

a processor for executing one or more application programs under the control of an operating system;

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a memory, associated with said processor, for storing said operating system, said application programs, and said objects;

a display subsystem for providing a user interface and for displaying representations of said objects;

a cursor control device for selecting and triggering one or more of said objects;

said objects comprising action objects wherein each said action object includes one or more scripts, each such script being written in one of a plurality of languages, each of said plurality of languages having an extension language attribute;

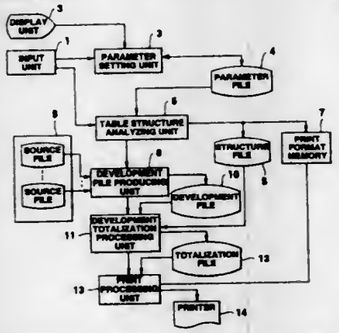
means for initializing an extension language attribute for each of said plurality of languages used in an action object script; and

means for interpreting said action object scripts independent of a language in which said scripts are written.

5,623,658
DATA TOTALIZING METHOD IN DATA PROCESSING APPARATUS

Hiroyoshi Kiuchi, Hachioji, and Tosio Touhara, Oome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 219,511, Mar. 29, 1994, abandoned.
This application Apr. 4, 1995, Ser. No. 416,929
Claims priority, application Japan, Apr. 20, 1993, 5-115157
Int. Cl.[6] G06F *12/08;17/30*
U.S. Cl. 395—612 **6 Claims**



1. A record totalization method for a data processing apparatus comprising the steps of:

arbitrarily preparing a totalization definition table representing a definition of totalization records defined by an arbitrary record name, a definition of totalization levels for providing an indication to totalize the defined totalization records, and a definition of data in records as a totalization object of each totalization record;

analyzing the data in the records as the totalization object and a relationship between the totalizations among the records in accordance with the totalization levels, on the basis of the prepared totalization definition table;

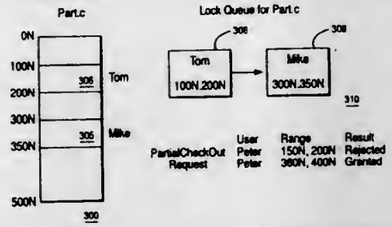
extracting records having a data corresponding to the totalization object from a predetermined file, on the basis of the analysis;

totalizing said extracted records having the data corresponding to the totalization objects, as the totalization record defined by said record name, on the basis of said analysis, and, if totalization records at a higher level than a level of said totalization record exist, further totalizing the totalization records, as a totalization record of a record name at said higher level.

5,623,659
PARENT/CHILD SUBSET LOCKING SCHEME FOR VERSIONED OBJECTS

Shaw-Ben Shi, and Peter C.-T. Waog, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 56,013, Apr. 30, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 479,243
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—608 **20 Claims**



1. A method for version control of a versioned object in a memory of a computer system, comprising the steps of:

searching for a write lock on a first subset of the versioned object;

responsive to an absence of the write lock on the first subset granting a first request by a first user for write access to the first subset;

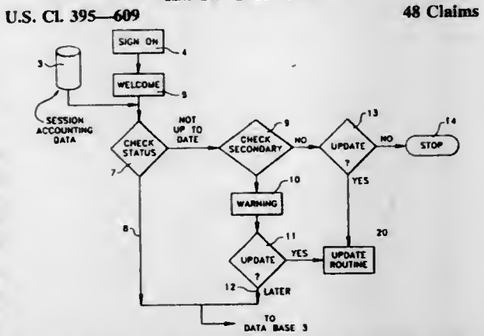
creating and transmitting a first child object of the versioned object to the first user, the first child object only a portion of the versioned object including a copy of the first subset; and

placing a write lock on the first subset of the versioned object to prevent other users from currently modifying the first subset, while allowing other users read access to the first subset.

5,623,660
SYSTEM FOR REGULATING ACCESS TO DATA BASE FOR PURPOSES OF DATA BASE MANAGEMENT

Jeffrey L. Josephson, 531 Eagelbrook Dr., Moorestown, N.J. 08057

Continuation-in-part of Ser. No. 231,035, Apr. 22, 1994, abandoned. This application Oct. 2, 1995, Ser. No. 537,541
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—609 **48 Claims**



1. An apparatus for regulating access to a data base for containing primary data to be accessed by a user and secondary data to authorize access to the primary data of the data base by the user, from a terminal for interfacing with the user and including means for communicating with the data base so that the primary data and the secondary data of the data base can be obtained, the apparatus comprising:

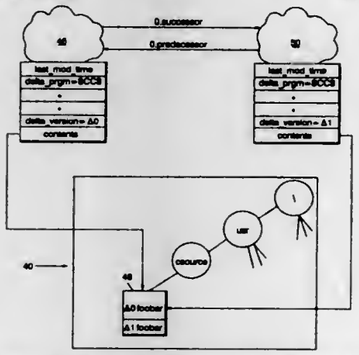
means associated with the communicating means, for limiting access to the primary data of the data base responsive to a selected precondition so that the communicating means is enabled for communication with the primary data when the selected precondition has been satisfied and disabled from communication with the primary data when the selected precondition has not been satisfied;

wherein the selected precondition includes an input of primary data pertaining to the user, for addition to the primary data forming part of the data base.

5,623,661
SYSTEM FOR AND METHOD OF PROVIDING DELTA-VERSIONING OF THE CONTENTS OF PCTE FILE OBJECTS

Lenny K. -M. Hon, North York, Canada, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 29, 1995, Ser. No. 564,771
Int. Cl.[6] G06F *1/00;17/30*
U.S. Cl. 395—601 **23 Claims**



1. A method of providing delta-versioning for data associated with one or more specified objects stored in a data repository, the data being stored on a host file system, comprising the steps of:

(i) defining a delta-versioning program to be used with the data associated with each of said one or more specified objects;

(ii) creating a delta control file and associating the delta control file with each of said one or more specified objects, the data associated with each of said one or more specified objects being incorporated into said delta control file and otherwise removed from the host file system;

(iii) associating a unique identifier with each of said one or more specified objects, said identifier indicating the contents of said delta control file required to reconstruct the data associated with the specified object associated with said identifier.

5,623,662
REVENUE SHARING SYSTEM WITH DATA FILTERING USING HISTORY, PERIODIC, AND EXCLUSION DATABASES

Matthew S. McIntosh, Garland, Tex., assignor to Supercomm, Inc., Dallas, Tex.

Continuation of Ser. No. 167,504, Dec. 15, 1993, abandoned.
This application Jan. 9, 1996, Ser. No. 583,862
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—619 **40 Claims**

1. A method for accessing revenue transaction data from a proprietary database created by a proprietary program to selectively extract the revenue transaction data therefrom, the revenue transaction data having a unique format associated therewith, comprising the steps of:

periodically selecting and extracting predetermined and fixed portions of the revenue transaction data from the proprietary database at given times in accordance with a selection template that defines the predetermined portions in an operation that is independent of the operation of the proprietary program, which fixed portions constitute a predetermined type of data that can be updated by the proprietary program and which given times occur after processing of data by the proprietary program and creation or updating of the fixed portions of the proprietary database;

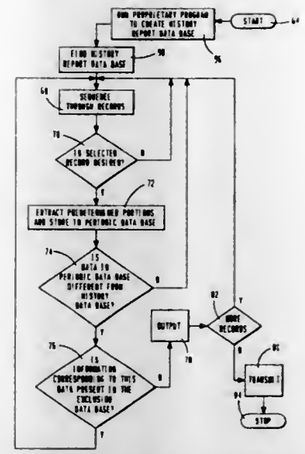
storing as a periodic database the selected predetermined portions of the revenue transaction data;

generating and storing a history database comprising the periodic database as it existed prior to each of the given times;

comparing the periodic database at the given time to the history database;

outputting as output data only the data in the periodic database that is not present in the history database at the given time; and

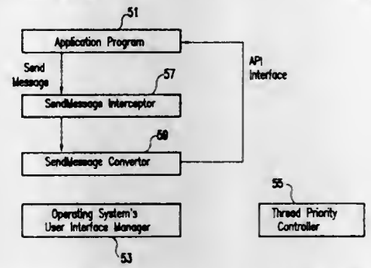
providing an exclusion database containing information corresponding to undesired data and outputting only the data in the periodic database that is not present in the history database and which does not correspond to the information in the exclusion database.



5,623,663
CONVERTING A WINDOWING OPERATING SYSTEM MESSAGING INTERFACE TO APPLICATION PROGRAMMING INTERFACES

Scott A. Morgan, Travis County; Karl D. Johnson, Williamson County, and Judith H. Lewis, Travis County, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 14, 1994, Ser. No. 337,705
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—650 **9 Claims**



1. A method for an application program to avoid using a messaging interface to a windowing operating system comprising the steps of:

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converting a message-driven application program to an application programming interface driven application by inserting code in the application program such that the inserted code intercepts a send message call to the windowing operating system; and

when a thread of the application program having a low priority sends a message to the windowing operating system, intercepting and converting the message to an application programming interface function call and returning the converted message to the application program so that the operating system never sees the message sent by the thread of the application program and the low priority of the thread is maintained.

5,623,664

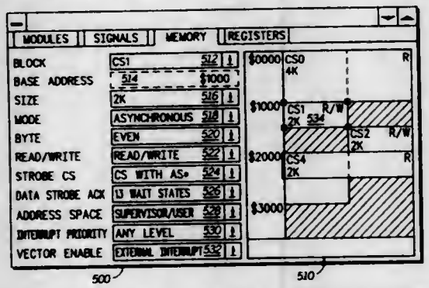
INTERACTIVE MEMORY ORGANIZATION SYSTEM AND METHOD THEREFOR

Brian E. Calvert; Arthur H. Claus, and Robert B. France, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 25, 1994, Ser. No. 279,605

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—651 **25 Claims**



1. A method for programming a data processing memory system, comprising the steps of:

storing a software program in a memory unit of the data processing memory system;

storing a plurality of parameters for modeling a data processor, the plurality of parameters indicating a memory organization of the data processor;

receiving a first user input for initiating the software program at an interface circuit, the interface circuit being coupled to the memory unit;

processing the first user input in a central processing unit to generate and communicate a plurality of data signals, a plurality of address signals, and a plurality of control signals to the memory circuit, the central processing unit being coupled to the interface circuit for communicating the first user input and being coupled to the memory circuit for communicating the plurality of data signals, the plurality of address signals, and the plurality of control signals;

accessing the software program in the memory unit using the plurality of data signals, the plurality of address signals, and the plurality of control signals, the software program providing a first video interface on a terminal of the data processing memory system, the first video interface illustrating a first memory organization of the data processor;

receiving a second user input for modifying a first portion of the first memory organization of the data processor; and

accessing the software program in the memory circuit to determine if the second user input modifying the first portion of the first memory organization results in a first allowable memory configuration of the data processor.

5,623,665

ELECTRONIC APPARATUS FOR PATCHING A READ-ONLY MEMORY

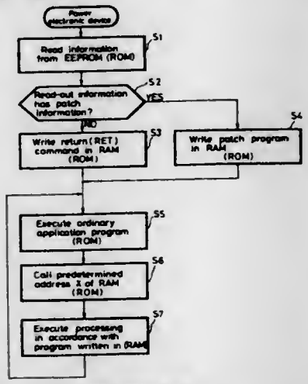
Keiichiro Shimada, and Sunao Furui, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 1,311, Jan. 6, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 404,115

Claims priority, application Japan, Jan. 13, 1992, 4-004092

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.03 **9 Claims**



1. An electronic device comprising:

input means for receiving patch information input from a source external to the electronic device;

first memory means which is a read-only memory (ROM), and in which information is stored in a fixed state and the information stored in the first memory means includes a call command which calls a predetermined address;

second memory means, including the predetermined address, in which the patch information input to the input means is stored starting at the predetermined address, and in which a return command is stored at an end of the patch information;

processing means for processing in accordance with the information stored in the first memory means and the second memory means, for processing the call command stored in the first memory means, and for processing the patch information starting at the predetermined address in the second memory means when the call command is processed; and

writing means for writing the patch information from the input means into the second memory means;

with the first memory means, the processing means, the input means and the second memory means being unitarily integrated as a one-chip microcomputer, whereby the processing of the patch information will patch a bug of the information stored in the first memory means.

5,623,666

DISTRIBUTED COMPUTING SYSTEM

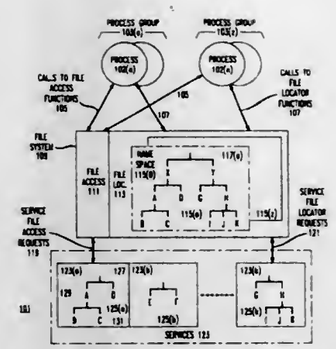
Robert C. Pike, Basking Ridge, and Kenneth L. Thompson, Watchung, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 237,967, May 3, 1994, abandoned, which is a continuation of Ser. No. 702,651, May 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 551,218, Jul. 11, 1990, abandoned. This application May 18, 1995, Ser. No. 443,650

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—616 **21 Claims**

1. An improved computer system, the improved computer system executing a multiprocess operating system, the multiprocess operating system creating a plurality of processes for executing programs and one or more name spaces, each of the processes being associated with a current one of the name spaces and the name space associated with a given process being a set of names of



entities in the computer given process being the set of names of entities in the computer system which are referencable by the given process in executing its program, and the improvement comprising:

new name space creation means in the operating system which are usable by any one of the processes in executing its program to create a new name space for the process executing the program which is separate from the current name. space for the process and replaces the current name space for the process.

5,623,667

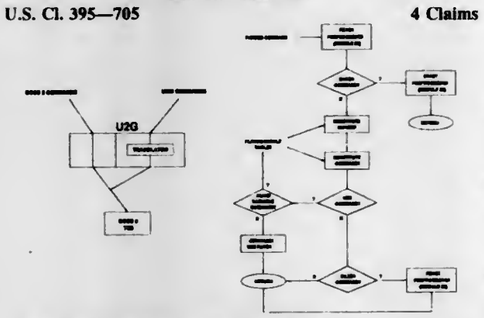
OPERATING SYSTEM TRANSLATOR INCORPORATING UNIX ALIASING CAPABILITY FOR A PROPRIETARY OPERATING SYSTEM

Forouzan Golshani, Paradise Valley, and Thomas H. Howell, Scottsdale, both of Ariz., assignors to Bull HN Information Systems Inc., Billlerca, Mass.

Filed May 22, 1995, Ser. No. 443,859

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—705 **4 Claims**



1. An open computer complex comprising:

A) a first computer system operating under the GCOS-8 operating system having a first operating system command repertoire;

B) a second computer system operating under the UNIX operating system having a second operating system command repertoire;

C) at least one of said first computer system and said second computer system further including a user terminal; and

D) interface means connecting said first and second computer systems, said interface means including an operating system translator, said operating system translator comprising:

1) a table of equivalent commands which are included in said first operating system command repertoire and said second operating system command repertoire, said table of equivalents including the following equivalent file operating system commands:

UNIX	GCOS-8
ls	clist
cat	display
more	p
rm	rele
mv	acce
tail	tail
diff	diff
file	len
wc	wc
sort	bsort

2) means for receiving an operating system command from said second operating system command repertoire which is to be executed in said first computer system;

3) means for determining from said table an operating system command in said first operating system command repertoire which is an equivalent operating system command of said operating system command from said second operating system command repertoire which is to be executed in said first computer system;

4) means for executing said equivalent operating system command in said first computer system; and

5) virtual aliasing means responsive to the reception of an aliasing command from said UNIX operating system for accessing said aliasing capability in said UNIX operating system on behalf of said GCOS-8 operating system, said virtual aliasing capability being invoked by manual entry at said user terminal of an "alias unix gcos" operating system translator command followed by an "alias" operating system command in conjunction with the specification of a command from said UNIX operating system command repertoire which is to be aliased, said virtual aliasing capability being disabled by manual entry of an "unalias" UNIX operating system command in conjunction with the specification of said UNIX operating system command which was previously aliased;

whereby, virtual aliasing capability is available for said GCOS-8 operating system.

5,623,668

METHOD IN A POLLING SYSTEM FOR TRANSMITTING QUEUE ELEMENTS FROM MULTIPLE INPUT QUEUES TO A SINGLE OUTPUT WITH IMPROVED QUEUE SERVICE PERFORMANCE

René Nieuwenhuizen, El Den Oever, Netherlands, assignor to Koninklijke PTT Nederland N.V., Netherlands

Continuation of Ser. No. 122,016, Sep. 15, 1993. This application Nov. 21, 1995, Ser. No. 561,551

Claims priority, application Netherlands, Sep. 25, 1992, 9201668

Int. Cl.[6] G06F *13/22*

U.S. Cl. 395—670 **4 Claims**

1. A method in a polling system for sequentially and selectively routing queue elements from multiple input queues to a single output of the polling system, each queue having a queue value Q(i),i=1, . . . , N where N is the number of queues, the queue values being variable in time or not known in advance, the queue values being indicative of, for example, the number of queue elements in each queue, or the increase in the number of queue elements in each queue, the method comprising the steps of

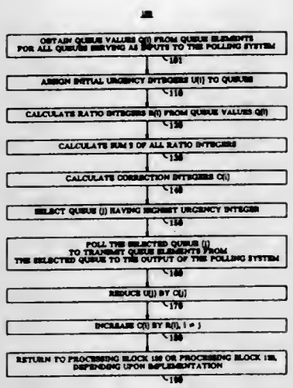
assigning urgency integers U(1), . . . , U(N) to the queues based on one or more pre-selected criteria upon initialization of said method,

calculating ratio integers R(1), . . . , R(N) in proportion to the queue values Q(1) , . . . , Q(N), respectively,

calculating the sum S of all of the ratio integers R(i), i=1, . . . , N,

calculating correction integers C(1), . . ., C(N) for the queues wherein C(i)=S–R(i) for each i,

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selecting a queue j having the highest urgency integer U(j) to identify a selected queue, j=1, . . . , N,

polling the selected queue to transmit queue elements from the selected queue to the single output of the polling system,

reducing the urgency integer U(j) of said selected queue by its corresponding correction integer C(j),

increasing all other urgency integers U(i), i≠j, by their corresponding ratio integers R(i), and

returning to said step of selecting.

5,623,669

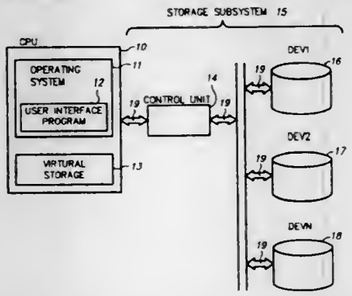
HIGH SPEED ONLINE COPY OF PARTITIONED DATA

W. James Kincaid, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 402,754, Mar. 10, 1995, abandoned, which is a continuation of Ser. No. 95,632, Jul. 21, 1993, abandoned. This application Aug. 13, 1996, Ser. No. 689,630

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—621 **12 Claims**



1. In a computer system comprising a CPU coupled to a storage subsystem, the CPU concurrently executing an operating system and at least one application program, the CPU and the storage subsystem being coupled to a common memory, the storage subsystem comprising a source storage device and a target storage device, a source partitioned data set being stored on the source storage device, the source data set having a plurality of source members each having only one source block, the source data set also having a source directory of source member names, the source partitioned data set at times having empty space (gas), a method for copying the plurality of source members from the source partitioned data set to the target partitioned data set which substantially reduces the number of I/Os required to copy the source partitioned data set in a logical copy operation, comprising the steps of:

selecting a first number greater than one of source members to copy from the source partitioned data set to a target partitioned data set;

ascertaining a target size of storage space required to store a copy of the first number of source members in the target partitioned data set as the target partitioned data set's members' blocks;

reserving, on the target storage device, in a single mass create directory I/O operation, a number of unnamed target members in a target directory for the target partitioned data set, equal to the first number;

reserving, on the target storage device, a storage space for the target partitioned data set equal to the ascertained target size;

copying, in a single copy operation having a single mass read I/O operation from the source partitioned data set and also having a single mass write I/O operation to the target partitioned data set, a group of source blocks from the plurality of source members of the source partitioned data set through the common memory to the target partitioned data set, the source blocks being copied without the empty space, wherein during the step of copying, the operating system and the at least one application program have read access to those of the source members being copied and update access to those of the source members not being copied; and

writing, in a single directory mass name I/O operation, the source member names of the ascertained first number of source members into the corresponding unnamed target members in the target directory.

5,623,670

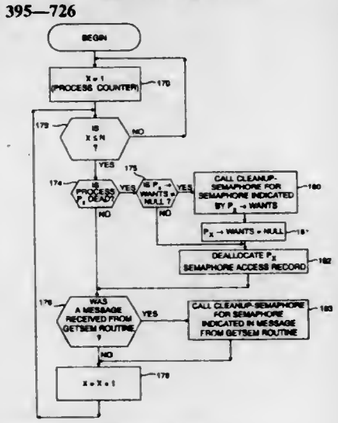
METHOD AND APPARATUS FOR CRASH SAFE ENFORCEMENT OF MUTUALLY EXCLUSIVE ACCESS TO SHARED RESOURCES IN A MULTITASKING COMPUTER SYSTEM

Philip L. Bohannon, Maple Shade; Jacques Gava, Plainfield; Daniel F. Lieuwen, and Sundararajarao Sudarshan, both of New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 17, 1995, Ser. No. 390,179

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—726 **25 Claims**



1. A computer system comprising:

at least one processing unit;

a plurality of shared resources, including a memory unit, accessible by said at least one processing unit;

a plurality of semaphore records stored in said memory unit, each of said semaphore records associated with one of said plurality of shared resources, wherein each of said semaphore records comprises:

a) availability indicia means for indicating whether the semaphore record is available,

b) owner identification means for registering ownership of the semaphore record, and

c) cleanup indicia for indicating whether the semaphore record is being evaluated by a cleanup routine;

a plurality of processes executing on said plurality of processing units, said processes requesting and acquiring exclusive access to said plurality of shared resources by requesting and acquiring ownership of said semaphore records; and

a plurality of semaphore access records stored in said memory unit, each of said semaphore access records associated with one of said plurality of processes, for identifying a semaphore record which said process associated with said semaphore access record wants to acquire ownership of;

wherein said cleanup routine comprises means for determining whether a semaphore record is owned by a process that has crashed by using information in said semaphore records and said semaphore access records and means for resetting the availability indicia of a semaphore record when the semaphore record is owned by a process that has crashed.

5,623,671

MUTUAL EXCLUSION CONTROL APPARATUS FOR MUTUAL EXCLUSION CONTROL BASED ON LOCKING AND UNLOCKING REQUESTS

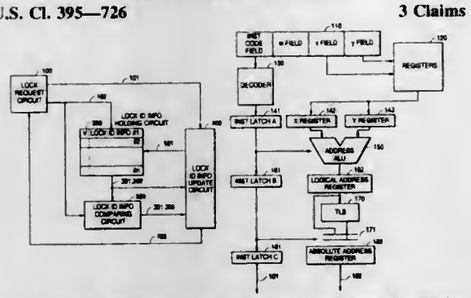
Kiyoshi Ando; Toyotugu Kasahara, and Jyunichi Kawakubo, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 13, 1995, Ser. No. 403,107

Claims priority, application Japan, Mar. 16, 1994, 6-045823

Int. Cl.[6] G06F *12/14;13/00*

U.S. Cl. 395—726 **3 Claims**



1. A mutual exclusion control apparatus for a mutual exclusion control upon receipt of a locking acquisition request or an unlocking request from lock request means, comprising:

lock identifying information holding means having at least one entry for holding a lock identifying information for identifying a region indicated by said lock request means as a target of mutual exclusion control;

lock identifying information comparing means for judging whether or not the lock identifying information from said lock request means is included in said lock identifying information holding means; and

lock identifying information updating means for updating said lock identifying information holding means based on a request from said lock request means, wherein

said lock identifying information holding means holds in each entry thereof a processor number related to a processor which has set the lock identifying information of the entry,

said lock identifying information comparing means judges whether or not a processor number related to an unlock request from said lock request means is included in the respective entries of said lock identifying information holding means,

said lock identifying information updating means invalidates any entry for which a coincidence of processor number is detected in said lock identifying information comparing means,

wherein all entries of said lock identifying information holding means determined by said lock identifying information comparing means as including a processor number matching the unlock request are invalidated even if the corresponding processor is unable to unlock, and

wherein said lock request means includes:

an instruction register for storing instructions to be executed;

a plurality of registers for temporarily storing data;

a decoder for decoding the instructions stored in said instruction register;

a plurality of instruction latches for holding said instructions in respective stages;

an address arithmetic logic unit for performing arithmetic operations on input operands and for outputting an arithmetic result of the input operands;

a plurality of operand registers for holding the input operands of the address arithmetic logic unit;

a logic address register for holding the arithmetic result of the address arithmetic logic unit;

a translation lookaside buffer for performing address translation; and

an absolute address register for holding absolute addresses.

5,623,672

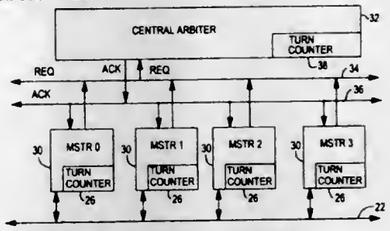
ARRANGEMENT AND METHOD OF ARBITRATION FOR A RESOURCE WITH SHARED USER REQUEST SIGNALS AND DYNAMIC PRIORITY ASSIGNMENT

Kaushik L. Popat, Pleasanton, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Dec. 23, 1994, Ser. No. 363,039

Int. Cl.[6] G06F *9/46;13/14*

U.S. Cl. 395—728 **39 Claims**



1. A shared resource arrangement comprising:

a shared resource;

a plurality of users coupled to the resource;

arbitration logic for arbitrating among the users for use of the resource, the arbitration logic allowing the users to make requests over a single shared request line in a given sequence of said users, and changing said sequence to a new sequence of said users after each use of the resource by one of the users, the requests being for use of the resource.

5,623,673

SYSTEM MANAGEMENT MODE AND IN-CIRCUIT EMULATION MEMORY MAPPING AND LOCKING METHOD

Douglas D. Gephardt, Austin; James R. MacDonald, Buda, and Victor F. Andrade, Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 25, 1994, Ser. No. 279,474

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—733 **11 Claims**

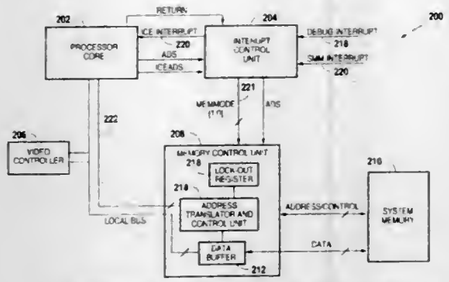
1. A computer system comprising:

a processor core including an interrupt input line;

an interrupt control unit coupled to said interrupt input line, wherein said interrupt control unit is configured to:

receive a system management mode (SMM) interrupt signal wherein said computer system enters a system man-

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agement mode from a normal mode upon assertion of said SMM interrupt signal;

receive a debug interrupt signal wherein said computer system is configured to enter a debug mode upon said assertion of said debug interrupt signal;

generate a memory mode signal which is indicative of a current mode of said computer system; and

assert a processor interrupt signal on said interrupt input line in response to said debug interrupt signal or said SMM interrupt signal;

a memory system including an area for storing system management code and an area for storing debug code; and

a memory control unit coupled to said processor core and to said interrupt control unit, wherein said memory control unit includes a lock-out register configured to selectively prevent accesses to said system management code when said computer system is in said normal mode depending upon a value stored within said lock-out register, and wherein said memory control unit is configured to receive

said memory mode signal from said interrupt control unit; and

an address signal from said processor core, wherein said memory control unit is configured to map said address signal to a first physical location of said memory system corresponding to a location of debug code if said memory mode signal is in a first state, and to a second physical location of said memory system corresponding to a location of SMM code if said memory mode signal is in a second state.

5,623,674

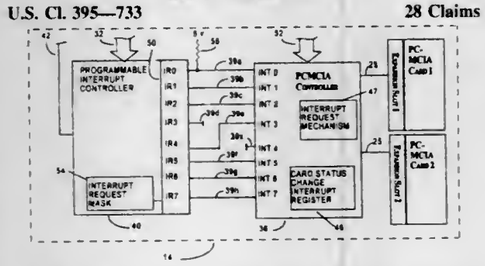
METHOD FOR DETERMINING STEERABLE INTERRUPT REQUEST LINES USED BY PCMCIA CONTROLLERS

Raymond D. Pedrizetti, Issaquah, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 8, 1995, Ser. No. 437,285

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—733 **28 Claims**



6. In a general purpose computer system characterized by computer resources including a central processing unit, a memory unit, a programmable interrupt controller (PIC) having an interrupt request register, said interrupt request register having a plurality of ordered interrupt request inputs and having values corresponding to each of said interrupt request inputs, and a PCMCIA controller having a plurality of interrupt request lines, each of said resources connected via a computer system bus, a computer-implemented method of determining the allocation of interrupt request connections between said programmable interrupt controller and said PCMCIA controller, comprising the steps of:

(a) gaining control of a selected interrupt request line to provide a predetermined signal;

(b) in response to gaining control of said interrupt request line, reading and saving the values of the interrupt request register as a first bit vector;

(c) providing a signal to simulate an interrupt request on said selected interrupt request line;

(d) in response to providing a signal to simulate an interrupt request on said selected interrupt request line, reading and saving the values of the interrupt request register as a second bit vector;

(e) releasing control of said selected interrupt request line;

(f) in response to releasing control of said selected interrupt request line, reading and saving the values of the interrupt request register as a third bit vector; and

(g) evaluating said bit vectors to determine the allocation of interrupt request connections between said PIC and said PCMCIA controller.

5,623,675

PRINTING SYSTEM, AND METHOD OF RECEIVING AND PROCESSING INTERRUPT REQUEST IN PRINTER

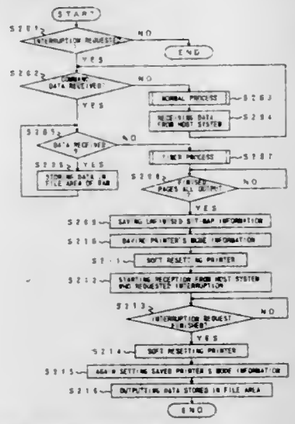
Toshie Mizuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 135,565, Oct. 14, 1993, abandoned. This application Dec. 29, 1995, Ser. No. 580,772

Claims priority, application Japan, Oct. 27, 1992, 4-311339

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—733 **22 Claims**



1. A printing system comprising:

a) storing means for storing first-Job data when an interrupt request is received while performing a first print job, wherein:

1) the first-job data includes:

i) image information which is currently being processed into a plurality of places of page information for the first print job, each piece of page information representing a corresponding printed page, the processing of which into a piece of page information is unfinished at the time at which the interrupt request is received; and

ii) state information indicating a current state of a printer which is to print the image information; and

2) the interrupt request constitutes a request to perform a second job by interrupting processing of the image information for the first print job and causing the printer to print all of the pages represented by the corresponding pieces of page information which have already been completely processed from the image information of the first-job data before the interrupt request is received; and

b) control means, connected to the storing means, for reading the stored first-job data after the second job is performed, to allow the first-job data to then be used for continuing to perform the first print job.

5,623,676

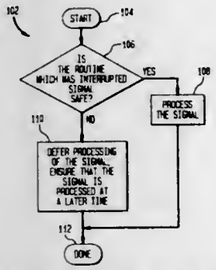
COMPUTER PROGRAM PRODUCT AND PROGRAM STORAGE DEVICE FOR SAFING ASYNCHRONOUS INTERRUPTS

Tsuneo Horiguchi, San Jose; Eric L. Porter, Freemont, both of Calif., and Richard Tallman, Saugerties, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 216,932, Mar. 24, 1994, Pat. No. 5,513,349. This application Jun. 6, 1995, Ser. No. 468,990

Int. Cl.[6] G06F *13/24*

U.S. Cl. 395—735 **12 Claims**



1. A computer program product for use in a computer system, said computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium for enabling a computer system to process an asynchronous signal directed to a thread comprising a software routine executing in the computer system such that data consistency is maintained, said computer readable program code means comprising:

signal safe determining computer readable program code means for enabling the computer system to determine whether the routine is signal safe such that processing of the routine may be interrupted in order to process the signal without possibly causing inconsistency of data;

computer readable program code means for enabling the computer system to asynchronously interrupt the routine and process the signal immediately if the routine is signal safe; and

deferring computer readable program code means for enabling the computer system to defer processing of the signal if the routine is not signal safe to a time when the signal may be processed without possible causing inconsistency of data.

5,623,677

APPARATUS AND METHOD FOR REDUCING POWER CONSUMPTION IN A COMPUTER SYSTEM

David B. Townsley, Cupertino; Wing-Hong Chow, San Jose; Michael D. Johnson, San Jose, and Helder Ramalho, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

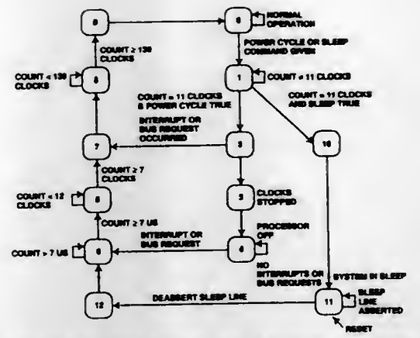
Continuation of Ser. No. 242,252, May 13, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 609,969

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—750 **12 Claims**

1. A computer system comprising:

a processor running a programming structure, wherein the programming structure determines when the processor is in an inactive state using periodic task scheduling and outputs an idle indication in response to determining that the processor is in the inactive state;



a phase-locked loop (PLL) coupled to supply clocking signals to the processor, wherein the PLL comprises maskable outputs that allow output of the clocking signals to the processor when unmasked and prevent output of the clocking signals when masked, and further wherein the PLL maintains synchronization in a locked state when the maskable outputs are masked

a power supply that supplies power to the processor;

a switch coupled to the power supply and the processor, wherein the switch couples the power supply to the processor when the switch is on and decouples the power supply to the processor when the switch is off;

a timer coupled to provide a periodic interrupt signal at a predetermined interval to the processor; and

a controller coupled to the processor, the switch and the PLL to place the processor in a reduced power consumption state, wherein the controller, in response to the idle indication, causes masking of the maskable outputs of the PLL to prevent the processor from receiving the clocking signals and turns the switch off to prevent the processor from receiving power, and

further wherein the controller, responsive to either a bus request from an alternate bus master, the periodic interrupt signal or an interrupt, causes unmasking of the maskable outputs and turns switch on, thereby causing the processor to exit the reduced power consumption state until such time as the processor outputs the idle indication again.

5,623,678

Patent Not Issued For This Number

5,623,679

SYSTEM AND METHOD FOR CREATING AND MANIPULATING NOTES EACH CONTAINING MULTIPLE SUB-NOTES, AND LINKING THE SUB-NOTES TO PORTIONS OF DATA OBJECTS

Kevin G. Rivette, Palo Alto; Michael P. Florio, Atherton; Adam Jackson, Belmont; Don Ahn, Daly City; Irving S. Rappaport, Palo Alto, and Deborah Kurata, Pleasanton, all of Calif., assignors to Waverley Holdings, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 341,129, Nov. 18, 1994, which is a continuation-in-part of Ser. No. 155,752, Nov. 19, 1993. This application Apr. 18, 1995, Ser. No. 423,676

Int. Cl.[6] G06F *17/00*

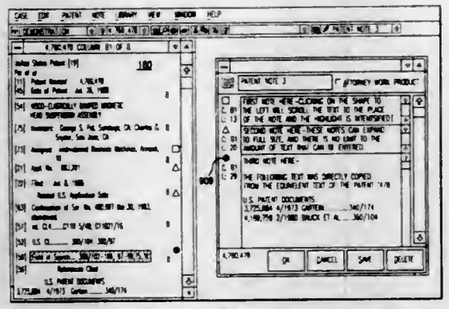
U.S. Cl. 395—773 **10 Claims**

1. A computer controlled display system, comprising:

(1) a central processing unit (CPU);

(2) a display unit;

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(3) a storage device for storing at least one patent text document comprised of an equivalent text file and at least one patent image document comprised of a patent image file, said patent image document corresponding to said patent text document, said equivalent text file including linking information that links at least one portion of said equivalent text file to at least one portion of said patent image file, said equivalent text file also including equivalency information detailing an equivalency relationship between said patent image file and a corresponding patent text file, said equivalency information comprising at least one of

(A) special character information specifying at least one mapping of a group of characters in said patent text file to a special character in said patent image file, and

(B) graphical item location information specifying locations in said patent image file of graphical item referred to in said patent text file, said graphical items including any combination of figures, figure elements, equations, non-text tables, structures and diagrams,

said patent image file being a data file having stored therein one or more image pages from a patent, each of said image pages being an electronic image of a page of said patent or a page of a document related to said patent, wherein said image pages are stored in a compressed format, said patent text file being a data file having stored therein ASCII text data representing at least a portion of textual data in said patent, including patent bibliography information and patent text paragraphs;

(3) means for displaying said patent text document in a first window of said display unit and said patent image document in a second window of said display unit; and

(4) note creation means for enabling a user to create a note and to link said note to any patent text document stored in said storage device.

5,623,680

FINITE STATE MACHINE FOR PROCESS CONTROL

Alan R. Flora-Holmquist, Batavia, and Thomas L. Mills, Lisle, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1993, Ser. No. 174,641

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—573 **5 Claims**

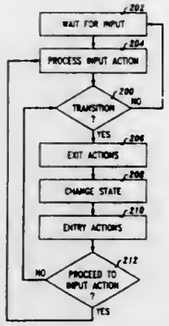
1. A method for controlling a process by implementing by a finite state machine (FSM) in a microcomputer controlled apparatus, the FSM having a plurality of states, the method comprising the steps of:

(a) receiving a set of input signals while said FSM is in a first state, each of said input signals representing a condition associated with said process;

(b) generating a set of output signals while FSM is in said first state, each of said output signals representing a command that controls a function associated with said process;

(c) storing a set of vectors associated with said first state which define when to transition to a different state of said FSM;

(d) comparing said set of input signals with said set of vectors;



(e) making a decision on whether to transition to a different state based on said comparison;

(f) after having made the decision to transition to said different state, determining if said set of input signals should be compared with a stored set of vectors associated with said different sate, said determination being made based on whether a predetermined proceed flag associated with said different state is set, said proceed flag being an independent state instruction;

(g) upon said proceed flag being set, comparing said set of input signals with said stored set of vectors associated with said different state regardless of whether a change of state of one said input signals has occurred.

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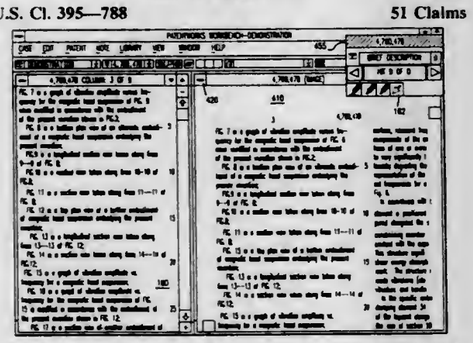
METHOD AND APPARATUS FOR SYNCHRONIZING, DISPLAYING AND MANIPULATING

Kevin G. Rivette, Palo Alto; Michael P. Florio, Atherton; Adam Jackson, Sunnyvale; Don Ahn, Daly City; Irving S. Rappaport, Palo Alto, and Deborah Kurata, Pleasanton, all of Calif., assignors to Waverley Holdings, Inc., Palo Alto, Calif.

Filed Nov. 19, 1993, Ser. No. 155,752

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—788 **51 Claims**



1. A computer controlled display system including at least one central processing unit (CPU), said CPU coupled to a display for displaying a patent document and a patent image on said display, comprising:

(1) storage means coupled to said CPU for storing at least one patent document comprised of an equivalent text file, and at least one patent image document comprised of a patent image file, said equivalent text file including linking information that links at least one portion of said equivalent text file to at least one portion of said patent image file, said equivalent text file also including equivalency information detailing an equivalency relationship between said patent image file and a corresponding patent text file, said equivalency information comprising at least one of

(A) special character information specifying at least one mapping of a group of characters in said patent text file to a special character in said patent image file, and

(B) graphical item location information specifying locations in said patent image file of graphical items referred to in said patent text file, said graphical items including any combination of figures, figure elements, equations, non-text tables, structures and diagrams,

said patent image file being a data file having stored therein one or more image pages from a patent, each of said image pages being an electronic image of a page of said patent or a page of a document related to said patent, wherein said image pages are stored in a compressed format, said patent text file being a data file having stored therein ASCII text data representing at least a portion of textual data in said patent, including patent bibliography information and patent text paragraphs; and

(2) a user interface generated by said CPU for display by display means, said user interface selectively displaying said equivalent text file and said patent image file on said display, such that said equivalent text file is displayed in a first window and said patent image file is displayed in a second window and both of said windows may be selectively viewed simultaneously on said display.

5,623,682

APPARATUS FOR PROCESSING DOCUMENTARY INFORMATION

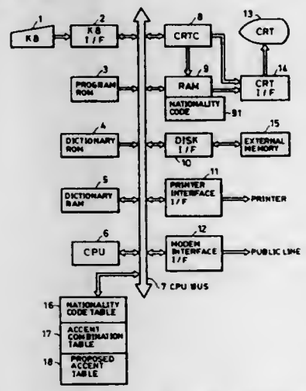
Koji Fukunaga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 890,137, May 29, 1992, abandoned. This application May 30, 1995, Ser. No. 452,865

Claims priority, application Japan, Jul. 9, 1991, 3-167305

Int. Cl.[6] G06F *3/14;17/21*

U.S. Cl. 395—798 **29 Claims**



26. An information processing method, adapted to operate an apparatus according to a key input processing main routine and according to an accent search process, comprising the steps of:

inputting characters and a nationality code into an information processing apparatus during the key input processing main routine;

displaying the characters inputted in said inputting step;

determining whether the input characters should be accented with accent symbols;

operating the apparatus according to the key input processing main routine when said determining step determines that the input characters should not be accented with accent symbols and for conducting the accent search process when said determining step determines that the input characters should be accented with accent symbols;

displaying a plurality of accent symbols simultaneously in a priority order form left to right, determined according to the frequency of use in the language corresponding to the input nationality code, for each character that should be accented as determined in said determining step when the apparatus operates according to the accent search process; and

selecting one accent symbol from the plurality of displayed symbols for each character that should be accented and combining the selected accent symbols and their respective characters to form accented characters.

5,623,683

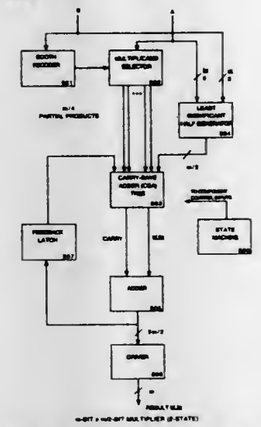
TWO STAGE BINARY MULTIPLIER

Ashish Pandya, Chandler, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1992, Ser. No. 998,382

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800 **34 Claims**



1. An apparatus for multiplying an m-bit multiplicand A by an m-bit multiplier B to produce a 2 m-bit final product A×B, the multiplicand A having a most significant m/2 bits denoted by A_H and a least significant m/2 bits denoted by A_L, the multiplier B having a most significant m/2 bits denoted by B_H and a least significant m/2 bits denoted by B_L, the apparatus comprising:

means for producing a first product $A\times B_L$ having 3m/2 bits comprising a most significant m/2 bits, a middle m/2 bits, and a least significant m/2 bits;

means for generating the least significant m/2 bits of a product $A_L\times B_H$;

means for choosing the least significant m/2 bits of said product $A_L\times B_H$ to produce a second product;

means for adding the second product to the middle m/2 bits of the first product to produce a third product having 3 m/2 bits, wherein the least significant m bits of the third product are the least significant m bits of the final product;

means for selecting the most significant m bits of the third product and shifting the most significant m bits selected into the position of the least significant bits to produce a shifted third product;

means for subtracting the m/2 bits of second product from the shifted third product to produce a first difference comprising at least m bits;

means for producing a fourth product $A\times B_H$ comprising 3m/2 bits;

means for adding the fourth product to the first difference to produce a fifth product comprising 3m/2 bits, wherein the most significant m bits of the fifth product are the most significant m bits of the final product; and

a control unit for controlling the operation of said apparatus.

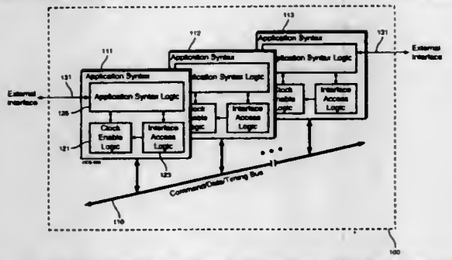
VOL 1197 ISS 4 APR 22 1997 UMI

5,623,684

APPLICATION SPECIFIC PROCESSOR ARCHITECTURE COMPRISING PRE-DESIGNED RECONFIGURABLE APPLICATION ELEMENTS INTERCONNECTED VIA A BUS WITH HIGH-LEVEL STATEMENTS CONTROLLING CONFIGURATION AND DATA ROUTING

Hussein S. El-Ghoroury, Carlsbad; Dale A. McNeill, Encinitas, and Charles A. Krause, Carlsbad, all of Calif., assignors to Commquest Technologies, Inc., Encinitas, Calif.

Filed May 17, 1994, Ser. No. 243,963
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800 **18 Claims**



1. A programmable processor architecture for execution of instructions in a communications system comprising:
an integrated circuit having a plurality of physical application elements interconnected on a command/data/timing bus to cooperatively perform a plurality of communication functions useful in a communications system;
some of the application elements having:
an application element logic block for performing a predefined communications function;
a clock enable logic block for providing the respective application element with timing signals and enabling the application element logic block at the time its function is needed; and,
an interface logic access block for allowing the application element logic block to receive commends and data from and send commands and data to other aplication elements over the command/data/timing bus;
and being responsive to an instruction associated with the corresponding application element, each instruction having;
a command argument to set control parameters of the application element; and,
a time argument to determine the time the application element is invoked.

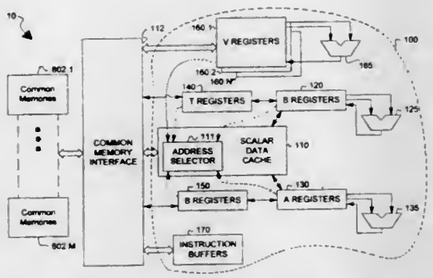
5,623,685

VECTOR REGISTER VALIDITY INDICATION TO HANDLE OUT-OF-ORDER ELEMENT ARRIVAL FOR A VECTOR COMPUTER WITH VARIABLE MEMORY LATENCY

George W. Leedom, Jim Falls, and William T. Moore, Elk Mound, both of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Dec. 1, 1994, Ser. No. 347,953
Int. Cl.[6] G06F *9/38;12/06*
U.S. Cl. 395—800 **18 Claims**

1. A computer system comprising:
a memory; and
vector processing apparatus comprising:
a plurality of vector registers coupled to said memory, wherein each vector register includes a plurality of chunks, and each chunk includes a plurality of elements;
a chunk-validation controller, wherein the chunk-validation controller marks each chunk valid after two or more elements in the chunk have been loaded from the memory;
a validity indicator corresponding to each of said vector registers, wherein each said validity indicator indicates a subset of elements in its corresponding vector register



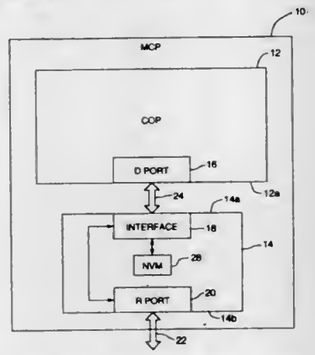
which are valid, and wherein each said validity indicator is connected to said chunk-validation controller;
an arithmetic logical functional unit (ALFU) coupled to said vector registers; and
a vector register controller connected to control said vector registers and operating in response to program instructions in order to cause valid elements of a vector register, selected from said plurality of vector registers, to be successively transmitted to said ALFU.

5,623,686

NON-VOLATILE MEMORY CONTROL AND DATA LOADING ARCHITECTURE FOR MULTIPLE CHIP PROCESSOR

Christopher M. Hall, Redwood City; Gary D. Phillips, San Jose; William E. Miller, Los Gatos; David W. Weinrich, San Jose; Robert M. Salter, III, Saratoga, and Richard E. Crippen, Mountain View, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 359,417, Dec. 20, 1994. This application May 19, 1995, Ser. No. 446,079
Int. Cl.[6] G06F *15/76*
U.S. Cl. 395—800 **9 Claims**



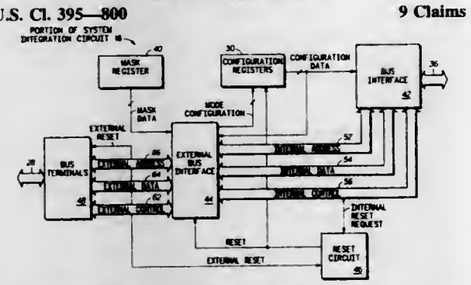
1. A multiple chip package processor comprising:
a processor die, including a central processing unit, said central processing unit generating and outputting at a data output terminal thereof data of at least first and second types intended for first and second destination circuits, respectively,
a memory die, including a memory for storing instructions for said central processing unit,
a package enclosing said processor die and said memory die,
a data register on said processor die for storing said data, said data register having an input terminal coupled to receive said data from said data output terminal and an output terminal,
an input data register on said memory die for storing said data, said input data register having an input terminal coupled to receive data from said data output terminal of said central processing unit and an output terminal coupled to said first and second destination circuits, and
control circuit means for activating one of said destination circuits to accept said data responsive to the type of said data.

5,623,687

RESET CONFIGURATION IN A DATA PROCESSING SYSTEM AND METHOD THEREFOR

Oded Yishay; Joseph Jelemensky; Jeffrey D. Quinn, and Daniel W. Pechonis, all of Austin, Tex., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 26, 1995, Ser. No. 494,664
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **9 Claims**



1. A data processing system, comprising:
a bus interface unit for receiving a plurality of internal address values, a plurality of internal data values, and a plurality of internal control values;
a mask register for storing a first configuration data value;
a plurality of bus terminals, a first portion of the plurality of bus terminals receiving a second configuration data value and a second portion of the plurality of bus terminals receiving a mode select data value;
a reset circuit for providing an internal reset signal to indicate the data processing system is executing a reset operation;
an external bus control circuit coupled to the reset circuit for receiving the internal reset signal, coupled to the plurality of bus terminals for receiving the second configuration data value and the mode select data value, and coupled to the mask register for receiving the first configuration data value, the external bus control circuit providing the first configuration data value when the mode select data value is in a first logic state and the external bus control circuit providing the second configuration data value when the mode select data value is in a second logic state; and
a configuration register coupled to the reset circuit for receiving the internal reset signal and coupled to the external bus control circuit for storing a one of the first configuration data value and the second configuration data value when the internal reset signal is asserted.

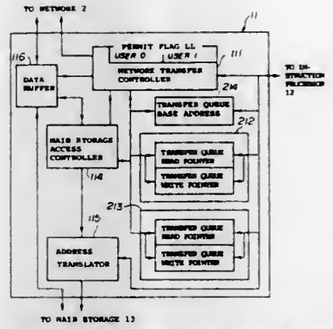
5,623,688

PARALLEL PROCESSING SYSTEM INCLUDING INSTRUCTION PROCESSOR TO EXECUTE INSTRUCTIONS AND TRANSFER PROCESSOR TO TRANSFER DATA FOR EACH USER PROGRAM

Masayuki Ikeda; Shigeru Nagasawa; Naoki Shinjo; Teruo Utsumi; Masami Dewa; Haruhiko Ueno; Kazushige Kobayakawa, and Kenichi Ishizaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 165,715, Dec. 13, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 520,231
Claims priority, application Japan, Dec. 18, 1992, 4-339093
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800 **11 Claims**

1. A parallel processing system adapted to a parallel computer system, said parallel processing system comprising:



a plurality of processing units each having a main storage storing instructions and data, an instruction processor reading the instructions from the main storage and executing the instructions, and a transfer processor for transferring said data from the main storage in units of a packet which is made up of a header and body data; and
a network to couple said plurality of processing units to each other, and for each of a plurality of user processes, to enable said transfer processor in one of said plurality of processing units to transfer the data stored in said main storage of said one processing unit to another of said plurality of processing units in response to one of said plurality of user processes and based on information included in the header of the packet, said header including information related to at least a destination of the data, an attribute of a memory access to the main storage and a length of the data,
said transfer processor of at least an arbitrary one of said processing units comprising:
managing means for managing a plurality of user queues for each of said plurality of user processes, said plurality of user queues including a transfer queue base address indicating a first address of a transfer queue of said data in the main storage, a transfer queue write pointer indicating to which data transfer request of the transfer queue the instruction processor has enqueued, and a transfer queue read pointer indicating to which data transfer request of the transfer queue the transfer processor has finished the data transfer process, and for managing a memory access virtual space; and
address translation means for performing an address translation depending on the memory access virtual space specified by the information included in the header of the packet and for issuing an access address with respect to the main storage, said transfer queue being a list of headers of packets.

5,623,689

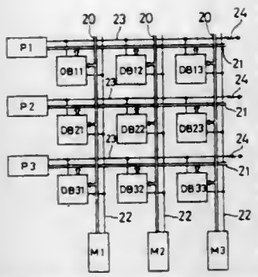
PARALLEL PROCESSOR SYSTEM FOR QUICKLY DETECTING THE TERMINATION OF DATA TRANSMISSION

Katsuyuki Kaneko, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 366,378, Dec. 29, 1994, Pat. No. 5,511,221, which is a continuation of Ser. No. 913,358, Jul. 15, 1992, abandoned. This application Jan. 24, 1996, Ser. No. 590,643
Claims priority, application Japan, Jul. 16, 1991, 3-175419
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **8 Claims**

1. A parallel processor system comprising:
a first data bus group including a plurality of data buses;
a second data bus group including a plurality of data buses;
a first device group including a plurality of first devices, each of said first devices connected to one of the data buses of said first data bus group for outputting data to the data buses of said first data group, each of said first devices providing a first transmit ending signal indicating the completion of outputting data to the data buses of said first data bus group;
a second device group including a plurality of second devices, each said second devices connected to one of the data buses

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of said second data bus group, for receiving data from the data buses of said second data group, and each of said second devices receiving a second transmit ending signal;

a plurality of data buffer devices, each data buffer device including,

a data buffer memory for temporarily storing data outputted from a data bus of said first data bus group and for outputting the stored data to a data bus of said second data bus group, and for transmitting a transmit completion signal indicating that said data buffer is empty,

detection means providing a detection output signal when said data buffer is empty and said first transmit ending signal is true, said detection means receiving a first transmit ending signal and a transmit completion signal,

a first plurality of transmit ending signal lines, each of said first transmit ending signal lines for transmitting a first transmit ending signal to a detection means, each of which first transmit ending signal lines is connected to one of the first devices of said first device group,

a second plurality of transmit ending signal lines, each of said second transmit ending signal lines for receiving a second transmit ending signal, each of which second transmit ending signal lines is connected to one of the second devices of said second device group, and

a plurality of transmit detection means, each transmit detection means receiving a detection output signal and providing a second transmit ending signal to said second plurality of transmit ending signal lines when all of said detection output signals are true,

wherein said first and second data bus groups are provided such that buses intersect like a lattice,

said data buffer devices are provided on all the intersections of the data buses of said first and second data bus groups,

each of said data buffer devices is connected to the data buses of said first and second data bus groups forming the correspondent intersection, and

wherein each of said second transmit ending signal lines transmits a second transmit ending signal for a second device of said second device group corresponding to the second transmit ending signal line and indicates that all the data have been transmitted, the data being fed from the buffer device to a second device of said second device group connected to the data bus which is connected to the second device of said second device group.

5,623,690

AUDIO/VIDEO STORAGE AND RETRIEVAL FOR MULTIMEDIA WORKSTATIONS BY INTERLEAVING AUDIO AND VIDEO DATA IN DATA FILE

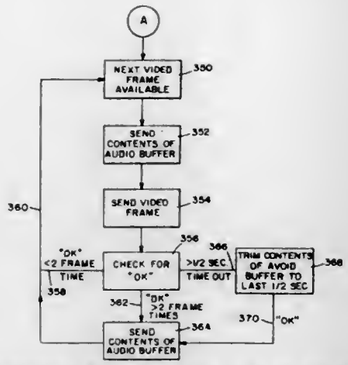
Larry G. Palmer, and Ricky S. Palmer, both of Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 893,074, Jun. 3, 1992, Pat. No. 5,375,068, and Ser. No. 893,234, Jun. 3, 1992, abandoned. This application Jul. 16, 1992, Ser. No. 915,088

Int. Cl.[6] G11B *27/02*

U.S. Cl. 395—806 **39 Claims**

1. A method for storing and retrieving an audio data stream and corresponding frames of video data on a multimedia workstation, comprising the steps of



storing the audio data stream in blocks from the workstation to a data file accessible by the workstation such that the audio data stream can be retrieved from the data file and reconstructed by the workstation into a continuous audio signal;

storing the frames of video data from the workstation to the data file by inserting each of the frames of video data between the blocks of the audio data stream to position the frames of the video data with the blocks of the audio data stream;

attaching timing information to each of the frames of video data stored to the data file indicating a point in the audio data stream, also stored to the data file, corresponding in time to the frames of video data;

retrieving and audibly reproducing the audio data stream from the data file;

retrieving the frames of video data from the data file; and

displaying the frames of video data in response to audibly reproducing a portion of the audio data stream, retrieved from the data file, that corresponds to the timing information of the frames of video data.

5,623,691

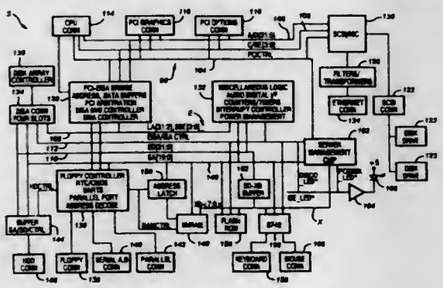
PCI BUS HARD DISK ACTIVITY LED CIRCUIT

Steven J. Clohset, and William C. Galloway, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 14, 1994, Ser. No. 339,402

Int. Cl.[6] H01J *3/00*

U.S. Cl. 395—821 **8 Claims**



1. A computer system comprising:

a processor;

a plurality of input/output controller devices, one of said input/output controller devices being a hard disk controller;

a bus having a plurality of lines;

wherein said input/output controller devices being coupled to said bus and said plurality of lines carry data transfer operation signals indicating data transfer operations by said controller devices, one of the lines on said bus being associated with said hard disk controller; and

a disk drive activity indication circuit comprising:

a mask value register having mask register output signals for individually selecting and masking of each of the plurality of data transfer operation indication signals;

a mask enable circuit for setting said mask value register output signals corresponding to data transfer operation signals on lines other than the line to set hard disk controller to indicate a masking operation;

said mask enable circuit further setting the mask value register output signal corresponding to data transfer operation signal on set line to set hard disk controller to indicate no masking operation;

a masking circuit for receiving each of the plurality of data transfer operation signals from said bus and the mask register output signals from said mask value register;

said masking circuit forming output signals masking an assertion of the data transfer operation signals based on said mask register output signals;

said masking circuit further providing the masked output signals so formed for each of the plurality of data transfer operation signals;

an output activity circuit for receiving the masked output signals and providing an output activity signal whenever any of the masked output signals is received;

a disk output activity circuit receiving the output activity signal and providing a disk output activity signal of at least a predetermined period in response thereto; and

a disk output activity indicator for receiving the disk output activity signal and providing a visual indication of disk drive activity.

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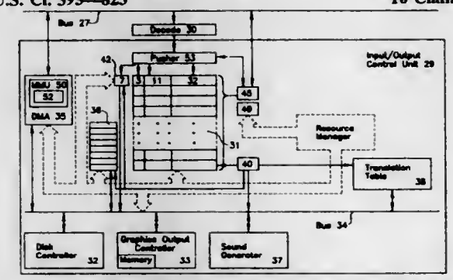
ARCHITECTURE FOR PROVIDING INPUT/OUTPUT OPERATIONS IN A COMPUTER SYSTEM

Curtis Priem, Fremont, and David S. H. Rosenthal, Palo Alto, both of Calif., assignors to NVidia Corporation, Sunnyvale, Calif.

Filed May 15, 1995, Ser. No. 441,399

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—823 **10 Claims**



1. Hardware input/output address translation apparatus adapted for use in a multitasking computer system comprising:

first hardware means responsive to commands from an unprivileged application program addressed to an input/output address for translating the input/output address to a physical space of an input/output device and transferring the command to the physical address of an input/output device, the first hardware means comprising:

a storage circuit storing a physical address of an input/output device which is a translation from an input/output address furnished by an unprivileged application program,

an accessing circuit responsive to commands from an unprivileged application program directed to an input/output address for furnishing the physical address of an input/output device stored by the storage device, and

second hardware means responsive to commands from an unprivileged application program addressed to an input/output address for selecting from safe translations of input/output addresses to physical address spaces of input/output devices for the first hardware means, the second hardware means comprising:

a cache circuit storing physical input/output addresses which may be safely translated by an unprivileged application program, and

a loading circuit responsive to calling commands from an unprivileged application program to place a physical input/output address from the cache circuit selected by the unprivileged application program in the storage circuit.

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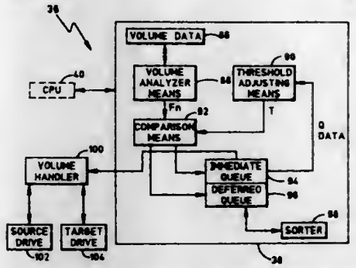
SYSTEM FOR PERFORMING ACTION BY SORTING ACTIONS INTO IMMEDIATE AND DEFERRED QUEUES, PROCESSING IMMEDIATE QUEUE WHILE STILL SORTING, AND APPENDING DEFERRED QUEUE TO IMMEDIATE AFTER SORTING

Lyn L. Ashton; Anthony S. Pearson, and Jerry W. Pence, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1994, Ser. No. 198,005

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—825 **20 Claims**



1. In a procedural environment having an action processing capacity and a plurality of N actions to perform, wherein the actions may be performed in any order, wherein a variable cost F_n=(0,1) can be assigned for each said action, wherein F_n=0 represents the lowest cost, and wherein N and n≦N are positive integers, a machine-implemented method for processing said actions, said method comprising the steps of:

(a) arranging a plurality of M≦N of said actions into a processing queue ordered by said variable-cost F_m, wherein M and m≦M are positive integers, said arranging step comprising the steps of:

(a.1) apportioning said M actions into an immediate queue and a deferred queue by performing steps comprising:

(a.1.1) defining the variable-cost threshold T=[0,1];

(a.1.2) placing the mth said action in said immediate queue if F_m≦T;

(a.1.3) placing the mth said action at the beginning of said immediate queue if F_m=0; and

(a.1.4) otherwise placing said m^{th} action in said deferred queue;

(a.2) sorting said actions in order of said variable cost F_m in said deferred queue after completion of said apportioning step (a.1); and

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(a.3) appending said deferred queue to said immediate queue to represent said processing queue after completion of said sorting step (a.2);

(b) before completion of said apportioning step (a.1) performing repeatedly the steps of

(b.1) performing to completion the first action in said immediate queue, and

(b.2) removing said action from said processing queue.

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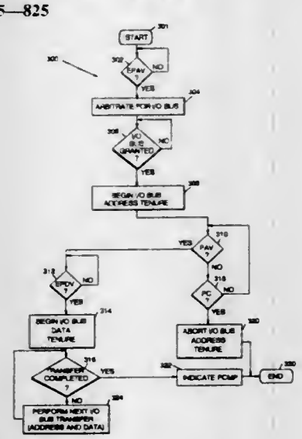
ABORTING AN I/O OPERATION STARTED BEFORE ALL SYSTEM DATA IS RECEIVED BY THE I/O CONTROLLER AFTER DETECTING A REMOTE RETRY OPERATION

Ravi K. Arimilli, Round Rock; John S. Dodson, Pflugerville, and Jerry D. Lewis, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1994, Ser. No. 316,978

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—825 **7 Claims**



1. A data processing system, comprising:

one or more processing units;

one or more I/O controllers;

a system memory;

a system bus, connecting said processing units, said I/O controllers said system memory;

controllers in said system memory; and

a system control unit, connected to each device connected to said system bus, for controlling the operation of said processing system;

said I/O controllers further comprising:

means for reading one ore more signals indicating a start of an I/O operation;

means for indicating that said start indicating signals are valid;

means for detecting a remote retry operation;

means for determining system data received valid;

means for holding said I/O operation until said system data received is determined valid;

means for aborting said I/O operation if a remote retry is detected; and

means for starting said I/O operation before all of said system data is received by said I/O controller thereby reducing the time required to complete said I/O operation.

5,623,695

SYSTEM FOR COMMUNICATING CONCURRENTLY WITH MULTIPLE SYSTEM FACILITATES THROUGH A SINGLE APPLICATION PROGRAMMING INTERFACE UTILIZING LOOK-UP TABLE SPECIFYING ENTRY POINT INFORMATION INTO AN IMPLEMENTATION

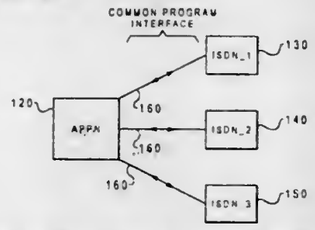
Zygmunt A. Lozinski, Winchester, and Barry J. Worley, Southampton, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1993, Ser. No. 58,619

Claims priority, application European Pat. Off., Jun. 12, 1992, 92305403

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—828 **3 Claims**



1. A data processing system for permitting an application program to communicate concurrently with a plurality of system facilities through a single application programming interface, said data processing system comprising:

said single application program interface having multiple implementations for permitting an application program to utilize specific data or functions within a plurality of system facilities to provide concurrent operation with said system facilities by controlling communication adapters;

a look-up table which specifies entry point information into a particular implementation of said application program interface for each of said plurality of system facilities, wherein said look-up table comprises a name of said single application program interface, identification of system facilities, and a unique key name corresponding to said entry point information; and

means for selecting particular entry point information into said application program interface in response to selection of a particular system facility among said plurality of system facilities.

5,623,696

SYSTEM FOR FORMATTING A REQUEST INTO A PACKET WHICH CAN BE READ BY PLURALITY OF OPERATING SYSTEMS FOR PROVIDING A DRIVER FOR A STORAGE DEVICE

Richard H. Johnson, San Jose, Calif.; Rosa O. Voncina, Hillsboro, Oreg.; Douglas Noddings, and Christopher J. Emberley, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1995, Ser. No. 453,306

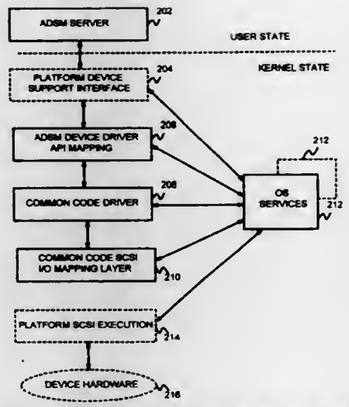
Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—681 **14 Claims**

1. A method for supporting a plurality of storage devices, utilized with a data processing system, the plurality of storage devices being utilized on a plurality of operating system platforms, the method comprising the steps:

(a) receiving a request from a user for a particular storage device;

(b) formatting the request into at least one common packet by: sending a command which indicates that the request has been received; and formatting the command into at least one packet which can be read by all of the plurality of operating system platforms, wherein the at least one common packet includes a small computer single system interface (SCSI) packet; and



(c) providing the at least one common packet to each of the plurality of operating system platforms, whereby any of the plurality of operating system platforms can utilize the at least one common packet to provide a device driver for the particular storage device.

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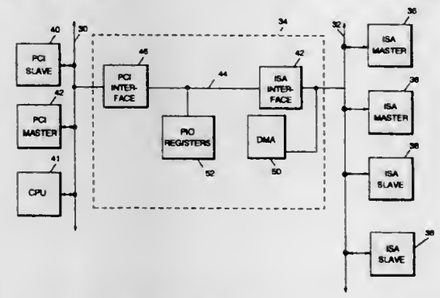
BRIDGE BETWEEN TWO BUSES OF A COMPUTER SYSTEM WITH A DIRECT MEMORY ACCESS CONTROLLER HAVING A HIGH ADDRESS EXTENSION AND A HIGH COUNT EXTENSION

Patrick M. Bland, Austin, Tex.; Daniel R. Cronin, III, Lake Worth, Fla.; Richard G. Hofmann, Cary, N.C.; Dennis Moeller, and Lance M. Venarchick, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 350,165

Int. Cl.[6] G06F *13/28*

U.S. Cl. 395—842 **8 Claims**



1. A bridge for interfacing the buses of a computer system that has a first bus having M-bit memory addressing capacity and a second bus having N-bit memory addressing capacity, the bridge comprising:

a direct memory access (DMA) controller circuit that generates M-bit memory addresses for DMA transfer operations, the DMA controller circuit including:

a pair of cascaded DMA controllers that generate P bits of the M-bit memory addresses;

address extension logic having a low page register that provides Q bits of the M-bit memory addresses, and a high page register that provides R bits of the M-bit memory addresses, the Q and R bits concatenated with the N bits to form the M-bit addresses, where P+Q+R=M;

logic for incrementing and decrementing the M-bit memory addresses during DMA transfer operations: wherein a boundary exists between the most significant bit of the P bits and the least significant bit of the Q bits, the P bits forming the first and second bytes of the M-bit addresses, the Q bits forming the third byte of the M-bit addresses, and the R bits forming the fourth byte of the M-bit addresses, the first byte being the least significant and the fourth byte being the most significant of the M-bit addresses; and

boundary crossing detection logic for detecting when incrementing or decrementing the M-bit addresses will cause a boundary crossing between the second and third bytes.

5,623,698

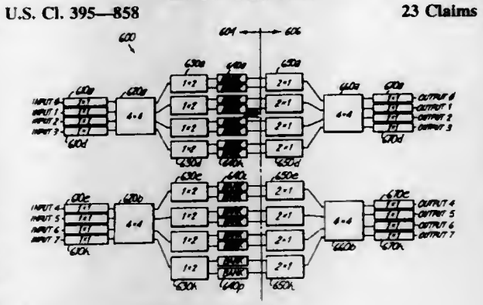
MEMORY INTERCONNECT NETWORK HAVING SEPARATE ROUTING NETWORKS FOR INPUTS AND OUTPUTS USING SWITCHES WITH FIFO QUEUES AND MESSAGE STEERING BITS

Bricky A. Stephenson, and Peter G. Loggbe, both of Chippewa Falls, Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Apr. 30, 1993, Ser. No. 55,814

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—858 **23 Claims**



1. A memory module, comprising:

a plurality of inputs;

a plurality of outputs;

a plurality of memory banks;

a first routing network connecting the plurality of inputs to the plurality of memory banks, wherein the first routing network comprises a plurality of switches, including a first switch and a crossbar switch, wherein the first switch includes a FIFO queue structure used to queue packets being transferred to one of said memory banks and wherein the crossbar switch includes a FIFO queue structure connected to the first switch of the first routing network to buffer packets received from said first switch, wherein the packets include a plurality of message steering bits and wherein some of said plurality of switches include steering bit replacement means for replacing one or more of the plurality of message steering bits with bits representing inputs to its respective switch; and

a second routing network connecting the plurality of memory banks to the plurality of outputs, wherein the second routing network comprises a plurality of switches, including a first switch having a FIFO queue structure used to queue packets being transferred from one of said memory banks.

5,623,699

READ ONLY LINEAR STREAM BASED CACHE SYSTEM

Michael C. Blakeslee, Washington, D.C., assignor to Thunderwave, Inc., Rockville, Md.

Filed Dec. 6, 1994, Ser. No. 354,133

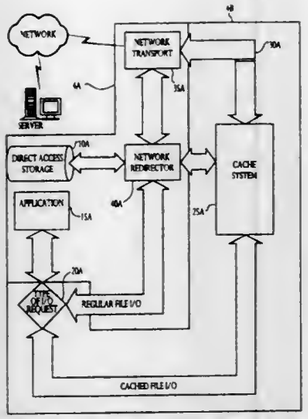
Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—872 **19 Claims**

1. A linear stream based cache system receiving data from a data source and transmitting the data to an application controlling a display for displaying the data, comprising:

an application memory storing first data;

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a cache memory, operatively connected to said application memory, and storing second data; and

a data processor, operatively connected to said application and cache memories, controlling the transmission of third data from the data source to the application via at least one of said application and cache memories responsive to an application file request including one of open, close and read requests, said data processor comprising:

means for receiving the application file request from the application; and

means for requesting the third data from the data source without waiting for a data source response when a sufficient amount of at least one of the first and second data is stored in at least one of the application and cache memories, respectively.

5,623,700

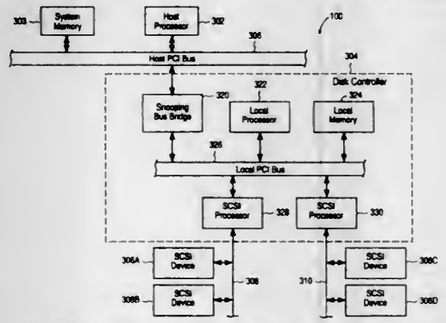
INTERFACE CIRCUIT HAVING ZERO LATENCY BUFFER MEMORY AND CACHE MEMORY INFORMATION TRANSFER

Terry J. Parks, Round Rock; Craig S. Jones, and Darius D. Gaskins, both of Austin, all of Tex., assignors to Dell, USA L.P., Round Rock, Tex.

Filed Apr. 6, 1994, Ser. No. 223,874

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—873 **24 Claims**



1. An adapter circuit for providing an interface between a host bus of a host computer and a peripheral device comprising:

a local bus;

a memory buffer coupled to said local bus;

at least one processing unit capable of initiating a transfer of selected data from said peripheral device to said memory buffer via said local bus; and

a bus bridge coupled between said local bus and said host bus, wherein said bus bridge includes a storage element for temporarily storing data to be transferred to said host bus from said local bus, and a control unit capable of snooping said local bus and causing said selected data to be latched into said storage element when said selected data is being transferred from said peripheral device to said memory buffer.

5,623,701

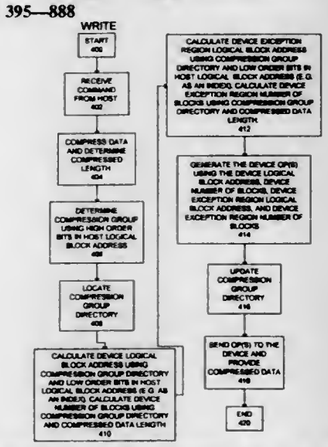
DATA COMPRESSION METHOD AND STRUCTURE FOR A DIRECT ACCESS STORAGE DEVICE

Brian E. Bakke; Daniel F. Moertl, and Bruce M. Walk, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 468,712

Int. Cl.[6] G06F *12/00;17/30*

U.S. Cl. 395—888 **20 Claims**



1. A method for storing compressed data in a direct access storage device (DASD) of the type including a fixed block architecture comprising the steps of:

segmenting the DASD into a plurality of compression groups; each of said compression groups having a fixed logical size;

allocating at least one compressed data region and an exception region within each compression group;

writing and reading related compressed data to and from said at least one compressed data region of one of said plurality of compression groups;

writing and reading compressed data exceptions to and from said exception region; said compressed data exceptions including updated compressed data which exceeds an original storage space for corresponding original compressed data; and

writing a corresponding directory table within said exception region for each of said compression groups.

5,623,702

RESILIENT LENS RETAINER

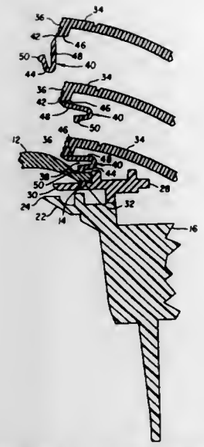
Douglas H. Pearson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1996, Ser. No. 597,742

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—6 **6 Claims**

1. A camera comprising a taking lens having an integral collar, a main body portion including a rigid fixed lens-support for said taking lens, and a front cover portion for said main body portion including an integral lens-surround arranged at least opposite said collar to leave a space between said lens-surround and the collar, is characterized in that:



said lens-surround can be forcibly depressed into said space towards said taking lens; and

a plurality of resilient compliant lens-retaining means, interconnects said lens-surround and said collar within said space, each for elastically urging said taking lens against said lens support and for providing increased resistance when the lens-surround is forcible depressed into said space to prevent the lens-surround from moving the taking lens.

5,623,703

CAMERA CAPABLE OF DETECTING EYE-GAZE

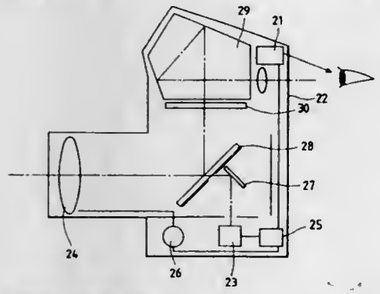
Tadao Takagi, Yokohama; Shigemasa Sato, Chiba, and Shigeyuki Uchiyama, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 210,293, Mar. 18, 1994, abandoned, which is a division of Ser. No. 773,726, Oct. 9, 1991, Pat. No. 5,333,029. This application Jun. 7, 1995, Ser. No. 477,591

Claims priority, application Japan, Oct. 12, 1990, 2-272174; Oct. 25, 1990, 2287723; Oct. 29, 1990, 2291434

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—51 **2 Claims**



1. A camera comprising:

an eye-gaze detecting device having plural eye-gaze detection areas obtained by dividing a finder field corresponding to a photo-image plane, said eye-gaze detection areas being grouped to form a plurality of main detection areas each constituted by a respective plurality of eye-gaze detection areas, said eye-gaze detecting device detecting in which of said main detection areas a photographer gazes and outputting an eye-gaze detection signal;

a measurement signal outputting circuit having a plurality of measuring areas corresponding to said main detection areas for outputting measurement signals corresponding to said main detection areas, each measuring area being shaped similarly to the corresponding main detection area; and

an operation circuit for operating, in association with the taking of a photograph, based on at least one of the measurement signals.

5,623,704

CAMERA WITH VIBRATION CORRECTION FUNCTION

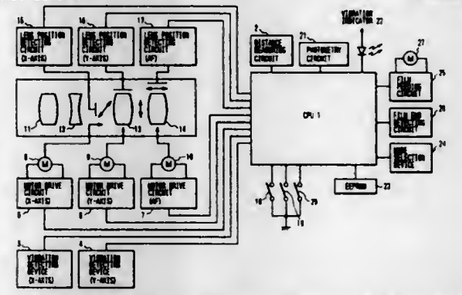
Hidenori Miyamoto, Urayasu, and Yoshio Imura, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 373,790

Claims priority, application Japan, Apr. 22, 1994, 6-085079; Apr. 22, 1994, 6-085080; Apr. 22, 1994, 6-085081; Apr. 28, 1994, 6-092651

Int. Cl.[6] G03B *5/00*

U.S. Cl. 396—55 **4 Claims**



1. A camera with a vibration correction function by a vibration correcting optical system provided with a continuous shot mode for carrying out continuous photographing, said camera comprising:

a vibration detecting device to detect vibration of said camera;

a vibration correcting device to correct said vibration of said camera at the time of photographing based on a signal from said vibration detecting device; and

a control device to stop the vibration correcting operation of said vibration correcting device at the time of said continuous shot mode.

5,623,705

APPARATUS FOR INSPECTING BLUR CORRECTION CAMERA, BLUR CORRECTION CAMERA, AND METHOD OF INSPECTING BLUR CORRECTION CAMERA

Sueyuki Ohishi, Tokyo, and Tadao Kai, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 377,512, Jan. 24, 1995, and a continuation of Ser. No. 377,517, Jan. 24, 1995, abandoned. This application Feb. 6, 1996, Ser. No. 597,112

Claims priority, application Japan, Mar. 18, 1994, 6-048126; Mar. 18, 1994, 6-048482; Mar. 18, 1994, 6-048627

Int. Cl.[6] G03B *17/00*

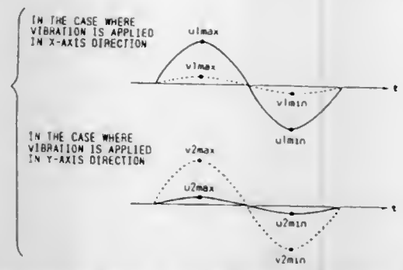
U.S. Cl. 396—55 **16 Claims**

1. A method of inspecting a blur correction function of a blur correction camera, comprising the steps of:

applying a sinusoidal vibration having a predetermined angular amplitude in a detection direction of an angular velocity of an angular velocity detecting unit;

detecting maximum and minimum values of a displacement of a photographing optical system upon application of the sinusoidal vibration; and

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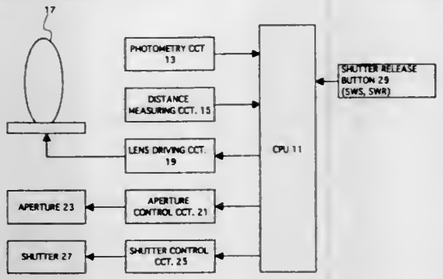
discriminating, based on the maximum and minimum values, whether the blur correction function is normal for changing an optical axis of the photographing optical system of the blur correction camera.

5,623,706

CAMERA HAVING AUTO FOCUSING AND AUTO EXPOSURE FUNCTIONS

Kosei Kosako, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1995, Ser. No. 505,843
Claims priority, application Japan, Jul. 26, 1994, 6-174365
Int. Cl.[6] G03B *7/00;13/36*
U.S. Cl. 396—67 **25 Claims**



1. A camera, comprising:

a focusing lens;

means for measuring one of a distance to an object to be photographed and a defocus amount of an image of said object to be photographed;

means for driving said focusing lens in accordance with one of said measured distance or said measured defocus amount;

means for determining an exposure value of said object to be photographed;

means for judging whether said one of said distance to said object and said defocus amount, which satisfies a predetermined condition, can be measured;

means for increasing said determined exposure value in response to said judging means judging that said predetermined condition is not satisfied;

means for determining an aperture value and a time value for photographing said object based on said exposure value, in accordance with a predetermined algorithm; and

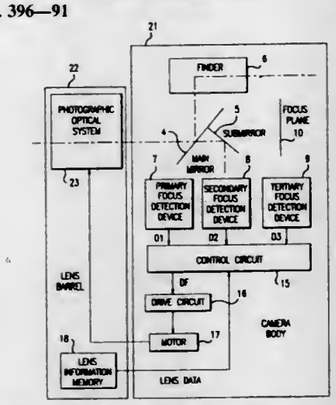
means for controlling said camera to photograph said object in accordance with said determined exposure value, wherein said predetermined condition includes a condition that said object distance is within a focusable distance range of said focusing lens, and wherein said driving means drives said focusing lens to a closest focusable position of said image when said judging means judges that said object is closer to said camera than said closest focusable position.

5,623,707

AUTO FOCUS ADJUSTMENT SYSTEM AND AUTO FOCUS ADJUSTMENT METHOD

Yosuke Kusaka, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,460
Claims priority, application Japan, Aug. 26, 1994, 6-202475
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—91 **28 Claims**



1. An auto focus adjustment system comprising:

a photographic optical system that forms an image plane;

focus detection device for detecting a plurality of defocus amounts corresponding to a plurality of focus detection regions arranged in a photographic field of said photographic optical system, each of said plurality of defocus amounts representing a defocus deviation amount from a predetermined focus plane to said image plane of each of said focus detection regions, wherein said defocus amount is positive if said image plane of said photographic optical system is formed on a photographic optical system side of the focus plane, and said defocus amount is negative if said image plane is formed on a side of the focus plane opposite said photographic optical system side;

defocus amount determination circuit for determining a final defocus amount based on the plurality of defocus amounts detected by said focus detection device, said defocus amount determination circuit selecting defocus amounts greater than a predetermined negative defocus amount from said plurality of defocus amounts detected by said focus detection device and determining a least defocus amount from among the selected defocus amounts as said final defocus amount; and

drive control circuit for driving said photographic optical system based on said final defocus amount determined by said defocus amount determination circuit.

5,623,708

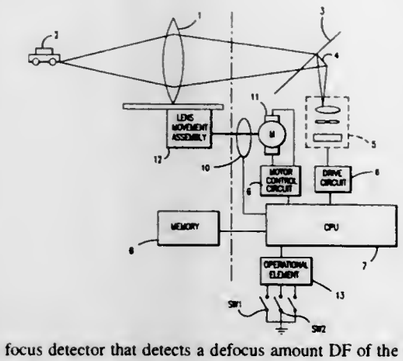
AUTOFOCUS ADJUSTMENT DEVICE OF A CAMERA AND METHOD

Toshimi Watanabe, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,973
Claims priority, application Japan, Sep. 7, 1994, 6-214116
Int. Cl.[6] G03B *3/00*
U.S. Cl. 396—153 **21 Claims**

1. An autofocus adjustment device of a camera for focusing on an image, comprising:

a shooting lens that is movable to focus an image of an object;



a focus detector that detects a defocus amount DF of the shooting lens;

a monitor that monitors a movement amount of the shooting lens;

a timer that measures a time required by the focus detector to detect a defocus amount;

a memory that stores data including a time measurement to detect a defocus amount, the movement amount, and the defocus amount;

an image plane movement velocity calculator that calculates an image plane movement velocity S0 based on data stored in the memory;

a movement determining device that determines whether the object is moving based upon the image plane movement velocity calculator; and

a control that controls lens movement, wherein the movement determining device uses the image plane movement velocity S0 to determine whether the object is moving, and wherein the control uses a focus position change velocity SP0 to change speeds of lens movement as the lens moves, the image plane movement velocity S0 is determined by

$$S0=(DF0-DF1')/(t0-t1)$$

where DF0 is a current time's t0 central time of accumulation defocus amount and DF1' is a previous time's t1 central time of accumulation defocus amounts,

the focus position change velocity SP0 is determined by

$$SP0=(P0-P1)/(t0-t1)$$

where P0 is a lens position at the current central time of accumulation and P1 is a lens position at the previous central time of accumulation.

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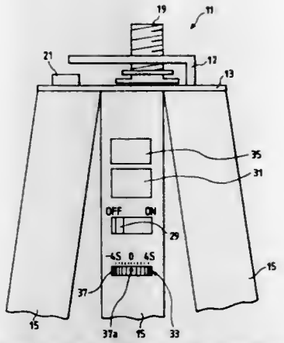
TRIPOD WITH DETECTOR FOR INCLINATION OF PAN HEAD

Hidenobu Kaji, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 8, 1996, Ser. No. 598,649
Claims priority, application Japan, Feb. 10, 1995, 7-022821
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—283 **6 Claims**

4. A tripod device comprising:

an angle detector disposed on said tripod device for detecting, when a pan head is inclined at a predetermined angle, said predetermined angle, and outputting a predetermined angle signal; and



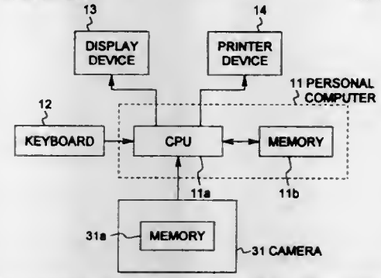
a notifying unit to be operated by said predetermined angle signal from said angle detector for notifying a user that said pan head is inclined at said predetermined angle.

5,623,710

PRESENTATION APPARATUS FOR PHOTOGRAPHIC DATA

Hidehiro Ogawa, Funabashi, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 253,288, Jun. 3, 1994, abandoned.
This application Sep. 12, 1996, Ser. No. 713,191
Claims priority, application Japan, Jun. 7, 1993, 5-136234
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—300 **24 Claims**



1. A presentation apparatus for photographic data, comprising:

a presentation means for presenting photographic data for each of multiple photographic frames of film;

an input operating member which is manually operated to input frame numbers

a setting means for setting frame numbers which are to be presented corresponding to said photographic data which are to be presented based upon said input frame numbers input by said input operating member; and

a control means for controlling said presentation means to present said photographic data for said photographic frames with said set frame numbers.

5,623,711

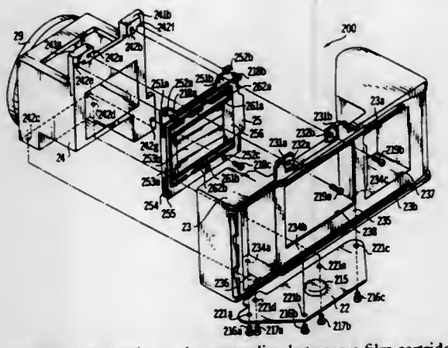
CAMERA HAVING SHUTTER BLOCK WITH GUIDE RAILS

Masayuki Misawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1996, Ser. No. 583,550
Claims priority, application Japan, Jan. 12, 1995, 7-019778
Int. Cl.[6] G03B *17/02;19/12*
U.S. Cl. 396—357 **25 Claims**

1. A camera, comprising:

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a camera body having a plate extending between a film cartridge chamber and a spool chamber, said plate having an opening formed therein;

a mirror housing for supporting a swingable mirror, said mirror housing being secured to said camera body;

a shutter block having a frame aperture formed therein for defining an exposable area of a frame of film and at least one pair of guide rails for positioning said film, said shutter block being secured to one of said mirror housing and said camera body; and

said frame aperture and said guide rails being positioned within said opening formed in said plate.

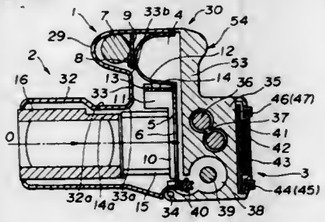
5,623,712

CAMERA HAVING A GRIP RECESS AND A LENS BARREL RECESS WHICH COOPERATE TO PROVIDE A FINGER RECEIVING RECESS

Hiroki Onda, Nagano-ken; Kazuhiko Watarai, Tama, and Mutsumi Naruse, Hachioji, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 113,599, Aug. 27, 1993, abandoned.
This application Mar. 28, 1995, Ser. No. 411,401
Claims priority, application Japan, Aug. 31, 1992, 4-232101
Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—424 **2 Claims**



2. A camera, comprising:

an opening located in a camera body and defining a film screen;

a lens barrel including an outer wall located in front of said opening and extending in a direction forward of the camera body;

a projection located behind said opening and extending rearwardly from said camera body;

a grip formed on one side surface of said projection and laterally spaced away from a side of the projection, and having a rear end which lies forward of a rear end of said projection, said grip being held with the fingers of a photographer's hand during photography, said grip having a forward recess in a forward end thereof for accommodating the hand holdind the grip;.and

a recess formed on an outer circumference of a side portion of the outer wall of said lens barrel, located in an area adjacent to said grip and inward from a forward end of the lens barrel outer wall in a direction toward the back of the camera and being measured along a line parallel to an optical axis of the lens barrel, indented toward an inner circumference of said lens barrel and cooperating with said forward recess to accommodate at least a portion of several fingers of the hand holding the grip, said recess receiving said portion of several fingers being located at a back side of each of the several fingers of the hand between a tip and a knuckle which is closest to the tip, whereby the hand holding the grip supports the camera without holding the lens barrel and

wherein said lens barrel has a lens holding portion with an interior periphery of substantially constant diameter for receiving a taking lens, a portion of an exterior periphery of the lens holding portion being removed to receive the indented portion of said recess in said outer wall.

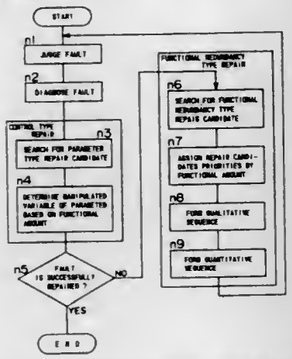
5,623,713

SELF-REPARIR TYPE IMAGE FORMING APPARATUS UTILIZING FUNCTIONAL REPRESENTATION

Yoshiki Shimomura; Sadao Tanigawa; Yukihiro Mori; Toshimitsu Takakura, all of Osaka; Yasushi Umeda, Tama; Tetsuo Tomiyama, and Hiroyuki Yoshikawa, both of Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1995, Ser. No. 403,423
Claims priority, application Japan, Mar. 18, 1994, 6-49309
Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—42 **2 Claims**



1. A self-repair type image forming apparatus having a self-repair function for self-repairing a fault when there occurs such a fault that a predetermined function does not develop sufficiently, said self-repair type image forming apparatus utilizing functional representation, and comprising:

first storing means for storing a function expanding structure in which at least a portion to be self-repaired is represented as a network including a hierarchical structure of a plurality of functions and a plurality of behaviors and states realizing the plurality of functions, and predetermined functions belonging to a relatively lower-order hierarchy are respectively assigned functional modifiers for modifying the functions;

second storing means for storing functional amount data, which is previously examined in conformity with each of said functional modifiers, representing the change in a functional amount with the change of a predetermined physical parameter;

third storing means for storing a parameter tree in which at least a structure of a portion to be self-repaired is represented as a cause and effect relation among a plurality of physical parameters;

means for applying, when a fault occurs, the state of the fault to the parameter tree stored in said third storing means, to raise a physical parameter to be operated so as to repair the fault;

means for calculating a manipulated variable of said raised physical parameter on the basis of the functional amount data stored in said second storing means; and

means for operating the raised physical parameter to self-repair the function on the basis of said calculated manipulated variable.

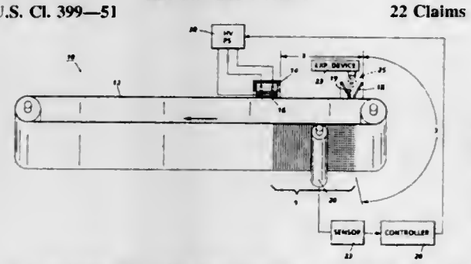
5,623,714

AUTOMATIC EXPOSURE CORRECTION USING CURRENT SENSING TECHNOLOGY

David M. Thompson, Fairport; Carol J. Panepinto, Rochester, and Edward C. Savage, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 344,297
Int. Cl.[6] G03G *15/043*

U.S. Cl. 399—51 **22 Claims**



1. In an image processing apparatus having a corona device with a charging grid for charging a photoreceptor to voltage levels, an exposure device for projecting an image onto the photoreceptor, a developer for applying toner to the photoreceptor, a sensor for providing a signal in relation to current flow between the photoreceptor and the developer, and an exposure device control, including a photodiode for sensing light intensity, a method of adjusting the exposure device comprising the steps of;

charging predetermined test patches on the photoreceptor,

providing sensor signals to the exposure device control in response to developing the predetermined test patches on the photoreceptor,

setting the exposure device to an intensity level of approximately 50% reflection from a given reference providing a first photodiode signal, and storing an indication of the first photodiode signal in memory, and

increasing the exposure device intensity level to an intensity level wherein the sensor provides a second photodiode signal approximately double said first photodiode signal.

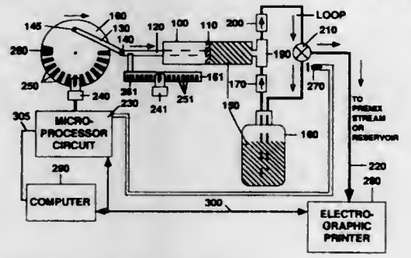
5,623,715

LIQUID TONER CONCENTRATE MANAGEMENT SYSTEM AND METHOD

Lloyd D. Clark, 15 Conrad St., San Francisco, Calif. 94131

Filed Aug. 23, 1994, Ser. No. 294,942
Int. Cl.[6] G03G *15/10*

U.S. Cl. 399—57 **20 Claims**



1. A fluid pumping system, comprising:

(a) motive means providing a motive force,

(b) a pump containing a cyclically movable driving member which is arranged to eject from said pump, when said pump contains fluid, a known volume of fluid in each cycle of operation, the volume of fluid being proportional to the travel of said driving member,

(c) coupling means for coupling said motive means to said pump so that said motive means forces said pump to operate,

(d) a loop containing a fluid reservoir, said loop connected to said pump so that fluid, when present in said pump and said conduit, recirculates between said pump and said reservoir in response to said operation of said pump,

(e) check valve means for restricting fluid flow around said loop to a single, predetermined direction,

(f) measuring means for determining the position of said driving member, and

(g) eject valve means for intermittently causing some of said fluid to be expelled from said loop.

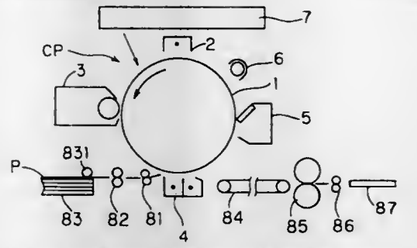
5,623,716

PROCESS FOR IMAGE FORMING USING A PHOTOSENSITIVE MEMBER HAVING AN AMORPHOUS CARBON LAYER AS AN OUTERMOST SURFACE LAYER

Kenji Masaki, Ibaragi; Izumi Osawa, Ikeda, and Seishi Ojima, Takatsuki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 946,679, Sep. 18, 1992, abandoned.
This application Mar. 21, 1994, Ser. No. 215,169
Claims priority, application Japan, Sep. 20, 1991, 3-241746
Int. Cl.[6] G03G *15/00;15/16;21/00*

U.S. Cl. 399—159 **12 Claims**



1. A process for image formation comprising the steps of:

forming an electrostatic latent image on a photosensitive member having an amorphous carbon layer as an outermost surface layer;

developing said electrostatic latent image with toner to form a toner image;

transferring said toner image onto transfer paper contacting with said photosensitive member; and

cleaning residual toner remaining on the surface of said photosensitive member by a cleaning blade disposed in contact with the surface after the transfer;

wherein said transfer paper has a pH-value of 7.0 to 8.5 according to JIS-P-8133 to maintain an electrical resistance and charge retaining property of the photosensitive member.

5,623,717

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS WHICH USES BIAS VOLTAGES TO ATTRACT CHARGED TONER

Eiji Takenaka, Isehara, and Yozo Matsuura, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

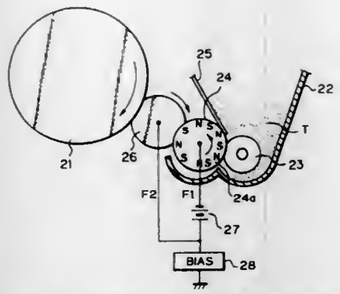
Continuation of Ser. No. 163,527, Dec. 9, 1993, abandoned.
This application Oct. 26, 1995, Ser. No. 548,529
Claims priority, application Japan, Dec. 11, 1992, 4-331771
Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—281 **24 Claims**

1. A developing device for an image forming apparatus, comprising:

a first bias voltage generator;

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toner conveying means for conveying a high resistance toner charged by friction or charge injection, said toner conveying means being charged with a first bias voltage from said first bias voltage generator; .

a blade contacting the toner conveying means which regulates a thickness of toner on the toner conveying means;

a second bias voltage generator; and

elastic roller-like conveying means for causing the toner from said toner conveying means to deposit electrically thereon, whereby said toner is conveyed by said roller-like conveying means to a developing region included in said image forming apparatus, said elastic roller-like conveying means being charged with a second bias voltage from said second bias voltage generator, said second bias voltage different from said first bias voltage, which causes portions of said toner which have a predetermined charged to be more strongly attracted to said elastic roller-like conveying means than to said toner conveying means,

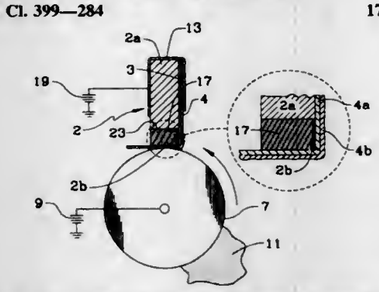
wherein a conveying surface of the toner conveying means is harder than a conveying surface of the elastic roller-like conveying means.

5,623,718

EXTENDED LIFE COMPLIANT DOCTOR BLADE WITH CONDUCTIVE ABRASIVE MEMBER

Peter W. Bracken; Jeffery R. Brener; Martin V. DiGirolamo; Donald W. Stafford, and Peter E. Wallin, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Sep. 6, 1995, Ser. No. 524,275
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—284 **17 Claims**



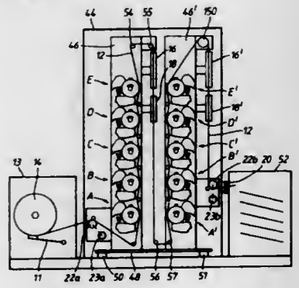
1. An electrically energized doctor blade for metering charged electrophotographic toner held on a developer roller by physically contacting a sector of said roller with a surface of said blade which is electrically charged, said blade comprising a compliant backing member, a supporting member to position said blade adjacent to said roller, and a layer on said complaint backing member comprising a solid binder having dispersed throughout said binder grit particles and a conductive filler, said compliant backing member and said layer with grit and conductive filler being attached to said supporting member and being bendable to extend under said supporting member to contact said layer with grit and conductive filler with said sector of said developer roller during use.

5,623,719

GUIDING OR REVERSING ROLLER ARRANGEMENT FOR AN ELECTROSTATOGRAPHIC IMAGE REPRODUCTION APPARATUS

Etienne M. De Cock; Lucien A. De Schamphelaere, both of Edegem, and Erik G. G. Van Weverberg, Mortsel, all of Belgium, assignors to XEIKON NV, Mortsel, Belgium

Filed Mar. 6, 1995, Ser. No. 398,894
Claims priority, application European Pat. Off., Apr. 5, 1994, 94302399.4
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—299 **15 Claims**



1. An electrostatographic image reproduction apparatus for forming images of toner particles on a receptor material moving along a receptor material transport path, comprising a rotatable contact roller having a direction of rotation for contacting said receptor material while it has an electrostatically charged toner particle image having a charge polarity on at least a surface thereof which faces said contact roller, wherein said contact roller is selected from a guiding roller and a reversing roller and comprises a roller surface having an electrically insulating surface coating thereon, wherein said contact roller is associated with electrostatic charging means for providing an electrostatic charge on said roller surface, said electrostatic charge having the same polarity as said charge polarity of the toner particles on said surface of said receptor material before contact of said receptor material with said roller surface.

5,623,720

METHOD AND APPARATUS FOR STRIPPER BAR ROTATION

Richard L. Howe; Leon G. Poplawski, and Joseph Rozansky, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1996, Ser. No. 720,523
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—323 **20 Claims**

1. An apparatus for moving a stripper bar assembly near a paper path comprising:

a housing;

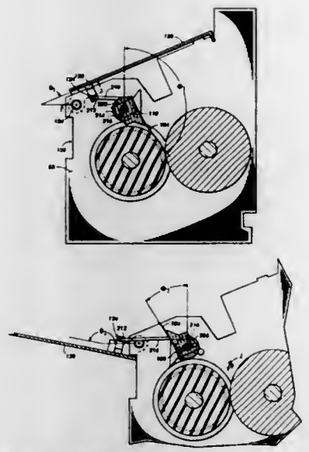
at least one stripper finger;

a stripper bar having a first end and a second end, with the at least one stripper finger attached thereto, the stripper bar being rotatably mounted in the housing and near the paper path;

a cam member located at the first end of the stripper bar;

a cable having a first end and a second end, the first end of the cable attached to the cam member; and

a moving member which moves from a first location to a second location, the second end of the cable being attached to the moving member so that when the moving member moves



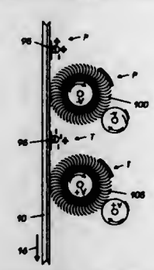
from the first location to the second location, the stripper bar rotates in a first direction and moves the at least one stripper finger away from the paper path.

5,623,721

BRUSH BIAS POLARITY FOR DUAL ESB CLEANERS WITHOUT PRECLEAN COROTRON FOR TRIBOELETRIC NEGATIVE TONERS

Nero R. Lindblad, Ontario, and Christopher W. Curry, Rochester, both of N.Y., assignors to Xerox Corportion, Stamford, Conn.

Filed Mar. 27, 1996, Ser. No. 622,980
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—354 **9 Claims**



1. An apparatus for removing triboelectric negatively charged particles from a surface, the surface being capable of movement, comprising:

a first means of cleaning having a first bias for removing particles from the surface, the particles being positively and negatively charged;

a second means of cleaning having a second bias for removing particles from the surface, the particles being positively and negatively charged, said second cleaning means being located downstream from said first means in a direction of motion of the surface;

said first cleaning means having the first bias and said second cleaning means having the second bias opposite the first bias, said first and second cleaning means removing positively charged particles having remaining particles negatively charged;

the first bias of said first cleaning means further negatively charging the remaining particles comprising a charge injection phenomenon, said charge injection phenomenon enabling the second bias of said second cleaning means to efficiently remove the remaining particles from the surface; and

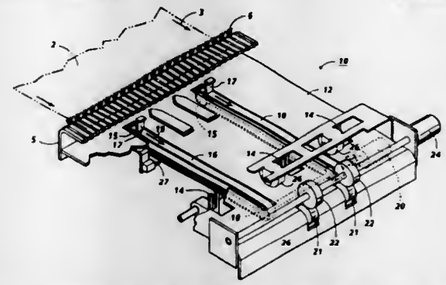
a housing, said first cleaning means and said second cleaning means being partially enclosed therein.

5,623,722

DOCUMENT SET COMPILER AND EJECT SYSTEM

Rodney L. Hawley, Webster; David F. Johnson, Victor, and Edward T. Bloomer, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1995, Ser. No. 458,043
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—397 **16 Claims**



1. A compiler tray for accumulating a plurality of output copy sheets delivered to a support surface thereof, to produce a document set, including means for transporting the document set to an output tray, comprising:

a transport belt system including at least one movable belt for being selectively driven along a curvilinear path defined by a pair of rotatable roll members, said at least one movable belt having a portion situated along a substantially common plane with the support surface, wherein said at least one movable belt is adapted to remain stationary for a selected time to accumulate a stack of output copy sheets on the support surface, said at least one movable belt being further adapted to be selectively driven for effecting transport motion of said transport belt system;

an output drive roll system including at least one output roll for contacting the document set as the document set is being transported via said transport belt system; and

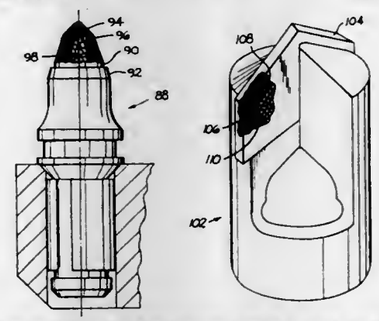
means for driving said output drive roll system at a predetermined speed greater than a speed at which said transport belt system is driven to actively remove the document set from said transport belt system during transport of the document set to the output tray.

5,623,723

HARD COMPOSITE AND METHOD OF MAKING THE SAME

Mark S. Greenfield, 119 Cheshire Dr., Greensburg, Pa. 15601

Filed Aug. 11, 1995, Ser. No. 514,293
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—6 **22 Claims**



1. A method of heat treating a green compact having an exposed surface, the method comprising the steps of:

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providing a green compact comprised of a hard carbide and binder;
placing a grain refiner on at least one portion of the exposed surface of the green compact; and
heat treating the green compact and grain refiner so as to diffuse the grain refiner toward the center of the green compact thereby forming a peripheral zone inwardly from the exposed surface on which the grain refiner was placed, and forming an interior zone, the peripheral zone having a grain size that is smaller than the grain size of the interior zone.

5,623,724

HIGH POWER CAPACITOR

Stephen R. Gurkovich, Penn Hills; Kenneth C. Radford, North Huntingdon, and Deborah P. Partlow, Export, all of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 9, 1994, Ser. No. 287,818
Int. Cl.[6] B22F 7/04
U.S. Cl. 419—8 **14 Claims**



1. A method of manufacturing a ceramic capacitor suitable for high energy density and high temperature application characterized by the fact of
a. producing the appropriate oxide powders using the sol-gel process and mechanically mixing the powders,
b. calcining the mixture to remove organics and obtain the desired phase,
c. milling the resulting ceramic powder to deagglomerate the powder and obtain a desired particle size,
d. forming a slip with said ceramic powder with a binder and a volatile solvent,
e. casting the slip on a moving surface to form a thin tape,
f. drying said tape to form a flexible ceramic tape,
g. screen printing a conductor thereon and pre-forming the desired capacitor structure, and
h. firing the structure to produce the desired sintered capacitor form.

5,623,725

PROCESS FOR PRODUCING VERY PURE PLATINUM MATERIALS, SEMI-FINISHED PARTS AND FOILS DISPERSION-REINFORCED WITH Y203

Joachim Disam, Hahnheim; Gerhard Jangg; Johannes Zbiral, both of Wien; Gerhard Schreier, Wiener, and Christian Edtmaier, Wien, all of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed May 16, 1995, Ser. No. 442,023
Claims priority, application Germany, May 19, 1994, 44 17 495.0
Int. Cl.[6] B22F 3/14;9/24
U.S. Cl. 419—19 **21 Claims**

1. A process for producing a pure platinum material dispersion-reinforced with Y_2O_3 and having high strength and extensibility, even in the temperature range >800° C., from platinum powder, comprising:
(a) providing a high purity platinum powder having a particle size of from 2 to 10 μm;
(b) dispersing Y_2O_3 particles having a size of <1 μm in the platinum powder by milling the powder and Y_2O_3 particles in a platinum vessel using milling media of zirconium oxide to produce a milled product;
(c) charging the milled product into a platinum capsule and degassing the milled product under a vacuum of at least 10^{-3} mbar at a temperature of at least 1200° C. for a period of up to 48 hours;
(d) welding the evacuated capsule to form a gastight capsule; and,
(e) hot isostatic pressing the gastight capsule to form a material of compact dispersion-reinforced platinum having a density of 100%.

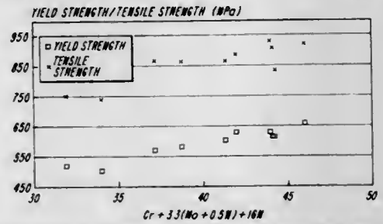
16. A process for preparing a high purity finely divided platinum powder comprising:
(a) dissolving platinum in hydrochloric acid or boiling aqua regia to form a solution;
(b) evaporating the solution to a concentration of about 400 g Pt/l;
(c) further evaporating the solution up to a boiling temperature of about 180° C. to a platinum concentration of about 1500 g Pt/l;
(d) taking up the hot solution of (c) with H_2O to dilute the solution to a concentration of about 600 g Pt/l;
(e) cooling the platinum solution of (d) to a temperature of 80° C. and adjusting the solution to a concentration of 150–200g Pt/l;
(f) adding the cooled and adjusted solution with vigorous stirring to a 30% strength ammonium chloride solution (300 g NH_4Cl/l) present in a frit and at a temperature of 80° C.;
(g) precipitating platinum as $(NH_4)_2[PtCl_6]$ and suctioning off remaining reaction liquid to obtain a filter cake;
(h) washing the filter cake a plurality of times with dilute cold NH_4Cl solution and maintaining the filter cake in a moist condition until the washing solution emerges colorless; then
(i) drying the washed filter cake by applying suction at a low pressure;
(j) removing residual water from the filter cake of step (i) with acetone until the acetone emerges with a milky turbidity;
(k) drying the filter cake at a low pressure;
(l) thermally decomposing the dried filter cake in a furnace at 380°–420° C. to form a platinum sponge;
(m) pulverizing the platinum sponge to give a fine platinum powder;
(n) boiling the fine platinum powder with distilled water a plurality of times;
(o) removing the water with suction and subsequently drying the powder to constant weight.

5,623,726

ROLL MANUFACTURE

Erkki Kiiski; Jari Liimatainen, and Hannu Martikainen, all of Tampere, Finland, assignors to Rauma Materials Technology OY, Tampere, Finland

Filed Jul. 7, 1995, Ser. No. 499,190
Claims priority, application Finland, Jul. 11, 1994, 943285
Int. Cl.[6] B22F 1/00
U.S. Cl. 419—23 **30 Claims**



1. Method of manufacturing a roll shell of steel so that powder is made from molten steel by inert gas atomization,

a roll shell preform or a section of a roll shell preform is made of the powder so that a mould is filled with the powder and at a high temperature brought under pressure and/or hot working, and sections of a roll shell preform, if such have been made, are joined together to form a roll shell preform, and
the roll shell preform is machined to form a roll shell, characterized in that
austenitic-ferritic stainless steel is used as steel, and a paper or board machine roll shell or roll shell preform is made of it.

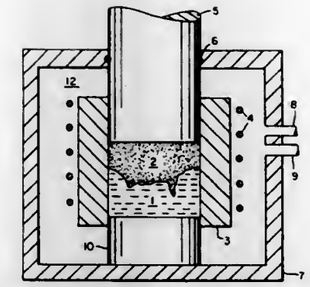
5,623,727

METHOD FOR MANUFACTURING POWDER METALLURGICAL TOOLING

Paul Vawter, 668 W. Magill, Fresno, Calif. 93074

Filed Nov. 16, 1995, Ser. No. 558,731
Int. Cl.[6] B22F 3/14
U.S. Cl. 419—51 **5 Claims**

1. A method for powder metallurgical manufacturing of an article, wherein a refractory die defines a consolidated particulate material a shape, said method comprising the steps of:
providing a refractory die which is replicated from an original model by casting or other methods;
positioning said refractory die in a forging die supported on a lower ram; filling said forging die with the particulate materials and covering said refractory die with fine particulate materials;



heating said forging die with its contents of said particulate materials and said refractory die in an inert or reducing atmosphere at a consolidation temperature;
subjecting the said particulate material and said refractory die to pressure by at least one pressure means, a movable ram which passes through a sealed inlet of said furnace, said movable ram is pressed downward to transfer axial pressure to said particulate materials in order to consolidate said particulate materials and form a dense body replicating the surface of said refractory die;
lowering the temperature of the forging die so as to remove a consolidated article and refractory die; and
removing the said refractory die from the said consolidated article by mechanical, thermal shock or chemical leaching.

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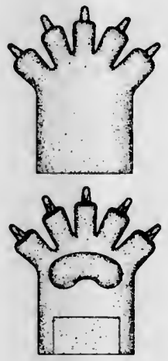
378,867
DINOSAUR-SHAPED FOOD PRODUCT
Dean J. Champane, Grosse Pointe Farms, Mich., assignor to Variety Foods Inc., Warren, Mich.
Division of Ser. No. 14,132, Oct. 13, 1993. This application May 2, 1995, Ser. No. 39,276
Term of patent 14 years
U.S. Cl. D1—106



378,868
PRETZEL
Randall L. Bartter, Clovis, Calif., assignor to Societe des Produits Nestle S.A., Vevey, Switzerland
Filed Apr. 3, 1996, Ser. No. 52,537
Term of patent 14 years
U.S. Cl. D1—120



378,869
ANIMAL PAW GLOVE
Merle A. Mikell, 3416 Lenczyk Dr. West, Jacksonville, Fla. 32277
Filed Apr. 28, 1995, Ser. No. 38,478
Term of patent 14 years
U.S. Cl. D2—615



378,870
SLEEPING BAG
Patrick W. Phillips, 6730 Hollis Ave., Dallas, Tex. 75227
Filed Nov. 7, 1994, Ser. No. 30,757
Term of patent 14 years
U.S. Cl. D2—719

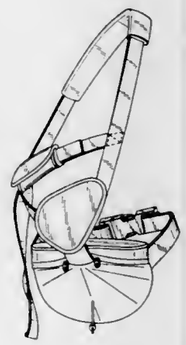


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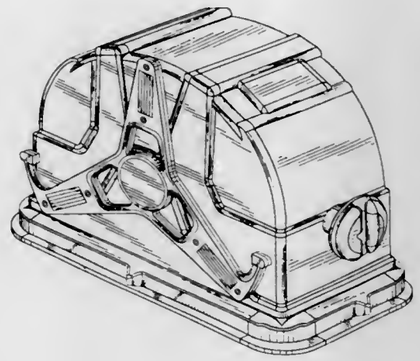
378,871
SHOE OUTSOLE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 32,078, Dec. 2, 1994, abandoned. This application Jun. 16, 1995, Ser. No. 40,368
Term of patent 14 years
U.S. Cl. D2—953



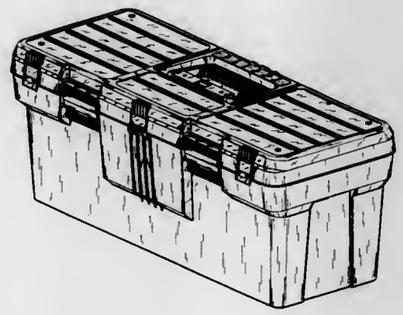
378,872
BABY CARRIER
Toshihide Shimura, and Hiroaki Matsuda, both of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan
Filed Apr. 20, 1994, Ser. No. 21,505
Claims priority, application Japan, Oct. 20, 1993, 5-31604
Term of patent 14 years
U.S. Cl. D3—214



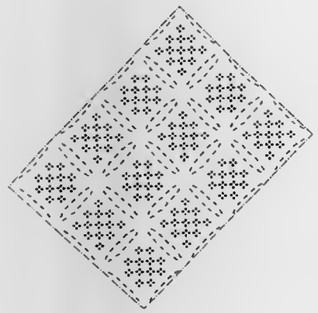
378,873
300 MM MICROENVIRONMENT POD WITH DOOR ON SIDE
Barry Gregerson, Deephaven; Brian Wiseman, Oakdale, both of Minn., and Gary Gallagher, Colorado Springs, Colo., assignors to Empak, Inc., Chanhassen, Minn.
Filed Oct. 13, 1995, Ser. No. 45,247
Term of patent 14 years
U.S. Cl. D3—273



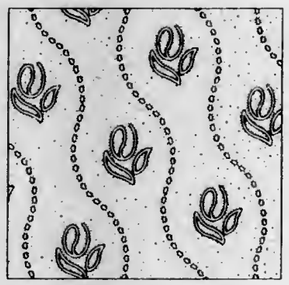
378,874
TOOLBOX HAVING A TRANSPARENT LID
Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Louis, Mo.
Filed Dec. 15, 1995, Ser. No. 47,956
Term of patent 14 years
U.S. Cl. D3—281



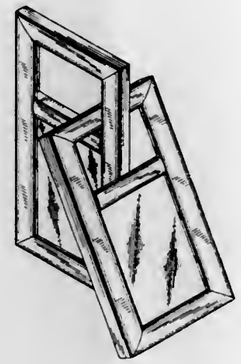
378,875
PAPER PRODUCT
Joseph H. Miller, Menasha; Cheryl L. Ferraro, Green Bay; Robert R. Schuh, Kaukauna, and Edward J. Giesler, Sr., Little Suamico, all of Wis., assignors to James River Corporation, Richmond, Va.
Filed Apr. 28, 1994, Ser. No. 22,069
Term of patent 14 years
U.S. Cl. D5—25



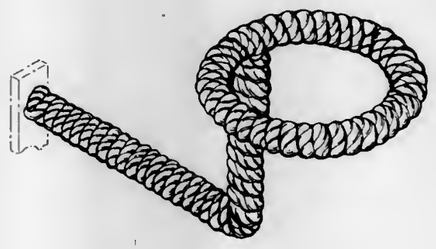
378,876
EMBOSSED TISSUE
Ellen G. Spanagel, Appleton, and Sandra A. Enderby, New Franken, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sep. 18, 1995, Ser. No. 44,086
Term of patent 14 years
U.S. Cl. D5—37



378,877
PICTURE FRAME
Christopher Lanci, Roslyn, N.Y., assignor to Fred M. Lawrence Co., Inc, Long Island City, N.Y.
Filed Nov. 6, 1995, Ser. No. 46,058
Term of patent 14 years
U.S. Cl. D6—300

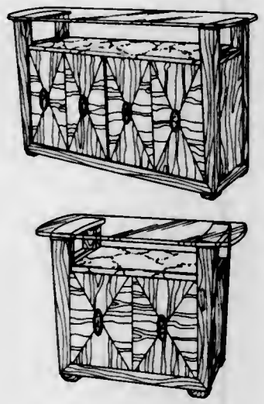


378,878
HAT RACK
Deborah M. Rapier, and David J. Rapier, both of 231 E. 11th Ave., Broomfield, Colo. 80020
Filed Nov. 14, 1995, Ser. No. 46,402
Term of patent 14 years
U.S. Cl. D6—320

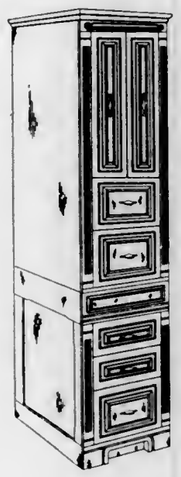


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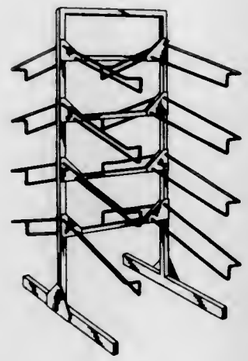
378,879
CABINET
H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Nov. 14, 1995, Ser. No. 46,428
Term of patent 14 years
U.S. Cl. D6—436



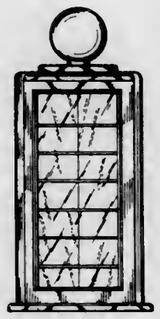
378,880
LINEN CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,233
Term of patent 14 years
U.S. Cl. D6—445



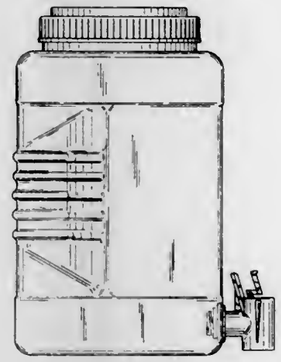
378,881
CANTILEVERED RACK
Jud Lusk, Walhalla, and John G. Cheek, Anderson, both of S.C., assignors to Orian Rugs, Inc., Anderson, S.C.
Filed Jun. 10, 1994, Ser. No. 24,250
Term of patent 14 years
U.S. Cl. D6—463



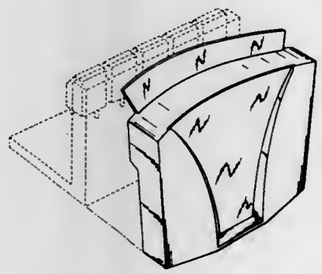
378,882
CORNER DISPLAY CABINET
Michael J. Inman, 21626 Kuder Ave., Perris, Calif. 92570
Filed Nov. 28, 1995, Ser. No. 47,171
Term of patent 14 years
U.S. Cl. D6—470



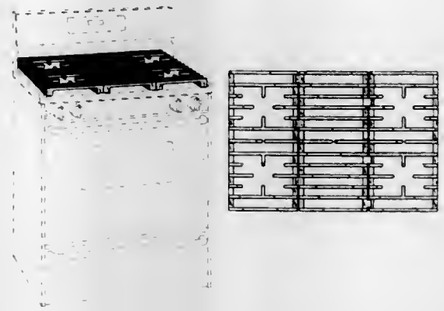
378,883
WATER PURIFICATION DISPENSER
Jan H. Magnusson, Mahtomedi, Minn., assignor to WTC Industries, Inc., Minneapolis, Minn.
Filed Aug. 14, 1995, Ser. No. 42,575
Term of patent 14 years
U.S. Cl. D7—306



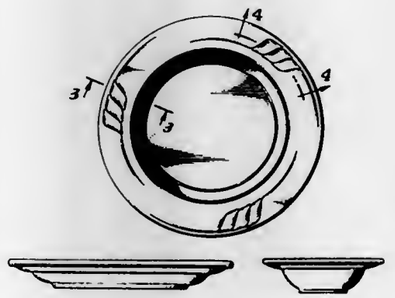
378,884
COVER FOR DRINK DISPENSING UNIT
Riccardo Guadalupi, Bergamo, Italy, assignor to Vin Service S.R.L., Italy
Filed Aug. 24, 1995, Ser. No. 43,062
Claims priority, application Hague Agreement, May 5, 1995, 001401
Term of patent 14 years
U.S. Cl. D7—392



378,885
GAS COOKTOP GRATE
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Dec. 27, 1995, Ser. No. 48,809
Term of patent 14 years
U.S. Cl. D7—408

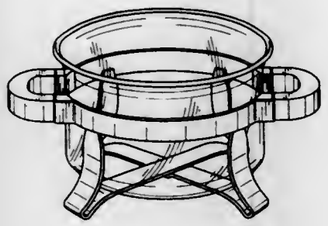


378,886
DINNERWARE
Kenneth M. Joyce, Novato, Calif., assignor to Sky One, Inc., Walnut, Calif.
Filed Apr. 20, 1995, Ser. No. 37,794
Term of patent 14 years
U.S. Cl. D7—585

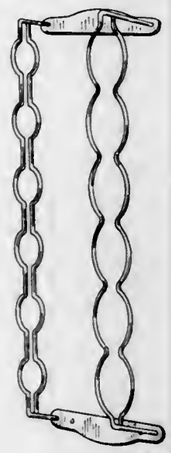


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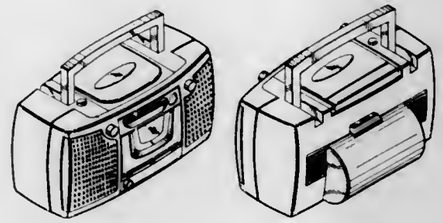
378,887
SUGAR BOWL
Carsten Joergensen, Kriens, Switzerland, assignor to Pi-Design AG, Switzerland
Filed Jun. 27, 1995, Ser. No. 41,327
Claims priority, application Spain, Jan. 5, 1995, 134158
Term of patent 14 years
U.S. Cl. D7—590



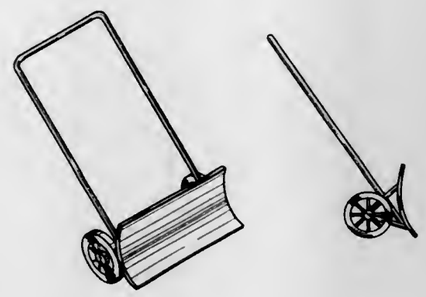
378,888
WINE-RACK
Sonny Bertilsson, Tranemo, Sweden, assignor to Sunwood AB, Sweden
Filed Sep. 26, 1995, Ser. No. 44,529
Claims priority, application Sweden, Mar. 27, 1995, M-950640
Term of patent 14 years
U.S. Cl. D7—704



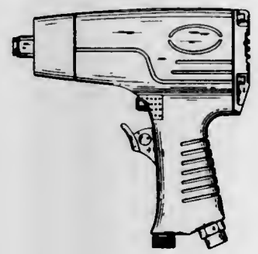
378,889
RADIO LUNCH BOX
Jay R. Simon, 2921 Lake Arnold Pl., Orlando, Fla. 32806
Filed Jan. 22, 1996, Ser. No. 49,326
Term of patent 14 years
U.S. Cl. D7—710



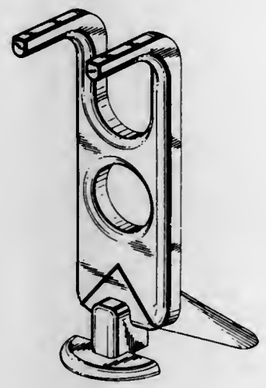
378,890
WALK BEHIND SNOW SHOVEL
James Furno, 8722 George F. Bunker, St. Heights, Mich. 48313
Filed Jun. 13, 1995, Ser. No. 40,232
Term of patent 14 years
U.S. Cl. D8—10



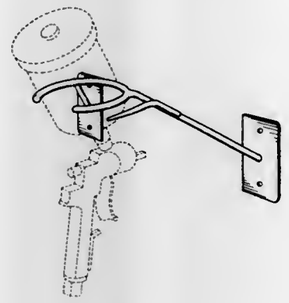
378,891
IMPACT WRENCH
Eric Sung, No. 27 Lane 4, Ji-Lung Road, Ta-Li, Taichung County, Taiwan
Filed Sep. 11, 1995, Ser. No. 43,846
Term of patent 14 years
U.S. Cl. D8—68



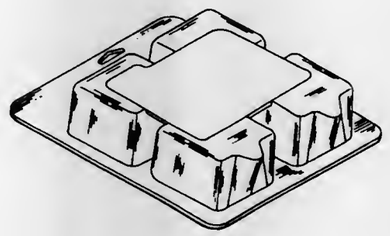
378,892
ADJUSTABLE SUPPORT FOR A PERSONAL HAIR DRYER
Roberto Garcia, 1001 NE. 96 St., Miami Shores, Fla. 33138
Filed Aug. 16, 1995, Ser. No. 42,650
Term of patent 14 years
U.S. Cl. D8—373



378,893
WALL HANGER FOR BLOW GUNS AND SPRAY GUNS
Melvin A. Nordeen, 11053 Stout La., Greeley Hill, Calif. 95311
Filed Aug. 23, 1995, Ser. No. 43,011
Term of patent 14 years
U.S. Cl. D8—373

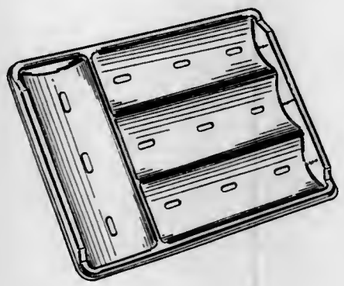


378,894
FOOD PACKAGE
Frank C. Mello, Columbus, Miss., assignor to Sara Lee Corporation, Winston-Salem, N.C.
Continuation of Ser. No. 13,030, Nov. 30, 1994, Pat. No. Des. 364,343. This application Jan. 11, 1995, Ser. No. 33,387
The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—345



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378,895
FOUR COMPARTMENT BANANA BUNCH WASHING TRAY
Jack D. Bankier, Northbrook, Ill., assignor to Bankier Companies, Inc., Niles, Ill.
Filed Aug. 15, 1995, Ser. No. 42,697
Term of patent 14 years
U.S. Cl. D9—347



378,896
BOTTLE
Samuel S. Straub, Indianapolis, Ind.; Charles A. Curtiss, Long Island City, N.Y.; Thomas B. Aldrich, III, Chestnut Ridge, N.Y.; Jim F. Warner, New York, N.Y., and Gregory A. Geisinger, Toledo, Ohio, assignors to Dowbrands Inc., Indianapolis, Ind.
Filed May 23, 1995, Ser. No. 39,315
Term of patent 14 years
U.S. Cl. D9—542



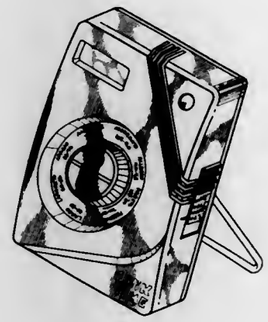
378,897
COMBINED BOTTLE AND STOPPER
Robert du Grenier, and David Horner, both of New York, N.Y., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Mar. 19, 1996, Ser. No. 51,931
Term of patent 14 years
U.S. Cl. D9—546



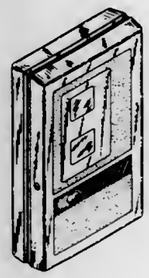
378,898
WATCHCASE WITH WATCHBAND
Yukiko Hayashi, and Rumi Tanaka, both of Chiba, Japan, assignors to Seiko Instruments Inc., Japan
Filed May 26, 1995, Ser. No. 39,366
Term of patent 14 years
U.S. Cl. D10—32



378,899
ELECTRONIC METRONOME WITH MEMBRANE SWITCH CONTROLS AND EXTENDIBLE STAND
Steve Ridinger, P.O. Box 2769, Laguna Hills, Calif. 92654-2769
Filed Nov. 16, 1995, Ser. No. 46,829
Term of patent 14 years
U.S. Cl. D10—43



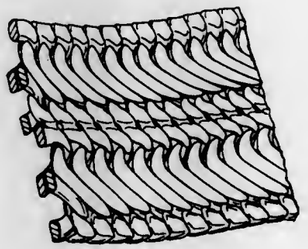
378,900
TEMPERATURE AND HUMIDITY MONITOR
David C. de Sleyes, Hamilton, and Neila d'Entremont, Lexington, both of Mass., assignors to CMT, Inc., Hamilton, Mass.
Filed Dec. 4, 1995, Ser. No. 47,408
Term of patent 14 years
U.S. Cl. D10—52



378,901
WRISTWATCH STRAP
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,436
Term of patent 14 years
U.S. Cl. D11—3

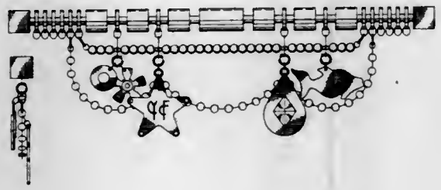


378,902
ORNAMENTAL CHAIN
Vittorio Gori, Rome, Italy, assignor to Uno A Erre Italia S.p.A., Arezzo, Italy
Filed Mar. 3, 1995, Ser. No. 35,678
Claims priority, application Italy, Sep. 8, 1994, FI9400052
Term of patent 14 years
U.S. Cl. D11—14

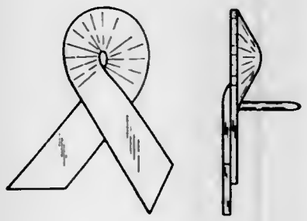


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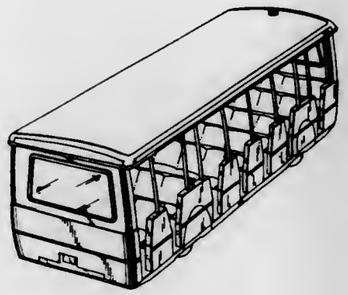
378,903
MULTI-PURPOSE GARMENT PIN
Yvonne Feliciano, 296 Nichols Ave., Brooklyn, N.Y. 11208
Filed Feb. 12, 1996, Ser. No. 50,775
Term of patent 14 years
U.S. Cl. D11—44



378,904
PIN
Rosa M. Sciuto, Via Milano, 49, Catania, Italy
Filed Mar. 15, 1995, Ser. No. 36,200
Term of patent 14 years
U.S. Cl. D11—66



378,905
TOWED PERSONNEL TRANSPORT
Michael L. Meister, and Keith A. Pfannenstiel, both of Wichita, Kans., assignors to Chance Industries, Inc., Wichita, Kans.
Filed Nov. 22, 1995, Ser. No. 46,959
Term of patent 14 years
U.S. Cl. D12—84



378,906
AUTOMOBILE BODY
Bryan E. Nesbitt, Auburn Hills; Steven W. Ferrerio, Troy; Jack E. Crain, Birmingham, and K. Neil Walling, Leonard, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Jul. 31, 1995, Ser. No. 42,015
Term of patent 14 years
U.S. Cl. D12—91



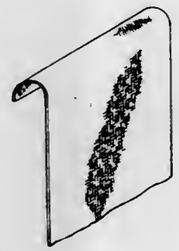
378,907
TRAILER
Derick Garzancich, Johannesburg; Peter Bennetto, and Garth D. Bolton, both of Sandton, all of South Africa, assignors to Notice Investments (PTY) Limited, Johannesburg, South Africa
Filed Apr. 12, 1995, Ser. No. 37,432
Claims priority, application South Africa, Oct. 12, 1994, 94/0757
Term of patent 14 years
U.S. Cl. D12—97



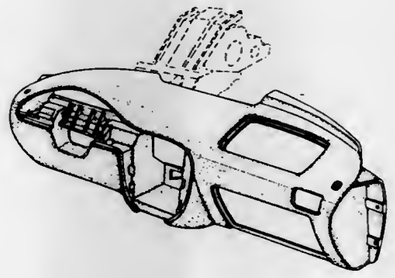
378,908
COMBINED CHILD STROLLER AND INFANT CARRIER
Steve Courtney, Troy; David J. Stroud, Dayton, both of Ohio, and Jerry Drobinski, Reding, Pa., assignors to Lisco, Inc., Tampa, Fla.
Filed Nov. 13, 1995, Ser. No. 46,375
Term of patent 14 years
U.S. Cl. D12—129



378,909
REAR SIDE PANEL PROTECTOR FOR PICKUP TRUCKS
Greg Aycock, 33215 Buckshot La., Magnolia, Tex. 77355
Filed Jan. 17, 1995, Ser. No. 33,552
Term of patent 14 years
U.S. Cl. D12—167

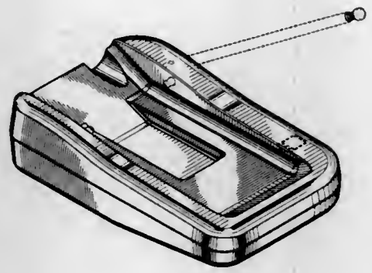


378,910
VEHICLE INSTRUMENT PANEL
Marc S. Black, Southfield; Albert Wan-Hsi Chan, Utica; William G. Jones, Canton; Dennis A. Kopp, West Bloomfield; Douglas V. Mankoff, Pinckney, and Kenneth C. Sherman, III, Farmington Hills, all of Mich., assignors to General Electric Company, Pittsfield, Mass.
Filed Jun. 14, 1994, Ser. No. 24,398
Term of patent 14 years
U.S. Cl. D12—192

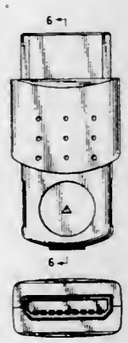


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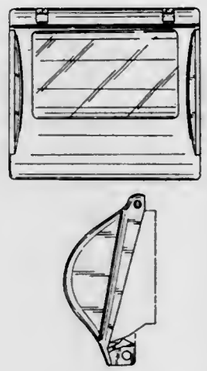
378,911
CHARGER BASE HOUSING
Albert L. Nagele, Wilmette, and Louis J. Lundell, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 5, 1995, Ser. No. 33,150
Term of patent 14 years
U.S. Cl. D13—108



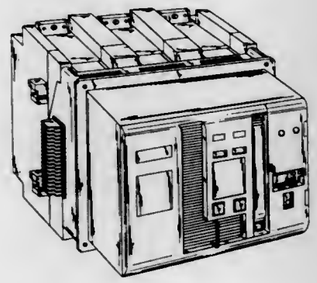
378,912
CONNECTOR
Akitoshi Oikawa, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Sep. 25, 1995, Ser. No. 44,472
Term of patent 14 years
U.S. Cl. D13—147



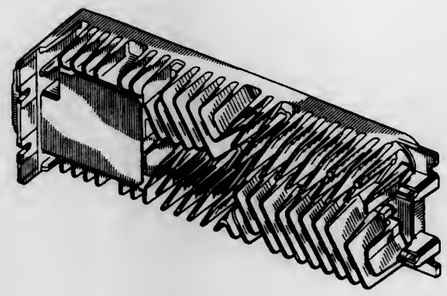
378,913
COVER FOR ELECTRICAL BOXES
William M. Chambers, Valley City, and David P. Marshall, Chagrin Falls, both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio
Filed Nov. 17, 1994, Ser. No. 31,109
Term of patent 14 years
U.S. Cl. D13—156



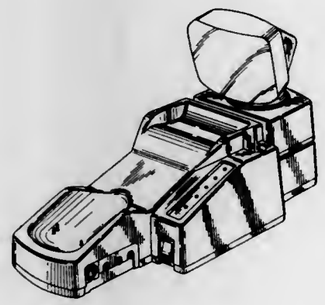
378,914
INDUSTRIAL-RATED CIRCUIT BREAKER
James I. Smith, Avon; William H. Calder, Plainville; Karen B. Lausier, Terryville, all of Conn., and Roy Watson, Pittsfield, Mass., assignors to General Electric Company, New York, N.Y.
Filed May 11, 1994, Ser. No. 22,784
Term of patent 14 years
U.S. Cl. D13—160



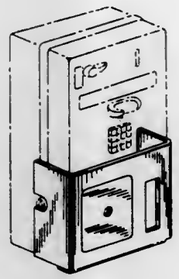
378,915
HEAT SINK
Robert B. Widmayer, Harvard, and Kenneth W. Larson, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 39,970, Jun. 7, 1995, abandoned, which is a division of Ser. No. 28,537, Sep. 19, 1994, Pat. No. Des. 367,469. This application Mar. 15, 1996, Ser. No. 51,683
Term of patent 14 years
U.S. Cl. D13—179



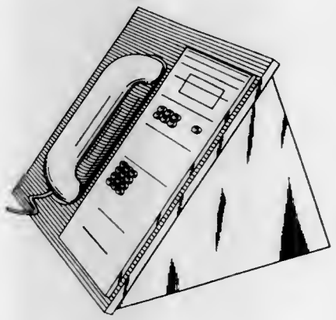
378,916
COMBINED CRADLE AND RECEIVER FOR A BAR CODE READER
Tsutomu Kanno; Takashi Kondo, and Hisashi Murata, all of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 43,894
Term of patent 14 years
U.S. Cl. D14—116



378,917
APPARATUS FOR PROTECTION OF COIN-OPERATED TELEPHONES
David Obayon, Hewitt, N.J., assignor to Renault Metal Products, Ltd., Middle Village, N.N.Y.
Continuation-in-part of Ser. No. 99,932, Jul. 29, 1993, Pat. No. 5,402,476. This application Jan. 9, 1995, Ser. No. 33,291
Term of patent 14 years
U.S. Cl. D14—146

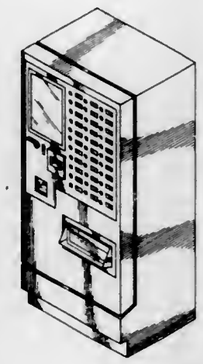


378,918
PUBLIC PHONE
Francoise Lemaire, Paris, France, assignor to France Telecom, Paris, France
Continuation-in-part of Ser. No. 23,059, May 17, 1994, abandoned. This application May 10, 1995, Ser. No. 38,719
Claims priority, application France, Nov. 17, 1993, 935938
Term of patent 14 years
U.S. Cl. D14—146

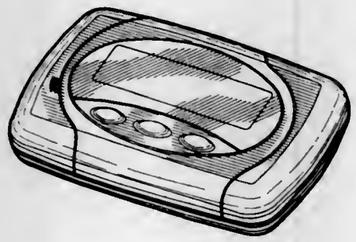


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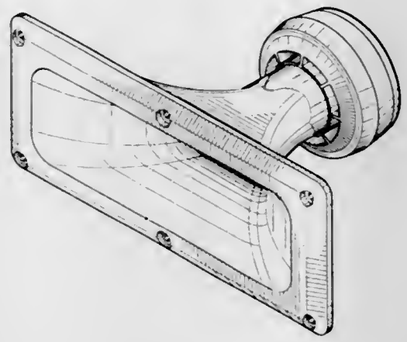
378,919
CD VENDING MACHINE
Lathan D. Gareiss, and Brenda C. Campbell, both of 820 S. Broadway, Peru, Ind. 46970
Filed Apr. 28, 1995, Ser. No. 38,177
Term of patent 14 years
U.S. Cl. D14—173



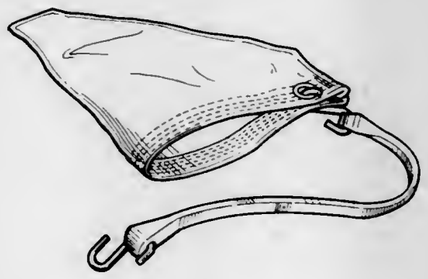
378,920
SELECTIVE CALL RECEIVER
Robert Kurcbart, Boca Raton; Robert Marinelli, Lake Worth, and Richard J. Toth, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 1, 1996, Ser. No. 49,869
Term of patent 14 years
U.S. Cl. D14—191



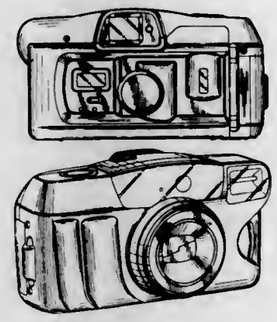
378,921
HORN TWEETER
Jerry L. Bohannan, Albuquerque, N.M., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 2, 1996, Ser. No. 48,517
Term of patent 14 years
U.S. Cl. D14—208



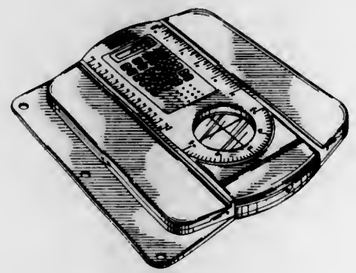
378,922
EXHAUST STACK COVER
Gregory B. Huffman, 44081 Harper Hearn Rd., New London, N.C. 28127
Filed Dec. 28, 1994, Ser. No. 32,789
Term of patent 14 years
U.S. Cl. D15—28



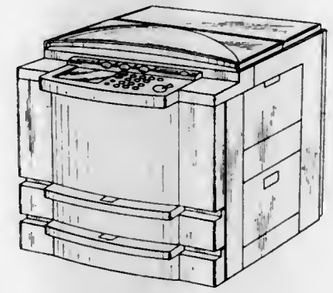
378,923
CAMERA
Hitomi Ito, Tokyo; Akihiro Namai, Kawasaki, and Mitsuo Uchida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 28, 1995, Ser. No. 47,193
Claims priority, application Japan, May 30, 1995, 7-15265
Term of patent 14 years
U.S. Cl. D16—209



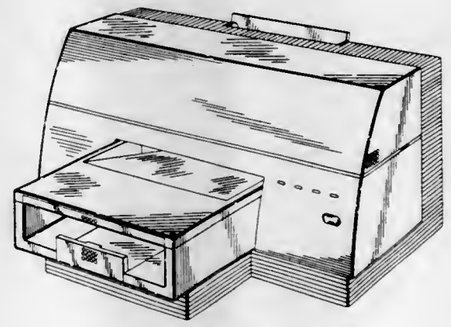
378,924
ELECTRONIC CALCULATOR
Mark A. Bedol, P.O. Box 2847, Rancho Cucamonga, Calif. 91729-2847
Filed Jun. 17, 1994, Ser. No. 24,606
Term of patent 14 years
U.S. Cl. D18—2



378,925
PHOTOCOPIER
Hiroshi Komatsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 11, 1995, Ser. No. 47,675
Claims priority, application Japan, Jun. 12, 1995, 7-16686
Term of patent 14 years
U.S. Cl. D18—38

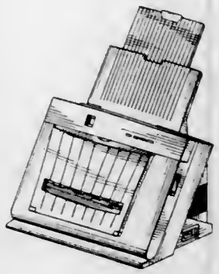


378,926
PRINTER WITH MEDIA TRAY
Paul T. Dubson, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 3, 1995, Ser. No. 35,659
The portion of the term of this patent subsequent to Apr. 8, 2011, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—50

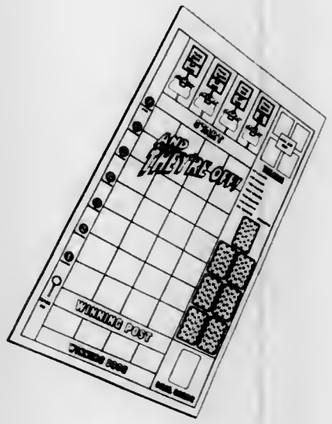


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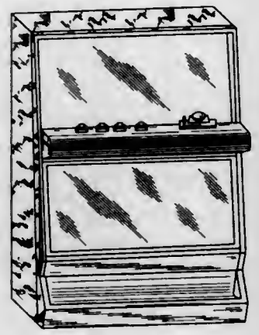
378,927
COMPUTER OUTPUT PRINTER
Yoshihiro Kasahara; Masami Goto; Wataru Senoo, and Tetsuya Nagata, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 24, 1995, Ser. No. 36,658
Claims priority, application Japan, Sep. 26, 1994, 6-29047
Term of patent 14 years
U.S. Cl. D18—50



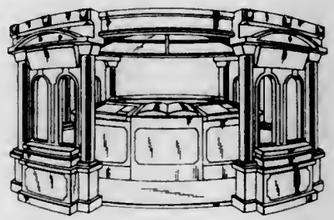
378,928
BOARD GAME
Andrew L. Webber, Sydmonton Court, Burghclere, Nr Newbury, Berkshire RG15 9NJ; Anthony J. Pye-Jeary, 14 Laurel Road, Barnes, London, SW 13 0EE, and Charles P. E. Brooks, North Cottage, Pounds Farm, East Garton, Newbury, all of United Kingdom
Filed Mar. 20, 1995, Ser. No. 36,419
Term of patent 14 years
U.S. Cl. D21—26



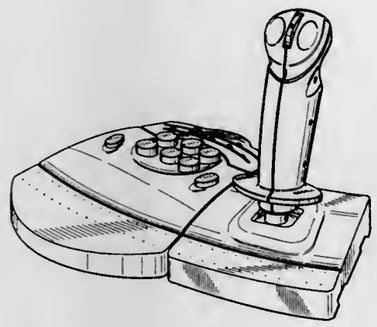
378,929
VIDEO SLOT MACHINE
Dirk I. Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany
Filed May 24, 1995, Ser. No. 39,224
Claims priority, application Germany, Dec. 5, 1994, M 94 09 371.7
Term of patent 14 years
U.S. Cl. D21—37



378,930
MEDAL GAME MACHINE
Fujio Nobata, and Yoshikazu Hara, both of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan
Filed Jan. 16, 1996, Ser. No. 49,032
Claims priority, appilcation Japan, Jul. 17, 1995, 7-20609
Term of patent 14 years
U.S. Cl. D21—37



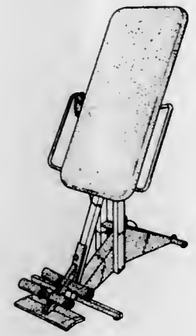
378,931
CONTROL PAD WITH CONTROL STICK
Johnny D. Couch, San Jose; Sarah M. Richmond, Foster City; Ira L. Velinsky, Saratoga, all of Calif.; Stephen K. Guerrera, Milford, Mass.; Gregory H. Hunter, Westwood, Mass., and John D. Gundlach, Rowley, Mass., assignors to Sega Enterprises, Ltd., Japan
Filed Mar. 15, 1995, Ser. No. 36,221
The portion of the term of this patent subsequent to Apr. 8, 2011, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—48



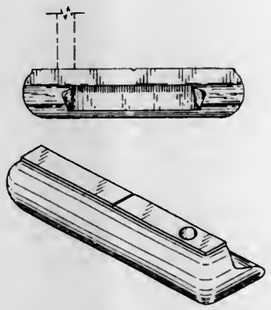
378,932
TOY FOAL
Christian Stephensen, Hellerup, and Jacob Nielsen, Copenhagen S, both of Denmark, assignors to Interlego AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,978
Term of patent 14 years
U.S. Cl. D21—165



378,933
BACK BENCH
Staffan Johansson, Eskilstuna, Sweden, assignor to Svensk Maskin & Djurexport AB, Eskilstuna, Sweden
Filed Feb. 16, 1994, Ser. No. 18,849
Claims priority, application Sweden, Feb. 3, 1994, 94-0254
Term of patent 14 years
U.S. Cl. D21—191



378,934
GOLF PUTTER
Radford O. Clanton, 403 Meadow Lark Dr., Greeneville, Tenn. 37743
Filed Sep. 14, 1994, Ser. No. 28,414
Term of patent 14 years
U.S. Cl. D21—217

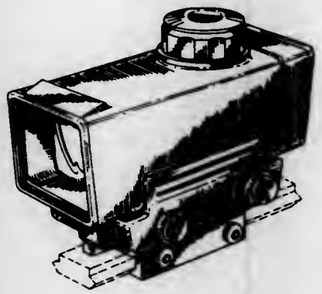


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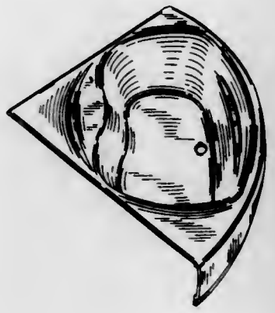
378,935
GRIP FOR TENNIS RACQUET HANDLE
Brian J. Blonski, Yardley, Pa., assignor to Prince Sports Group, Inc., Bordentown, N.J.
Filed Feb. 17, 1995, Ser. No. 35,047
The portion of the term of this patent subsequent to May 21, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—222



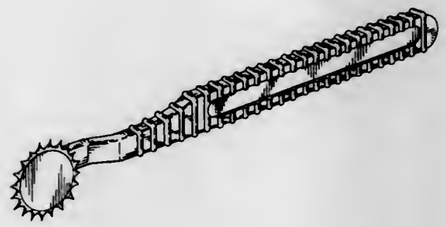
378,936
GUN SIGHT WITH CONTROLS
Alfred C. DePaoli, 1 Wyman St., Woburn, Mass. 01801
Filed Feb. 18, 1994, Ser. No. 18,939
Term of patent 14 years
U.S. Cl. D22—109



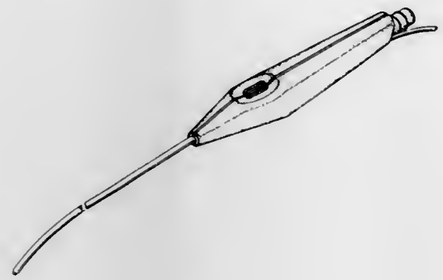
378,937
TUB FOR BATHING
Anna-Pia K. Formgren, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 3, 1995, Ser. No. 45,944
Term of patent 14 years
U.S. Cl. D23—280.1



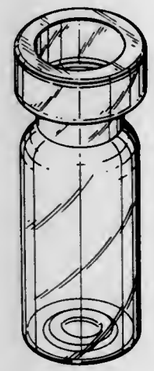
378,938
NEUROLOGICAL PINWHEEL
Charles L. Solomon, 4571 Balcom Canyon, Somis, Calif. 93066
Filed Nov. 17, 1995, Ser. No. 46,530
Term of patent 14 years
U.S. Cl. D24—142



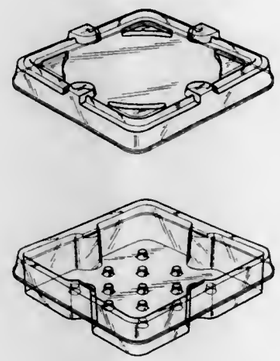
378,939
SUCTION COAGULATOR
Roger F. Smith, and Gregory Trudel, both of Englewood, Colo., assignors to Aspen Labs, Englewood, Colo.
Filed Nov. 22, 1994, Ser. No. 31,562
Term of patent 14 years
U.S. Cl. D24—144



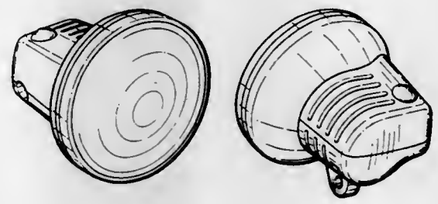
378,940
SUPPORT SLEEVE
James A. Baxter, London, United Kingdom, assignor to Chromacol Limited, Hertfordshire, United Kingdom
Filed Apr. 4, 1995, Ser. No. 37,110
Term of patent 14 years
U.S. Cl. D24—224



378,941
CULTURE DISH
William J. Lahm, Sumter, S.C.; Timothy A. Stevens, Warwick, N.Y.; Alexander G. Tschumakow, Sommerville; Leon M. Wilkins, North Andover, both of Mass.; John M. Janson, Piscataway, N.J., and Stephen C. Conley, North Attleboro, Mass., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 27, 1995, Ser. No. 44,624
Term of patent 14 years
U.S. Cl. D24—224

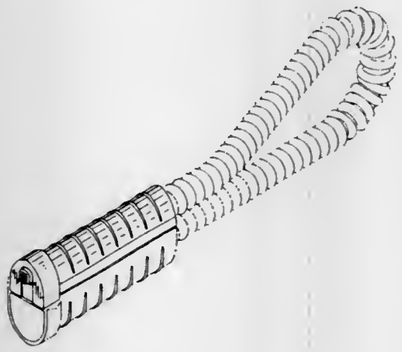


378,942
HEADLAMP
Takashi Ueda, Izumi, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Mar. 6, 1995, Ser. No. 35,729
Claims priority, application Japan, Feb. 3, 1995, 7-2696
Term of patent 14 years
U.S. Cl. D26—28

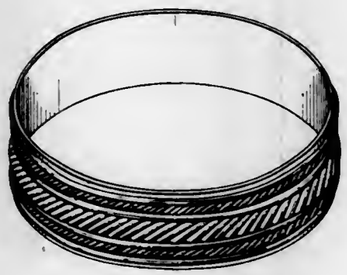


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378,943
HEAD FOR A FLASHLIGHT
Thomas Swyst, Arlington, Mass., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,604
Term of patent 14 years
U.S. Cl. D26—43



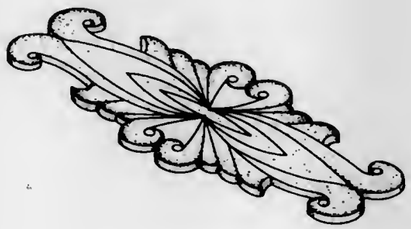
378,944
GLASS SHADE
San-Jhy Yan, 3F., No. 23, Yuan-Huang West Rd., Fong Yuan, Taichung Hsien, Taiwan
Filed Jan. 24, 1996, Ser. No. 49,369
Term of patent 14 years
U.S. Cl. D26—137



378,945
DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,245
Term of patent 14 years
U.S. Cl. D26—152



378,946
DECORATIVE PLATE FOR LAMP SHADES AND CEILING FAN HOUSINGS
Yuh-Shyong Wang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 22, 1996, Ser. No. 49,248
Term of patent 14 years
U.S. Cl. D26—152



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
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Abel, Roland; and Wörner, Karl-Fred, to Hoechst Aktiengesellschaft. Surface impregnated catalyst, process for the production thereof, and use thereof for the preparation of vinyl acetate. 5,622,908, Cl. 502-339.000.
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Adair, Newell. Garden tool for planting plants. 5,622,122, Cl. 111-106.000.
Adams, Richard J.; Brossard, Edward L.; Dahl, Curtiss R.; Lee, Timothy E.; and Sorenson, Mark A., to Beloit Technologies, Inc. Method and apparatus for effecting a clipped tail in a traveling paper web. 5,622,601, Cl. 162-194.000.
Adamski, Maximilian, Jr.; Ruderman, Stephen S.; and Kosrow, Robert L., to Union Special Corporation. Automatic coverstitch on circular garment bands. 5,622,125, Cl. 112-63.000.
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Adde, Danielle C. R.; Charbonnel, Jean-Louis; Gougeon, Philippe F. P.; and Miraucourt, Gérard G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Axial fixing arrangement for rotor blades of a turbomachine. 5,622,476, Cl. 416-221.000.
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Anisimova, Vera A.; Levchenko, Margarita V.; Korochina, Tatyana B.; Spasov, Alexander A.; Kovalev, Sergei G.; and Dudchenko, Galina P., 5,623,073, Cl. 544-252.000.
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Aharonson, Ophira R.; and Aharonson, Dov. Method of and station for integrated typed data and optically scanned data capture for computer interfacing and the like. 5,623,285, Cl. 345-168.000.
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Anderson, Duwayne R.; and Marineau, Mark D., to Tektronix, Inc. Method of determining angular coordinates of opposing optical fibers in a mechanical optical switch. 5,623,563, Cl. 385-16.000.

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Ogino, Shinichi, to Toa Medical Electronics Co., Ltd. Particle measuring apparatus and particle measuring method by the apparatus. 5,623,200, Cl. 324-71.400.
Ogue, Yousuke; and Ariyoshi, Hideho, to Matsushita Electric Industrial Co., Ltd. Method for forming resin articles. 5,622,811, Cl. 430-269.000.
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Ohishi, Sueyuki; and Terui, Nobuhiko, to Nikon Corporation. Camera having memory device which stores timer values used in the computation of velocity of an image blur suppression lens. 5,623,327, Cl. 396-55.000.
Ohishi, Sueyuki; and Kai, Tadao, to Nikon Corporation. Apparatus for inspecting blur correction camera, blur correction camera, and method of inspecting blur correction camera. 5,623,705, Cl. 396-55.000.
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Hunter, David M.; Kappel, Frank; Layne, Richard E. C.; and Quamme, Harvey A., 9,863, Cl. Plt.-36.000.
Quamme, Harvey A.: *See*—
Hunter, David M.; Kappel, Frank; Layne, Richard E. C.; and Quamme, Harvey A., 9,863, Cl. Plt.-36.000.
Ralli, Giuseppe; Ralli, Iolanda; Ralli, John; and Ralli, Joseph, to G & I Ralli & Sons. Table grape named 'Ralli Seedless'. 9,865, Cl. Plt.-47.100.
Ralli, Iolanda: *See*—
Ralli, Giuseppe; Ralli, Iolanda; Ralli, John; and Ralli, Joseph, 9,865, Cl. Plt.-47.100.
Ralli, John: *See*—
Ralli, Giuseppe; Ralli, Iolanda; Ralli, John; and Ralli, Joseph, 9,865, Cl. Plt.-47.100.
Ralli, Joseph: *See*—
Ralli, Giuseppe; Ralli, Iolanda; Ralli, John; and Ralli, Joseph, 9,865, Cl. Plt.-47.100.
Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Jingle Time'. 9,868, Cl. Plt.-74.100.
Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Pink View Time'. 9,869, Cl. Plt.-76.000.
Wain, Peter, to Cleangro Ltd. Chrysanthemum plant named 'Noon Time'. 9,870, Cl. Plt.-82.200.
Wambach, Alex A., deceased (by Catherine M. Wambach, Independent Executrix): *See*—
Wambach, Catherine M.; Wambach, Alex A., deceased, 9,862, Cl. Plt.-20.000.
Wambach, Catherine M.; Wambach, Alex A., deceased (by Catherine M. Wambach, Independent Executrix), to Certified Roses, Inc. Hybrid tea rose plant named 'Wamsper'. 9,862, Cl. Plt.-20.000.
Wambach, Catherine M., Independent Executrix: *See*—
Wambach, Catherine M.; Wambach, Alex A., deceased, 9,862, Cl. Plt.-20.000.
Westhoff, Wilhelm, to J+H Westhoff. Scaevola plant named Fancy. 9,867, Cl. Plt.-68.100.
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G. Apricot tree "Autumn Glow". 9,864, Cl. Plt.-39.000.
Zaiger, Gary N.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 9,864, Cl. Plt.-39.000.
Zaiger, Grant G.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 9,864, Cl. Plt.-39.000.

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CLASSIFICATION OF PATENTS

ISSUED APRIL 22, 1997

NOTE—First number, class; second number, subclass; third number, patent number

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559	5,621,965
727	5,621,966
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456	5,622,051
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603	5,622,053
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459	5,622,082
475	5,622,083
490.03	5,622,084
498	5,622,085
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CLASS 297
19 5,622,403
188.1 5,622,404
283.4 5,622,405
318 5,622,406
366 5,622,407
367 5,622,408
5,622,410

CLASS 300
21 5,622,411

CLASS 301
124.2 5,622,412

CLASS 303
119.2 5,622,413

CLASS 307
10.1 5,623,169
10.2 5,623,170
106 5,623,171
117 5,623,172
150 5,623,173

CLASS 310
45 5,623,174
54 5,623,175
80 5,623,176
242 5,623,177
260 5,623,178

CLASS 312
116 5,622,414
265.4 5,622,415
319.9 5,622,416

CLASS 313
141 5,623,179
310 5,623,180
512 5,623,181
532 5,623,182

CLASS 315
5.37 5,623,183
102 5,623,184
169.3 5,623,185
200 5,623,449
276 5,623,186
307 5,623,187
5,623,188

CLASS 318
432 5,623,189
800 5,623,190
801 5,623,191
811 5,623,192

CLASS 320
13 5,623,193
15 5,623,194
22 5,623,195
30 5,623,196
61 5,623,197

CLASS 323
282 5,623,198

CLASS 324
66 5,623,199
71.4 5,623,200
107 5,623,201
158.1 5,623,202
220 5,623,203
228 5,623,204
244 5,623,205
309 5,623,206
5,623,207
318 5,623,208
382 5,623,209
426 5,623,210
538 5,623,211
693 5,623,212
754 5,623,213
5,623,214
765 5,623,215

CLASS 326
27 5,623,216
40 5,623,217

CLASS 327
18 5,623,218
50 5,623,219
79 5,623,220
108 5,623,221
259 5,623,222
298 5,623,223
333 5,623,224
554 Re.35,494

CLASS 329
302 5,623,225

CLASS 330
2 5,623,226
5,623,227
110 5,623,228
255 5,623,229
267 5,623,230
276 5,623,231
307 5,623,232

CLASS 331
37 5,623,233
49 5,623,234

CLASS 333
81 A 5,623,235
187 5,623,236
204 5,623,237
5,623,238

CLASS 335
132 5,623,239
216 5,623,240
296 5,623,241

CLASS 340
311.1 5,623,242
425.5 5,623,244
426 5,623,245
438 5,623,246
457.4 5,623,247
540 5,623,248
555 5,623,249
603 5,623,251
618 5,623,252
630 5,623,253
644 5,623,254
649 5,623,255
825.08 5,623,258
825.69 5,623,256
5,623,257
932.2 5,623,259
994 5,623,260

CLASS 341
26 5,623,261
67 5,623,262
143 5,623,263
144 5,623,264
160 5,623,265

CLASS 342
14 5,623,266
26 5,623,267
32 5,623,268
354 5,623,269
372 5,623,270

CLASS 343
895 5,623,271

CLASS 345
13 5,623,272
33 5,623,273
34 5,623,274
46 5,623,275
60 5,623,276
87 5,623,277
95 5,623,278
98 5,623,279
104 5,623,280
108 5,623,281
121 5,623,282
127 5,623,283
166 5,623,284
168 5,623,285
212 5,623,286

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3 5,623,288
5,623,289
7 5,623,290
5,623,291
18 5,623,292
50 5,623,293
87 5,623,287
98 5,623,294
103 5,623,296
111 5,623,295
194 5,623,297
202 5,623,298
215 5,623,299
237 5,623,300
251 5,623,301

CLASS 348
96 5,623,303
143 5,623,304
208 5,623,305
243 5,623,306
355 5,623,309
392 5,623,308
394 5,623,310
396 5,623,311
416 5,623,312
5,623,313
423 5,623,314
515 5,623,315
569 5,623,316
584 5,623,317
614 5,623,318
5,623,319
5,623,320
730 5,623,321

CLASS 349
5 5,623,348
8 5,623,349
17 5,623,352
38 5,623,350
100 5,623,351
122 5,623,353
124 5,623,354

CLASS 351
119 5,623,322
219 5,623,323

CLASS 353
69 5,622,417
97 5,622,418
119 5,622,419
120 5,622,420

CLASS 356
4.02 5,623,334
5.01 5,623,335
73.1 5,623,336
153 5,623,337
237 5,623,340
300 5,623,341
301 5,623,342
351 5,623,307
357 5,623,338
5,623,339
399 5,623,343

CLASS 358
407 5,623,345

CLASS 359
2 5,623,347
110 5,623,355
123 5,623,356
135 5,623,357
172 5,623,358
180 5,623,359
287 5,623,360
291 5,623,361
341 5,623,362
344 5,623,363
557 5,623,364
569 5,623,365
577 5,623,366
600 5,623,367
619 5,623,368
639 5,623,369
654 5,623,370
693 5,623,371
814 5,623,372
819 5,623,373
841 5,623,374
883 5,623,375

CLASS 360
43 5,623,376
65 5,623,377
67 5,623,378
74.1 5,623,379
77.15 5,623,380
97.01 5,623,381
99.08 5,623,382
103 5,623,383
105 5,623,384
109 5,623,385
135 5,623,386

CLASS 361
56 5,623,387
119 5,623,388
321.1 5,623,389
679 5,623,390
681 5,623,391
5,623,392
682 5,623,393
705 5,623,394
735 5,623,395
801 5,623,396

CLASS 362
66 5,622,421
158 5,622,422
186 5,622,423
226 5,622,424
249 5,622,425
281 5,622,426
300 5,622,427

CLASS 363
20 5,623,397
65 5,623,398
132 5,623,399

CLASS 364
140 5,623,400
147 5,623,401
162 5,623,402
189.04 5,623,447
422 5,623,407
424 5,623,408
424.046 5,623,410
424.051 5,623,409
424.06 5,623,411
431.03 5,623,412
436 5,623,413
449.1 5,623,414
478.13 5,623,415
483 5,623,416
488 5,623,417
489 5,623,418
490 5,623,419
5,623,420
510 5,623,421
514 C 5,623,422
514 R 5,623,424
514 12 5,623,423
553 5,623,425
557 5,623,426
563 5,623,427
578 5,623,428
5,623,429
5,623,430
604 5,623,431
707 5,623,432
709.12 5,623,433
757 5,623,434
764 5,623,435

CLASS 365
45 5,623,436
49 5,623,437
145 5,623,439
149 5,623,440
185.08 5,623,442
185.16 5,623,443
185.23 5,623,444
185.29 5,623,445
189.11 5,623,446
200 5,623,448
203 5,623,450
222 5,623,451
230.05 5,623,452
233 5,623,453
5,623,454

CLASS 367
76 5,623,455
99 5,623,524

CLASS 368
226 5,623,456

CLASS 369
13 5,623,457
5,623,458
32 5,623,459
5,623,460
5,623,461
44.23 5,623,462
44.25 5,623,463
44.28 5,623,464
44.32 5,623,465
5,623,466
47 5,623,467
48 5,623,468
58 5,623,470
84 5,623,471
116 5,623,472
5,623,473
124 5,623,474
126 5,623,475
5,623,476
275.3 5,623,477
275.4 5,623,478
275.5 5,623,479

CLASS 370
209 5,623,485
224 5,623,482
225 5,623,481
241 5,623,480
253 5,623,483
263 5,623,490
335 5,623,484
342 5,623,486
5,623,487
360 5,623,488
381 5,623,489
397 5,623,491
5,623,492
5,623,493
5,623,494
5,623,495
475 5,623,496

CLASS 371
5.1 5,623,497
20.1 5,623,498
22.1 5,623,499
5,623,500
22.2 5,623,501
22.3 5,623,502
5,623,503
37.4 5,623,504
40.1 5,623,505
5,623,506
40.3 5,623,507

CLASS 372
3 5,623,508
45 5,623,509
75 5,623,510

CLASS 374
45 5,622,430

CLASS 375
207 5,623,511
211 5,623,512
219 5,623,513
222 5,623,514
257 5,623,515
259 5,623,516
262 5,623,517
278 5,623,518
316 5,623,519
343 5,623,520
345 5,623,521
369 5,623,522
376 5,623,523

CLASS 376
260 5,623,525
288 5,623,526

CLASS 377
72 5,623,527

CLASS 378
2 5,623,528
34 5,623,529
136 5,623,530

CLASS 379
56 5,623,531
58 5,623,532
5,623,533
59 5,623,534
60 5,623,535
67 5,623,536
5,623,537
5,623,538
88 5,623,539
115 5,623,540
136 5,623,541
399 5,623,542
402 5,623,543
413 5,623,544

CLASS 380
2 5,623,545
4 5,623,546
24 5,623,547
28 5,623,548
37 5,623,549

CLASS 381
69.2 5,623,550
119 5,623,551

CLASS 382
124 5,623,552
127 5,623,553
233 5,623,555
5,623,556
246 5,623,557
254 5,623,558
293 5,623,559
295 5,623,560

CLASS 383
63 5,622,431
210 5,622,432

CLASS 384
45 5,622,433
49 5,622,434
100 5,622,435
448 5,622,436
5,622,437
624 5,622,438

CLASS 385
12 5,623,561
16 5,623,562
5,623,563
20 5,623,564
24 5,623,565
5,623,566
30 5,623,567
45 5,623,568
76 5,623,569
95 5,623,570
130 5,623,571

CLASS 386
1 5,623,346
5,623,572
5,623,344
92 5,623,573

CLASS 392
303 5,623,576
451 5,623,574

CLASS 395
2.38 5,623,577
2.64 5,623,578
2.74 5,623,575
22 5,623,579
51 5,623,580
99 5,623,582
106 5,623,581
110 5,623,584
115 5,623,585
120 5,623,583
124 5,623,586
135 5,623,587
160 5,623,589
172 5,623,593
180 5,623,594
182.03 5,623,665
182.04 5,623,595
182.12 5,623,596
182.16 5,623,599
184.01 5,623,598
186 5,623,597
187.01 5,623,600
5,623,601
200.04 5,623,603
200.08 5,622,429
200.1 5,623,604
200.13 5,623,602
200.17 5,623,605
209 5,623,404
228 5,623,403
230 5,623,405
250 5,623,606
5,623,607
5,623,608
263 5,623,609
281 5,623,610
309 5,623,611
326 5,623,588
5,623,590
5,623,591
5,623,612
348 5,623,592
353 5,623,613
402 5,623,618
403 5,623,619
412 5,623,620
421.1 5,623,621
427 5,623,622
430 5,623,623
432 5,623,624
440 5,623,625
445 5,623,626
449 5,623,627
468 5,623,628
5,623,629
5,623,630
470 5,623,631
471 5,623,632
473 5,623,633
478 5,623,634
479 5,623,635
490 5,623,636
491 5,623,637
494 5,623,638
5,623,639
497.01 5,623,640
497.02 5,623,641
500 5,623,642
5,623,643
551 5,623,645
556 5,623,647
557 5,623,648
558 5,623,644
5,623,649
560 5,623,646
563 5,623,616
568 5,623,617
573 5,623,680
581 5,623,650
585 5,623,615
587 5,623,614
601 5,623,661
608 5,623,655
5,623,659
609 5,623,653
5,623,660
610 5,623,652
5,623,656
612 5,623,658
616 5,623,651
5,623,666
619 5,623,662
621 5,623,669
622 5,623,654
650 5,623,663
651 5,623,664
670 5,623,668
681 5,623,696
683 5,623,657
705 5,623,667
726 5,623,670
5,623,671
728 5,623,672
733 5,623,673
5,623,674
5,623,675
735 5,623,676
750 5,623,677
753 5,623,406
773 5,623,679
788 5,623,681
798 5,623,682
800 5,623,683
5,623,684
5,623,685
5,623,686
5,623,687
5,623,688
5,623,689
806 5,623,690
821 5,623,691
823 5,623,692
825 5,623,693
5,623,694
5,623,695
828 5,623,697
842 5,623,698
858 5,623,699
872 5,623,700
873 5,623,701
888

CLASS 396
6 5,623,702
51 5,623,703
55 5,623,326
5,623,327
5,623,704
5,623,705
67 5,623,706
91 5,623,707
153 5,623,708
283 5,623,709
300 5,623,710
357 5,623,711
380 5,623,324
424 5,623,712
515 5,623,325

CLASS 399
42 5,623,713
51 5,623,714
57 5,623,715
111 5,623,328
159 5,623,716
281 5,623,717
284 5,623,718
299 5,623,719
310 5,623,330
314 5,623,329
323 5,623,720
354 5,623,721
378 5,623,331
381 5,623,333
388 5,623,332
397 5,623,722

CLASS 400
124.1 5,622,439
234 5,622,440

CLASS 401
209 5,622,441

CLASS 403
282 5,622,442
294 5,622,443
316 5,622,444
375 5,622,445
377 5,622,446

CLASS 405
7 5,622,447
15 5,622,448
19 5,622,449
128 5,622,450
158 5,622,451
198 5,622,452
240 5,622,453
259.5 5,622,454
262 5,622,455
284 5,622,456

CLASS 406
1 5,622,457
194 5,622,458

CLASS 407
23 5,622,459
42 5,622,460

CLASS 408
224 5,622,461
230 5,622,462

CLASS 409
131 5,622,463

CLASS 411
399 5,622,464
432 5,622,465

CLASS 414
228 5,622,466
304 5,622,467
422 5,622,468
785 5,622,469
786 5,622,470
5,622,471

CLASS 415
9 5,622,472
160 5,622,473
173.1 5,622,474

CLASS 416
220 R 5,622,475
221 5,622,476

CLASS 417
40 5,622,477
53 5,622,478
231 5,622,479
234 5,622,480
319 5,622,481
321 5,622,482
363 5,622,483
393 5,622,484
423.2 5,622,485
536 5,622,486

CLASS 418
55.2 5,622,487
55.5 5,622,488

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8 5,623,724
19 5,623,725
23 5,623,726
51 5,623,727

CLASS 420

109 5,622,674

CLASS 422

102 5,622,675
104 5,622,676
144 5,622,677
295 5,622,678

CLASS 423

21.5 5,622,679
213.5 5,622,680
228 5,622,681
230 5,622,682
414 5,622,683
702 5,622,684

CLASS 424

1.65 5,622,685
9.32 5,622,686
9.33 5,622,687
9.363 5,622,688
52 5,622,689
59 5,622,690
62 5,622,691
63 5,622,692
69 5,622,693
70.122 5,622,694
75 5,622,695
5,622,696
76.6 5,622,697
93.4 5,622,698
93.6 5,622,699
144.1 5,622,700
153.1 5,622,701
184.1 5,622,702
187.1 5,622,703
195.1 5,622,704
199.1 5,622,705
253.1 5,622,706
402 5,622,707
405 5,622,708
423 5,622,709
438 5,622,710
445 5,622,711
450 5,622,712
5,622,713
5,622,714
5,622,715
461 5,622,716
488 5,622,717
5,622,718
5,622,719
489 5,622,720
490 5,622,721
494 5,622,722
495 5,622,723
520 5,622,779
641 5,622,724
665 5,622,725

CLASS 425

12 5,622,726
84 5,622,727
87 5,622,728
5,622,729
141 5,622,730
384 5,622,731
466 5,622,732
504 5,622,733
517 5,622,734
530 5,622,735
556 5,622,736
590 5,622,737

CLASS 426

52 5,622,738
74 5,622,739
138 5,622,740
243 5,622,741
279 5,622,742
330.4 5,622,743
623 5,622,744

CLASS 427

2.1 5,622,745
79 5,622,746
96 5,622,747
100 5,622,748
158 5,622,749
163.2 5,622,750
376.2 5,622,751
421 5,622,752
453 5,622,753

CLASS 428

35.7 5,622,754
5,622,755
36.5 5,622,756
36.91 5,622,757
40.1 5,622,758
40.2 5,622,759
41.3 5,622,760
41.9 5,622,761
43 5,622,762
52 5,622,764
97 5,622,765
110 5,622,766
121 5,622,767
141 5,622,768
209 5,622,769
5,622,770
219 5,622,771
328 5,622,780
331 5,622,781
344 5,622,782
355 EN 5,622,783
447 5,622,784
525 5,622,785
537.5 5,622,786
620 5,622,787
688 5,622,788

CLASS 429

7 5,622,789
16 5,622,790
111 5,622,791
192 5,622,792
218 5,622,793

CLASS 430

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14 5,622,795
22 5,622,796
30 5,622,797
31 5,622,798
58 5,622,799
5,622,800
5,622,801
106 5,622,802
110 5,622,803
115 5,622,804
117 5,622,805
137 5,622,806
139 5,622,807
199 5,622,808
250 5,622,809
264 5,622,810
269 5,622,811
270.15 5,622,812
281.1 5,622,813
314 5,622,814
320 5,622,815
347 5,622,816
543 5,622,817
555 5,622,818

CLASS 431

187 5,622,489
288 5,622,490
328 5,622,491

CLASS 433

3 5,622,492
7 5,622,493
9 5,622,494
22 5,622,495
39 5,622,496
60 5,622,497
80 5,622,498
172 5,622,499
173 5,622,500
215 5,622,501
216 5,622,502

CLASS 434

36 5,622,503
430 5,622,504

CLASS 435

4 5,622,819
5 5,622,820
6 5,622,821
5,622,822
5,622,823
5,622,824
5,622,825
5,622,826
5,622,827
5,622,828
5,622,829
7.21 5,622,831
7.4 5,622,830
19 5,622,832
23 5,622,833
69.1 5,622,838
5,622,839
5,622,840
5,622,841
69.6 5,622,842
5,622,843
84 5,622,834
101 5,622,844
106 5,622,845
128 5,622,846
135 5,622,847
173.1 5,622,848
192 5,622,849
221 5,622,850
227 5,622,851
252.1 5,622,858
5,622,859
252.3 5,622,860
5,622,861
254.1 5,622,863
290.1 5,622,864
304.1 5,622,865
320.1 5,622,866
325 5,622,852
5,622,855
5,622,856
328 5,622,835
338 5,622,837
344 5,622,836
353 5,622,862
366 5,622,854
372.3 5,622,853
378 5,622,857

CLASS 436

18 5,622,867
147 5,622,868
148 5,622,869
165 5,622,870
514 5,622,871
518 5,622,872

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3 5,622,874
5 5,622,636
9 5,622,899
21 5,622,897
50 5,622,901
5,622,902
53 5,622,633
65 5,622,873
123 5,622,896
127 5,622,898
135 5,622,876
172 5,622,891
194 5,622,880
202 5,622,887
210 5,622,882
218 5,622,878
220 5,622,885
238 5,622,884
5,622,886
264 5,622,881
266 5,622,879
396 5,622,883
5,622,893
397 5,622,889
398 5,622,888
404 5,622,890
464 5,622,900
571 5,622,877
598 5,623,438
601 5,622,892
643 5,622,894
691 5,622,875
702 5,622,596
710 5,622,595

CLASS 439

67 5,622,505
74 5,622,506
76.2 5,622,507
79 5,622,508
106 5,622,509
160 5,622,510
248 5,622,511
271 5,622,512
340 5,622,513
342 5,622,514
398 5,622,515
408 5,622,516
417 5,622,517
504 5,622,518
570 5,622,519
573 5,622,520
595 5,622,521
607 5,622,522
5,622,523
620 5,622,524

CLASS 442

118 5,622,776
5,622,778
135 5,622,773
136 5,622,774
374 5,622,777
392 5,622,775
401 5,622,772

CLASS 451

41 5,622,525
72 5,622,526

CLASS 482

53 5,622,527

CLASS 501

35 5,622,903
53 5,622,904
97 5,622,905

CLASS 502

104 5,622,906
174 5,622,907
339 5,622,908

CLASS 503

216 5,622,909

CLASS 504

105 5,622,910
116 5,622,911
143 5,622,912
245 5,622,913
247 5,622,914
254 5,622,915
269 5,622,916
283 5,622,917

CLASS 505

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CLASS 507

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232 5,622,920
259 5,622,921

CLASS 508

272 5,622,922
431 5,622,923
469 5,622,924

CLASS 510

329 5,622,925
340 5,622,926

CLASS 514

2 5,622,927
5,622,928
8 5,622,929
12 5,622,930
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16 5,622,933
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25 5,622,936
5,622,937
35 5,622,938
54 5,622,939
5,622,940
167 5,622,941
171 5,622,942
179 5,622,943
181 5,622,944
185 5,622,945
5,622,946
213 5,622,947
236.5 5,622,948
237.8 5,622,949
249 5,622,950
253 5,622,951
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300 5,622,966
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5,622,971
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318 5,622,973
320 5,622,974
324 5,622,975
326 5,622,976
336 5,622,977
356 5,622,978
365 5,622,979
370 5,622,980
380 5,622,981
399 5,622,982
419 5,622,983
423 5,622,984
5,622,985
449 5,622,986
454 5,622,987
455 5,622,988
469 5,622,989
533 5,622,990
558 5,622,991
613 5,622,992
626 5,622,993
643 5,622,994
667 5,622,995

CLASS 521

33 5,622,996
5,622,997
41 5,622,998
106 5,622,999

CLASS 522

16 5,623,000
84 5,623,001

CLASS 523

106 5,623,002
428 5,623,003
436 5,623,004

CLASS 524

96 5,623,005
100 5,623,006
105 5,623,007
114 5,623,008
117 5,623,009
174 5,623,010
270 5,623,011
398 5,623,012
443 5,623,013
543 5,623,014
555 5,623,015
591 5,623,016
860 5,623,017

CLASS 525

74 5,623,018
92 C 5,623,019
185 5,623,020
240 5,623,021
247 5,623,022
327.3 5,623,023
397 5,623,024
450 5,623,025
463 5,623,026
466 5,623,027
474 5,623,028
478 5,623,029
5,623,030
489 5,623,031
491 5,623,032

CLASS 526

124.8 5,623,033
160 5,623,034
183 5,623,035
245 5,623,036
247 5,623,037
255 5,623,038
281 5,623,039
284 5,623,040
329.2 5,623,041

CLASS 528

26 5,623,043
28 5,623,044
68 5,623,045
111 5,623,046
285 5,623,047
486 5,623,042

CLASS 530

203 5,623,048
300 5,623,049
324 5,623,050
5,623,051
330 5,623,052
350 5,623,053
370 5,623,054
391.1 5,623,055
403 5,623,056
404 5,623,057
405 5,623,058
412 5,623,059

CLASS 534

573 5,623,060
637 5,623,061
653 5,623,062

CLASS 536

17.2 5,623,063
20 5,623,064
23.1 5,623,065
23.72 5,623,066
24.1 5,623,067
25.34 5,623,068
26.71 5,623,069
27.6 5,623,070
103 5,623,071

CLASS 544

239 5,623,072
252 5,623,073

CLASS 546

114 5,623,074
269.7 5,623,075
345 5,623,076

CLASS 548

338.1 5,623,077
452 5,623,078

CLASS 549

253 5,623,079
393 5,623,080
475 5,623,081

CLASS 554

231 5,623,082

CLASS 556

479 5,623,083

CLASS 558

54 5,623,084

CLASS 560

25 5,623,085
240 5,623,086

CLASS 562

576 5,623,087

CLASS 564

112 5,623,088

CLASS 568

13 5,623,089
360 5,623,090
683 5,623,091

CLASS 570

168 5,623,092

CLASS 600

118 5,622,528

CLASS 602

18 5,622,529

CLASS 604

20 5,622,530

CLASSIFICATION OF DESIGNS

D1—	106	378,867		470	378,882		546	378,897		147	378,912		378,927	D26— 28 378,942
	120	378,868	D7—	306	378,883	D10—	32	378,898		156	378,913	D21— 26	378,928	43 378,943
D2—	615	378,869		392	378,884		43	378,899		160	378,914	37	378,929	137 378,944
	719	378,870		408	378,885		52	378,900		179	378,915		378,930	152 378,945
	953	378,871		585	378,886	D11—	3	378,901	D14—	116	378,916	48	378,931	378,946
D3—	214	378,872		590	378,887		14	378,902		146	378,917	165	378,932	
	273	378,873		704	378,888		44	378,903			378,918	191	378,933	
	281	378,874		710	378,889		66	378,904		173	378,919	217	378,934	
D5—	25	378,875	D8—	10	378,890	D12—	84	378,905		191	378,920	222	378,935	
D6—	37	378,876		68	378,891		91	378,906		208	378,921	D22— 109	378,936	
	300	378,877		373	378,892		97	378,907	D15—	28	378,922	D23— 280.1	378,937	
	320	378,878			378,893		129	378,908	D16—	209	378,923	D24— 142	378,938	
	436	378,879	D9—	345	378,894		167	378,909	D18—	2	378,924	144	378,939	
	445	378,880		347	378,895		192	378,910		38	378,925	224	378,940	
	463	378,881		542	378,896	D13—	108	378,911		50	378,926		378,941	

CLASSIFICATION OF PLANTS

P.—	20	9,862		39	9,864		49	9,866		74.1	9,868		82.2	9,870
	36	9,863		47.1	9,865		68.1	9,867		76	9,869			

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PATENTS

01 : 5,622,034 5,622,046 5,622,076 5,622,705
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05 : 5,622,028 5,622,314 5,622,697
06 : 5,621,915 5,621,923 5,621,927 5,621,930 5,621,973 5,621,974 5,621,975 5,621,977 5,621,985 5,622,022 5,622,047 5,622,088 5,622,090 5,622,092 5,622,101 5,622,130 5,622,132 5,622,140 5,622,149 5,622,162 5,622,166
5,622,182 5,622,184 5,622,227 5,622,250 5,622,278 5,622,280 5,622,295 5,622,296 5,622,344 5,622,355 5,622,385 5,622,387 5,622,395 5,622,419 5,622,424 5,622,426 5,622,484 5,622,492 5,622,494 5,622,501 5,622,522 5,622,532 5,622,536 5,622,545 5,622,565 5,622,588 5,622,595 5,622,623 5,622,630 5,622,632 5,622,642 5,622,675 5,622,676 5,622,687 5,622,699 5,622,700 5,622,701 5,622,712 5,622,713 5,622,739 5,622,758 5,622,761 5,622,779 5,622,789 5,622,791 5,622,807 5,622,820 5,622,821 5,622,827
5,622,829 5,622,841 5,622,850 5,622,853 5,622,856 5,622,870 5,622,872 5,622,875 5,622,880 5,622,882 5,622,885 5,622,931 5,622,944 5,622,948 5,622,952 5,622,965 5,622,981 5,622,996 5,623,011 5,623,029 5,623,053 5,623,055 5,623,065 5,623,067 5,623,068 5,623,070 5,623,105 5,623,146 5,623,149 5,623,151 5,623,156 5,623,160 5,623,183 5,623,186 5,623,213 5,623,214 5,623,223 5,623,231 5,623,235 5,623,244 5,623,248 5,623,259 5,623,262 5,623,266 5,623,269 5,623,274 5,623,341 5,623,384 5,623,387
5,623,391 5,623,396 5,623,408 5,623,418 5,623,419 5,623,420 5,623,433 5,623,434 5,623,436 5,623,440 5,623,443 5,623,480 5,623,494 5,623,501 5,623,502 5,623,513 5,623,525 5,623,540 5,623,558 5,623,577 5,623,582 5,623,591 5,623,592 5,623,595 5,623,596 5,623,597 5,623,599 5,623,600 5,623,603 5,623,604 5,623,608 5,623,614 5,623,616 5,623,617 5,623,620 5,623,634 5,623,645 5,623,652 5,623,669 5,623,672 5,623,676 5,623,677 5,623,679 5,623,681 5,623,684 5,623,686 5,623,692 5,623,696 5,623,715
08 : 5,621,936 5,622,170 5,622,378 5,622,470 5,622,556 5,622,618 5,622,828 5,622,886 5,622,912 5,623,116 5,623,118 5,623,377 5,623,492 5,623,507 5,623,527 5,623,538
09 : 5,621,971 5,621,972 5,622,059 5,622,094 5,622,438 5,622,489 5,622,534 5,622,682
10 : 5,621,914 5,622,609 5,622,614 5,622,672 5,622,765 5,622,964 5,623,089
11 : 5,623,536 5,623,581 5,623,699
12 : 5,621,951 5,621,980 5,622,103 5,622,136 5,622,269 5,622,270
13 : 5,621,916 5,621,935 5,621,994 5,622,030 5,622,238 5,622,261 5,622,306 5,622,315 5,622,346 5,622,389 5,622,416 5,622,516 5,622,597 5,622,649 5,622,734 5,622,772 5,622,786 5,622,819 5,622,955 5,623,260 5,623,561
15 : 5,622,401 5,622,702
16 : 5,621,917 5,622,502
5,622,292 5,622,297 5,622,301 5,622,342 5,622,349 5,622,363 5,622,388 5,622,422 5,622,447 5,622,449 5,622,499 5,622,564 5,622,762 5,622,855 5,622,878 5,622,890 5,623,098 5,623,127 5,623,196 5,623,261 5,623,280 5,623,345 5,623,413 5,623,615

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	5,622,741	23 :	5,622,631	27 :	5,621,983		5,623,356		5,623,587		5,623,589
	5,622,747	24 :	5,622,023		5,622,011		5,623,359		5,623,588		5,623,610
	5,623,095		5,622,258		5,622,017		5,623,363		5,623,702		5,623,628
	5,623,598		5,622,703		5,622,123		5,623,388		5,623,714		5,623,644
	5,623,624		5,622,759		5,622,164		5,623,429		5,623,720		5,623,647
17 :	5,621,952		5,622,861		5,622,191		5,623,483		5,623,721	42 :	5,621,956
	5,622,006		5,622,959		5,622,260		5,623,485		5,623,722		5,621,987
	5,622,029		5,622,960		5,622,264		5,623,495		5,365,819		5,622,069
	5,622,110		5,623,189		5,622,310		5,623,498	37 :	5,622,163		5,622,089
	5,622,113		5,623,252		5,622,399		5,623,499		5,622,231		5,622,187
	5,622,117		5,623,357		5,622,404		5,623,503		5,622,256		5,622,208
	5,622,171		5,623,360		5,622,480		5,623,508		5,622,514		5,622,288
	5,622,181	25 :	5,622,009		5,622,530		5,623,535		5,622,770		5,622,328
	5,622,193		5,622,043		5,622,537		5,623,537		5,622,869		5,622,339
	5,622,199		5,622,054		5,622,538		5,623,539		5,623,024		5,622,354
	5,622,226		5,622,137		5,622,551		5,623,542		5,623,042		5,622,393
	5,622,283		5,622,173		5,622,708		5,623,555		5,623,176		5,622,458
	5,622,284		5,622,175		5,622,711		5,623,564		5,623,395		5,622,529
	5,622,334		5,622,216		5,622,764		5,623,566		5,623,552		5,622,547
	5,622,353		5,622,257		5,623,038		5,623,567	38 :	5,623,087		5,622,579
	5,622,390		5,622,427		5,623,110		5,623,568	39 :	5,621,924		5,622,652
	5,622,398		5,622,441		5,623,383		5,623,570		5,621,960		5,622,654
	5,622,414		5,622,455		5,623,701		5,623,590		5,621,976		5,622,745
	5,622,443		5,622,463	28 :	5,621,922		5,623,605		5,621,993		5,622,777
	5,622,464		5,622,475		5,621,992		5,623,656		5,621,996		5,622,816
	5,622,477		5,622,557		5,622,276		5,623,660		5,622,015		5,622,823
	5,622,493		5,622,558	29 :	5,622,212		5,623,666		5,622,053		5,622,831
	5,622,519		5,622,612		5,622,317		5,623,670		5,622,070		5,622,835
	5,622,521		5,622,662		5,622,338	35 :	5,621,957		5,622,071		5,622,938
	5,622,533		5,622,665		5,622,448		5,622,453		5,622,116		5,622,963
	5,622,548		5,622,668		5,622,568		5,622,571		5,622,118		5,622,967
	5,622,594		5,622,732		5,622,774		5,623,114		5,622,122		5,622,980
	5,622,601		5,622,752		5,622,852	36 :	5,621,970		5,622,124		5,622,990
	5,622,622		5,622,795		5,622,949		5,621,986		5,622,203		5,623,019
	5,622,647		5,622,824		5,622,972		5,621,990		5,622,241		5,623,041
	5,622,686		5,622,825		5,623,072		5,622,014		5,622,254		5,623,085
	5,622,754		5,622,832		5,623,077		5,622,057		5,622,268		5,623,217
	5,622,971		5,622,895		5,623,084		5,622,063		5,622,274		5,623,230
	5,623,027		5,622,939		5,623,088		5,622,127		5,622,313		5,623,403
	5,623,032		5,622,940		5,623,179		5,622,168		5,622,319		5,623,415
	5,623,058		5,622,953	30 :	5,622,690		5,622,202		5,622,343		5,623,449
	5,623,093		5,622,968		5,623,366		5,622,230		5,622,384		5,623,490
	5,623,132		5,622,970	31 :	5,622,020		5,622,255		5,622,392		5,623,573
	5,623,227		5,623,054		5,622,340		5,622,259		5,622,473		5,623,723
	5,623,239		5,623,119		5,622,391		5,622,262		5,622,481		5,623,724
	5,623,249		5,623,139	32 :	5,622,078		5,622,266		5,622,485	44 :	5,622,159
	5,623,292		5,623,270		5,622,210		5,622,271		5,622,544		5,622,221
	5,623,422		5,623,275		5,622,500		5,622,272		5,622,576		5,623,096
	5,623,520		5,623,285		5,622,728		5,622,376		5,622,578		5,623,256
	5,623,523		5,623,307	33 :	5,622,004		5,622,377		5,622,589	45 :	5,622,125
	5,623,531		5,623,355		5,622,093		5,622,467		5,622,638		5,622,167
	5,623,534		5,623,397		5,622,263		5,622,498		5,622,650		5,622,196
	5,623,541		5,623,406		5,622,302		5,622,503		5,622,659		5,622,746
	5,623,550		5,623,414		5,622,402		5,622,518		5,622,670		5,622,785
	5,623,574		5,623,416		5,622,735		5,622,520		5,622,671		5,623,128
	5,623,643		5,623,424		5,622,834		5,622,540		5,622,683	46 :	5,622,307
	5,623,680		5,623,544		5,623,064		5,622,591		5,622,689	47 :	5,621,949
18 :	5,621,964		5,623,571		5,623,637		5,622,596		5,622,694		5,622,024
	5,622,001		5,623,621		5,623,690		5,622,598		5,622,696		5,622,055
	5,622,008		5,623,642	34 :	5,621,918		5,622,608		5,622,698		5,622,126
	5,622,045	26 :	5,621,919		5,622,000		5,622,611		5,622,723		5,622,352
	5,622,091		5,621,959		5,622,003		5,622,620		5,622,736		5,622,361
	5,622,115		5,621,961		5,622,041		5,622,626		5,622,782		5,622,415
	5,622,138		5,621,965		5,622,065		5,622,635		5,622,854		5,622,471
	5,622,214		5,621,991		5,622,066		5,622,641		5,622,903		5,622,504
	5,622,327		5,622,002		5,622,176		5,622,692		5,622,907		5,623,086
	5,622,386		5,622,005		5,622,248		5,622,721		5,622,923		5,623,126
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	5,622,961		5,622,147		5,622,600		5,622,851		5,623,080		5,622,058
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	5,623,175		5,622,380		5,622,842		5,623,006		5,623,578		5,622,224
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	5,622,042		5,622,457		5,622,913		5,623,137		5,622,733		5,622,486
	5,622,205		5,622,497		5,622,922		5,623,172		5,622,906		5,622,506
	5,622,234		5,622,526		5,622,954		5,623,174		5,622,919		5,622,605
	5,622,265		5,622,663		5,622,973		5,623,187		5,623,267		5,622,616
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	5,623,335		5,622,860		5,623,044		5,623,324		5,622,374		5,622,695
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	5,622,228		5,623,066		5,623,145		5,623,339		5,622,726		5,622,864
	5,622,364		5,623,083		5,623,180		5,623,354		5,623,129		5,622,867
	5,622,462		5,623,094		5,623,233		5,623,358		5,623,130		5,622,893
	5,622,994		5,623,247		5,623,308		5,623,394		5,623,198		5,622,897
	5,623,718		5,623,277		5,623,311		5,623,421		5,623,276		5,622,900
22 :	5,622,452		5,623,374		5,623,312		5,623,427		5,623,313		5,622,921
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	5,623,004		5,623,524		5,623,694		5,622,771		5,622,604		5,622,232
	5,623,012		5,623,545		5,623,697		5,622,775		5,622,839		5,622,235
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	5,623,173		5,623,618		5,622,527		5,623,242		5,623,204		5,622,554
	5,623,184		5,623,619		5,622,657		5,623,322		5,623,282		5,622,655
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	5,623,407		5,623,648		5,622,403		5,622,108		5,623,674		5,623,650
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	5,623,450		5,623,662		5,622,252		5,622,186		5,621,978		
	5,623,455		5,623,663		5,622,273		5,622,204		5,622,031		
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PLANT PATENTS

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on April 26, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,305,470 through 5,307,520
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 24, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,918,752 through 4,920,574
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 22, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,583,246 through 4,584,720
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 19, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,423	06/797,170	05/19/87
(4,500,638)	(06/437,517)	(02/19/85)
Re. 34,131	07/639,481	11/24/92
(4,804,884)	(07/645,922)	(02/14/89)
Re. 34,186	07/774,578	03/02/93
(4,804,003)	(07/106,205)	(02/14/89)
4,499,620	06/453,906	02/19/85
4,499,621	06/471,044	02/19/85
4,499,624	06/469,756	02/19/85
4,499,648	06/426,455	02/19/85
4,499,649	06/407,293	02/19/85
4,499,650	06/391,636	02/19/85
4,499,656	06/523,232	02/19/85
4,499,660	06/280,574	02/19/85
4,499,662	06/560,260	02/19/85
4,499,663	06/541,184	02/19/85
4,499,664	06/325,677	02/19/85
4,499,665	06/449,605	02/19/85
4,499,671	06/401,172	02/19/85
4,499,672	06/451,427	02/19/85
4,499,673	06/472,502	02/19/85
4,499,687	06/462,416	02/19/85
4,499,691	06/411,307	02/19/85
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5,186,877	07/782,573	02/16/93
5,186,881	07/788,209	02/16/93
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5,186,920	07/795,292	02/16/93
5,186,922	07/462,740	02/16/93
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5,186,960	07/610,146	02/16/93
5,186,963	07/817,644	02/16/93
5,186,967	07/904,594	02/16/93
5,186,969	07/720,387	02/16/93
5,186,975	07/734,102	02/16/93
5,186,979	07/674,182	02/16/93
5,186,981	07/289,442	02/16/93
5,186,982	07/584,356	02/16/93
5,186,983	07/660,527	02/16/93
5,186,988	07/623,560	02/16/93
5,186,990	07/681,107	02/16/93
5,186,993	07/776,542	02/16/93
5,186,998	07/528,821	02/16/93
5,187,004	07/529,442	02/16/93
5,187,011	07/819,304	02/16/93
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5,187,029	07/700,390	02/16/93
5,187,031	07/741,381	02/16/93
5,187,044	07/699,666	02/16/93
5,187,049	07/552,887	02/16/93
5,187,057	07/840,278	02/16/93
5,187,059	07/650,784	02/16/93
5,187,062	07/345,220	02/16/93
5,187,064	07/287,365	02/16/93
5,187,075	07/302,425	02/16/93
5,187,088	07/755,163	02/16/93
5,187,097	07/498,270	02/16/93
5,187,105	07/659,897	02/16/93
5,187,106	06/645,567	02/16/93
5,187,110	07/792,104	02/16/93
5,187,137	07/766,092	02/16/93
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5,187,161	07/842,752	02/16/93
5,187,174	07/673,177	02/16/93
5,187,176	07/775,677	02/16/93
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5,187,190	07/608,475	02/16/93
5,187,195	07/543,437	02/16/93
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5,187,412	07/850,477	02/16/93
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5,187,484	07/829,790	02/16/93
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5,187,502	07/757,280	02/16/93
5,187,503	07/650,087	02/16/93
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5,187,528	07/683,546	02/16/93
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5,187,540	07/784,218	02/16/93
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5,187,608	07/806,400	02/16/93
5,187,624	07/814,694	02/16/93
5,187,643	07/830,855	02/16/93
5,187,647	07/667,450	02/16/93
5,187,659	07/577,163	02/16/93
5,187,664	07/618,793	02/16/93
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5,187,768	07/810,317	02/16/93
5,187,785	07/635,450	02/16/93
5,187,794	07/323,748	02/16/93
5,187,797	07/334,244	02/16/93
5,187,799	07/194,882	02/16/93
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Re. 34,248	07/552,800	07/13/90	05/11/93	02/10/97
4,466,346	06/329,662	12/11/81	08/21/84	02/12/97
4,638,188	06/644,249	08/27/84	01/20/87	02/10/97
4,759,514	06/913,275	09/30/86	07/26/88	02/10/97
4,922,376	07/335,802	04/10/89	05/01/90	02/12/97
4,929,519	07/383,376	07/20/89	05/29/90	02/12/97
4,951,439	07/294,747	01/09/89	08/28/90	02/10/97
4,961,290	06/777,217	09/18/85	10/09/90	02/12/97
5,043,437	07/425,197	08/18/89	08/27/91	02/12/97
5,128,342	07/561,173	08/01/90	07/07/92	02/07/97
5,140,718	07/623,692	12/07/90	08/25/92	02/12/97
5,150,401	07/621,476	12/04/90	09/22/92	02/12/97
5,216,387	07/757,075	09/10/91	06/01/93	02/11/97

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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,619,845	06/704,117	02/22/85	10/28/86	02/18/97
4,998,621	07/526,829	05/22/90	03/12/91	02/20/97
5,034,183	07/355,930	05/23/89	07/23/91	02/20/97
5,078,716	07/522,264	05/11/90	01/07/92	02/21/97
5,100,051	07/646,098	01/25/91	03/31/92	02/21/97
5,116,371	07/549,096	07/06/90	05/26/92	02/21/97
5,144,797	07/633,300	12/24/90	09/08/92	02/21/97
5,155,811	07/304,662	01/31/89	10/13/92	02/21/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,956,184, Re. S.N. 08/787,144, Jan. 22, 1997, Cl. 424/661, ANTI-INFLAMMATORY FORMULATIONS FOR INFLAMMATORY DISEASES, Robert D. Kross, et. al., Owner of Record: *Alcide Corporation, Norwalk, Conn.*, Attorney or Agent: Karl R. Hermanns, Ex. Gp.: 1205

5,021,951, Re. S.N. 08/729,132, Oct. 11, 1996, Cl. 395/425, DATA PROCESSOR, Baba Shiro, Owner of Record: *Inventor*, Attorney or Agent: Carl J. Brundidge, Ex. Gp.: 2309

5,266,124, Re. S.N. 08/755,787, June 12, 1996, Cl. 134/42, PROCESS FOR REMOVING CONTAINMENTS FROM POLYOLEFINS, Kusay B. Al-Jumah, et. al., Owner of Record: *Southern Research Institute*, Attorney or Agent: Burton A. Amernick, Ex. Gp.: 1109

5,311,595, Re. S.N. 08/644,286, May 10, 1996, Cl. 380/25, METHOD OF TRANSFERRING DATA BETWEEN COMPUTER SYSTEMS USING ELECTRONIC CARDS, Jorgen Bjerrum, et. al., Owner of Record: *Kommunedata I/S, Copenhagen V, Denmark*, Attorney or Agent: Min Xu, Ex. Gp.: 2202

5,327,587, Re. S.N. 08/679,327, July 12, 1996, Cl. 002/422, ILLUMINATED SAFETY HELMUT, Marni Hurwitz, Owner of Record: *Inventor*, Attorney or Agent: Marie-Claire Boisvert Maple, Ex. Gp.: 2407

5,339,962, Re. S.N. 08/802,716, Feb. 18, 1997, Cl. 209/576, METHOD AND APPARATUS FOR SORTING MATERIALS USING ELECTROMAGNETIC SENSING, Edward J. Summer, Jr., et. al., Owner of Record: *Technology Financial Services, LLC., Nashville, Tenn.*, Attorney or Agent: John J. Feldhaus, Ex. Gp.: 3101

5,366,401, Re. S.N. 08/752,854, Nov. 21, 1996, Cl. 440/89, EXHAUST CLEANING SYSTEM FOR MARINE PROPULSION ENGINE, Masayoshi Nanami, et. al., Owner of Record: *Sonshin Kogyo Kabushiki Kaisha, Shizuoka-ken, Japan*, Attorney or Agent: William H. Shreve, Ex. Gp.: 3102

5,384,217, Re. S.N. 08/787,661, Jan. 23, 1997, Cl. 429/225, BATTERY PLATES HAVING ROUNDED LOWER CORNERS, Richard R.W. Binder, et. al., Owner of Record: *Globe-Union Inc., Milwaukee, Wis.*, Attorney or Agent: Anthony G. Sitko, Ex. Gp.: 1111

5,466,294, Re. S.N. 08/803,627, Feb. 21, 1997, Cl. 127/42, SUGAR BEET JUICE PURIFICATION PROCESS, Michael M. Kearney, et. al., Owner of Record: *Amalgamated Sugar Company, Ogden, Conn.*, Attorney or Agent: David V. Trask, Ex. Gp.: 1105

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Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,422,821, Reexam. No. 90/004,579, March 13, 1997, Cl. 364/478.07, APPARATUS FOR INTERCEPTING AND FORWARDING INCORRECTLY ADDRESSED POSTAL MAIL, Ronald L. Allen, et. al., Owner of Record: *Electrocom Automotive, Arlington, Tex.*, Attorney or Agent: Harold E. Meier, Gardere & Wynne, Dallas, Tex., Ex. Gp.: 2306, Requester: Michael J. Bell, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
January 20, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,710	71/075,777	04/18/1916
109,714	71/088,459	04/18/1916
109,742	71/078,167	04/18/1916
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333,901	71/371,868	04/14/1936
333,904	71/371,802	04/14/1936
333,916	71/371,595	04/14/1936
333,957	71/363,978	04/14/1936
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625,181	71/686,796	04/17/1956
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625,239	71/693,081	04/17/1956
625,251	71/679,096	04/17/1956
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625,269	71/692,445	04/17/1956
625,271	71/692,460	04/17/1956
625,283	71/696,820	04/17/1956
625,285	71/695,407	04/17/1956
625,286	71/695,581	04/17/1956
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625,322	71/692,922	04/17/1956
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625,324	71/692,925	04/17/1956
625,326	71/692,927	04/17/1956
625,327	71/692,928	04/17/1956
625,328	71/692,929	04/17/1956
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625,471	71/691,789	04/17/1956
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625,480	71/692,507	04/17/1956
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625,534	71/662,547	04/17/1956
625,535	71/662,550	04/17/1956
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625,562	71/684,133	04/17/1956
625,564	71/684,169	04/17/1956
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625,574	71/686,234	04/17/1956
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625,590	71/682,847	04/17/1956
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625,593	71/689,338	04/17/1956
625,603	71/657,587	04/17/1956
625,604	71/658,429	04/17/1956
625,606	71/673,810	04/17/1956
625,607	71/677,045	04/17/1956
625,608	71/684,151	04/17/1956
625,612	71/668,891	04/17/1956
625,617	71/679,163	04/17/1956
625,619	71/687,614	04/17/1956
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1,037,873	73/045,598	04/13/1976
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1,037,879	73/049,847	04/13/1976
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1,037,885	73/054,249	04/13/1976
1,037,886	73/055,667	04/13/1976
1,037,887	73/043,788	04/13/1976
1,037,888	73/048,660	04/13/1976
1,037,894	73/039,873	04/13/1976
1,037,904	73/011,984	04/13/1976
1,037,905	73/028,832	04/13/1976
1,037,912	73/048,609	04/13/1976
1,037,916	73/053,156	04/13/1976
1,037,925	73/060,211	04/13/1976
1,037,929	73/061,029	04/13/1976
1,037,932	73/039,568	04/13/1976
1,037,935	73/053,906	04/13/1976
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1,037,939	73/060,806	04/13/1976
1,037,940	73/007,864	04/13/1976
1,037,942	73/042,943	04/13/1976
1,037,945	73/054,622	04/13/1976
1,037,947	73/055,822	04/13/1976
1,037,949	73/058,860	04/13/1976
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1,037,953	73/056,078	04/13/1976
1,037,954	73/058,746	04/13/1976
1,037,962	73/003,926	04/13/1976
1,037,963	73/005,665	04/13/1976
1,037,966	73/046,158	04/13/1976
1,037,967	73/046,224	04/13/1976
1,037,969	73/056,899	04/13/1976
1,037,971	73/037,647	04/13/1976
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1,038,013	72/448,771	04/13/1976
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1,038,022	72/420,097	04/13/1976
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1,038,027	72/449,495	04/13/1976
1,038,028	72/461,819	04/13/1976
1,038,029	72/411,307	04/13/1976
1,038,034	73/029,582	04/13/1976
1,038,042	73/067,082	04/13/1976
1,038,047	73/042,069	04/13/1976
1,038,050	73/045,673	04/13/1976
1,038,051	73/045,549	04/13/1976
1,038,053	73/054,368	04/13/1976
1,038,056	73/064,096	04/13/1976
1,038,058	73/043,053	04/13/1976
1,038,061	72/456,381	04/13/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Prisma Corp., Los Angeles, Calif., Reg. Nos. 1,077,001 and 1,201,225, for the mark "SUNBOW LTD" and "SUNBOW LTD AND DESIGN"; respectively Canc. No. 24,633.

Soren Shirt Co., Inc., New York, N.Y., Reg. No. 710,962, for the mark "LAURENS" and design, Canc. No. 25,071.

Mission Dry Corp., Louisville, Ky., Reg. No. 353,414, for the mark "CHARGER", Canc. No. 25,436.

Whitebirch, Inc., Mahwah, N.J., Reg. No. 1,663,114, for the mark "MIRACOLO", Canc. No. 25,739.

Surfacing Systems, Inc., Delran, N.J., Reg. No. 1,104,339, for the mark "VERSATURF", Canc. No. 25,638.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

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Errata

"All reference to Patent No. 5,580,944 to George Goodwin of Pennsylvania for WATER REPELLENT SURFACE TREATMENT WITH INTEGRATED PRIMER appearing in the *Official Gazette* of December 3, 1996 should be deleted since no patent was granted."

Disclaimers

4,668,747 — Jeffrey S. Cadel, Camillus; Eric H. Larson, Marcellus, both of N.Y. PREPARATION OF WATER SOLUBLE CATIONIC ACRYLAMIDE POLYMER AND PRODUCT USING WEAK ACID TO ADJUST PH. Patent dated May 26, 1987. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

4,808,668 — John V. Carioti, Baldwinsville; Richard M. Jobbins, Marcellus, both of N.Y. CARBOXYLATE POLYMERS AND PROCESSES FOR THEIR PREPARATION AND USE. Patent dated Feb. 28, 1989. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

4,981,936 — Frederick J. Good, Jr., Camillus; Ronald E. Highsmith, Skaneateles, both of N.Y. TERPOLYMER OF OXYALKYENE ACRYLATES, ACRYLAMIDES AND QUATERNARY MONOMERS. Patent dated Jan. 1, 1991. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

4,988,442 — Ronald E. Highsmith, Skaneateles; Frederick J. Good, Jr., Camillus, both of N.Y.; Francis S. Lupton, Evanston, Ill.; Kenneth P. Kehrer, Lancaster, Pa.; Glenn E. Petrie, Bartlett, Ill. PROCESS FOR DEWATERING OF BIOLOGICAL SLUDGE. Patent dated Jan. 29, 1991. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

5,008,319 — Ronald E. Highsmith, Skaneateles; Eric H. Larson, Marcellus, both of N.Y. HOMOGENEOUS MIXTURES OF SOLID ORGANIC AND SOLID CATIONIC ESTER-BASED POLYMER FLOCCULANTS. Patent dated April 16, 1991. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

5,008,444 — William G. Chiang, Fayetteville; Richard M. Jobbins, Marcellus; Michael P. Populе, Syracuse, all of N.Y. PROCESS FOR THE PRODUCTION OF SUBSTITUTED ACRYLOYLOXYHYDROXYPROPYLTRIALKYLAMMONIUM CHLORIDE. Patent dated April 16, 1991. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

5,019,275 — Frederick J. Good, Jr., Camillus; Ronald E. Highsmith, Skaneateles, both of N.Y. METHOD OF FLOCCULATION WITH CATIONIC TERPOLYMER FLOCCULANTS. Patent dated May 28, 1991. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

5,132,383 — Eric H. Larson, Marcellus; Benjamin Shultes, III, Liverpool; William G. Chiang, Fayetteville, all of N.Y. COPOLYMERS OF 3-METHACRYLOYLOXY-2-HYDROXYPROPYL TRIMETHYLAMMONIUM CHLORIDE MONOMER AND VINYL MONOMER. Patent dated July 21, 1992. Disclaimer filed March 10, 1997, by the assignee, S.N.F.

Hereby enters this disclaimer to all claims of said patent.

5,193,417 — Tsunefumi Niiyama, Noboru Sekine, both of Saitama; Takamichi Shimada, Tokyo; Hiroyuki Shimada, Saitama; Kaoru Kajikawa, Tokyo, all of Japan. TRANSMISSION WITH ONE-WAY CLUTCHES AND FAILSAFE METHOD OF AND APPARATUS FOR CONTROLLING THE TRANSMISSION. Patent dated March 16, 1993. Disclaimer filed July 30, 1996, by the assignee, Honda Giken Kogyo Kabushiki Kaisha.

Hereby enters this disclaimer to claims 12 and 13 of said patent.

Certificates of Correction
For the Week of April 29, 1997

B1 4,831,230	5,489,372	5,547,713	5,567,707
D. 362,314	5,489,571	5,547,901	5,567,901
D. 375,592	5,489,692	5,548,131	5,568,163
D. 377,984	5,489,782	5,549,514	5,568,618
Re. 35,437	5,492,673	5,550,107	5,568,718
4,303,986	5,496,835	5,551,231	5,569,504
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5,125,215	5,502,277	5,552,485	5,569,564
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5,214,605	5,510,448	5,554,342	5,570,451
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5,267,231	5,511,898	5,556,446	5,571,527
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5,350,161	5,513,079	5,557,715	5,571,902
5,350,806	5,514,195	5,557,845	5,572,279
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5,362,933	5,523,468	5,558,713	5,573,122
5,370,855	5,525,345	5,559,084	5,573,338
5,371,601	5,525,738	5,559,190	5,573,463
5,376,681	5,526,340	5,559,822	5,573,515
5,377,093	5,529,728	5,560,552	5,574,520
5,378,703	5,530,162	5,560,673	5,574,574
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5,381,233	5,532,128	5,561,004	5,575,746
5,381,794	5,532,341	5,561,015	5,575,815
5,386,700	5,532,715	5,561,493	5,576,090
5,390,256	5,532,800	5,561,504	5,576,161
5,391,374	5,533,147	5,561,534	5,576,218
5,395,036	5,533,723	5,561,782	5,576,576
5,396,487	5,534,474	5,561,941	5,576,736
5,411,204	5,534,633	5,562,721	5,576,745
5,415,906	5,536,098	5,562,890	5,576,762
5,418,564	5,536,313	5,563,352	5,577,008
5,424,994	5,536,675	5,563,431	5,577,030
5,427,990	5,536,764	5,563,594	5,577,685
5,437,134	5,537,782	5,563,631	5,577,807
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5,453,175	5,540,671	5,564,463	5,579,085
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5,456,687	5,541,431	5,564,545	5,579,880
5,459,152	5,541,494	5,564,771	5,580,209
5,460,785	5,542,169	5,565,079	5,580,423
5,464,388	5,543,168	5,565,492	5,580,536
5,465,918	5,543,317	5,565,505	5,580,804
5,468,701	5,543,549	5,565,886	5,581,323
5,470,175	5,543,551	5,565,954	5,581,384
5,476,142	5,543,941	5,566,179	5,581,590
5,479,889	5,544,664	5,566,520	5,581,702
5,486,476	5,545,962	5,567,016	5,581,921
5,487,736	5,546,093	5,567,064	5,582,286
5,488,274	5,546,428	5,567,687	5,583,280

5,583,643	5,585,947	5,587,876	5,592,356	5,595,269	5,597,064	5,599,192	5,603,072
5,583,873	5,586,157	5,588,143	5,592,478	5,595,271	5,597,352	5,599,942	5,603,687
5,584,628	5,586,393	5,589,183	5,593,155	5,595,334	5,597,437	5,600,060	5,604,223
5,584,862	5,586,560	5,589,329	5,593,487	5,595,423	5,597,895	5,600,207	5,604,510
5,584,954	5,586,586	5,590,295	5,593,561	5,595,526	5,598,144	5,600,230	5,605,555
5,585,242	5,586,926	5,591,162	5,593,768	5,595,532	5,598,242	5,600,564	5,605,559
5,585,249	5,587,066	5,591,265	5,593,868	5,595,564	5,598,794	5,601,567	5,605,704
5,585,286	5,587,424	5,591,304	5,594,107	5,595,749	5,599,064	5,601,737	5,608,066
5,585,414	5,587,523	5,591,329	5,594,552	5,596,021	5,599,068	5,601,787	5,608,376
5,585,715	5,587,533	5,591,751	5,594,591	5,596,113	5,599,153	5,602,123	
5,585,918	5,587,640	5,592,095	5,594,774	5,596,705	5,599,188	5,602,789	

3510-16

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Meeting of the Public Advisory Committee for Trademark Affairs

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice of meeting.

SUMMARY: The Patent and Trademark Office is announcing, in accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), an open meeting of the Public Advisory Committee for Trademark Affairs.

DATES: The meeting will be held from 10:00 a.m. until 4:00 p.m. on Monday, May 19, 1997.

ADDRESSES: U.S. Patent and Trademark Office, 2121 Crystal Drive, Crystal Park 2, Room 912, Arlington, Virginia.

FOR MORE INFORMATION CONTACT: David E. Bucher, Deputy Assistant Commissioner for Trademark Policy and Projects, by mail marked to his attention and addressed to Office of the Assistant Commissioner for Trademarks, Patent and Trademark Office, 2900 Crystal Drive, South Tower Building, Suite 10B10, Arlington, VA 22202-3513; by telephone at (703) 308-9100, ext. 20; by fax at (703) 308-9099; or by e-mail to dave.bucher@uspto.gov.

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SUPPLEMENTARY INFORMATION: The meeting will be open to public observation. Accordingly, seating will be available to members of the public on a first-come-first-served basis. Members of the public will be permitted to make oral comments of three (3) minutes each. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed. Copies of the minutes will be available upon request. The agenda for the meeting is as follows:

(1) Opening remarks

(2) Financial Report

(3) Trademark Trial and Appeal Board Report

(4) Business Process Reengineering Report

(5) Report on Service and Examination Activities

(6) Discussion of Policy Issues in Examination

(7) Legislation and International Affairs Report

(8) Discussion of Trademark/Domain name issues

(9) Discussion of prospective hearings on Intent-to-Use

Dated: April 10, 1997

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
March 3-7, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
3-3	EX EX	74/140,026 74/140,610	Small Luxury Hotels of the World Ltd.	Sec. 6 disclaimer (requirement of words "SMALL LUXURY HOTELS" [genericness; non-distinctiveness under Sec. 2(f)]	Refusal Reversed (in both cases)	"SMALL LUXURY HOTELS OF THE WORLD" and "SLH SMALL LUXURY HOTELS OF THE WORLD" (and design) [promoting, marketing and advertising the hotels and resorts of others; hotel and resort reservation services]			No
3-3	OPP	90,744	CAE, Inc. v. Clean Air Engineering, Inc.	Sec. 2(d)	Opposition Dismissed	"CAE" [technical consultation, testing, research and engineering in the field of environmental processes]	"CAE" and "CAE" (and design) [both marks for electronic apparatus and equipment-namely, simulators, visual display systems and motion systems for use with simulators; supervisory control and data logging equipment and systems; and magnetometers and magnetic anomaly detection equipment]; "CAE" (and design) [nuclear power station training simulators, air traffic control radar data processing and display equipment]		No

[1]EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
3-4	EX	74/540,030	Time, Inc.	whether, as evidenced by the specimens of use, the applicant is using the matter asserted for registration as a trademark for the goods recited in its application	Refusal Affirmed		"WHERE AMERICAN DREAMS STILL COME TRUE" [magazines in the field of finance, investments, and related subjects]		No
3-5	EX	74/450,430	R.G.S. Group, Ltd.	2(a) [immoral or scandalous matter]	Refusal Affirmed		"REALLY GOOD SHIT" [penetrating oil for automotive, marine, industrial, residential, and sporting use]		No
3-5	EX	74/480,996	Lucy Cousins	whether the matter asserted for registration functions as a trademark for applicant's goods or, rather, functions only as part of applicant's book titles	Refusal Reversed		"MAISY" [children's story books]		No
3-6	CANC CANC	21,379 21,124	Stromgren Supports, Inc. v. Bike Athletic Co.	genericness; 2(e)(1) [merely descriptive]; abandonment	Petitions to Cancel Granted [on grounds of genericness and abandonment as to mark "COMPRES-SION"; on grounds of mere descriptiveness and lack of distinctiveness as to mark "COMPRESSION PERFORMANCE SHORT"]		"COMPRESSION" [hosiery]; "COMPRESSION PERFORMANCE SHORT" [elastic athletic garments and outer wear, namely, sports girdles]		Yes

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
3-6	OPP	93,653	W. B. Johnson Properties, Inc. v. Ritz World, Inc.	2(d)	Opposition Sustained (but not as to opposer's "PUTTIN ON THE RITZ" and "THE RITZ CARLTON ORCHESTRA" marks)	registered marks: "RITZ-CARLTON," "RITZ," "THE RITZ-CARLTON CLUB," and "THE RITZ KIDS" [all for hotel services]; "PUTTIN ON THE RITZ" [watches, stationery items, clothing, food, wine, liquor, etc.]; "THE RITZ-CARLTON ORCHESTRA" [music cassettes and records] and prior use of "THE RITZ," "RITZ," and "RITZ-CARLTON" marks in conjunction with various transportation and rental car services for hotel guests	"RITZ RENT A CAR" (and design) [rental of vehicles]		No
3-7	EX	74/326,627	Evelyn Virshup	de jure functionality; inherent distinctiveness	Refusal Affirmed		configuration of a jewelry storage device [jewelry storage devices]		Yes
3-7	OPP	94,062	Stephen Enterprises, Inc.	2(d)	Opposition Dismissed	"BOO-BUNNIE" [novelty ice packs for application to minor injuries]	"BOO BOO BUDDY" [cold packs that provide either hot or cold temperatures]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

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Washington, D.C. 20231

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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/06/95
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HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY	308-2351	10/25/95
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SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/29/95
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TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/02/95
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MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/05/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/09/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/01/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
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(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
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TRADEMARK OPERATION

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Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	01/30/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	11/13/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/04/96	03/17/97
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Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/96	12/12/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/16/96	10/28/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	01/13/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/96	01/22/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	02/03/97
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/21/97	—0—
Renewals (All Classes)	02/10/97	—0—
Section 12(c) Publications (All Classes)	12/05/96	—0—

1. ** Assigned to all Law Office

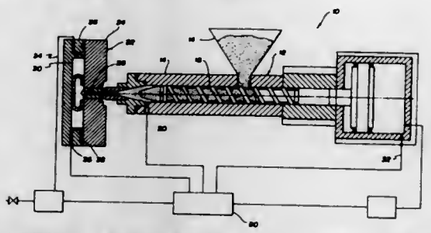
2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,441,680 (3180th)
METHOD AND APPARATUS FOR INJECTION MOLDING
Milko G. Guergov, 615 Wahington, #5, Monroe, Mich. 48161
Reexamination Request No. 90/004,351, Sep. 3, 1996.
Reexamination Certificate for Patent 5,441,680, issued Aug. 15, 1995, Ser. No. 236,471, May 2, 1994.
Int. Cl.[6] B29C *45/34*
U.S. Cl. 264—40.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–21** is confirmed.

1. For use with an injection molding machine, a method of injection molding, comprising:

generating internal counterpressure within molten plastic as plastic pellets are plasticized in the injection molding machine; and

pressurizing air within a cavity of a mold in the injection molding machine to an air pressure level which is substantially equal to said internal counterpressure in order to counterbalance said internal counterpressure as said molten plastic is injected into said cavity, thus providing a substantially pressure-balanced molding environment for the plastic; and

injecting said molten plastic into said cavity.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,495

PRINTED SHEET MONITORING ASSEMBLY

Claus A. Bolza-Schuenemann, and Johannes G. Schaede, both of Wuerzburg, Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

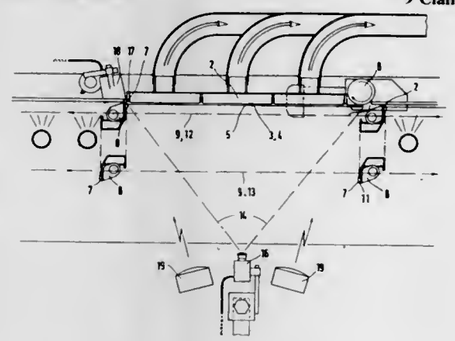
Original No. 5,329,852, dated Jul. 19, 1994, Ser. No. 926,697, Aug. 10, 1992. Application for reissue Jan. 16, 1996, Ser. No. 585,737

Claims priority, application Germany, Aug. 14, 1991, 4126799

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232

9 Claims



1. A printed sheet monitoring assembly usable to monitor a printed sheet in a sheet-fed rotary press, said printed sheet monitoring assembly comprising:

a suction box having a planar lower suction surface for tightly holding a sheet to be monitored in a crease-free manner, said suction box being positioned intermediate first and second spaced processing devices of the press;

first and second spaced, endless conveyor chains passing beneath said suction surface and defining an upper chain path and a lower chain path;

a plurality of sheet gripping means secured to, and extending between said conveyor chains;

an opto-electronic image sensor positioned beneath said suction surface, said sensor being operable to monitor a printed sheet held against said suction surface; and

trigger means operable to activate said sensor when a printed sheet to be monitored is properly positioned on said suction surface.

Re. 35,496

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING THE SAME

Ken Yamamura; Naoto Ueda; Kazunari Michii; Hitoshi Fujimoto; Kiyoaki Tsumura; Hitoshi Sasaki, and Takashi Miyamoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

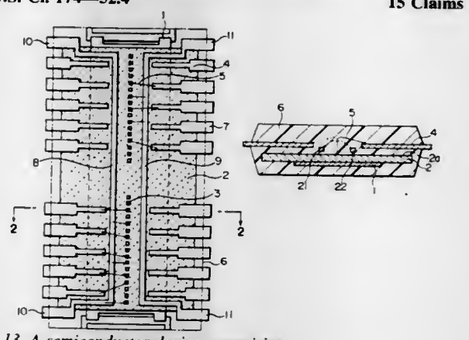
Original No. 5,334,803, dated Aug. 2, 1994, Ser. No. 968,055, Oct. 28, 1992. Application for reissue Sep. 8, 1995, Ser. No. 525,174

Claims priority, application Japan, Oct. 30, 1991, 3-284565; Sep. 17, 1992, 4-248367

Int. Cl.[6] H01L *23/02;23/08;43/00*

U.S. Cl. 174—52.4

15 Claims



13. A semiconductor device comprising:

a semiconductor chip having a first surface, an opposed second surface, and a plurality of electrode pads linearly disposed substantially on a longitudinal center line of the first surface of said semiconductor chip;

a die-pad bonded to the second surface of said semiconductor chip to support the chip and having a smaller area than said semiconductor chip;

at least one common inner-lead disposed opposite and spaced from the first surface of said semiconductor chip and substantially parallel to the longitudinal center line;

a plurality of inner leads disposed adjacent to corresponding electrode pads opposite and spaced from the first surface of said semiconductor chip;

a plurality of metallic wires electrically connecting respective electrode pads with one of the common inner-lead and the corresponding inner lead;

a resin package encapsulating, said semiconductor chip, said die-pad, said common inner-lead, said plurality of inner leads, and said plurality of wires;

at least one common outer-lead integrally connected with said common inner-lead and exposed outside said resin package; and

a plurality of outer leads, each outer lead being unitary with a corresponding inner lead and exposed outside said resin package wherein said common inner-lead and said plurality of inner leads are spaced from the first surface of said semiconductor chip by a gap filled with resin that is pan of said resin package.

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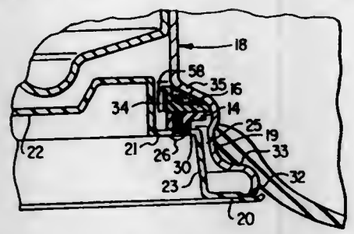
Re. 35,497
DECORATIVE SIMULATED WHEEL COVER RETENTION SYSTEM

George A. Carter, III, 6614 Lakeshore Dr., Garland, Tex. 75042, assignor to George A. Carter, III, Garland, Tex.

Original No. 5,188,428, dated Feb. 23, 1993, Ser. No. 655,328, Feb. 12, 1991. Continuation-in-part of Ser. No. 496,339, Mar. 20, 1990, Pat. No. 5,046,784. Application for reissue Nov. 16, 1994, Ser. No. 340,721

Int. Cl.[6] B60B 7/06

U.S. Cl. 301—37.43 66 Claims



48. A retention system for securing a wheel cover to an automotive wheel, the wheel cover having an annular rim portion and the automotive wheel having an annular wall portion extending from an outer peripheral edge portion with an annular under cut area along the annular wall portion, said retention system comprising:

a mating member having a circumferential side portion adapted to be positioned and fixedly secured to the annular wall portion of said automotive wheel, said mating member including a first releasable engagement member;

a retaining member to be fixed to the wheel cover along said annular rim portion of the wheel cover, said retaining member releasably engaging said first releasable engagement member of the said mating member;

a resilient ring of soft material extending about the circumference of said mating member at the annular wall portion of the wheel securing said mating member to the wheel with said retaining member being removably secured to the mating member upon interengagement of said releasable engagement member;

a decorative wheel cover secured to said retaining member and securable in an operative position with said retaining member engaged with said mating member, said decorative wheel cover including a back side secured to said retaining member and including a circular annular rim portion and

fastening means for securing said wheel cover to said retaining member.

Re. 35,498
VEHICLE LOCATION SYSTEM

Michael E. Barnard, Reigate, United Kingdom, assignor to U.S. Philips Corporation, New York, N.Y.

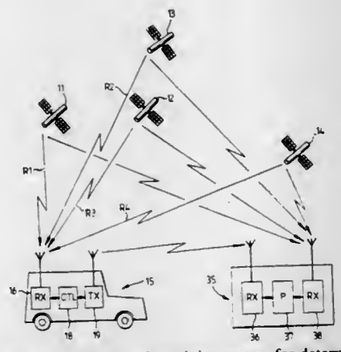
Original No. 5,119,102, dated Jun. 2, 1992, Ser. No. 644,792, Jan. 23, 1991. Application for reissue May 27, 1994, Ser. No. 250,782

Claims priority, application United Kingdom, Feb. 28, 1990, 9004433

Int. Cl.[6] H04B 7/185; G01S 5/02

U.S. Cl. 342—357 48 Claims

1. A vehicle location system for use in a global positioning system (GPS), comprising at least one vehicle mounted equipment including means for receiving signals directly from the GFS, a fixedly sited base station including first means for receiving signals directly from the GPS, characterised in that the vehicle mounted equipment includes means for recording the received GPS signals and means for retransmitting the recorded GPS signals to the base station, and in that the fixedly sited base station includes second means for receiving the recorded GPS signals retransmitted by the vehicle mounted equipment, and position determining means



coupled to the first and second receiving means for determining the position of the vehicle at the time when the vehicle mounted equipment received the GPS signals.

Re. 35,499
ELIMINATION OF MONOCARBONATE FROM POLYCARBONATE

Sarat Munjal, and Che I. Kao, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 4,939,230, dated Jul. 3, 1990, Ser. No. 272,150, Nov. 16, 1988. Application for reissue May 17, 1993, Ser. No. 61,540

Int. Cl.[6] C08G 64/00

U.S. Cl. 528—198 14 Claims

10. [A] *An interfacial* process for making polycarbonate comprising *the steps in sequence of*

[(a) forming a reaction mixture which comprises a dihydroxy compound, a carbonic acid derivative, a solvent, and sufficient base to bring about the formation of polycarbonate, and

(b) employing in said reaction mixture a chain terminator, containing a hydroxy group, such that monocarbonate does not form]

(a) forming a reaction mixture which comprises a dihydroxy compound, phosgene, and organic solvent, and sufficient aqueous base to bring about the formation of polycarbonate;

(b) employing in said reaction mixture a chain terminator, containing a hydroxy group, such that monocarbonate forms only in an amount less than 100 ppm by adding said chain terminator to the reaction mixture when the reaction between said dihydroxy compound and said phosgene to form polycarbonate is complete;

(c) cooling the reaction mixture; and

(d) adding a chain coupling catalyst to the polycarbonate forming reaction mixture.

PLANT PATENTS

GRANTED APRIL 29, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,871
NECTARINE TREE CALLED "SUNMIST"

Wayne B. Sherman, 2230 SW. 43 Pl., Gainsville, Fla. 32608

Filed Aug. 22, 1994, Ser. No. 303,036

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—40.1 1 Claim

1. A new and distinct variety of nectarine tree, as illustrated and described, characterized by a low chilling requirement and bearing early-ripening fruit with white flesh and high eating quality, and with aroma typically associated whith white flesh.

9,872
PEACH TREE "AUTUMN SNOW"

Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Feb. 9, 1996, Ser. No. 599,124

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—42.1 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and a productive and regular bearer of large, white flesh, freestone fruit with excellent flavor and eating quality; the new variety is further characterized by having firm flesh with good handling and shipping quality, having a high degree of attractive orange-red skin color, ripening in the late maturity season, approximately 6 to 7 days after Snow Giant Peach (U.S. Plant Pat. No. 8,085).

9,873
PEACH TREE 'SNOW PRINCE'

Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 1, 1995, Ser. No. 605,259

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—42.1 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous and upright growth, and a productive and regular bearer of large, white flesh, clingstone fruit with very good flavor and eating quality; the fruit is further characterized by having firm flesh with good handling and shipping quality, having a high degree of attractive red skin color, and in comparison to the early maturing, Top Crest Peach (U.S. Plant Pat. No. 5,745) the new variety has white flesh instead of yellow flesh with heavier production of larger size fruit.

9,874
***POTENTILLA FRUTICOSA* PLANT NAMED 'PINK BEAUTY'**

Louis M. Lenz, Winnipeg, Canada, assignor to University of Manitoba, Winnipeg, Canada

Filed Nov. 21, 1995, Ser. No. 563,891

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—54.1 1 Claim

1. A new and distinctive cultivar of *Potentilla fruticosa* plant, substantially as herein shown and described, which:

(a) forms in profusion attractive deep pink flowers substantially continuously from summer until frost,

(b) exhibits a medium-sized compact round and spreading growth habit that tends to hold its foliage well even at the base of the plant,

(c) grows satisfactorily even under hot and dry growing conditions where other pink-flowered cultivars of the same species have tended to perform poorly, and

(d) forms attractive deep green foliage.

9,875
COREOPSIS PLANT NAMED TEQUILA SUNRISE

Kenneth E. Smith, and Linda L. Smith, botb of 2262 Hard Rd., Columbus, Ohio 43235

Filed Jan. 26, 1996, Ser. No. 592,160

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct cultivar of Coreopsis plant named Tequila Sunrise, as illustrated and described.

9,876
CHRYSANTHEMUM PLANT NAMED 'RUBY LADY'

Peter Wain, Hayling Island, United Kingdom, assignor to Cleangro Ltd., Chichester, United Kingdom

Filed Apr. 8, 1996, Ser. No. 629,370

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—76 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Ruby Lady, as illustrated and described.

9,877
POINSETTIA PLANT PETERSTAR MARBLE

Peter Jacobsen, deceased, late of Skibby, Denmark, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 10, 1995, Ser. No. 502,422

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—86.1 1 Claim

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, distinguished by its strong stems, bicolored pink and creamy white bracts, self-branching, large flowers and good leaf and bract retention in the consumer environment.

9,878
POINSETTIA PLANT PETERSTAR WHITE

Peter Jacobsen, deceased, late of Skibby, Denmark, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 10, 1995, Ser. No. 500,767

Int. Cl.[6] A01H 5/00

U.S. Cl. Plt.—86.2 1 Claim

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, distinguished by its strong stems, white bracts, self-branching, large flowers and good leaf and bract retention in the consumer environment.

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9,879

POINSETTIA PLANT PETERSTAR PINK

Peter Jacobsen, deceased, late of Skibby, Denmark, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 10, 1995, Ser. No. 500,486
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.3 **1 Claim**

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, distinguished by its strong stems, dark pink bracts, self-branching, large flowers and good leaf and bract retention in the consumer environment.

9,880

ANTHURIUM PLANT NAMED JASMINE

Calvin K. Hayashi, P.O. Box 242, Pahoa, Hi. 96778

Filed Dec. 5, 1995, Ser. No. 567,744
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of *Anthurium andraeanum* substantially as described and illustrated, known by the cultivar name Jasmine and characterized by the combined features of a yellow-green, generally heart-shaped spathe and an indentation along an edge thereof; long straight pedicles which hold and position the spathe well above the leaves; dark green leaves; slightly spreading growth habit and good blooming habit.

PATENTS

GRANTED April 29, 1997

ERRATA

For CLASS	See PATENT NO.
108–043	5,623,869
473–497	5,624,112
473–430	5,624,113
473–520	5,624,114
473–567	5,624,115
473–538	5,624,116
473–471	5,624,122
524–386	5,624,485
065–434	5,624,507
438–718	5,624,529
204–283	5,624,542
438–715	5,624,582
438–720	5,624,583
422–186	5,624,734
442–129	5,624,744
051–309	5,624,756
437–031	5,624,854
216–011	5,624,872
345–201	5,625,386
345–211	5,625,387
346–135	5,625,388
396–300	5,625,429
396–065	5,625,430
396–418	5,625,431
396–284	5,625,432
396–604	5,625,433
396–095	5,625,434
399–107	5,625,437
399–272	5,625,438
399–272	5,625,439
399–272	5,625,440
399–272	5,625,441
399–327	5,625,442
399–353	5,625,443
399–400	5,625,444
399–054	5,625,445

174–422 O.G.–97–2: QL3

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ERRATA–CONTINUED

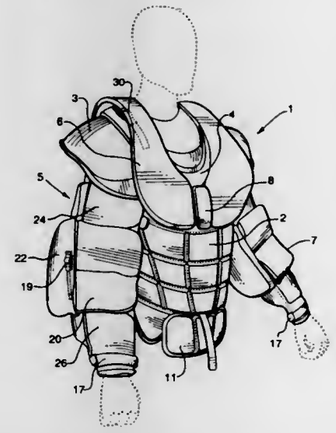
For CLASS	See PATENT NO.
386–053	5,625,461
386–046	5,625,462
349–086	5,625,473
349–079	5,625,474
349–123	5,625,475
349–149	5,625,476
349–035	5,625,477
365–127	5,625,524
395–452	5,625,553
395–611	5,625,554

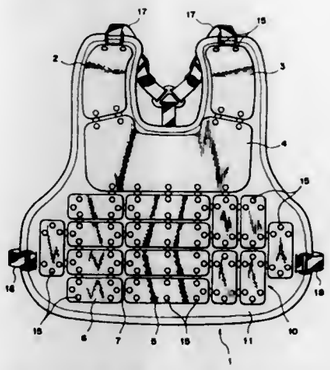
PATENTS

GRANTED APRIL 29, 1997

GENERAL AND MECHANICAL

5,623,728
HOCKEY GOALTENDER'S BODY PAD WITH SIZE ADJUSTMENT
Steven G. Wagner, Kitchener, Canada, assignor to Canstar Sports Group, Inc., Canada
Filed Feb. 10, 1995, Ser. No. 386,539
Claims priority, application Canada, Feb. 11, 1994, 2115524
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—462 **5 Claims**





1. Protective gear for a sports player, comprising:
a primary front protective pad securable to the player and generally configured to cover a portion of the player's chest and to extend downwardly to cover a portion of the player's abdomen;
a rear protective pad securable to the player and generally configured to cover a portion of the player's back;
said front and rear pads being flexibly connected to each other by a flexible connection to form a single unit; and
left and right arm sections flexibly connected to said primary front protective pad, said left and right arm sections being generally configured to cover portions of the player's upper arms and lower arms and to extend downwardly towards the player's wrists, said left and right arm sections comprising adjustment means for adjusting the overall length of each of said arm sections so as to selectively position arm sections relative to the player's arms, wherein either one of said front pad, said rear pad, and said flexible connection comprises adjustment means for adjusting the secured position of the front pad in relation to the rear pad, permitting said front pad to extend to a greater or lesser extent downwardly over the player's abdomen so as to accommodate desired positioning of said front pad.

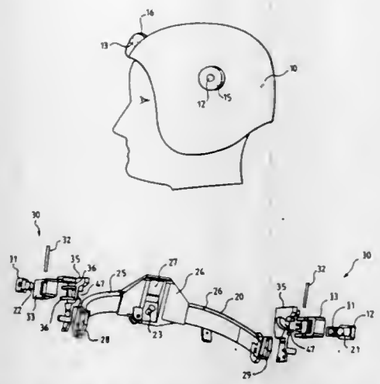
5,623,729
CHEST PROTECTOR
Mike C. Chen, 17, Kung 6 Road, Linkou 2nd Industrial Park, Taipei Hsien, Taiwan
Filed Jan. 30, 1996, Ser. No. 593,910
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—461 **5 Claims**

1. A chest protector comprising an upper guard portion and a lower padding portion wherein said upper guard portion consists of a right shoulder guard panel, a left shoulder guard panel, a chest guard panel and a plurality of abdomen guard panels connected with one another by a plurality of connecting plates, and said lower padding portion is a soft pad provided with shoulder belts and waist belt, characterized in that:
said right and left shoulder guard panels are symmetrical to each other and slightly curved to fit the curvature of the shoulder and chest of the body, and provided at the upper and lower ends thereof with a plurality of holes for connection purpose;
said chest guard panel is disposed beneath said right and left shoulder guard panels and provided on both the upper right and left sides thereof with a plurality of holes for connecting, respectively, to the holes at the lower ends of said right and left shoulder guard panels by means of said connecting plates, the chest guard panel being provided at the lower end thereof with a plurality of holes so that it can be connected to the plurality of said abdomen guard panels by means of said connecting plates;
said abdomen guard panels are provided at both ends each with a plurality of holes so that they are connected to one another and to the chest guard panel thereabove by means of the plurality of said connecting plates;
said connecting plates are each provided at both ends thereof with buttons for fastening into said holes on said right and left shoulder guard panels, said chest guard panel, and said abdomen guard panels; and
said upper guard portion is laid over said lower padding portion of suitable shape and size so that said upper guard portion is secured to said lower padding portion by means of rivets being driven into the holes, not being fastened by said buttons of said connecting plates, on the right and left shoulder guards, chest guard, and the abdomen guards.

5,623,730
QUICK-FIT MODULAR HELMET
Joël Baudou, Medard En Jalles, and Pascal Capdepuy, Merignac, both of France, assignors to Sextant Avionique, Velizy Villacoublay, France
Filed Sep. 25, 1995, Ser. No. 533,549
Claims priority, application France, Sep. 30, 1994, 94 11735
Int. Cl.[6] A42B *3/04*
U.S. Cl. 2—6.2 **16 Claims**

1. Helmet composed of two main parts, a shell with two side panels connected by the front and rear panels of the shell, and a rigid structure shaped to receive optronic devices, in which the structure can be mounted on and removed from the shell by means of a set of attachments, each attachment including linkage parts in the form of a stud and a cylinder, one of the linkage parts being attached to the shell and the other to the structure, each cylinder having an axial direction, wherein at least one linkage part in each of two of the attachments mounted on the structure is mobile relative to this structure and can be moved into open and closed

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positions, such that in the open position the two mobile linkage parts enable the structure to be placed on the shell, and in the closed position these mobile linkage parts assure the linkage with the shell via the corresponding linkage parts on the shell, and wherein the structure is equipped with means of holding these mobile linking parts in their open and closed positions, the change from open to closed position being obtained by pressing manually on a part that includes the mobile linkage part mounted on the structure, the pressure being applied to each the parts on each of the two attachments substantially along the axial direction of each of said cylinders.

5,623,731

DETACHABLE DEVICE FOR FASTENING AN OBJECT, LOCATED IN A CASE, TO A CARRIER

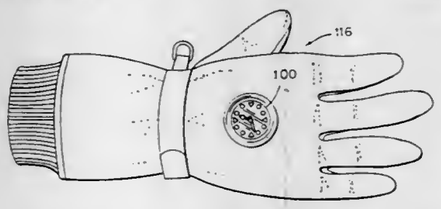
Rudolf Ehrgott, c/o Flimpex GmbH, Schuttelstrasse 67, A-1020 Vienna, Austria, and Dirk Albrecht, c/o D.A.N.Z. Trading & Consulting, Bachweg 14, CH-6314 Edlibach, Switzerland

Filed Jan. 6, 1995, Ser. No. 369,692

Claims priority, application Switzerland, Jan. 6, 1994, 028/94; Apr. 7, 1994, 030/94

Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—160 **4 Claims**



1. A fastening device detachably fastening a measuring device to a carrier,

said fastening device comprising:

a first fastening element fixed to a said measuring device,

a second fastening element having cylindrical sides,

said first fastening element detachably and mechanically engaged to the second fastening element,

sides of the case of said measuring device recessed within the cylindrical sides of said second fastening element and a face of the measuring device being exposed when said first fastening element is engaged to said second fastening element,

a third fastening element engaging a carrier to the second fastening element,

wherein the first fastening element and the second fastening element are complementary halves of a bayonet mount device, and

the third fastening element is a clamping ring corresponding to the cylindrical sides of the second fastening element.

5,623,732

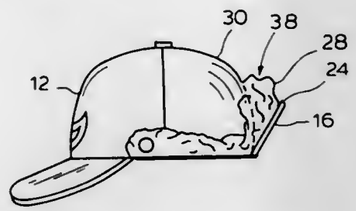
HAT IN COMBINATION WITH A HOOD

Michael A. Olajide, Jr., 64 E. 34th St., Suite 5A, New York, N.Y. 10016

Continuation-in-part of Ser. No. 832,757, Feb. 6, 1992, abandoned. This application Jun. 28, 1994, Ser. No. 268,164

Int. Cl.[6] A42B *1/18*

U.S. Cl. 2—195.1 **18 Claims**



18. A hat in combination with a hood comprising:

a hat including a crown having a lower peripheral edge, a front and a rear, the front and the rear being significantly spaced from each other by two sides;

a first visor attached to the front of the crown;

a second visor attached to the rear of the crown, the rear visor being capable of moving between an upper position and a lower position, in which in the upper position an approximate V-shaped pocket is formed between the rear visor and the crown, wherein neither the front visor nor the rear visor is attached to any portion of the peripheral edge on either of the sides of the crown; and

a hood adapted to cover at least part of the backside of a hat wearer.

5,623,733

MOISTURE RETAINING FACE MASK

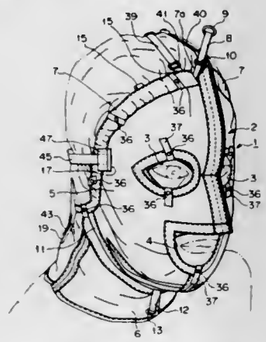
Humi Kurimoto, 3-2, Saginomiya 3-chome, and Yuhko Takahashi, 28-14-102, Saginomiya 1-chome, both of Nakano-ku, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,011

Claims priority, application Japan, Dec. 29, 1993, 5-222353

Int. Cl.[6] A42B *1/00*

U.S. Cl. 2—206 **7 Claims**



4. A moisture retaining face mask comprising:

a mask body including a face covering portion sewn in conformity to a facial configuration and provided with openings at respective positions corresponding to a user's eyes and mouth, and a neck covering portion having first and second end portions and which is connected to a lower edge of said face covering portion, said face and neck covering portions being made of a double-layered material composed of a first material that is heat retentive and hygroscopic and a second material that is air permeable and hygroscopic, said first and second materials being laid one on top of the other and sewn together so that said second material constitutes an inner side of said mask body,

said mask body having a first elastic cord housing portion provided along a peripheral edge of said mask body except along a lower peripheral edge of said face covering portion, said elastic cord housing portion having an opening at a top portion of said face covering portion,

said mask body further having a first fastening elastic cord inserted into said first elastic cord housing portion through said opening and fixed at both ends thereof in said first elastic cord housing portion,

said mask body further having a second elastic cord housing portion provided along an upper edge of said neck covering portion, said second elastic cord housing portion having an opening at a central portion of said second elastic cord housing portion,

said mask body further having a second fastening elastic cord inserted into said second elastic cord housing portion through said opening and fixed at both ends thereof in said elastic cord housing portion,

said mask body having a hook-and-loop fastener fixed to an obverse side at one of a left side or a right side of said face covering portion, and hook-and-loop fasteners fixed to an outer side of said neck covering portion at respective positions which correspond to the nape of a user's neck, said mask body further having joint securing hook-and-loop fasteners fixed to said neck covering portion such that one of said hook-and-loop fasteners is disposed on an obverse side at one of said first and second end portions of said neck covering portion, and the other hook-and-loop fastener is disposed on the reverse side of the other of said first and second end portions;

a pair of tapes crossed in an X shape, one end of each tape being connectable to said top portion of said face covering portion, said pair of tapes having hook-and-loop fasteners respectively fixed to the other ends of said tapes so that said hook-and-loop fasteners fixed to said tape ends can be attached to said respective hook-and-loop fasteners which are fixed to said neck covering portion at said positions corresponding to the nape of a user's neck; and

another tape connectable at one end thereof to the other of said left and right sides of said face covering portion, said tape having a hook-and-loop fastener fixed to the other end of said tape so that said hook-and-loop fastener can be attached to said hook-and-loop fastener fixed to said one of said left and right sides of said face covering portion.



toes having a length sufficient to separate the toes from each other at a portion thereof where the toe nails are located for avoiding damage to polish on the nails.

5,623,735

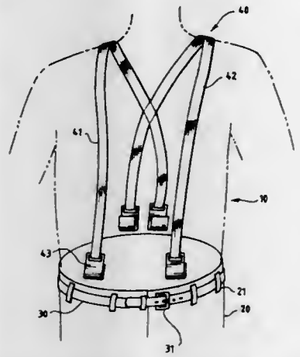
SUSPENDER TO BE WORN WITH A BELT

Don A. Perry, 742 Wolf Rd., Decatur, Ill. 62526

Continuation of Ser. No. 262,245, Jun. 17, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,102

Int. Cl.[6] A41F *3/00*

U.S. Cl. 2—327 **3 Claims**



1. A method of supporting a wearer's pants worn with a belt threaded through a plurality of belt loops at the waist of the pants, the method comprising:

(a) obtaining a pair of suspenders comprising:

(i) a pair of straps, each of which has two sides and two ends, each of which straps is adapted to be worn with one side facing inward against the body of the wearer and with the other side facing outward, each of which straps is further adapted to be worn over a shoulder of the wearer and to extend down the front and back of the trunk of the wearer; and

(ii) a connector at each end of each strap, each connector being made of a rectangular piece of rigid material having a length of about 3 to 6 inches formed into the shape of a hook by having a curved bend of about 180° such that a shank portion has a length of about 2 to 4 inches and a barb portion has a length of about 1 to 2 inches, each connector being attached to the strap at the shank portion at a location opposite the curved bend and in a fixed orientation relative to the strap such that the shank portion faces outward and the barb portion faces inwardly;

(b) placing the straps of the suspenders over the shoulders of the wearer; and

(c) hooking the connectors onto the belt with the shank portion facing outward so that an uplifting force is provided to the

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5,623,734

PEDICURE SOCK

Annette M. Pugliatti, 30 Ridgeland Terr., Rye, N.Y. 10580

Filed Mar. 21, 1995, Ser. No. 408,321

Int. Cl.[6] A43B *7/00*; **A41B** *11/08*

U.S. Cl. 2—239 **26 Claims**

1. A pedicure device comprising a means for enclosing a foot, said means for enclosing a foot having means for separating toes from each other, said means for separating toes extending from a base of each of the toes, where the toes are connected to each other, to an opening located in an area of each of the toes beneath a base of a toe nail on each of the toes, said means for separating

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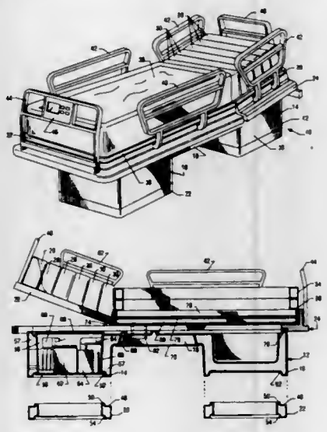
belt, which force is, in turn, provided to the pants; and so that the connectors provide an inward force against the belt and the pants to resist any tendency of the top of the pants to fold over because of the protrusion of the wearer's stomach.

5,623,736

MODULAR INFLATABLE/AIR FLUIDIZED BED

Sohrab Soltani, Charleston; James J. Romano, and Timothy Perez, both of James Island, all of S.C., assignors to Suport Systems, International, Charleston, S.C.

Filed Dec. 9, 1994, Ser. No. 353,053
Int. Cl.[6] A47C *27/08;27/10*
U.S. Cl. 5—689 **18 Claims**



1. A bed for supporting a patient comprising:
an inflatable support layer comprising a plurality of inflatable cells to support at least a first portion of a patient's body;
a fluidizable medium contained within a suitable containment system for supporting a second portion of the patient's body;
a frame assembly supporting said inflatable support layer and said fluidizable medium; and
a unitary, plastic base for supporting said frame assembly, said base comprising first and second box shaped pedestals, a midsection connecting said pedestals, and a blower compartment formed in one of said pedestals, said blower compartment containing a blower for inflating said support layer and for fluidizing said fluidizable medium.

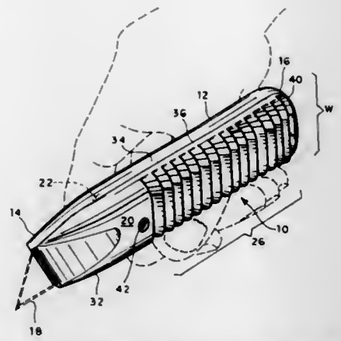
5,623,737

COMBINATION TOOL FOR WALLBOARD

William L. Moyer, Jr., and Gregory A. Moyer, both of R.D. 3, Box 580, Bedford, Pa. 15522

Continuation-in-part of Ser. No. 23,557, May 26, 1994, Pat. No. Des. 360,817. This application Nov. 7, 1994, Ser. No. 336,243
Int. Cl.[6] B26B *11/00*
U.S. Cl. 7—158 **8 Claims**

1. A combination hand tool with a fixed knife blade and devoid of moving parts for use in the fabrication and finishing of wallboard construction, said tool comprising:
an elongate handle portion having a first end and an opposite second end, with said first end having a planar utility knife blade fixed therein, and said second end having a smoothly rounded compound convex curvature thereto;
said handle portion further having a width and a thickness, with said handle portion width being greater than said handle portion thickness, and having opposite first and second sides extending perpendicularly across said width, with said first and second sides being substantially flat and parallel to said planar utility knife blade, and;
at least one of said first and second sides of said handle portion having a plurality of transverse rasp teeth, said transverse rasp teeth comprising a plurality of sharp edged teeth perpendicularly extending across at least one of said first and second sides of said handle portion, with each tooth of said teeth having a first face angled toward said first end of said handle portion having said knife, and an opposite second face being perpendicular to said first and second sides of said handle portion, wherein cutting and smoothing action of said rasp teeth is provided when said combination tool is drawn along a wallboard edge in a direction toward said second end of said handle portion and away from said planar utility knife blade extending from said first end of said handle portion; and
said combination hand tool being devoid of any movable parts, whereby said combination tool further serves as a cutting tool by means of said knife blade, and a tamping and burnishing tool by means of said smoothly rounded, compound convex curvature of said second end of said handle portion.

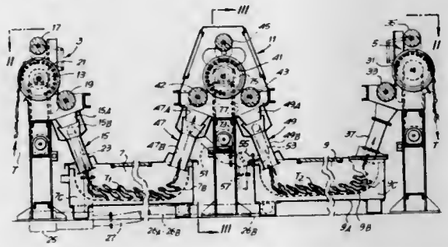


5,623,738

MACHINE AND METHOD FOR THE CONTINUOUS WASHING OF A FABRIC

Fiorenzo Biancalani, Prato, and Luigi Marcora, Vicchio, both of Italy, assignors to Officina Meccanica Biancalani & C. di Fiorenzo Biancalani & C. S.n.c., and Coramtex S.r.l., both of Prato, Italy

Filed Mar. 8, 1995, Ser. No. 400,620
Int. Cl.[6] D06B *3/28*
U.S. Cl. 8—152 **22 Claims**



1. A machine for the continuous washing of a fabric, comprising:
fabric introducing means for introducing the fabric to be treated into the machine;
extracting means for extracting the treated fabric from the machine;
treatment tank means disposed between said fabric introducing means and said extracting means, said treatment tank means including at least two fabric treatment tanks arranged in series with respect to an overall direction of advance of the fabric through the machine; and
reversible transfer means, provided between said at least two fabric treatment tanks, for transfer of the fabric from a first tank of said at least two fabric treatment tanks to a second tank of said at least two fabric treatment tanks and back again, said reversible transfer means including a first conveying duct leading to said first tank, a second conveying duct leading to said second tank and pipes for introducing a conveying liquid under pressure, one of said pipes leading into said first conveying duct and another of said pipes leading into said second conveying duct.

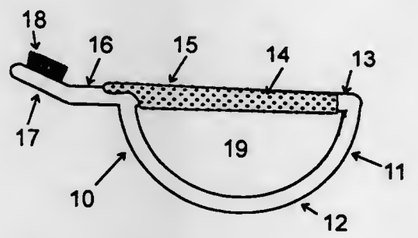
20. A method for the continuous washing of a fabric, comprising:
introducing the fabric being into a tank means containing a washing liquid;
treating the fabric in said tank means;
extracting the fabric from said tank means, wherein said tank means is provided as a first tank and a second tank;
forming an accumulation of fabric with fabric introduced into the first tank and forming a second accumulation of fabric with fabric introduced into the second tank;
transferring the fabric forming said first and second accumulations alternately from said first to said second tank and back again before being extracted from said second tank wherein the transferring of fabric forming the accumulation is transferred from said second tank to said first tank and back again by means of a liquid introduced under pressure into a respective conveying duct.

5,623,739

TODDLER/CHILD TOOTHBRUSH

Roxanne Thompson, #5 Starnes Addition, Springfield, Ill. 62702

Filed Oct. 10, 1995, Ser. No. 541,515
Int. Cl.[6] A46B *9/04*
U.S. Cl. 15—167.1 **1 Claim**



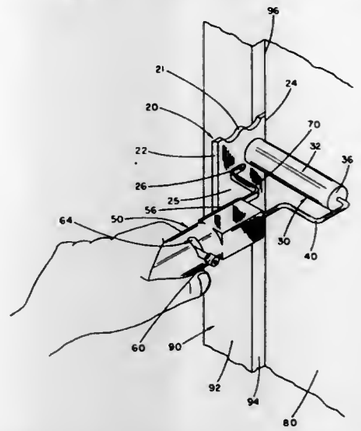
1. A toothbrush for a toddler or young child comprising:
a handle of unitary rigid construction having a straight section having a longitudinal axis and a curved section thereby defining a closed semi-circular ring, whereby the curved section prevents mouth injury by limiting insertion of the handle into a young child's mouth;
a bridge member extending linearly from and along the longitudinal axis of the straight section of the handle;
a brush head extending at an angle of 25 degrees from the longitudinal axis of the straight section and in a direction opposite to the curved section of the handle, said semi-circular closed ring defining an aperture sized to be proportional with and to receive four fingers of the young child;
the straight section of the handle being uniformly covered with a resilient material and provided with soft protrusions to enable secure gripping of the handle; and
the brush head including an array of soft, chiseled, nylon bristles attached to said brush head.

5,623,740

PAINT ROLLER EDGE GUARD

Harlow H. Burns, 1052 S. 20th St., Omaha, Nebr. 68108; Van H. Burns, and Brian D. Burns, both of Omaha, Nebr., assignors to Harlow H. Burns, Omaha, Nebr.

Filed Apr. 21, 1995, Ser. No. 426,941
Int. Cl.[6] B05C *1/00*
U.S. Cl. 15—230.11 **17 Claims**



1. A paint roller edge guard apparatus for use with a generally cylindrical roller sock, to facilitate the painting of a wall surface adjacent a non-painted surface by preventing the application of paint to the non-painted surface from the roller sock, the apparatus comprising:
a handle;
an edge guard having four edges and front and back faces;
means for pivotally and rotatably supporting said edge guard on said handle;
means for rotatably supporting a roller sock on said handle such that said roller sock may be rotated between a painting position, wherein the roller sock longitudinal axis is perpendicular to and adjacent said edge guard front face, and a filling position wherein the roller sock longitudinal axis is parallel to said edge guard front face; and
such that upon placement of said roller sock in said painting position, and upon positioning of said edge guard in contact with said adjacent non-painted surface, said roller sock may be placed in contact with a painted wall by application of pressure to said handle deflecting said edge guard rearward allowing the roller sock to contact said painted wall surface applying paint thereto while said corner is kept clean of said applied paint.

5,623,741

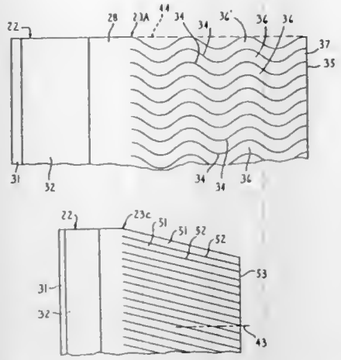
BRUSH PAD WITH IRREGULAR FINGERS

Gaylord J. Clark, 4769 Paw Paw Lake Rd., Coloma, Mich. 49038

Filed Nov. 17, 1995, Ser. No. 559,134
Int. Cl.[6] B60S *3/06*
U.S. Cl. 15—230.16 **24 Claims**

1. In a vehicle finishing apparatus having a support rotatable about a rotation axis, and a plurality of finishing units mounted on said support in spaced relation therearound, each said finishing unit including a thin sheetlike pad of flexible material having an outer free edge adapted to contact a vehicle, said pad having an inner edge positioned adjacent to a periphery of the support, said pad also having a plurality of slits which extend inwardly from said outer free edge in a direction toward but terminating short of said inner edge so as to define a plurality of elongate cantilevered flexible strips, and mounting means cooperating between said

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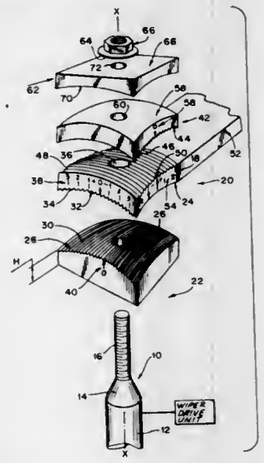
support and said pad for releasably securing said pad to said support, comprising the improvement wherein said slits extend inwardly from said outer edge in generally nonperpendicular relationship relative to said rotational axis.

5,623,742

MOTOR VEHICLE SCREEN WIPER HAVING MEANS FOR ORIENTATION OF THE DRIVE HEAD

Maurice Journee, Reilly, and Philippe Favre, Quevilly, both of France, assignors to Paul Journee, S.A., Reilly, France

Filed Mar. 20, 1995, Ser. No. 414,123
Claims priority, application France, Mar. 23, 1994, 94 03413
Int. Cl.[6] B60S *1/34*
U.S. Cl. 15—250.34 **9 Claims**



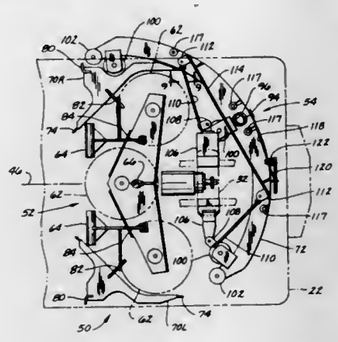
1. A motor vehicle screen wiper assembly comprising a screen wiper drive unit having a rotatable motor shaft defining an end portion and an axis of rotation thereof, a drive head of a screen wiper arm, and fastening means securing the drive head on the said end portion of the motor shaft, the said end portion comprising a conical portion and a terminal threaded shank projecting from the conical portion, the drive head having a conical through hole complementary to the conical portion of the motor shaft for cooperation therewith, the fastening means including the said conical portion and shank of the motor shaft and a nut having a radial thrust face, the nut being screwed on to the threaded shank of the motor shaft, the drive head having an upper face with which the said thrust face of the nut cooperates, wherein the drive head includes an orientation ring in which the said conical hole is formed and which has a first arcuate face defining a first set of elongated ridges thereon, the drive head further including a drive head body having a second arcuate face formed with a second set of elongated ridges cooperating with the first set of ridges, the drive head body having an oblong through hole, with the said motor shaft end portion extending through both said conical and oblong holes, wherein said oblong hole allows lateral movement of the drive head body with respect to the axis of rotation and the orientation ring.

5,623,743

MOBILE SURFACE SCRUBBER SOLUTION RECOVERY SYSTEM

Jack L. Burgoon, Toledo, and Donald E. Line, Arlington, both of Ohio, assignors to Clarke Industries, Inc., Bowling Green, Ohio

Filed Jun. 4, 1996, Ser. No. 659,019
Int. Cl.[6] A47L *11/30*
U.S. Cl. 15—320 **20 Claims**



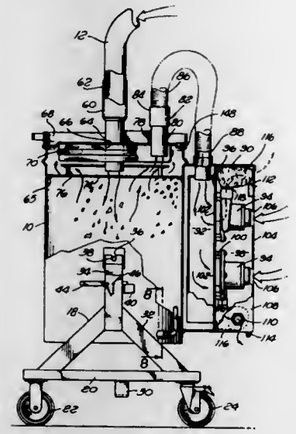
1. A mobile surface scrubber for scrubbing a surface wetted with cleaning solution, said scrubber comprising:
- a frame having a front, a back, left and right sides as viewed looking forward from the back of the frame, and a central longitudinal axis extending in a front-to-back direction relative to the frame;
- a plurality of wheels rotatably mounted on the frame for transporting said scrubber over the surface in a plurality of directions including forward, left turning, and right turning directions;
- scrub brush means attached to said frame and positioned to scrub the wetted surface as said scrubber is transported over the surface; and
- a recovery system for recovering cleaning solution from the surface, said recovery system including a return tank for retaining recovered cleaning solution, an elongate rear squeegee pivotally connected to said frame, and left and right elongate side squeegees mounted on said frame adjacent the left and right sides of the frame, respectively, said rear squeegee having opposite left and right ends, each of said side squeegees having forward and rearward ends, said rear squeegee being positionable to contact said surface behind said scrub brush means when said scrubber is transported in the forward direction, said side squeegees being unvaryingly oriented with respect to the frame and positionable to contact said surface on opposite sides of said scrub brush means when said scrubber is transported in the forward direction, said rear squeegee being so constructed and operable that when said scrubber is transported in a right turning direction the rear squeegee pivots relative to the frame to a position in which the right end of the rear squeegee overlaps the rearward end of the right side squeegee, and when said scrubber is transported in a left turning direction the rear squeegee pivots relative to the frame to a position in which the left end of the rear squeegee overlaps the rearward end of the left side squeegee.

5,623,744

VACUUM CLEANER

Timothy Triplett, 690 Camino Manzanas, Thousand Oaks, Calif. 91360, and Wolfgang Beuhler, 402 N. Marcile Ave., Glendora, Calif. 91741

Filed Dec. 8, 1995, Ser. No. 569,342
Int. Cl.[6] A47L *5/36*
U.S. Cl. 15—326 **7 Claims**



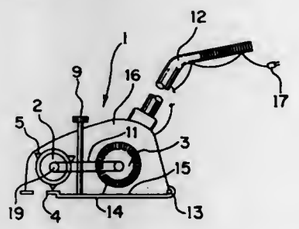
1. A vacuum cleaner having;
means for creating a vacuum;
means for applying the vacuum created to a localized area;
means for collecting materials retrieved by the localized application of the vacuum;
means for prohibiting said retained materials from entering the means for creating a vacuum, said means including two annular disks connected by spacer means;
means for minimizing the amount of ambient noise disturbance resulting from said means for creating a vacuum, said means including a sound dampening sleeve member and a helical spring member fitted within said sleeve member.

5,623,745

CARPET CUTTING SYSTEM

Michael Stanek, 304 Paseo Pinto, San Clemente, Calif. 92672

Filed Jan. 24, 1996, Ser. No. 590,816
Int. Cl.[6] A47L *5/28*
U.S. Cl. 15—339 **5 Claims**



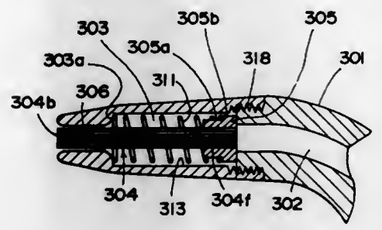
1. A carpet cleaning system comprising in combination a carpet vacuum cleaner having beater brushes, a motor for creating a vacuum, a handle for guiding the vacuum cleaner and wheels for allowing said vacuum cleaner to move over a carpeted surface,
- a plate having a cutting edge mounted adjacent said beater brushes,
- a rotating drum having cutting blades mounted adjacent said plate,
- means for rotating said drum,
- whereby as said drum rotates it pulls portions of said carpet toward said plate where said portions will be cut off and said cut off portions will be picked up by the vacuum of said vacuum cleaner.

5,623,746

TOOTH-BRUSHING MACHINE

Sugimoto Ichiro, Yokkaichi, Japan, assignor to Euronica Corporation, Hyogo, Japan

PCT No. PCT/JP94/00220, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/17690, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 14, 1994, Ser. No. 507,338
Claims priority, application Japan, Feb. 15, 1993, 5-050109
Int. Cl.[6] A46B *13/04*
U.S. Cl. 15—22.2 **7 Claims**



1. A tooth brushing machine, comprising a hollow nozzle having a tip with a water-spraying opening; a single bundle of bristles extending through said water-spraying opening; and means for reciprocating said single bundle of bristles in said water-spraying opening so as to move said single bundle of bristles in and out of said water-spraying opening to act efficiently on user's teeth, said water spraying opening and said bundle of bristles being formed so as to form between said bundle of bristles and an inner surface of said opining a gap through which water is sprayed outwardly from said water-spraying opening around said reciprocating single bundle of bristles to act efficiently on user's teeth.

5,623,747

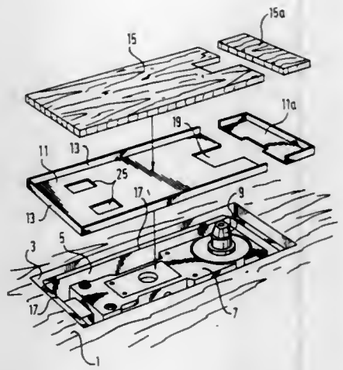
FLOOR-MOUNTED DOOR CLOSER DEVICE

Mario Marinoni, Magenta, Italy, assignor to Societa Italiana Proquetti S.r.l., Magenta, Italy

PCT No. PCT/EP94/04285, § 371 Date Aug. 15, 1995, § 102(e) Date Aug. 15, 1995, PCT Pub. No. WO95/17573, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 22, 1994, Ser. No. 505,204
Claims priority, application Germany, Dec. 22, 1993, 9319769 U
Int. Cl.[6] E05F *3/00*
U.S. Cl. 16—49 **10 Claims**

1. Floor-mounted door closer device comprising a floor trough (5) insertable in a cavity (3) of a floor and arranged to receive a closer casing (7) from which a pivot pin (9) projects, the device further comprising a cover plate (11) covering the floor trough (5) and closer casing (7), characterised in that the cover plate (11) has a material layer (15) made of flooring material positioned thereon, and is supported on the floor trough (5) such that the cover plate (11) is sunk in the cavity (3) and the material layer (15) positioned on the cover plate (11) is substantially flush with the surface of the

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flooring material (1) surrounding the cavity, wherein the cover plate comprises a flat rectangular box having side walls which is open on its top side and is filled with the material layer made of flooring material.

5,623,748

SYSTEM FOR CARDING TEXTILE FIBRES

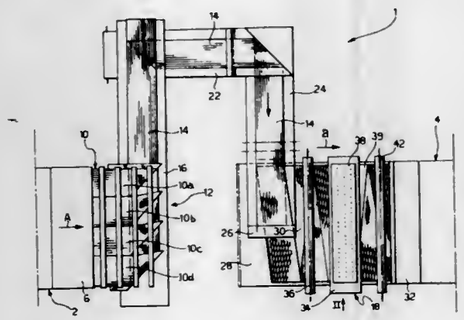
Giovanni Bacchio, Mongrando, Italy, assignor to Fonderie Officine Riunite F.O.R., Beilla (Vercelli), Italy

Filed Jan. 22, 1996, Ser. No. 588,044

Claims priority, application Italy, Jan. 26, 1995, TO95A0050

Int. Cl.[6] D01G *15/00*

U.S. Cl. 19—98 **6 Claims**



1. A system for carding textile fibres comprising:

a first and a second carding machine, the first carding machine having an output portion and the second carding machine having an input portion,

a layering system disposed between said output portion and input portion, the layering system being able to form a mat composed of a plurality of superimposed layers produced from a web of fibres coming from the first carding machine, and

a compactor device disposed downstream of the layering system for bringing about cohesion of the various superimposed layers forming the mat.

5,623,749

APPARATUS FOR SEPARATING OPENED FIBER TUFTS FROM AN AIR STREAM

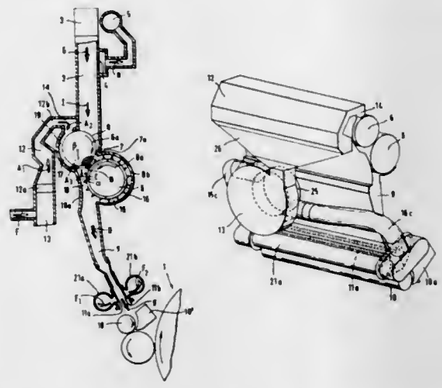
Ferdinand Leifeld, Kempen; Ralf Meger, and Armin Leder, both of Mönchengladbach, all of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Sep. 28, 1995, Ser. No. 535,839

Claims priority, application Germany, Nov. 10, 1994, 44 36 114.9; Jun. 24, 1995, 195 22 995.9

Int. Cl.[6] D01G *15/40*

U.S. Cl. 19—105 **18 Claims**



1. An apparatus for feeding fiber tufts to a fiber processing textile machine, the apparatus comprising

(a) a feed chute having upper and lower ends;

(b) means for introducing fiber tufts into the feed chute at said upper end;

(c) means for discharging the fiber tufts from said feed chute at said lower end;

(d) densifying air stream generating means for introducing an air stream into said feed chute in a flow direction toward said lower end to densify the fiber tufts therein;

(e) a screen forming part of a lower region of said feed chute for separating the air stream from the fiber tufts; said screen having screen openings;

(f) an air removal hood immediately adjoining said screen externally of said feed chute;

(g) means for forcing the air stream through said screen openings out of said feed chute into and through said air removal hood;

(h) first guide means for guiding the air stream into said air removal hood from said feed chute through said screen openings at an acute angle relative to said flow direction; and

(i) second guide means for guiding the air stream in a curvilinear path within said air removal hood upon entry thereinto from said feed chute.

5,623,750

ADJUSTABLE ELASTIC AND INELASTIC STRAP APPARATUS

Jarrod A. Nasin, 184 Kahn Rd., and John H. Marcotte, III, 232 Pleasure Hill Rd., both of Franklin, Conn. 06254

Filed Aug. 7, 1995, Ser. No. 512,095

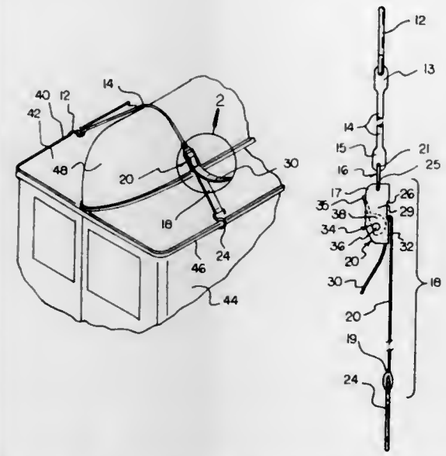
Int. Cl.[6] B65D *63/00;* **A44B** *11/00*

U.S. Cl. 24—68 CD **8 Claims**

1. An adjustable elastic and inelastic strap apparatus, comprising:

a first connector,

a flexible elastic strap assembly having a first end and a second end, wherein said first end of said elastic strap assembly is attached to said first connector.



a second connector connected to said second end of said elastic strap assembly,

a flexible inelastic strap assembly connected to said second connector, wherein said first connecter, said flexible elastic strap assembly, said second connector, and said flexible inelastic strap assembly are connected in series, wherein said inelastic strap assembly includes a strap-length-adjustment assembly and an inelastic strap adjustably connected to said strap-length-adjustment assembly, wherein said strap-length-adjustment assembly is employed for adjusting an effective length of said inelastic strap assembly between a first end of said inelastic strap assembly and a second end of said inelastic strap assembly, and

a third connector connected to said second end of said inelastic strap assembly.

5,623,751

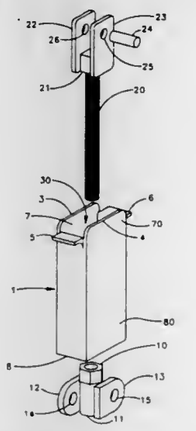
RETRACTABLE BINDER FOR SECURING CARGO LOADS

Kenneth Knutson, Rte. 2, Box 67, Toronto, S. Dak. 57268

Filed Jun. 16, 1995, Ser. No. 491,523

Int. Cl.[6] A44B *21/00;* **B66F** *3/00*

U.S. Cl. 24—71.1 **6 Claims**



1. A load binding system comprising:

a housing body having four sides together defining an encasement cavity, the housing body having a first closed end spaced from a second open end,

a threaded screw extending longitudinally through a bore in the first closed end and into the encasement cavity of the housing body,

a first rotating means threadably engaging a portion of the threaded screw located outside of the encasement cavity adjacent to the bore in the first closed end, and

a second capture means for capturing cargo lashings, the second capture means being fixed to a portion of the screw opposite the first rotating means, the second capture means having a first extended position substantially outside of the encasement cavity for permitting the capture of cargo lashings and having a second retracted position substantially inside the encasement cavity,

wherein rotation of the first rotating means causes movement of the second capture means from the first extended position to the second retracted position such that cargo lashings captured by the second capture means may be pulled into the encasement cavity to facilitate a tightened condition of a captured lashing looped about cargo, and

wherein said first rotating means includes a threaded fastener that engages the portion of said threaded screw projecting through the bore in said first closed end, the fastener being fixedly attached to a threaded leveraging collar, at least one ear being attached to the collar with each ear having an opening sized to receive a leveraging bar used to the threaded fastener of said first rotating means to move said second capture means alternately between said first and said second positions.

5,623,752

FOLDABLE COFFIN

Alexandre Gillard, Lausanne, and Alexandre Haas, Romanel-sur-Lausanne, both of Switzerland, assignors to Gerald Pidoux, Orbe, Switzerland

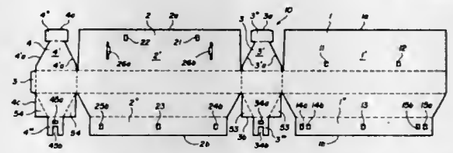
PCT No. PCT/CH94/00177, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO95/08973, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 6, 1994, Ser. No. 436,439

Claims priority, application Switzerland, Sep. 28, 1993, 2920/93

Int. Cl.[6] A61G *17/00*

U.S. Cl. 27—2 **9 Claims**



1. A container made of a single sheet of substantially cellulosic material, said sheet comprising a plurality of panels for forming the bottom, the sidewalls and the cover of the container, as well as assembling and reinforcing portions and having pre-formed folding lines and a plurality of pairs of openings arranged for becoming superposed in the folded state of the container, fastening members of plastic material for fastening together corresponding portions of said sheet being inserted into respective pairs of said openings so as to occlude the same and maintain the edges thereof together, said openings being of rectangular shape and said fastening members have a body part comprising rectangulary arranged side wall portions adapted for fitting into said openings, and further have a flat frame portion surrounding first edges of said side wall portions, two movable flaps hinged connected, through respective pedal means, to two opposite ones of said side wall portions, and a cover part comprising cam portions arranged for actuating said pedal means to bring said movable flaps into a position where they extend beyond second edges of said wall portions in a direction

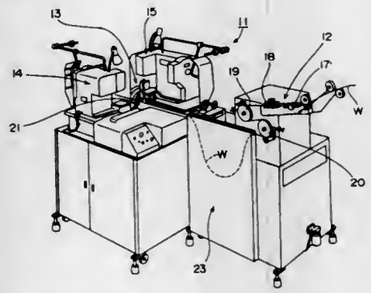
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parallel to said flat frame portion when said cover part is placed on said body part in a closing position.

5,623,753
APPARATUS FOR PRODUCING ELECTRIC WIRES WITH TERMINALS

Yoshikazu Tamura, Kanazawa, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Aug. 15, 1995, Ser. No. 518,401
Claims priority, application Japan, Aug. 30, 1994, 6-205705
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—33 M **19 Claims**



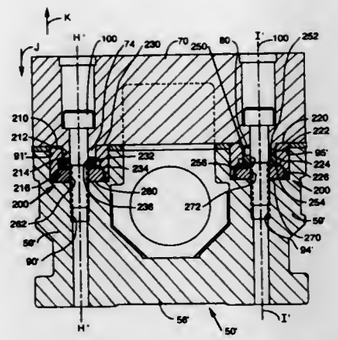
1. An apparatus for producing electric wires with a terminal, comprising:
- storing means for storing a plurality of pieces of data required to produce a plurality of types of electric wires with a terminal;
- reading out means for reading out from the storing means, in response to that a certain type of electric wire with a terminal has been produced on the basis of one of the plurality of pieces of data stored in the storing means, data corresponding to a type of electric wire with a terminal to be subsequently produced;
- extracting means for comparing data read out by the reading out means with data corresponding to the electric wire with a terminal which has been produced and for extracting a portion which differs in contents of the data; and
- displaying means for displaying the portion of data extracted by the extracting means.

5,623,754
APPARATUS FOR FACILITATING THE DETACHMENT OF AN ELEMENT FROM AN OBJECT

George R. Swann, Gibsonia, and Edward S. Paris, Allison Park, both of Pa., assignors to Chick Machine Tool, Inc., Warrendale, Pa.

Continuation-in-part of Ser. No. 300,375, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 192,431, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 955,361, Oct. 1, 1992, abandoned. This application May 8, 1995, Ser. No. 437,031
Int. Cl.[6] B25B *27/14*
U.S. Cl. 29—281 **9 Claims**

1. Apparatus for facilitating the separation of a member that is attached to an object wherein the member has at least two locating protrusions integrally formed therewith and protruding therefrom that are adapted to be received in corresponding locating counterbores in the object to locate the member in a predetermined orientation relative to the object and wherein the member is removably attachable to the object by threaded fasteners that are adapted to selectively engage and disengage corresponding coaxial threaded bores in the object when said locating protrusions are received in the corresponding locating counterbores, the separation apparatus comprising



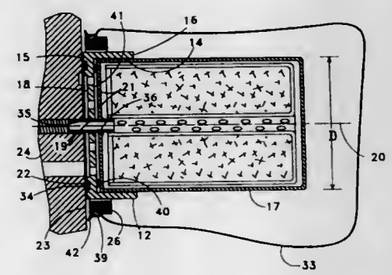
a plunger member coaxially and slidably received in each said locating counterbore, each said plunger member being coaxially displaceable within said corresponding locating counterbore in response to contact with said locating protrusion received therein; and

a spring member received in the bottom of each locating counterbore for biasing said corresponding plunger member and said locating protrusion away from said object when said threaded fasteners are disengaged from said threaded bores.

5,623,755
ENGINE OIL FILTER ADAPTER ASSEMBLY FOR FACILITATING THE REMOVAL OF AN OIL FILTER WITHOUT SPILLING OIL

Walter F. Childress, 15123 Elmbrook Dr., La Mirada, Calif. 90638, and Steven W. Childress, Rte. 1, Box 400, Coldwater, Miss. 38618

Filed Jan. 5, 1996, Ser. No. 583,659
Int. Cl.[6] B01D *35/00*
U.S. Cl. 29—426.5 **8 Claims**

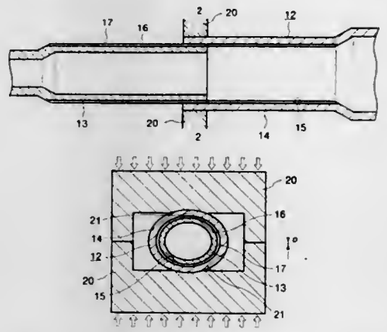


6. A method of removing an oil filter from an engine block having an engine oil filter stud for holding an oil filter and to which a drain cup adapter has been affixed, said drain cup adapter being positioned between an oil filter and the engine block and including an external ring with attachment means thereon, said method comprising the steps of:
- loosening the oil filter from the engine block by beginning to unscrew the oil filter from the oil filter stud;
- affixing a bag holding member with an associated flexible bag having a closed bottom to said attachment means of said external ring of said drain cup adapter;
- grasping the oil filter through said flexible bag;
- completely unscrewing the oil filter from the engine oil filter stud and allowing the oil filter to fall into the flexible bag;
- waiting a time sufficient for all the oil to drain out of the engine block into the flexible bag; and
- removing the bag holding member and associated flexible bag from the drain cup adapter.

5,623,756
METHOD OF MANUFACTURING A SHOCK ABSORBING TYPE STEERING SHAFT

Teruomi Yanagidate, Maebashi, and Kiyoshi Sadakata, Gunma-ken, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,413
Claims priority, application Japan, Sep. 22, 1994, 6-228177
Int. Cl.[6] B23P *19/02*
U.S. Cl. 29—525 **2 Claims**



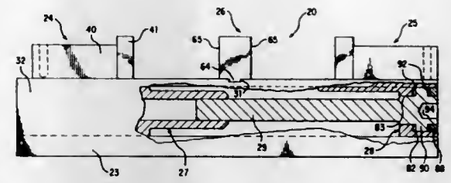
1. A method of manufacturing a shock absorbing type steering shaft including a tubular outer shaft having a reduced-diameter portion with a reduced inner diameter and a female serration formed on an inner peripheral surface of said reduced-diameter portion, and an inner shaft having an enlarged-diameter portion with an enlarged outer diameter and a male serration formed on an outer peripheral surface of said enlarged-diameter portion and engaged with said female serration, each of said reduced-diameter portion and said enlarged-diameter portion having a fore end portion, a base end portion, and an intermediate portion between the fore end portion and the base end portion, said method comprising the following steps:
- while said fore end portion of said enlarged-diameter portion is received in said fore end portion of said reduced-diameter portion, pressing the outer peripheral surface of said reduced-diameter portion inwardly in a diametral direction thereof to plastically deform said fore end portions of said reduced-diameter portion and said enlarged-diameter portion; and
- relatively displacing said outer shaft and said inner shaft axially toward each other to bring said fore end portion of said reduced-diameter portion and said fore end portion of said enlarged-diameter portion into pressure-fitting engagement with said base end portion of said enlarged-diameter portion and said base end portion of said reduced-diameter portion, respectively, and to bring said intermediate portions of said reduced-diameter portion and said enlarged-diameter portion into loose engagement with each other.

5,623,757
TWO STATION MACHINING VISE WITH REMOVABLE AND OFF-SETTING JAWS

David L. Durfee, Jr., Meadville, Pa., assignor to Toolex Systems, Inc., Meadville, Pa.

Division of Ser. No. 113,048, Aug. 31, 1993, Pat. No. 5,458,321. This application Jun. 7, 1995, Ser. No. 480,868
Int. Cl.[6] B25B *1/10*
U.S. Cl. 29—559 **9 Claims**

1. A method of operating a vise comprising a stationary jaw mounted between first and second movable jaws that reciprocate relative to the stationary jaw through rotation of a vise screw, the second movable jaw being attached to an off-set mechanism, the method comprising the steps of:

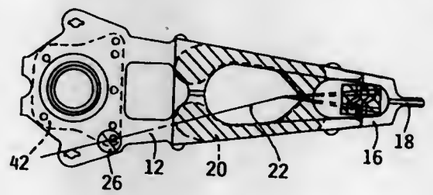


- applying a brake in the off-set mechanism to create a frictional resistance in the off-set mechanism to resist movement of the second movable jaw upon rotation of the vise screw in a first direction but to allow movement of the first movable jaw;
- impeding movement of the first movable jaw while continuing rotation of the vise screw; and
- overcoming the frictional resistance of the off-set mechanism to allow movement of the second movable jaw and the off-set mechanism while the brake is applied.

5,623,758
METHOD OF FABRICATING A LOW PROFILE HEAD SUSPENSION ASSEMBLY HAVING LOAD AND UNLOAD CAPABILITY

William W. Brooks, Jr.; Jeffrey B. Brown; Jerome T. Coffey, and Donald J. Wanek, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 221,339, Mar. 31, 1994, abandoned. This application May 12, 1995, Ser. No. 439,620
Int. Cl.[6] G11B *5/48;21/16*
U.S. Cl. 29—603.01 **6 Claims**



1. A method of fabricating a head suspension assembly for use in a data storage disk drive having a load and unload ramp, comprising the steps of:
- (a) applying a coating to at least a portion of a load beam;
- (b) stringing a head lead wire over said load beam;
- (c) placing a cover over said load beam so as to sandwich said head lead wire between said cover and said load beam after steps (a) and (b), and positioning said cover in a predetermined position relative to said load beam so that a load and unload tang projecting from said cover is engageable with the load and unload ramp; and
- (d) adhering said cover to said load beam after step (c) by heating said coating.

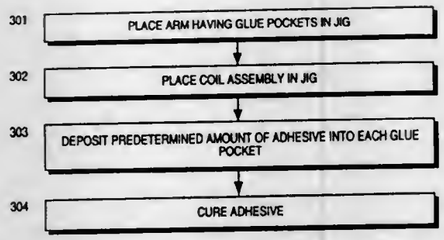
5,623,759
METHOD OF ATTACHING A VOICE COIL TO AN ACTUATOR ARM

Laurene J. Thorson, Louisville; Richard E. Rupp, Jr., Berthoud, and John D. McCrandall, Longmont, all of Colo., assignors to Maxtor Corporation, Longmont, Colo.

Continuation of Ser. No. 336,552, Nov. 9, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 568,314
Int. Cl.[6] G11B *5/42;5/187*
U.S. Cl. 29—603.04 **25 Claims**

1. A method for assembling an actuator arm assembly comprising a voice coil assembly and an actuator arm, said actuator arm

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comprising a first actuator arm surface for interfacing with said voice coil assembly and a plurality of adhesive receptacles formed in said actuator arm which interface with said first actuator arm surface, said method comprising the steps of:

disposing a first voice coil surface of said voice coil assembly generally adjacent to said first actuator arm surface;

maintaining a first space between said first voice coil surface and said first actuator arm surface;

disposing an adhesive in each of said plurality of adhesive receptacles in said actuator arm;

wicking said adhesive in said plurality of adhesive receptacles into said first space between said first voice coil surface and said first actuator arm surface;

substantially limiting said adhesive to said first voice coil surface and said first actuator arm surface; and

interconnecting said voice coil assembly and said actuator arm, said interconnecting step comprising using said adhesive.

5,623,760

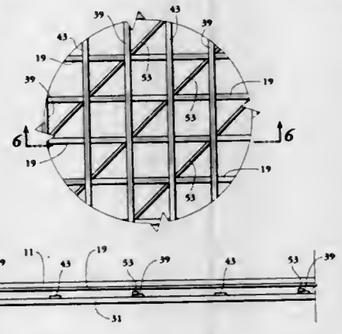
PRESSURE SENSITIVE SWITCH

Paul F. Newham, San Antonio, Tex., assignor to Bed-Check Corporation, Tulsa, Okla.

Continuation of Ser. No. 281,431, Jul. 27, 1994, Pat. No. 5,554,835. This application Sep. 9, 1996, Ser. No. 706,744

Int. Cl.[6] H01H *3/14;11/04*

U.S. Cl. 29—622 **4 Claims**



1. A method of making a pressure sensitive switch comprising the steps of:

applying an array of substantially parallel, spaced-apart electrically conductive bands to a surface of a first flat flexible member;

applying an array of substantially parallel, spaced-apart electrically conductive bands to a surface of a second flat flexible member, said array including a conductive input lead connected to selected ones of said second member conductive bands and a conductive output lead connected to others of said second member conductive bands;

applying an array of substantially parallel, spaced-apart dielectric bands narrower than said conductive bands to said surface of said second member and traversing said first member conductive bands;

cutting an opening through a third flat flexible member;

laminating said first, second and third members together with said conductive arrays traversing said opening and each other and said dielectric array being diagonally aligned with alternate overlapping points of said conductive arrays and partially separating said conductive arrays from electrical contact therebetween at said alternate overlapping points;

whereby said upper and lower members resiliently flexibly permit said overlapping points of said arrays of conductive bands to close into and open out of electrical contact therebetween upon exertion and removal, respectively, of a threshold external compressive force to and from said opening.

5,623,761

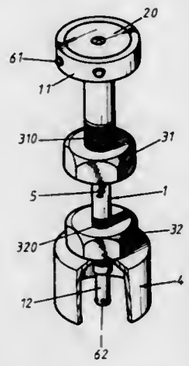
BEARING REMOVING DEVICE

Chen-Chi Chiang, 3/F., No. 13, Alley 100, Lane 155, Tun Hwa N Rd., Taipei, Taiwan

Filed Apr. 5, 1995, Ser. No. 417,384

Int. Cl.[6] B21D *53/10*

U.S. Cl. 29—724 **12 Claims**



1. A bearing removing device comprising:

an elongated tubular member having a central through hole and a plurality of first holes formed on a first end thereof and spaced along a circumference to each receive therein a first spherical member, each of the first holes having a tapered and outward converged configuration so as to allow the first spherical member received therein to partially protrude out of the tubular member, the first end of the tubular member configured to be inserted into a bearing seat;

an elongated shaft member received within the through hole of the tubular member in such a manner to allow the shaft member to be movable relative to the tubular member between a first protruding position and a first retracting position, the shaft member having a first end movably received within the first end of the tubular member;

means for retaining the first spherical members partially protruding out of the tubular member and thus engaging the bearing to be removed when the shaft member is in the first protruding position and the first end of the tubular member is inserted into the bearing to be removed;

means for retracting the first spherical members into the tubular member when the shaft member is in the first retracting position;

a support member for supporting the tubular member on the bearing to be removed when the first end of the tubular member is inserted into the inner diameter of the bearing to be removed;

means for applying a force to the tubular member to move the tubular member, together with the bearing engaged by the first spherical members, relative to the support member and thus away from the bearing seat; and

means for moving the shaft member relative to the tubular member between the first protruding position and the first retracting position, wherein the retaining means comprises a cylindrical section formed on the first end of the shaft member which is to be in contact engagement with the first spherical members to force the first spherical members to partially protrude out of the tubular member when the shaft member is in the first protruding position and wherein the means for moving the shaft member comprises a handle member fixed to the shaft member and extending externally of the tubular member through a slot formed in the tubular member.

5,623,762

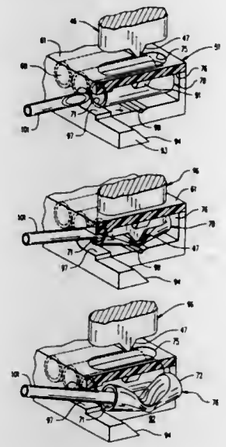
HYPODERMIC NEEDLE DISPOSAL APPARATUS

Jennifer A. White, 53 Putnam Ave., Cambridge, Mass. 02138

Filed Aug. 17, 1994, Ser. No. 291,799

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—816 **19 Claims**



1. A needle disposal device comprising:

first and second jaws; means defining an engagement chamber for retaining a ferrule and a removal cavity transversely juxtaposed thereto, said first and second jaws being reciprocably movable with respect to each other into and out of said engagement chamber;

entry means defining for a needle shaft an entry passage into said engagement chamber and axially aligned with the ferrule;

actuator means for producing relative closure movement between said first and second jaws into engagement with the ferrule in said engagement chamber so as to cause crimping thereof on the needle shaft;

exit means defining into said removal cavity an exit passage, said entry passage being of insufficient size to accommodate passage of said crimped ferrule and said exit passage being of sufficient size to accommodate passage of said crimped ferrules and

means defining a removal passage extending between said entry passage and said exit passage and adapted to accommodate passage of the needle shaft during movement of the crimped ferrule between said engagement chamber and said removal cavity.

5,623,763

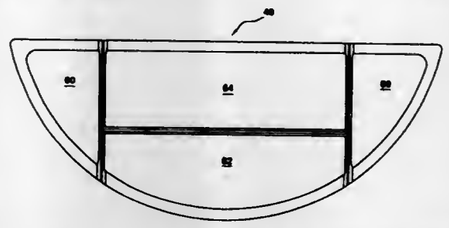
METHOD OF REPLACING PRIMARY DIVIDER PLATE IN A STEAM GENERATOR

Harold G. McClellan, Cambridge, and William G. Schneider, Branchton, both of Canada, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 1, 1995, Ser. No. 509,906

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890.031 **13 Claims**



1. A method for replacing a primary divider plate in a steam generator, comprising the steps of:

removing in sections an existing divider plate from the steam generator;

installing through a manway two corner segments of a floating one-piece replacement primary divider plate;

positioning the two corner segments in the steam generator into location so that a rim on each segment engages seating means therein;

positioning a lower segment of the one-piece floating primary divider plate through the manway into the steam generator so that a rim on the lower segment engages the seating means within the primary head of the steam generator;

positioning an upper section of the one-piece floating divider plate within the steam generator into position on top of the lower segment and between the two corner segments, a rim on the upper section engaging seating means within the steam generator; and

welding the segments together into position.

5,623,764

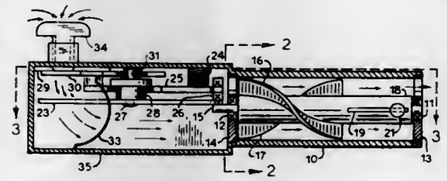
HAIR CLIPPER

Ferenc Cseh, 37 Passaic St., Passaic, N.J. 07055

Filed May 30, 1995, Ser. No. 453,213

Int. Cl.[6] B26B *19/20;19/44*

U.S. Cl. 30—133 **1 Claim**



1. A cutting mechanism for use in a hair clipper comprising:

(1) a movable cutting blade having a slot;

(2) a stationary cutting blade having an opening for receiving hair to be cut;

(3) an eccentric connected to said movable cutting blade;

(4) said eccentric mounted on a shaft;

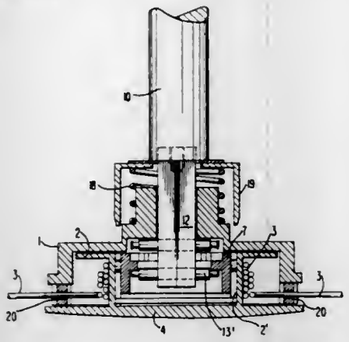
(5) a stationary pin received in said slot for guiding said movable cutting blade;

(6) said stationary pin being positioned between said eccentric and said opening; and

whereby rotating said shaft results a wobbling-reciprocating motion of said movable cutting blade against the opening of said stationary cutting blade for cutting hair received in said opening.

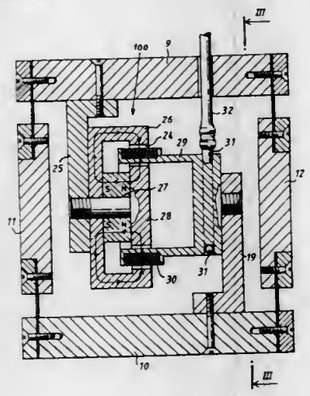
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5,623,765
FEED-OUT MECHANISM FOR ROTARY MOWER CUTTING HEAD
Shimon Ner-Gaon, 6 Remez Street, Bat Yam, Israel
Continuation of Ser. No. 106,371, Aug. 13, 1993, abandoned. This application Dec. 8, 1995, Ser. No. 569,563
Claims priority, application Israel, Aug. 20, 1992, 102.887
Int. Cl.[6] A01D *50/00*
U.S. Cl. 30—276 **7 Claims**



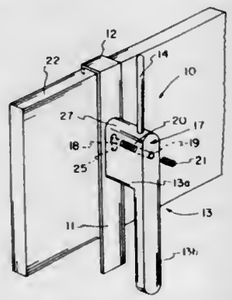
1. A rotary mower cutting head which comprises a housing, said housing having an interior surface in which is mounted a spool on which is wound at least one flail, an outer wall of said spool is also a cover for said housing, said spool being axially stationary relative to said housing when a length of said at least one flail is released from said spool by a release mechanism, said spool having an inner space adapted to accommodate said release mechanism which comprises a ring shaped housing member, and there is further provided a helical spring placed on an exterior surface of said housing, and a control shaft of a non-round cross section which is connected to said release mechanism.

5,623,766
PROBE HEAD FOR COORDINATE MEASURING APPARATUS WITH DAMPING AND CLAMPING FEATURES
Otto Ruck, Ellwangen-Pfahlheim, and Franz Szenger, Königsbronn, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
Filed Jul. 5, 1995, Ser. No. 498,344
Claims priority, application Germany, Jul. 9, 1994, 44 24 225.5
Int. Cl.[6] G01B *5/004*
U.S. Cl. 33—561 **10 Claims**



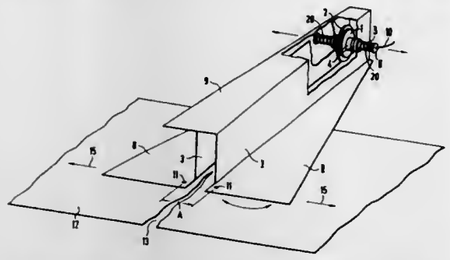
1. A probe head for a coordinate measuring apparatus, the probe head comprising:
a displaceable part;
three measuring systems for measuring the deflections of said displaceable part in three different directions;
a guide system for holding said displaceable part so as to permit said displaceable part to deflect in said different directions;
the guide system including: a first guide unit for permitting said part to deflect in a first one of said directions; a second guide unit for permitting said part to deflect in a second one of said directions; and, a third guide unit for permitting said part to deflect in a third one of said directions;
each one of said guide units including a measuring sensor for measuring the deflection in said one direction corresponding thereto;
each one of said guide units further including: an electromagnetic force generator for generating a measuring force of predeterminable magnitude and direction;
a clamping device for clamping said displaceable part in said predeterminable direction;
said clamping device including a control circuit for applying a signal to said electromagnetic force generators opposite in direction to the deflection of said displaceable part; and,
an electromagnetic damping device for said displaceable part.

5,623,767
SIDING INSTALLATION ALIGNMENT TOOL
Christopher Colavito, 2881 Jack Rd., Clayton, N.C. 27520
Filed Jun. 28, 1995, Ser. No. 496,053
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—647 **7 Claims**



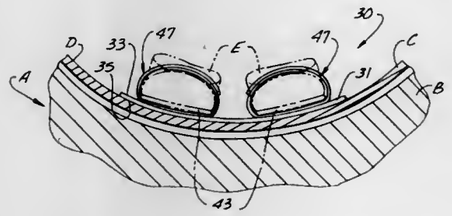
1. A tool for use in the alignment and installation of horizontally overlapping siding boards on the exterior of a building, said boards having an upper edge and a lower edge, said tool comprising:
an elongated body member having a downwardly facing, J-shaped hook integrally formed at a terminal end thereof for engaging said upper edge of a first siding board enabling said tool to depend from said upper edge;
an inverted L-shaped handle having a short leg portion and a long leg portion, said handle being pivotally attached to said body member at said short leg portion by connecting means, said connecting means imparting a 360 degree rotational movement to said handle in a plane generally parallel to an exterior surface of said first siding board between a siding engagement position and a siding disengagement position, said handle including an upwardly facing alignment means for engaging said lower edge of a second siding board to be installed on said building in overlapping relation to said first siding board such that when said tool is in a depending relation to said first siding board, said lower edge of said second siding board is held on said alignment means in an overlapping relation to said first siding board during installation of said second siding board on said building and is thereafter removable from said depending relationship with said first siding board by rotation of said handle 180 degrees in either direction to said disengagement position.

5,623,768
METHOD FOR DETERMINING AN EXTENSION OF AN OBJECT BY MEANS OF AN EXTENSOMETER AND EXTENSOMETER FOR PERFORMING THE METHOD
Wolfgang Menzer, Lohmar; Kunibert Förster, Kürten-Dürscheid, and Josef Becher, Overath, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 21, 1994, Ser. No. 309,952
Claims priority, application Germany, Mar. 26, 1992, 9204103 U
Int. Cl.[6] G01B *7/16*
U.S. Cl. 33—787 **14 Claims**



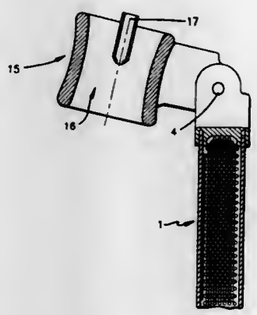
1. In a method for determining an extension of an object with an extensometer including two legs being movable in a spreading plane and each having one end connected to a joint and an other end connected to the object with the extensometer with the spreading plane approximately parallel to a surface of the object between the other ends of the legs; and
fastening foot-plates, each being carried by a respective one of the legs, being oriented in the spreading plane and having a region projecting beyond the other ends of the legs, to the object at the respective region.

5,623,769
DEVICE FOR DRYING OBJECTS IN A DRYER OF CLOTHES
Richard Hayden, 958 Woodside Village, Ballwin, Mo. 63021
Filed Jan. 31, 1996, Ser. No. 594,841
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—61 **15 Claims**



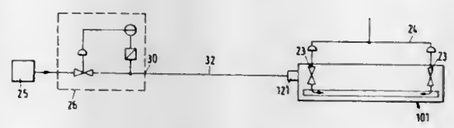
1. A device for holding an object within a generally cylindrical dryer drum mounted for rotation in a dryer, the dryer drum having a curved inner surface defining a drying chamber, the device comprising:
a thin magnetic sheet having an inner surface and an outer surface, the magnetic sheet being flexible to substantially conform to a portion of the curved inner surface of the dryer drum whereby the outer surface of the magnetic sheet engages the inner surface of the drum over substantially the entire area of the outer surface of the magnetic sheet, and
a connector for releasably mounting the object on the magnetic sheet for holding the object on the sheet as the dryer drum rotates;
the flexible magnetic sheet and connector being constructed and arranged to hold the object on the dryer drum with the magnetic sheet interposed between the object and the portion of the curved inner surface of the dryer drum to which the magnetic sheet conforms.

5,623,770
PROCESS AND APPARATUS FOR DRYING PAINT AND BASE MATERIAL LAYERS
Friedrich Hoffmann, Brunn am Geb., Austria, assignor to Peter Andreas Hoffman, Brunn am Geb., Austria
Filed Nov. 30, 1994, Ser. No. 352,673
Claims priority, application Austria, Dec. 1, 1993, 2437/93
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—267 **6 Claims**



1. In a process for heating water-dilutable coatings on a substrate, comprising heating a coating on the substrate by infrared radiation and directing air against the substrate; the improvement comprising applying to the substrate successive first and second said coatings one atop the other, and after application of the first coating, applying infrared radiation at a first power level and driving the air at a first power level, and after the application of the second coating, driving the air at a second power level lower than the first air power level and applying infrared radiation at a second power level higher than said first infrared radiation power level.

5,623,771
STEAM MOISTENING APPARATUS
Stefan Winheim, Frankfurt, Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Germany
Filed Jan. 3, 1996, Ser. No. 582,453
Claims priority, application Germany, Jan. 12, 1995, 195 00 752.2
Int. Cl.[6] C26B *17/00*
U.S. Cl. 34—585 **16 Claims**



1. A steam moistening apparatus comprising a housing having an interior space and a length, a steam blow chamber being mounted in the housing, the housing and the steam blow chamber having a common external wall, the external wall being provided with steam outlet openings, the housing further having means for admitting

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steam into the interior space of the housing, a distribution duct being mounted in the interior of the housing so as to be continuously surrounded by steam on all sides thereof, further comprising means for admitting steam to the distribution duct, and a plurality of supply lines for connecting the distribution duct to the steam blow chamber, wherein the supply lines are distributed over the length of the housing.

5,623,772

FOOT-WARMING SYSTEM FOR A BOOT

Michael E. Sunderland, and Douglas R. Clark, both of Eugene, Oreg., assignors to Ski-Time Corporation, Eugene, Oreg.

Continuation of Ser. No. 373,956, Jan. 17, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 621,201

Int. Cl.[6] A43B *7/02*

U.S. Cl. 36—2.6 **10 Claims**



1. A foot-warming device in combination with an article of conventional footwear, said footwear having an upper surface, said device comprising:

(a) a heating element able to be positioned inside said footwear so as to leave sufficient space inside said footwear for the foot of a user;

(b) an electrical cord assembly connected electrically, at one end, to said heating element and including, at the other end, a connector;

(c) a battery pack including a power terminal detachably connectable electrically to said connector for providing power to said heating element; and

(d) a support assembly able to detachably support yieldably said battery pack along said upper surface of said footwear so as to enable said battery pack to move relative to a predetermined support position fixed in relation to said upper surface in response to impact between said battery pack and external objects, said support assembly including an outer covering fastened to said upper surface so as to lie flat against said upper surface, said outer covering being constructed so as to elastically stretch to selectively receive said battery pack therebeneath and to thereby support said battery pack in said predetermined support position, said outer covering providing an automatic return mechanism such that, in response to any movement by said battery pack away from said predetermined support position, said outer covering urges said battery pack back toward said predetermined support position.

5,623,773

SKI BOOT HAVING A REINFORCED REAR SHAFT PORTION

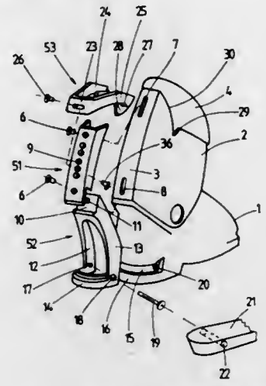
Mirco Bergamin, Castelfranco, Italy, assignor to Lange International S.A., Fribourg, Switzerland

Continuation of Ser. No. 97,706, Jul. 27, 1993, abandoned. This application Aug. 30, 1994, Ser. No. 298,364

Claims priority, application Switzerland, Aug. 7, 1992, 2473/92

Int. Cl.[6] A43B *5/04;5/16*

U.S. Cl. 36—117.1 **13 Claims**



1. A ski boot for reception by a ski binding and having a heel which has a back having an upper part, the boot being made of plastic material and comprising a shell (1) for surrounding a foot and a heel of a skier, a shaft (2) in the form of a collar having a rear and being articulated on the shell (1) about an axis of articulation and a rigid reinforcing means on the rear of the boot, said reinforcing means extending from the upper part of the shaft to the heel of the boot and comprising an upper portion, a lower portion and an intermediate portion:

said upper portion extending from said upper part of said shaft to said lower part of said shaft;

said lower portion being arch shaped and extending in an essentially horizontal plane about the heel of the boot and substantially longitudinally of the shell; and

said intermediate portion comprising two arms extending between said upper portion and ends of said lower portion and rigidly connected to said lower portion.

5,623,774

STUD FOR SPORT SHOES

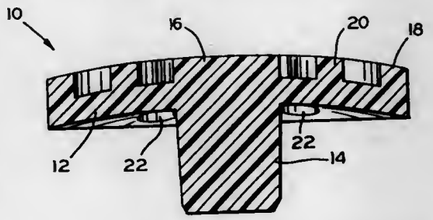
Edward F. Abbey, Frankfort, Mich., assignor to Greenspike, Inc., Frankfort, Mich.

Continuation of Ser. No. 388,976, Feb. 15, 1995, abandoned. This application May 3, 1996, Ser. No. 642,593

Int. Cl.[6] A43B *5/00;15/00*

U.S. Cl. 36—134 **4 Claims**

1. A stud for attachment to the sole of a sport shoe wherein the



sole has at least one internally threaded socket for receiving the stud, the stud comprising:

a main body portion formed of a plastic material, said body portion having an upper surface in facing relation to the sole of the sport shoe and a lower surface in spaced and generally parallel relation to the upper surface and in facing relation to a supporting surface;

a cylindrical shank formed of a plastic material, said cylindrical shank being integral with and extending outwardly from the upper surface of said body portion, said cylindrical shank having a smooth outer surface adapted to be threadably received by the threaded socket of the sole of the sport shoe;

a cylinder integral with and extending outwardly from the lower surface of said body portion, said cylinder being defined by a cylindrical side wall and a substantially flat end wall and arranged in coaxial relation with said cylindrical shank wherein the side wall and the end wall meet to form a traction producing circularly extending edge; and

a plurality of spaced apart annular ribs extending outwardly from the lower surface of said body portion to provide traction between the sport shoe and a supporting surface, each of said ribs being concentric with each other and with said cylinder and having spaced apart generally parallel annular side walls extending perpendicularly outwardly of the lower surface of said body portion and terminating in a flat annular end wall wherein the side walls and the flat annular end wall meet to form traction producing annularly extending edges.

5,623,775

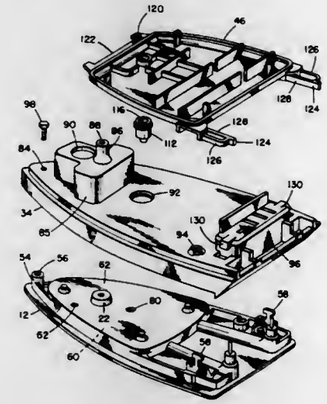
ELECTRIC STEAM IRON WITH IMPROVED WATER TANK AND SKIRT ASSEMBLY

Richard I. Farrington, Seymour, and George M. Drizos, Cheshire, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 16, 1996, Ser. No. 587,313

Int. Cl.[6] D06F *75/36*

U.S. Cl. 38—88 **6 Claims**



1. An electric steam iron having a soleplate, a skirt connected to the soleplate, and a water tank connected to the skirt, further including:

a pair of deflectable arms mounted in spaced parallel relation on a bottom wall of said water tank; and

a pair of ledges mounted on a top surface of the skirt in vertical alignment with the deflectable arms, said ledges deflecting said arms when the tank is placed on said skirt, said arms being snap-locked to said ledges for retaining said tank on said skirt.

5,623,776

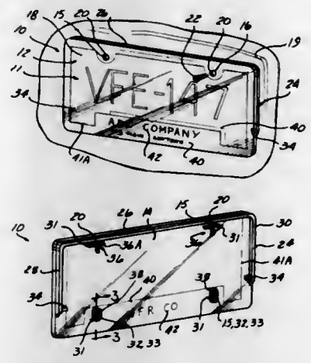
ONE PIECE TRANSPARENT LICENSE PLATE PROTECTOR AND METHOD OF MAKING SAME

David F. Lucier, 3837 St. Clair Rd., Stoney Pt., Ontario, Canada

Filed Nov. 8, 1994, Ser. No. 336,302

Int. Cl.[6] G05F *7/00*

U.S. Cl. 40—209 **17 Claims**



1. A license plate protector, comprising: a flexible one piece cover made of ultraviolet stabilized polycarbonate resin, for protection of a license plate, said cover having a substantially solid face and back plane wherein the cover remains substantially transparent upon marring, scratching or weathering of the face, and wherein the cover further defines a plurality of attachment locations at least two of which are adapted to correspond to two of a plurality of aligned holes in the license plate, with at least two of said attachment locations defining upper attachment holes extending from the face through the back plane, permitting containment of said license plate between said cover and a motor vehicle by passing fasteners through said attachment holes and aligned holes defined in the license plate, said cover also further comprising:

a perimeter rib extending in a generally rearward direction from at least a top surface, a left side and a right side of the cover back plane;

at least one positioning tab in proximity to each attachment location, extending in a generally rearward direction from the back plane, for spacing raised alpha-numeric characters on the license plate from the cover, obtaining a secure, substantially rattle free connection of the cover and license plate to the motor vehicle, and locating appropriate positions for a plurality of lower attachment holes to optionally be drilled through the cover at selected lower attachment locations; and

a plurality of retaining tabs extending inboard from the perimeter rib to provide a secure, substantially rattle free connection of the cover to the license plate;

wherein the cover is printable on at least one of the face and back plane; and wherein the positioning tabs comprise a plurality of sets of extender tabs, with each set circumferentially spaced around an attachment location.

5,623,777

WHEEL COVER

Leslie Hsiao, 120 Barrington Dr., Tampa, Fla. 33624-2548, and Jeffrey R. Spiker, 9921 Adamo Dr., Tampa, Fla. 33619-2617

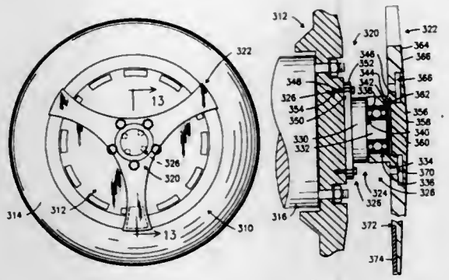
Continuation-in-part of Ser. No. 275,017, Jul. 13, 1994. This application Apr. 21, 1995, Ser. No. 426,053

Int. Cl.[6] G09F *21/04*

U.S. Cl. 40—587 **4 Claims**

1. A wheel cover for mounting on a wheel, said wheel cover comprises a base member having a disc member mounted thereto, said base member and said disc member configured to mate with each other to maintain concentric alignment and limit oscillation of

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said disc member relative to said base member, said base member comprises an inner base element including a base hub having a centrally disposed protrusion formed therethrough to operatively receive and support a base element thereon and an outer base element including a substantially cylindrical member with an outer portion having a centrally disposed aperture formed therethrough to operatively receive and house a bearing with a channel therein to receive said centrally disposed protrusion therein and a recess with a periphery formed in said outer portion having a groove formed in said periphery thereof to receive a portion of said disc member, said outer base element further includes an enlarged annular rim formed on the outer portion of said substantially cylindrical member.

5,623,778

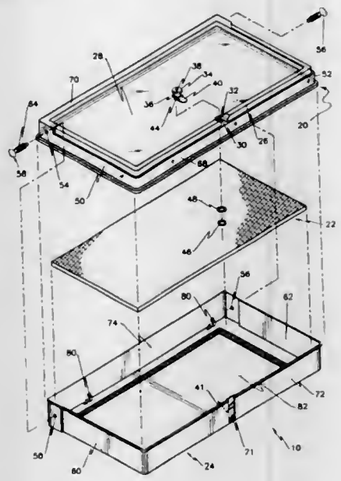
WEATHERIZED POSTING BOARD ASSEMBLY

Gary D. Dunn, 2368 Podocarpus Way, Clearwater, Fla. 34619

Filed Jun. 21, 1995, Ser. No. 492,935

Int. Cl.[6] G09F *7/02*

U.S. Cl. 40—611 **6 Claims**



1. A weatherized posting board assembly comprising:

a back frame enclosure having two side members, a top member and a bottom member, all integral at an interior edge with a back member, said back member having interior and exterior surfaces and a rectangular perimeter;

said back member exterior surface having a monolithic raised rectangular mounting brace means projecting rearwardly therefrom, said rectangular mounting brace means adaptable for connection to at least two different vertical supports;

a posting board mounted on said interior surface of said back member;

a front cover hinged to said back frame enclosure, said front cover having two side members, a top member and a bottom member, all integral at an interior edge with a transparent front panel, said two side, top, and bottom members of said front cover corresponding to said two side, top, and bottom members of the back frame enclosure, the front cover pivotal between open and closed positions, said two side, top, and bottom members of the front cover overlapping said two side, top, and bottom members of the back frame enclosure when said front cover is in the closed position, wherein

the overlapping of said two side, top, and bottom members provides a substantially watertight enclosure for documents posted on said posting board.

5,623,779

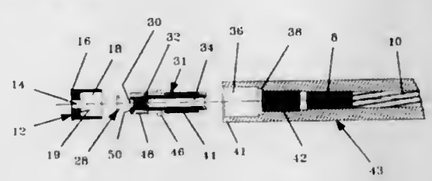
MUZZLE-LOADING FIREARM

William F. Rainey, III, Rt. 1, Box 166-B-81, Galveston, Tex. 77554

Continuation-in-part of Ser. No. 154,280, Nov. 18, 1993, abandoned. This application May 2, 1995, Ser. No. 432,799

Int. Cl.[6] F41C *9/08*

U.S. Cl. 42—51 **4 Claims**



1. An ignition device carrier for providing flammable energy from a percussion excited ignition device through an intermediate assembly to a breech-located charge of a muzzle-loading firearm, comprising

a cylindrical jacket having a clearance counterbore for surrounding the aft portion of the assembly, the assembly being sized for secure attachment into a mating receiving breech counterbore of the firearm and having an axial flash opening therethrough, the aft end of said jacket having a central opening therein,

said percussion excited ignition device being press fitted into said central opening of said jacket positioned such that when ignited the flammable energy therefrom is directed forward through the axial flash opening of the assembly toward the breech-located charge, and

said aft end of said jacket including an extraction flange for easy removal from the firearm.

5,623,780

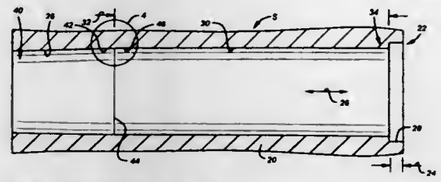
BORE FOR WEAPONS

Jonathan W. Phillips, Jr., Hitchcock, Tex., assignor to Phillips and Rodgers, Inc., Conroe, Tex.

Filed Feb. 27, 1996, Ser. No. 607,712

Int. Cl.[6] F41A *21/12*

U.S. Cl. 42—76.01 **6 Claims**



1. In a weapon having an ejector and cartridge positioner mechanism capable of firing different calibers of cartridges from the weapon, an improved cartridge bore formed in the weapon, comprising:

a rim seating portion for seating cartridges having rims, said rim seating portion having a length along a longitudinal axis of said cartridge bore equal to the thickness of the widest cartridge rim of a cartridge to be fired from the weapon;

said rim seating portion further having a cylindrical surface with an inner diameter larger than the outer diameter of the largest cartridge rim to be fired from the weapon;

a first taper segment forming an outer wall of the cartridge bore and extending inwardly along the longitudinal axis thereof from said rim seating portion a distance substantially equal to the length of the longest cartridge to be fired from the weapon,

said first taper segment outer wall having an inner diameter at a rear portion adjacent said rim seating portion substantially equal to the largest cartridge casing cylinder to be fired from the weapon,

said first taper segment outer wall tapering inwardly along said distance of its inner extent about one percent of the diameter of the cartridge bore per unit length of said first taper segment;

a second taper segment formed inwardly of said first taper segment and forming an outer wall of the cartridge bore,

said second taper segment extending inwardly from said first taper segment to a forward end of the cartridge bore,

said second taper segment having an inner diameter at a rear portion at a juncture with said first taper segment matching the diameter of said first taper segment at said juncture,

said second taper segment outer wall tapering inwardly along its inner extent about five percent of the diameter of the cartridge bore per unit length of said second taper segment.

5,623,781

PILLS OR PELLETS CONTAINING SEEDS AND INERT CARRIER MATERIAL AND METHOD FOR THEIR PREPARATION

Robert J. Legro, Enkhuizen, Netherlands, assignor to Incotec B.V., Netherlands

Continuation-in-part of Ser. No. 977,775, Nov. 17, 1992, Pat. No. 5,389,115. This application Feb. 13, 1995, Ser. No. 387,472

Claims priority, application Netherlands, Nov. 21, 1991, 9101959

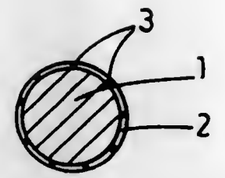
Int. Cl.[6] A01G *1/00*

U.S. Cl. 47—576 **10 Claims**

1. A multi-seed pellet comprising:

a core comprising a substance biologically and chemically inert to seeds in said multi-seed pellet, said core selected from the group consisting of glass beads, perlite granules, plastic balls and bentonite granulates; and

an adhesive layer surrounding the core and comprising at least two seeds, each of said seeds having a cross dimensional size of 10 μm to 1000 μm, said adhesive layer holding the seeds to the core and selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl chloride, polyvinyl acetate, clay, bentonite, gypsum, cellulose powder, chalk, vermiculite, turf, perlite, talcum and quartz flour.



5,623,782

MAIZE RESISTANT TO ARYLOXYPHENOXYALKANECARBOXYLIC ACID HERBICIDES

Günter Donn, Hofheim am Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 245,064, May 17, 1994, abandoned, which is a continuation of Ser. No. 70,430, Jun. 8, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,734

Claims priority, application European Pat. Off., Mar. 12, 1991, 91103765; WIPO, Mar. 7, 1992, PCT/EP92/00506

Int. Cl.[6] A01H *1/04;1/06;* **C12N** *5/04;15/01*

U.S. Cl. 47—58 **3 Claims**

1. A method for controlling mono- and dicotyledon weeds in cultures of maize plants which are resistant to aryloxyphenoxyalkanecarboxylic acid herbicides comprising applying to said plants aryloxyphenoxyalkanecarboxylic acid herbicides in combination with one or more herbicides selected from the group of the sulfonylureas and imidazolinones.

5,623,783

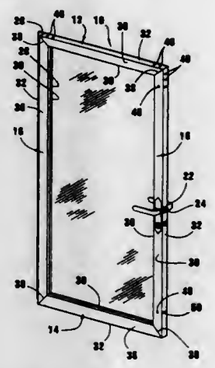
VENTED GLASS DOOR

Terry Kenkel, Des Moines, Iowa, assignor to Emco Enterprises, Inc., Des Moines, Iowa

Filed Jan. 5, 1995, Ser. No. 369,111

Int. Cl.[6] E05F *15/20*

U.S. Cl. 49—21 **10 Claims**



1. A vented glass door comprising:

A rectangular frame comprising a top frame member, a bottom frame member, and first and second side frame members,

each of said frame members having an inner edge, an outer edge, a front face, and a rear face;

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said inner edges of said top, bottom and first and second side frame members forming a rectangular window opening;

a rectangular window fitted within said window opening and being operatively sealed to said inner edges of said top, bottom, and first and second side frame members;

at least one vent passageway extending through at least one of said frame members, said vent passageway having a first opening in said rear face of said one frame member and a second opening in said outer edge of said one frame member and providing air flow along a path between said first and second openings;

said vent passageway being free from obstructions so as to always be open between the first and second openings.

5,623,784

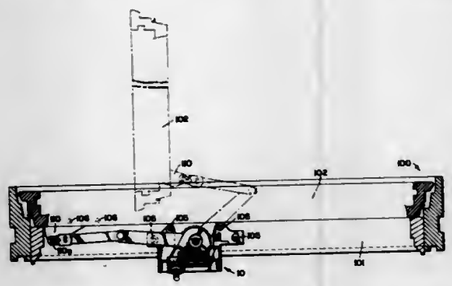
WINDOW OPERATOR

William R. Kuersten, Pecatonia, Ill.; Duane T. Fier, Hudson, Minn.; Richard L. Bildahl, Rockford, Ill., and Kenneth D. Paulson, Albany, Oreg., assignors to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 212,025, Mar. 11, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 478,117

Int. Cl.[6] E05F *11/24*

U.S. Cl. 49—342 **15 Claims**



1. An operator mechanism for mounting to a window frame, the window frame having a centerline and a window sash, the operator mechanism for moving the sash between an open position and a closed position comprising:

(a) a housing having first, second and third gear receiving receptacles and an arm receiving hub operatively connected to said housing;

(b) a worm gear positioned in said first gear receiving receptacle, said worm gear generally parallel to the centerline of the window frame;

(c) a driven gear positioned in said second gear receiving receptacle and operatively connected to said worm gear;

(d) a drive gear positioned in said third gear receiving receptacle and operatively connected to said driven gear, said drive gear generally transverse to the centerline of the window frame;

(e) a handle operatively connected to said drive gear for rotational movement of said drive gear; and

(f) an arm operatively connected at its first end to said hub, said arm having gear teeth for operative engagement with said worm gear and said arm operatively connected at its second end to the sash, wherein rotational movement of said handle, through said drive gear, driven gear, worm gear and gear teeth causes movement of said arm, thereby moving the sash between an open and closed position.

5,623,785

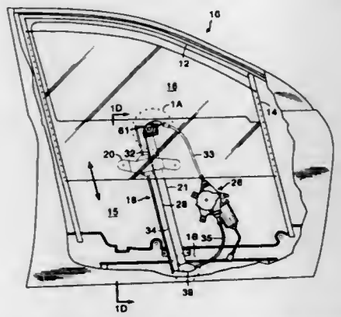
WINDOW REGULATOR WITH TORSION SPRING ACTUATED DIRECT CABLE TENSIONING

James G. Mariel, Mishawaka, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed Sep. 29, 1995, Ser. No. 536,573

Int. Cl.[6] E05F *11/48*

U.S. Cl. 49—352 **20 Claims**



1. A window regulator assembly comprising, in combination:

a first glider attached to a windowpane and slidably mounted to an elongated first track;

first cable guide means attached to a first position on said first track;

a first bracket mounted to a second position on said first track;

second cable guide means coupled to said first bracket;

a cable attached to said first glider and extending in a path around said first cable guide means, said second cable guide means and a rotatable cable drive means which moves said cable upon rotation of said cable drive means; and

a torsion spring coupled to said first bracket and directly coupled to said second cable guide means to cause tension in said cable by forcing said second cable guide means outward from said path to extend the path traveled by said cable.

5,623,786

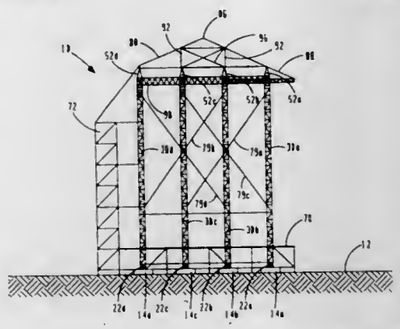
BASE BLOCK WITH REMOVABLE BALLAST FOR PORTABLE TOWER, SYSTEM AND METHOD

Hedwig F. H. DeMeyer, Werchter, Belgium, assignor to Stageco U.S., Inc., Colorado Springs, Colo.

Continuation-in-part of Ser. No. 20,681, Feb. 22, 1993, Pat. No. 5,388,376. This application Nov. 18, 1994, Ser. No. 342,210

Int. Cl.[6] E04H *3/10*

U.S. Cl. 52—6 **10 Claims**



1. A portable tower construction system of the type for building, disassembling, moving and reassembling a tower at an intended site from component pieces, comprising:

(a) a pair of base blocks positionable at a predetermined location at the intended site;

(b) a pair of towers removably fastenable to, and having tops vertically extending upwardly from, said pair of base blocks;

(c) a pair of triangular head block sections removably fastenable at said tops of said pair of towers; and

(d) a triangular roof truss constructable on-site at platform level between said pair of opposed base blocks, with said roof aligned between said pair of towers and liftable upwardly via a pair of cable winches and which triangular truss is removably fastenable to said triangular head blocks with pinned male and female connection devices.

5,623,787

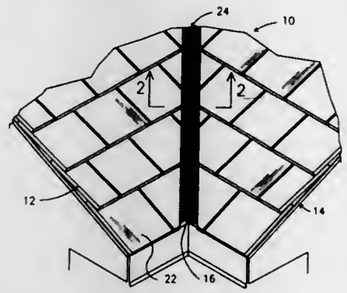
TILE ROOF VALLEY GUARD

Elsayed A. Ali, 903 Highview Dr., Palm Harbor, Fla. 34683-6616

Filed Jan. 5, 1996, Ser. No. 583,722

Int. Cl.[6] E04D *13/00*

U.S. Cl. 52—13 **4 Claims**



1. A tile roof valley guard comprising in combination

a) a slanted roof having adjoining sections interconnected at an angle thereby forming a valley therebetween,

b) said roof including a layer of sheeting, a layer of subroofing material on top of said sheeting and extending over said valley, and a layer of tiles on top of said layer of sub roofing material on the adjoining roof sections and terminating at the edge of the valley whereby said tiles of one roof section are spaced from and opposed to said tiles of the other roof section, and said opposed faces of said opposed tiles of said adjoining roof sections are formed parallel to each other, and

c) an elongated strip of resilient material having a great plurality of openings therein bent into a convex shape when viewed in transverse cross section with the lateral edges of said strip resiliently engaging the entire opposed edges of said tiles adjacent to the sides of said valley with said engagement being substantially from the bottom to the top of said tiles.

5,623,788

ROOF ANCHORING APPARATUS

Uwe H. Bimberg, and Oliver U. Bimberg, both of 11629 Casa View Dr., El Paso, Tex. 79936

Filed Mar. 7, 1996, Ser. No. 612,235

Int. Cl.[6] E04B *7/00*

U.S. Cl. 52—23 **11 Claims**

1. A roof anchoring apparatus, comprising:

a first plurality of roof-pressing assemblies for placement on a roof of a building structure, said first plurality of roof-pressing assemblies being positionable in an array on the roof from a first edge of the roof to a second edge of the roof,

a second plurality of roof-pressing assemblies for placement on the roof, said second plurality of roof-pressing assemblies being positionable in an array on the roof from the first edge of the roof to the second edge of the roof, wherein each of the roof-pressing assemblies includes a roof-pressing portion having a top side and a bottom side, and at least one cable locking assembly projecting upward from said top side of said roof-pressing portion,

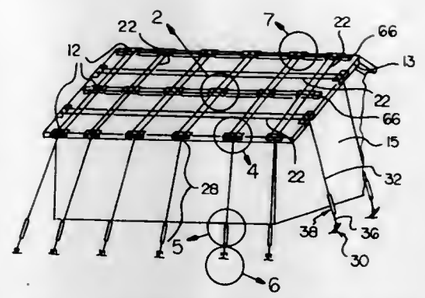
a first plurality of first cables connected between the first plurality of roof-pressing assemblies,

a second plurality of first cables connected between the second plurality of roof-pressing assemblies,

a first rigid crosspiece member positioned in abutting contact with the bottom side of the roof-pressing portion of one of the first plurality of roof-pressing assemblies, the first rigid crosspiece member extending from the one of the first plurality of roof-pressing assemblies and into abutting contact with the bottom side of the roof-pressing portion of one of the second plurality of roof-pressing assemblies;

a plurality of second cable assemblies, each second cable assembly having a first end and a second end, with said first end of each second cable assembly being connected to an individual one of said roof-pressing assemblies located at one of the edges of the roof,

a plurality of ground-engaging assemblies, wherein each ground-engaging assembly is connected to an individual one of the second end of said second cable assemblies.



5,623,789

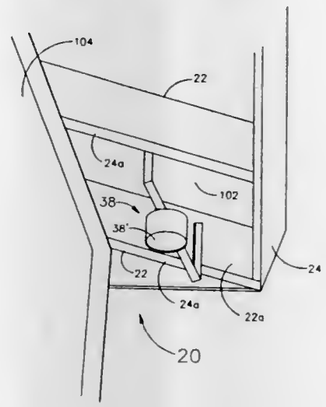
PITCH STABILIZING, POSITIONABLE EAVES-OVERHANG LIGHT SUPPORT ASSEMBLY

Steven A. Kidwell, 5941 Adkins Rd., Knoxville, Tenn. 37918, and John N. Forrester, 508 High Point Orchard Rd., Kingston, Tenn. 37763

Filed Sep. 12, 1994, Ser. No. 304,685

Int. Cl.[6] E04F *19/00*

U.S. Cl. 52—28 **9 Claims**



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2. A method of installing, relative to an adjacent pair of sloped rafters and a soffit board in a roof overhang area, a light support assembly having an open-ended electric box means, a generally L-shaped, channeled coupling member attached to the electric box means and first and second L-shaped track members each having cross-sectionally, first and second transverse rail subelements and lengthwise, first and second ends transversely connected to one another, the first ends of each of said track members being slideably and biasably mounted within the channel of said coupling member, and the first and second transverse rail subelements of each of the respective second ends of each of said first and second track members defining channeled attachment holes; the method comprising:

positioning the electric box means and the coupling member so that the open end of the electric box means is substantially adjacent to a substantially horizontal plane generated by the anticipated position of the soffit board placement, and positioning the electric box means along the horizontal plane to a preselected position relative to each of the adjacent pair of rafters;

slideably extending the respective first ends of each of the respective first and second L-shaped track members such that each respective second end of the first and second L-shaped track members is seated substantially flush to each of the respective adjacent pair of rafters while allowing the channeled coupling member and the electric box means to be retained and supported along the horizontal plane in the preselected position relative to each of the adjacent pair of sloped rafters; and

utilizing a preselected available length of each of the respective second ends of the track members to compensate perpendicularly from the horizontal plane for the slope of the rafters, and a preselected choice of the channeled attachment holes available on the transverse rail subelements of each respective second end of each of the respective track members, to secure each of the positioned track members within the roof overhang area securing the electric box means in the preselected position relative to each of the respective adjacent pair of sloped rafters.

5,623,790

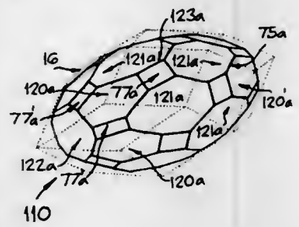
BUILDING SYSTEMS WITH NON-REGULAR POLYHEDRA BASED ON SUBDIVISIONS OF ZONOHEDRA

Haresh Lalvani, 164 Bank St., Apt. 2B, New York, N.Y. 10014

Continuation of Ser. No. 740,504, Aug. 5, 1991, which is a continuation-in-part of Ser. No. 428,018, Oct. 26, 1989, Pat. No. 5,036,635, which is a continuation of Ser. No. 319,861, Mar. 6, 1989, which is a continuation of Ser. No. 88,308, Aug. 24, 1987. This application Apr. 25, 1994, Ser. No. 232,867

Int. Cl.[6] F04H *1/00*

U.S. Cl. 52—81.2 **16 Claims**



1. A polyhedral building system comprising:

a plurality of polyhedral structures connected to each other, each said structure having a plurality of vertices, edges and faces, wherein

said vertices, edges and faces are joined to one another by attachment means,

said faces comprise a first set and a second set of polygonal faces, wherein at least one said face in either said set is a non-regular polygon, wherein

said first set comprises 4-sided polygons,

said second set comprises even-sided polygons having at least six sides, wherein

each said polygon of said first set shares each edge with one of said polygon of said second set,

each said polygon of said second set shares alternating edges with one of said polygon of said first set and one of said polygon of said second set, and wherein

said plurality of said polyhedral structures comprises at least one said structure having more than six said faces belonging to said first set.

5,623,791

PROTECTIVE GRILLE ASSEMBLY AND METHOD OF MOUNTING THEREOF

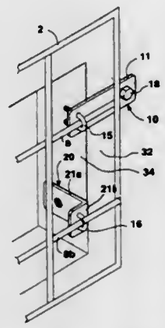
Chanan Schwarz, 30 Raanan Street, 34385 Haifa, Israel

Continuation-in-part of Ser. No. 66,256, May 25, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 330,842

Claims priority, application Israel, May 26, 1992, 102009

Int. Cl.[6] E06B *3/68*

U.S. Cl. 52—107 **6 Claims**



1. A protective grille assembly mountable over a window opening in a wall, comprising:

a grille panel having a plurality of parallel, spaced, vertical bars fixed to a plurality of parallel, spaced, horizontal bars, the grille panel being of larger dimension than said window opening such that the ends of the bars along at least one side project past the respective side of the window opening when the grille panel is mounted thereto;

and a plurality of fastening brackets for mounting said grille panel to said wall to cover said opening;

each of said brackets including a loop section for slidably enclosing an end of a bar at the projecting side of the grille panel, and a fastening section for fastening the bracket to said wall after the loop section, while enclosing an end of a bar, has been slid along the respective bar to a location where the fastening section can be fastened to a mounting surface of the wall;

wherein said mounting surface of the wall for mounting at least one of said brackets borders said window opening and is perpendicular to the plane of said window opening, and wherein said loop section is perpendicular to said fastening section of said at least one bracket and is defined by a U-bolt having its two opposite ends received within two openings in the bracket and secured thereto by nuts.

5,623,792

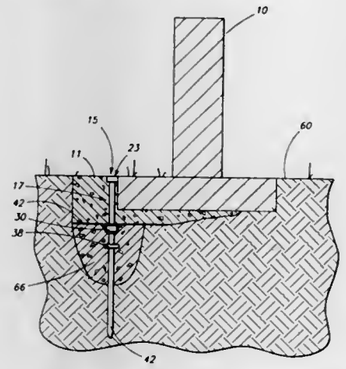
GRAVE MARKER LEVELING

William H. Crumpacker, 1538 School Ave., Walla Walla, Wash. 99362

Filed May 24, 1996, Ser. No. 653,282

Int. Cl.[6] E04B *1/04*

U.S. Cl. 52—126.7 **21 Claims**



21. A grave marker and footing leveling device enabling selective periodic leveling of the grave marker from above an adjacent ground surface, comprising:

a grave marker;

a grave marker lifting member engageable with the grave marker to impart elevational movement thereto;

a stationary footing member mounting the grave marker lifting member for selective elevational movement relative to the ground surface; and

a ground surface operator connected to the grave marker lifting member, and positionable adjacent the ground surface for operation from above the ground surface to selectively move the grave marker engaging member and grave marker elevationally relative to the adjacent ground surface.

5,623,793

PERMANENT FORM FOR PLACING BASEMENT CONCRETE WALL

Junsuke Kyomen; Masayuki Sakaguchi; Michio Watanabe; Kazutaka Takada, all of Sakai; Hiromasa Kawamura, Osaka; Shunji Horinaka, Osaki; Hideaki Iwatake, Osaka; Ryoichi Takesako, Osaka, and Shinichiro Takai, Osaka, all of Japan, assignors to Muramoto Construction Co., Ltd., Kitakatsuragi-gun, and Kubota Corporation, Osaka, both of Japan

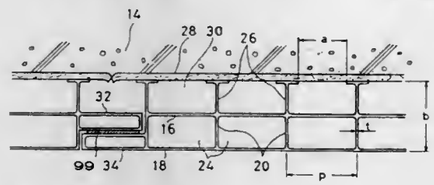
PCT No. PCT/JP93/00954, § 371 Date Jun. 14, 1994, § 102(e) Date Jun. 14, 1994, PCT Pub. No. WO94/01625, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 8, 1993, Ser. No. 204,301

Claims priority, application Japan, Jul. 9, 1992, 4-181958; Dec. 2, 1992, 4-323002

Int. Cl.[6] E02B *11/00;* **E02D** *31/02*

U.S. Cl. 52—169.5 **6 Claims**



1. In combination:

a basement concrete wall; and

a permanent form which is utilized for placing said basement concrete wall and is integrated with said basement concrete wall when said wall is placed, said permanent form comprising:

a panel for forming a surface of said basement concrete wall;

water-conduit channel for discharging water from said basement concrete wall, said panel and said channel being integrally formed of synthetic resin, said panel and said channel forming a main body of said form; and

a cushioning layer interposed between said main body and said basement concrete wall, said cushioning layer being displaced as said basement concrete wall undergoes displacement to prevent said displacement of said basement concrete wall from being transmitted to said main body so as to prevent cracking or bending of said main body of said form caused by said displacement of said basement concrete wall, said cushioning layer being formed of a non-woven fabric selected for cushioning of said main body.

5,623,794

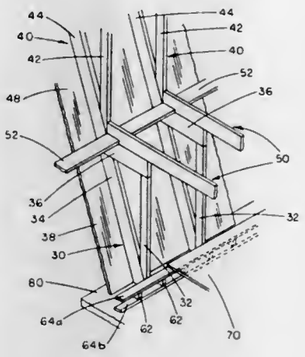
FRAMING STRUCTURE APPARATUS AND METHOD FOR EARTH SHELTERED, MULTI-LEVEL STRUCTURE

Glen Bohls, 1208 Wedgewood Dr., Council Bluffs, Iowa 51501

Filed Aug. 18, 1995, Ser. No. 516,995

Int. Cl.[6] E02D *27/00*

U.S. Cl. 52—169.6 **17 Claims**



1. In a multi-level, earth sheltered structure having a foundation for supporting the structure and of a shape corresponding to the exterior shape of the structure; a first floor corresponding to the lowest level; means for supporting the first floor proximate to the structure foundation thereby defining a first level of the multi-level structure; a second floor, means for supporting the second floor thereby defining a second level of the multi-level structure; a roof, means for supporting the roof adjacent the top of the uppermost level such that an enclosed, multi-level earth supported structure is formed thereby, an exterior framing structure adapted to support an exterior wall and for supporting the structure comprising:

a plurality of truss pairs, each of said pairs being formed by a lower first truss and an upper second truss, each of said trusses having a top and a bottom and including,

a first generally vertical elongated inner member having top and bottom portions,

a second outer elongated member having top and bottom portions, said outer member bottom portion being joined with said inner member at the bottom portion thereof,

a connecting member connecting said inner and outer member top portions in a spaced apart relation such that said second member slopes upwardly and outwardly from the bottom portion thereof thereby defining an angle between said inner and outer members, whereby each truss is generally triangularly shaped;

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said bottom of said upper second truss being attached to said top of said lower first truss such that said second outer members of both trusses in said pair are generally aligned to present a substantially continuous outwardly sloping surface; and

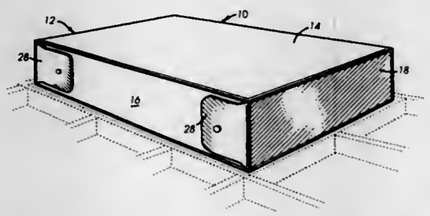
means for securing said plurality of truss pairs to the foundation in said horizontally spaced apart relation such that when the exterior wall is fastened thereto, an exterior frame for the structure is formed thereby.

5,623,795

DRAFT INSULATOR FOR AN ATTIC PULL-DOWN STAIRCASE

Herman M. Padgett, Jr., 201 Westside Dr., Lexington, S.C. 29072

Filed Jun. 5, 1996, Ser. No. 658,349
Int. Cl.[6] E04F *11/04*
U.S. Cl. 52—202 **18 Claims**



15. Apparatus for preventing drafts from an attic having a pull-down staircase, said apparatus comprising:

a die cut and foldable flat forming an enclosure dimensioned to receive said pull-down staircase, said enclosure having edges;

means for holding said foldable flat as a folded enclosure;

sealing means attachable to said frame for supporting and for engaging said edges and for sealing against said edges; and

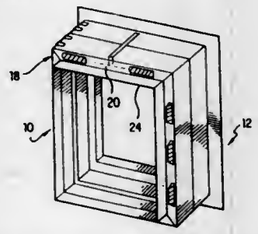
means for guiding said enclosure into position on the frame with said edges adapted to engage engaging said sealing means and said guiding means adapted to be positioned angularly through said sealing means.

5,623,796

METHOD AND APPARATUS FOR MOUNTING A FIRE DAMPER

Francis J. McCabe, #6 Bunker Hill Rd., Ottsville, Pa. 18942

Filed Mar. 29, 1996, Ser. No. 625,795
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.8 **4 Claims**



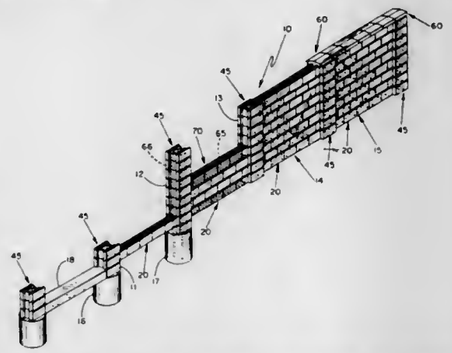
1. A fire damper mounting means comprising: a frame; a transversely extending outer flange attached to said frame for engagement with a first exterior surface of a wall surrounding a hole into which said fire damper is to be mounted; lug means comprising a plurality of rotatable lugs mounted on said frame at spaced intervals along a face of said frame remote from and in a plane parallel to the outer flange of said frame; said rotatable lugs being so positioned as to be capable of being rotated about an axis from a position of non-interference with the exterior surfaces of the wall forming the hole into which said damper is to be mounted, into an interfering position with a second exterior surface of the wall forming said hole, so as to be juxtaposed to the second surface of said wall upon rotation thereof to prevent said fire damper from being withdrawn from said hole; and fastening means for engaging said frame and said lugs to prevent said lugs from being rotated to a non-interfering position once they have been rotated to a position of interference with the egress of said damper from said hole.

5,623,797

BLOCK STRUCTURE AND SYSTEM FOR ARRANGING ABOVE-GROUND FENCING, RAILING AND/OR SOUND BARRIERS

Robert A. Gravier, Bloomington, and Tim A. Bott, Chanhassen, both of Minn., assignors to Allan Block Corporation, Edina, Minn.

Filed Jul. 20, 1995, Ser. No. 504,700
Int. Cl.[6] E04B *1/04;2/46*
U.S. Cl. 52—284 **3 Claims**



1. In an interlocking stackable block structure for erecting a shock-resistant wall arrays, and comprising a plurality of rectangular parallelepipedons with a pair of opposed major front and rear panels each having a face surface, a pair of opposed end wall surfaces and a top and a bottom surface; the improvement comprising:

(a) said top surface having a pair of parallelly disposed upwardly protruding laterally extending ridge projections of truncated triangular cross-sectional configuration and having a first height dimension for interlocking engagement with the bottom surface of a block in an adjacent stacked row, said ridge projections being integral with said major panels and with said blocks having a hollow core formed therein extending through said block between said top and bottom surfaces, and with a transverse planar load bearing web having a top surface disposed normal to the plane of said front and rear panels and extending between said panels laterally of said hollow core and with said web having a first load bearing surface and defining the upward extension thereof;

(b) said bottom surface having a pair of parallelly disposed front and rear recesses forming downwardly converging cross-sectional surfaces of inverted truncated triangular configuration having a second height dimension greater than said first height dimension for receiving and engaging said laterally extending ridge projections and providing load support of a superimposed stacked block on said planar load bearing web; and

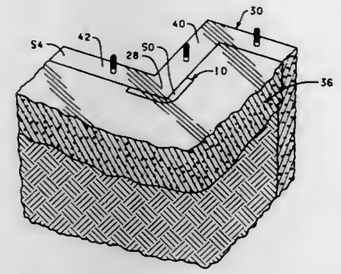
(c) said front and rear recesses defining a lower web with a load bearing surface therein so that the surface of said lower web provides a second load bearing surface mating with the first load bearing surface of a superimposed stacked block.

5,623,798

DEVICE FOR REDUCING STRESS AT RE-ENTRANT CORNERS OF A CONCRETE SLAB

Grant Crews, El Reno; Ben D. Fuller, and Michael Caldarone, both of Edmond, all of Okla., assignors to Dolese Bros. Co., Oklahoma City, Okla.

Filed Oct. 13, 1995, Ser. No. 543,244
Int. Cl.[6] E04B *1/16*
U.S. Cl. 52—294 **11 Claims**



1. A concrete slab poured within the confines of a stem wall in combination with a stress reducing device for preventing cracks in the concrete slab, a first portion and a second portion of the stem wall defining a re-entrant corner, the stress reducing device comprising:

a body member having a first leg and a second leg, the first leg having a first surface and an opposed second surface and the second leg having a first surface and an opposed second surface, the first surface of the first leg and the first surface of the second leg defining an angle in the body member substantially corresponding to the angle of the re-entrant corner in the stem wall and the second surface of the first leg and the second surface of the second leg cooperating to define an arcuate concrete engaging surface, the body member embedded in the concrete slab with the first surface of the first leg disposed substantially adjacent the first portion of the stem wall and the first surface of the second leg disposed substantially adjacent the second portion of the stem wall such that the angle formed by the first surfaces of the first and second legs substantially conforms with the angle formed by the re-entrant corner in the stem wall in a substantially abutting relationship therewith and such that the arcuate concrete engaging surface is exposed to the concrete slab so as to reduce the concentration of stresses in the concrete slab adjacent the re-entrant corner and thereby reduce the development of cracks in the concrete slab adjacent the re-entrant corner.

5,623,799

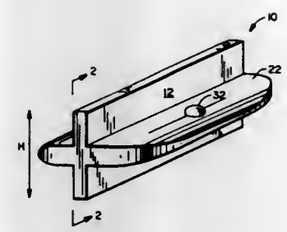
DEVICE AND PROCESS FOR MOUNTING TILES OF VARYING THICKNESS

William R. Kowalski, P.O. Box 30486, Honolulu, Hi. 96820, and Clinton Taylor, 254 Huall St. #8, Honolulu, Hi. 96813

Filed Mar. 8, 1995, Ser. No. 400,871
Int. Cl.[6] E04F *13/08*
U.S. Cl. 52—392 **16 Claims**

1. A device, comprising:

an extruded cross having a cross height, a cross width, and an extruded depth, defining substantially coplanar upper and lower tabs and substantially coplanar front and rear tongues having upper and lower surfaces, said tongues being substantially perpendicular to said tabs;



said extruded depth being greater than said cross height and greater than said cross width; and

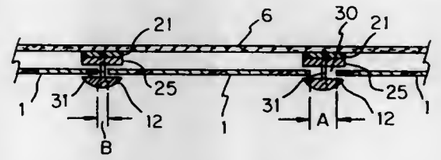
at least one locking bump on a surface of said front tongue.

5,623,800

PANEL SYSTEM

George Shinkosky, Marietta, Pa., assignor to Marietta Millworks, Marietta, Pa.

Filed Jun. 20, 1995, Ser. No. 492,648
Int. Cl.[6] E04C *2/00*
U.S. Cl. 52—468 **10 Claims**



2. A removable paneling system comprising

a) a plurality of panels of defined thickness each panel having an outer surface and opposing longitudinal ends;

b) a plurality of mounting strips, each mounting strip having a front face and a rear attaching face with an adhesive thereon for attachment to a surface;

c) a plurality of molding caps, each molding cap having a flat bottom portion sized to rest against opposing edge outer surface portions of adjacent panels and to cover opposing longitudinal ends of adjacent panels when positioned adjacent said surface;

d) a plurality of fasteners, each fastener sized to extend through said molding cap and a space between the flat bottom portion of said molding cap and the front face of the mounting strip and into said mounting strip without penetrating said surface; and

e) at least two slotted backing boards, one for a top edge of said panels and the other for a bottom edge of said panels, each slotted backing board having a rear face with an adhesive thereon for attachment to said surface, a front face to receive a cover molding, and a panel edge receiving recess in said front face, said panel edge receiving recess including a lip portion sized to retain an edge of a panel when positioned in said panel edge receiving recess, wherein, when said cover molding is attached to said slotted backing boards, said slotted backing boards and cover moldings are removable with said panels, said molding caps and said molding strips as a removable paneling unit.

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5,623,801

DEVICE FOR COVERING A WALL OPENING

Otto Drumbl, Bockkellerstrasse 8, Wien, Austria

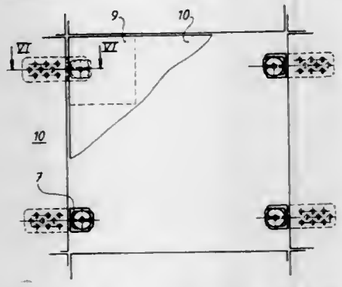
PCT No. PCT/AT92/00170, § 371 Date Jun. 16, 1994, § 102(e) Date Jun. 16, 1994, PCT Pub. No. WO93/12310, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 17, 1992, Ser. No. 244,843

Claims priority, application Austria, Dec. 19, 1991, 2530/91

Int. Cl.[6] E04F *19/08*

U.S. Cl. 52—514 **8 Claims**



1. A kit for covering an opening in a masonry wall, said wall being provided with a facing of tiles, said kit comprising:

a cover member having an outer surface and an inner surface, said outer surface having a surface treatment complementary with that of said facing of tiles, said inner surface having a ferromagnetic surface portion extending over at least a part of the overall area of the inner surface;

a first support means, a second support means, and said first and second support means each comprising anchoring means for anchoring the respective support means to said masonry in said opening; and

at least one holding member comprising a carrier section and a permanent magnet compatible with said ferromagnetic surface portion of the cover member, said holding member further comprising

first connecting means compatible with said first support means and including a lateral projection integral with the carrier section and provided with a threaded stem compatible with a threaded opening in the first connecting means, said stem being pivotable but axially fixed relative to the lateral projection and being so oriented that, on application, its axis is generally perpendicular to the respective masonry wall, whereby the spacing between the first connecting means and the carrier section is adjustable in the direction along the opening by threading the stem to a selected position in the associated threaded opening, and

second connecting means distinct from said first connecting means and compatible with said second support means, said second connecting means having a slot provided in the carrier section, said slot being lockably compatible with said second support means to permit sliding of the carrier section onto said support means and locking of the two to each other,

whereby a single type of said holding member can be fixedly secured to said first or second support means.

5,623,802

CONSTRUCTION TECHNOLOGY

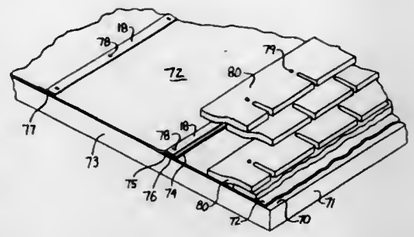
Robert E. Boushek, and Kalman R. Bundy, both of Worthington, Minn., assignors to Bedford Industries, Inc., Worthington, Minn.

Filed Jun. 30, 1994, Ser. No. 268,294

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—543 **36 Claims**

1. An extruded plastic construction strip in the form of a coil of overlapped convolutions, said strip consisting of a blended uniform composition comprised primarily of polyolefin material, said strip



being over 100 feet in length and having a substantially uniform thickness between about 20 and 80 mils and a width of at least one-half inch and not over about 12 inches, the structural integrity of said strip being such that it has sufficient resistance to tearing to be substantially untearable under opposing hand forces applied perpendicular to its thickness at an edge starting cut and has sufficient toughness to exhibit a tensile strength in excess of 1,000 psi when tested in accordance with ASTM:D882-91, plus sufficient stiffness to support at least a 6-inch length of itself in upright substantially vertical condition from a holding point and sufficient flexibility to be wound upon itself in overlapping convolutions as small as one inch internal diameter, said coil of overlapped convolutions having adjacent surfaces of the strip in the coil in intimate contact but freely separable during unwinding from said coil, the innermost convolution of said coil having an internal diameter not over about 3 inches and the outermost convolution of said coil having an external diameter in excess of about 10 inches.

5,623,803

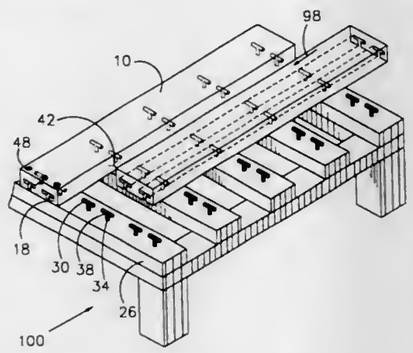
PLASTIC DECKING AND SECUREMENT SYSTEM AND METHOD OF INSTALLATION

Mark C. Willis, 4215 Hart Rd., Richfield, Ohio 44256

Filed Mar. 21, 1995, Ser. No. 407,715

Int. Cl.[6] E04H *12/02*

U.S. Cl. 52—650.3 **18 Claims**



1. A deck structure comprising:

a frame, said frame comprising spaced-apart, supporting members;

a plurality of planks comprising plastic material, said planks being closely received transversely to said supporting members, each of said planks having a longitudinal groove formed in the underside thereof and,

a plurality of connectors, said connectors protruding from said frame and being fixedly attached thereto, said connectors selectively fitting into said grooves for connecting said planks to said frame so that said planks are slidable relative to said frame in a direction parallel to said grooves.

5,623,804

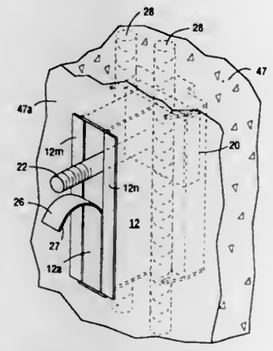
CONCRETE STRUCTURE HAVING LOAD TRANSFERRING INSERT AND METHOD FOR MAKING SAME

David L. Kelly, Sacramento, Calif., and Sidney E. Francies, III, Universal City, Tex., assignors to The Burke Group, Sacramento, Calif.

Continuation of Ser. No. 369,449, Jan. 6, 1995, abandoned. This application Jul. 25, 1996, Ser. No. 687,264

Int. Cl.[6] E04B *1/38*

U.S. Cl. 52—704 **43 Claims**



1. A concrete support apparatus for supporting thereon an object, said apparatus comprising;

a concrete structure having a surface,

a reinforcement bar disposed in said concrete structure,

a primary support member for securely engaging a secondary support member attached to said object, and

an insert embedded in said concrete structure and having an interior volume and an opening coplanar with said surface of said structure with a remainder of said insert being embedded within said concrete structure, said insert comprising a wall defining said interior volume, said interior volume having first and second contiguous portions, said first portion sized and shaped to accept said primary support member in a first orientation and said second portion sized and shaped such that said primary support member does not fit into said second portion when in said first orientation, said primary support member being disposed in said first portion of said interior volume of said insert, whereby said secondary support member can be attached to said primary support member and a load of said object is transferred through said concrete structure,

wherein said insert further comprises an extension projecting beyond said wall, said extension defining a recess for engaging a reinforcement bar in a position relative to said insert such that said load of said object is also transferred through said reinforcement bar.

5,623,805

SEAMING DEVICE CAPABLE OF SEAMING CURVED AND STRAIGHT PANELS

Frederick Morello, Johnstown, Pa., assignor to M.I.C. Industries, Inc., Reston, Va.

Filed Apr. 20, 1995, Ser. No. 425,439

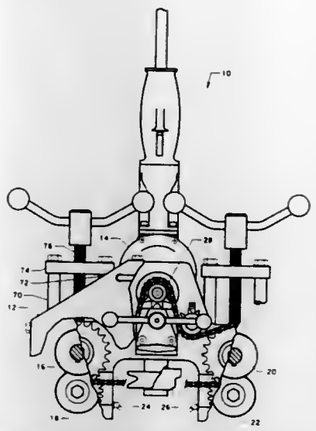
Int. Cl.[6] E04D *15/00*

U.S. Cl. 52—749.1 **5 Claims**

1. A seaming apparatus for connecting a pair of adjacent panels, one of the panels having an outturned flange portion with a downturned terminal portion forming a U-shaped channel and the other of the panels having an inturned flange portion positioned in the U-shaped channel of the one panel, said seaming apparatus comprising:

a main support frame;

a drive motor mounted to said main support frame;



a first set of upper and lower vertically opposed rollers mounted for rotation to said main support frame, the lower roller of said first set capable of being positioned in the U-shaped channel and the upper roller of said first set capable of being simultaneously positioned above and in contact with the outturned flange portion, both of the rollers of said first set making engagement with respectively adjacent surfaces of the panels and at least one of the rollers of said first set being coupled to said drive motor by a drive train;

a second set of upper and lower vertically opposed rollers mounted for rotation to said main support frame and longitudinally spaced from said first set of upper and lower vertically opposed rollers, the lower roller of said second set capable of being positioned in the U-shaped channel and the upper roller of said second set capable of being simultaneously positioned above and in contact with the outturned flange portion, both of the rollers of said second set making engagement with respectively adjacent surfaces of the panels and at least one of the rollers of said second set being coupled to said drive motor by said drive train;

a set of first and second horizontally opposed rollers mounted for rotation in a plane to said main support frame between said first and second sets of upper and lower vertically opposed rollers, said set of first and second horizontally opposed rollers mounted for limited linear motion normal to their plane of rotation during seam-forming operation of said seaming apparatus,

said set of first and second horizontally opposed rollers positionable such that said first horizontally opposed roller rides over the outturned flange portion opposite to the downturned terminal portion and such that said second horizontally opposed roller contacts the downturned terminal portion and bends the downturned terminal portion under the inturned terminal portion at an angle whereby said second set of upper and lower vertically opposed rollers flattens the angularly disposed downturned terminal portion against the underside of the inturned flange portion as said seaming apparatus is moved along the panels.

5,623,806

CHANGEOVER APPARATUS FOR POSITIONING BOTTLES FOR CAPPING EQUIPMENT

David E. J. Larson, Indianapolis; Cherie L. Wolfe, Greenwood, and Patrick S. Reeves, Indianapolis, all of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

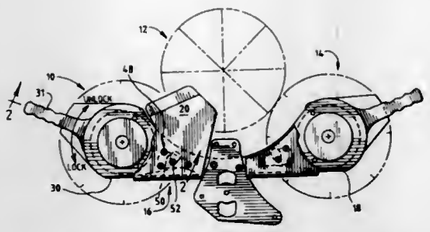
Filed Sep. 29, 1995, Ser. No. 536,166

Int. Cl.[6] B65B *7/28*

U.S. Cl. 53—317 **10 Claims**

1. Apparatus for supporting and facilitating rapid conversion of a ramp means for handling bottles relative to a capping mechanism

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comprising means for supporting the ramp means, means for maintaining said ramp means in position relative to said support means, and locking means defining an opening means positionable relative to said maintaining means for readily locking the ramp in one position and extending said maintaining means through said opening means in a second position thereby to lock said ramp means in said first position and release said ramp in said second position to permit changing said ramp means to accommodate positioning of bottles to various heights as required by associated capping equipment.

5,623,807

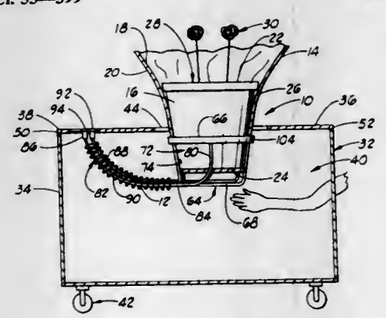
METHOD FOR APPLYING A BAND ABOUT A SHEET OF MATERIAL AND A POT OR FLORAL GROUPING

Donald E. Weder, Highland; William F. Straeter, Breese, and Joseph G. Straeter, Highland, all of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 934,832, Aug. 24, 1992, Pat. No. 5,426,914, which is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application May 8, 1995, Ser. No. 437,473

Int. Cl.[6] B65B *13/02;67/08*

U.S. Cl. 53—399 **6 Claims**



1. A method for placing a band about a sheet of material for cooperating to hold the sheet of material in position extending about at least a portion of an outer peripheral surface of a flower pot having an open upper end and a lower end comprising:

providing a pot frame having a pot receiving space formed therein;

providing a band holder configured to hold a band, the band holder supported by the pot frame and substantially aligned with the pot receiving space in the pot frame;

moving the flower pot and the sheet of material into the pot receiving space of the pot frame to position the sheet of material about the outer peripheral surface of the flower pot while maintaining the open upper end of the flower pot substantially uncovered by the sheet of material; and

removing the band from the band holder and positioning the band about the sheet of material and the flower pot to hold the sheet of material about the outer peripheral surface of the flower pot so as to provide a decorative cover for the flower pot while the flower pot having the sheet of material disposed about the outer peripheral surface of the flower pot is maintained in the pot receiving space of the pot frame.

5,623,808

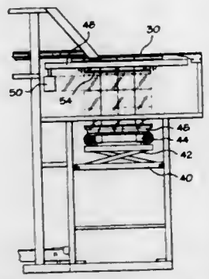
APPARATUS AND METHOD FOR PALLETIZING AND WRAPPING A LOAD

Joseph F. Franklin, and Owen N. Reese, II, both of Montgomery, Ala., assignors to HK Systems, Inc., New Berlin, Wis.

Filed Jan. 19, 1996, Ser. No. 588,774

Int. Cl.[6] B65B *13/10;35/50;53/00*

U.S. Cl. 53—399 **19 Claims**



13. A method for palletizing and wrapping a load containing a number of bundles, said method comprising the steps of:

feeding a plurality of said bundles onto a conveyor;

arranging said bundles into a load layer on said conveyor by means of positioning structure associated with said conveyor;

transferring said load layer onto a stripper plate associated with said conveyor;

raising a pallet with a hoist located beneath said stripper plate;

raising said pallet above said hoist to said stripper plate by means of a scissor lift mounted on said hoist;

dropping said load layer from said stripper plate to said pallet;

dispensing a wrapping material about the perimeter of said load layer; and

lowering said pallet.

5,623,809

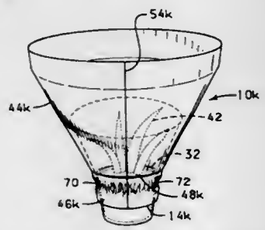
METHOD OF SLEEVING A COVERED POTTED PLANT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, Pat. No. 5,572,851, and a continuation-in-part of Ser. No. 306,558, Sep. 15, 1994, Pat. No. 5,509,188, which is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application Jun. 5, 1995, Ser. No. 462,412

Int. Cl.[6] A01G *9/02;* **B65B** *11/58;25/02;* **B65D** *85/52*

U.S. Cl. 53—412 **13 Claims**



1. A method of wrapping a potted plant, comprising:

providing a tubular sleeve having a lower portion with a lower end and an upper end, the tubular sleeve having an outer peripheral surface and an inner peripheral surface, the lower portion sized to surround at least a portion of a pot means, and the upper portion sized to surround at least a portion of a floral grouping disposed within the pot means, the tubular sleeve having a bonding material disposed upon a portion thereof for forming a crimped portion therein;

providing a covered pot means comprising:

a pot means having an upper end and an outer surface, a decorative covering disposed about the pot means, and a floral grouping disposed within the pot means;

placing the tubular sleeve about the covered pot means whereby at least a portion of the lower portion of the tubular sleeve is disposed adjacent the pot means and a portion of the upper portion of the sleeve is disposed adjacent the floral grouping; and

forming a crimped portion in the tubular sleeve by crimping together portions of the sleeve having the bonding material thereon and bondingly connecting adjacent portions of the sleeve, the crimped portion adjacent the decorative cover and the crimped portion holding the tubular sleeve in a position about the covered pot means.

5,623,810

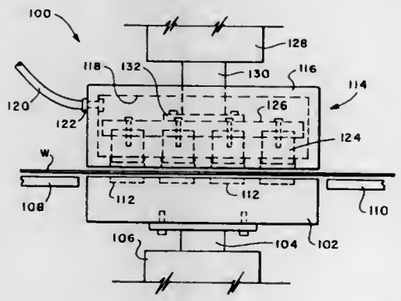
METHOD FOR MAKING STERILE SUTURE PACKAGES

Clifford A. Dey, San Angelo, Tex.; Robert J. Cerwin, Pipersville, Pa.; J. Mark Findlay, San Angelo, Tex.; Konstantin K. Ivanov, Bound Brook, N.J.; Robert Nuñez, Asbury, N.J.; Donald Pompei, Montville, N.J.; William R. Reinhardt, Belle Mead, N.J.; Mehmet Reyhan, E. Windsor, N.J., and David A. Szabo, Branchburg, N.J., assignors to Ethicon, Inc., Summerville, N.J.

Filed Mar. 29, 1996, Ser. No. 624,971

Int. Cl.[6] B65B *55/02;47/00*

U.S. Cl. 53—425 **6 Claims**



1. A method for making sterile suture packages, comprising:

a. feeding an elongated web of foil along a frame assembly line, the foil having a thin polymer coating on its top surface;

b. moving a frame section of the web into a cavity forming station having a die beneath the web;

c. during a pause in the web's movement, forcing air under pressure at the top surface of the web to deform the web into a plurality of large recesses to define cavities in the web and to deform the web into a plurality of small recesses located along the edges of the web to define rib-like depressions arranged in sets, each set corresponding to and lying adjacent to a cavity, and forcing a plug into each of the cavities from above the web to further define the shape of the cavities;

d. advancing the frame section to a suture packet loading station, and loading a suture packet into each cavity during a pause in the web's movement;

e. advancing the frame section to a top foil loading station, and loading a sheet of top foil atop the frame section during a pause in the web's movement, the sheet of top foil having a polymer coating on its bottom surface;

f. advancing the frame section to a sealing station and then, during a pause in the web's movement, exposing portions of the web and top foil partially around each cavity to heat and pressure to form a primary seal, leaving portions unsealed between each cavity and the adjacent corresponding set of rib-like depressions;

g. advancing the frame section to a cutting station, and then, during a pause in the web's movement, cutting the web at the leading and trailing edges of the frame section to provide a separate frame;

h. then, on a sterilization line, sterilizing the suture packets in the frame and then sealing portions of the frame at the outer periphery of each cavity to provide a complete peripheral heat seal around each cavity; and

i. transporting the frame to a blanking station and separating a set of packages from the frame, each package having a single suture package contained therein in a sterile condition.

5,623,811

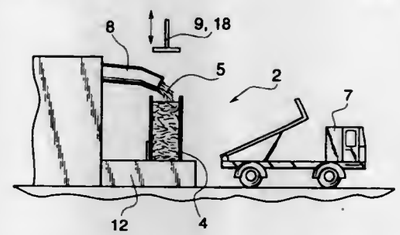
PROCESS AND DEVICE FOR PACKAGING AND SUPPLYING FIBER MATERIAL

Herwig Hirschek, Bobingen, and Jürgen Lang, Gessertshausen, both of Germany, assignors to Firma Autefa Maschinenfabrik GmbH, Friedberg, Germany

Filed May 6, 1994, Ser. No. 239,349

Int. Cl.[6] B65B *1/20*

U.S. Cl. 53—436 **29 Claims**



11. A device for packaging fiber material, the apparatus comprising:

a closable freight container having fastening element means designed to be repetitively connectable to and disconnected from a transport vehicle means;

compaction means designed to be repetitively connectable to and disconnectable from said freight container and for compacting the fiber material into a volume insertable into said closable freight container;

filling means designed to be repetitively connectable to and disconnectable from said freight container for filling said closable freight container with the fiber material to have the fiber material directly in contact with said freight container, said freight container blocking expansion of the fiber material.

5,623,812

SHRINK WRAP MATERIAL AND METHOD FOR PROTECTING ARTICLES

Gregory L. Todt, Union, Mich., assignor to Transhield Technology Co., LLC, Elkhart, Ind.

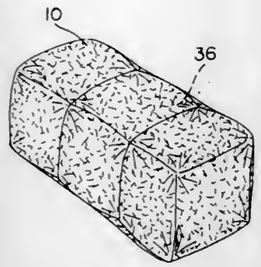
Division of Ser. No. 324,105, Oct. 14, 1994, Pat. No. 5,491,017. This application Nov. 3, 1995, Ser. No. 552,883

Int. Cl.[6] B65B *23/00;53/02*

U.S. Cl. 53—442 **9 Claims**

6. Method of protecting articles against surface damage comprising the steps of providing a wrap material consisting of a shrinkable, stretchable film first layer intermittently bonded to a

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second layer of fibers defining voids therebetween, said fibers being arranged into a non-woven fabric, arranging said wrap material around said article such that the wrap material covers the article with the second layer against the article and the first layer away from the article, and applying heat to said wrap material sufficient to shrink said first layer to an extent that the second layer engages said article, said applied heat being sufficient to expand air entrained in said voids to soften the fabric to provide a cushion supporting said first layer away from said article.

5,623,813

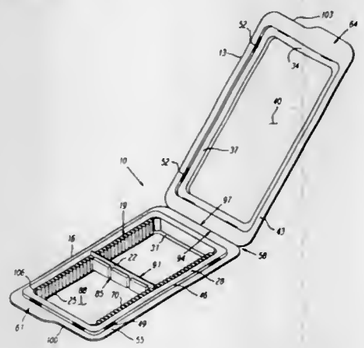
MEMORY MODULE CONTAINER

Abraham C. Ma, Union City, Calif., assignor to Ma Laboratories, Inc., San Jose, Calif.

Continuation of Ser. No. 268,665, Jun. 29, 1994, Pat. No. 5,441,150, which is a continuation of Ser. No. 939,988, Sep. 3, 1992, abandoned. This application Aug. 11, 1995, Ser. No. 514,005

Int. Cl.[6] B65B *5/10;7/26;25/00*

U.S. Cl. 53—467 **4 Claims**



1. A method for placing memory modules into a container comprising the steps of

opening the container, the container having a lid;

inserting the memory modules in slots formed between protrusions formed into the container, each of the slots having a root;

seating the modules on a ledge at the root of the slots;

filling a desired number of the slots with the memory modules;

closing the lid of the container; and

securing the lid with a latch.

5,623,814

Patent Not Issued For This Number

5,623,815

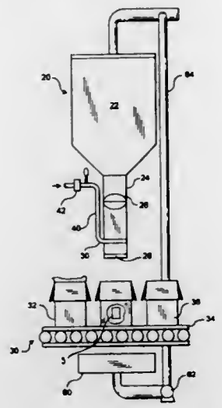
MOLDED BIODEGRADABLE PACKAGING

Richard R. Hornstein, Upp. Saddle River, and Grady F. Landrum, Morristown, both of N.J., assignors to Norel, Little Ferry, N.J.

Filed Oct. 31, 1995, Ser. No. 550,933

Int. Cl.[6] B65B *55/00;23/00*

U.S. Cl. 53—472 **7 Claims**



1. A method of packaging an article in a container, which comprises;

providing a container having a bottom and a sidewall;

placing an article for packaging in the container, leaving a space between the article and the container bottom and sidewall;

providing a quantity of loose nuggets, said nuggets being defined in part by an exposed surface of a gelatinizable starch material;

gelatinizing the starch material of the surface in a portion of the nuggets;

packing the nuggets adjacent to each other in the space between the article and the container bottom and sidewall, with nuggets having gelatinized starch surfaces in contact with surfaces of adjacent nuggets; and

allowing the gelatinized starch to retrograde, in one to three minutes, whereby adjacent nuggets adhere together at sites of contact; to form a solid, integrated and unitary cushion within the space between the article and the container bottom and sidewalls, said cushion being frangible and easily broken up and disposed of.

5,623,816

PACKAGING ARRANGEMENT

Russell J. Edwards; Richard W. Abrams, both of Jacksonville; William E. Holley, Ponte Vedra Beach, all of Fla.; Borge P. Gundersen, Tikob, and Thomas C. Ravn, Helsignor, both of Denmark, assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Division of Ser. No. 257,787, Jun. 10, 1994. This application Jun. 5, 1995, Ser. No. 461,934

Int. Cl.[6] B65B *51/10*

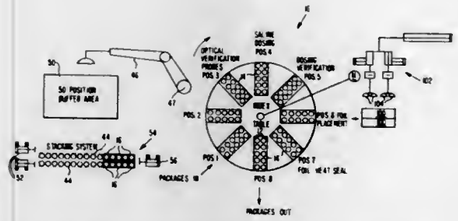
U.S. Cl. 53—478 **9 Claims**

1. A method of hermetically heat sealing a laminated top sealing cover to a plurality of individual package bases to create a sealed package with a seal which is

durable, to survive subsequent packaging operations, and yet consumer friendly to enable a consumer to easily separate and open the sealed package, comprising:

a. placing a laminated sealing cover over an array of individual, unconnected package bases;

b. heating a seal head to maintain the temperature of the seal head in a range from 210°–265° C.;



c. driving the heated seal head by a pneumatic cylinder to press the heated seal against the laminated sealing cover on the package bases;

d. measuring the force generated by the pneumatic cylinder by an in-line load cell; and

e. initiating a timer when a predetermined force is detected by the in-line load cell, which timer times a given period of time, after which pressure in the pneumatic cylinder is released, thereby forming a seal between the laminated sealing cover and each package base which is both detachable and consumer friendly.

5,623,817

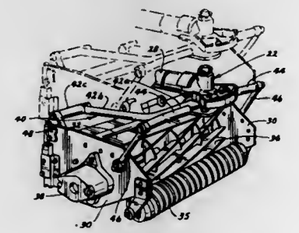
OPERATING UNIT JOINT FOR TURF MAINTENANCE EQUIPMENT

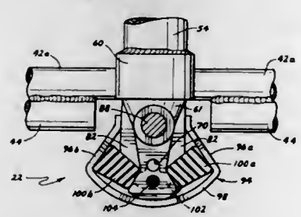
Thomas K. Bricko, Lakeville; Joseph P. Hager, Burnsville, and Daniel G. Stiller, Savage, all of Minn., assignors to The Toro Company, Bloomington, Minn.

Filed Jan. 20, 1995, Ser. No. 376,333

Int. Cl.[6] A01D *34/62*

U.S. Cl. 56—7 **23 Claims**





1. A turf maintenance machine comprising:

(a) a traction unit;

(b) a lift arm operatively connected to the traction unit;

(c) a turf maintenance operating unit; and

(d) a steering operating unit joint connecting the turf maintenance operating unit to the lift arm, wherein the turf maintenance operating unit has an operating position and a transport position, and wherein the steering operating unit joint (i) permits the turf maintenance operating unit to yaw from a generally straight orientation to a generally yawed orientation, and (ii) includes a resilient component which exerts on the turf maintenance operating unit a yaw resisting force sufficient to move the turf maintenance operating unit from its generally yawed orientation to its generally straight orientation when the turf maintenance operating unit is in its transport position.

5,623,818

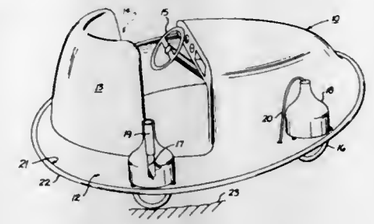
ROTATABLE IN PLACE POWERED VEHICLE FOR STEERING AROUND ABUTMENTS

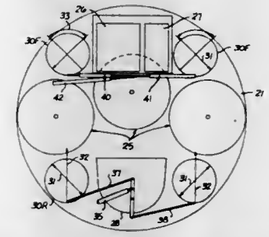
Clyde S. Ledbetter, 116 Amberwood Dr., Shelby, N.C. 28152

Filed Sep. 13, 1995, Ser. No. 527,444

Int. Cl.[6] A01D *34/64;* **B62D** *7/14*

U.S. Cl. 56—15.4 **23 Claims**





18. A rotatable in place powered riding vehicle comprising in combination:

a vehicle body with a set of steering wheels pivotably mounted thereon for steering of the vehicle;

driving control means comprising body rotation means, locomotion means and means for steering the path of travel of the vehicle body during locomotion;

said locomotion means comprising powered traction means for turning at least one wheel to move the vehicle body along a forward direction of travel;

said body rotation means comprising means for pivoting all the wheels of said set of steering wheels for wheel rotation into a tangential orientation about a circle defining a body pivot axis and means for operating the locomotion means to turn the wheels of said set of steering wheels for rotation of the vehicle body with the vehicle body resident in-situ at a pivot axis site; and

said steering means further comprising means for pivotably rotating a subset of less than all the wheels in said set of steering wheels to steer the direction of forward travel of the vehicle.

5,623,819

METHOD AND APPARATUS FOR SEQUENTIALLY STAGED COMBUSTION USING A CATALYST

Jeffrey C. Bowker, Gibsonia, and Dennis M. Bachovchin, Delmont, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

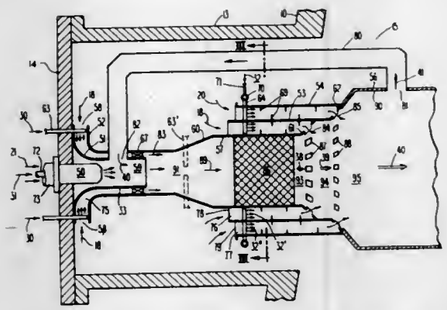
Continuation of Ser. No. 255,858, Jun. 7, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 567,864

Int. Cl.[6] F23R *3/34;3/40*

U.S. Cl. 60—39.06 **15 Claims**

1. A combustor for burning a fuel in air, comprising:

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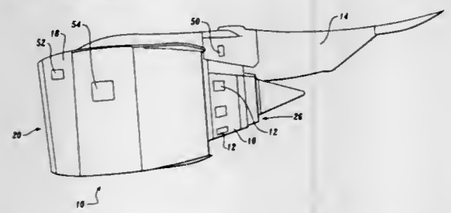
a) means for mixing a first flow of fuel into a first flow of air in a mixing zone, thereby producing a first fuel/air mixture;
b) a combustion catalyst, and means for directing said first fuel/air mixture through said catalyst so as to produce a catalyzed fuel/air mixture;
c) a first combustion zone in which said catalyzed fuel/air mixture is combusted, thereby producing a combusted gas;
d) a second combustion zone disposed downstream of said first combustion zone, and means for directing said combusted gas from said first combustion zone to said second combustion zone;
e) means for mixing a second fuel/air mixture into said combusted gas in said second combustion zone and combusting said second fuel/air mixture, thereby producing a further combusted gas;
f) a third combustion zone disposed downstream of said second combustion zone, and means for directing said further combusted gas from said second combustion zone to said third combustion zone;
g) means for mixing a third fuel/air mixture into said further gas in said third combustion zone and combusting said third fuel/air mixture, thereby producing a still further combusted gas; and
h) means for transferring heat from said still further combusted gas to said first fuel/air mixture for heating said first fuel/air mixture prior to directing said first fuel/air mixture through said combustion catalyst.

5,623,820

FLOW CONTROL APPARATUS FOR GAS TURBINE ENGINE INSTALLATION PRESSURE RELIEF DOORS

Ronald L. Balzer, Bothell, Wash.; Daniel T. Jensen, Indianapolis, Ind., and Michael L. Sangwin, Kirkland, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 3, 1995, Ser. No. 383,243
Int. Cl.[6] F02C *7/00*
U.S. Cl. 60—39.091 **5 Claims**



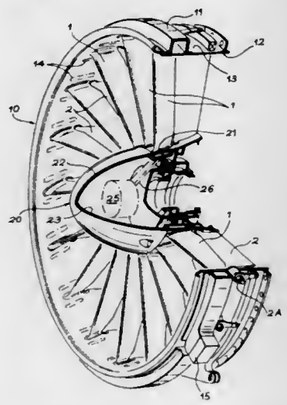
1. A pressure relief system for an engine shroud of a turbine engine, comprising:
a cutout in the engine shroud through which gases from the engine may escape the engine shroud in the occurrence of a bleed duct failure, the cutout having a forward edge, an aft edge and opposing sides;
a door having a forward edge, an aft edge, and opposing sides, the forward edge of the door being pivotally coupled to the engine shroud upstream along the direction of movement of a bypass air flow; and
a wall located on the opposing sides of the door and extending inward approximately normal to the door into the cutout, the wall extending at least partially from the forward edge of the door to the aft edge of the door.

5,623,821

TURBOJET EQUIPPED WITH A DEICING SYSTEM ON THE INTAKE CASE

Philippe Bouiller, Samoreau; Claude G. Corbin, Voisenon; Michel Franchet, Cesson, and Gérard E. A. Jourdain, Saintry Sur Seine, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Jul. 31, 1995, Ser. No. 509,054
Claims priority, application France, Aug. 18, 1994, 94 10102
Int. Cl.[6] F02C *7/047*
U.S. Cl. 60—39.093 **8 Claims**



1. A turbojet comprising:
an air intake case having radial arms between an outer annular structure and an inner central structure, said radial arms being made from a dielectric composite material;
a deicing unit configured to deice said radial arms by microwaves and located in said central structure, said deicing unit having a microwave generator and a transmitting element configured to transmit energy supplied by said microwave generator, said transmitting element comprising an inside annular waveguide located inside of said central structure;
an energy distributing element configured to eliminate ice; and
a coupling element coupling said transmitting element and said energy distributing element.

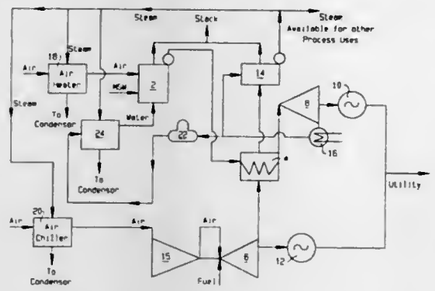
5,623,822

METHOD OF OPERATING A WASTE-TO-ENERGY PLANT HAVING A WASTE BOILER AND GAS TURBINE CYCLE

Wolfram G. Schuetzenduebel, Pike Rd., Ala., and Daniel M. Smith, Pembroke Pines, Fla., assignors to Montenay International Corp., Miami, Fla.

Filed May 23, 1995, Ser. No. 449,399
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—39.182 **9 Claims**

1. A method of efficiently operating a waste to energy facility in a manner which reduces boiler plant corrosion comprising:



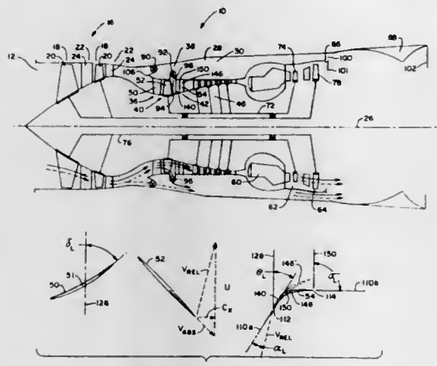
a) utilizing waste combustion gas, generated from the burning of municipal, commercial or industrial waste, to generate saturated steam having a pressure of at least 1000 psia in a waste heat recovery boiler;
b) flowing said saturated steam having a pressure of at least 1000 psia through one side of a steam superheater having at least two sides;
c) combusting fuel to generate fuel combustion gas;
d) flowing the fuel combustion gas through a combustion turbine which converts the gas into combustion turbine exhaust gas;
e) flowing all of said combustion turbine exhaust gas through another side of said steam superheater, wherein said combustion turbine exhaust gas provides heat to superheat said steam having a pressure of at least 1000 psia;
f) flowing the superheated steam through a steam turbine; and
g) flowing all of said combustion turbine exhaust gas exiting the steam superheater through a combustion turbine exhaust gas heat recovery unit.

5,623,823

VARIABLE CYCLE ENGINE WITH ENHANCED STABILITY

Steven M. Schirle, Boynton Beach; Samy Baghdadi, Palm Beach Gardens; Syed J. Khalid, Palm Beach Gardens, and Gary M. Perkins, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, East Hartford, Conn.

Filed Dec. 6, 1995, Ser. No. 568,039
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—226.3 **7 Claims**



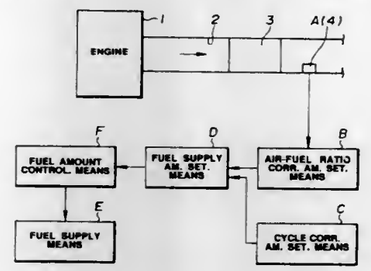
1. A variable cycle gas turbine engine having:
an engine intake for admitting a working medium into the engine;
a fan downstream of the intake having at least one fan blade array rotatable about a central axis;
a fan duct downstream of the fan;
a core unit also downstream of the fan and in parallel flow relationship with the fan duct, the core unit comprising, in series flow relationship:
a guide vane array;
a hybrid stage having a rotor blade array and a stator vane array; and,
a core compressor having at least one rotor blade array, the hybrid and compressor rotor blade arrays being rotatable about the central axis at a common rotational speed;
a fan duct bypass valve for governing flow communication between the fan and the fan duct;
a compressor bypass port upstream of the compressor for selectively establishing flow communication between the core unit and the fan duct; and,
a compressor bypass valve for controlling working medium flow through the bypass port,
the fan duct and compressor bypass valves each having a closed position and an open position, the engine being operable in at least two modes determined by the positions of the valves such that the mass flow rate of the working medium channeled into the core unit in one of the modes exceeds that channeled into the core unit in the other of the modes, the engine characterized in that each vane in the hybrid stator vane array has a leading segment with a leading edge and a trailing segment with a trailing edge, and the orientation of the leading segment is adjustable over a range of leading segment pitch angles for regulating the incidence angle of the leading edge relative to the working medium, and the orientation of the trailing segment is separately adjustable over a range of trailing segment pitch angles for controlling the mass flow capacity of the hybrid vane array.

5,623,824

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Fumio Yukawa, and Tsutomu Kikuchi, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 858,012, Mar. 26, 1992, abandoned.
This application Feb. 18, 1994, Ser. No. 198,395
Claims priority, application Japan, Jun. 26, 1991, 3-154949
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—276 **16 Claims**



1. An air-fuel ratio control system for an internal combustion engine having a catalytic converter disposed in an exhaust gas passageway of the engine, said system comprising:
means for detecting an air-fuel ratio of an air-fuel mixture supplied to the engine, by sensing a component of exhaust gas in the exhaust gas passageway downstream of the catalytic converter, said air-fuel ratio detecting means including no more than a single air-fuel ratio sensor, wherein said single air-fuel ratio sensor is disposed in the exhaust gas passageway downstream of the catalytic converter to detect an air-fuel ratio in the exhaust passageway downstream of the catalytic converter;
means for setting an air-fuel ratio correction amount in accordance with said detected air-fuel ratio, to control said air-fuel

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ratio toward a target air-fuel ratio, said air-fuel ratio correction amount having a period and an amplitude in variation;

means for setting a cycle correction amount in accordance with an engine operating condition, at least one of said period and said amplitude of said air-fuel ratio correction amount being changeable in accordance with said cycle correction amount, said cycle correction amount being set such that said amplitude of said air-fuel ratio correction amount is large at a low engine coolant temperature as compared with that at a high engine coolant temperature higher than said low engine coolant temperature;

means for setting a fuel supply amount in accordance with said air-fuel ratio correction amount and said cycle correction amount;

means for supplying a fuel into the engine; and

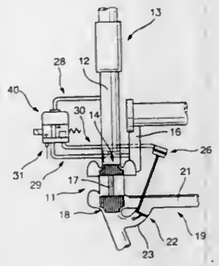
means for controlling an amount of the fuel to be supplied from said fuel supply means, in accordance with said fuel supply amount.

5,623,825

TURBO CHARGER ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Karl-Heinz Kempka, Esslingen, and Peter Strätz, Sindelfingen, both of Germany, assignors to MC Micro Compact Car Aktiengesellschaft, Biel, Switzerland

Filed Sep. 5, 1996, Ser. No. 708,891
Int. Cl.[6] F02B *37/12*
U.S. Cl. 60—602 **6 Claims**



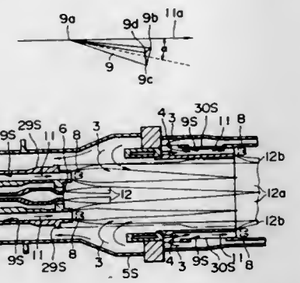
1. A turbocharger arrangement for an internal combustion engine including an exhaust gas turbine with an exhaust gas pressure control valve (waste gate) and an operating motor connected to said waste gate for opening or closing said waste gate, a charger coupled to said exhaust gas turbine for rotation therewith and having an air suction side with an air suction pipe and an air discharge side connected to an engine air intake duct for supplying air from said charger to said engine, and a system control valve for controlling said waste gate operating motor, said system control valve being in communication with the suction side and with the pressure side of said charger for applying either suction or discharge air pressure to said waste gate operating motor and including means for placing said charger air suction side in communication with said charger air discharge side to permit discharge air to return to said charger air suction side through said system control valve.

5,623,826

COMBUSTOR HAVING A PREMIX CHAMBER WITH A BLADE-LIKE STRUCTURAL MEMBER AND METHOD OF OPERATING THE COMBUSTOR

Masaya Ohtsuka, and Shin-ichi Inage, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,099
Claims priority, application Japan, Jul. 30, 1993, 5-189882
Int. Cl.[6] F23K *3/00*
U.S. Cl. 60—737 **12 Claims**



1. A combustor having a premixer for mixing air and fuel together to form a premixture, comprising:

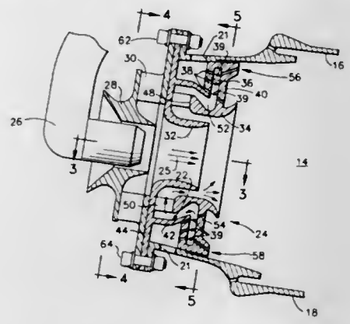
a structural member, having an angle of elevation with respect to a direction of a main stream of said premixture, provided within said premixer, said structural member being shaped as a triangular pyramid and having a portion projecting from an inner surface of said premixer.

5,623,827

REGENERATIVE COOLED DOME ASSEMBLY FOR A GAS TURBINE ENGINE COMBUSTOR

Joseph D. Monty, Boxford, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 26, 1995, Ser. No. 378,703
Int. Cl.[6] F23R *3/60*
U.S. Cl. 60—748 **20 Claims**



1. A dome assembly for a single annular combustor of a gas turbine engine comprising a plurality of modules, each of said modules further comprising:

(a) a first dome wall in flow communication with compressed air supplied to said combustor, said first dome wall including a central opening therein and at least one cooling passage therethrough;

(b) a baffle spaced downstream of and connected to said first dome wall at radially outward and inward ends, said baffle including a central opening therein;

(c) a second dome wall defining said central opening in said first dome wall, said second dome wall extending upstream of said first dome wall;

(d) a venturi located within said central opening of said first dome wall, said venturi including a flange extending radially outward from said central opening, wherein said second dome wall is connected to said flange at an upstream end;

(e) a flare cone located within said central opening of said baffle and radially outward of said venturi, wherein a substantially radial passage is provided between said venturi flange and said flare cone; and

(f) a swirler located within said radial passage;

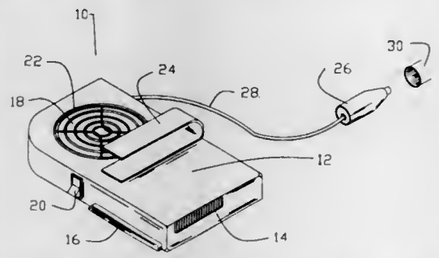
wherein a chamber is formed by said first dome wall, said second dome wall, said baffle, said venturi, and said flare cone, said chamber being in flow communication with said compressed air by means of said cooling passage in said first dome wall, whereby said compressed air impinges on said baffle and circulates through said swirler.

5,623,828

THERMOELECTRIC AIR COOLING DEVICE

Steven S. Harrington, 5158 Clareton, Agoura Hills, Calif. 91301

Filed Apr. 5, 1996, Ser. No. 626,144
Int. Cl.[6] F25B *21/02*; **F25D** *17/04;17/06*
U.S. Cl. 62—3.2 **10 Claims**



1. An apparatus for producing a flow of cooled air, said apparatus comprising,

a portable enclosure having two ambient air intake ports, one on the top of the enclosure and one on the bottom of the enclosure, a hot air exhaust port and a cold air discharge port;

an electrical means by which said apparatus is powered;

a blower/motor assembly mounted within said enclosure adjacent said intake ports which produces an airstream;

a planar dividing wall placed adjacent to the blower/motor assembly, parallel to the airstream which divides the airstream into a first and second portion;

a hot heat sink disposed on one side of the dividing wall to transfer heat to the first portion of the airstream;

a cold heat sink disposed on the opposite side of the dividing wall to transfer heat from the second portion of the airstream;

a thermoelectric module contained in the dividing wall fixedly attached to the hot heat sink and the cold heat sink.

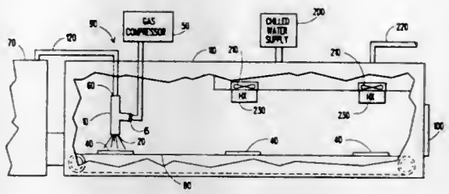
5,623,829

VORTEX TUBE COOLING SYSTEM FOR SOLDER REFLOW CONVECTION FURNACES

Francis C. Nutter, Methuen, and Mark Hutchings, Westford, both of Mass., assignors to BTU International, North Billerica, Mass.

Filed Jan. 17, 1996, Ser. No. 587,466
Int. Cl.[6] F25B *9/02*
U.S. Cl. 62—5 **19 Claims**

1. A cooling system for cooling product discharged from a furnace, said cooling system comprising:



a housing defining a cooling space within said housing, said housing having an entrance opening at a first end and an exit opening at a second end;

a support assembly disposed within said housing for receiving and supporting the product for cooling; and

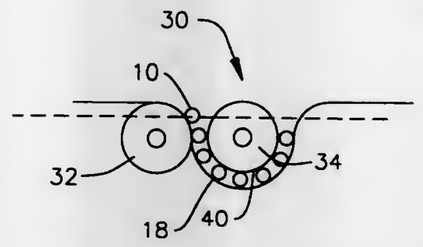
a vortex tube disposed within said housing, said vortex tube comprising a tubular body, an inlet to an interior of the tubular body disposed to receive gas from a source of compressed gas, the inlet located to impart a vortex to gas within the tubular body, a cold gas outlet located at one end of said tubular body to discharge cold gas from said interior of said tubular body, said cold gas outlet in communication with said cooling space, a hot gas outlet located at an opposite end of said tubular body to discharge hot gas, said hot gas outlet disposed to direct hot gas outside of said housing.

5,623,830

METHOD AND APPARATUS FOR FREEZING A FOOD PRODUCT IN A PREDETERMINED SHAPE

Robert J. Knight, Acworth; Simon J. Shamoun, Kennesaw; Jay R. Amber, Woodstock, and Donald W. Black, Simon's Island, all of Ga., assignors to The BOC group, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 418,198, Apr. 7, 1995, abandoned. This application Feb. 22, 1996, Ser. No. 593,179
Int. Cl.[6] F25D *13/06*
U.S. Cl. 62—63 **29 Claims**



1. A method for at least partially freezing a food product in a preselected shape comprising:

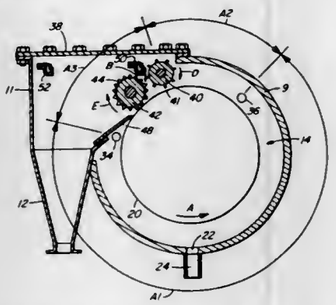
a) transporting the food product on a conveyor belt to a vessel containing a liquid cryogen and a roller assembly;

b) before or during contact of the food product with the liquid cryogen, passing the food product on the conveyor belt into contact with the roller assembly to form the food product into the preselected shape; and

c) contacting the food product on the conveyor belt with the liquid cryogen, wherein the food product is at least partially frozen in said preselected shape.

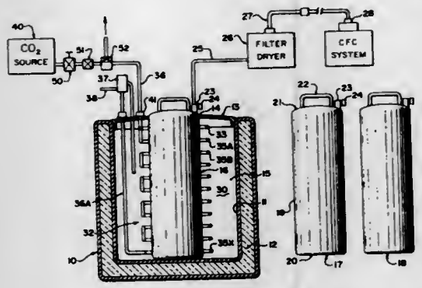
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5,623,831
FLUIDIZED PARTICLE PRODUCTION SYSTEM AND PROCESS
Terry Mesher, 176 Little Eldon Place, Victoria, British Columbia, Canada
Filed May 10, 1995, Ser. No. 435,432
Int. Cl.[6] F25C 5/02; A23G 9/00
U.S. Cl. 62—71 **13 Claims**



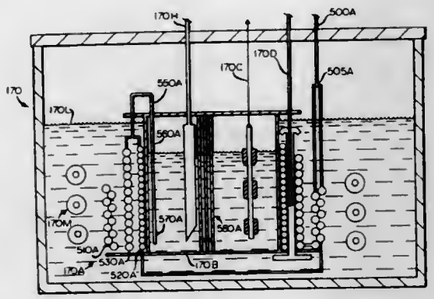
11. A process for the production of fluidized ice particles, comprising the steps of:
freezing water on a peripheral surface of a rotating drum to form a layer of ice on the surface;
crushing the ice in a nip between the drum surface and a sizing roller to form fluidizable ice particles;
enclosing said drum and said sizing roller in a sealed enclosure;
supplying a flow of gas at a controlled pressure to the interior of said enclosure;
discharging the gas through the nip towards an outlet from said enclosure and thereby fluidizing the particles and transporting the fluidized particles from said enclosure.

5,623,832
EXTRACTION AND STORAGE OF PRESSURIZED FLUENT MATERIALS
Dennis J. Bokitch, 191 Elmview Road, Regina, Saskatchewan, Canada, and William E. Hastings, 195 Lloyd Crescent, Regina, Saskatchewan, Canada
Continuation-in-part of Ser. No. 138,442, Oct. 20, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 325,669
Int. Cl.[6] F25B 45/00
U.S. Cl. 62—77 **20 Claims**



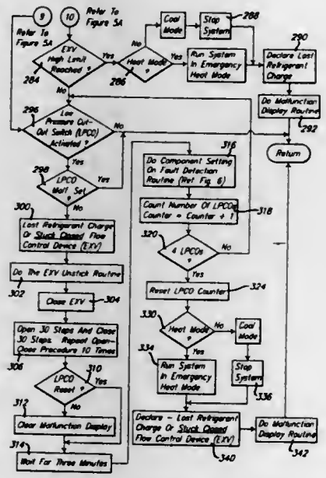
1. A method for extraction and collection of a fluent material from a pressurized system containing same comprising providing a sealed storage container containing gas substantially at atmospheric pressure, placing the sealed storage container in an insulated drum, immersing the container within a coolant medium inside the drum such that the coolant medium intimately engages an outside surface of the container, providing an evaporator duct in the drum within the coolant medium surrounding the container, providing a supply of compressed CO_2 in liquid form in a supply vessel, passing the CO_2 through the duct from the supply vessel to an end of the duct to cool the medium and the container and thus to reduce the pressure of the gas in the container to generate a partial vacuum, connecting the container to the system and communicating the partial vacuum to the system to extract the material and including the steps of shaping the duct to include a plurality of duct portions each separated from the next by at least a one hundred eighty degree turn, providing an orifice between the supply vessel and the duct through which the CO_2 passes, and tuning a dimension of the orifice relative to a length and diameter of the duct such that by the end of the duct substantially all of the CO_2 in liquid form has evaporated to gas for discharge to atmosphere.

5,623,833
SYSTEM AND METHOD FOR RECOVERING AND SEPARATING NON-CONDENSING GASES FROM A HALOCARBON COMPOSITION
Mark D. Mitchell, Wilson, N.C.; Donald P. Sparks, Maumee, and Howard K. Thompson, Toledo, both of Ohio, assignors to FRC International Inc., Holland, Ohio
Filed Jun. 25, 1996, Ser. No. 670,012
Int. Cl.[6] F25B 47/00
U.S. Cl. 62—85 **26 Claims**



24. A method for recovery of halocarbon compounds and removal of non-condensable gases from a halocarbon composition including vapor phase halocarbon and non-condensable gases, the method comprising the steps of:
filling a condensing module with a liquid heat transfer medium;
submerging a heat exchange unit and a collection tank integral with the heat exchanger unit in the liquid heat transfer medium;
transferring the halocarbon composition from a halocarbon composition source into the collection tank;
cooling the heat exchange unit and the liquid heat transfer medium;
liquefying the vapor phase halocarbon in the collection tank forming liquid phase halocarbon;
separating residual liquid phase halocarbon from a vapor stream mixture including vapor phase halocarbon and non-condensable gases by further cooling the vapor stream mixture using a flow control orifice in combination with a liquid trap arrangement;
transferring the residual halocarbon liquid phase from the liquid trap arrangement into the collection tank; and
transferring the liquid phase halocarbon from the collection tank into a receiver.

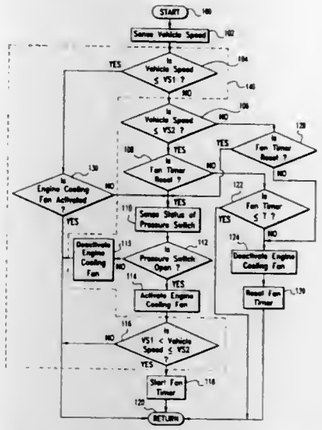
5,623,834
DIAGNOSTICS FOR A HEATING AND COOLING SYSTEM
Vijay Bahel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton; Gregory P. Herroon, Piqua, and Gerald L. Greschl, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio
Filed May 3, 1995, Ser. No. 433,619
Int. Cl.[6] F25B 41/04
U.S. Cl. 62—131 **6 Claims**



1. A controller for a heat pump which operates in heating and cooling modes and is of the type having a compressor for discharging refrigerant through an expansion valve (EXV) into a heat exchanger, comprising:
a low pressure cutout means coupled to said compressor for electrically disconnecting said compressor when pressure on an inlet side of said compressor falls below a first parameter and for electrically reconnecting said compressor when said pressure rises above a second parameter; and
at least one control processor, coupled to said low pressure cutout means and said EXV, for providing a low pressure malfunction diagnostic that includes:
(a) a valve releasing system for attempting to free said EXV,
(b) a default setting system for operating said heat pump at default settings, and
(c) a counter incrementing system for incrementing a cycle counter,
wherein if said cycle counter is less than a first predetermined number and said low pressure cutout means disconnects said compressor, said at least one control processor executes systems (a)–(c), and if said cycle counter equals said first predetermined number, said at least one control processor declares a malfunction.

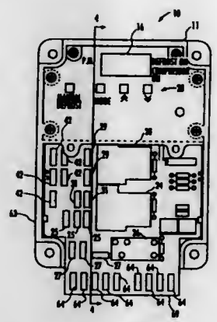
5,623,835
SYSTEM FOR CONTROLLING AIR FLOW TO A VEHICLE AIR CONDITIONING UNIT
Robert J. Layman, Columbus; Rebecca J. Darr, New Whiteland, and Jimmie J. Trusblood, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Aug. 31, 1995, Ser. No. 521,821
Int. Cl.[6] F25B 39/04
U.S. Cl. 62—133 **25 Claims**

1. A system for controlling air flow to a vehicle air conditioning unit, the unit including a refrigerant condenser operable to receive pressurized refrigerant from the unit, the system comprising:
means for providing air flow to the refrigerant condenser;



means for sensing the pressure of refrigerant received by the refrigerant condenser and providing a pressure signal corresponding thereto;
means for sensing vehicle speed and providing a vehicle speed signal corresponding thereto; and
controller means for controlling said air flow means in response to said vehicle speed and pressure signals, said controller means being operable in
a first mode to continuously activate said air flow means while the vehicle speed is below a first speed threshold if the refrigerant pressure exceeds a first pressure threshold, and
a second mode to activate said air flow means for a predetermined duration while the vehicle speed is above said first speed threshold but below a second higher speed threshold if the refrigerant pressure is above said first pressure threshold.

5,623,836
ELECTRONIC REFRIGERATION CONTROL SYSTEM
Richard Mrozinsky, Manitowoc, and Robert Novak, Sun Prairie, both of Wis., assignors to Paragon Electric Company, Inc., Two Rivers, Wis.
Filed Sep. 14, 1995, Ser. No. 528,673
Int. Cl.[6] F25B 49/02
U.S. Cl. 62—151 **20 Claims**



1. An electronic refrigeration and defrost temperature control system, comprising:
a defrost relay including a defrost power terminal and a defrost neutral terminal;
a compressor relay including a compressor power terminal and compressor neutral terminal;

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a fan relay including a fan power terminal and a fan neutral terminal;

a processor coupled to the defrost relay, the compressor relay, and the fan relay, the processor providing a defrost control signal to the fan relay, a compressor control signal to the compressor defrost relay, and a fan control signal to the fan relay in response to a software program including temperature and defrost control criteria; and

a housing supporting the defrost relay, the compressor relay, the fan relay, and the processor, the housing having an external surface, wherein the defrost neutral terminal, the compressor neutral terminal, and the fan relay neutral terminal are arranged in a group on the external surface spaced apart from the defrost power terminal, the compressor power terminal, and the fan power terminals, and wherein the defrost power terminal, the compressor power terminal, and the fan power terminal are located on the external surface.

5,623,837

AIR CONDITIONING SYSTEM FOR A VEHICLE

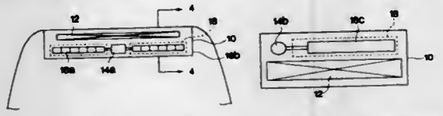
Hwan-Oh Sim, Kyungsangnam-Do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea

Filed Jun. 2, 1995, Ser. No. 458,872

Claims priority, application Rep. of Korea, Jun. 3, 1994, 94-12954

Int. Cl.[6] F25D *17/06*

U.S. Cl. 62—419 **5 Claims**



1. An air conditioning system for a vehicle, said air conditioning system comprising:

a unit case having an air inlet side and an air outlet side substantially linearly aligned with the air inlet side;

an evaporator disposed immediately adjacent the outlet side of said unit case, said evaporator being slanted for accelerating an air flow and effectively exchanging heat therethrough;

a single blow motor disposed within said unit case; and

a pair of blow fans disposed within said unit case on opposing side of blow of and operated by said single blow motor, said pair of blow fans and said single blow motor being aligned parallel to said evaporator;

said evaporator being postitioned intermediate said pair of blow fans aligned with said single blow motor and the air outlet, whereby upon operation of said single blow motor and said pair of blow fans, said pair of blow fans generate a smooth stream of air flow into the seat area of the vehicle through the air side inlet and air side outlet.

5,623,838

ADJUSTABLE LINK FOR CHAIN LINK BRACELET

Cyril Cuche, Bienne, Switzerland, assignor to SMH Management Services AG, Biel, Switzerland

Filed Mar. 28, 1996, Ser. No. 623,003

Claims priority, application France, Apr. 11, 1995, 95 04334

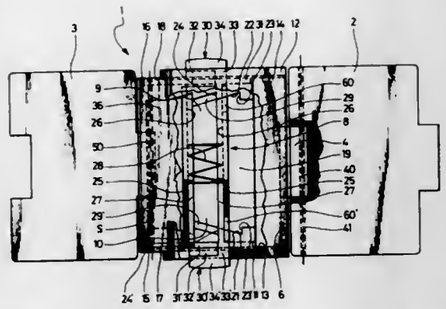
Int. Cl.[6] A44C *5/04*

U.S. Cl. 63—5.1 **4 Claims**

1. An adjustable link for a bracelet having a plurality of links extending in a longitudinal direction, said adjustable link comprising:

first and second attachment means for connecting said adjustable link to links of a bracelet;

said first attachment means being fixed to a cap and said second attachment means being fixed to a base slidable in said cap to vary the length of said adjustable link in said longitudinal direction; and,



a push-piece mechanism comprising two manually actuated push-pieces for selecting one of at least two different length values of said adjustable link to thereby adjust the length of the bracelet to variations in diameter of a wrist of a user,

said cap being in the shape of a U with branches, each branch having thereon a cap rail turned towards the inside of the U,

said base being tube-shaped with a rectangular cross-section,

said base having small sides with external faces each carrying a groove sized so as to slide on one of the cap rails,

said base having large sides with external faces, the face of one of the large sides being closed and the face of another large side having racks thereon which face each other and are directed in the longitudinal direction of the bracelet, each of said racks having at least two teeth,

said push-piece mechanism comprising a return spring; and a U-shaped profile bar movable in said base and having branches with guide grooves on internal faces of the branches,

said push-pieces having rails thereon which are guided in said guide grooves,

said push-pieces being arranged facing each other and separated by said return spring, each of said push-pieces further comprising a notch cooperating with one of the teeth of one of the racks and a head to which manual pressure may be applied, each head extending through one of the small sides of the base via an opening having a length greater than that of the head, and through one of the branches of the cap via an opening having dimensions substantially equal to the dimensions of the cross-section of the head.

5,623,839

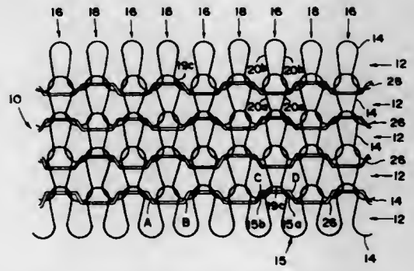
KNITTED FABRIC AND METHOD OF PRODUCING

William R. Hoggarth, Mansfield Woodhouse, and John E. Hancock, Mansfield, both of Great Britain, assignors to Sara Lee Corporation, Winston-Salem, N.C.

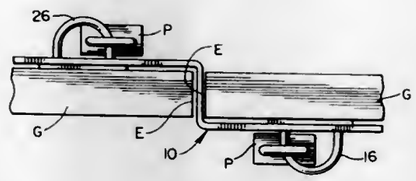
Filed Apr. 5, 1995, Ser. No. 416,968

Int. Cl.[6] D04B *11/00*

U.S. Cl. 66—178 A **9 Claims**



1. A hosiery garment including at least a leg portion comprising a fabric defined by a ground knitted structure having a plurality of successive courses knitted from a ground yarn and bare elastomeric yarn laid-in on every course of the ground knitted structure so as to cross-over the head of sinker loops between adjacent first and second groups of wales defined by needle loops of ground yarn, the laid-in elastomeric yarn having spaced length portions which extend across the technical back of each first group of wales, the ground yarn and elastomeric yarn being such that said length portions of the elastomeric yarn are embedded within the ground yarn of the needle loop heads in said first group of wales so that said lengths of elastomeric yarn reside below the technical back surface of the fabric.



5,623,840

PROCESS FOR PRODUCTION OF WEAVE-KNIT MATERIAL

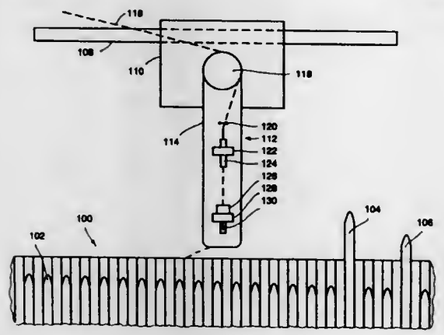
Friedrich Roell, Buberach, Germany, assignor to Tecnit-Technische Textilien und Systeme GmbH, Germany

Continuation-in-part of Ser. No. 370,441, Jan. 9, 1995, abandoned, which is a continuation-in-part of Ser. No. 89,112, Jul. 8, 1993. This application Oct. 17, 1995, Ser. No. 544,142

Claims priority, application Switzerland, Jul. 8, 1992, 02149/92

Int. Cl.[6] D04B *7/14;15/56*

U.S. Cl. 66—190 **8 Claims**



1. A process for inserting weft warp or weft and warp yarns in knitted goods on a knitting machine having at least one needle bed, the insertion being performed by at least one first yarn guide which is movable in a controlled manner in the direction of the needle bed independently of at least one second yarn guide of a knitting feed system of the knitting machine for feeding a yarn for knitting a base knit structure, the first yarn guide including a yarn feeding device for advancing the yarn into the knitting region and a cutting device for cutting the yarn, the process comprising the steps of:

actuating the yarn feeding device, at the beginning of yarn insertion, to advance the yarn to the knitting region whereupon insertion of the yarn starts,

guiding the first yarn guide along the needle bed in order to insert the yarn corresponding to a desired length over several needles, and

terminating the yarn insertion by actuating the cutting device of the first yarn guide.

5,623,841

TWO-WAY LOCKING SYSTEM AND METHOD

Ira Deemar, Rte. 2 Box 130, South Haven, Mich. 49090

Filed Sep. 12, 1995, Ser. No. 528,473

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—14 **26 Claims**

1. An integrated two-way locking system for the confronting free edges of a pair of entryway members which permits ingress from a first ingress side of said member pair and egress from a second egress side of said member pair, comprising

a strap, said strap having a first segment confronting one of said pair of entryway members on said ingress side and a second segment confronting the other of said pair of entryway members on said egress side,

a first lock element fastened to said one entryway member and confronting said first segment and a second lock element fastened to said other entryway member and confronting said second segment,

said first segment having first means for engaging said first lock element to facilitate securance of said first segment to said first entryway member and to secure said entryway member pair from said ingress side, and

said second segment having second means for engaging said second lock element to facilitate securance of said second segment to said second entryway member and to secure said entryway member pair from said egress side,

said first and second means being independently usable and being separately accessible, one from said ingress side only and the other from said egress side only.

5,623,842

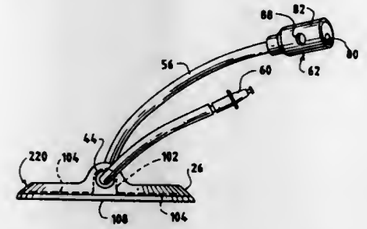
MOUNTABLE DEVICE FOR SECURING PORTABLE ITEMS

Gregory M. Davidge, Kula, Hi., assignor to Tortoise Products, Inc., Kula, Hi.

Continuation-in-part of Ser. No. 972,166, Nov. 5, 1992, Pat. No. 5,349,834, which is a continuation-in-part of Ser. No. 852,576, Mar. 17, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,169

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—18 **22 Claims**



1. A security device for removably attaching a portable article to a non-portable object to prevent unauthorized removal of the portable article comprising:

a base member formed of a polymeric material, said base member being in the form of a substantially flat slab and including a raised arch extending substantially diametrically of said slab, said arch having a tunnel extending through said arch and surrounded by said polymeric material, said tunnel defining a tunnel axis of cylindrical symmetry;

means for permanent attachment of a selected surface of the base member to a surface of the non-portable object;

a metal band defining a channel, the channel having a channel axis, the metal band being received in said tunnel to reinforce the tunnel, with the channel axis of the metal band being substantially coaxial with the tunnel axis;

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an elongated attaching member being received within said channel and said tunnel, and having end portions which both extend outwardly from said base member toward said portable article;

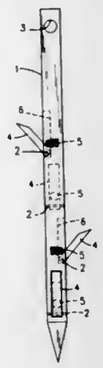
and means for removably securing said attaching member to said portable article.

5,623,843

MOTORCYCLE TETHERING DEVICE

Joseph E. Sands, 2013 NE. 2nd St., Ocala, Fla. 32670

Filed Apr. 17, 1995, Ser. No. 424,710
Int. Cl.[6] E05B *71/00*; B61H *5/00*
U.S. Cl. 70—234 **2 Claims**



1. A combination motorcycle and device for securing said motorcycle on pavement, said device comprising:

(a) a stake designed for driving into pavement, said stake having two or more axial segments, said stake having a sharp end and a blunt end, said blunt end provided with a bore hole therethrough for receiving a locking mechanism, said stake provided with at least two hinged barbs, said barbs arranged such that no two barbs are provided in the same axial segment of the stake, said barbs designed to deploy to prevent extraction of the stake once the stake is driven into said pavement;

(b) a motorcycle side stand including means for tethering;

(c) a mechanism;

wherein said means for tethering is a metal link welded to the side stand of the motorcycle.

5,623,844

KEY LEVERAGE EXTENDING APPARATUS AND METHOD

Richard L. Draeger, Rte. 2, Box 232A, Columbus, Kans. 66725

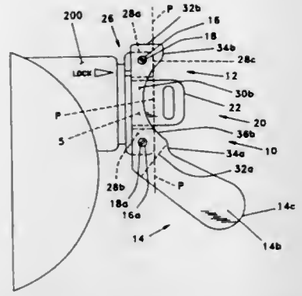
Filed Jun. 6, 1994, Ser. No. 254,616
Int. Cl.[6] E05B *19/04*
U.S. Cl. 70—408 **12 Claims**

1. A method for providing additional leverage to a key in a lock comprising the steps of:

(a) providing a key;

(b) providing a lock assembly;

(c) providing a leverage extending apparatus having a base member comprising a pair of opposed ends secured to a pair of opposed sides and a pair of opposed tops secured respectively to said opposed ends and said opposed sides such that a longitudinal aperture is formed therebetween, a handle member secured to one of said opposed sides comprising an angular disposition relative to a plane of said base member and having handle sides thereof generally parallel to said opposed sides, at least one set screw aperture disposed in one of said opposed sides adapted to threadably receive a set screw, and a set screw member threadably disposed in said set screw aperture;



(d) disposing said key of step (a) in said leverage extending apparatus such that a head of said key abuts one of said opposed ends, one of said opposed sides, one of said opposed tops, and such that said key head is disposed opposite said set screw member disposed in said at least one set screw aperture;

(e) tightening said set screw member against said key head to fixedly wedge said key head against said one opposed side;

(f) disposing said key and said leverage extending apparatus in said lock assembly; and

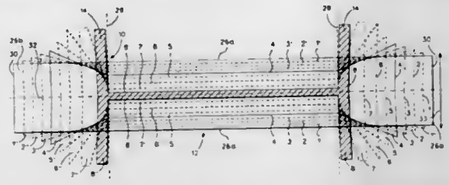
(g) turning said handle member of said leverage extending apparatus to turn said key in said lock assembly.

5,623,845

METHOD FOR PRODUCING FLANGED STRUCTURAL PRODUCTS DIRECTLY FROM SLABS

William J. Wilde, Bath, Pa., assignor to Bethlehem Steel Corporation

Continuation-in-part of Ser. No. 86,074, Jul. 1, 1993, Pat. No. 5,386,869. This application Feb. 2, 1995, Ser. No. 383,120
Int. Cl.[6] B21B *1/10*
U.S. Cl. 72—225 **40 Claims**



1. A method for producing a flanged product of predetermined dimensions and shape from a slab, said flanged product having a web to flange area ratio A_w/A_f, comprising the steps:

a) introducing directly into a universal mill a slab having a cross section thickness t_s and a predetermined cross section depth d_s;

b) compressing between opposed web rolls in the universal mill a web portion of said slab to an intermediate thickness t_w, at least one web roll having a roll width equal to a web depth d_w of said predetermined dimensions of said flanged product;

c) compressing by at least one flange roll in the universal mill, and substantially concurrently with step (b), said slab depth d_s to an intermediate depth d_w, the at least one flange roll compressing flange portions of said slab located in regions not compressed by the opposed web rolls and causing said flange portions to extend in a direction substantially perpendicular to said web portion;

d) adjusting incrementally at least one of the opposed web rolls in a direction to reduce said intermediate thickness t_w;

e) adjusting incrementally the at least one flange roll in a direction to reduce said intermediate depth d_w;

f) compressing said slab simultaneously between the adjusted opposed web rolls and with the adjusted at least one flange roll to incrementally further reduce said intermediate thickness t_w, and to incrementally further reduce said intermediate depth d_w and to further extend said flange portions in a direction substantially perpendicular to said web portion; and

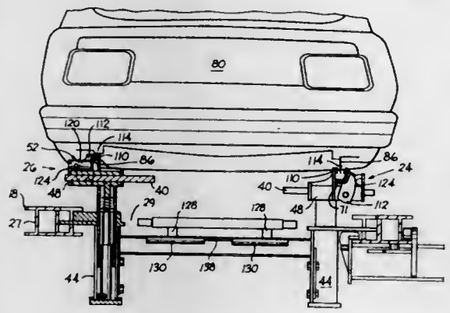
g) repeating steps (d), (e), and (f) in the universal mill until said slab is reduced to an intermediate thickness t_w equal to a web thickness t_w of said predetermined dimensions of said flanged product.

5,623,846

DEVICE FOR STRAIGHTENING A FRAME OF AN AUTOMOBILE

Clarence R. Brewer, Jr., Rte. 3, Country Club Estates, Central City, Ky. 42330

Continuation-in-part of Ser. No. 159,121, Nov. 30, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 346,019
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—305 **14 Claims**



1. A device for straightening the frame of a vehicle having a pinchweld, said device comprising:

a. a platform for receiving said vehicle, said platform having a open center;

b. a clamp assembly attached to said platform and means for moving said clamp assembly between an at rest position and an engaged position;

c. means for applying a vertical force to said clamp assembly;

d. means for vertically moving said clamp assembly in relation to said platform actuated by said means for applying a vertical force;

e. means for locking said clamp assembly against lateral movement actuated by said means for applying a vertical force; and

f. means for damping said clamp assembly to said pinchweld actuated by said means for applying a vertical force.

5,623,847

METHOD OF AND APPARATUS FOR DEEP DRAWING

Yoshihiro Uchiyama, Toyota; Kenji Tamada, Nagoya; Takashi Kosaka, Nisshin, and Hiroshi Hiyama, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

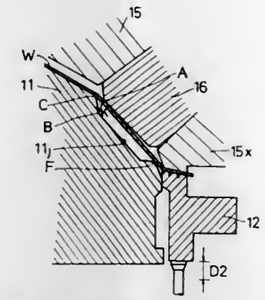
Filed Mar. 5, 1996, Ser. No. 612,000
Claims priority, application Japan, Mar. 9, 1995, 7-049948
Int. Cl.[6] B21D *22/00*; *22/21*
U.S. Cl. 72—348 **3 Claims**

1. A deep drawing apparatus comprising:

a stationary die having a recess formed in a process surface;

a movable die for approaching the stationary die along a vector P;

a movable die part having displacement relative to the movable die and undergoing a displacement along a vector K, the direction being different from that of the vector P, while the movable die approaches the stationary die, the movable die part being adapted to enter the recess for deep drawing a work when the movable die has approached the stationary die until the work is clamped between the movable die and the stationary die;



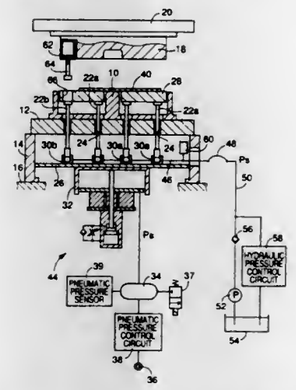
a cushion ring disposed adjacent to the stationary die for displacement a predetermined distance along the vector P, the cushion ring being adapted to clamp an edge of the work in cooperation with the movable die while the movable die approaches the stationary die, the clamped edge being displaced in the direction of the vector P with further approach to the stationary die by the movable die, the movable die part entering the recess before the edge of the work clamped between the cushion ring and the movable die is brought into contact with an edge of the recess.

5,623,848

PRESSING METHOD AND SYSTEM WHEREIN CUSHION PLATEN IS LOWERED BY COOPERATION OF SHOCK ABSORBERS AND CYLINDERS BEFORE HOLDING OF BLANK BETWEEN DIE AND PRESSURE RING

Kazunari Kirii, Aichi-ken, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed May 15, 1996, Ser. No. 648,373
Claims priority, application Japan, May 22, 1995, 7-122088
Int. Cl.[6] B21D *24/14*
U.S. Cl. 72—351 **10 Claims**



1. A method of performing a drawing operation on a blank in a pressing system including (a) a die and a punch cooperating to perform the drawing operation to draw the blank along a forming surface of the punch, (b) a cushion platen, (c) resistance applying means for applying a resistance to a movement of the cushion platen, (d) a pressure ring cooperating with the die to hold the blank at a peripheral portion thereof during the drawing operation,

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(e) a plurality of first cylinders disposed on said cushion platen and having respective pressure chambers and respective pistons, and (f) a plurality of cushion pins interposed between said first cylinders and said pressure ring, for transmitting a blank holding force based on said resistance to said pressure ring, wherein the drawing operation is performed during movements of said pressure ring and the die relative to the punch in a pressing direction against said resistance, such that the pistons of said first cylinders are held at neutral positions between upper and lower stroke ends thereof, for even distribution of said blank holding force to said pressure ring through all of said cushion pins, said method comprising the steps of:

providing said cushion platen with a plurality of second cylinders which have respective pressure chambers communicating with the pressure chambers of said first cylinders;

providing a plurality of shock absorbers between said second cylinders respectively and one of said die and a member moving with said die; and

moving down said cushion platen against said resistance, by cooperation of said second cylinders and said shock absorbers during a downward movement of said die toward said pressure ring and before holding of said blank by said blank holding force by and between said die and said pressure ring, for thereby reducing a speed at which said die collides with said pressure ring through said blank.

5,623,849

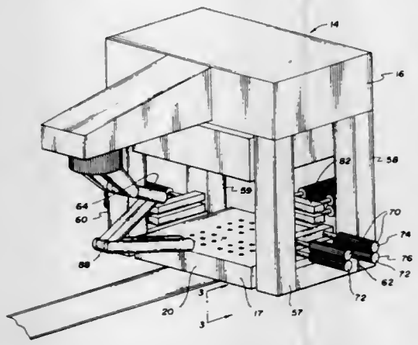
VERTICALLY ADJUSTABLE TOOL ACTUATORS FOR A SINGLE STAGE FINISHING PRESS

Kenneth H. Goff, Jr., Plymouth, and William E. Schultz, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 246,589, May 20, 1994, Pat. No. 5,465,600. This application Dec. 16, 1994, Ser. No. 357,964

Int. Cl.[6] B21D *31/06*

U.S. Cl. 72—394 **11 Claims**



1. In a press used to impart shape to a workpiece, the press having a crown and a bed between which the workpiece is located, opposed tools movable relative to one another within the crown and the bed so as to impart shape to the workpiece, and columns extending between the crown and the bed, an improvement comprising:

a plurality of tool actuator assemblies in communication with the tools, each actuator assembly having means to operate on said workpiece in cooperation with said tools, each tool actuator assembly being attached to and being adjustably mounted horizontally and vertically between a pair of adjacent columns independently of the reciprocatory motion of the press so that adjustment or actuation may be made before, during, or after press operation.

5,623,850

APPARATUS FOR ASCERTAINING SELECTED CHARACTERISTICS OF SHEETS

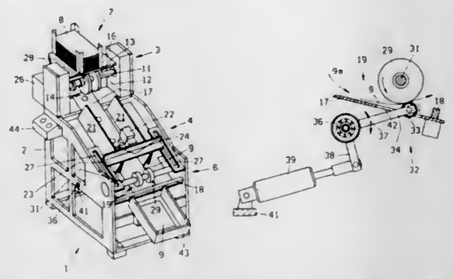
Wolfram Szczepaniak, Sandhöhe; Harald Rann, Hamburg, and Frank Hörnicke, Wedemark, all of Germany, assignors to E.C.H. Will GmbH, Hamburg, Germany

Filed Mar. 12, 1996, Ser. No. 614,312

Claims priority, application Germany, Mar. 24, 1995, 195 10 753.5

Int. Cl.[6] G01N *21/86*

U.S. Cl. 731—159 **19 Claims**



1. Apparatus for ascertaining at least one selected characteristic of a plurality of characteristics—including the length, the width and the coarseness of edges—of sheets, comprising a sheet testing unit having means for monitoring said sheets to ascertain the at least one selected characteristic of the sheets being tested at a predetermined location; means for automatically supplying sheets from a source to said location and for maintaining the thus supplied sheets in predetermined positions at said location, said source including means for receiving and supporting at least one stack of overlapping sheets and said means for supplying including means for feeding to said location a series of successive discrete sheets from the at least one stack of overlapping sheets along a predetermined path on to said location, said means for feeding including at least one ramp which slopes from said source downwardly toward said location and defines at least a portion of said path wherein the sheets can slide toward said location; and means for evacuating monitored sheets from said location.

13. Apparatus for ascertaining at least one selected characteristic of a plurality of characteristics—including the length, the width and the coarseness of edges—of sheets, comprising a sheet testing unit having means for monitoring said sheets to ascertain the at least one selected characteristic of the sheets being tested at a predetermined location; means for automatically supplying sheets from a source to said location and for maintaining the thus supplied sheets in predetermined positions at said location; and means for evacuating monitored sheets from said location, comprising a driven evacuating conveyor and a device for transferring monitored sheets from said location to said evacuating conveyor, said conveyor including at least one substantially roller-shaped member rotatable about an axis disposed at a level above a stop for sheets at said location and extending transversely of a direction of advancement of sheets from said source to said location.

5,623,851

TRANSMISSION FOR ELECTRIC VEHICLE

Kazuo Ooyama; Masahiro Imamura, and Makoto Kojima, all of Saitama, Japan, assignors to Honda Giken Kogyo Kasbushiki Kaisha, Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,713

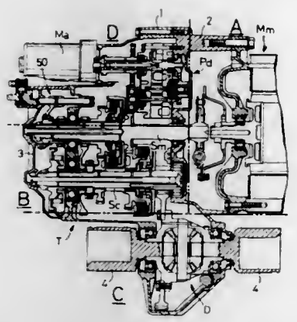
Claims priority, application Japan, May 27, 1994, 6-115718

Int. Cl.[6] F16H *3/08*

U.S. Cl. 74—333 **13 Claims**

1. A transmission for an electric vehicle, comprising,

a one-way clutch for being brought into an engaged state to establish a starting shift stage in a power transmitting path between an input shaft and an output shaft in order to transmit



a driving force from a reversible electric motor to a vehicle driven wheel through a preselected shift stage established in said power transmitting path; and

a shifting clutch capable of being brought into an engaged state to establish a shift stage other than said starting shift stage, wherein

said transmission further includes a clutch means provided in said power transmitting path for disengaging at least one gear of said starting shift stage from one of said input shaft and said output shaft during backward towing of the vehicle.

5,623,852

ADJUSTING DRIVE SYSTEM FOR TRANSMISSION OF MOTORIZED VEHICLES

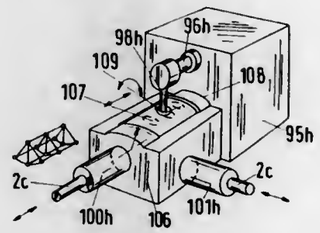
Dieter Tischer, Wendlingen, and Alfred Trzmiel, Grafenberg, both of Germany, assignors to Hydraulik-Ring Antriebs- und Steuerungstechnik GmbH, Nürtingen, Germany

Filed Apr. 8, 1994, Ser. No. 224,860

Claims priority, application Germany, Apr. 10, 1993, 43 11 855.0

Int. Cl.[6] F16H *59/04;61/28;63/08*

U.S. Cl. 74—473 R **8 Claims**



1. An adjusting drive system for a transmission of motorized vehicles, said system comprising:

a gear shifting shaft;

a first and second adjusting drive operatively connected to said gear shifting shaft, wherein said first adjusting drive rotates said gear shifting shaft and said second adjusting drive axially displaces said gear shifting shaft;

wherein said first adjusting drive is a linear drive having an axially displaceable adjusting member;

wherein said second adjusting drive is a linear drive having an axially displaceable adjusting member;

wherein said axially displaceable adjusting members are displaceable transverse to one another; and

a switching element, connected to said gear shifting shaft and to said first and second adjusting drives.

5,623,853

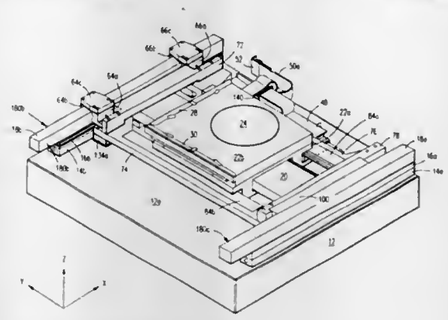
PRECISION MOTION STAGE WITH SINGLE GUIDE BEAM AND FOLLOWER STAGE

W. Thomas Novak, Hillsborough, Calif.; Zahirudeen Premji, Boulder, Colo.; Uday G. Nayak, San Jose, and Akimitsu Ebihara, San Mateo, both of Calif., assignors to Nikon Precision Inc., Belmont, Calif.

Filed Oct. 19, 1994, Ser. No. 325,740

Int. Cl.[6] G05G *11/00*

U.S. Cl. 74—490.09 **32 Claims**



1. A stage mechanism, comprising:

a base;

at least one linear guide mounted on said base and extending along a first direction;

a movable linear beam elongated in a second direction perpendicular to the first direction and guided slidably by said at least one linear guide;

a stage assembly guided movably in the second direction by said linear beam and movable in the first direction with said linear beam;

a follower stage located adjacent said stage assembly and not contacting said main stage assembly and guided slidably by said at least one linear guide;

a stage drive motor having a first portion on said stage assembly and a second portion on said follower stage, for moving said stage assembly in the second direction; and

a follower drive motor for moving said follower stage in the first direction so as to follow movement of said stage assembly in the first direction with said linear beam.

5,623,854

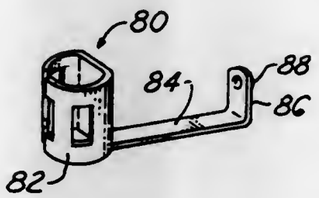
RETENTION AND DETENT SPRING FOR CONTROL KNOB

Chris R. Snider, Kokomo, Ind., assignor to Delco Electronics Corporation

Division of Ser. No. 323,306, Oct. 14, 1994, Pat. No. 5,537,893. This application Apr. 30, 1996, Ser. No. 609,325

Int. Cl.[6] G05G *1/10*

U.S. Cl. 74—553 **2 Claims**



1. A knob retention and detent spring for engaging a detent surface and for securing a knob to a shaft having a D-shaped cross-section, comprising:

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a one-piece D-shaped spring adapted to fit within the knob and to surround and grip the shaft; and

the spring including a detent arm extending radially from the spring and adapted to extend outside the knob to engage the detent surface.

5,623,855

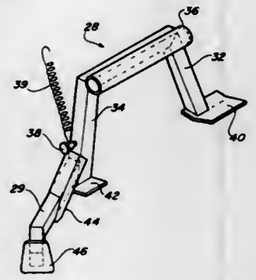
MOTORCYCLE PARKING STAND

Vernon H. Miles, Fort Walton Beach, Fla., assignor to Power Park, Inc., Fort Walton Beach, Fla.

Continuation-in-part of Ser. No. 85,418, Jun. 30, 1993, abandoned. This application Sep. 26, 1994, Ser. No. 312,096

Int. Cl.[6] G05G *1/18*

U.S. Cl. 74—564 **2 Claims**



1. A motorcycle adapted to be parked on a parking surface located beneath said motorcycle, said motorcycle comprising:

an engine;

a front wheel;

a rear wheel;

a frame, said frame supporting said engine, said front wheel, and said rear wheel;

a center parking stand including mounting means for mounting said parking stand to said frame for movement about an axis and between a stowed position and a use position in which said parking stand extends downward from said frame, said use position being employed to park said motorcycle;

biasing means for alternatingly biasing and maintaining said parking stand in said stowed and use positions;

said parking stand further including a right support leg terminating in a right support shoe and a left support leg terminating in a left support foot shoe, said right support shoe extending in a direction away from said left support leg thereby widening a stance of said parking stand and increasing stability of said parking stand in said use position, said support shoes defining right and left support surfaces adapted to engage the parking surface, said right support surface having a larger surface area than said left support surface and being adapted to lean said motorcycle to the left in the event of at least one of said legs penetrating into the parking surface;

lean limiting means for limiting the amount of lean imparted to said motorcycle, said lean limiting means including a portion defining a footlever extending outward from said left support leg, said footlever having a footlever length and being oriented such that said footlever contacts the parking surface when said parking stand is in said use position, said support legs being secured to said mounting means for rotation about said axis, said right and left support legs extending away from said mounting means and exhibiting a leg length enabling said parking stand to be moved from said stowed position to said use position, said length of said legs being such that said rear wheel of said motorcycle engages the parking surface when said motorcycle is parked on said parking stand, said leg lengths permitting said legs to cooperate with each other to balance said motorcycle in a vertical position when said parking stand is in said use position without causing said legs to bear the weight of said motorcycle, the weight of said motorcycle being supported by said front and rear wheels of said motorcycle when said motorcycle is parked.

5,623,856

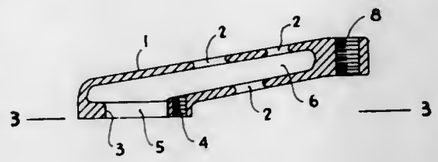
BICYCLE CRANK ARM WITH INTERNAL FLANGE

Roger O. Durham, 1370 Thompson Ave., Glendale, Calif. 91201

Filed May 31, 1995, Ser. No. 456,185

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—594.1 **5 Claims**



1. A hollow, internally-flanged crankarm including: (a) a pedal mounting hole; (b) an internal flange having a mounting surface and a plurality of mounting holes; and (c) an internal cavity terminating as an aperature through said internal flange.

5,623,857

METHOD AND APPARATUS FOR COMPENSATING FOR THERMAL DISTORTION FOR A MACHINE TOOL

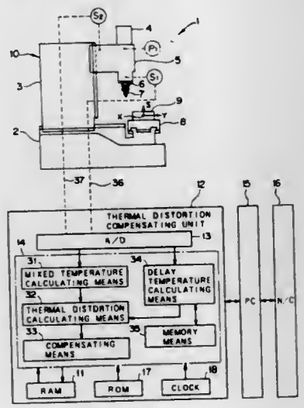
Hajime Sakuraba, Abiko, Japan, assignor to Hitachi Seiki Co., Ltd., Abiko, Japan

Filed Jun. 2, 1995, Ser. No. 458,305

Claims priority, application Japan, Jun. 16, 1994, 6-158105; Oct. 24, 1994, 6-284357; Jan. 19, 1995, 7-024741

Int. Cl.[6] B23Q *15/18*

U.S. Cl. 82—1.11 **26 Claims**



1. A method for compensating for a thermal distortion of a machine tool, comprising the steps of:

detecting a temperature change of a machine structure which is influenced by a heat source;

calculating a temperature change having substantially the same time constant as a time constant of the thermal distortion of said machine tool by using the temperature change detected; and

correcting a machining error on the basis of a thermal distortion that changes in correspondence with the calculated temperature change.

5,623,858

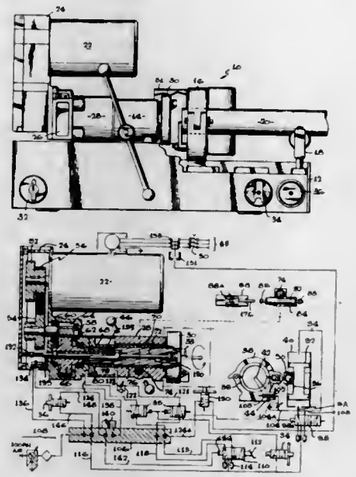
PRODUCTION END FINISHING MACHINE FOR TUBE AND BAR STOCK

Orville J. Birkestrand, 1435 Jersey Ridge Rd., Davenport, Iowa 52803

Filed Mar. 30, 1995, Ser. No. 413,243

Int. Cl.[6] B23B *5/16*

U.S. Cl. 82—113 **29 Claims**



1. An end finishing machine for forming a workpiece including a spindle and drive assembly, means fastened to said spindle for finishing said workpiece, and drive means for rotating said spindle;

a quill surrounding said spindle and means for translating said quill, said means including a rack on said quill, a gear connected to said rack, and means for rotating said gear;

means for securing said workpiece including an actuator;

control means including a source of fluid under pressure and valve means connected to said source; and

means responsive to said valve means for connecting said source to said actuator for operating said securing means to secure said workpiece;

stop means having an arm for locating said workpiece in position for forming; and

means responsive to operation of said valve means for retraction of said stop means delayed until after said workpiece is secured.

5,623,859

LATHES FEATURING PIVOTING TOOL CARRIAGES

C. E. Benton, Richmond, Va., assignor to Accu International, Inc., Ashland, Va.

Filed Jun. 30, 1995, Ser. No. 497,642

Int. Cl.[6] B23B *21/00;5/02*

U.S. Cl. 82—136 **15 Claims**

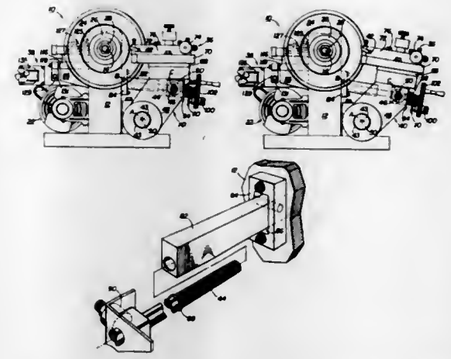
1. A lathe for finishing a component, comprising:

a. a frame to which an arbor is rotatably mounted, which arbor is connected to a power source and is adapted to receive a component to be finished;

b. a carriage pivotally connected to the frame;

c. at least one tool post connected to the carriage, which tool post is adapted to mount a tool for finishing the component; and

d. a feedscrew rotatably connected to the carriage and rotatably received in a capture block which is pivotally connected to the frame, and connected in threaded fashion to at least one of the carriage and the capture block, which feedscrew, when turned, pivots the carriage relative to the frame and thus moves the tool relative to the component.



5,623,860

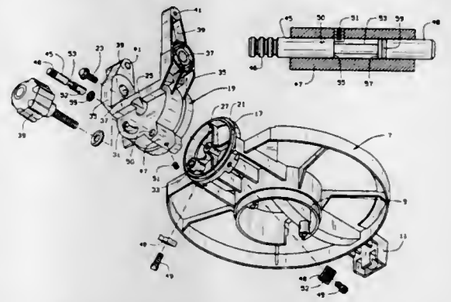
ADJUSTABLE/BYPASSABLE BEVEL STOP FOR COMPOUND MITER SAW

Keith R. Schoene, St. Charles; Daniel A. Terpstra, Kirkwood; Richard B. Brundage, Ladue, and Frank J. Tomiser, Jr., St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 15, 1994, Ser. No. 356,518

Int. Cl.[6] B23D *45/14;* B27B *5/20*

U.S. Cl. 83—471.3 **11 Claims**



1. A compound miter saw comprising: a supporting frame; a turntable rotatably mounted on said supporting frame, said turntable including a saw blade slot extending through an upper planar surface and a fixed cylinder section mounted at one end of said turntable which extends generally transverse to the upper planar surface of said turntable; a movable cylinder section rotatably mounted to said fixed cylinder section, said movable cylinder section pivotally mounting a power driven saw blade that moves along a predetermined path from an upper raised position to a lower operational position that includes the saw blade slot in said turntable;

bevel adjustment means for selectively rotatably moving said movable cylinder section relative to said fixed cylinder section in order to provide bevel adjustment of said power driven saw blade relative to said turntable; and

adjustable/bypassable bevel stop means for predetermined bevel stop settings as well as for over-riding such bevel stop settings when angles beyond the bevel stop settings are desired without re-adjusting said bevel stop means, the adjustable/bypassable bevel stop means including bevel stops mounted on said fixed cylinder section for engaging an index pin mounted on said movable cylinder section when the bevel

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adjustment means is operated for positioning the movable cylinder section between the bevel stop settings, said index pin being selectively movable into and out of engagement with said bevel stops for movement of the movable cylinder section beyond the bevel stop settings, the index pin being longitudinally movable between an engaged and disengaged position relative to the bevel stop in a direction generally transverse to the plane of movement of the movable cylinder section relative to the fixed cylinder section.

5,623,861

PNEUMATIC CYLINDER AND CONTROL VALVE THEREFOR

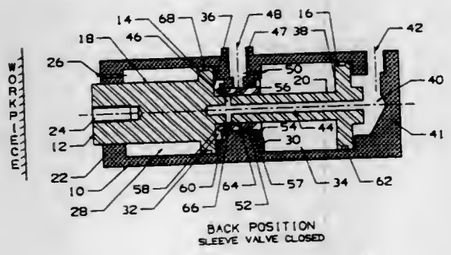
Allan Ward, Wimborne, and David J. Trimmer, Poole, both of England, assignors to Savair, Inc., St. Clair Shores, Mich.

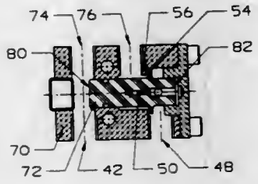
Continuation of Ser. No. 267,495, Jun. 29, 1994. This application Jun. 7, 1995, Ser. No. 480,532

Claims priority, application United Kingdom, Jul. 8, 1993, 9314145; European Pat. Off., Jun. 9, 1994, 94304157

Int. Cl.[6] F15B *11/08;13/04*

U.S. Cl. 91—420 **15 Claims**





1. A pneumatic cylinder comprising:

a piston;

a cylinder body containing said piston and defining therewith a first pressure chamber and a second pressure chamber such that pressurization of said first chamber effects movement of said piston relative to said cylinder body in a first direction, and such that pressurization of said second chamber effects movement of said piston relative to said cylinder body in an opposite direction;

means associated with said second chamber for providing restricted venting of said second chamber during movement of said piston in said first direction; and

valve means associated with said cylinder body and operative upon forward movement of said piston in said cylinder body being completed for venting pressure in said second chamber, said valve means also being operative to progressively restrict venting of said first chamber when movement of said piston relative to said cylinder body is in said opposite direction and approaches a limiting extent thereof so as to retard movement of said piston.

5,623,862

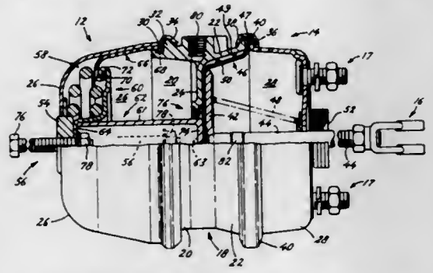
LONG STROKE SPRING BRAKE ACTUATOR

Roger D. Hanaway, Blue Springs, Mo.; John Heard, III, and Albert D. Fisher, both of LaHarpe, Kans., assignors to Midland Brake, Inc., Kansas City, Mich.

Filed Aug. 17, 1995, Ser. No. 516,444

Int. Cl.[6] F01B *7/00*

U.S. Cl. 92—63 **26 Claims**



1. A spring brake assembly comprising:

(a) axially-aligned first and second cups, peripheral edge portions of each being secured adjacent one another to form a spring brake chamber;

(b) a compressed power spring axially disposed within said chamber and exerting a force tending to separate said first and second cups;

(c) an axially-aligned, reciprocally-movable spring piston in said chamber having a spring side and an opposite-facing push-rod side, the opposed forces of said compressed power spring being exerted in one direction on the aligned interior of said first cup and in the opposite direction on the spring side of said spring piston;

(d) an axially-aligned push rod having one distal end portion sealingly secured to and movable with said spring piston, the other distal end and intermediate portions extending slidingly and sealingly through a centrally-apertured portion of said second cup for reciprocal fail-safe control of a brake actuator; and

(e) a generally-annular-shaped flexible diaphragm having an outer peripheral portion sealingly secured between said adjacent peripheral edge portions of said first and second cups and an inner peripheral portion sealingly secured adjacent the outer periphery of the spring side of said spring piston and disposed within the chamber radially outwardly from the spring piston so that subjecting the push-rod side of said spring piston to a fluid medium at sufficient pressure compresses said compressed power spring still further, and exhausting said pressurized fluid medium therefrom releases the additional compression of said power spring, whereby said spring piston and said push rod are reciprocally controlled.

5,623,863

DUAL-THREAD RELEASE BOLT FOR SPRING BRAKE ACTUATOR

Ronald S. Plantan, Charlotte, N.C., assignor to Indian Head Industries, Inc., Charlotte, N.C.

Filed Dec. 29, 1995, Ser. No. 581,120

Int. Cl.[6] F01B *7/00*

U.S. Cl. 92—63 **20 Claims**

1. A spring brake actuator comprising:

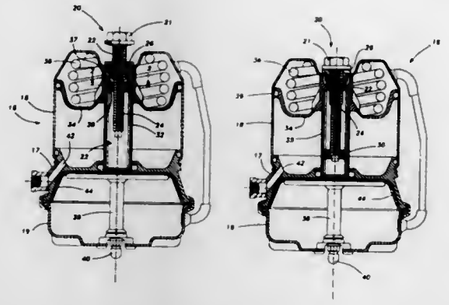
a central housing defining an aperture for passage of a push rod;

a push rod selectively extending through said aperture;

an outer housing connected to said central housing to define an emergency chamber;

an actuator member moving with said push rod;

a power spring selectively moving said actuator member and said push rod outwardly of said aperture;



a release tool for selectively caging said power spring and preventing movement of said power spring to move said push rod through said aperture, said release tool being movable between fully caged and fully released positions, said release tool moving a caging member within said emergency chamber to cage said power spring, and said release tool being operable such that upon movement of said release tool axially outwardly of said outer housing, the resulting movement of said caging member is amplified to be greater than the movement of said release tool such that said release tool need not move outwardly of said housing a large amount.

9. A spring brake actuator comprising:

a central housing defining an aperture for passage of a push rod;

a push rod selectively extending through said aperture;

an outer housing connected to said central housing to define an emergency chamber;

an actuator member moving with said push rod;

a power spring selectively moving said actuator member and said push rod outwardly of said aperture;

a release bolt for selectively caging said power spring and preventing movement of said power spring to move said push rod through said aperture, said release bolt being movable between fully caged and fully released positions, said release bolt extending outwardly of said outer housing between said fully released and said fully caged positions, said release bolt having two threaded portions, with a first-threaded portion being received in a threaded insert in said outer housing, and a second-threaded portion positioned axially inwardly frown said first threaded portion, said second-threaded portion being threadably received in a caging member, the threads on said first and second portions extending in opposed directions, such that upon rotation of said release bolt, said release bolt moves outwardly of said outer housing due to rotation in said threaded insert, and said caging member being received on said second threaded portion and moving axially outwardly with said release bolt during this movement, and rotation of said second-threaded portion within said caging member also causing axially outward movement of said caging member.

5,623,864

SINGLE CHAMBER BREWING DEVICE

Joseph F. Moore, Richmond, Va.; Mark S. Kopaskie, Chagrin Falls, Ohio; Mark E. Cook, Stow, Ohio; Daniel J. Wanhalnen, Newbury, Ohio, and Craig C. Weidman, Wooster, Ohio, assignors to Healthometer, Inc., Bedford Heights, Ohio

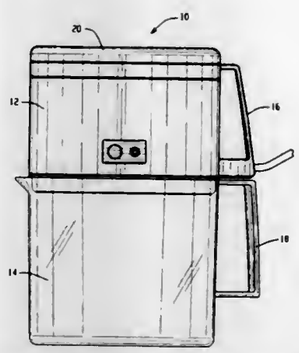
Filed Apr. 17, 1995, Ser. No. 423,170

Int. Cl.[6] A47J *37/00*

U.S. Cl. 99—280 **22 Claims**

1. A brewing device for preparing and containing a brewed beverage, the device comprising,

a brewing chamber adapted to receive a brewing material and liquid, the brewing chamber comprising a heat source for supplying heat to liquid in the brewing chamber, whereby the brewing material is brewed in the brewing chamber as the liquid is heated in the brewing chamber, and



a valve disposed in an opening in the brewing chamber, the valve operative to release brewed beverage from the brewing chamber through the opening, and

a brewed beverage container positionable to receive brewed beverage released from the brewing chamber.

5,623,865

INFUSER

Perry Sidiropoulos, 15 Woodville Rd., Granville 2142 NSW, Australia

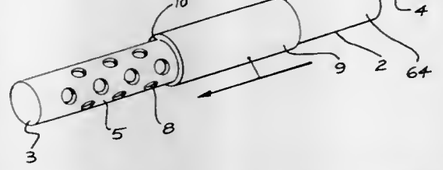
PCT No. PCT/AU94/00750, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15105, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 2, 1994, Ser. No. 652,526

Claims priority, application Australia, Dec. 3, 1993, PM2771; Apr. 8, 1994, PM5140

Int. Cl.[6] A47J *31/00*

U.S. Cl. 99—323 **15 Claims**



1. An infuser, adapted to hold solids, from which to infuse a substance into a liquid in which the infuser is immersed, comprising:

an elongated member having an outer surface with a first end portion, an intermediate portion and a second end portion;

an infuser charge holding chamber, located at the first end portion of the elongated member, and having perforations or porous material thereon, communicating between the infusion charge holding chamber and the said outer surface:

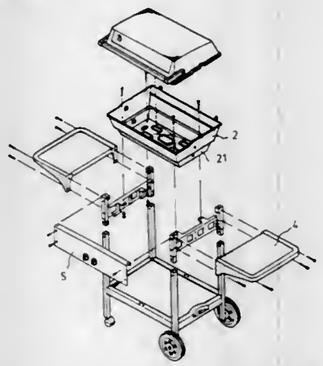
a gripping portion located at said second end portion; and

a sleeve, of smaller length than that of the elongated member, adapted to move along or over said elongated member between said first end portion and said intermediate portion of said elongated member, such that in a first position, with the sleeve on said intermediate portion, the perforations or porous material of said first end portion are exposed, whereby, in use with the infuser charge in said chamber, when said infuser charge holding chamber is immersed in the desirable liquid, infuses a substance into the liquid, while in a second position the sleeve covers the perforations or the porous material of said first end portion to resist leakage of liquid from said chamber, said sleeve and said elongated member being so dimensioned that, in use, the elongated member is held, by a user, at the gripping portion and said sleeve is moved along or

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over the said elongated member between the first end portion and the intermediate portion, without covering the gripping portion, so that there is no need for the user to touch the perforations or porous material of the infusion charge holding chamber.

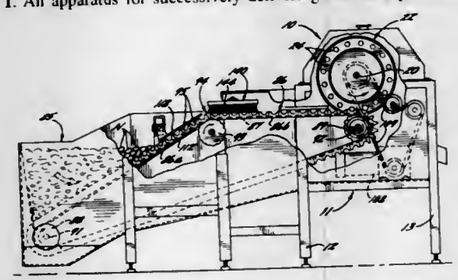
5,623,866
SUPPORT BRACKET FOR A GRILL BOWL
William Horne, 9th F1/3, No. 374, Sec. 2, Pa-Teh Road, Taipei, Taiwan
Filed Aug. 8, 1996, Ser. No. 694,305
Int. Cl.[6] A47J *37/00*
U.S. Cl. 99—444 **2 Claims**



1. In an outdoor gas grill having a grill bowl, a pair of support brackets supporting the grill bowl, a pair of side tables, a grease tray and four cart legs each having a hole at an upper end thereof, said support brackets each being a generally H-shaped member having two vertical pillars and a beam formed between said two vertical pillars, said beam being an elongated member having a plurality of ventilation openings, said elongated member being formed at a top with a pair of inwardly extending shoulders for supporting said grill bowl and at a bottom with a pair of inwardly extending lugs for receiving said grease tray, each of said legs having a lower end provided with a spring-loaded ball adapted to engage with the hole of a respective cart leg.

5,623,867
APPARATUS FOR CRACKING NUTS AT HIGH PRODUCTION RATES
James B. Quantz, Columbia, S.C., assignor to John B. Sanfilippo & Sons, Inc., Elk Grove, Ill.
Filed Dec. 20, 1995, Ser. No. 575,278
Int. Cl.[6] A23N *5/00*
U.S. Cl. 99—571 **16 Claims**

1. An apparatus for successively delivering nuts in a predetermined orientation to a cracking head of a nutcracker or the like, and comprising



a hopper for storing a relatively large quantity of the nuts to be cracked,

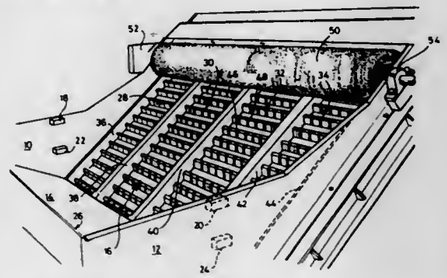
endless conveyor means having an upper run extending through said hopper to a delivery point exteriorly thereof, with said conveyor means comprising a feed chain and a plurality of nut transport elements mounted in succession on said feed chain, with each element including opposite sides and a generally semicircular, laterally extending receptacle which faces upwardly during movement of the element through said hopper and to said delivery point, and with each receptacle being sized to supportingly receive a single nut to be cracked which is oriented with its end to end direction extending along the receptacle,

said upper run of said endless conveyor means including an upwardly inclined segment extending through the lower portion of said hopper and a substantially horizontal segment extending from said upwardly inclined segment to said delivery point, and with the upwardly inclined segment and the horizontal segment defining a transition juncture therebetween,

power means for rotating said endless conveyor means such that said nut transport elements move in succession through said hopper and to said delivery point, and

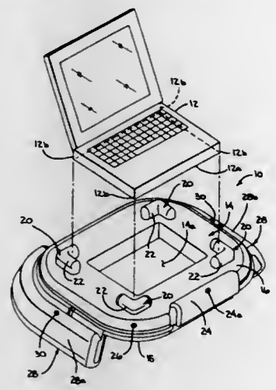
singularizing and orienting means mounted along said upper run of said endless conveyor means for effectively removing any nuts in excess of one from the receptacle of each nut transport element and for effectively orienting such nut with its end to end direction extending along the receptacle.

5,623,868
CARROT PROCESSING MACHINES
William McKenna, Marshland St James, United Kingdom, assignor to Fenland Fruits Limited, Cambridge, Great Britain
Filed Mar. 10, 1995, Ser. No. 401,963
Claims priority, application United Kingdom, Sep. 27, 1994, 9419470
Int. Cl.[6] A23N *15/00*
U.S. Cl. 99—636 **15 Claims**



1. A carrot processing machine comprising an accumulation well for receiving carrots, an elevating conveyor for elevating the carrots to an upper position and a pocket conveyor with pockets for receiving the carrots, wherein the elevating convey is constructed integrally with the pocket conveyor and at least one rotating brush is located above, so as to extend across, the elevating section of the pocket conveyor, so that in use the pocket conveyor picks up carrots from the accumulation well, the carrots are constrained to lie in the pockets and are aligned therewith, as they are transferred to the said upper position within the machine, and wherein a delivery conveyor cooperates with the accumulation well to deliver carrots thereto, height sensing means associated with the well determines the height to which carrots have accumulated in the well and speed control means for the delivery conveyor is operated in response to signals from the height sensing means to stop, decelerate, restart and accelerate as required the delivery conveyor so as to maintain the height of the carrots in the well substantially constant.

5,623,869
LAPTOP TABLE FOR PORTABLE COMPUTERS
David L. Moss, and Erica J. Scholder, both of Austin, Tex., assignors to Dell Computer Corporation, Austin, Tex.
Filed Jan. 25, 1996, Ser. No. 599,502
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—43 **16 Claims**



1. A lap table for a portable computer, comprising:

a supple main body having a top surface joined to a bottom surface, said main body having a sealed hollow interior for containing a filling material to give said main body a degree of rigidity sufficient to support said portable computer thereon;

a securing wall integral with said top surface and configured to receive a footprint of said portable computer and exert a positive securing force against said portable computer to thereby secure said portable computer to said top surface when said hollow interior is filled with said filling material, wherein said filling material is an inflating gas and said main body further includes an inflating gas intake valve for receiving said inflating gas into said hollow interior of said main body, to thereby give said main body a degree of rigidity sufficient to support said portable computer thereon; and

a wrist rest having a sealed hollow interior in fluid communication with said hollow interior of said main body to receive said inflating gas therein, to thereby give said wrist rest a degree of rigidity sufficient to support a user's wrist when said user operates said portable computer.

5,623,870
OIL MIST ELIMINATOR FOR A PRESS OIL CONTROL SYSTEM
Edward A. Daniel, Fort Loramie, Ohio, assignor to The Minster Machine Company, Minster, Ohio
Continuation of Ser. No. 305,184, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 108,067, Aug. 17, 1993, abandoned. This application Sep. 20, 1995, Ser. No. 530,826
Int. Cl.[6] B30B *15/00*
U.S. Cl. 100—102 **11 Claims**

1. A press comprising:

a frame structure with a crown and a bed;

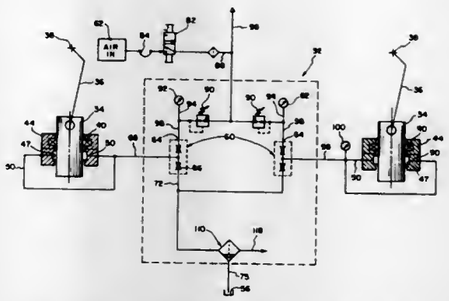
a slide guided by the frame structure for reciprocating movement in opposed relation to said bed;

a drive mechanism attached to said frame structure for reciprocating said slide, said mechanism including a drive piston connected to said slide;

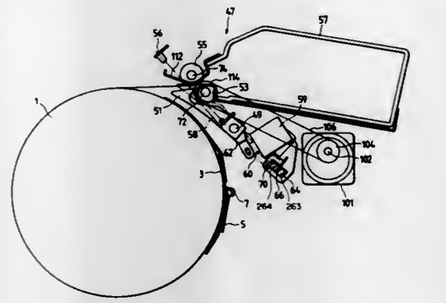
a seal about said drive piston to prevent oil migration from said drive piston to said slide;

an oil control mechanism arranged about said seal, said mechanism having a vacuum induced air flow to vacuum oil leaking from said seal away from said drive piston, the oil thereby entrained within said air flow; and

an oil mist filter through which said air flow passes, said oil mist filter coalescing said entrained oil thereby substantially eliminating oil from said air flow.



5,623,871
STENCIL DISCHARGING APPARATUS IN A STENCIL PRINTING MACHINE
Shinichi Takahira, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Filed Aug. 7, 1995, Ser. No. 511,854
Claims priority, application Japan, Aug. 8, 1994, 6-185790
Int. Cl.[6] B41L *13/14;31/00*
U.S. Cl. 101—114 **6 Claims**



1. A stencil discharging apparatus in a stencil printing machine which uses a stencil paper wound on an outer cylindrical surface of a rotary cylindrical drum, said stencil discharging apparatus comprising:

a stencil discharging claw;

moving means for moving said stencil discharging claw between a standby position which is located near the outer cylindrical surface of said rotary cylindrical drum and is spaced a predetermined distance from the rotary cylindrical drum, and a stencil separating position which is closer to the rotary cylindrical drum, for removing the stencil paper from the rotary cylindrical drum;

a used-stencil accommodating section for receiving the stencil paper thus removed from the rotary cylindrical drum by said stencil discharging claw;

conveying means for conveying the stencil paper thus removed from the rotary cylindrical drum by said stencil discharging claw to said used-stencil accommodating section;

detecting means for detecting whether said stencil discharging claw is at said standby position; and

control means for executing a problem control signal indicating that the stencil paper has not been removed in an acceptable manner when said detecting means detects that said stencil

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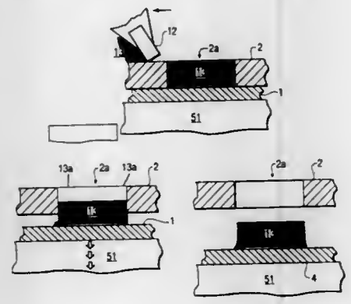
discharging claw is not at said standby position after the stencil discharging operation.

5,623,872

APPARATUS AND METHOD FOR SEPARATING A MASK PLATE AND PRINTED CIRCUIT BOARD

Michinori Tomomatsu, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 14, 1995, Ser. No. 422,180
Claims priority, application Japan, Apr. 14, 1994, 6-075817
Int. Cl.[6] B41F *15/18*
U.S. Cl. 101—126 **12 Claims**



1. A screen printing apparatus comprising:
a board supporting part for supporting a printed circuit board,
a mask plate having patterned holes,
an elevating means for raising and lowering said board supporting part to make an upper surface of said printed circuit board touch and leave an under side of said mask plate,
a squeegee moving on said mask plate to fill solder paste into said patterned holes while the under side of said mask plate is touching the upper surface of said printed circuit board,
a controlling part for controlling said elevating means, to move said elevating means in accordance with a speed pattern beginning with a zero value, the middle including a plurality of unit speed patterns having a plurality of nonzero and zero values, and ending with a zero value.

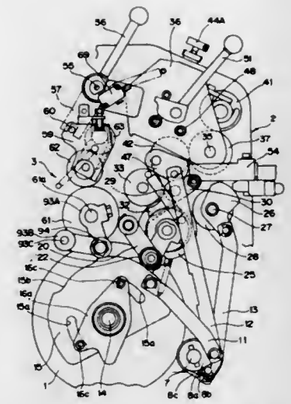
5,623,873

OFFSET PRINTING PRESS

Naoki Ikeda, Fuchu, Japan, assignor to Ryobi Limited, Tokyo, Japan

Filed Apr. 30, 1996, Ser. No. 640,024
Claims priority, application Japan, Feb. 5, 1995, 7-108566
Int. Cl.[6] B41F *7/06;7/02*
U.S. Cl. 101—137 **14 Claims**

1. An offset printing press comprising:
a plate cylinder onto which a printing plate is attached;
a forme dampening roller having an elasticity on its outer surface;
a water fountain roller immersed into water in a water pan;
intermediate roller means for transferring the water from the water fountain roller to the forme dampening roller, the intermediate roller means comprising a water oscillating roller which has a hydrophilic property on its outer surface and is capable of reciprocating in its axial direction with contacting the forme dampening roller;
first moving means for moving the forme dampening roller close to and away from the plate cylinder; and



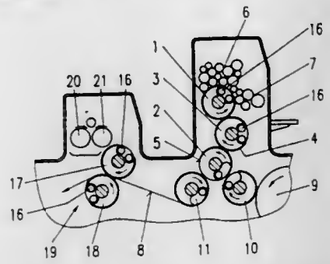
second moving means for moving at least one of the water oscillating roller and the forme dampening roller so that these two rollers can be moved close to and away from each other.

5,623,874

COUNTER-PRESSURE MEANS FOR EFFECTUATING PERFORATIONS AND/OR PUNCHINGS AT OFFSET SHEET PRINTING MACHINES

Daniel Ruprecht, Heimiswil, Switzerland, assignor to Ruprecht Handels AG, Krauchthal, Switzerland

Continuation-in-part of Ser. No. 389,203, Feb. 15, 1995, abandoned. This application Oct. 11, 1995, Ser. No. 540,662
Claims priority, application Switzerland, Apr. 14, 1994, 01147/94
Int. Cl.[6] B41F *9/00*
U.S. Cl. 101—142 **15 Claims**



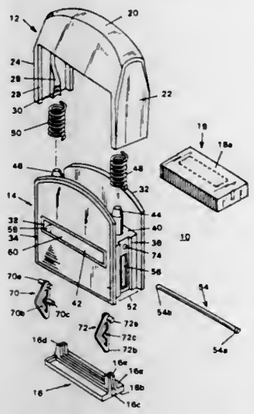
1. An offset sheet printing machine having an arrangement for punching and/or perforating paper sheets (**8**), comprising:
a printing group having a first printing cylinder (**2**) and an allocated rubber blanket cylinder (**3**);
a varnishing group (**19**) having a second printing cylinder (**18**) and an allocated forming cylinder (**17**), one of said rubber blanket cylinder (**3**) and said forming cylinder (**17**) being equipped with fixing means (**16**) for fastening a foil layer thereto, and a perforating ribbon (**5**) being fixed on the first printing cylinder (**2**) or the second printing cylinder (**18**);
wherein a counter-pressure means is provided on one of said rubber blanket cylinder (**3**) and said forming cylinder (**17**), said counter-pressure means being allocated to the printing cylinder (**2, 18**) with said perforating ribbon (**5**) fixed thereon for effecting perforations and/or punchings in paper sheets (**8**), said counter-pressure means comprising a layer fixed on said one of said rubber blanket cylinder (**3**) and said forming cylinder (**17**), said layer being a combination of an inner underlying blanket (**15**) of hard material and an outer resistant foil (**4**).

5,623,875

MULTI-COLOR AND EASY TO ASSEMBLE AUTOMATIC RUBBER STAMP

Mishel Perets, c/o M. Perets Ltd., 15 E. 40th St., 5th Fl., New York, N.Y. 10016

Filed Mar. 28, 1996, Ser. No. 623,640
Int. Cl.[6] B41K *1/42*
U.S. Cl. 101—334 **8 Claims**



1. An automatic, self-inking stamping device, comprising:
a housing defining an inner chamber and having a pair of side channels;
a stamping element having a base and being reciprocally movable in the chamber of the housing;
a pin extending transversely through the chamber of the housing and having distal ends which protrude from the pair of side channels in the housing;
a hand actuator coupled with and slidable relative to the housing, the pin being secured to and movable with the hand actuator, the stamping element being also secured to and movable with the pin, the stamping element having a stamping face carrying a printing impression;
an ink pad disposed in the chamber, at a location spatially between the stamping element and the hand actuator;
a flipping mechanism for flipping the stamping element in the chamber in response to actuation of the hand actuator, so that when the hand actuator is in a rest position the stamping face lies against and contacts the ink pad and when the hand actuator is in a depressed position, the stamping face is flipped to face away from the ink pad;
the ink pad comprising a plurality of pad sections providing at least two differently colored ink pads; and
in which the pin and the stamping element are secured to one another by a snap connection which permits separation of the stamping element from the pin by pulling the stamping element away from the pin, the snap connection comprising a semi-cylindrical channel formed in the base of the stamping element for receiving and removably holding the pin therein.

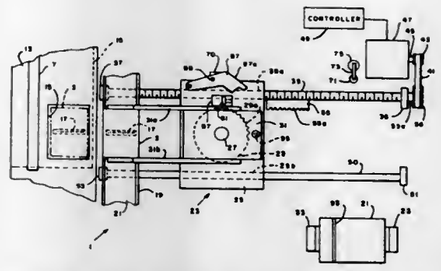
5,623,876

APPARATUS AND METHOD FOR POSITIONING A PRINTING MECHANISM BETWEEN STATIONS IN A MAIL HANDLING APPARATUS

Charles F. Murphy, III, Milford, and Patrick Murphy, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 23, 1995, Ser. No. 518,612
Int. Cl.[6] B41J *2/165*
U.S. Cl. 101—483 **9 Claims**

8. A method for positioning in a mail handling apparatus a carriage assembly having rotatably mounted thereon a digital printing mechanism with a plurality of nozzles, the method comprising the steps of:



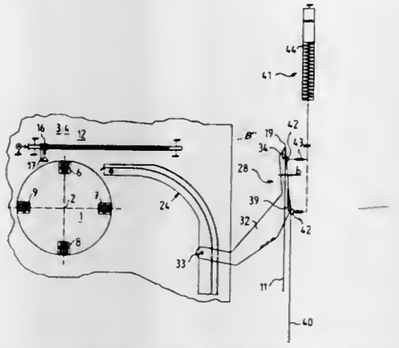
moving the carriage assembly along a path of travel between a printing mechanism printing position and a printing mechanism maintenance position;
rotating the printing mechanism out of the path of travel to align the printing mechanism substantially parallel to a wiper blade of a maintenance station for engaging the nozzles with the wiper blade as the printing mechanism moves into the maintenance position, the maintenance station being positioned lateral to the path of travel.

5,623,877

METHOD AND APPARATUS FOR PREPARING A PRINTING PLATE

Bernhard W. W. Muth, Veltshöchheim, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Nov. 28, 1995, Ser. No. 563,551
Claims priority, application Germany, Nov. 30, 1994, 44 42 574.0
Int. Cl.[6] B41L *3/02*
U.S. Cl. 101—486 **3 Claims**



1. A method for preparing printing plates having front suspension edges for mounting on a plate cylinder of a rotary printing press including:
providing a movable printing plate preparation device;
positioning at least a first printing plate leading edge suspension strip on said movable printing plate preparation device;
supporting said plate preparation device for movement between a plate preparation position remote from said plate cylinder and a plate mounting position adjacent said plate cylinder;
positioning a front suspension edge of a first printing plate on said printing plate leading edge suspension strip and orienting said first printing plate in a generally vertical orientation while said plate preparation device is in said preparation position;
moving said plate preparation device and said first printing plate from said plate preparation position to said plate mounting position adjacent said plate cylinder;

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providing a printing plate manipulating device adjacent said plate cylinder and adjacent said printing plate suspension edge of said printing plate preparation device when said printing plate preparation device is in said plate mounting position; and

operating said printing plate manipulating device to transfer said printing plate leading edge from said plate preparation device to said plate cylinder.

5,623,878

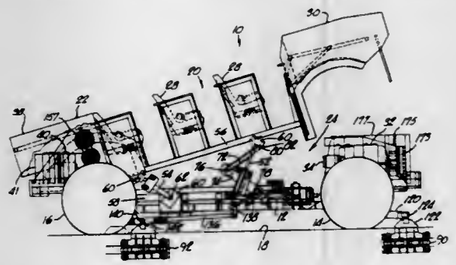
DYNAMIC RIDE VEHICLE

Anthony W. Baxter, Anaheim Hills; David G. Fink, Glendale; William G. Redmann, Moorpark; Jon H. Snoddy, Pasadena; David W. Spencer, II, Saugus, and Scott F. Watson, Glendale, all of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Continuation of Ser. No. 109,175, Aug. 19, 1993, abandoned. This application Nov. 16, 1995, Ser. No. 559,569

Int. Cl.[6] A63G *25/00*

U.S. Cl. 104—85 **78 Claims**



1. A dynamic ride vehicle that carries a passenger and that moves along a path through an environment external to the vehicle, comprising:

(a) a chassis that selectively moves the vehicle along the path with respect to the environment;

(b) a body that carries the passenger and that permits viewing by the passenger of the environment;

(c) a motion apparatus connecting the body to the chassis and permitting at least one degree of controlled motion of the body independent of motion of the chassis; and

(d) a programmable controller that controls the motion of the body and the motion of the chassis and the relative motion between the body and the chassis.

5,623,879

TRAVELLING MECHANISM FOR HOISTING EQUIPMENT

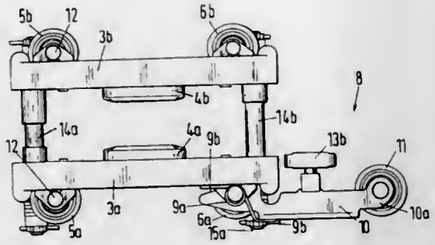
Udo Gersemsky, Herdecke; Karl Llebig, Wetter, and Thomas Schweflinghaus, Wuppertal, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 17, 1995, Ser. No. 423,162

Claims priority, application Germany, Apr. 15, 1994, 44 13 537.8

Int. Cl.[6] B61B *3/00*

U.S. Cl. 105—150 **7 Claims**



1. A travelling mechanism for hoisting equipment that runs on a monorail flange beam having a travel path with straight sections and at least one of elevated and laterally curved sections, the travelling mechanism comprising:

two opposed side shield members arranged at a distance from one another;

two pairs of side guide rollers, a respective one of said pairs of side guide rollers being mounted on each one of said side shield members;

at least one travelling wheel rotatably mounted on each of said side shield members between said respective pair of side guide rollers;

travelling drive means for moving the hoisting equipment along the travelling path; and

curve travelling means for guiding the mechanism along said curve sections of the beam, the curve travelling means including a rotatably mounted sprung one-armed pivot lever mounted on one of said side shield members so that said pivot lever has a first, free end, said curve travelling means further including an auxiliary side guide roller rotatably mounted to the free end of said pivot lever, and spring means for urging said pivot lever toward the beam, said pivot lever having a second, fork-shaped end that is rotatably mounted on an axis of one side guide roller of one of said pairs of side guide rollers, said spring means including a torsion spring mounted along the axis of the one side guide roller so as to provide a spring force between said pivot lever and said one side shield member so that said pivot lever is rotatably sprung.

5,623,880

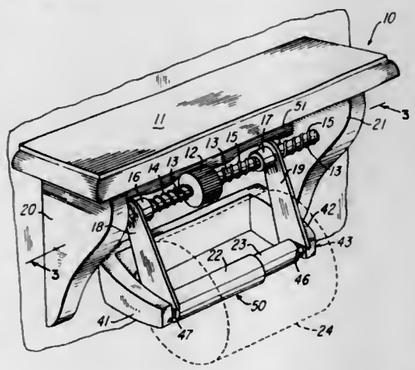
BATHROOM SHELF

Charles H. Kuntz, 2008 Mapleton Dr., Centerville, Ohio 45459

Filed May 13, 1995, Ser. No. 448,229

Int. Cl.[6] A47B *37/00*

U.S. Cl. 108—42 **15 Claims**



1. A bathroom shelf apparatus universally adjustable to fit most toilet tissue mounting rolls comprising a bathroom shelf having a positive self-leveling rear tilt positioning it stably against a bathroom wall in the vicinity of a commode, paid tilt comprising vertical mounting members, each having arcuate lower surfaces and being mounted on a threaded axle having counter-clockwise and clockwise threads, and an adjusting knob centrally located on said axle between said vertical mounting members providing lateral adjustment thereof responsive to finger pressure to cause alignment, centering and maintaining of said arcuate lower surfaces on outer portions of most toilet tissue mounting rolls.

5,623,881

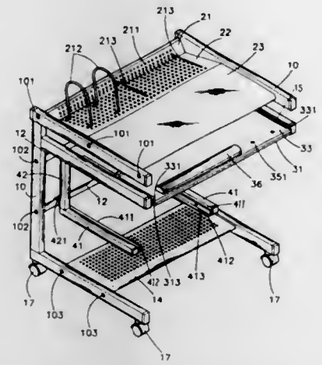
COMPUTER DESK

Feng-Chanmr Huang, 4 Fl., No- 17-10, Shen Nung Rd., I Lan City, Taiwan

Filed Feb. 23, 1996, Ser. No. 606,441

Int. Cl.[6] A47B *35/00*

U.S. Cl. 108—50 **15 Claims**



1. A computer desk comprising two opposite upright side flames respectively equipped with swivel wheels for moving, each of said upright side frames defining a horizontal sliding track at an inner side, a plurality of top stretchers connected between said upright side frames at a top side by screws, a desk top mounted on said top stretchers, a plurality of back stretchers connected between said upright side frames at a back side at different elevations by screws, a rack mounted on said back stretcher for holding things, a plurality of bottom stretchers connected between said upright side frames at a bottom side by screws, a bottom plate mounted on said bottom stretchers, two rails respectively connected to said horizontal sliding tracks, and a keyboard holder connected between said rails, wherein said desk top comprises a front desk top section, a rear upright wall, a rear desk top section sloping downwards from said front desk top section toward said rear upright wall, a plurality of plug holes over said rear upright wall and said rear desk top section, a book stand fastened to said plug holes for holding a number of books on said rear desk top section and two parallel rods fastened to said plug holes between said rear desk top section and said upright rear wall for holding a personal computer system on said desk top.

5,623,882

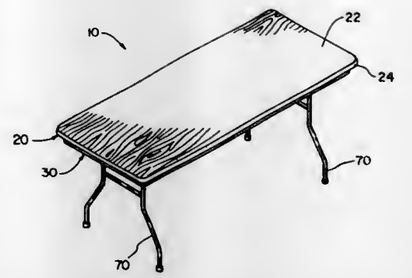
PLASTIC TABLE STRUCTURE

Mark E. Price, Fort Smith, Ark., assignor to Alltrista Corporation, Muncie, Ind.

Division of Ser. No. 166,207, Dec. 13, 1993, Pat. No. 5,443,020. This application Mar. 27, 1995, Ser. Nn. 410,921

Int. Cl.[6] A47B *3/00*

U.S. Cl. 108—129 **17 Claims**



1. A table structure, comprising:

an upper portion comprising a planar top surface,

a lower plastic portion having a first surface portion for engaging the upper portion and a plurality of downwardly-extending recessed portions;

a reinforcing core interposed between said upper and lower portions; and

a folding leg assembly including at least one table-engaging portion shaped for rotational engagement, and extending transversely across the lower plastic portion and

at least one leg-receiving surface formed in the plurality of downwardly-extending recessed portions of the lower plastic table portion and shaped for rotatably receiving said at least one transversely extending table-engaging portion of said folding leg assembly.

5,623,883

KILN FOR CALCINATION OF A POWDER

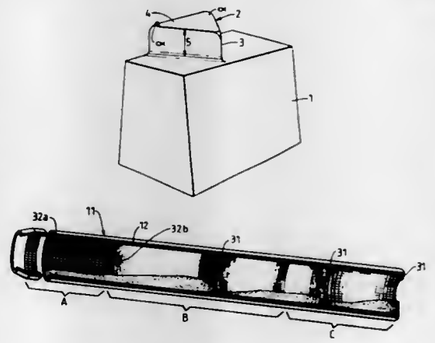
John F. Davidson, Cambridge, and Kevan R. Reilly, Ingleby Barwick, both of England, assignors to Tioxide Group Services Limited, United Kingdom

Filed Mar. 20, 1995, Ser. No. 406,618

Claims priority, application United Kingdom, Mar. 23, 1994, 9405760

Int. Cl.[6] B23K *3/02*; **B44B** *7/02*

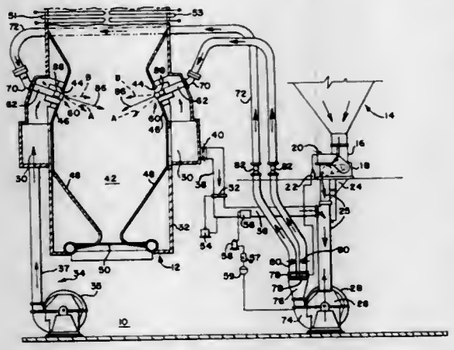
U.S. Cl. 110—226 **13 Claims**



1. A kiln for calcination of a powder comprising a directly heated rotary kiln having an inner circumferential wall, at least a part of said inner circumferential wall of the kiln being equipped with a plurality of protrusions having a shape of a triangular prism, the protrusions being arranged within the kiln with one triangular face of the prism parallel to the inner circumferential wall and with an edge formed by the intersection of two parallelogrammatic faces positioned to provide the first part of the protrusion to emerge from a bed of powder within the kiln when the kiln is rotated in use, the triangular face being an isosceles triangle in which the equal angles are greater than the angle of repose of said powder, such that said powder is not substantially lifted by the protrusions as a result of rotation of the kiln during use.

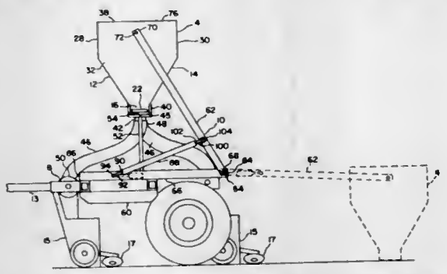
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5,623,884
TILTING COAL NOZZLE BURNER APPARATUS
Craig A. Penterson, Sutton, and Donald S. Langille, deceased, late of Worcester, both of Mass., assignors to DB Riley, Inc., Worcester, Mass.
Filed Dec. 5, 1995, Ser. No. 567,204
Int. Cl.[6] F23D *1/02*
U.S. Cl. 110—264 **21 Claims**



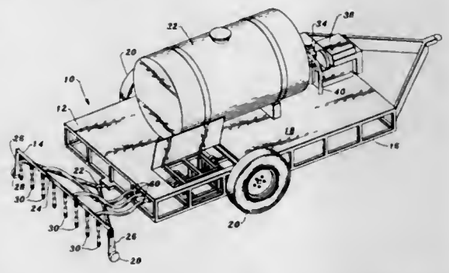
1. Apparatus for burning fuel, comprising:
conduit means having an outlet end for supplying a fuel/air mixture to a fuel burning zone;
nozzle means adjacent said outlet end mounted for pivotal movement relative to a pivot axis extending transversely across said conduit means, said pivot axis of said nozzle means extending in a generally horizontal direction transversely across a longitudinally extending central axis of said conduit means;
said nozzle means having an inlet end portion surrounding said outlet end of said conduit means and having a plurality of separate outlet sections joining said inlet end portion; and
swirl vane means in each of said outlet sections for causing the fuel/air mixture in adjacent outlet sections to swirl about respective central swirl axes thereof in opposite directions, said central swirl axes of said outlet sections being spaced above and below said central axis of said conduit means.

5,623,885
SINGLE SEED CONTAINER FOR MULTI ROW PLANTER PIVOTABLE BETWEEN RAISED OPERATING POSITION AND LOWERED FILLING POSITION
Steven R. Haag, R.R. #1, P.O. Box 102, Cullom, Ill. 60929
Filed Jul. 24, 1995, Ser. No. 506,281
Int. Cl.[6] A01C *19/00*
U.S. Cl. 111—200 **18 Claims**



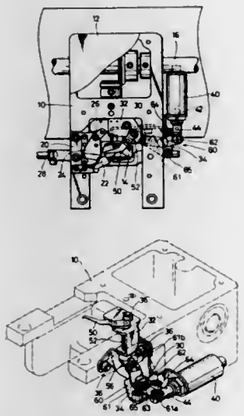
1. A multi-row planter having a plurality of laterally spaced apart seed dispensing assemblies for planting seeds in a plurality of laterally spaced apart longitudinal rows, comprising a refillable seed container having an opening to receive seed therethrough to fill said container, discharge means to discharge seed from said seed container, conveying means comprising first conveying means to receive seed from said discharge means and convey to a first one of said plurality of seed dispensing assemblies, a second conveying means to receive seed from said discharge means and convey to a second one of said plurality of seed dispensing assemblies, container support means to support said seed container in an operating position on said planter in communication with said conveying means, and raising and lowering means operable to move said seed container between a raised position wherein it is supported in said operating position by said container support means and a lowered position wherein said seed container is lowered to the ground to be more easily filled with seed.

5,623,886
APPARATUS AND METHOD FOR INJECTING PREHYDRATED HYDROPHILIC POLYMER MATERIAL INTO THE GROUND
Rudy Marangi, P.O. Box 159, Rancho Cordova, Calif. 95741-0159
Filed Jan. 18, 1996, Ser. No. 588,520
Int. Cl.[6] A01C *15/00*
U.S. Cl. 111—200 **20 Claims**



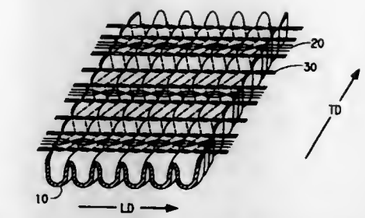
1. Apparatus for injecting prehydrated hydrophilic polymer material into the ground, said apparatus comprising, in combination:
portable support means movable along the ground;
container means defining a container interior for holding a quantity of prehydrated hydrophilic polymer material;
pump means mounted on said portable support means in fluid flow communication with said container interior for pumping prehydrated hydrophilic polymer material from said container interior and pressurizing said prehydrated hydrophilic polymer material;
prime mover means mounted on said portable support means connected to said pump means for operating said pump means;
a plurality of outlet nozzles supported by said portable support means above the ground and oriented toward the ground;
a plurality of airless fluid ejector guns mounted on said portable support means, said airless fluid ejector guns being spaced from one another and each airless fluid ejector gun leading to and in selective fluid-flow communication with at least one of said plurality of outlet nozzles supported by said support means above the ground and oriented toward the ground, said airless fluid ejector guns including gun valve means for selectively establishing fluid flow communication between the outlet nozzles and said pump means to dispense discrete quantities of pressurized prehydrated hydrophilic polymer material from said airless fluid ejector guns through said outlet nozzles under high pressure toward and into the ground at spaced ground locations; and
control means operatively associated with said gun valve means for separately establishing and terminating flow of pressurized prehydrated hydrophilic polymer material through said outlet nozzles.

5,623,887
THREAD CUTTING DEVICE IN SEWING MACHINE
Ikuo Tajima; Tomoaki Anezaki; Masayoshi Hirate, and Masaru Akao, all of Kasugai, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan
Filed Jun. 5, 1995, Ser. No. 462,490
Claims priority, application Japan, Jul. 29, 1994, 6-178769; Feb. 9, 1995, 7-021937
Int. Cl.[6] D05B *65/02*
U.S. Cl. 112—291 **12 Claims**



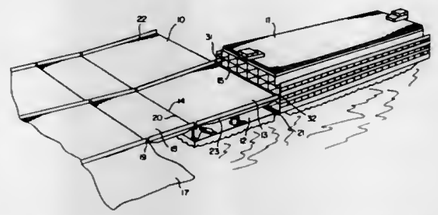
1. A thread cutting device in a sewing machine, comprising:
a movable knife movable across a space between a throat plate and a shuttle positioned below said throat plate so as to perform a thread cutting operation;
a lower thread retreating lever movable from a waiting position to an operative position for retreating a lower thread taken out from said shuttle to a position out of a thread cutting orbit of said movable knife;
the thread cutting device being operable in either a thread cutting mode for cutting both an upper thread and a lower thread or a thread cutting mode for cutting only an upper thread by selectively positioning said lower thread retreating lever at either said waiting position or said operative position during the operation of said movable knife; and
an actuator and an interlocking mechanism between said actuator and said lower thread retreating lever for driving said lower thread retreating lever, said actuator and said interlocking mechanism being positioned on the side of the shuttle which is opposite to the side for mounting a shuttle bobbin on said shuttle.

5,623,888
BULKY, STABLE NONWOVEN FABRIC
Dimitri P. Zafiroglu, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 52,322, Apr. 22, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,385
Int. Cl.[6] D05B *35/08;* **B32B** *5/04*
U.S. Cl. 112—414 **9 Claims**



1. A process for preparing a durable, dimensionally stable, nonwoven fabric comprising in sequence, the steps of
intermittently attaching an array of contractible elements to a nonwoven fibrous layer having a weight of 15 to 100 g/m^2, a length, a width, a longitudinal direction and a transverse direction, the longitudinal direction and the transverse direction respectively being parallel to the length and width of the nonwoven layer, and the length and width together defining the original planar area of the nonwoven layer,
contracting the array of contractible elements thereby causing the nonwoven fibrous layer to buckle and gather into an area that is in the range of 25 to 75% of the original planar area, the buckling creating a series of waves or protuberances that project generally perpendicularly from the planar area of the layer and increase the layer thickness to a thickness in the range of 1 to 8 mm, the waves or protuberances having a spacing frequency of 2 to 8 per cm, in the longitudinal and/or transverse directions of the layer, and then
over-stitching the gathered and buckled fibrous layer with a substantially inextensible, nonelastic yarn to form parallel rows of interconnected stitches extending generally along the longitudinal direction of the gathered layer, the stitches being in the range of 1 to 6 mm apart within each row and the parallel rows being in the range of 1 to 6 mm apart, the inelastic thread of the over-stitching having a weight that is 5 to 50 percent of the total weight of the resultant over-stitched and gathered nonwoven fabric.

5,623,889
MOORING AND RAMP SYSTEM FOR FERRY BOATS
Philip C. Whitener, 5955 Battlepoint Dr., Bainbridge Island, Wash. 98110
Filed Sep. 15, 1995, Ser. No. 528,615
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 **2 Claims**

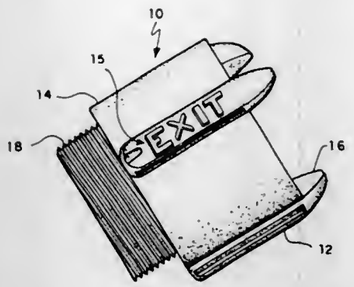


1. A mooring and ramp system for use with ferry boats, each of said boats having an end, a first side and a second side, and a plurality of decks for transporting vehicles, said system comprising a mooring subsystem and a ramp subsystem, said ramp subsystem comprising means for providing access for said vehicles to each of said decks, said mooring subsystem comprising means for detachably attaching said end of each of said boats to said ramp subsystem, said means for attaching allowing lateral movement of said boat relative to said ramp subsystem, said mooring subsystem further comprising means for moving said boat laterally relative to said ramp subsystem.

5,623,890
SAFE EXIT INDICATING FIREHOSE COUPLING
Gregory D. Lenske, 2328 S. 107th St., Milwaukee, Wis. 53227
Filed Jun. 1, 1995, Ser. No. 456,834
Int. Cl.[6] G01D *21/00*
U.S. Cl. 116—205 **13 Claims**

1. A directional firehose coupling system comprising:

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means for coupling a first firehose having a female coupling component body with a second firehose having a male coupling component body, each said coupling component body being matingly configured; and

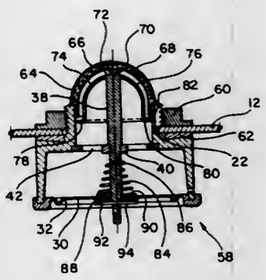
at least one directional indicator having an elongated extension of said male coupling component body, said extension located opposite the direction in which said male coupling component body is inserted to couple with said female coupling component body for coupling respectively the second firehose with the first firehose, whereby the direction of a firehose water source is indicated to direct a fire fighter away from a fire and a safe exit towards the firehose water source.

5,623,891

INTERNAL FAULT INDICATOR FOR A TRANSFORMER

Lloyd D. Miller, Pine Bluff, Ark., assignor to Central Moloney, Inc., Pine Bluff, Ark.

Filed Jan. 18, 1995, Ser. No. 374,232
Int. Cl.[6] G01L *19/12*
U.S. Cl. 116—271 **9 Claims**



1. An internal fault indictor adapted for mounting in an opening in the wall of a transformer casing comprising:

an open ended housing defining an internal chamber;

an indicator lens attached to said housing at a first open end thereof to close said first open end;

a diaphragm attached to said housing at a second open end thereof opposite to and spaced from said indicator lens, said diaphragm being attached to close said second open end and operating to flex inwardly of said chamber toward said indicator lens from a first position to a second position in response to pressure surges within said housing sensed by said diaphragm;

trigger retaining means on said diaphragm;

an indicator shaft mounted for rotation within said housing and having a first end adjacent to said diaphragm and a second end adjacent to, but spaced from, said indicator lens;

an indicator mounted at the second end of said indicator shaft for rotation by said indicator shaft, said indicator being spaced beneath said indicator lens for observation through said indicator lens;

bias means connected to said indicator shaft to bias said indicator shaft toward rotation relative to said housing; and

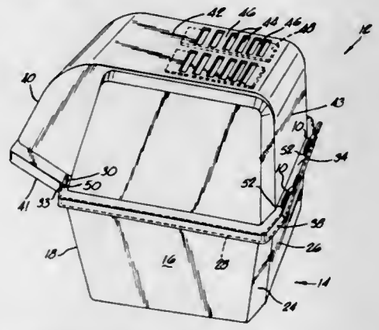
trigger means on said indicator shaft for contacting said trigger retaining means to prevent rotation of said indicator shaft in the first position of said diaphragm, said trigger retaining means operating to release said trigger means in the second position of said diaphragm to permit said bias means to rotate said indicator shaft.

5,623,892

HINGE ASSEMBLY FOR PROVIDING A CAT LITTER BOX WITH A READILY REMOVABLE HINGED COVER

Anthony O'Rourke, Malibu, and Charles Byrne, Mammoth Lakes, both of Calif., assignors to Aspen Pet Inc., Denver, Colo.

Filed Jun. 23, 1994, Ser. No. 264,791
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—165 **15 Claims**



1. A cat litter box assembly comprising:

a container adapted to hold a supply of cat litter therein and having upstanding side and rear wall portions, an open upper end and defining an upper edge;

a cover adapted to be carried by and disposed over said open upper end of said container, said cover having a forward end, a rearward end and raised wall portions and defining a lower edge adapted to be disposed over and adjacent said upper edge on said container upon said cover being disposed on said container;

a pair of first laterally spaced vertical slots disposed adjacent said upper edge of said container adjacent said rear wall portion thereof;

a pair of second laterally spaced vertical slots disposed adjacent said lower edge of said cover, said second slots being disposed over and axially aligned with said first slots in said container upon said cover being disposed on said container;

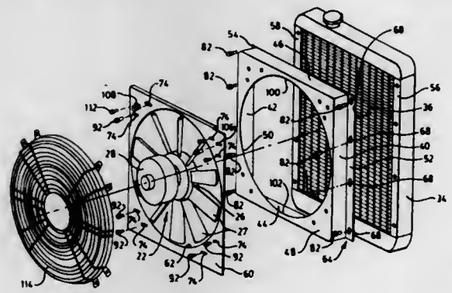
a pair of hinge members providing a removable pivotal attachment of said cover on said container whereby said cover can be moved on said container between a closed and a fully open position, each of said hinge members defining a depending tab portion, a curvilinear guide portion extending upwardly and rearwardly from said tab portion and merging into a cover support portion of said hinge member, said tab portion being extendable through one of said first and second aligned slots and being configured so as to be removably retained within one of said first slots, said guide portion being configured relative to said second slots so as to allow sliding movement of said cover upwardly and rearwardly along said guide portion, whereby upon said cover being disposed on said container, said tab portions inserted through said aligned slots, respectively, and said forward end of said cover raised from said container, said cover is caused to pivot rearwardly with respect to said container by said curvilinear guide portions of said hinge members until raised wall portions at the rearward end of said cover abut said cover support portions of said hinge members whereupon said cover is in said fully open position providing unobstructed access to said container.

5,623,893

ADJUSTABLE FAN SHROUD ARRANGEMENT

John C. Bartz, Fuquay-Varina, N.C.; Brian S. Howard, and Randall G. Peck, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 20, 1996, Ser. No. 650,279
Int. Cl.[6] F01P *7/10*
U.S. Cl. 123—41.49 **17 Claims**



1. An adjustable fan shroud arrangement for a frame mounted transverse engine having a radiator and a fan having blades for moving cooling air through the radiator, comprising:

a pair of spaced apart plenum mounting flange portions connected to said radiator;

a plenum having a plurality of sides, a pair of spaced apart radiator mounting flange portions connected to opposite ones of said sides, a supporting portion having an opening centrally disposed therethrough, said supporting portion being connected to each of said sides, said opening being of a predetermined size sufficient to receive said fan blades;

a shroud having an opening disposed therethrough, said openings being of a predetermined size sufficient to receive said fan blades;

a first plurality of fasteners connecting the pair of spaced apart plenum mounting flange portions to the pair of radiator mounting flange portions,

a second plurality of fasteners connecting the shroud to the supporting portion of said plenum;

first means for maintaining adjustable movement of the plenum relative to the plenum mounting flange portions in directions along a first line of movement;

second means for maintaining adjustable movement of the shroud relative to the supporting portion in directions along a second line of movement transverse the first line of movement.

5,623,894

DUAL COMPRESSION AND DUAL EXPANSION ENGINE

John M. Clarke, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 14, 1995, Ser. No. 557,874
Int. Cl.[6] F02B *59/00*
U.S. Cl. 123—50 R **112 Claims**

1. An internal combustion engine comprised of:

an external housing having a cylindrical, upwardly disposed first piston sleeve and a cylindrical downwardly disposed second piston sleeve; and

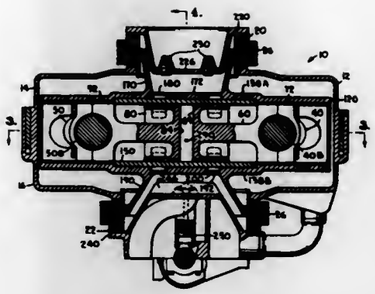
an internal housing disposed in said external housing, said internal housing including a center section defining an operating chamber and further having an upwardly disposed firs piston member in reciprocating engagement with said first piston sleeve and a downwardly disposed second piston member in reciprocating engagement with said second piston sleeve, said first piston member including a first piston base portion including a first piston valve window.

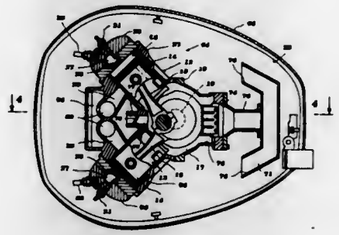
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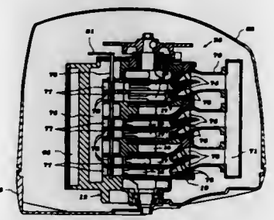
V-TYPE, MULTI-CYLINDER, TWO-CYCLE ENGINE

Tatsuyuki Masuda, Iwata, and Seiichi Nishimura, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 6, 1995, Ser. No. 384,510
Claims priority, application Japan, Feb. 7, 1994, 6-013404
Int. Cl.[6] F02B *33/04*
U.S. Cl. 123—54.4 **29 Claims**







1. A scavenge control system for a V-type crankcase compression internal combustion engine having a pair of angularly related cylinder banks each containing a plurality of cylinder bores, a crankcase chamber from which said cylinder banks radiate and having a plurality of sealed chamber sections each associated with a respective cylinder bore, a single scavenging manifold extending along one side of said crankcase chamber, a plurality of scavenging control passages each extending from a respective one of said crankcase chamber sections into said scavenging manifold, and valve means for controlling the communication of each of said crankcase chamber sections with said scavenging manifold.

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VALVE TIMING CONTROL APPARATUS FOR ENGINE

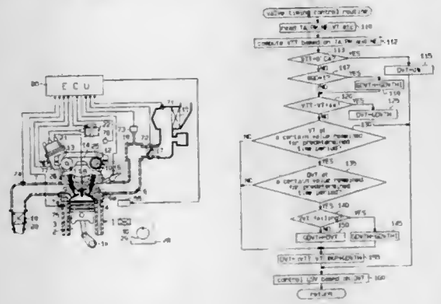
Senji Kato, Aichi-ken; Atsushi Yasumura, Toyota; Nobuhisa Ohkawa, and Tadahisa Naganawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 11, 1996, Ser. No. 630,640

Claims priority, application Japan, Apr. 13, 1995, 7-088441; Aug. 23, 1995, 7-214986

Int. Cl.[6] F01L *1/34;* **F02D** *13/02*

U.S. Cl. 123—90.15 **7 Claims**



1. A valve timing control apparatus for an engine having an air intake passage for introducing air to a combustion chamber and an air exhausting passage for exhausting gas from the combustion chamber, said intake passage and said exhausting passage having an intake valve and an exhaust valve, respectively, the valves being alternately opened and closed with a valve timing according to rotation of a cam shaft, which rotates in synchronism with rotation of a crank shaft of the engine, wherein the valves are simultaneously opened during a period of valve overlap, and wherein the rotational phase of the cam shaft is arranged to be selectively advanced or retarded with respect to the rotational phase of the crank shaft to converge the valve timing to a target value so as to vary the period of the valve overlap within a range between a maximum value and a minimum value based on a current running condition of the engine, said apparatus comprising:

adjusting means for continuously adjusting the valve timing of at least one of the intake valve and the exhaust valve, said adjusting means being driven by hydraulic pressure;

supplying means for supplying the hydraulic pressure to said adjusting means, said supplying means including tuning means for tuning the hydraulic pressure;

first detecting means for detecting the running condition of the engine;

computing means for computing the target value based on said running condition;

second detecting means for detecting the actual valve timing adjusted by the adjusting means;

control means for controlling the supplying means to operate the adjusting means so as to converge the detected valve timing to the target value and vary the period of the valve overlap based on the running condition of the engine, wherein said control means controls the supplying means to sustain the valve timing when it is approximately coincided with the target value;

determining means for determining an offset between the detected valve timing and the target value when the valve timing is sustained by said control means for a predetermined time period, said determining means including calculating means for calculating an offset value between the valve timing and the target value;

correction means for correcting said target value with a current specific value for cancelling the offset value, said correction means being arranged to compute the current specific value based on said offset value, said correction means being arranged to apply an initial value for an initial computation of the current specific value; and

storage means for storing said initial value, said initial value being preset to control the adjusting means so as to decrease the period of the valve overlap with respect to said maximum value.

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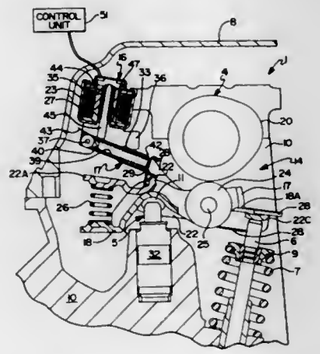
ENGINE VALVE CONTROL SYSTEM USING A LATCHABLE ROCKER ARM ACTIVATED BY A SOLENOID MECHANISM

Keith Hampton, Ann Arbor, and David M. Preston, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 22, 1996, Ser. No. 622,239

Int. Cl.[6] F01L *13/00;1/18*

U.S. Cl. 123—90.16 **7 Claims**



1. A valve control system for an internal combustion engine including a cylinder head, an engine poppet valve and a camshaft having a cam lobe formed thereon, said control system comprising:

a lash adjuster mounted on said cylinder head having a lash adjuster plunger;

a link pin adapted to pivot on said plunger;

an outer rocker arm nonrotatably supported on said link pin and engageable with said engine popper valve;

an inner rocker arm having a saddle portion for rotatably contacting said link pin and adapted for rotation relative to said outer rocker arm, said inner rocker arm engaging said cam lobe;

a biasing spring contacting said inner rocker arm and said outer rocker arm for forcing said outer rocker arm into engagement with said popper valve and said inner rocker arm into contact with said cam lobe;

a slidable latch member for selectively linking said inner rocker arm and said outer rocker arm for rotation in unison with said link pin about said pivot point in response to a force applied by said cam lobe to said inner rocker arm, and for selectively unlinking said inner and said outer rocker arms for independent rotation, said latch member extending from approximately one end of said outer rocker arm at said poppet valve along said outer rocker arm toward said link pin;

actuation means for applying a force and a displacement; and

an actuator arm pivoted at a first end and contacting said latch member at a second end upon application of a force generated by said actuation means, said actuator arm being variable in length and having an arm spring acting thereon to bias said actuator arm to an extended position.

5,623,898

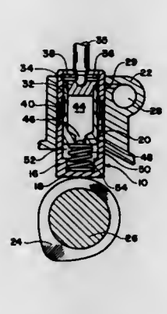
VARIABLE DURATION HYDRAULIC VALVE LIFTERS

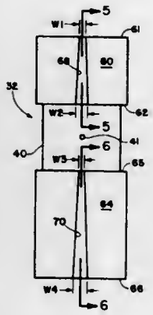
Murl L. Bruton, 7735-52 Mission Gorge Rd., Santee, Calif. 92071

Filed Jan. 16, 1996, Ser. No. 586,971

Int. Cl.[6] F01L *1/16;1/24*

U.S. Cl. 123—90.35 **18 Claims**





1. A variable duration hydraulic valve lifter comprising:

a hollow cylindrical body with a closed lower end for engagement with a cam, said cylindrical body having an outer cylindrical surface and an upper end; an annular channel in the outer cylindrical surface of said cylindrical body for receiving oil from a pressurized source, said annular channel being located intermediate the upper end and the lower end of said cylindrical body; a port opening into the interior of said cylindrical body from said annular channel;

a hollow cylindrical plunger having a bottom wall with an outlet formed therein; said cylindrical plunger having an outer cylindrical surface, a top end and a bottom end; an annular peripheral channel is formed in the outer cylindrical surface of said cylindrical plunger and it is located intermediate its top end and its bottom end to form an upper portion and a lower portion; a port opening into the interior of said cylindrical plunger from said annular peripheral channel;

said upper portion having a top edge and a bottom edge, an upper groove extending from said top edge to said bottom edge along the outer cylindrical surface of the plunger; said upper groove having a width W1 at its top edge and a width W2 at its bottom edge and W2 is greater than W1;

said lower portion having a top edge and a bottom edge, a lower groove extending from said top edge to said bottom edge of the lower portion respective along the outer cylindrical surface of the plunger; said lower groove having a width W3 at its top edge and a width W4 at its bottom edge and W4 is greater than W3;

said cylindrical plunger being axially slidable in said cylindrical body and enclosing a pressure chamber in the lower end of said cylindrical body; a return spring positioned in said pressure chamber to bias said plunger upwardly out of said cylindrical body; and

a cap for the top end of said cylindrical plunger and means for retaining said cap within said cylindrical body.

5,623,899

VALVE TIMING GEAR FOR AN INTERNAL COMBUSTION ENGINE

Harry Wolf, Uhingen, and Albert Rapp, Ludwigsburg, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

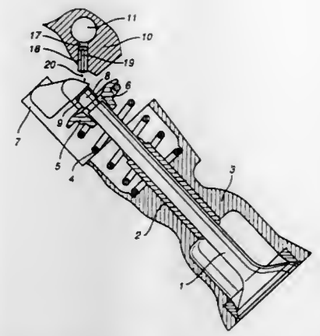
Filed Dec. 19, 1995, Ser. No. 575,706

Claims priority, application Germany, Dec. 23, 1994, 44 46 488.6

Int. Cl.[6] F01M *9/08*

U.S. Cl. 123—90.36 **7 Claims**

1. A valve timing gear for an internal combustion engine having valves with valve stems having surface areas to be lubricated,



means for actuating said valves and oil supply passages for supplying lubricating oil to said valve actuating means, said oil supply passages having side bores each with an outlet opening arranged above a surface area of a valve stem which is to be lubricated and a restrictor mounted in said outlet opening for controlling the oil flow therethrough, said restrictor being a pin having at least one axially extending groove formed in its outer surface and being received in said side bore so as to define, with the bore wall, an oil flow restriction passage.

5,623,900

INTERNAL-COMBUSTION ENGINE COMPRISING AN INTAKE SYSTEM

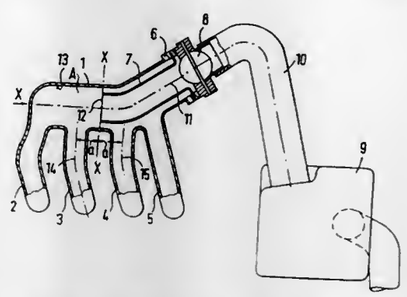
Walter Töpfer, Iptingen; Franz Eberle, Stuttgart; Dietmar Krüger, Friolzheim; Norbert Kleinehakenkamp, Weissach, all of Germany; Michail I. Fesina, Togliatti, Russian Federation; Rudolf N. Starobinskij, Togliatti, Russian Federation; Jurij P. Lasarev, Togliatti, Russian Federation, and Evgenij V. Lysenko, Togliatti, Russian Federation, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany, and Avto-Waz Volga Automovile Associated Works, Togliatti, Russian Federation

PCT No. PCT/EP92/01930, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/04816, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 22, 1992, Ser. No. 387,912

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.42 **9 Claims**



1. An internal combustion engine intake system comprising,

an intake chamber,

a plurality of individual suction pipes connecting the intake chamber with a cylinder head and respective individual cylinders by way of valves,

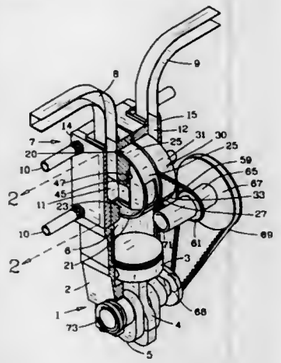
an intake connection connecting an air supply system to the intake chamber,

and an air guiding pipe connected with the intake connection, said air guiding pipe projecting freely into the chamber and

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being arranged coaxially with respect to the intake connection, a mouth opening of the air guiding pipe in the chamber extending in a plane located between two centrally disposed individual suction pipes at an identical distance from center axes of said two individual suction pipes.

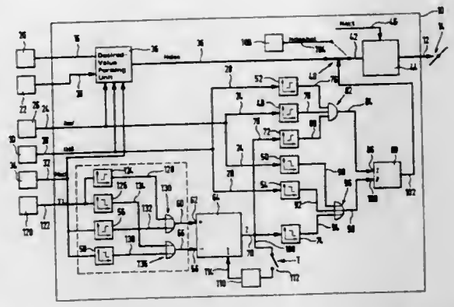
5,623,901
TIME TWISTER CYLINDER HEAD FOR USE IN INTERNAL COMBUSTION ENGINES
Mark E. Hartzell, 14687 Brewster Dr., Largo, Fla. 33774
Filed Aug. 14, 1996, Ser. No. 696,678
Int. Cl.[6] F01L *5/04*
U.S. Cl. 123—190.2 **11 Claims**



1. In an internal combustion engine having at least one cylinder within which a piston reciprocates, a crankshaft rotated by reciprocation of said piston, said cylinder having an upwardly facing opening covered by a cylinder head, an intake manifold and an exhaust manifold connected to respective intake and exhaust passageways in said cylinder head, the improvement comprising intake and exhaust valves in said cylinder head for controlling supply to and exhaust from said cylinder;
each of said valves comprising a cylindrical body having a generally circular peripheral wall, a side wall and an opening opposite said side wall, said peripheral wall having a port therethrough;
said intake valve having an inlet comprising a said opening and an outlet comprising a said port;
said exhaust valve having an inlet comprising a said port and an outlet comprising a said opening;
said intake and exhaust valves being mounted in said head with said openings facing away from one another; and
drive means for rotating said valves disposed between said valves adjacent said side walls thereof.

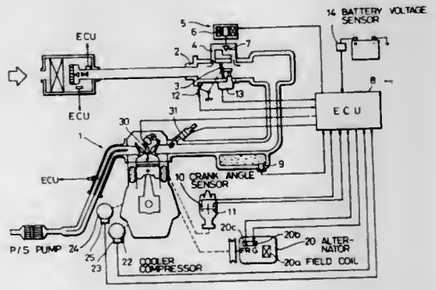
5,623,902
METHOD AND ARRANGEMENT FOR IDLE ADJUSTMENT OF AN INTERNAL COMBUSTION ENGINE
Claus-Dieter Nusser, Schwieberdingen; Peter Henkelmann, Sersheim, and Markus Lischwe, Rieden, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 7, 1995, Ser. No. 478,774
Claims priority, application Germany, Sep. 19, 1994, 44 33 299.8
Int. Cl.[6] F02M *3/06;* **F01M** *1/20*
U.S. Cl. 123—339.16 **17 Claims**

1. An arrangement for adjusting the idle rpm of an internal combustion engine provided with engine oil to lubricate the engine, the arrangement comprising:



a measuring device for detecting the load on said engine and for supplying a signal indicative of said load;
a control apparatus including a microcomputer for receiving said signal;
an actuator device for adjusting the idle rpm of said engine;
said microcomputer being adapted to generate a drive signal for driving said actuator device for adjusting the idle rpm of said engine; and,
said microcomputer being further adapted to execute the following steps:
determining an operating state of said engine at least on the basis of said engine load (TL) wherein the oil temperature exceeds a threshold value above which an oil pressure can be expected which is too low to adequately lubricate said engine and said operating state being detected when said engine has been driven at high load for a given time duration; and,
adjusting said drive signal to increase said idle rpm of said engine when said operating state has been determined to be present thereby facilitating lubrication of said engine.

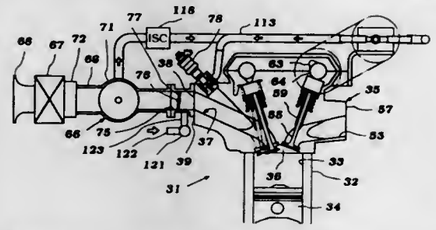
5,623,903
IDLE SPEED CONTROL METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Katsunori Ueda, Tokyo, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP94/01707, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO95/10699, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 12, 1994, Ser. No. 424,495
Claims priority, application Japan, Oct. 12, 1993, 5-254506
Int. Cl.[6] F02M *3/00*
U.S. Cl. 123—339.23 **7 Claims**



1. An idle speed control method for an internal combustion engine, which adjusts the amount of intake air supplied to said internal combustion engine on the basis of the result of comparison between an actual engine speed and a target engine speed during idle operation of the internal combustion engine, and subjects the amount of intake air to speed feedback control so that the idle speed is kept on the level of the target speed, comprising steps of:

detecting the load of said internal combustion engine in predetermined detection periods;
storing the detected load value obtained at the start of said speed feedback control as a reference value;
obtaining a deviation between the detected load value and said reference value with every detection period during said speed feedback control; and
temporarily terminating said speed feedback control to subject the amount of intake air to open-loop control when a predetermined threshold value is exceeded by said deviation.

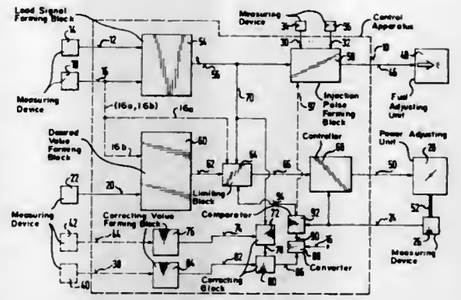
5,623,904
AIR-ASSISTED FUEL INJECTION SYSTEM
Hiromitsu Matsumoto, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed May 16, 1995, Ser. No. 442,196
Int. Cl.[6] F02D *41/08;* **F02M** *23/06*
U.S. Cl. 123—339.23 **61 Claims**



40. An internal combustion engine having an induction system for delivering a charge to a combustion chamber to said engine, a fuel injector for injecting a fuel spray into said induction system, means for directing a stream of air at a pressure not substantially greater than atmospheric into said induction system, and control valve means for controlling the timing and duration at which said stream of air is injected, means for adjusting at least one of the timing and duration of the supply of air through said control valve means during the running of the engine, said control valve means further including a throttle valve for controlling the volume of air injected in amounts sufficient for controlling the idle speed of the engine, sensing means for sensing engine speed at least in one speed range, and means for controlling the condition of said throttle valve to maintain a desired idle speed in said one speed range.

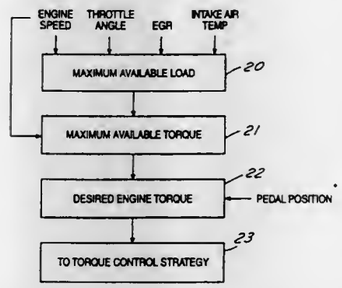
5,623,905
METHOD AND ARRANGEMENT FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE
Robert Kau, deceased, late of Asperg; Margit Müller, Asperg; Martin Knoss, Asperg, and Diethard Löhr, Mainhardt, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 5, 1994, Ser. No. 318,295
Claims priority, application Germany, Oct. 5, 1993, 43 33 896.8
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—361 **11 Claims**

1. A method of controlling an internal combustion engine having a throttle flap to operate on the air supplied to the engine, the method comprising the steps of:
detecting a pregiven position value (DKdes) of said throttle flap;
detecting the actual position value (DKact) of said throttle flap and forming a variable (TL) indicative of the load of said engine;
ascertaining a maximum value (DKdesmax) for the position of said throttle flap above which a change in position of said throttle flap causes only a slight change of the load of said engine; and,



electrically controlling said throttle flap in dependence upon said pregiven position value (DKdesmax) and upon said position value (DKact) so that said maximum value (DKdesmax) is not exceeded.

5,623,906
FIXED THROTTLE TORQUE DEMAND STRATEGY
Eric M. Storbok, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 22, 1996, Ser. No. 589,239
Int. Cl.[6] F02D *43/04*
U.S. Cl. 123—419 **4 Claims**



1. A method for operating an internal combustion engine having a fixed throttle including the steps of:
determining a desired driver engine torque;
determining a maximum available engine torque;
controlling engine torque as a function of the ratio of a desired engine torque to a maximum available engine torque;
sensing engine speed, throttle angle, exhaust gas recirculation, intake air temperature, and accelerator pedal position;
developing signals representing engine speed, throttle angle, exhaust gas recirculation, intake air temperature, and accelerator pedal position;
calculating the maximum available engine load;
calculating the maximum available engine torque using engine load and engine speed;
determining desired driver demand engine torque as a percentage of the maximum torque available; and
reducing actual engine torque to desired engine torque by retarding spark advance and cutting out fuel injector operation.

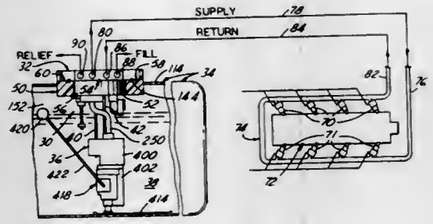
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5,623,907

LIQUID PROPANE FUEL DELIVERY SYSTEM

Kenneth J. Cotton, Caro; James A. Herndon, Cass City; Ronald H. Roche, Cass City; John S. Stark, Cass City, and Matthew L. Werner, Caro, all of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jun. 9, 1995, Ser. No. 488,813
Int. Cl.[6] F02M *37/04;21/02;* **F02N** *17/00*
U.S. Cl. 123—456 **51 Claims**



1. A liquid propane fuel storage and fuel delivery system for supplying liquid propane fuel to a vehicle-installed automotive internal combustion engine equipped with fuel injectors, a fuel rail communicating with the inlets of the injectors with the injectors being coupled in parallel between the rail and engine combustion chambers, and an on-board computerized electronic engine control unit (EECU), the engine being operable for developing driving power to the vehicle in response to vehicle-operator input control commands to the EECU, said system comprising:

(1) a fuel storage tank constructed to withstand interior pressures sufficient to maintain propane fuel in a liquid state in a tank interior chamber even at maximum ambient temperatures to be encountered in vehicle design operating conditions,

(2) an engine fuel delivery conduit means operably coupled for communicating propane fuel between the tank interior chamber and the engine fuel injectors and including supply line means for delivering propane fuel from the tank interior chamber to the injectors via the fuel rail and return line means for returning excess fuel from the fuel rail to the tank interior chamber in bypass relation to injector output to the engine,

(3) electric fuel pump means having inlet means disposed in the lowest elevation of the tank interior chamber and having outlet means operably coupled in series with said fuel delivery conduit means for pumping liquid propane from the tank interior chamber to said supply line means at a pressure above tank interior chamber pressure,

(4) fuel handling means operably fluid flow intercoupled between said tank interior, said pump outlet means and said fuel delivery conduit means comprising:

(a) solenoid-operated fuel supply valve means operable for opening and closing communication between said pump outlet means and said supply line means,

(b) fuel return check valve means operable for opening communication from said return line means to said tank interior chamber in response to return line fuel pressure exceeding tank interior chamber pressure by a given pressure differential amount, and for preventing reverse flow from the tank interior chamber into said return line means, and

(c) fuel return check bypass valve means operable for communicating said return line means into the tank interior chamber in bypass flow relation to said fuel return check valve means in response to a tank in-flow direction pressure differential thereacross much less than said given pressure differential operational amount of said fuel return check valve means, and also being operable as a reverse flow check valve for preventing reverse flow from the tank interior chamber to said return line means, and

(5) system electronic control means (SECU) operably electrically coupled in controlling relation to said fuel pump means, said fuel supply valve means, said bypass valve means and operably slave control coupled to said EECU for automatically:

(a) causing said pump means to be energized to deliver propane from the tank interior in a liquid state past the fuel injectors via the fuel rail and back to the tank interior chamber via said bypass valve means with a relatively high flow rate and relatively low pressure differential just prior to engine fuel delivery operation of said fuel injectors to thereby purge propane vapor from said supply and return line means and fuel rail, and

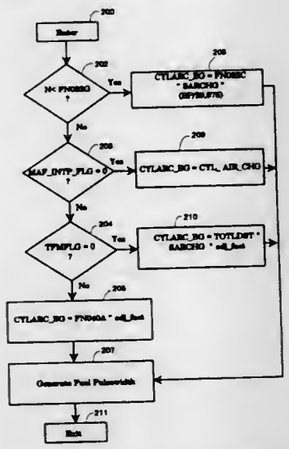
(b) then closing said bypass valve means while said pump means is so energized to thereby cause said pump means to supply propane via said fuel supply valve means and said supply line means to said fuel injectors via the fuel rail in a liquid state concurrently with engine fuel delivery operation thereof and to return excess fuel flowing in the fuel rail past said fuel injectors to the tank interior chamber via said return line means and said fuel return check valve means at a return line pressure higher than tank interior chamber pressure by at least said given pressure differential amount.

5,623,908

ENGINE CONTROLLER WITH AIR METER COMPENSATION DURING ENGINE CRANK

Jay C. Locke, Howell; Mark D. LeRoux, Allen Park, and Lawrence E. Roman, Garden City, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1996, Ser. No. 587,053
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—491 **18 Claims**



1. An engine controller for controlling delivery of fuel to an intake of an engine during engine crank comprising:

means, responsive to an air meter signal, for generating an air flow value indicative of the mass flow rate of air through said intake;

means, responsive to an engine temperature signal, for generating an engine temperature value indicative of the temperature of said engine;

means, responsive to an engine speed signal, for generating an engine speed value, indicative of the rotational speed of said engine;

means, responsive to said engine temperature value and to said engine speed value for generating a compensated aircharge value, indicative of a change in said air flow value due to injection of fuel into said intake during said engine crank;

means, responsive to said compensated aircharge value for generating a fuel pulsewidth value, indicative of an amount of fuel to be injected into said intake; and

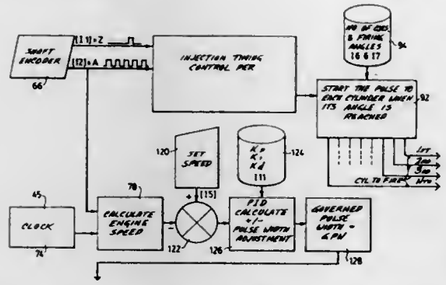
means for causing injection of an amount of fuel into said intake corresponding to said fuel pulsewidth value.

5,623,909

INJECTION TIMING AND POWER BALANCING CONTROL FOR GASEOUS FUEL ENGINES

Harry P. Wertheimer, Painted Post, N.Y., assignor to Dresser-Rand, Wellsville, N.Y.

Filed May 3, 1994, Ser. No. 237,199
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—501 **26 Claims**



1. A method for controlling the injection timing and power balance for each cylinder in a two-stroke gaseous fuel engine, the engine having one or more cylinders each with an exhaust port, a piston in each of the cylinders and adapted to reciprocate in the cylinder, a rod connecting the piston to a crankshaft, a cylinder head for each of the cylinders, the cylinder head sealing each cylinder and providing an opening for a fuel injector, and a control unit coupled to a shaft encoder, the shaft encoder connected to the crankshaft, the engine having a working injection time which sets the time for each injector to start an injection of fuel to the cylinder, said method comprising the steps of:

determining a programmed function injection time, the programmed function injection time is an optimum injection time to be used for the working injection time at the current operating speed;

setting the working injection time to an initial injection time, the initial injection time being in a retarded position with respect to the programmed function injection time;

measuring the speed of the crankshaft;

comparing the monitored speed with a first preset limit;

advancing the working injection time at a predetermined rate when the monitored speed exceeds the first preset limit; and

setting the working injection time to the programed function injection time when the working injection time is equal to or less than the programmed function injection time.

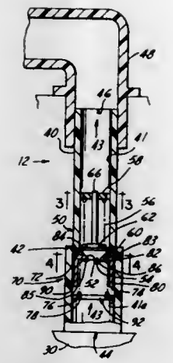
5,623,910

CHECK AND VENT VALVE ASSEMBLY

Russell K. Riggle, Newcomerstown, Ohio, assignor to Walbro Corporation, Cass City, Mich.

Filed Nov. 30, 1994, Ser. No. 347,283
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—510 **20 Claims**

1. For a no-return fuel system for an engine with at least one fuel injector and a fuel pump with an inlet constructed for communicating with a reservoir of liquid fuel and an outlet providing fuel at an increased pressure, a valve assembly comprising, a housing, a fuel passage through said housing having an inlet constructed to communicate with the outlet of the fuel pump and an outlet for supplying liquid fuel to the engine fuel injector, a check valve in said fuel passage constructed and arranged to be normally closed when the fuel pump is not operating, and to open when the fuel pressure at said housing inlet exceeds the fuel pressure at said housing outlet, and a vent valve in said fuel passage communicating with said housing outlet and housing inlet, said vent valve having a vent valve seat fixed in said housing and a vent valve body in said fuel passage and movable relative to said housing and said vent valve seat to open and close said vent valve, and



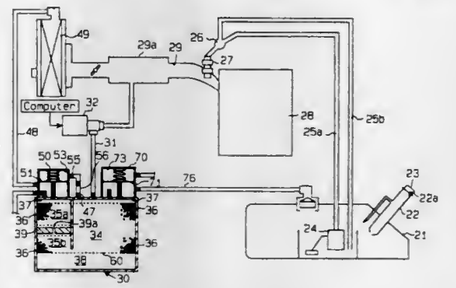
constructed and arranged to be normally closed and to open when the pressure of fuel at the housing outlet is greater than both a predetermined minimum pressure and the fuel pressure at the fuel pump outlet to bleed fuel through the passage in the housing and through the fuel pump outlet to reduce the pressure of the fuel at the housing outlet to such predetermined minimum pressure, and said check valve having a check valve seat on and movable in unison with said vent valve body and a check valve body movable relative to said housing and said vent valve body and yield yieldably biased by a preload onto said check valve seat to close said check valve.

5,623,911

FUEL VAPOR TREATING APPARATUS

Shinsuke Kiyomiya, Seto; Koji Okawa, Toyota; Mitsuru Takada, Aichi-ken, and Takashi Ishikawa, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 17, 1995, Ser. No. 503,111
Claims priority, application Japan, Jul. 29, 1994, 6-179086; Feb. 3, 1995, 7-017288
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—520 **10 Claims**



1. An apparatus for treating fuel vapor evaporated in a fuel tank, having a canister for collecting the fuel component and allowing a passage of gas, both the fuel component and the gas contained in the fuel vapor which is introduced to the canister through a vapor line, and an air intake passage communicating an engine, said canister having an inlet port for introducing air thereinto based on negative pressure generated in the canister and an outlet port for releasing the gas therefrom based on positive pressure generated in the canister, wherein said fuel vapor is purged to the air intake passage from the canister through a purge line when the engine is in the operation, and wherein the amount of fuel vapor passing through the purge line is controlled by a purge control valve

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actuated by a duty signal from a controller in accordance with information representing engine operation status, said apparatus comprising:

a first valve means provided with the canister, for selectively opening and closing the inlet port, wherein said first valve means opens the inlet port based on said negative pressure in the canister by the fuel vapor purged to the air intake passage from the canister;

a second valve means provided with the canister, for selectively opening and closing the outlet port, wherein said second valve means opens the outlet port based on said positive pressure in the canister by the fuel vapor introduced to the canister from the fuel tank;

at least one of said first and second valve means including a diaphragm check valve, said diaphragm check valve having a pressure chamber;

a pressure passage connecting the pressure chamber with the canister to introduce the negative pressure to the pressure chamber from the canister; and

an orifice formed in the pressure passage to dampen the pressure changes downstream thereof with respect to the purge line.

5,623,912

IGNITION CONTROL CIRCUIT, AND ENGINE SYSTEM

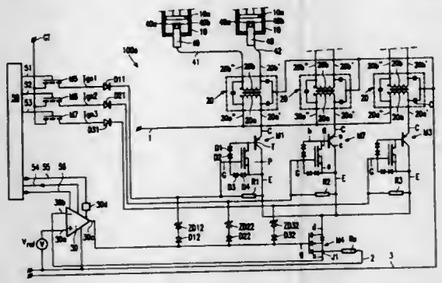
Brendan P. Kelly, Stockport, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,551

Claims priority, application United Kingdom, Dec. 23, 1994, 9426214; Jul. 25, 1995, 9515272

Int. Cl.[6] F02P *3/12*

U.S. Cl. 123—644 **11 Claims**



1. An ignition control circuit for an internal combustion engine having a plurality of cylinders and at least two ignition coils, each of said coils having a primary and a secondary winding and providing current to no more than two of said cylinders, said ignition control circuit comprising:

a. a respective power semiconductor switch for each of said at least two ignition coils, each of said power semiconductor switches having:

(1) a first main electrode, coupled via the primary winding of the respective ignition coil to a first voltage supply line; and

(2) a second main electrode and a control electrode coupled to a respective ignition control line;

said control electrodes enabling the power semiconductor switches to be rendered conducting in a specific sequence;

b. a semiconductor device having first and second main electrodes, coupled between the second main electrodes of the power semiconductor switches and a second voltage supply line, and a control electrode for receiving a drive signal for controlling the current flow through said semiconductor device;

c. current sensing means for sensing the current flowing through the semiconductor device; and

d. a control device responsive to the sensed current for controlling the drive signal to limit the current through the semiconductor device to a predetermined value and responsive to an input signal for turning off the semiconductor device to render a conducting one of the power semiconductor switches into a non-conducting state, thereby initiating sparking in one of the cylinders associated with said power semiconductor switch that is rendered into said non-conducting state.

5,623,913

FUEL INJECTION CONTROL APPARATUS

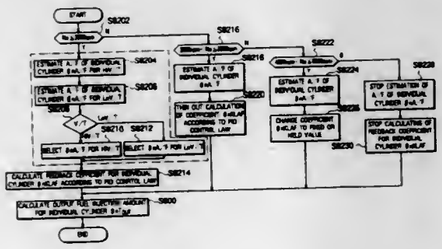
Shinichi Kitajima; Yusuke Hasegawa; Toshio Hayashi, and Yoshitaka Takasuka, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1996, Ser. No. 602,286

Claims priority, application Japan, Feb. 27, 1995, 7-038856; Feb. 27, 1995, 7-038867; Feb. 27, 1995, 7-038868

Int. Cl.[6] F02D *41/14;* **G06G** *7/70*

U.S. Cl. 123—673 **10 Claims**



1. A fuel injection amount control apparatus for internal combustion engine comprising:

an air/fuel ratio detecting means disposed at a collective portion of an exhaust system of a muliple cylinder internal combustion engine, said air/fuel ratio detecting means detecting an air/fuel ratio of an air-fuel mixture discharged from each cylinder of said mulfiple cylinder internal combustion engine;

an air/fuel ratio estimating means for estimating an air/fuel ratio of individual cylinder, said air/fuel ratio estimating means setting an observer in which, based on a model defining a behavior of the air/fuel ratio in the exhaust system of said muliple cylinder internal combustion engine, said air/fuel ratio is input and a condition within said exhaust system is observed; and

an air/fuel ratio correction coefficient calculating means for calculating, based on said estimated air/fuel ratio of individual cylinder, an air/fuel ratio correction coefficient for individual cylinder which corrects a fuel injection amount for individual cylinder supplied to each cylinder of said multiple cylinder internal combustion engine so as to reduce fluctuation in air/fuel ratios among the cylinders;

said apparatus further comprising:

an air/fuel ratio control stopping means which, when said estimated air/fuel ratio is at a value outside of a predetermined range, stops the calculation of said air/fuel ratio correction coefficient for individual cylinder concerning the corresponding cylinder and

an air/fuel ratio estimation processing continuing means which continues the estimation processing of said air/fuel ratio when the calculation of said air/fuel ratio correction coefficient is stopped.

5,623,914

AIR/FUEL RATIO CONTROL APPARATUS

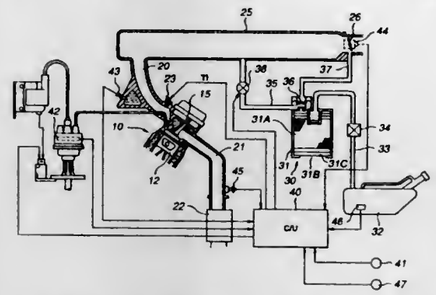
Yutaka Kawamoto; Atsushi Iochi, and Hiroshi Kuriki, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 4, 1995, Ser. No. 434,799

Claims priority, application Japan, May 9, 1994, 6-095344; Jun. 30, 1994, 6-149625

Int. Cl.[6] F02D *41/14;* **F02M** *25/08*

U.S. Cl. 123—689 **5 Claims**



1. An apparatus for controlling the air/fuel ratio of an air/fuel mixture supplied to an internal combustion engine having a throttle valve located in an induction passage for controlling the amount of air supplied to the engine through the induction passage, the engine being associated with an evaporated fuel purging unit having a canister adapted to accumulate evaporated fuel introduced therein into from a fuel tank and a purge passage connecting the canister to the induction passage at a position downstream of the throttle valve to purge the accumulated evaporated fuel, the apparatus comprising:

a purge valve provided in the purge passage for movement between open and closed positions, the purge valve opening the purge passage at the open position and closing the purge passage at the closed position;

sensor means sensitive to engine operation conditions, including temperature of fuel in said fuel tank, for producing signals indicative of sensed engine operating conditions;

means sensitive to an air/fuel ratio at which the engine is operating for producing a signal indicative of the sensed air/fuel ratio;

means for calculating a basic value for fuel delivery requirement based on the sensed engine operating conditions;

means for calculating a target air/fuel ratio value based on the sensed engine operating conditions;

means for calculating a feedback correction factor based on a deviation of the sensed air/fuel ratio from the calculated target air/fuel ratio value;

means for correcting the calculated fuel delivery requirement basic value based on the calculated feedback correction factor to calculate a required value for fuel delivery requirement;

means for supplying fuel to the engine in an amount corresponding to the required value; and

means for setting the feedback correction factor at an initial value in response to a movement of the purge valve from the open position toward the closed position.

5,623,915

ARCHERY BOWSTRING SYSTEM

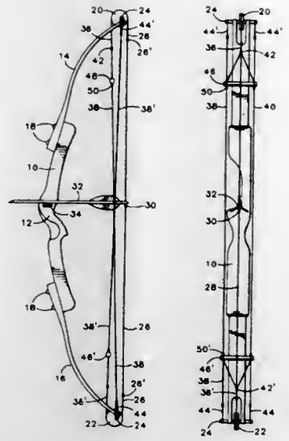
Donald S. Kudlacek, 3412 Oak St., Longview, Wash. 98632

Filed Feb. 28, 1994, Ser. No. 203,241

Int. Cl.[6] F41B *5/10*

U.S. Cl. 124—25.6 **16 Claims**

1. In combination with a compound archery bow having eccentric cams at the outer ends of limbs extending from a central bow handle, and an intermediate arrow position, a bowstring system comprising:



a) a pair of power cables each having a single cable end segment having a free end and a pair of stretch segments having free ends secured at one end to one end of the end segment,

b) the free end of the end segment of each power cable being arranged for connection to a different one of the eccentric cams of a compound archery bow and the free ends of the pair of stretch segments of each power cable being arranged for connection to laterally spaced positions on the limb of the compound archery bow mounting the eccentric cam opposite the cam connecting the end segment, whereby the pair of stretch segments of each power cable extends across the intermediate, arrow position of the archery bow,

c) spacer means for engaging the pair of stretch segments of each power cable for spreading said segments apart to opposite sides of the operating plane of a bowstring, for receiving an archery arrow between the spaced stretch segments of each of said power cables, and

d) a bowstring connected to and extending between said eccentric cams for operation in a plane disposed between the spread stretch segments of the power cables.

5,623,916

METHOD AND APPARATUS FOR CUTTING GROOVES INTO DIAMONDS AND PRECIOUS STONES

Muataser H. El-Gaouni, 8919 Beatrice Pl., Rosemead, Calif. 91770

Filed Mar. 10, 1995, Ser. No. 401,723

Int. Cl.[6] B28D *1/02*

U.S. Cl. 125—12 **13 Claims**

7. A method for holding and positioning diamonds and precious stones while grooves for invisible settings are cut into the diamonds and precious stones, comprising the steps of:

mounting a stone into a holding arm supported by a base;

moving the stone linearly, forward and backward along a first axis using a x translation stage;

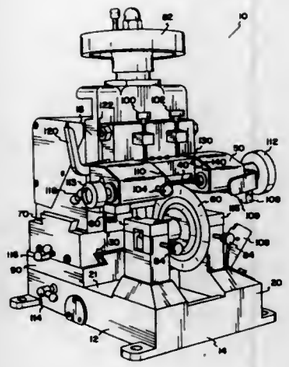
moving the stone linearly, left and right along a second axis using a y translation stage;

moving the stone linearly, up and down along a third axis using a z translation stage;

swiveling the x translation stage about a fourth axis in the z direction;

holding and adjusting the angular position of the stone relative to the cutting means about a fifth axis parallel to, but displace from the second axis;

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cutting grooves into the stone using a cutting means; and

cooling the cutting means to prevent discoloration of the stone as the grooves are cut into the stone.

5,623,917

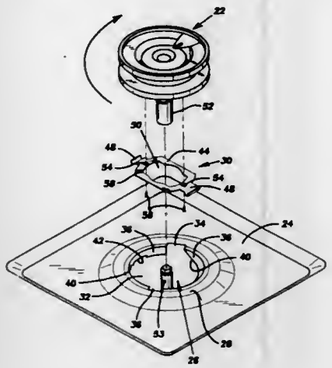
SEALED BURNER ASSEMBLY

Joseph Dinaso, Lady Lake, Fla., and Julia L. Wright, Clarksville, Tenn., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 21, 1995, Ser. No. 576,494

Int. Cl.[6] F24C *3/00*

U.S. Cl. 126—39 H **13 Claims**



1. A burner assembly, comprising:

a main top panel including a recessed well and defining a burner opening in the well, said top panel having first and second surfaces; said first surface being relatively above said second surface;

a burner having a body member, said body member comprising a lower surface and having a burner tube extending downwardly therefrom; and,

a burner mounting bracket secured to the lower surface of the burner, said mounting bracket having a generally planar body member with first and second ends and defining an enlarged opening intermediate said ends, a first mounting wing extends from said first end and a second mounting wing extends from said second end, wherein said burner body member lower surface engages the first surface of the top panel and said mounting wings engage the second surface of the top panel.

5,623,918

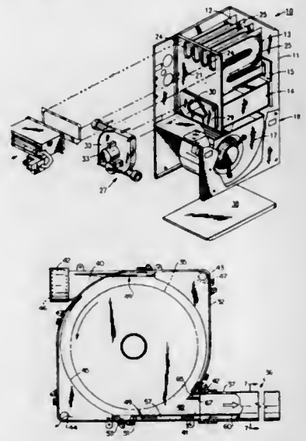
INDUCER CONDENSATE CHANNEL

Robert C. Swilik, Jr., Indianapolis; Merle D. Sears, Mooresville, and Randall E. Light, Indianapolis, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 7, 1995, Ser. No. 499,141

Int. Cl.[6] F24H *3/02*

U.S. Cl. 126—110 R **16 Claims**



13. A method of removing condensate from a high efficiency furnace having a heat exchanger through which flue gases are passed in heat transfer relation with comfort air that includes the steps of

connecting an inducer housing to the flue gas exit of the heat exchanger,

mounting an inducer fan in the inducer housing to conduct flue gases from the heat exchanger through an exhaust port into a vent system, and

mounting an open ended condensate return channel in the exhaust port so that condensate formed in the venting system flows back into said inducer housing through said channel.

5,623,919

CAMPFIRE REFLECTIVE SHEET

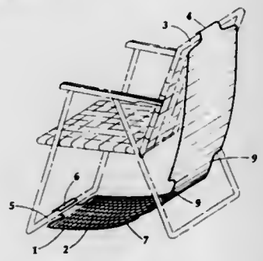
Michael P. Kelly, 87 Des Parulines, Hull, Quebec, Canada

Filed Feb. 5, 1996, Ser. No. 596,521

Claims priority, application Canada, Feb. 24, 1995, 2143398

Int. Cl.[6] A61F *7/00*

U.S. Cl. 126—204 **3 Claims**



1. A flexible sheet comprising of a multitude of concave or convex reflective shapes on its surface with attachments at both ends, to be attached to a chair having a horizontal rail at the top of the backrest and a lower horizontal rail between the two front legs, where when it is attached to the chair, a curve or an arc is formed

under the chair, to uniformly disperse the radiant heat generated from a campfire in an upward direction, warming those parts of a person's body not normally receiving heat.

5,623,920

VALVE ASSEMBLIES

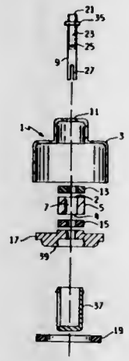
Andrew M. Bryant, Loughborough, Great Britain, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/GB93/01458, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/01347, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 13, 1993, Ser. No. 362,520

Int. Cl.[6] A61M *11/00;15/00*

U.S. Cl. 128—200.23 **20 Claims**



1. A valve assembly for a pressurised aerosol container comprising:

a casing capable of being secured to an aerosol container;

a hollow body secured to the casing and defining a metering chamber having a first opening communicating with the outside environment and a second opening communicating with the interior of the aerosol container; and

an elongate valve member sealingly extending through an aperture in the casing and at least the first opening of the metering chamber, which elongate valve member is reciprocally movable between a dispensing position in which there is an outlet channel through the elongate valve member connecting the metering chamber with the outside environment and the metering chamber is sealed to prevent the passage of material from the interior of the aerosol container to the metering chamber and a closed, non-dispensing position in which the elongate valve member allows the passage of material from the interior of the aerosol container to the metering chamber but prevents the passage of material from the metering chamber to the outside environment;

the elongate valve member having no net mechanical bias to the dispensing or non-dispensing positions.

5,623,921

LARYNGEAL MASK AIRWAY AND METHOD FOR ITS USE

J. William Kinsinger, 12000 Windflower Pl., Oklahoma City, Okla. 73120, and William A. Beck, 500 Napa Valley, Apt. 536, Little Rock, Ark. 72211

Filed Apr. 10, 1996, Ser. No. 633,845

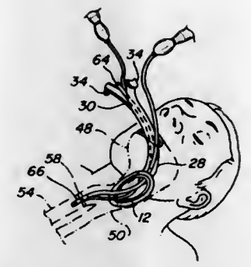
Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—200.26 **11 Claims**

1. A laryngeal mask airway having an inflatable mask for sealing around a patient's laryngeal inlet, and also having an airway tube connected to the mask and being adapted to deliver air therethrough to the mask and a patient's laryngeal inlet, wherein the airway tube comprises:

a first tube section having a first proximal end and a first distal end, the first distal end being connected to the mask; and

a second tube section having a second proximal end and a second distal end, the second distal end being removably connected to the first proximal end, and wherein the second tube section has a pair of radially opposite separation lines longitudinally extending from the second proximal end to the second distal end to thereby allow the second tube section to be split apart along the separation lines.



5,623,922

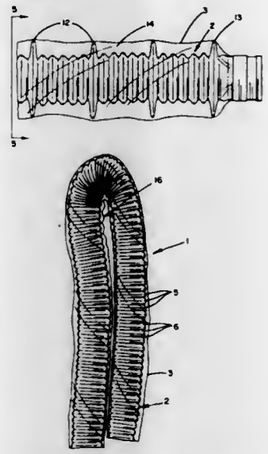
INSULATED BREATHING TUBE

Charles A. Smith, 811 Starlite Dr., Louisville, Ky. 40207

Continuation-in-part of Ser. No. 900,995, Jun. 19, 1992, Pat. No. 5,377,670, which is a continuation-in-part of Ser. No. 593,555, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 275,940, Nov. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 19,248, Feb. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 910,625, Sep. 23, 1986, abandoned. This application Jan. 3, 1995, Ser. No. 367,733

Int. Cl.[6] A61M *16/00;* **A62B** *7/00;* **F24J** *3/00*

U.S. Cl. 128—204.18 **3 Claims**



1. An insulated breathing tube arrangement having an air impervious corrugated tube for carrying respiratory gases and an outer casing of first internal diameter constituting means for insulating the corrugated tube said corrugated tube being located within said casing and having an outer diameter substantially less than said internal diameter of said casing, said casing being of an overall length greater than the length of said corrugated tube and being

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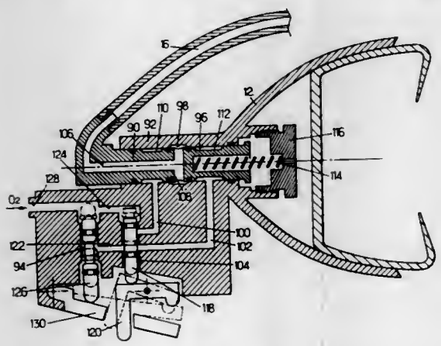
sealed at its ends to the ends of the corrugated tube thereby defining an annular insulating dead air space between said corrugated tube and said casing, said casing further being in a slightly longitudinally compressed state relative to said corrugated tube thereby causing said annular dead air space to be of irregular cross section and further providing means for facilitating sharp bends in said tube arrangement said casing further being of a thickness which is less than the thickness of said corrugated tube.

5,623,923

RESPIRATORY EQUIPMENT WITH COMFORT ADJUSTMENT

Fernand Bertheau, Elancourt, and Philippe Thomas, Montfort l'Amaury, both of France, assignors to Intertechnique, Plaisir, France

Continuation-in-part of Ser. No. 257,271, Jun. 9, 1994, Pat. No. 5,504,147. This application Jun. 6, 1995, Ser. No. 471,221
Claims priority, application France, Sep. 6, 1993, 93 06930
Int. Cl.[6] A62B *7/14*
U.S. Cl. 128—207.11 **4 Claims**



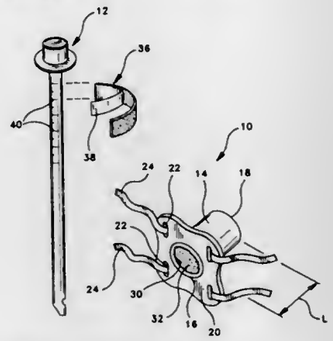
1. Head respiratory equipment comprising:
a respiratory mask adapted to be fit against the face of a user and provided with a demand regulator with air dilution, connectable to a pressurized respiratory gas source;
an extensible harness having end portions connected to said mask and including an element **16** inflatable by the respiratory gas for being stretched up to a sufficient size for enabling the user to don it over the head,
manually controlled means for delivering said pressurized respiratory gas from said source into the inflatable element for stretching it and to allow the pressure to decrease in said element for enabling the harness to contact the head and forcibly apply the mask onto the face of the user, and
pressure control means for automatically admitting pressurized gas into a compound of the harness, from the respiratory gas source, and for exhausting pressurized gas from said compound to atmosphere, comprising:
a housing securely connected to said mask, formed with a bore;
a plunger slidably received in said bore and secured to said end portions; and
comfort mask selection means comprising a valve member manually movable between a comfort position where it is apt to communicate a first passage opening into said bore with atmosphere and it communicates a second passage opening into said bore at a distance from said first passage with an inlet connectable to said source and another position where it is apt to communicate said first and second passages simultaneously to atmosphere;
wherein said plunger is formed with a third passage opning into said resilient element and is arranged to separate said third passage from said first and second passages when in a mid-position in said bore, to communicate said third passage and said first passage when said plunger is moved along said bore from said mid-position in a predetermined direction past a predetermined position and for communicating said second and third passages when said plunger is moved in an opposite direction past another predetermined position.

5,623,924

APPARATUS AND METHOD FOR RETAINING AN ENDOTRACHEAL TUBE

Tammy S. Lindenman, 1917 Washington La., Bensalem, Pa. 19020, and Kathryn E. Aubry, 1731 Lansing, Philadelphia, Pa. 19111

Filed Mar. 29, 1996, Ser. No. 625,626
Int. Cl.[6] A61M *16/04*
U.S. Cl. 128—207.17 **12 Claims**



1. An intubation assembly, comprising:
an endotracheal tube;
a first piece of hook and loop fastening material coupled to a section of said endotracheal tube;
a tubular element having an interior surface, wherein said tubular element is adapted to extend into the mouth of a patient;
a second piece of hook and loop fastening material coupled to said interior surface of said tubular element, wherein said second piece of hook and loop fastening material engages said first piece of hook and loop fastening material when said endotracheal tube is passed into said tubular element, thereby joining said endotracheal tube to said tubular element in a predetermined positional relationship.

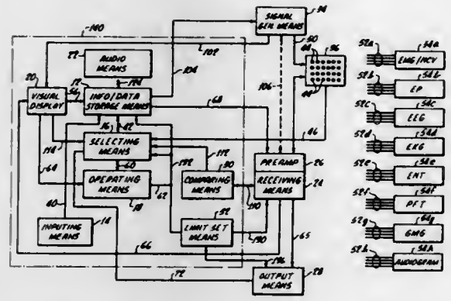
5,623,925

VIRTUAL MEDICAL INSTRUMENT FOR PERFORMING MEDICAL DIAGNOSTIC TESTING ON PATIENTS

Michael R. Swenson, San Diego, and Gregory R. Holland, Irvine, both of Calif., assignors to CMeD, Inc., Irvine, Calif.

Filed Jun. 5, 1995, Ser. No. 463,055
Int. Cl.[6] A61B *5/0205*
U.S. Cl. 128—630 **23 Claims**

1. A virtual medical instrument system for providing a medical facility with a plurality of patient medical diagnostic test protocols, said virtual medical instrument system comprising:
a. data storage means for storing said plurality of diagnostic test protocols;
b. means for inputting information into said storage means;
c. a universal interface having a number of electrical contacts;
d. a plurality of sets of electrical conduits associated with a like plurality of different patient diagnostic test protocols;
e. selecting means connected to said data storage means and said universal interface for enabling a user of the system to select any one of said plurality of stored patient diagnostic test protocols for conducting on said patient, and thereby to select the corresponding set of electrical conduits to be connected to particular electrical contacts of said universal interface;



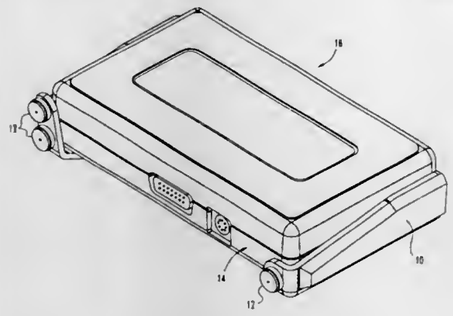
f. operating means for causing the selected diagnostic test protocol to be performed on said patient after the corresponding set of electrical conduits are connected to the universal interface contacts and to said patient on which the selected diagnostic test is to be performed;
g. signal receiving means connected to said universal interface contacts through said set of electrical conduits for receiving electrical signals from said patient undergoing said selected diagnostic test protocol; and
h. output means connected to said signal receiving means for providing an output corresponding to said received electrical signals.

5,623,926

HANDHELD ELECTROCARDIOGRAM MONITOR WITH ELECTRODES MOUNTED ON SWING ARMS

David M. Weiss, Centerville, Ohio, assignor to Technology Transfer, Inc., Lafayette, Ind.

Filed Jun. 7, 1995, Ser. No. 487,029
Int. Cl.[6] A61B *5/0408*
U.S. Cl. 128—639 **7 Claims**



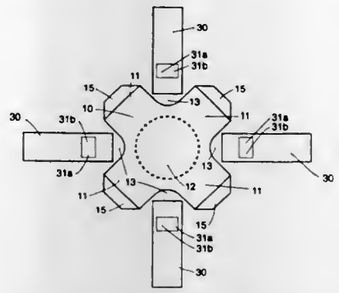
1. A handheld electrocardiogram monitor, comprising:
a housing;
a swing arm rotatably mounted on said housing, said swing arm having a plurality of electrodes mounted thereon;
an ECG monitor circuit contained within said housing and connected to said electrodes on said swing arm; and
a detent mechanism attached to said swing arm and said housing, said detent mechanism including a first member having a plurality of grooves therein spaced apart by a first dimension, and a plurality of groove-engaging elements spaced apart by a second dimension different from said first dimension.

5,623,927

MULTIPLE PATIENT BREAST SCANNING ON A MAGNETIC RESONANCE IMAGING APPARATUS

Raymond V. Damadian, Woodbury, and Jan Votruba, Elmont, both of N.Y., assignors to Fonar Corporation, Melville, N.Y.

Continuation of Ser. No. 131,124, Oct. 4, 1993, Pat. No. 5,490,513, which is a continuation-in-part of Ser. No. 952,327, Sep. 28, 1992. This application Jun. 1, 1995, Ser. No. 456,508
Int. Cl.[6] A01B *5/055*
U.S. Cl. 128—653.2 **32 Claims**



1. A medical magnet resonance imaging system comprising:
(a) a magnet having an imaging volume and at least two apertures, wherein each aperture is sufficiently large to provide patient access to the imaging volume;
(b) at least two patient handling systems, with each of said patient handling systems comprising a moveable bed structure having means which provides access to one of said apertures of said magnet and with each of said moveable bed structures having means for receiving and positioning the breast region of a patient to be subjected to a magnetic resonance imaging procedure in said imaging volume of said magnet;
(c) a radio frequency antenna system for transmitting radio frequency energy into a patient and detecting magnetic resonance imaging data from said breast region of each said patient.

5,623,928

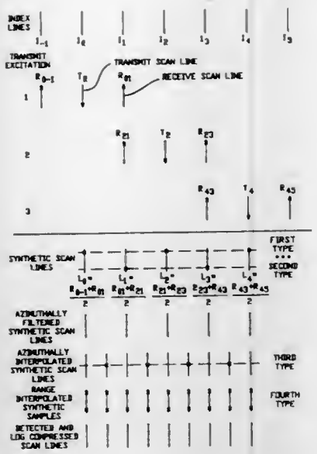
METHOD AND APPARATUS FOR COHERENT IMAGE FORMATION

J. Nelson Wright, Menlo Park; Samuel H. Maslak, Woodside; David J. Finger, San Jose, and Albert Gee, Los Altos, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Continuation of Ser. No. 286,510, Aug. 5, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 419,595
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.01 **139 Claims**

1. A method for imaging an object using coherent samples acquired on receive scan lines, which samples are representative of a signal from the object, the method comprising the steps of:
(a) phase aligning the acquired coherent samples to effect beam-to-beam coherency; and

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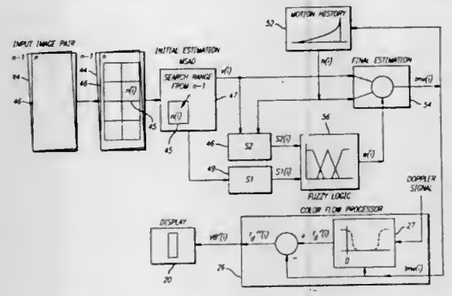
(b) synthesizing at least one new sample from the phase-aligned samples.

5,623,929

ULTRASONIC DOPPLER FLOW IMAGING METHOD FOR ELIMINATING MOTION ARTIFACTS

Lee Weng, Issaquah, Wash., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jun. 30, 1995, Ser. No. 497,344
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **20 Claims**



1. In an ultrasonic diagnostic system, including means for receiving Doppler information signals having motion components due to fluid flow and/or image motion, and means for formatting said Doppler information signals for display, a method for removing effects of image motion from the information to be displayed comprising the steps of:

demodulating said Doppler information signals to provide Doppler signal samples containing a fluid motion component and an image motion component;

estimating an image motion vector by comparing successive image frames;

deriving a center Doppler frequency value for said image motion component utilizing said estimated image motion vector; and

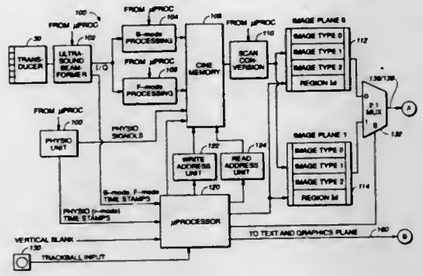
deriving a fluid motion vector from said derived center Doppler frequency value.

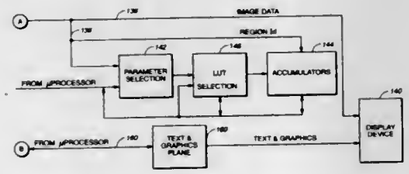
5,623,930

ULTRASOUND SYSTEM FOR FLOW MEASUREMENT

J. Nelson Wright, Menlo Park; Donald R. Langdon, Mountain View, and Ismayil M. Guracar, Redwood City, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed May 2, 1995, Ser. No. 432,858
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.1 **61 Claims**





1. A method for measuring flow of a fluid in a vessel in a body, comprising the steps of:

producing a value of the velocity of the fluid from a Doppler or time shifted ultrasound signal from each of a plurality of locations on a first scan plane and substantially across the vessel;

obtaining from said velocity values and/or said signal a first averaged velocity value and a first area measurement value;

deriving values for a cross-sectional area of the flow and the averaged velocity of fluid over the cross-sectional area from the averaged velocity value and area measurement value; and

calculating from said cross-sectional area of the flow and the averaged velocity of fluid over the cross-sectional area a value of flow of the fluid in the vessel.

5,623,931

NEEDLE GUIDE FOR USE WITH ULTRASOUND IMAGING SYSTEMS

Peter C. Wung, Redmond; Marc W. Bommarito, Maple Valley; John G. Tomkinson, Seattle, and Swend L. Miller, Kent, all of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

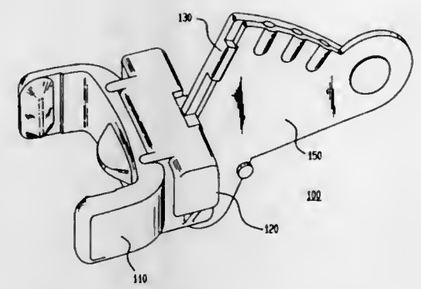
Filed Oct. 11, 1994, Ser. No. 321,646
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.05 **11 Claims**

1. A device guide for use with a probe comprises:

clip means for detachably affixing the device guide to the probe, the clip means comprising a C-clamp, the C-clamp comprising protuberances disposed along an inner arc of the C-clamp, the C-clamp defining one or more channels along an outer arc of the C-clamp;

clip locking means for detachably locking the clip means to secure the device guide to the probe, wherein the clip lock means comprises one or more legs which are disposed to be moved to fill at least a portion of the channels to lock the clip means and, thereby to secure the device guide to the probe;

device support means, affixed to the clip means, for supporting and positioning a device; and



device cap means, detachably affixed to the device support means, for supporting and positioning the device;

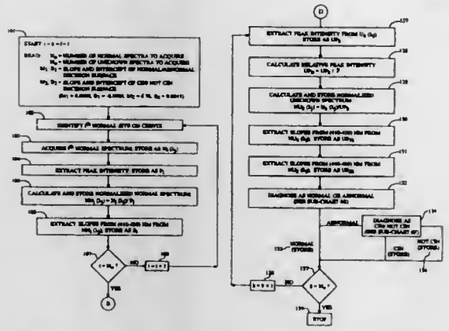
wherein the device support means and the device cap means are comprised of snap locking means for detachably affixing the device support means and the device cap means to each other.

5,623,932

DIAGNOSIS OF DYSPLASIA USING LASER INDUCED FLUORESCENCE

Nirmala Ramanujam; Anita Mahadevan; Rebecca R. Richards-Kortum, all of Austin; Michele F. Mitchell, and Sharon Thomsen, both of Houston, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 60,432, May 12, 1993, Pat. No. 5,421,339. This application Jun. 6, 1995, Ser. No. 469,396
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—665 **11 Claims**



1. A method for diagnosing dysplasia in cervical tissue, comprising:

subjecting a plurality of cervical tissue sites to electromagnetic energy;

detecting fluorescence in each of the plurality of cervical tissue sites at plural emission wavelengths within a first wavelength range containing peak intensity wavelengths for normal cervical tissue, wherein some of the cervical tissue sites exhibit relatively high and uniform peak fluorescence intensities within the first wavelength range and at least one of the cervical tissue sites does not exhibit relatively high and uniform peak fluorescence intensities within the first wavelength range;

determining a first spectrum characteristic from fluorescence intensities at wavelengths within the first wavelength range for cervical tissue sites exhibiting relatively high and uniform peak fluorescence intensities within the first wavelength range;

detecting fluorescence in the cervical tissue site not exhibiting relatively high and uniform peak fluorescence intensities within the first wavelength range, at plural emission wavelengths within a second wavelength range containing peak intensity wavelengths for a first type of abnormal tissue;

determining a second spectrum characteristic from fluorescence intensities at wavelengths within the second wavelength range for the cervical tissue site not exhibiting relatively high and uniform peak fluorescence intensities within the first wavelength range; and

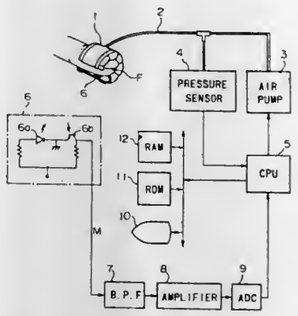
comparing the first spectrum characteristic with the second spectrum characteristic in accordance with a discriminant function, wherein similarity indicates that the cervical tissue site not exhibiting relatively high and uniform peak fluorescence intensities within the first wavelength range contains a first type of abnormal tissue.

5,623,933

PULSE WAVE ANALYSIS DEVICE

Kazuhiko Amano, Suwa; Hiromitsu Ishii, Chiba, and Kazuo Kodama, Yokohama, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 285,378
Claims priority, application Japan, Aug. 3, 1993, 5-192620; Nov. 18, 1993, 5-289635
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—687 **7 Claims**



1. A pulse wave analysis device comprising:

pressurization means for applying pressure to a body surface of a living body;

pressure detection means for detecting pressure applied at the body surface;

memory means for storing data of pulse wave variation patterns which represent changes in amplitude levels of said pulse wave corresponding to changes in the pressure;

pulse wave detection means for detecting pulse waves through a pulse wave detection site on the body surface where the pressurization means applies pressure; and

means for identifying pulse wave variation patterns, based on the pulse waves detected by the pulse wave detection means, and on the data stored in the memory means, the pulse wave variation patterns being changes in amplitude levels of said pulse wave corresponding to changes in the pressure applied at the detection site.

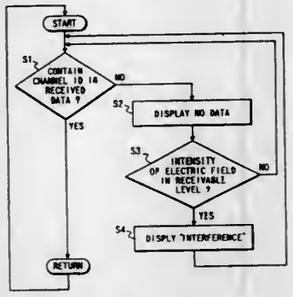
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5,623,934

INTERFERENCE-DETECTING MEDICAL MONITORING APPARATUS AND METHOD

Yoshikazu Midorikawa, Tokyo, Japan, assignor to Nihon Kohden Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,693
Claims priority, application Japan, Jun. 30, 1994, 6-149370
Int. Cl.[6] A61N 5/04
U.S. Cl. 128—696 **3 Claims**



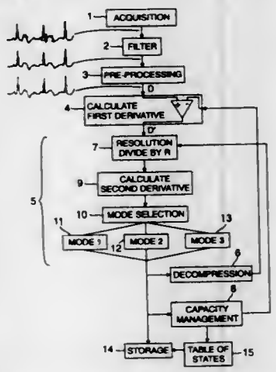
1. A medical monitoring apparatus comprising:
a receiver for receiving an input signal;
channel ID check means, coupled to said receiver, for determining whether remote monitoring data in said input signal received by said receiver contains a channel ID which is the same as a channel ID stored in advance in said receiver;
receiving level check means for checking whether an intensity of said input signal is higher than a predetermined receivable level;
interference state check means for checking whether radio interference has effected said input signal based upon an output signal of said channel ID check means and an output signal of said receiving level check means; and
display means for displaying a radio interference state based upon an output signal of said interference state check means.

5,623,935

DATA COMPRESSION METHODS AND APPARATUS FOR USE WITH PHYSIOLOGICAL DATA

Yves Faisandier, Paris, France, assignor to Ela Medical, S.A., Montrouge, France

Filed Jul. 7, 1995, Ser. No. 499,438
Claims priority, application France, Jul. 7, 1994, 94 08406
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—696 **22 Claims**



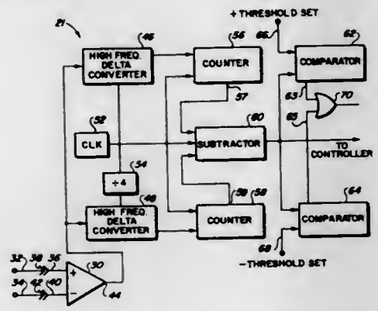
1. A process for physiological data compression, comprising the steps of:
a) acquiring an electrical signal having an amplitude variation representative of the physiological data to be compressed during a given time period;
b) sampling the acquired electrical signal amplitude at a predetermined frequency;
c) processing the sampled signals by:
i) determining a first derivative of a current sampled signal;
ii) determining a second derivative of the current sampled signal;
iii) performing a predictive analysis of the current sampled signal amplitude as a function of a plurality of values of the first and second derivatives;
iv) selecting a coding mode from among at least two coding modes as a function of the predictive analysis to optimize a global volume of a memory in which to store compressed physiological data for the given time period, said coding modes being dynamically switchable from one mode to another mode; and
d) compressing the sampled signal by implementing the selected coding mode.

5,623,936

IMPLANTABLE MEDICAL DEVICE HAVING MEANS FOR DISCRIMINATING BETWEEN TRUE R-WAVES AND VENTRICULAR FIBRILLATION

Kelly H. McClure, Simi Valley, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Dec. 5, 1995, Ser. No. 567,658
Int. Cl.[6] A61B 5/046; A61N 1/39
U.S. Cl. 128—705 **38 Claims**



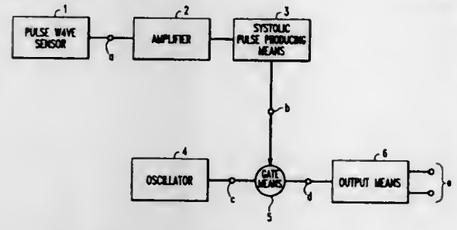
1. An implantable medical device for discriminating R-waves from ventricular fibrillation (VF) waveforms within an intracardiac signal, comprising:
a high-frequency delta converter for receiving the intracardiac signal as an input and for producing as an output a first delta signal, the high-frequency delta converter being responsive to both R-waves and VF waveforms;
a low-frequency delta converter for receiving the intracardiac signal as an input and for producing as an output a second delta signal, the low-frequency delta converter being responsive only to the VF waveforms;
means for determining a difference signal based on the first and second delta signals; and
comparator means, coupled to the determining means, for comparing the difference signal to at least one predetermined threshold signal and for producing an event detection signal when the difference signal exceeds the predetermined threshold signal;
whereby an event detection signal is not generated when the VF waveform is present in the intracardiac signal.

5,623,937

ARTIFACT DETECTOR FOR STIMULATOR

Minoru Sasaki, Yokohama, Japan, assignor to Kabushiki Kaisya Advance, Tokyo, Japan

Division of Ser. No. 75,399, Jun. 11, 1993. This application Jun. 7, 1995, Ser. No. 482,813
Claims priority, application Japan, Jun. 12, 1992, 4-177782; Jun. 12, 1992, 4-177783; Jun. 12, 1992, 4-177784; Jun. 12, 1992, 4-177785; Jun. 12, 1992, 4-177786; Jun. 12, 1992, 4-177787; Jun. 12, 1992, 4-177788; Jun. 12, 1992, 4-177790
Int. Cl.[6] A61B 5/0456
U.S. Cl. 128—708 **4 Claims**



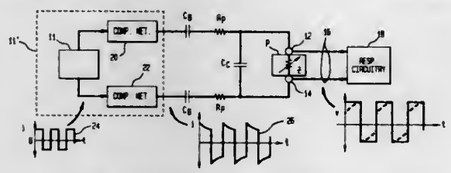
1. An artifact detector, comprising:
a biomedical signal wave detecting sensor;
means for converting a sensed biomedical signal wave into multiple pulses;
duration measuring means responsive to the pulses provided by said converting means for measuring values of the multiple pulse durations of the biomedical signal wave;
averaging means for fetching and averaging the values of the multiple pulse durations to provide an average value; and
means for comparing each of the measured duration values provided by said duration measuring means with the average value provided by said averaging means for detecting generation of an artifact in accordance with a ratio of the compared values.

5,623,938

METHOD AND APPARATUS FOR RESPIRATION MONITORING

Robert R. Addiss, Westford, Mass., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 29, 1995, Ser. No. 537,175
Int. Cl.[6] A61B 5/08
U.S. Cl. 128—723 **14 Claims**



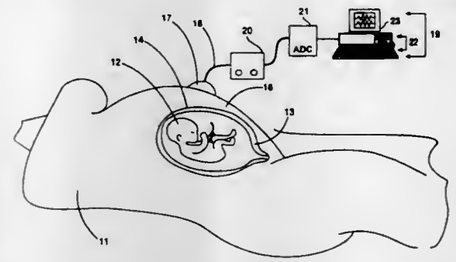
1. An apparatus for monitoring the expansion and contraction of the thoracic cavity of a patient caused by respiration, comprising:
generating means for generating an AC examination current signal;
coupling means for applying said examination current signal to the patient so that said examination current passes through said thoracic cavity of the patient, but at least a portion of said current does not pass through said thoracic cavity of the patient;
detecting means coupled to said coupling means for detecting an amplitude modulated voltage signal developed across said patient in response to said application of the examination current and variation of the transthoracic impedance of the patient due to respiration; and
current modifying means coupled with the generating means for modifying the AC examination current during application to the patient so that said portion of the examination current which does not pass through said patient is at least partially compensated.

5,623,939

METHOD AND APPARATUS FOR ANALYZING UTERINE ELECTRICAL ACTIVITY FROM SURFACE MEASUREMENTS FOR OBSTETRICAL DIAGNOSIS

Robert E. Garfield, Friendswood, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 246,214, May 19, 1994, Pat. No. 5,546,953. This application Jun. 7, 1995, Ser. No. 483,755
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—733 **31 Claims**



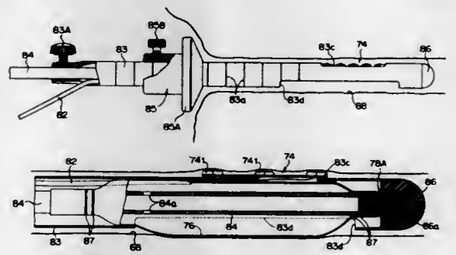
1. A method of analyzing surface electromyographic data to characterize uterine activity, comprising:
applying action potential measuring electrodes to a surface of a patient;
measuring electromyographic signals produced by said electrodes;
analyzing frequency components of said electromyographic signals; and
characterizing uterine activity of said patient based on said analysis of frequency components.

5,623,940

CATHETER APPARATUS WITH A SENSOR

Norio Daikuzono, Chiba-ken, Japan, assignor to S.L.T. Japan Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1994, Ser. No. 284,963
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—736 **7 Claims**

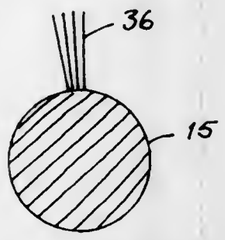


1. A catheter apparatus having a sensor, which is insertable into a body cavity for detecting information receivable at a wall of the body cavity or transmitted therethrough, comprising:
a rigid sheath which is to be inserted into said body cavity;
a first window provided on a side of a front end portion of the sheath to enable a sensor to move in or out therethrough, and

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a second window provided on a side opposite to said first window for a balloon to be inflated out therethrough;
a sensor positioned within said first window and movable in or out therethrough in a radial direction of said sheath; and
a balloon means comprising a rigid probe and a balloon mounted thereon, the balloon being inflated or deflated by adjustment of a fluid pressure provided therein,
whereby said balloon means is inserted into said sheath and said balloon during use is biased to the wall of said body cavity through said second window when said balloon is inflated, said sensor being thereby positively brought into close contact with the wall of said body cavity through said first window by a reaction force exerted on said sensor by said inflated balloon.

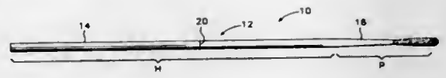
5,623,941
CERVICAL SAMPLING VELOUR BRUSH
Tommy Hedberg, and Jan Claren, both of Lund, Sweden, assignors to Nils Stormby, Malmo, Sweden
Continuation of Ser. No. 265, Jan. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 674,127, Oct. 3, 1991, abandoned. This application May 18, 1995, Ser. No. 443,822
Claims priority, application Sweden, May 10, 1988, 8801764-5
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—756 **14 Claims**



1. A method for medical sampling, comprising:
providing a collection instrument comprising
an elongated shank;
a body forming an axial extension of said elongated shank at a first end thereof, a second end of the elongated shank forming a handle where the brush is to be gripped manually for use, said body being substantially circular in a transverse cross section and forming a smooth surface extending continuously over the axial length of said body; and
a velour finish covering the smooth surface of the body over an entire circumference of the body, the velour finish including a plurality of fibers of a uniform length, each of the fibers having first and second ends, the fibers being glued to said surface at said first ends uniformly distributed over the surface, and the fibers projecting radially from the surface with said second ends defining a curved surface of the velour finish;
collecting biomaterial from a cervix onto the plurality of fibers;and
transferring the biomaterial onto a deposit site.

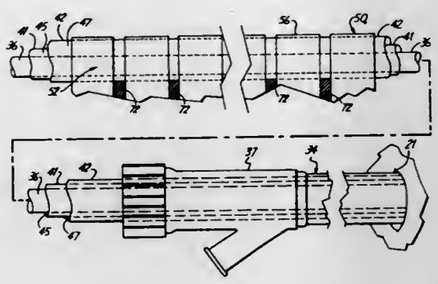
5,623,942
CELL COLLECTION SWAB
Cornelius N. Pestes, and Larry L. Pestes, both of Boring, Oreg., assignors to MML Diagnostics, Troutdale, Oreg.
Filed Jan. 24, 1996, Ser. No. 590,531
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—759 **7 Claims**

1. A swab for collecting cell samples from the urethra of a human penis comprising:



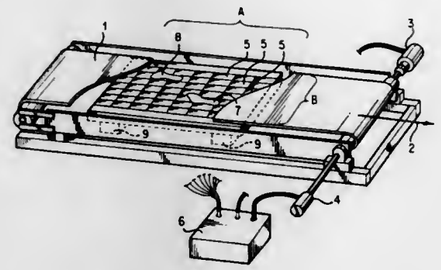
(a) an elongate unitary shaft having a handle at one end and a probe at the other end;
(b) said handle having a constant diameter, circular cross-section;
(c) said probe having a circular cross-section which tapers toward the distal extremity thereof;
(d) a fiber tip located at the distal extremity of said probe; wherein
(e) said shaft is nylon filled 5 to 20 percent by volume with fiberglass.

5,623,943
MAGNETIC MEDICAL SHAFT MOVEMENT CONTROL DEVICE AND METHOD
Steven S. Hackett, Maple Grove; Roger N. Hastings, Burnsville; Arnold W. Thornton, Roseville; Darlene A. Thometz, Maple Grove, and Kenneth R. Larson, Bloomington, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Aug. 12, 1992, Ser. No. 929,083
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **18 Claims**



1. A method of controlling movement of an elongated shaft for use in the catheterization of a patient, wherein a distal portion of the shaft is inserted within the patient and a proximal portion of the shaft remains outside the patient, the method comprising:
providing an operative segment on the proximal portion of the shaft, the operative segment including a plurality of longitudinally spaced magnetically active segments;
positioning the operative segment on the shaft adjacent a tool, the tool having a plurality of magnets spaced thereon, and the tool and the operative segment cooperating to create a magnetic coupling force field therebetween to restrict longitudinal movement of the shaft relative to the tool; and
correlating the spacing of the magnets with the spacing of the magnetically active segments to increase the strength of the magnetic field to restrict the movement of the shaft longitudinally relative to a transverse holding force created by the magnets.

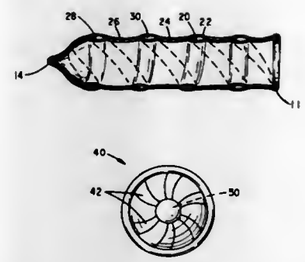
5,623,944
METHOD FOR CHARACTERIZING GAIT
Lewis M. Nashner, Lake Oswego, Oreg., assignor to NeuroCom International, Inc., Clackamas, Oreg.
Division of Ser. No. 138,374, Oct. 15, 1993, Pat. No. 5,474,087, which is a continuation of Ser. No. 774,553, Oct. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,060
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—779 **22 Claims**



1. A method for characterizing the locomotor activity of a subject comprising:
(A) placing the subject in a position of locomotion on a movable support surface having a tread area;
(B) providing a matrix of force transducers, each transducer producing an output signal and being associated with a portion of the tread area directly above the transducer, so that every portion of the tread area on which a foot of the subject may exert a force has a transducer associated with it, each portion of the tread area having an area less than the area of the soles of the subject's feet, the matrix of force transducers being arranged in a grid, n transducers wide by m transducers long, where both n and m are both greater than 2, the matrix of force transducers being mounted in a fixed position beneath the movable support surface in such a way as to permit motion of the support surface across such matrix and to permit each transducer to receive substantially all of the vertical force exerted by the subject's foot on the portion of the tread area associated with that transducer;
(C) instructing the subject to perform locomotion on the movable surface;
(D) accepting the output signal from each transducer, at each of a series of points in time, during a period of time; and
(E) processing the output signals to provide quantities related to the vertical forces exerted by each foot on the movable support surface.

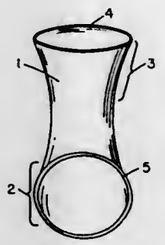
5,623,945
DOUBLE LAYER PROPHYLACTIC INCORPORATING PHARMACOLOGICAL FLUID AND SPIRAL BARRIER LAYER
Linda M. Shecterle, Plymouth, and John A. St. Cyr, Maple Grove, both of Minn., assignors to Jacqmar, Inc., Plymouth, Minn.
Continuation-in-part of Ser. No. 296,900, Aug. 29, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,844
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **13 Claims**

1. A prophylactic device, comprising:
(a) a first and a second layer of elastomeric, liquid impermeable material arranged adjacent one another and defining a pocket, said pocket having a vertex and an opposing rim, said first and second layers being bonded to one another along a continuous spiral path extending from a first compliant reservoir at said vertex to a second compliant reservoir at said rim to define an elongated spiral chamber of uniform cross-section communicating with the first and second reservoirs; and



(b) a pharmacological agent disposed in said first and second reservoirs and said chamber.

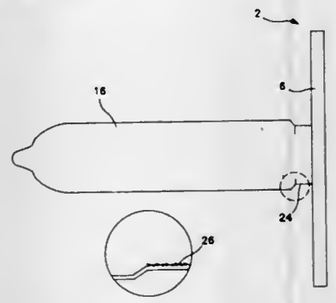
5,623,946
TUBULAR PROTECTIVE DEVICE FOR PROTECTION AGAINST TRANSFER OF INFECTIOUS MATTER DURING SEXUAL INTERCOURSE
Jasse Hessel, Oakley Hill, Denmark, assignor to Chartex International Plc., United Kingdom
Continuation of Ser. No. 840,921, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 27,842, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 621,850, Dec. 4, 1990, Pat. No. 5,094,250, which is a continuation of Ser. No. 148,992, Jan. 27, 1988, Pat. No. 4,976,273, which is a continuation of Ser. No. 58,766, Jun. 5, 1987, Pat. No. 4,735,621. This application May 27, 1994, Ser. No. 250,660
Int. Cl.[6] A61F *6/04*
U.S. Cl. 128—844 **2 Claims**



1. A tubular protective device for protection against a transfer of infectious matter during sexual intercourse, said protective device comprising;
(a) a flexible polyurethane tube having a continuous thickness between 20 and 60 microns and having;
(i) a closed end,
(ii) an open end, and
(iii) a first diameter of said tube sufficiently large to permit movement of a penis within said tube during coitus;
(b) an outwardly extending polyurethane ring for radially stretching said open end, said outwardly extending polyurethane ring having a second diameter at least equal to said first diameter and welded to said open end of said flexible polyurethane; and
(c) a circular elastic ring-like member located in said closed end of said flexible, thin-walled tube having a diameter sufficient to maintain said circular elastic member in a vagina of a user.

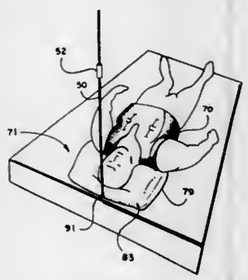
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5,623,947
DEVICE TO BE USED WITH CONDOMS TO PREVENT THE TRANSMISSION OF DISEASE
Kevin B. Lawler, 493 Arborway, Jamaica Plain, Mass. 02130
Filed Aug. 29, 1994, Ser. No. 297,596
Int. Cl.[6] A61F 5/44
U.S. Cl. 128—844 **4 Claims**



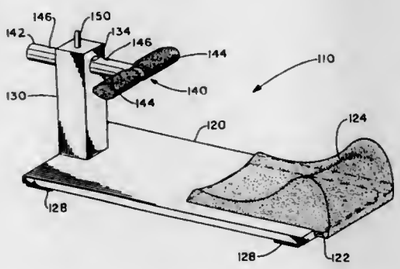
1. A flexible, protective shield worn at the base of a penis comprising:
a) a tubular member with a first and a second end, and
b) a diaphragm with a through hole,
where said diaphragm is attached to the first end of said tubular member with said hole generally aligned with the tubular axis such that the tubular member diaphragm combination retains a through hole, and where the diaphragm extends outward about radially from said axis, and
c) said tubular member including a first area of adhesion, where said first area of adhesion is arranged and constructed to secure the tubular member to the penis and where said first area of adhesion is made of a thicker material and of a lesser diameter than the rest of said tubular member and further comprises small teeth directed toward the head or front end of the penis.

5,623,948
SAFETY AMBULATORY SUPPORT APPARATUS FOR PATIENTS
C. Van Morris, 297 Boulevard, Athens, Ga. 30601
Continuation-in-part of Ser. No. 99,916, Jul. 30, 1993, Pat. No. 5,456,655. This application Apr. 27, 1995, Ser. No. 429,824
Int. Cl.[6] A61G 15/00;7/08;7/10
U.S. Cl. 128—845 **5 Claims**



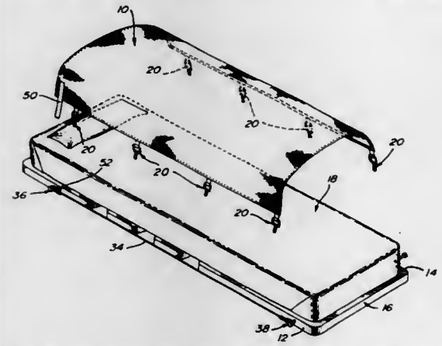
1. A safety support device for providing ambulatory support to a patient, said device comprising:
a support garment wearable by the patient comprising
a vest worn generally about the patient's thorax; and
a support harness extending from said vest and positionable adjacent the back of the patient's head;
a tether line having a first end and an opposed free end attachable to said support garment;
a tether line retainer associated with said support harness adjacent the vertex of the patient's head when the patient is wearing said support garment;
a support carrier, said first end of said tether line disposed in supported engagement with said support carrier, and said support carrier capable of applying a support force to said support garment wherein, said tether line is disposed in restrained engagement with said support garment adjacent the vertex of the patient's head by said tether line retainer so that said tether line extends from said support garment substantially adjacent to the vertex of the patient's head when a support force is applied to said tether;
said support harness comprising a pillow support harness including a pillow enclosure adapted to receive a pillow therein;
said pillow support harness defining a base portion and an opposed attaching portion;
said base portion of said pillow support harness being attachable to said vest adjacent the superior borders of the patient's scapulae, bilaterally, and said tether line retainer being located at said opposed attaching portion; and
said pillow enclosure being located between said base and said attaching portion,
whereby said opposed attaching portion is disposed in restrained engagement with said tether line such that said tether line extends from said pillow support harness adjacent the vertex of the patient's head when a support force is applied to said tether.

5,623,949
PATIENT POSITIONING DEVICE
Jeffrey V. Kostich, 8433 Scenic Ridge, N.W., Clinton, Ohio 44216
Continuation-in-part of Ser. No. 251,477, Jun. 6, 1994, Pat. No. 5,433,220. This application May 31, 1995, Ser. No. 454,996
Int. Cl.[6] A61G 15/00; A61F 5/00
U.S. Cl. 128—845 **22 Claims**



1. A device for positioning a patient in an arms-over-head position for treatment, said device comprising:
a base including means for selectively and releasably receiving a head positioning member;
a handlebar support member connected to said base;
a handlebar adjustably supported by said support member, whereby said handlebar may be adjustably positioned in accordance with the size of a patient undergoing treatment.

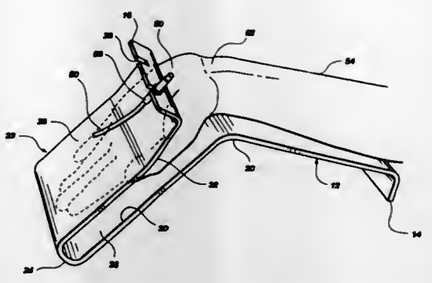
5,623,950
SECURITY COVER
Claude Bergeron, Chicoutini, Canada, assignor to Genimedic Inc., Jonquiere, Canada
Filed May 9, 1995, Ser. No. 437,873
Claims priority, application Canada, May 10, 1994, 2123291
Int. Cl.[6] A61B 19/00
U.S. Cl. 128—869 **10 Claims**



1. A security cover apparatus for use in preventing a person lying on a bed from falling off said bed, said bed being of the type having a mattress mounted on a mattress support including two opposite longitudinal sides, said security cover apparatus comprising:
a pair of apertured hooking elements mounted to each said longitudinal sides of said mattress support;
a pair of flexible lines each having respective first and second ends provided with hooks; each said flexible line being removably extendable along one longitudinal side of said mattress support between said apertured hooking elements and secured in place by the passage of each said hook in one of said apertured hooking elements;
a security cover having opposite longitudinal sides and made of a sturdy material; said security cover including a plurality of securing loop elements mounted to each said longitudinal sides thereof; said securing loop elements being adapted to be slidably traversed by said flexible line; said security cover further including fastening loop elements mounted to said longitudinal sides thereof; said fastening loop elements being removably mountable to one of said (i) hook of said flexible line and (ii) said hooking elements whereby:
(a) said securing loop elements allow said cover to be releasably mounted to said mattress support to thereby form, with said mattress, an enclosed space around said person lying on said bed thereby preventing said person from falling off said bed; and
(b) said fastening loop elements prevent unintentional sliding of said securing loop elements on said flexible lines.

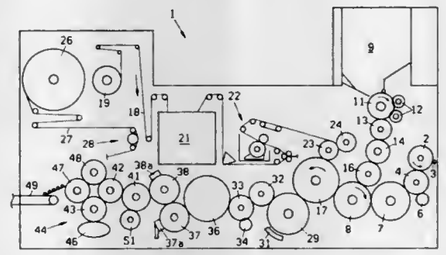
5,623,951
WRIST EXTENDING BOARD FOR CANNULATION OF A CATHETER AND/OR ARTERIAL BLOOD SAMPLING AND METHODS FOR USING SAME
Hiroshi Kamaya, 3710 E. Eastwood Dr., Salt Lake City, Utah 84109
Filed May 10, 1996, Ser. No. 643,312
Int. Cl.[6] A61F 5/37
U.S. Cl. 128—877 **20 Claims**

1. A wrist extending board for cannulation of a catheter and/or arterial blood sampling, the wrist extending board comprising:
a cannulation board having a first end, a second end and at least one angular bend disposed between said first end and said second end, said cannulation board including a longitudinal surface adapted to receive a supinated hand, wrist and forearm of a user;



said angular bend formed in said cannulation board providing means for hyperflexing the supinated wrist of the user;
a fixation member formed approximate the second end of said cannulation board, said cannulation board and said fixation member being formed of a rigid material having a substantially uniform thickness, the fixation member comprising an opening having an internal periphery being sufficient in dimension for introducing a portion of said supinated hand of said user; and
said fixation member providing means for removably restricting said hand, wrist and forearm of the user in said supinated position for cannulating said catheter and sampling said arterial blood.

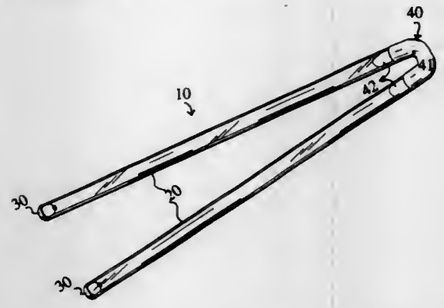
5,623,952
METHOD AND APPARATUS FOR MAKING FILTER CIGARETTES
Nikolaus Häusler, Wohltorf, Germany, assignor to Hauni Maschinenbau GmbH, Hamburg, Germany
Filed Jan. 22, 1996, Ser. No. 589,395
Claims priority, application Germany, Feb. 1, 1995, 195 03 123.7
Int. Cl.[6] A24C 5/60
U.S. Cl. 131—281 **27 Claims**



1. A method of making filter cigarettes wherein groups of plain cigarettes and filter rod sections are held in axial alignment by convoluted adhesive-carrying uniting bands, comprising the steps of conveying a series of successive groups along a first path; advancing a web of coherent uniting bands from a source along a second path; mechanically displacing selected portions of the web and at least partially removing by mechanical means at least some of the displaced portions from the web to thus provide the web with perforations determining the permeability of the web; subdividing the perforated web into discrete uniting bands; and convoluting the discrete uniting bands around the groups in said first path.

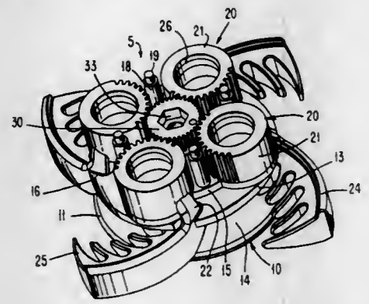
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5,623,953
HAIR STYLING TOOL AND METHOD
Edwin P. McDowell, 345 Coosa Dr., Cropwell, Ala. 35054
Filed Sep. 15, 1995, Ser. No. 529,031
Int. Cl.[6] A45D *7/00*
U.S. Cl. 132—210 **15 Claims**



1. A hair styling tool comprising a pair of elongated rods connected to each other at one end by a flexible coupling member, wherein said coupling member comprises a "V" shaped coupler having protruding ends attached to said elongated rods.

5,623,954
HAIR ANCHORING DEVICE
Adolfo Cefis, Milan, Italy, assignor to Arborea S.A.S. di Adolfo Cefis & C., Milan, Italy
Continuation of Ser. No. 230,751, Apr. 21, 1994, Pat. No. 5,511,567. This application Nov. 17, 1995, Ser. No. 558,239
Int. Cl.[6] A45D *8/30*
U.S. Cl. 132—279 **9 Claims**



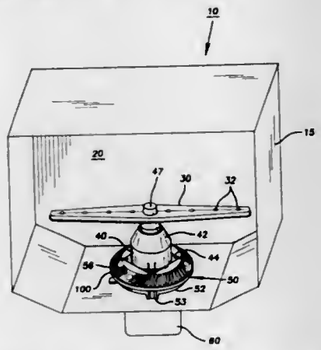
1. A device for removably anchoring an item to hair, comprising:
a miniature central receiving section locatable in an area containing hair;
a plurality of comb assemblies pivotally connected to the central receiving section and spaced symmetrically around the central receiving section, each comb assembly having a plurality of teeth and each assembly being pivotable in the same pivot direction, between an open position with the teeth spaced away from the central receiving section, and a closed position with the teeth moved radially inwardly into engagement with the central receiving section for trapping hair between the comb assemblies and the central receiving section; and
mounting means connected to the central receiving section for connecting an item to the central receiving section for anchoring the item to the hair;
the central receiving section including an annular groove there around, the teeth of the comb assemblies being shaped to be engageable into the annular groove when the comb assemblies are in their closed positions.

5,623,955
SHAVING EQUIPMENT
Miles A. B. Sewell, 47 Norfolk Road, Maidenhead, Berkshire, England
PCT No. PCT/GB93/00681, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/19638, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 1, 1993, Ser. No. 307,856
Claims priority, application United Kingdom, Apr. 1, 1992, 9207177
Int. Cl.[6] A45D *42/14*
U.S. Cl. 132—291 **14 Claims**



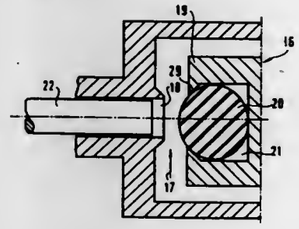
1. Shaving equipment, comprising:
a mirror;
a sucker disposed behind the mirror for releasably attaching the mirror to a wall;
means disposed in front of the mirror for releasably attaching a razor to the equipment; and
means operable to facilitate release of the sucker from the wall;
wherein the sucker and the razor attaching means are attached to the mirror at or adjacent the same location on the mirror; and
wherein the sucker has a projection which passes through a hole in the mirror and also forms at least part of the razor attaching means.

5,623,956
DISHWASHER STRAINING SYSTEM
Dan Kirkland, Winterville, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Sep. 8, 1995, Ser. No. 525,413
Int. Cl.[6] A47L *15/42*
U.S. Cl. 134—104.3 **18 Claims**



8. A washer for washing debris off of objects using fluid, said washer comprising:
a tub having a wash area for washing the objects;
a sump for collecting the fluid and the debris falling from the wash area, said sump being located at the bottom of the tub and having an outer rim;
a hub projecting from the sump;
a spray arm rotatably mounted to the hub, said spray arm having jets for projecting sprays of fluid into the wash area;
a pump for pumping the fluid from the sump up to the spray arm and thence into the wash area; and
a straining system comprising:
a first surface horizontally located above the sump, the first surface having resilient connectors projecting therefrom and including an outer perimeter and an inner opening to permit the hub to extend therethrough, the resilient connectors releasably securing the straining system to the hub; and
a second surface having an inner boundary joined to the outer perimeter of the first surface, the second surface extending outwardly from the inner boundary and terminating at an edge with a bottom that is contiguous with the outer rim of the sump, the second surface having a plurality of slots formed therein, the slots permitting the fluid to pass through the straining system and enter the sump, and the slots precluding a portion of the debris from passing through the straining system and entering the sump.

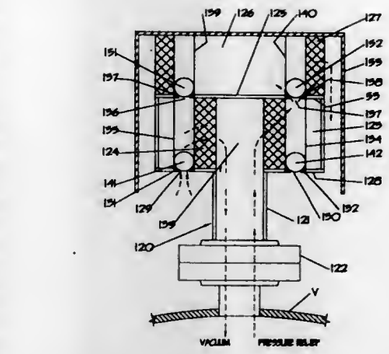
5,623,957
VALVE FOR CONTROLLING A GAS OR LIQUID FLOW
Anders Lekholm, Bromma, Sweden, assignor to Siemens-Elema AB, Solna, Sweden
Filed Jan. 27, 1995, Ser. No. 379,951
Claims priority, application Sweden, Feb. 4, 1994, 9400366
Int. Cl.[6] F16K *13/10;31/08*
U.S. Cl. 137—246 **13 Claims**



1. A valve for controlling a fluid flow comprising:
an inlet for a fluid flow, said fluid flow having a fluid flow pressure;
an outlet for said fluid flow;
a housing disposed between said inlet and said outlet;
a valve seat disposed in said housing between said inlet and outlet and a valve part movably disposed in said housing to press against said valve seat to block fluid flow and to move away from said valve seat to permit fluid flow;
a liquid which is insoluble in said fluid flow, said liquid having a surface tension; and
means for containing said liquid for causing said liquid to interact between said valve part and said valve seat when said valve part is against said valve seat for forming a seal, by giving said liquid a shape which, in combination with said surface tension, produces an internal pressure of said seal which is higher than said pressure of said fluid flow.

5,623,958
LOW PRESSURE RELIEF VALVE
Norman R. Bumpers, 2911 Country Club Dr., Pearland, Tex. 77581
Filed Feb. 22, 1995, Ser. No. 394,644
Int. Cl.[6] F16K *17/26;15/04*
U.S. Cl. 137—269 **15 Claims**

1. A low pressure relief valve comprising:

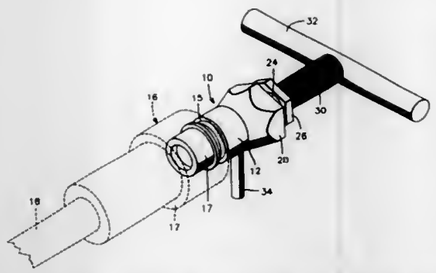


a valve body having a flow passage therethrough providing fluid communication between the interior and exterior of a vessel the interior of which is under a low positive or negative pressure;
first and second valve ports in said valve flow passage having corresponding valve seats therearound;
first and second closure members of preselected weights carried in said valve body and engageable with corresponding ones of said valve seats to block said fluid communication between said interior and said exterior of said vessel, said first closure member being responsive to an increased negative pressure within said vessel to disengage the valve seat of said first valve port, free of any other force than gravity, to permit fluid flow from the exterior of said vessel to the interior thereof to decrease said negative pressure, said second closure member being responsive to an increased positive pressure within said vessel to disengage the valve seat of said second valve port, free of any other force than gravity, to permit fluid flow from the interior of said vessel to the exterior thereof to decrease said positive pressure, said valve therefore maintaining said vessel at pressures between a preselected negative pressure and a preselected positive pressure; and
at least one other valve port and one other corresponding closure member carried in said valve body, all of said closure members being exposed to the pressure within said vessel through a common plenum, said other valve port and closure member cooperating with one of said first and second valve ports and closure members to provide additional fluid flow between the interior and exterior of said vessel upon a further increase in pressure, negative or positive, depending upon which of said first and second valve ports and closure members said other valve port and closure member cooperates with, said other closure member being of a weight greater than the weight of the first or second closure member with which it cooperates.

5,623,959
HYDRAULIC PRESSURE RELIEF TOOL
Kent G. Granmoe, Box 280, Glendive, Mont. 59330
Filed Jun. 7, 1995, Ser. No. 479,193
Int. Cl.[6] F16K *31/50;* **F16L** *37/32*
U.S. Cl. 137—322 **9 Claims**

1. A hydraulic pressure relief tool for relieving hydraulic pressure in a hose supplying hydraulic pressure to a pressure operated unit and having a valved quick coupler component thereon which retains residual hydraulic pressure in said hose when the quick coupler component on the hose is separated from another valved quick coupler component connected with a source of hydraulic pressure, said tool comprising a hollow body duplicative of the valved quick coupler component on the hose with the valve removed, said hollow body being coupled to the quick coupler component on the hose, a screw threaded member threadedly mounted in said hollow body with an inner end of the screw

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threaded member engaging the valve on the quick coupler component on the hose, a handle on said screw threaded member externally of the body to rotate the screw threaded member to move it longitudinally against the valve in the quick coupler component on the hose to move the valve in the quick coupler component on the hose to open position to relieve hydraulic pressure in the hose thereby enabling the quick coupler component on the hose to be connected to a quick coupler component connected to a source of hydraulic pressure without having to open the valve in the quick coupler component on the hose against residual hydraulic pressure in said hose, said body including a drain opening for discharge of hydraulic fluid released from the hose.

5,623,960

SOLENOID-OPERATED VALVE FOR THERMALLY INSULATED PIPING AND ATTACHMENT CONSTRUCTION THEREFOR

Hideki Kawamura, Hyogo-ken; Yoji Mori, and Minoru Ueta, both of Komaki, all of Japan, assignors to Teisan Kabushiki Kaisha, Japan, and L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, France

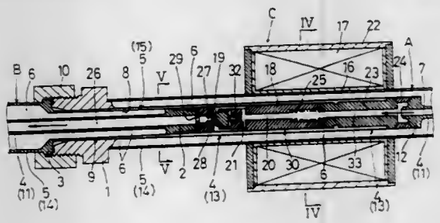
PCT No. PCT/JP93/01839, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/15127, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 17, 1993, Ser. No. 436,422

Claims priority, application Japan, Dec. 18, 1992, 4-337744

Int. Cl.[6] F16L *7/00;* **F16K** *49/00*

U.S. Cl. 137—375 **6 Claims**



1. A solenoid-operated valve for a thermally insulated piping, said valve comprising:

flow passages;

a heat-insulating layer surrounding said flow passages;

a solenoid coil disposed outside said heat-insulating layer;

a movable core disposed inside said heat-insulating layer to be reciprocated along a longitudinal direction of said flow passages in response to a magnetizing/demagnetizing action of said solenoid coil;

a valve member disposed inside said heat-insulating layer to open or shut said flow passage in response to said reciprocating movement of said movable core; and

a fixed core inside said heat-insulating layer, said fixed core constituting a magnetic circuit between said solenoid coil and said movable core.

5,623,961

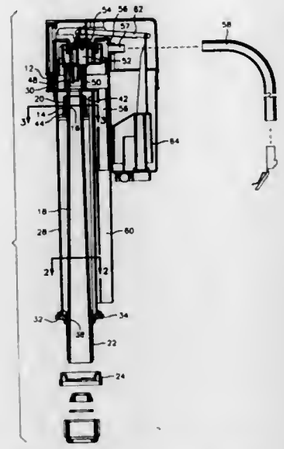
TOILET FLUSH TANK FILL VALVE ASSEMBLY

David Nichols-Roy, Escondido, Calif., assignor to Hunter Plumbing Products, San Marcos, Calif.

Filed Feb. 12, 1996, Ser. No. 599,777

Int. Cl.[6] F16K *31/26;51/00*

U.S. Cl. 137—377 **18 Claims**



1. A flush tank fill valve assembly, comprising:

an elongated tubular riser having a threaded upper end and a threaded lower end, said riser adapted to be mounted by said lower end in an opening in a bottom of a flush tank, and for connecting to a source of water;

a flush valve including a housing having a nipple defining a threaded inlet opening adapted to mount on said upper end of said riser; and

an elongated tubular sleeve adapted to detachably mount over said riser and having first means for extending between said sleeve and said riser for engagement and limiting rotation between said sleeve and said riser, and second means for extending between said sleeve and said riser for engagement and limiting rotation of said sleeve relative to said valve for preventing unthreading of said flush valve from said upper end of said riser.

5,623,962

PRESSURE RELIEF VALVE

Roger D. Danzy, Pineville, La., and George R. Holliday, Charlotte, N.C., assignors to Dresser Industries, Dallas, Tex.

Filed Nov. 3, 1995, Ser. No. 552,757

Int. Cl.[6] F16K *17/08*

U.S. Cl. 137—469 **19 Claims**

1. A pressure relief valve for connection in a line carrying a pressurized fluid, and for releasing a portion of said fluid when the fluid pressure in said line exceeds a set pressure, said valve comprising:

a body having an interior wall defining a passageway extending through said body, said body being correctable in-line between an upstream portion of said line and a downstream portion of said line and being configured such that substantially all of said pressurized fluid that flows from said upstream portion of said line to said downstream portion of said line flows through said passageway, said body further including a chamber having an inlet port and an outlet, said inlet port providing fluid communication between said chamber and said passageway;

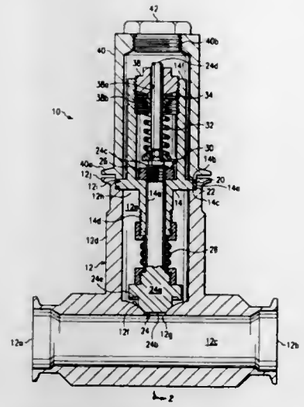
a spindle disposed in said chamber and including a disc formed on one end of said spindle, said spindle being slidable between a first position in which said disc is removed from said port and fluid communication is established between said chamber and said passageway, and a second position in which said disc seals said port to prevent fluid communication between said chamber and said passageway, and wherein, in said second position, the face of said disc exposed to said fluid in said passageway is recessed from said internal wall a distance no greater than one half the diameter of said passageway;

a guide removably secured to said body and defining a bore extending into said chamber for slidably receiving a portion of said spindle and guiding said spindle between said first and second positions, said guide further defining an open-ended portion into which said spindle extends away from said chamber;

a retention nut threadingly secured to a portion of said spindle extending from said bore;

a spring disposed in said open-ended portion of said guide and bearing on said spindle for biasing said spindle in said first position while said fluid pressure is less than said set pressure; and

an adjusting screw threadingly secured to said open-ended portion and bearing against said spring for adjusting the compression of said spring and for adjusting said set pressure.



5,623,963

MODULAR VALVE POSITION INDICATOR

Wallace F. Stommes, Fergus Falls; Ross S. Kunz, Callaway; Bryan A. Beckman, Wendell, and Christopher J. Kunz, Callaway, all of Minn., assignors to StoneL Corporation, Fergus Falls, Minn.

Filed Sep. 18, 1995, Ser. No. 529,693

Int. Cl.[6] E03B *7/07;* **F16K** *37/00*

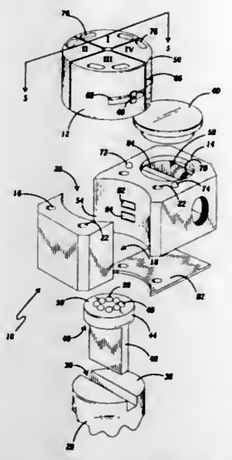
U.S. Cl. 137—554 **8 Claims**

1. A valve position indicator for attachment to a valve body, the valve body including a shaft projecting outwardly from a planar surface and rotatable between a first position when the valve is in a fluid blocking condition and a second position when the valve is in a fully open, fluid passing condition, the valve position indicator comprising:

(a) a visual indicator drum having an external cylindrical surface partitioned into four quadrants with the first and third quadrants of a first color and the second and fourth quadrants of a second color distinctive from the first color, said drum being secured to said shaft and rotatable therewith, said drum further haveing a plurality of radially spaced apertures formed through the cylindrical surface at predetermined locations;

(b) means for mounting a target member in each of the plurality of radially spaced apertures; and

(c) first and second window defining members attached to said planar surface of the valve body at locations diametrically opposite one another relative to the drum, each including a concave arcuate surface cooperating with the external cylindrical surface of the drum, the first and second window defining members partially surrounding the drum to expose to view the first color when the shaft is in its first position and to expose to view the second color when the shaft is in its second position.



5,623,964

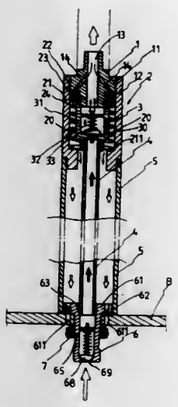
SAFETY GAS FILLING VALVE FOR VEHICLES

Shun-Ching Tsai, P.O. Box 82-144, Taipei, Taiwan

Filed Aug. 14, 1995, Ser. No. 514,908

Int. Cl.[6] F16K *24/00*

U.S. Cl. 137—588 **3 Claims**



1. A gas filling valve comprising:

an inner connector having a first threaded portion at a lower end and a second threaded portion at an intermediate portion which is larger than said first threaded portion in diameter, said inner connector being formed with a longitudinal through hole and two branch passages extending slopingly and downwardly through an inner wall of said hole to a lower side of said second portion;

a relief valve having a tubular casing having a smaller opening at a lower end thereby forming a shoulder at an inner wall thereof, a spring disposed on said shoulder, a washer arranged on said spring, and a rubber ring mounted on said washer, said

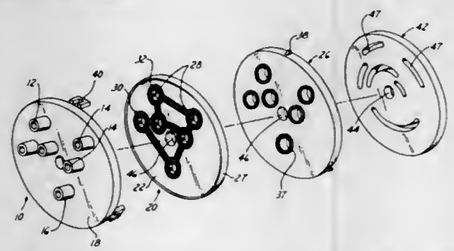
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tubular casing having an upper end threadedly engaged with said first threaded portion of said inner connector;
a check valve arranged within said tubular casing of said relief valve, said check valve including a tubular housing in which is fitted a spring-loaded valve element;
an inner tubular member having an upper end engaged with a lower end of said check valve;
an outer tubular member having an upper end engaged with a lower end of said tubular casing of said relief valve; and
an outer connector having a flange formed with a plurality of holes and external threads adapted to engage with a lower end of said outer tubular member, said outer connector having a longitudinal passage in which is fitted a spring-loaded valve element engageable with an orifice of said outer connector.

5,623,965
LOW EFFORT VACUUM VALVE ASSEMBLY WITH ROTARY ACTUATOR

Chris R. Snider, and Curtis A. Stapert, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 30, 1995, Ser. No. 550,323
Int. Cl.[6] F15B *13/07*
U.S. Cl. 137—896.2 **10 Claims**



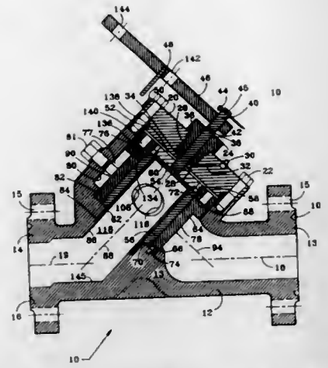
1. A vacuum valve assembly for selectively connecting a plurality of ports to a vacuum source comprising:
a stator having a source port for coupling to a vacuum source and a plurality of outlet ports;
a manifold for connecting the source port to a region adjacent each outlet port;
a valve plate of pliable material in contact with the stator and having integral movable poppets aligned with respective outlet ports and an integral movable poppet aligned with the source port for selectively isolating the manifold from the source port; and
an actuator for selectively controlling the position of each poppet so that the corresponding outlet port is either coupled to or isolated from the adjacent region, thereby selectively coupling the source port to each outlet port.

5,623,966
FLOW CONTROL CHOKE WITH SHUTOFF SEAL

John E. Rodger, San Antonio, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 10, 1995, Ser. No. 513,441
Int. Cl.[6] F16K *5/04*
U.S. Cl. 137—625.32 **30 Claims**

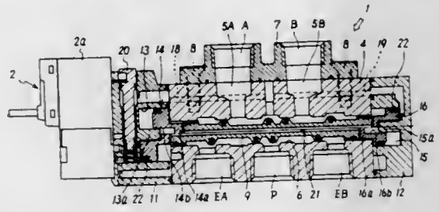
10. A choke for controlling the flow of fluid along a pressurized flow line, the choke comprising:
a body having a fluid inlet with an inlet axis, a fluid outlet with an outlet axis, the inlet axis being substantially aligned with the outlet axis, a cylindrical chamber within the body, and an inlet flow path to the cylindrical chamber having a flow path axis inclined relative to the inlet axis;
a stationary outer sleeve secured within the cylindrical chamber within the body, the stationary outer sleeve having a sleeve axis and radially opposing first and second sleeve flowthrough ports therethrough each in fluid communication with the fluid inlet, each of the first and second sleeve flow ports being spaced circumferentially approximately 90° from the flow path axis such that fluid from the fluid inlet impinges the stationary sleeve upon entering the cylindrical chamber and is diverted to the circumferentially spaced first and second sleeve flowthrough ports;
a rotary inner sleeve rotatably mounted within the stationary outer sleeve and rotatable about the sleeve axis, the rotary inner sleeve including radially opposing third and fourth sleeve flow ports therein, the rotary sleeve having an upper closed end an a lower open end in fluid communication with the fluid outlet;
a valve bonnet removably affixed to the valve body at a location spaced from both the fluid inlet and the fluid outlet for facilitating removal of the stationary outer and the rotary inner sleeve from the body;
a seal circumferentially surrounding each sleeve flow port in one of the stationary sleeve and rotary sleeve for sealing between the stationary outer sleeve and the rotary inner sleeve when the choke is in a closed position; and
a stem for controlling rotation of the rotary sleeve to selectively adjust the circumferential position of both the first port with respect to the third port and the second port with respect to the fourth port and thereby control the flow of fluid through the choke.



5,623,967
PILOT SWITCH VALVE

Bunya Hayashi, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 509,458
Claims priority, application Japan, Sep. 13, 1994, 6-244825
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—625.64 **2 Claims**



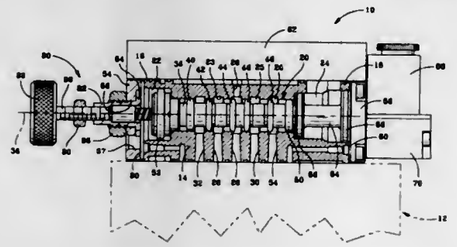
1. A pilot switch valve, comprising:
a valve body having a valve port formed therein;
a main valve segment having a valve member slidably fitted in the valve port,
a first piston chamber formed at an end of the valve port, and

a first piston slidably fitted in the piston chamber and positioned so as to be separate from said valve member, the first piston being moveable by a pilot fluid source switching the operation of the valve member and a pilot valve segment respectively supplying and discharging the pilot fluid to and from the main valve segment,
the first piston chamber having a columnar projection extending integrally from a wall portion of said piston chamber and along the axis thereof, the first piston having a long recess in which the projection is slidably fitted, and the projection and recess, in combination, guiding reciprocation of the first piston wherein the piston comprises a columnar pressing tip which is fitted in the valve port and the recess extends to an inside portion of the columnar pressing tip.

5,623,968
VALVE ASSEMBLY WITH MANUALLY ACTUATED VALVE OVERRIDE

Darin J. Thorp, Montpelier, Ohio, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 18, 1995, Ser. No. 573,623
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—625.66 **10 Claims**

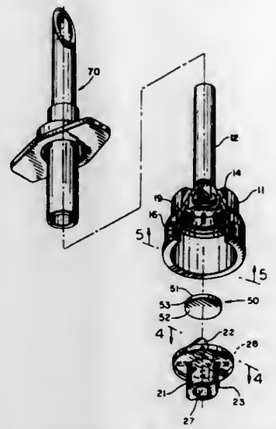


1. A valve assembly for controlling the flow of gas to a pneumatic machine, the valve assembly comprising:
a) a valve body having a first end, a second end, a bore extending through the ends and a plurality of flow ports formed therein, said plurality of flow ports including at least one fluid inlet port;
b) a valve spool having a first valve spool end and a second valve spool end, said valve spool being movable through the bore along an axis to control the flow of gas through the valve, to selectively open and seal the ports;
c) means for moving the valve spool in a first direction a distance along the axis towards the first end of the valve body, said means for moving the valve spool being movable in response to the flow of gas through the at least one inlet port, said means also including a first contact portion adapted to engage the second valve spool end to move the valve spool the required distance along the axis; and
d) manually actuated means for overriding the means for moving the valve spool towards the first end of the valve body, said manually actuated means including a contact member having a contact end adapted to engage the first valve spool end when the valve spool has moved the required distance along the axis, wherein said contact member biases the valve spool member in a second direction upon engagement with the first valve spool member end.

5,623,969
NORMALLY CLOSED ASPIRATION VALVE

Kenneth C. Raines, Bethlehem, Pa., assignor to B. Braun Medical Inc., Allentown, Pa.

Filed Jun. 7, 1995, Ser. No. 479,332
Int. Cl.[6] F16K *15/14*
U.S. Cl. 137—854 **17 Claims**

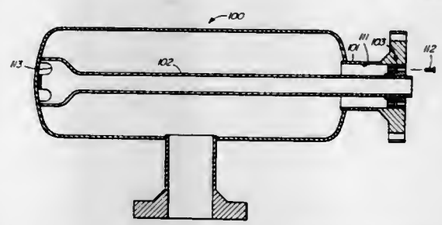


1. A normally closed aspiration valve device comprising:
a first body element having a first passageway therethrough and a shoulder disposed in an inner wall thereof;
a second body element having a second passageway therethrough, a support member and a means for syringe attachment, said second body element attached to said first body element; and
a flexible valve disc having a top surface, said disc mounted between said first and second body elements with said disc partially flexed, said first and second body elements and said disc forming a one-way valve, wherein said top surface of sale disc forms an annular seal with said shoulder preventing flow of a fluid between said first and second passageways, and wherein a fluid pressure drop in said second passageway increases the relative pressure in said first passageway such that said disc is further flexed away from said shoulder and allows fluid from said first passageway into said second passageway.

5,623,970
FIELD INSTALLABLE CHOKE TUBE

David N. Schuh, Calgary, Canada, assignor to Beta Machinery Analysis Ltd., Calgary, Canada

Continuation-in-part of Ser. No. 835,342, Feb. 14, 1992, Pat. No. 5,460,205. This application Oct. 24, 1995, Ser. No. 547,528
Int. Cl.[6] F16L *55/04*
U.S. Cl. 138—40 **12 Claims**

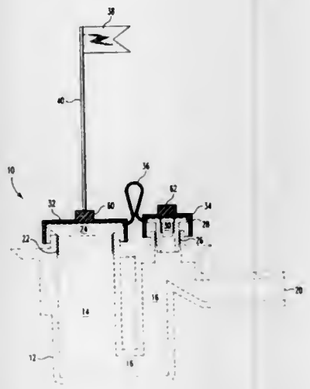


5. Choke tube apparatus for a pulsation dampener comprising a choke tube operably inserted into said pulsation dampener, said

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pulsation dampener having a nozzle, a first wedge member operably connected to said choke tube, a second wedge member being stationary relative to said pulsation dampener and a connector extending between said first and second wedge members, said connector being adjustable to increase or decrease the distance between said first and second wedge members.

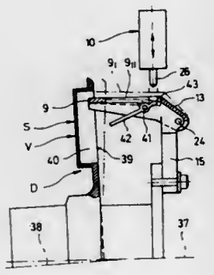
5,623,971
DRAIN AND CLEANOUT SPACER
William E. Foernzler, 306 Grovewood Dr., Beech Grove, Ind. 46107
Filed Sep. 12, 1995, Ser. No. 527,338
Int. Cl.[6] F16L *55/00*; E04B *1/00*
U.S. Cl. 138—89 4 Claims



1. A drain and cleanout spacer, comprising:
a first spacer having a round first top section and a hollow cylindrical first rim section coupled circumferentially to the first top section, wherein the first top section and the first rim section together form a first cylindrical space;
a second spacer having a round second top section and a hollow cylindrical second rim section coupled circumferentially to the second top section, wherein the second top section and the second rim section together form a second cylindrical space; and
a flexible web coupling the first and second spacers: and maintaining proper placement of the spacers on a drain and a cleanout port, respectively, during the pouring of concrete wherein the first and second spacers are formed from a frangible material and;
wherein the first and second spacers are adapted to be removed from said drain and said cleanout port, respectively, after concrete has cured around them, by breaking them into pieces.

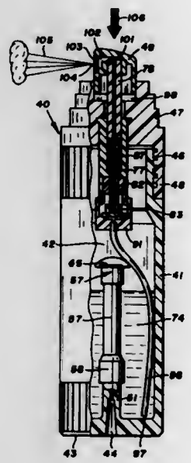
5,623,972
Patent Not Issued For This Number

5,623,973
WEFT-THREAD MEASURING FEEDER HAVING A CIRCUMFERENCE ADJUSTING SPREADING BODY
Paer Josefsson, Borås, Sweden, assignor to Iro AB, Ulricehamn, Sweden
PCT No. PCT/EP93/03348, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/12710, PCT Pub. Date Jun. 9, 1995
PCT Filed Nov. 29, 1993, Ser. No. 454,259
Claims priority, application Germany, Dec. 3, 1992, 42 40 709.5
Int. Cl.[6] D03D *47/36*
U.S. Cl. 139—452 19 Claims



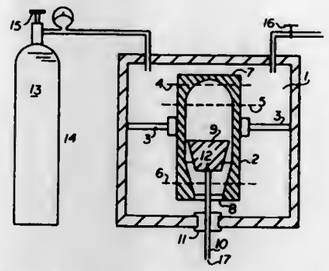
1. In a weft-thread measuring feeder comprising a storage drum for receiving tangentially wound turns of a thread about the drum circumference and from which windings of said thread can be withdrawn over an end of said storage drum in successive sections of a predetermined thread length, said storage drum having a plurality of radially adjustable segments for varying a circumferential length of said drum circumference, and a stop device associated with said storage drum and comprising a stop element for dimensioning the thread length, comprising the improvement wherein said storage drum includes a spreading body which is positioned radially inwardly of said windings of said thread to define a fraction of the drum circumference, said spreading body being elongated approximately in parallel with the drum axis and being temporarily radially extendable relative to said radially adjustable segments from a retracted passive position into a spreading position which projects radially outwardly beyond a circumferentially adjacent portion of the drum circumference defined by said radially adjustable segments to increase said circumferential length, said storage drum having therein a triggerable extension-type power accumulator for extending said spreading body to said spreading position.

5,623,974
SPRAY PRODUCT AND PUMP TO SUPPLY AIR UNDER PRESSURE TO THE DISPENSER
Christopher D. Losenno, and Gino L. Losenno, both of 5733 Beard Ave. S., Edina, Minn. 55410
Filed Oct. 24, 1994, Ser. No. 327,705
Int. Cl.[6] B65B *1/04;3/04;31/00*; B67C *3/00*
U.S. Cl. 141—20 35 Claims



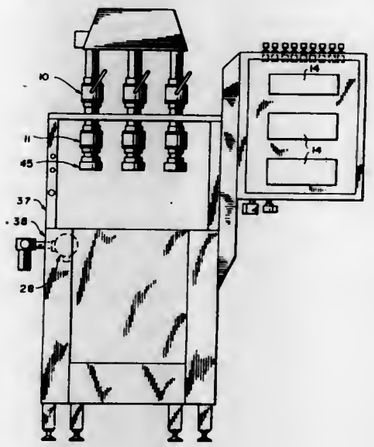
35. An apparatus for dispensing a spray product to a selected location comprising: a container having a chamber for storing a pressurized spray product, valve assembly mounted on the container operable to be moved to a first position to spray the product to a selected location and a second position to prevent the dispensing of the product, actuator means connected to the valve assembly, used by a person to move the valve assembly to the first position, and nozzle means mounted on the actuator means to direct spray product to a selected location, said actuator means having a passage for carrying spray product from the valve assembly to the nozzle means when the valve assembly has been moved to the first position, the nozzle means includes a head having a wall and at least one orifice in said wall open to the passage in the actuator means whereby when the valve assembly has been moved to the first position, the spray product is discharged through said at least one orifice to a selected location, the valve assembly has a sleeve and a tubular member slideably mounted in said sleeve, said actuator being mounted on the tubular member, said tubular member having a passage for carrying the spray product from the container chamber to the actuator means, seal means for controlling the flow of spray product into the passage, said sleeve and tubular member having portions separated from each other producing an annular space isolated from the spray product in the valve assembly, biasing means located in the annular space for biasing the valve assembly to the second position, said biasing means being isolated from the spray product which flows through the passage of the tubular means.

5,623,975
GAS CAPSULE FILLING AND SEALING PROCESS
Anton K. Simson, 13227 Aubrey St., Poway, Calif. 92064
Filed Jan. 30, 1995, Ser. No. 380,691
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—51 11 Claims



1. A method for packaging a volume of pressurized fluid which comprises the steps of:
selecting a vessel having substantially circular internal cross-sections and a single aperture smaller than the largest of said cross-sections, said vessel containing a plug made of elastomeric material and having substantially circular external cross-sections, at least one of said plug cross-sections being larger than said aperture and smaller than said vessel largest cross-section;
exposing said aperture to a source of said pressurized fluid by placing said vessel in a chamber and filling said chamber with said pressurized fluid while holding said plug spaced apart from said aperture;
placing said plug in closing contact with said aperture; and
removing said source of pressurized fluid from said aperture.

5,623,976
METHOD AND APPARATUS FOR SUPPLYING CONTAINERS
Dominic Muscara, Iselin, N.J., assignor to Benjamin Moore & Co., Montvale, N.J.
Continuation-in-part of Ser. No. 512,626, Aug. 8, 1995, Pat. No. 5,570,731, which is a division of Ser. No. 185,030, Jan. 24, 1994, Pat. No. 5,464,047. This application Jan. 26, 1996, Ser. No. 592,491
Int. Cl.[6] B65B *3/28*
U.S. Cl. 141—83 9 Claims



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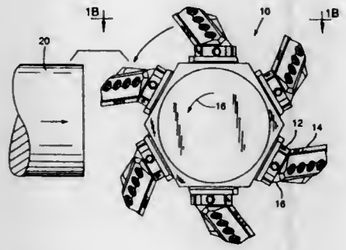
1. A method of supplying a substance into a container comprising in combination: introducing into the container a substance, weighing with a scale the amount of substance introduced into the container, stopping the flow of substance into the container when the scale indicates a first predetermined weight equal to a percentage of a target weight, measuring the weight of the substance in the container after the flow has been stopped to arrive at a first actual weight, comparing said first actual weight with said predetermined weight to determine the difference and a correction factor equal to said difference, resuming the flow of substance into the container and stopping the flow when the scale reaches a second predetermined weight equal to the target weight minus the correction factor, measuring the weight of the substance in the container after the flow has been stopped the second time to arrive at a second actual weight and comparing said second actual weight with the second predetermined weight to determine a second correction factor to be used in a next supply cycle.

5,623,977

CHIPPER BLADE FOR CHIPPER HAVING RADIUSED CUTTING EDGE

James R. Sparks, Yamhill, Oreg., assignor to U.S. Natural Resources, Inc., Vancouver, Wash.

Filed Dec. 11, 1995, Ser. No. 596,385
Int. Cl.[6] B27G *13/04*
U.S. Cl. 144—220 **3 Claims**



1. An open face chipper for chipping an open face in a log comprising:

a plurality of finishing blade edges mounted on the chipper for cutting along the plane of the desired open face in a log, said blade edges mounted for sequential cutting with succeeding blade edges overlapping the path of cut of the preceding blade edge in part and extending the path of the cut along the desired face in part;

said blade edges maintained on the chipper with the blade edges extended in parallel relation and positioned within an established tolerance distance on each side of a common plane, said blade edges are convexly curved as presented to the desired open face in the log, said overlapping blade edges and convex curve of the cutting edges cooperatively arranged for producing substantially intersecting cuts of each succeeding blade as maintained within the established tolerance.

5,623,978

STUMP CUTTING DOUBLE CLAW TOOTH STRUCTURE

Lyle Clemenson, 100 N. 74th Way, Brooklyn Park, Minn. 55444

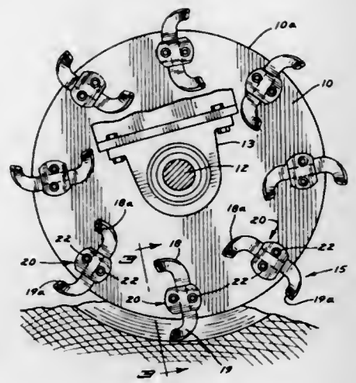
Filed Jul. 29, 1996, Ser. No. 688,692
Int. Cl.[6] B27C *1/00;* **A01G** *23/06*
U.S. Cl. 144—235 **7 Claims**

1. A double claw stump cutting tooth structure, comprising

a cutting tooth having a shank,

a cutting head at each end of said shank,

said cutting heads respectively being angled transversely of said shank to diverge laterally and being twisted outwardly to provide cutting faces at an obtuse angle to their respective cutting planes for a simultaneous slicing engagement with a stump in its cutting action.

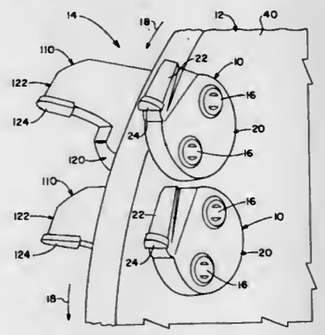


5,623,979

CUTTING TOOTH

John M. Bowling, 9376 Lincoln Way East, Orrville, Ohio 44667

Continuation of Ser. No. 306,571, Sep. 15, 1994, Pat. No. 5,497,815. This application Feb. 27, 1996, Ser. No. 607,826
Int. Cl.[6] B27G *13/04*
U.S. Cl. 144—241 **18 Claims**



1. A one-piece cutting tooth for direct connection to a cutting wheel of a stump cutting apparatus, said cutting tooth comprising:

a mounting base including at least one substantially flat surface for contacting said cutting wheel, said mounting base having at least one bore formed therethrough to receive a fastener for connecting said cutting tooth to said cutting wheel;

a head portion integral with said mounting base; and

a cutting tip fixedly attached to said head portion;

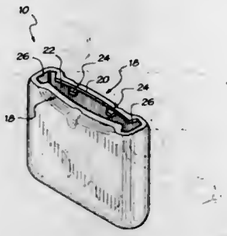
wherein said mounting base and said head portion are made of a one-piece metallic construction.

5,623,980

HOLDER FOR RECEIVING AND RETAINING SMALL ARTICLES

Walter C. McMahon, Akron, Ohio, assignor to Quikey Manufacturing Company, Inc.

Filed Jul. 7, 1995, Ser. No. 499,572
Int. Cl.[6] A45C *1/02;11/32;* **A63B** *57/00;* **B65D** *33/24*
U.S. Cl. 150—150 **11 Claims**



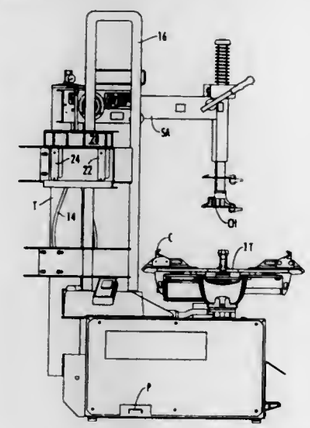
1. A holder for receiving and retaining small objects comprising two substantially pliable planar sheets, said sheets being seamlessly joined to each other along a majority of their perimeters and separated along a minority of their perimeters to form a pocket between said sheets having a deformable linear aperture defined by said separated perimeters, said holder further comprising a plurality of protruding members interiorly positioned below said aperture and spaced apart alternately along opposite lower edges adjacent to said aperture, and a notch at each end of and contiguous with said aperture such that upon application of inwardly directed pressure on the upper perimeter of said holder at the ends of said aperture, said holder is deformed and said aperture opens to provide access to said pocket for receiving or releasing said objects.

5,623,981

SAFETY BARRIER FOR RIM HOLDING TIRE CHANGERS

Charles L. Cunningham, Nashville; Robert E. Gwaltney, Brentwood, and Ronald D. Hone, Fairview, all of Tenn., assignors to Service Station Products Company, Lavergne, Tenn.

Filed Aug. 17, 1995, Ser. No. 516,129
Int. Cl.[6] B60C *25/00*
U.S. Cl. 157—1 **9 Claims**



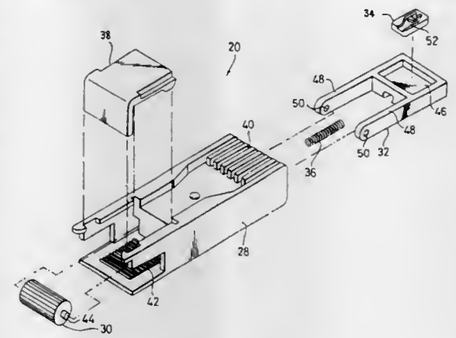
1. A safety device for a tire changer including a table on which a rim can be mounted and clamped into place while a tire is mounted on the rim, said tire changer including an air pressure source and means for controlling the flow of air pressure from said air pressure source to a chamber created between a tire and the contour of a rim mounted on said table, the safety device including barrier means for protecting an operator from explosion of a tire, an actuating station including said air pressure flow controlling means, and means for mounting said barrier means relative to said tire changer between said actuating station and said table.

5,623,982

PULL CORD STOPPER DEVICE FOR USE IN A BLIND APPARATUS

Fumiko Okazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Nichibei, Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 353,117
Int. Cl.[6] E06B *9/324*
U.S. Cl. 160—178.2 **5 Claims**



1. A pull cord stopper device for use in a blind apparatus including:

a head box;

a screen, a top of which is connected to the head box;

a plurality of pull cords, where a first end of each pull cord is connected to a bottom end of the screen, and a second end of each pull cord is inserted into a first opening of the head box and removed from a second opening of the head box; and

a pull cord stopper device capable of restraining movement of the pull cords;

said pull cord stopper device comprising:

a stopper case, a pinch roller, a slidable block, a switch member and a pressure member;

said stopper case comprising:

a separation portion for separating the pull cords

a knurled portion for guiding movement of the pinch roller; and

a pin which is received by a guide groove formed on the switch member for guiding the switch member;

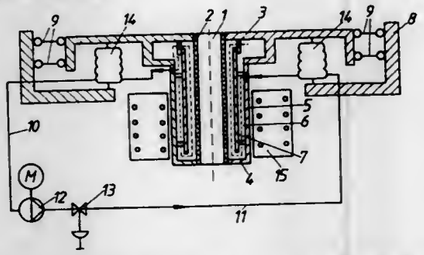
whereby said slidable block rotatably supports the pinch roller and is operative to move in a direction of movement of the pull cords by means of rotation of the pinch roller;

said slidable block supports the switch member which is movable with the pull cords in their direction of movement, and movable in a direction transverse to the movement of the pull cords; and

said pressure member is operative to pinch the pull cords between the pinch roller and the pressure member.

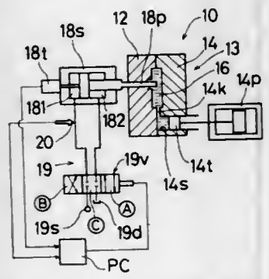
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5,623,983
CONTINUOUS CASTING MOLD
Heinrich Thöne, Losenstein, and Franz Wimmer, Riedau, both of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria
Filed Dec. 18, 1995, Ser. No. 574,392
Claims priority, application Austria, Dec. 21, 1994, 2380/94
Int. Cl.[6] B22D *11/04;11/16*
U.S. Cl. 164—416 9 Claims



1. In a continuous casting mold arrangement of the type including a continuous casting mold having side walls with a coolant flowing through said side walls, a hydraulically operated oscillation means, a stationary supporting structure and a guiding means constructed to support said continuous casting mold relative to said stationary supporting structure, the improvement wherein said oscillation means comprises a pulsator constructed to impart a pulsating pressure course to said coolant and a supporting means provided between said continuous casting mold and said stationary supporting structure, said supporting means being constructed to resiliently act in accordance with said pulsating pressure course imparted to said coolant and to absorb oscillation forces.

5,623,984
METHOD OF CONTROLLING PRESSURIZING PIN AND CASTING APPARATUS WITH PRESSURIZING PIN CONTROLLER
Mikiya Nozaki, Toyota; Mitsuhiro Karaki, Okazaki; Mitsuru Inui, Gifu-ken; Takehito Futamura, and Akira Saitoh, both of Gifu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Gifu Seiki Kogyo Kabushiki Kaisha, Tokyo, both of Japan
Filed Jun. 23, 1995, Ser. No. 494,260
Claims priority, application Japan, Jun. 29, 1994, 6-148017
Int. Cl.[6] B22D *27/11*
U.S. Cl. 164—457 7 Claims

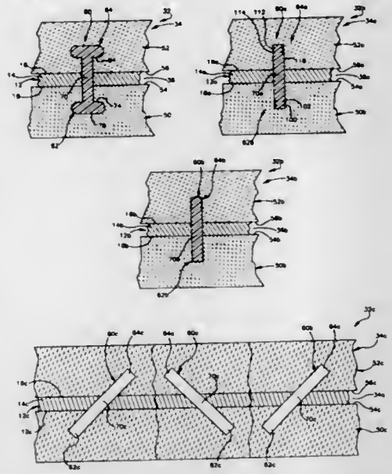


1. A method of controlling a pressurizing pin introduced into a die cavity during solidification of molten metal charged in the die cavity for replenishing a locality where molten metal is being solidified, the method comprising:

a first step of repeatedly detecting a physical quantity which is a function of a volume of non-solidified metal in the die cavity; and

a second step of advancing the pressurizing pin into the cavity when the physical quantity repeatedly detected in said first step reaches a value corresponding to a predetermined volume.

5,623,985
APPARATUS AND METHOD FOR MOLDING AN ARTICLE
Harold L. Wheaton, Bowerston, and Lawrence D. Graham, Chagrin Falls, both of Ohio, assignors to PCC Airfoils, Inc., Cleveland, Ohio
Filed Mar. 13, 1996, Ser. No. 614,533
Int. Cl.[6] B22D *27/04;* B22C *9/04*
U.S. Cl. 164—516 23 Claims

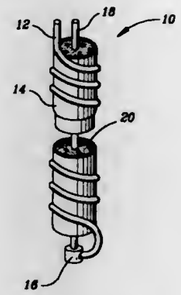


1. An apparatus for use in casting a metal article, said apparatus comprising a ceramic mold structure having first and second sections with a mold cavity which receives molten metal disposed between the first and second sections of said mold structure, and a pin having a first end portion disposed in the first section of said mold structure, a second end portion disposed in the second section of said mold structure, and a third portion which is disposed in the mold cavity and is disposed between the first and second end portions of said pin, first interlock means for interconnecting the first end portion of said pin and the first section of said mold structure, said first interlock means including a first surface disposed on the first end portion of said pin and facing toward the mold cavity, said first surface of said first interlock means being disposed in engagement with material of the first section of said mold structure, and second interlock means for interconnecting the second end portion of said pin and the second section of said mold structure, said second interlock means including a second surface disposed on the second end portion of the pin and facing toward the mold cavity, said second surface of said second interlock means being disposed in engagement with material of the second section of said mold structure.

17. A method of casting a metal article, said method comprising the steps of providing a pattern having a plurality of pins extending through the pattern with first end portions of the pins projecting from a first side of the pattern and second end portions of the pins projecting from a second side of the pattern, covering the pattern and the first and second end portions of the pins with wet ceramic material, drying the wet ceramic material to at least partially form a mold structure having a first section in which the first end portions of the pins are embedded and a second section in which the second end portions of the pins are embedded, removing the pattern from the mold structure to leave a mold cavity with the pins extending through the mold cavity between the first and second

sections of the mold structure, conducting molten metal into the mold cavity, urging the first and second sections of the mold structure away from each other under the influence of force applied against the first and second sections of the mold structure by the molten metal in the mold cavity, and retaining the first and second sections of the mold structure against movement relative to each other by transmitting force from the first end portions of the pins to the first section of the mold structure opposing movement of the first section of the mold structure away from the second section of the mold structure and by transmitting force from the second end portions of the pins to the second section of the mold structure opposing movement of the second section of the mold structure away from the first section of the mold structure, said step of transmitting force from the first end portions of the pins to the first section of the mold structure includes pressing surfaces disposed on the first end portions of the pins and facing toward the mold cavity against ceramic material in the first section of the mold structure and said step of transmitting force from the second end portions of the pins to the second section of the mold structure includes pressing surfaces disposed on the second end portions of the pins and facing toward the mold cavity against ceramic material in the second section of the mold structure.

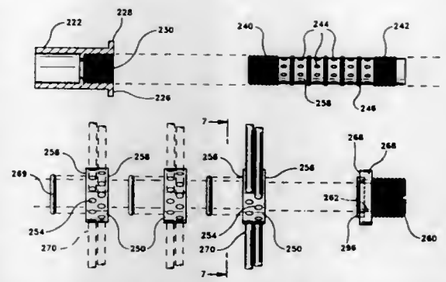
5,623,986
ADVANCED IN-GROUND/IN-WATER HEAT EXCHANGE UNIT
B. Ryland Wiggs, 425 Sims La., Franklin, Tenn. 37064
Filed Sep. 19, 1995, Ser. No. 530,053
Int. Cl.[6] F28D *21/00*
U.S. Cl. 165—45 30 Claims



1. A geothermal heat exchange unit comprising a hollow sleeve having inner and outer walls about central axis, a helical winding of thermally conductive tubing around the outer wall and a return length of said thermally conductive tubing along the central axis of the sleeve separated from the inner wall of the sleeve by thermally insulating material.

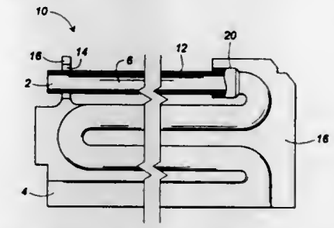
5,623,987
MODULAR MANIFOLD GAS DELIVERY SYSTEM
P. Mark Golben, Florida, N.Y., and John E. Fox, Sparta, N.J., assignors to Ergenics, Inc., Ringwood, N.J.
Division of Ser. No. 925,591, Aug. 4, 1992, Pat. No. 5,450,721.
This application Jun. 5, 1995, Ser. No. 464,297
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.12 12 Claims

1. A modular heat exchanger comprising: tubular manifold means for the distribution of gas through a plurality of aperatures in the manifold, one or more ring elements adapted to fit over said manifold, said ring elements having a plurality of appertures extending from the inner to the outer surface thereof, tubular means containing a metal hydride alloy having a first and second end each of which is inserted through appertures in the same ring element in a gas-tight sealed relationship with said ring element,



means for mounting said ring elements on said manifold, and means for sealing said ring elements against passage of gas except between said tubular means and the manifold interior.

5,623,988
POLYMERIC HEAT EXCHANGER WITH CERAMIC MATERIAL INSERT
John E. Holowczak, South Windsor, Conn., and Walter J. Fallows, Windsor, Mass., assignors to Gas Research Institute, Chicago, Ill.
Filed Sep. 25, 1995, Ser. No. 533,107
Int. Cl.[6] F28F *19/00*
U.S. Cl. 165—134.1 25 Claims



1. A heat exchanger for use in a gas-fired hot air furnace, comprising:

a ceramic pipe having a first end forming an inlet to the heat exchanger and a second end opposite the first end, said ceramic pipe forming an initial portion of a fluid flow path through said heat exchanger; and

a polymer-based structure connected to said second end of said ceramic pipe and forming a remaining portion of said fluid flow path through said heat exchanger;

wherein said ceramic pipe has a length limited to that which is sufficient to cool a fluid flowing through said ceramic pipe from a first temperature at said fast end of said ceramic pipe of approximately 300°–400° F. to a second temperature at said second end of said ceramic pipe through a transfer of heat to a second fluid, said second temperature being lower than a softening temperature of said polymer-based structure.

14. A method of forming a heat exchanger, comprising the steps of:

forming a ceramic pipe to have a certain length and to define an initial portion of a fluid flow path through said heat exchanger;

forming a polymer-based structure to define a remaining portion of said fluid flow path through said heat exchanger; and

attaching said polymer-based structure to one end of said ceramic pipe with an opposite end of said ceramic pipe being an inlet to said heat exchanger;

wherein said step of forming said ceramic pipe comprises the step of forming said ceramic pipe to have a length limited to that which is effective to cool a fluid flowing through said ceramic pipe from a first temperature at said opposite end of

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said ceramic pipe of approximately 300°–450° F. to a second temperature at said one end of said ceramic pipe through a transfer of heat to a second fluid, said second temperature being lower than a softening temperature of said polymer-based structure;

said method further comprising a step of placing an insulating material between said opposite end of said ceramic pipe and said polymer-based structure.

5,623,989

FINNED TUBE HEAT EXCHANGER

Detlev G. Kröger, Stellenbosch, South Africa, assignor to GEA Luftkühler GmbH, Bochum, Germany

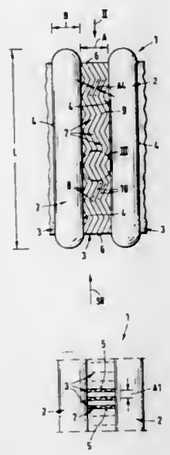
PCT No. PCT/DE95/00239, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/23949, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 23, 1995, Ser. No. 535,191

Claims priority, application Germany, Mar. 3, 1994, 44 06 966.9; Feb. 4, 1995, 195 03 766.9

Int. Cl.[6] **F28F** *1/20*

U.S. Cl. 165—152 **16 Claims**



1. A finned tube heat exchanger, particularly for the condensation of exhaust steams of large turbine plants by means of cooling air, the finned tube heat exchanger comprising heat exchanger tubes with a plurality of parallel fins between pairs of the heat exchanger tubes, each fin having an oblong cross section in a flow direction of the cooling air, the cross section of each fin having a length and a width, wherein the length of the cross section is a multiple greater than the width thereof, the fins extending parallel to the flow direction of the cooling air and perpendicularly to axes of the heat exchanger tubes, further comprising flow conduction devices comprising air conduction grooves formed on at least one side surface of the fins, wherein the air conduction grooves extend in a zig-zag-shaped configuration parallel next to each other, and wherein the air conduction grooves extend continuously along the flow direction of the cooling air and are open at ends of the fins.

5,623,990

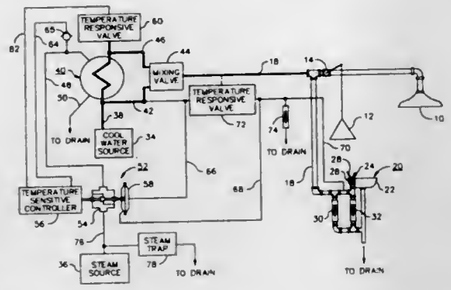
TEMPERATURE-CONTROLLED WATER DELIVERY SYSTEM

Fred L. Pirkle, Abington, Pa., assignor to Texan Corporation, Horsham, Pa.

Filed Nov. 3, 1995, Ser. No. 552,792

Int. Cl.[6] **B60H** *1/00*; **G05D** *23/00*

U.S. Cl. 165—298 **22 Claims**



1. Apparatus for delivering water at a controlled temperature comprising:

a heat exchanger having a water path, a steam path separate from the water path, and means for transferring heat from the steam path to the water path, each said path having an inlet and an outlet;

means for feeding cool water from a water supply to the inlet of the water path of the heat exchanger;

means for feeding steam to the inlet of the steam path of the heat exchanger;

means providing a by-pass path for the flow of water from the outlet of the water path of the heat exchanger to the inlet of the steam path of the heat exchanger; and

temperature-responsive valve means, in the by-pass path, for causing an increase in the rate of flow of water through said by-pass path from the outlet of the water path of the heat exchanger to the inlet of the steam path of the heat exchanger when the temperature of the water at the outlet of the water path of the heat exchanger exceeds a predetermined limit temperature;

whereby the operation of the heat exchanger is rapidly spoiled when the temperature of the water at the outlet of the water path of the heat exchanger exceeds said predetermined limit temperature.

5,623,991

TUBING TIGHTENER

William Jani, Calgary, Canada, assignor to Northwest Tech Group Inc., Calgary, Canada

Filed Dec. 6, 1995, Ser. No. 568,199

Int. Cl.[6] **E21B** *23/00*

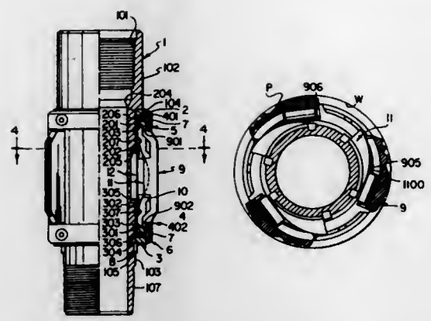
U.S. Cl. 166—216 **18 Claims**

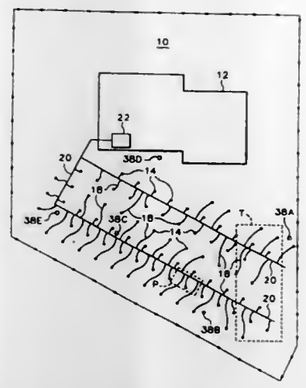
1. A tubing tightener adapted for insertion in a wellbore together with a tubing string, said tightener comprising:

a mandrel adapted for connection to at least an upper section of tubing in the tubing string by attachment of the mandrel to a lower end of said section, to secure the mandrel for axial and rotational movement with the tubing string and enable the tightener to be rotated between an unlocked and a locked position by manipulation of the tubing string;

a support member mounted upon the mandrel and freely rotatable thereabout, and means for restraining the support member from axial movement upon the mandrel;

a plurality of drag slips mounted upon the support member and spaced peripherally thereabout, the drag slips each having an outer surface comprising a slip surface region and a drag surface region which are selectively engageable with the wellbore and, located intermediate said regions, a region of





contact between the drag slip surface and the wellbore in both the locked and unlocked conditions of the tightener;

means biasing the slip surface regions inwardly towards the mandrel and the drag surface regions outwardly towards the wellbore with sufficient force that, in the unlocked position of the tightener, the drag surface regions frictionally engage the wellbore and restrain relative rotational movement between the drag slips and the wellbore whilst still permitting axial movement of the tubing string; and

a plurality of booster subs supported by and rotatable with the mandrel, each said booster sub having side edges extending axially of the mandrel and a wedge profile in cross-section from one side edge to the opposite side edge forming an outwardly facing ramped surface adapted for selective engagement with a first rear surface region of the drag slip behind the slip surface region upon rotation of said mandrel;

each booster sub being rotatable with the mandrel upon rotation thereof from the unlocked position of the tightener to its locked position whereupon said ramped surface is moved into engagement with said first rear surface region of the drag slip and progressively forces said first rear surface region outwardly to cause the drag slip to rock about the region of contact between the drag slip surface and the wellbore to retract the drag surface region and advance the slip surface region until the slip surface region engages the wellbore with sufficient force to prevent relative movement between the drag slip and the wellbore; and

each booster sub being rotatable with the mandrel upon rotation thereof from the locked position of the tightener to its unlocked position to disengage the ramped surface from the drag slip to allow the drag slip to rock in the opposite direction under the influence of said biasing means to retract the slip surface region and advance the drag surface region.

5,623,992

METHOD AND SYSTEM FOR DECONTAMINATING SOILS AND GROUNDWATER OF GASOLINE

Neil B. Shaw, 11305 SE. Nancy Rd., Vancouver, Wash. 98664

Filed Sep. 1, 1995, Ser. No. 523,101

Int. Cl.[6] **B09C** *1/08*; **E21B** *47/00*

U.S. Cl. 166—250.01 **20 Claims**

1. A method of decontaminating soil and groundwater of gasoline, comprising:

a) forming a multiplicity of closely spaced hollow aeration columns in the soil extending substantially vertically to a depth below groundwater level,

b) injecting oxygen containing gas into said vertical aeration columns below groundwater level, to reduce the specific gravity of the groundwater in the column and cause the oxygenated groundwater to rise in the column and then seep laterally out of the column and gravitate downward through the soil back to the groundwater at said groundwater level,

c) introducing into the aeration columns a quantity of biologically available nitrogen, and

d) continuing said injection of oxygen containing gas and introduction of nitrogen into the aeration columns and continuing said circulation of oxygenated groundwater upward through the aeration columns and laterally outward and downward through the soil back to the groundwater, for a time sufficient to decontaminate the soil and groundwater of gasoline.

12. A system for decontaminating soil and groundwater of gasoline, the system comprising:

a) a multiplicity of hollow aeration columns formed in the soil of an area to be decontaminated and extending substantially vertically to a depth below groundwater level,

b) a gas delivery tube in each aeration column extending to a depth below groundwater level,

c) a source of oxygen containing gas coupled to each delivery tube for injecting oxygen containing gas into each aeration column below groundwater level in sufficient volume to reduce the specific gravity of the groundwater in the column and cause the oxygenated groundwater to rise in the column and then seep laterally out of the column and gravitate downward through the soil back to the groundwater at said groundwater level,

d) a source of biologically available nitrogen arranged for introduction into each aeration column, and

e) monitoring means for collecting and chemically analyzing groundwater in the area to be decontaminated.

5,623,993

METHOD AND APPARATUS FOR SEALING AND TRANSFERING FORCE IN A WELLBORE

Richard G. Van Buskirk; Michael J. Loughlin; Rustom K. Mody, all of Houston; Albert A. Mullins, II, Humble, and Michael H. Johnson, Spring, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 258,130, Jun. 10, 1994, Pat. No. 5,417,285, which is a continuation of Ser. No. 926,872, Aug. 7, 1992. This application May 22, 1995, Ser. No. 447,311

Int. Cl.[6] **F21B** *33/12*

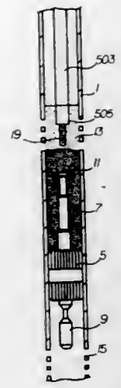
U.S. Cl. 166—292 **37 Claims**

1. A load-bearing apparatus for use in a wellbore having a wellbore surface defined therein, comprising:

a containment member for locating particulate matter in said wellbore; and

a plug member located adjacent said containment member, composed at least partially of compacted, and at least partially

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drained, particulate matter, for laterally transferring a selected amount of force to said wellbore surface.

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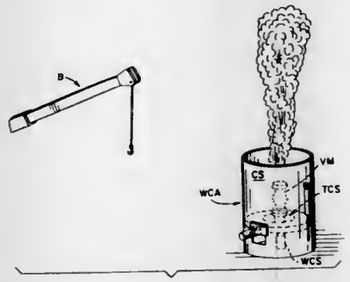
WELL HEAD CUTTING AND CAPPING SYSTEM

Jerry H. Robinson, Mobile, Ala., assignor to Wellcutter, Inc., Brewton, Ala.

Division of Ser. No. 167,092, Dec. 16, 1993, Pat. No. 5,524,517, which is a division of Ser. No. 849,711, Mar. 11, 1992, Pat. No. 5,285,706. This application Jan. 16, 1996, Ser. No. 586,225

Int. Cl.[6] E21B *29/08;29/10*

U.S. Cl. 166—379 **3 Claims**



1. A method of preparing a well casing for a capping operation and then capping the cut well casing comprising the steps of:

(a) positioning a well casing cutting assembly having a flexible cutting element adjacent a well casing to be capped, and then operating the cutting element so as to sever an upper portion from the well casing to thereby leave a remaining stub portion extending a selected distance above ground;

(b) removing the well casing cutting assembly;

(c) positioning a well capping assembly having shield enclosure and a thread cutting subassembly which includes an interiorly threaded pipe coupling which rigidly carries a normally open remotely controlled valving assembly such that the remaining stub of the well casing is substantially coaxially aligned with a bore of the pipe coupling;

(d) operating the thread cutting subassembly so that threads are cut in an exterior surface of the remaining stub of the well casing and so that the threads of the pipe coupling are concurrently threadably coupled to the formed threads on the remaining stub of the well casing; and thereafter

(e) closing the valving mechanism so as to cap the well casing.

5,623,995

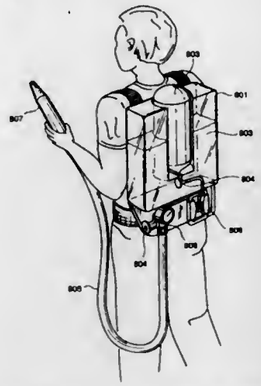
FIRE SUPPRESSANT FOAM GENERATION APPARATUS

Dennis E. Smagac, Erie, Colo., assignor to Intelagard, Inc., Boulder, Colo.

Filed May 24, 1995, Ser. No. 448,808

Int. Cl.[6] A62C *25/00*

U.S. Cl. 169—30 **9 Claims**



1. Apparatus for generating fire suppressant foam comprising:

a backpack;

a source of fire suppressant foam fluid mounted on said backpack, said source of said fire suppressant foam fluid comprising an approximately U-shaped storage tank having a base and two arms extending from said base with a recess being defined therebetween;

a source of pressurized gas mounted on said backpack, said source of said pressurized gas comprising a high pressure tank positioned within said recess;

means for producing a flow of said fire suppressant foam fluid from said source of said fire suppressant foam fluid;

means for injecting a flow of said pressurized gas into said flow of said fire suppressant foam fluid to create the fire suppressant foam;

means for expanding the fire suppressant foam; and

means for delivering the fire suppressant foam.

5,623,996

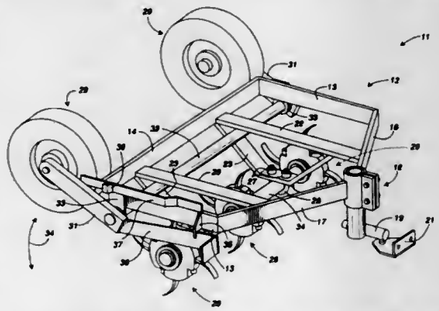
AERATOR

Leonard F. Postema, 830 Ranchwood Trail, Woodstock, Ga. 30188

Continuation-in-part of Ser. No. 252,244, Jun. 2, 1994. This application Jul. 27, 1995, Ser. No. 508,322

Int. Cl.[6] A01B *39/10;45/02*

U.S. Cl. 172—118 **25 Claims**



1. An aerator assembly comprising a frame member, an elongated pivot bar having a first end and a second end, said pivot bar being mounted at its first end to said frame member for pivotal movement about a substantially horizontal axis between a lowered position of said pivot bar and a raised position of said pivot bar, biasing means on said assembly for yieldably biasing said pivot bar toward its lowered position, aerating means mounted to said pivot bar for aerating soil as said aerator assembly is moved across the ground, and means on said assembly for providing castering movement of said pivot bar.

5,623,997

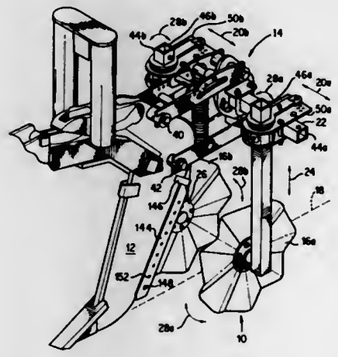
SOIL ZONE-BUILDER COULTER CLOSER/TILLER

Ray Rawson, Farwell, Mich.; William C. Maenle, Ottoville, and David R. Smith, Ft. Jennings, both of Ohio, assignors to Unverferth Manufacturing Co., Inc., Kalida, Ohio

Filed Aug. 29, 1995, Ser. No. 520,513

Int. Cl.[6] A01B *49/02;61/00*

U.S. Cl. 172—156 **20 Claims**



1. A soil manipulation device for closing a groove in soil formed by a soil tiller shank, comprising:

a support frame for being connected to said soil tiller shank; and

a pair of rotatable coulter blades mounted on the frame for engaging soil behind said tiller shank; said coulter blades being positioned on opposite sides of said groove so as to close said groove in said soil behind said tiller shank; said coulter blades being selectively movable and positionable in directions toward and away from each other so as to varying distance between said coulter blades; said coulter blades being selectively movable and positionable in a substantially vertical direction with respect to said frame so as to permit variation in depth of coulter blade penetration into said soil; said coulter blades having side surfaces which are selectively movable and positionable from orientations which are substantially in parallel with said groove to orientations which are substantially out of parallel with said groove so as to variably manipulate soil on opposite sides of said groove, wherein the frame comprises a parallel bar linkage which includes an upper link member having a first end for being secured to an upper portion of said tiller shank, a lower link member having a first end for being secured to a lower portion of said tiller shank, and a coulter blade support structure secured to the upper link member and lower link member at ends thereof opposite said first ends, wherein the upper link member, the lower link member and the coulter blade support structure are movable together in a vertical direction relative to said tiller shank, and further including at least one spring member having an upper end connected to the upper link member and a lower end connected to the lower link member for biasing said coulter blades toward said soil in a generally downward direction.

5,623,998

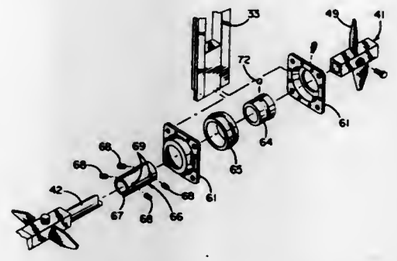
BEARING ASSEMBLY FOR A LEVELING HARROW

Philip W. Foster, Lee, Ill., assignor to Farmers' Factory Co., Lee, Ill.

Filed Jan. 11, 1996, Ser. No. 584,063

Int. Cl.[6] A01B *21/04;23/00*

U.S. Cl. 172—548 **10 Claims**



1. A harrow adapted to be towed forwardly by a tool bar comprising:

an elongated and laterally extending rod having a plurality of sleeves telescoped onto and secured to said rod in first and second groups of abutting sleeves, each of the sleeves having a plurality of angularly spaced teeth for working the ground;

adjacent sleeves of the first and second groups of sleeves being separated laterally from one another along the rod whereby first and second spaces are defined between the sleeves of the first and second groups, respectively;

first and second bearing assemblies disposed in the first and second spaces, respectively, and rotatably supporting the rod; each bearing assembly including a bearing having an inner and an outer race, a split collar concentrically positioned between the inner race of the bearing and the rod, and means locking the split collar to the rod and expanding the split collar to engage the inner race of the bearing thereby to non-rotatably connect the inner race of the bearing to the rod; and

means connected to and extending upwardly from the bearing assemblies for supporting the bearing assemblies and for connecting the bearing assemblies and the rod to the tool bar.

5,623,999

HAND-OPERATED TOOL

Peter Linsbauer, Remshalden, and Jochen Kramer, Waiblingen, both of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Jul. 21, 1995, Ser. No. 505,795

Claims priority, application Germany, Jul. 22, 1994, 94117866 u

Int. Cl.[6] B25F *3/00;5/02;* **B24B** *23/00*

U.S. Cl. 173—170 **11 Claims**

1. A hand-operated tool comprising:

a casing containing a motor for driving a tool member of said tool;

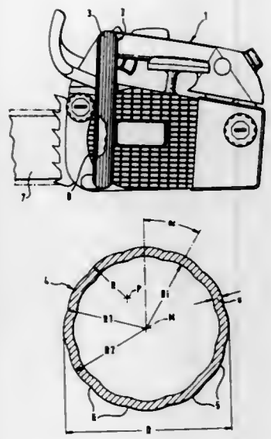
a metallic tubular grip with a tube wall connected to said casing;

said tube wall of said tubular grip having a profiled outer mantle surface made by deforming said tube wall;

said profiled outer mantle surface having raised sections and indentations extending in a longitudinal direction of said tubular grip over an entire length of said tubular grip;

wherein said profiled outer mantle surface, when viewed in cross-section transverse to said longitudinal direction of said tubular grip, comprises a plurality of adjoining arcs, wherein radii of said adjoining arcs are smaller than a radius of said tubular grip; and

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wherein each one of said arcs projects outwardly relative to a central axis of said tubular grip to form said raised sections.

5,624,000

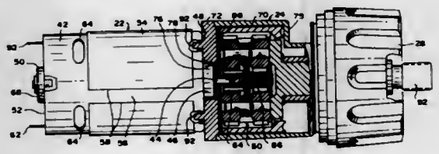
POWER TOOL WITH MODULAR DRIVE SYSTEM AND METHOD OF ASSEMBLY OF MODULAR DRIVE SYSTEM

Philip T. Miller, Lutherville, Md., assignor to Black & Decker, Inc., Newark, Del.

Continuation of Ser. No. 280,743, Jul. 26, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,470

Int. Cl.[6] B23B *45/02*

U.S. Cl. 173—216 **22 Claims**



1. A power tool including a modular drive system, comprising:

a tool housing for receiving the modular drive system;

a modular drive motor contained within said tool housing and including a motor housing and a rotary drive shaft;

a modular transmission contained within said tool housing and including a transmission housing which contains a planetary gear system having a set of planetary gears and a drive gear including an aperture for slidable insertion of said drive shaft;

one or more guide members formed on and extending from one of said motor and transmission housings for slidable insertion into one or more guide holes in the other of said motor and transmission housings when said drive shaft is inserted in said aperture in said drive gear to align said motor and transmission housings with each other, each guide member being frictionally engaged in the corresponding guide hole to retain said motor and transmission together to provide the modular drive system for installation in said tool housing; and retainer means formed on said tool housing for engaging said motor and transmission housings to retain said motor and said transmission assembled together inside said tool housing.

5,624,001

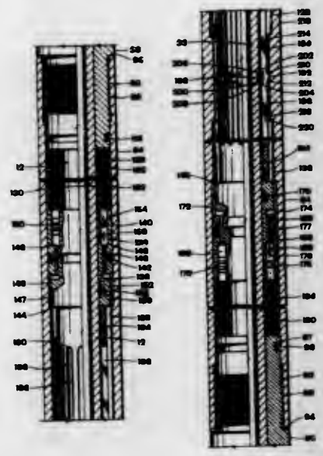
MECHANICAL-HYDRAULIC DOUBLE-ACTING DRILLING JAR

Robert W. Evans, Marble Falls, Tex., assignor to Dailey Petroleum Services Corp, Conroe, Tex.

Filed Jun. 7, 1995, Ser. No. 473,067

Int. Cl.[6] E21B *1/00*

U.S. Cl. 175—299 **12 Claims**



1. A mechanical-hydraulic double-acting drilling jar, comprising:

a mandrel;

a housing telescopingly positioned about said mandrel;

first and second pistons positioned between said mandrel and said housing and spaced longitudinally apart, said pistons respectively closing first and second substantially sealed chambers in said housing, each of said first and second pistons having first and second flow passages formed therein and extending therethrough; and

a collet positioned between said mandrel and said housing and between said first and second pistons, said collet being adapted to selectively trigger said mechanical-hydraulic double-acting drilling jar.

5,624,002

ROTARY DRILL BIT

Alan D. Huffstutler, Grand Prairie, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 287,390, Aug. 8, 1994. This application Apr. 13, 1995, Ser. No. 422,140

Int. Cl.[6] E21B *10/20*

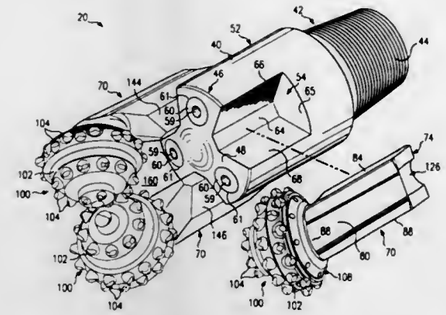
U.S. Cl. 175—356 **13 Claims**

1. A rotary cone drill bit for forming a borehole having a side wall and bottom comprising:

a one-piece bit body having an upper portion adapted for connecting said drill bit to a drill string for rotation of said drill bit;

a number of radially spaced support arms attached to said bit body and extending opposite from said upper portion, each of said support arms having an inside surface with a spindle connected thereto, each spindle projecting generally downwardly and inwardly with respect to its associated support arm;

a number of cutter cone assemblies equaling said number of support arms with one of said cutter cone assemblies mounted respectively on each spindle for boring engagement with said side wall and bottom of said borehole;



said bit body having a lower portion with a convex surface and a void space formed between said convex surface and said cutter cone assemblies;

a middle portion disposed between said upper portion and said lower portion of said bit body, said middle portion having a generally cylindrical configuration with an exterior surface defined in part by said cylindrical configuration;

a number of radially spaced pockets formed in the exterior of said middle portion of said bit body;

each of said pockets having a back wall for attaching said support arms to said bit body with said number of pockets equaling said number of support arms;

each of said pockets having a pair of side walls extending at an angle from said back wall; and

said side walls extending from said respective back wall for each pocket to said exterior surface of said middle portion of said bit body.

5,624,003

BATTERY TEMPERATURE-RAISING DEVICE FOR ELECTRIC VEHICLE

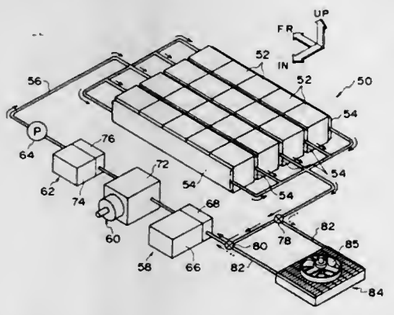
Tsutomu Matsuki, and Takayoshi Matsuno, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 9, 1993, Ser. No. 163,723

Claims priority, application Japan, Dec. 10, 1992, 4-330664; Jun. 30, 1993, 5-162525

Int. Cl.[6] B60L *11/02*

U.S. Cl. 180—65.1 **5 Claims**



1. A battery heating device for mounting to an electric vehicle having a battery charger to heat batteries that serve as a driving source of the electric vehicle while the batteries being heated are mounted to the vehicle, said device comprising:

battery charging means mounted to said vehicle and connected to said batteries for charging said batteries by being connected to an external power supply;

a conduit formed body forming a circulating path, said conduit formed body being located in one of close proximity to and in contact with said batteries midway along said circulating path; and

transfer means, positioned midway along said circulating path of said conduit formed body, for transferring exhaust heat from said charging means during charging to a heat transfer medium which flows within said conduit formed body.

5,624,004

WHEEL SUPPORT APPARATUS FOR A CARRIAGE, A CARRIAGE HAVING SAME, AND AN ARTICLE TRANSPORT SYSTEM HAVING SUCH CARRIAGES

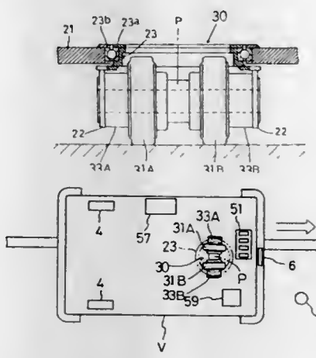
Haruhiro Watanabe, Komaki, Japan, assignor to Daifuku Co., Ltd., Japan

Continuation of Ser. No. 135,460, Oct. 12, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 622,363

Claims priority, application Japan, Oct. 14, 1992, 4-071287 U; Mar. 16, 1993, 5-055303; Jun. 17, 1993, 5-145808

Int. Cl.[6] B62D *6/00;* **B60K** *7/00*

U.S. Cl. 180—168 **12 Claims**



1. A carriage comprising:

an article support section for receiving articles thereon;

body frame means for supporting said article support section;

drive wheel means mounted on said body frame means and including a pair of wheels and a pair of motors for driving said wheels, respectively, each said motor coupled to one said wheel and positioned adjacent said wheel outside of a plane defined by said wheel, and each said motor having a diameter smaller than a diameter of said wheel; and

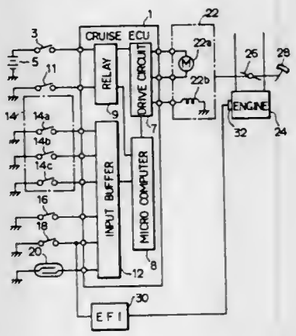
wheel support frame means for supporting each of said wheels and said motors at a position on said motor generally opposite from where said wheel is positioned relative to said motor, said wheel support frame means being attached to said body frame means through a bearing to be pivotable about a vertical axis defined in a middle position between said wheels;

wherein said bearing has a dimension such that part of said wheels enters a space surrounded by an inner race thereof, wherein said bearing overlaps with at least part of said motors such that a cylinder defined by said bearing and parallel to said vertical axis encircles at least a part of said motors, and

wherein said wheel support frame means supports said wheels with part of said wheels entering said space.

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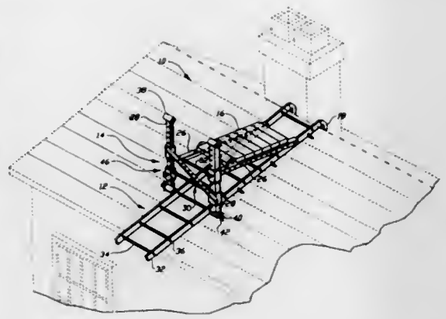
5,624,005
RUNNING SPEED CONTROL DEVICE FOR A VEHICLE
Yoshinari Torii, Gamagori, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed May 23, 1995, Ser. No. 447,773
Claims priority, application Japan, May 23, 1994, 6-108657
Int. Cl.[6] B60K *31/02*
U.S. Cl. 180—179 **32 Claims**



1. A running speed control device for a vehicle comprising:
throttle state detecting means for detecting an opening and closing state of a throttle mechanism for an internal combustion engine and generating a first signal when said throttle mechanism is fully closed and a second signal when said throttle mechanism is opened;
vehicle speed detecting means for detecting running speed of a vehicle;
throttle driving means for driving said throttle mechanism so as to cause vehicle speed to match a target running speed based on a difference between said target running speed and vehicle speed detected by said vehicle speed detecting means and said opening and closing state of said throttle mechanism detected by said throttle state detecting means during running speed control;
abnormality detecting means for detecting an abnormality of said throttle state detecting means by detecting that only a closed state of said throttle mechanism has been detected from a time when a predetermined condition is fulfilled until a time when a start of said running speed control is instructed; and
prohibiting means for prohibiting an operation of said throttle driving means when said abnormality detecting means detects the abnormality of said throttle state detecting means.

5,624,006
SUPPORT APPARATUS FOR USE ON AN INCLINED ROOF
Gary P. Richardson, Jr., 1439 S. George St., York, Pa. 17403
Filed Sep. 5, 1995, Ser. No. 523,332
Int. Cl.[6] E04G *1/36;3/12*
U.S. Cl. 182—45 **13 Claims**

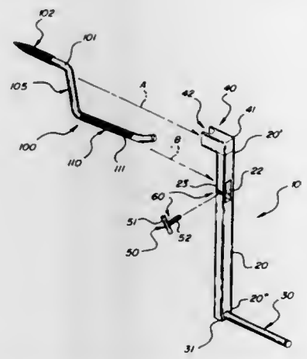
1. A support apparatus for supporting workers and materials on an inclined surface comprising:
at least one ladder having at least two rails and further having hollow rungs defining openings of a predetermined dimension in said rails whereby an unobstructed continuous first passage is formed through said openings and said rungs; and
a support frame operably attached to said at least one ladder, further comprising
at least two vertical legs, each at least two vertical legs having a first end and a second end, said first end defining a second passage approximating said predetermined dimension of said openings and configured for concentric alignment with said openings, and said second end defining a third passage



approximating said predetermined dimension of said openings and configured for concentric alignment with said openings.
a cross brace assembly further comprising at least one cross brace, said cross brace further comprising a pair of slidable members affixed to one another by an elongated rigid member, each said slidable member defining a channel matingly adapted to one of said vertical legs for slidable travel of said leg within said channel,
at least one elongated securing member adapted to closely pass through said first passage and selectively pass through said second or third passage of each of said vertical legs, and
at least two horizontal members, each said horizontal member having a proximate end and a distal end, said distal end defining a fourth passage approximating said predetermined dimension of said openings and configured for concentric alignment with said openings, and said proximate end defining a fifth passage through which said elongated rigid member passes to rotatably join said proximate end to said cross brace assembly;
whereby a tiltable horizontal platform is supported by said horizontal members, each of said horizontal members is capable of being rotated at least 180 degrees about said cross brace assembly supporting said horizontal members, each of said vertical legs supporting said cross brace assembly is capable of being selectively and individually vertically adjusted to an inclined surface, and said support frame is secured to said ladder by said at least one elongated securing member.

5,624,007
TREE STEP INSERTION AND REMOVAL DEVICE
Marvin Mahaffy, 23635 E. Main St., Armada, Mich. 48005
Filed Dec. 12, 1995, Ser. No. 570,913
Int. Cl.[6] A63B *27/00;29/04*
U.S. Cl. 182—92 **13 Claims**

1. A tree step insertion and removal device for use in conjunction with rod-type tree steps having vertically spaced-apart first and second horizontally disposed sections extending oppositely from a vertically disposed central section, said tree step insertion and removal device comprising:
a body portion including an opening for removably receiving therein said second section of said tree step, first retention means for removably capturing said central section of said

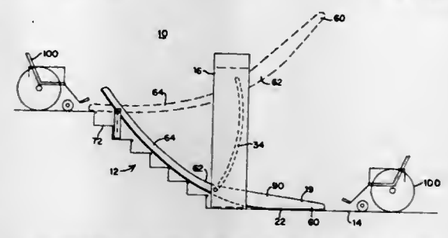


tree step, second retention means for selectively restraining said second section of said rod-type tree step within said opening, and a handle.

5,624,008
CONVERTIBLE TREE STAND
Charles E. Beardslee, Jr., 3057 Pease Dr., Bellevue, Nebr. 68123
Filed Mar. 29, 1995, Ser. No. 412,709
Int. Cl.[6] A63B *27/00;* **E04G** *1/00*
U.S. Cl. 182—136 **7 Claims**

1. A tree stand convertible into a cart, comprising:
a seat frame and a foot frame, each individually and independently attached to a tree
trunk for climbing the tree trunk and operably connectable to form a cart; said seat frame comprising:
a U-shaped support frame having a base and a pair of legs projecting from ends of the base;
a blade for engaging a tree trunk connected between projecting ends of said frame legs;
a U-shaped loop having a tree trunk engaging base portion and a pair of legs with projecting ends pivotally connected to said support frame legs proximal the support frame base;
a seat having forward and rearward ends, pivotally connected along its rearward end to said blade;
an axle removably connected between said support frame legs to support the forward end of said seat;
a pair of caps selectively retaining said axle in place between said support frame legs;
a pair of struts having first and second ends, pivotally connected proximal to but spaced from their first ends to the projecting ends of the support frame;
each said strut having an opening in the second end for receiving one end of said axle;
said struts removably connected at their second end openings to said loop legs to selectively support the loop at an incline relative to the support frame legs;
said strut first ends having an aperture therein for removable connection to said foot frame;
a pair of forward apertures in the support frame legs between the support frame base and the pivotal connection of the loop to the support frame, a pair of apertures in said loop legs located for alignment with the forward apertures when the loop is pivoted to a position co-planar with the support frame legs and means for selectively fastening the loop apertures aligned with the forward apertures when the loop is co-planar with the support frame legs;
said foot frame comprising:
a U-shaped support frame having a base and a pair of legs projecting from ends of the base;
a blade for engaging a tree trunk connected between projecting ends of the support frame legs;
a U-shaped loop having a tree trunk engaging base and a pair of legs with projecting ends pivotally connected to the support frame legs proximal the support frame base;
a pair of intermediate apertures located on the loop legs between the base and the leg ends for removable connection of the loop to the seat frame strut first end apertures;
a pair of struts having first and second ends, pivotally connected at their first ends to the support frame legs intermediate the support frame base and the pivotal connection of the loop to the support frame, and removably connected at their second ends to the loop at said intermediate apertures, to selectively support the loop at an incline relative to the support frame legs;
each said strut having an intermediate aperture therein located between the first and second ends;
a pair of forward apertures in the support frame legs proximal the base and spaced from the pivotal connection of the strut first ends for alignment with the strut intermediate apertures when the loop is pivoted to a position co-planar with the support frame legs, and means for selectively fastening the loop in a position co-planar with the support frame legs, journaled through the forward aperture and strut intermediate apertures;
a pair of wheels selectively and removably stored in said frame pockets, having hub apertures for receiving the ends of said axle; and
a hook member pivotally mounted on said seat frame support frame base, with an attachment hook sized to selectively retain the foot frame loop base therein when the tree stand is configured as a cart.

5,624,009
WHEELCHAIR LIFT
Kevin S. Benjamin, 89 Lynn St., Portland, Me. 04103, and Kurt H. Cushwa, 1118 Hamilton Blvd., Hagerstown, Md. 21740
Continuation-in-part of Ser. No. 268,860, Jun. 30, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,423
Int. Cl.[6] B66B *9/08*
U.S. Cl. 187—201 **16 Claims**



1. A wheelchair lift system for conveying a wheelchair between a lower floor and an upper floor, comprising:

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a. a wheelchair-support platform;
b. a set of similar arcuate tracks, including a first arcuate track and a second arcuate track, wherein each of said arcuate tracks has an upper end and a lower end;
c. means for coupling said wheelchair-support platform to said arcuate tracks; and
d. means for raising and lowering said lower end of said first arcuate track and said lower end of said second arcuate track;

wherein said wheelchair-support platform when coupled to said arcuate tracks will move along said arcuate tracks in response to a change in elevation of said lower end of each of said arcuate tracks.

5,624,010

REGULABLE SHOCK-ABSORPTION VALVE SYSTEM FOR THE DASHPOT IN A MOTOR VEHICLE

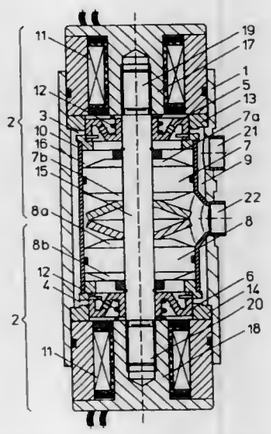
Zhen Huang, Wuppertal; Klaus Schmidt, Bergisch Gladbach; Hans Scheerer, Esslingen, and Andreas Opara, Fellbach, all of Germany, assignors to August Bilstein GmbH & Co., Ennepetal, and Mercedez-Benz, Stuttgart, both of Germany

Filed Dec. 7, 1994, Ser. No. 351,501

Claims priority, application Germany, Dec. 8, 1993, 43 41 775.2

Int. Cl.[6] F16F *9/46*; **B60G** *17/08*

U.S. Cl. 188—299 **8 Claims**



1. A regulatable shock-absorption valve system for a dashpot in a motor vehicle, comprising: two shock-absorption valves each having an electromagnetic bolt sliding back and forth; a substantially cylindrical housing having a mutually coaxial suction stage and a compression stage; a pressure-sensitive valve for said suction stage and a pressure-sensitive valve for said compression stage and having at least one port operating in conjunction with said electromagnetic bolt; hydraulic-fluid channels communicating with said suction stage and said compression stage; an electromagnet for actuating said bolt and having a pole core with a center; means for holding said pressure-sensitive valves and having ends secured in a bore extending through said center; said pressure-sensitive valves having mounting means, said bolts being uninfluenced by said mounting means due to introduction of flow forces into said housing over said holding means, said housing holding also fixedly said bolts and associated pole cores, jamming of said bolts being prevented by inhibiting axial forces from acting on said housing, said center simplifying assembly of said shock-absorption valve system.

5,624,011

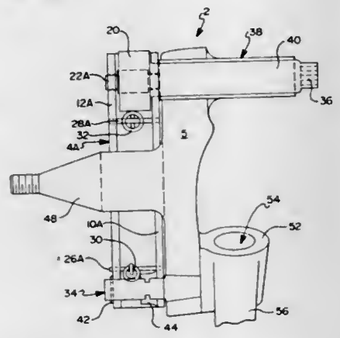
STEER AXLE BRAKE ASSEMBLY

Jay D. White, 9445 Treetop Dr., Galesburg, Mich. 49053, and Mark A. Davis, 7415 Arborcrest, Portage, Mich. 49002

Continuation of Ser. No. 407,567, Mar. 21, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 629,451

Int. Cl.[6] B62D *7/18*

U.S. Cl. 188—329 **13 Claims**



5. A brake assembly for a vehicle steer axle comprising:
a steering knuckle having an axle spindle extending therefrom for supporting and steering a vehicle, said steering knuckle having an upper king pin boss and a lower king pin boss and a steering arm formed directly from said upper king pin boss and a tie-rod arm formed directly from Said lower king pin boss;
at least one pivot pin directly attached to said steering knuckle;
a pair of arcuate brake shoes having first and second ends, said first ends pivotably supported on said pivot pin;
a pair of roller followers rotatably supported by said second ends of said brake shoes;
an S-cam rotated by an actuator shaft supported in an actuator support tube, where said support tube is secured directly in said steering knuckle, said S-cam disposed to contact said roller followers;
wherein said S-cam is rotated by said actuator shaft and urged into engagement with said roller followers thereby forcing at least one of said brake shoes to pivot on said pivot pin and thereby move radially outward to frictionally engage a brake drum.

5,624,012

RETRACTABLE HANDLE FOR A SUITCASE

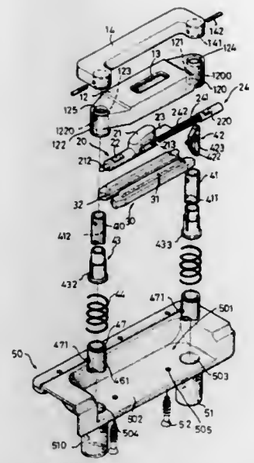
Jin-jiao Wang, No. 18, Lane 116, Ta An Gan Rd., Tachia Chen, Taichung Hsien, Taiwan

Filed Dec. 27, 1995, Ser. No. 579,287

Int. Cl.[6] A45C *13/26*

U.S. Cl. 190—115 **4 Claims**

1. A retractable handle assembly for a suitcase, said suitcase comprising an upper portion and a bottom portion, said retractable handle assembly comprising:
a base fixedly disposed to an upper portion of said suitcase and having a receiving portion defined in an upper portion thereof and said receiving portion being defined by a bottom, a first hole and a second hole respectively defined in said bottom from which a first short tube and a second short tube extend, said first short tube communicating with said first hole and said second short tube communicating with said second hole;
a first outer tube having one end connected to said first short tube and the other end thereof connected to a bottom frame disposed to said bottom portion of said suitcase, a second outer tube connected by one end thereof to said second short tube and the other end thereof connected to said bottom frame of said suitcase;



a first inner tube retractably received in said first outer tube, said first inner tube having a first end with a fourth hole defined in a periphery thereof and extending through said first hole of said base and a second end having a first stop disposed to an outer periphery thereof, a second inner tube retractably received in said second outer tube, said second inner tube having a first end with a fifth hole defined in a periphery thereof and extending through said second hole of said base and a second end having a first stop disposed to an outer periphery thereof, said first inner tube having a resilient element disposed in said first end thereof, said resilient element having a first protrusion extending therefrom which extends through said fourth hole of said first inner tube;
a second stop being a tubular element and having at least one second protrusion extending radially from an outer periphery thereof, each pair of said first outer tube and said first inner tube, and said second outer tube and said second inner tube having one second stop securely disposed therebetween, each of said first and said second outer tubes having a hole defined therein for said protrusion of said second stop to extend therethrough, each of said first and said second short tubes having a recess defined in an inner periphery thereof for said corresponding second protrusion being received therein;
a cover element having a first end and a second end, each of said first and said second ends having a third hole defined therein, said first end thereof having a first tubular portion extending downwardly therefrom which communicates with said third hole corresponding thereto, said second end thereof having a second tubular portion extending downwardly therefrom which communicates with the other third hole corresponding thereto, said first tubular portion having a first side hole defined in a periphery thereof and said second tubular portion having a second side hole defined in a periphery thereof facing to said first side hole, an elongated hole defined in said cover element and located between said first and said second third holes;
a U-shaped handle having a receiving recess defined in each one of two distal ends thereof, said first inner tube extending through said first tubular portion and being fixedly engaged with an inner periphery defining said corresponding receiving recess wherein said first protrusion of said resilient element extends through said first side hole via said fourth hole of said first inner tube, said second inner tube extending through said second tubular portion and being fixedly engaged with an inner periphery defining the other receiving recess corresponding thereto;
an actuating means disposed beneath said cover element and comprising a sliding portion and a biasing portion, said sliding portion having a first end with a tubular recess defined longitudinally therein and a button extending upwardly therefrom, a second end of said sliding portion with a rod extending longitudinally therefrom so as to extend through said fifth hole of said second inner tube via said second side hole of said second tubular portion, a first vertical hole defined in said second end of said sliding portion, said biasing portion having a first end with a second vertical hole defined therein and a second end with a long rod extending therefrom on which a first spring is mounted, said long rod and said first spring being received in said tubular recess and said first end of said biasing portion contacting said first protrusion of said resilient element, said base fixedly disposed to said upper portion of said suitcase by threadedly extending two screws through said bottom of said base and extending within said first and said second vertical holes respectively.

5,624,013

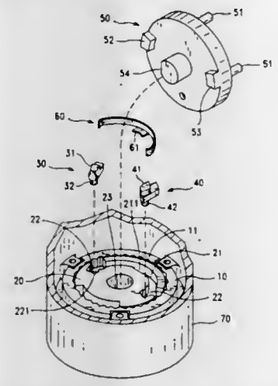
AUTOMATIC LOCKING MECHANISM FOR AUTOMATICALLY LOCKING THE TRANSMISSION SHAFT OF AN ELECTRIC HAND TOOL

Carl Tsai, Taichung Hsien, Taiwan, assignor to Collaborative Enterprises, Inc., Glendale, Calif.

Filed Feb. 8, 1996, Ser. No. 597,412

Int. Cl.[6] F16D *59/00*

U.S. Cl. 192—8 R **2 Claims**



1. A locking mechanism installed in an electric hand tool to automatically lock its power output shaft, the locking mechanism comprising:
an annular member fixedly mounted inside a shell of the electric hand tool, having a toothed inner wall;
a holder base mounted inside said annular member, having axial center through hole, an arched groove around said axial center through hole, a first recessed hole and a second recessed hole respectively disposed at two opposite ends of said arched groove, a retaining notch in the middle of said arched groove at an inner side adjacent to said axial center through hole, a first pin hole and a second pin hole respectively disposed in said first recessed hole and said second recessed hole;
an arched spring plate mounted in said arched groove of said holder base, having a projecting strip in the middle forced into engagement with the retaining notch of said holder base;
a first locking plate and a second locking plate respectively mounted in said first recessed hole and said second recessed hole of said holder base and stopped at two opposite ends of said arched spring plate, said first locking plate having a bottom pin inserted into the first pin hole of said holder base and a pawl forced by said arched spring plate into engagement with the toothed inner wall of said annular member, said second locking plate having a bottom pin inserted into the second in hole of said holder base and a pawl forced by said arched spring plate into engagement with the toothed inner wall of said annular member; and

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a transmission member mounted on said holder base and coupled to a power output end of the electric hand tool, having a bottom side, an axle perpendicularly raised from the center of the bottom side and inserted into the axial center through hole of said holder base, a first locating block and a second locating block raised from the bottom side at two opposite locations, said first locating block and said second locating block being respectively received in the first recessed hole and second recessed hole of said holder base and stopped against said first locking plate and said locking plate;

wherein the pawls of said first locking plate and said second locking plate are forced by said arched spring plate into engagement with the toothed inner wall of said annular member to stop rotary motion of said transmission member relative to said annular member when electric power supply is disconnected from the electric hand tool; the pawl of said first locking member is forced away from the toothed inner wall of said annular member by said first locating block and the pawl of said second locking member is forced into engagement with the toothed inner wall of said annular member by said second locating block when said transmission member is turned by the power output end of the electric hand tool clockwise; the pawl of said second locking member is forced away from the toothed inner wall of said annular member by said second locating block and the pawl of said first locking member is forced into engagement with the toothed inner wall of said annular member by said first locating block when said transmission member is turned by the power output end of the electric hand tool counter-clockwise.

5,624,014

DEVICE FOR ACTUATING A CLUTCH OR A GEAR BOX OR THE LIKE

Dominique Crasset, 4, Square Van Gogh, 95230 Soisy Sous Montmorency, France

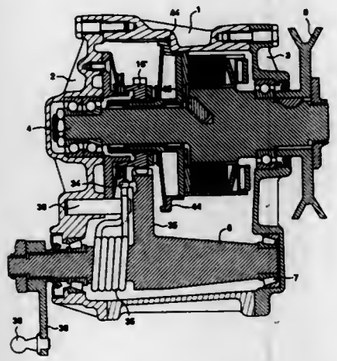
PCT No. PCT/FR93/00272, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/19411, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 18, 1993, Ser. No. 302,918

Claims priority, application France, Mar. 20, 1992, 92 03377

Int. Cl.[6] F16D *13/04*

U.S. Cl. 192—33 R **10 Claims**



1. Device for actuating a clutch or a gearbox associated with an engine, said device comprising control means (**26–31**) and an actuation member (**38**), and furthermore including:

a first shaft (**4**) adapted to be rotationally driven by the engine:

a second shaft (**6**) integral with the actuation member;

coupling means (**10, 13, 15, 16, 33**) for coupling the second shaft to the first shaft under the action of the control means;

means (**48, 53**) for uncoupling the second shaft from the first shaft after the second shaft has rotated through a predetermined angle; and

return means (**35**) for returning the second shaft to its initial position, prior to the rotation thereof, after it has been uncoupled from the first shaft;

the improvement comprising automatic means (**48, 53**) for keeping the coupling means coupled for as long as the second shaft has not made a rotation through the predetermined angle.

5,624,015

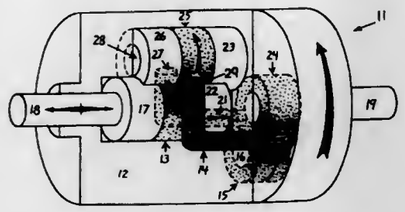
INFINITELY VARIABLE POSITIVE GEAR RATIO TRANSMISSION

Neal C. Johnson, P.O. Box 841, Deer Lodge, Mont. 59722

Filed May 25, 1995, Ser. No. 450,531

Int. Cl.[6] F16D *31/04*

U.S. Cl. 192—61 **3 Claims**



1. A continuously variable gear ratio transmission comprising a fluid tight housing supported for rotation about a longitudinal axis, said housing defining a plurality of bore chambers;

an output shaft rotatable within and extending from said housing and having a first gear fixedly attached;

a second gear rotatable about a trunion and contained within a fluid tight bore chamber in said housing and intermeshed with said adjacent first gear for rotation in opposite directions defining a gear pump;

a control shaft slideable along its axis and forming the longitudinal axis of said transmission and extending through said housing at an end longitudinally opposite of said output shaft;

a first collar non-rotatably fixed around said control shaft;

a second collar rotatably mounted around said control shaft and having a semi-circular cut through the outer dimension of said second collar along the longitudinal axis;

a third gear non-rotatably fixed around said control shaft and attached in a fluid tight manner between said rotating second collar and said non-rotating first collar;

an internal stub shaft secured within a bore chamber to prevent movement of said shaft along the longitudinal axis and mounted parallel to the longitudinal axis of said control shaft;

a third collar non-rotatably fixed around said stub shaft;

a fourth collar non-rotatably fixed around said stub shaft and having a semi-circular cut through outer dimension of said fourth collar along the longitudinal axis;

a fourth gear rotatably mounted around said stub shaft in a fluid tight manner between said non-rotating third and fourth collars;

a fluid tight passageway to conduct a working fluid from a fluid discharge area of intermeshing said first and second gears to a fluid inlet area of a variable intermeshing said third and fourth gears;

a fluid tight passageway to conduct said working fluid from a fluid discharge area of the variable intermeshing said third and fourth gears to a fluid inlet area of intermeshing said first and second gears.

5,624,016

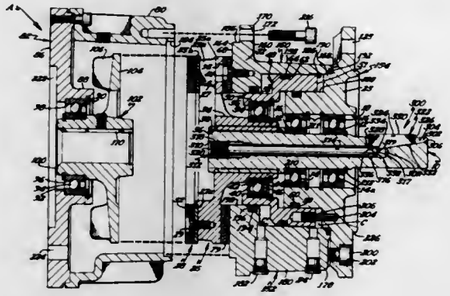
LOCKING APPARATUS FOR A KEYED CONNECTION

Tonya L. Coulter, Maple Grove, and David R. Hennessy, Minneapolis, both of Minn., assignors to Horton, Inc., Minneapolis, Minn.

Filed Sep. 20, 1995, Ser. No. 530,609

Int. Cl.[6] F16D *67/04;1/08*

U.S. Cl. 192—110 S **20 Claims**



1. Apparatus for torque transfer to a shaft carried article including a keyway comprising, in combination: a shaft having an axis, a free end, and an opposite end, with the shaft carried article being mountable to the shaft; a shaft keyway formed in the shaft and including first and second sidewalls extending parallel to the axis of the shaft, with the shaft keyway having a bottom wall extending between the sidewalls and extending at an acute angle from the axis of the shaft; a key including first and second sides spaced for slideable receipt in the sidewalls of the shaft keyway, with the key having a top extending between the sides, with the key further having a bottom extending between the sides and extending at the acute angle from the top of the key, with the key being slideable in the keyway; an axial bore in the shaft extending from the opposite end and intersecting with the shaft keyway; a push rod movable axially in the axial bore and having a forward end engaging the key in the shaft keyway; and means for axially moving the push rod into and out of the axial bore.

5,624,017

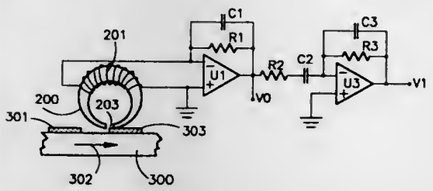
MULTI-PURPOSE CURRENCY VALIDATOR WITH COMPACT LOW POWER CASSETTE STACKER

George A. Plesko, Media, Pa., assignor to GAP Technologies, Inc., Media, Pa.

Filed Apr. 6, 1994, Ser. No. 224,013

Int. Cl.[6] G07D *7/00*

U.S. Cl. 194—207 **1 Claim**



1. A method for magnetically sensing printed magnetic ink patterns on a bill with a magnetic head sensor, comprising the steps of:

(A) providing a ferromagnetic core which is unmagnetized in the absence of an applied magnetic field;

(B) moving substantially non-magnetized magnetic ink patterns on said bill past a gap in said core and simultaneously receiving, with a coil wound on said core, only electrical signals generated by movement of said substantially non-magnetized magnetic ink patterns on said bill past said gap in said core;

wherein said gap is adapted to produce said electrical signals responsive to magnetic domains present at edges of said substantially non-magnetized magnetic ink patterns on said bill when said edges are moved past said gap in step (B) above.

5,624,018

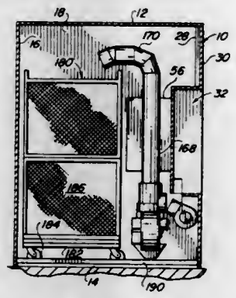
ALUMINUM CAN RECYCLING AND COUPON DISPENSER APPARATUS

David A. Schuff, 4302 W. Acoma; Roy C. Burnett, 4635 W. Dailey, both of Glendale, Ariz. 85306, and Joseph R. Goetz, 550 E. Encinas Ave., Gilbert, Ariz. 85234

Filed Nov. 28, 1995, Ser. No. 563,612

Int. Cl.[6] G07F *7/06*

U.S. Cl. 194—209 **26 Claims**



19. Aluminum can recycling and coupon dispenser apparatus comprising in combination:

a housing;

a door pivotally secured to the housing;

an opening in the door through which cans are fed for recycling;

conveyor means secured to the door for receiving the cans for recycling;

crusher means secured to the door for receiving cans from the conveyor means and for crushing the cans for recycling; and

control means for actuating the conveyor means and the crusher means in response to a can moving from the opening to the conveyor means.

5,624,019

METHOD AND APPARATUS FOR VALIDATING MONEY

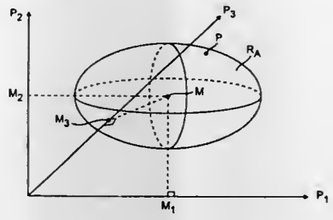
David M. Furneaux, Maidenhead, United Kingdom, assignor to Mars Incorporated, McLean, Va.

Division of Ser. No. 133,142, Nov. 5, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 512,842

Claims priority, application United Kingdom, Apr. 18, 1991, 9108355

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—217 **16 Claims**



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1. A method of identifying items of money, the method comprising taking n different measurements of an item of money, where n is an integer equal to or greater than 2, to define a point in n-dimensional space defined by axes representing the n respective measurements, determining which one of a plurality of centroids, each one of which is associated with a respective one of a plurality of n-dimensional ellipses each associated with a type of item of money, the said point is closest to and using the determination in evaluating to which type of item the tested item corresponds.

5,624,020

DEVICE FOR LINEARLY CONVEYING SHEET LIKE PRODUCTS

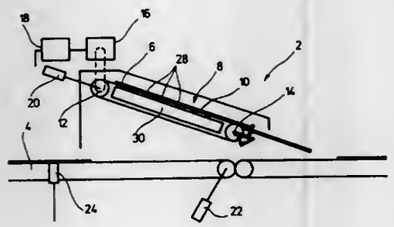
Bernhard Mokler, Markgröningen, and Stephan Gericke, Ostfildern, both of Germany, assignors to LTG Lufttechnische GmbH, Stuttgart, Germany

Filed May 24, 1995, Ser. No. 448,706

Claims priority, application Germany, Aug. 23, 1994, 44 29 883.8

Int. Cl.[6] B65G *47/26*

U.S. Cl. 198—460.1 **5 Claims**



1. A device for linearly conveying sheet-like products, fed with first means having a first speed, to second means having a second speed different from the first speed, said device comprising:

a conveying surface provided with suction openings communicating with a vacuum source for applying vacuum to said conveying surface for retaining the sheet-like products thereon; and

control means for changing a displacement speed of said conveying surface from the first speed to the second speed and, thereafter, from the second speed to the first speed,

wherein the application of vacuum to said suction openings is controlled in accordance with the speed of said conveying surface.

5,624,021

SPEED ADJUSTING APPARATUS FOR CONTAINERS

John Novak, Butler, and Lloyd Stivison, West Sunbury, both of Pa., assignors to AGR International, Inc., Butler, Pa.

Division of Ser. No. 328,479, Oct. 24, 1994. This application Nov. 17, 1995, Ser. No. 559,935

Int. Cl.[6] B65G *15/12*

U.S. Cl. 198—626.1 **13 Claims**

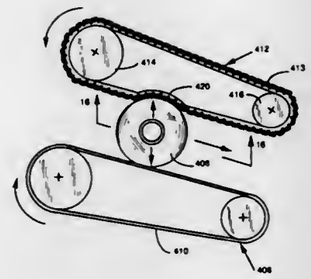
1. Container handling means comprising

container speed adjusting means,

drive means for sequentially delivering a plurality of said containers into contact with said container speed adjusting means,

said container speed adjusting means having endless belt means for contacting said containers,

pulley means disposed within and supportingly engaging said belt means, and



said belt means having integrally formed resiliently deformable portions defining a plurality of generally radially outwardly open messes having an enlarged portion in a radially inwardly disposed portion thereof.

5,624,022

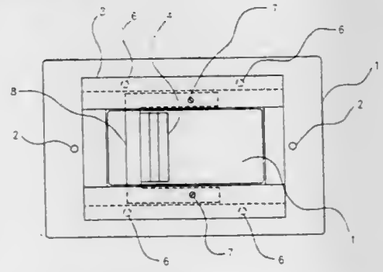
ADJUSTABLE LIMIT FOR THE SLIDE KNOB OF SLIDE DIMMERS

Tom J. Paulson, 14721 27th Ave. NE., Seattle, Wash. 98155

Filed Jan. 24, 1996, Ser. No. 590,833

Int. Cl.[6] H01H *1/52*

U.S. Cl. 200—327 **4 Claims**



1. A device for limiting travel of a slide knob of a slide switch comprising:

a wall plate adapted to be attached to the switch and having an opening therethrough for receiving the slide knob when the wall plate is attached to the switch;

a body member attached to a front face of the wall plate wherein the body member includes a central opening adapted to enable the slide knob to protrude therethrough when said body member is attached the wall plate and a pair of sidewalls positioned on opposite sides of the slide knob when said body member is attached to the wall plate;

an elongated slit located in each of said side walls; and

a limit arm slidably positioned in said slits and extending across said central opening and lockable into one of a plurality of selected position within said slits by a locking means whereby the slide knob is adapted to abut said limit arm when said limit arm is locked in a selected position to thereby selectively limit the travel of the slide knob.

5,624,023

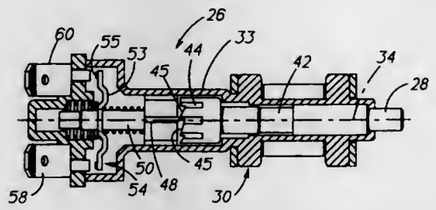
METHOD FOR SELECTIVELY CONNECTING AN ELECTRIC IRON TO A SOURCE OF ELECTRICAL POWER

James Chasen, West Haven; Paul DeMarsellles, Branford; George Drizos, Cheshire, all of Conn., and Tim Cronin, San Francisco, Calif., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 181,634, Jan. 13, 1994, Pat. No. 5,493,089. This application Nov. 17, 1995, Ser. No. 560,066

Int. Cl.[6] H01H *13/58*

U.S. Cl. 200—526 **2 Claims**



1. A method for selectively connecting and disconnecting an electric iron to a source of electrical power comprising the steps of:

activating a control switch by selectively applying a first manual force thereto to connect the electric iron to the source of electrical power;

deactivating the control switch by selectively applying a second manual force thereto to disconnect the iron from the source of electrical power;

alternatively disconnecting the iron from the source of electrical power by generating an electric control signal to disengage an electrical conductor of the iron from electrical contacts electrically connected to said source of electrical power; and

generating the control signal in response to non-use of the iron for a predetermined period of time.

5,624,024

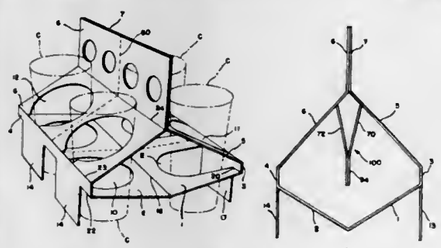
CONCESSION CUP CARRIER

Kenneth Miess, Lilburn, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 283,874, Aug. 1, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 493,447

Int. Cl.[6] B65D *85/62*

U.S. Cl. 206—172 **19 Claims**



1. A collapsible carrier for tapered articles, comprising:

a pair of upright handle panels secured together in a face-to-face contacting relationship;

a pair of divergent upper panels foldably joined respectively to lower edges of said handle panels, each of said upper panels having a first article-receiving aperture formed therein; and

a pair of convergent lower panels foldably interconnected with said upper panels to form in cooperation with said upper panels a tubular structure defining a tube axis generally parallel to said lower edges of said handle panels, each of said lower panels having a second article-receiving aperture vertically aligned with said first receiving aperture in adjacent one of said upper panels,

each of said upper and lower panels having a width extending perpendicularly to said tube axis, the summation of said widths of said lower panels being less than that of said widths of said upper panels so as to prevent said tubular structure from collapsing flat when at least one of vertically aligned pairs of said first and second receiving apertures is loaded with an article.

5,624,025

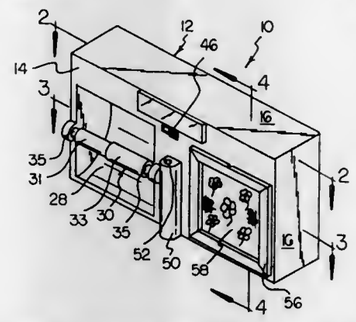
MULTIPURPOSE TOILET TISSUE DISPENSER

Theodore Hixon, 209 Vine St., Roselle, N.J. 07203

Filed Nov. 27, 1995, Ser. No. 562,829

Int. Cl.[6] B65D *69/00*

U.S. Cl. 206—233 **10 Claims**



1. A new and improved multipurpose toilet tissue dispenser comprising, in combination:

a housing including a front wall, four side walls, and an essentially open back, the back having an upper extent with a hanger bar positioned thereacross, the hanger bar including two upwardly extending slots positioned therein, the back also having a lower extent including a centrally positioned tab extending therefrom, the tab including an aperture, the hanger bar and tab permitting attachment of the toilet tissue dispenser to a bathroom wall;

a generally semicylindrical shaped recess being positioned in the front wall, the recess having a front edge including two centrally positioned semicircular projections, each projection including an indent, a spindle for holding a roll of toilet paper, the spindle including two end members, the spindle being releasably couplable within the projections with the end members rotatably positioned within the indents, the spindle holding and permitting rotatable dispensing of toilet tissue when desired by a user;

a night light assembly including a cavity formed of a recessed rear wall, a plurality of side walls and an open front, the cavity being positioned within the housing, a light socket and light bulb being positioned in the cavity, a clear light transmitting cover releasably coupled over the open front of the cavity, the cavity being provided with vent openings to cool the night light, the housing including an on/off switch for operating the night light, an electrical lead wire having a first end including an electrical plug adapted to be coupled to a bathroom electrical outlet, the electrical lead wire having a second end operatively coupled to the on/off switch and light socket, the night light assembly permitting light to be emitted from the toilet tissue dispenser when in use;

a pencil holder formed in an elongated generally cylindrical configuration and affixed vertically to the front wall of the housing, the pencil holder having a closed bottom end and an open top end including a downwardly extending bore, the bore of the pencil holder permitting a pencil to be held therein; and

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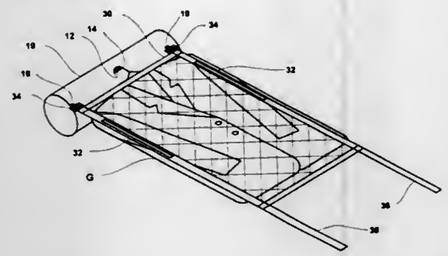
an air-freshener holder formed in a box-like configuration and positioned within the housing, the air-freshener holder having a recessed rear wall, a plurality of side walls and an open front, the open front having an outer edge, a cover door being coupled to the outer edge by a hinge, the cover door comprising a frame and a diffusing cover, the diffusing cover being fabricated of a porous material thereby permitting scent to diffuse from the air-freshener through the diffusing cover.

5,624,026

GARMENT HOLDING DEVICE FOR USE WITH VARIOUS TYPES OF LUGGGAGE

Don Chernoff, 10721 Sycamore Springs La., Great Falls, Va. 22066

Filed Mar. 20, 1995, Ser. No. 406,543
Int. Cl.[6] A45C *5/12;13/02*
U.S. Cl. 206—289 **8 Claims**



1. A garment holding device for use in retaining a hanging garment in an item of luggage comprising a rigid hollow tube of substantially circular cross section having a first attachment means for attaching a hanger with a primary hook and neck whereby said hanger is attached to the outside surface of said tube, said tube being of a dimension such that garments on said hanger are wrapped completely around the outside surface of said tube whereby garments longer than the circumference of said tube are wrapped around onto themselves until they completely conform to the curvature of said tube, said hanger being flexible enough to conform to the curvature of said tube, said garments being held in place against outside surface of said tube by a wrap around cover having opposed ends and means to detachably secure itself to said tube and detachably secure said opposed ends wherein said cover is wrapped around said garment and tube.

5,624,027

APPARATUS FOR SECURING A COMPUTER DISKETTE TO AN OBJECT

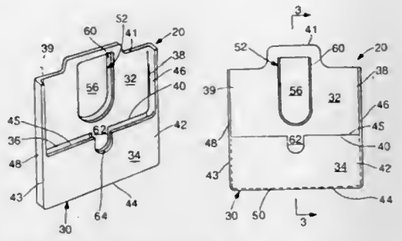
D. Leann Ayers, 943 N. Fouth St., Philadelphia, Pa. 19123; Matthew D. Marhefka, Doylestown, Pa., and Joseph M. Torsella, 301 S. 19th St., Philadelphia, Pa. 19103, assignors to Joseph M. Torsella, and D. Leann Ayers, both of Philadelphia, Pa.

Filed May 10, 1995, Ser. No. 438,419
Int. Cl.[6] B65D *85/30*
U.S. Cl. 206—308.3 **2 Claims**

1. An apparatus for securing a computer diskette to an object including a computer diskette, having first and second sides, a top edge and a bottom edge, and a determined thickness, with a label being located on the first side of the computer diskette adjacent to the top edge, located therein, the computer diskette holder comprising:

a first panel having opposing first and second edges, and opposing third and fourth edges;

a second panel having opposing first and second edges, and opposing third and fourth edges;



a third panel extending between the first edges of the first and second panels;

a fourth panel extending between the second edges of the first and second panels;

a fifth panel attached to the third edge of the second panel such that a space for receiving the diskette is formed between the first, second, third, fourth and fifth panels, the space being sized to accommodate one computer diskette;

the third edge of the first panel being located at a position which is above the fourth edge of the second panel, such that the label portion of the computer diskette is exposed on a first side of the computer diskette holder, and the fourth edge of the first panel extending above the computer diskette when the computer diskette is installed within the space such that a portion of the second side of the computer diskette adjacent to the bottom edge of the diskette is exposed on a second side of the computer diskette holder such that a user can access the second side of the computer diskette for removal of the computer diskette from the holder;

a first diskette retainer being located on the first panel above the top edge of the diskette which engages the top edge of the computer diskette when the computer diskette is located in the space;

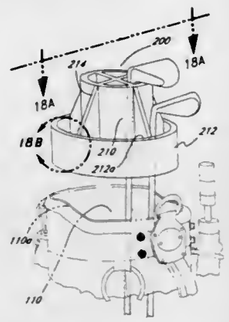
a resilient retaining member extending from the first panel, the retaining member being adapted to releasably engage the object to secure the computer diskette to the object.

5,624,028

FOAM ORGANIZER

Han S. Shin, Seoul, Rep. of Korea, and Byung Shin, 2500 White Rd., Irvine, Calif. 92714, assignors to Byung Shin, Irvine, Calif.

Continuation-in-part of Ser. No. 412,702, Mar. 29, 1995, which is a continuation-in-part of Ser. No. 103,667, Aug. 8, 1993, Pat. No. 5,450,958, which is a continuation of Ser. No. 924,563, Aug. 3, 1992, Pat. No. 5,311,987. This application Sep. 11, 1995, Ser. No. 526,816
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.6 **14 Claims**



1. A golf bag which hold golf clubs, including
a cavity in which a golf club receptacle structure is disposed,

said receptacle structure being made from a foam material and having

(a) an internal end portion which is received within the cavity,

(b) an external, and in outline, a substantially truncated, conical end portion at least partially extending outward from the cavity, and

(c) a plurality of openings which extend in a lengthwise direction through said receptacle structure,

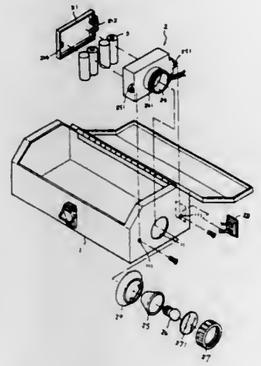
said conical end portion having a raised central section with a divider member that segregates the raised central section into a plurality of inner compartments, each inner compartment sized to hold only one golf club.

5,624,029

TOOL BOX WITH A LIGHTING APPARATUS

Yi L. Shih, P.O. Box 82-144, Taipei, Taiwan

Filed Jun. 18, 1996, Ser. No. 666,629
Int. Cl.[6] B65D *85/28*
U.S. Cl. 206—372 **1 Claim**



1. A tool box with a lighting apparatus comprising:

a casing formed with two perforations at an end thereof and a circular opening between said two perforations;

a lighting apparatus including a holder and a cover, said holder being a rectangular member formed at a central portion of a first side thereof with an internally threaded socket and an externally threaded tubular neck at a central portion of a second side thereof, said holder being mounted within said casing with said tubular neck extending out of said circular opening, said tubular neck being larger than said socket in diameter and coaxial with said socket, said holder having two recesses at two opposite end walls thereof, said cover being rectangular in shape provided at one end with a hook-like member adapted to engage with one of said recesses of said holder and at another end with a U-shaped member having a protuberance adapted to engage with another one of said recesses of said holder;

a conical reflector being fitted within said tubular neck;

a bulb threadedly engaged with said socket;

an annular member threadedly engaged with said tubular neck and

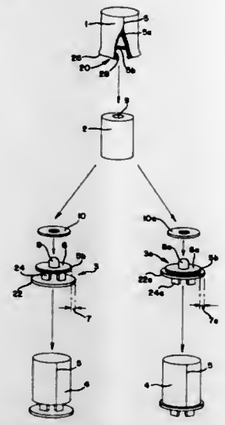
a lens arranged on said conical reflector and kept in place by engaging a locking member with said tubular neck, said first side of said holder being formed with a pair of battery chambers.

5,624,030

PACKAGING ASSEMBLY FOR PALLET TRANSPORT OF GOODS

Horst Rademacher, Ostercappeln, Germany, assignor to Felix Schoeller jr. Foto-und Spezialpapiere GmbH & Co. KG, Osnabruck, Germany

Filed Mar. 10, 1995, Ser. No. 402,121
Claims priority, application Germany, Mar. 11, 1994, 9404078 U
Int. Cl.[6] B65D *19/38*
U.S. Cl. 206—386 **13 Claims**



1. A package assembly for the pallet transport of goods, comprising: a pallet member for supporting a unit of goods thereon, the pallet member having a support portion for supporting said pallet member on a surface and a plate portion for supporting said unit of goods upon said pallet member, said plate portion being separate from said support portion and having a perimeter less than the perimeter of said support portion, the assembly further including a package hood for covering said unit of goods on said pallet member by enclosing said unit of goods, the package hood having a first opening extending generally lengthwise which permits said package hood to be applied to the unit of goods and a second opening at an end of said package hood which engages said pallet member to substantially enclose the unit of goods when the unit of goods is positioned upon said pallet member, said package hood including a first recloseable means disposed along said first opening and a second recloseable means at said package hood second opening which includes one recloseable fastener strip disposed at said package hood second opening and a second recloseable fastener strip disposed on said pallet member on an edge of said plate portion and extending around the perimeter thereof and in opposition to said packaging hood one recloseable fastener strip, whereby said package hood and said pallet member may be interconnected together beneath a bottom surface of the unit of goods, and a barrier member interposed between the unit of goods and said pallet member plate portion which defines a seal at said package hood second opening between the unit of goods and said pallet member when the unit of goods is positioned on the pallet member.

5,624,031

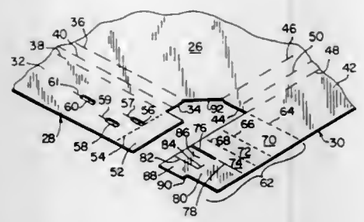
TRAY CONSTRUCTION AND METHOD OF CONSTRUCTING

James L. Fowler, Sapulpa, Okla., and Charles E. Wood, Arlington, Tex., assignors to Green Bay Packaging, Inc., Green Bay, Wis.

Filed Jul. 20, 1995, Ser. No. 504,699
Int. Cl.[6] B65D *85/66;5/30;* **B31B** *1/50*
U.S. Cl. 206—391 **17 Claims**

1. A tray construction, comprising:
a bottom panel;

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at least two side portions extending from the bottom panel, wherein each side portion defines at least one end;

wherein the side portions are foldable relative to the bottom panel to at least two fold positions such that at least a part of each side portion defines a side wall extending upwardly from the bottom wall, wherein the ends of the side portions are located adjacent each other when the side portions are folded relative to the bottom panel, wherein folding of the side portions to different fold positions varies the position of adjacent side portion ends relative to each other; and

variable position retainer structure provided on the ends of the side portions for securing the folded side portions together when the side portions are folded, wherein the retainer structure is constructed and arranged so as to be engageable in at least two discrete engagement positions accommodating variations in the position of adjacent side portion ends when the side portions are folded to their at least two fold positions.

14. A method of constructing a tray, comprising the steps of:

providing a tray blank having a bottom panel with a series of side portions extending from the bottom panel, wherein each side portion defines a pair of ends;

folding the side portions upwardly relative to the bottom panel by folding each side portion at one of a plurality of fold locations, wherein each folded side portion defines a side wall and wherein the ends of adjacent side portions are placed in overlapping relationship when the side portions are folded to define the side walls;

wherein folding of the side portions at different ones of the fold locations functions to vary the height of the side walls and the amount of overlap of the side portion ends; and

wherein the side portions include variable position retainer structure engageable in a plurality of discrete engagement positions;

interconnecting the overlapping ends of the adjacent side portions utilizing one of the plurality of discrete engagement positions of the variable position retainer structure, to secure the side walls together and to maintain the side walls in their folded positions.

5,624,032

PACKAGING SYSTEM WITH PRODUCT COLLAR SUPPORT

Stephen M. Yucknut, Danbury, Conn., and Nicholas H. Winters, Suffern, N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Aug. 28, 1995, Ser. No. 519,908

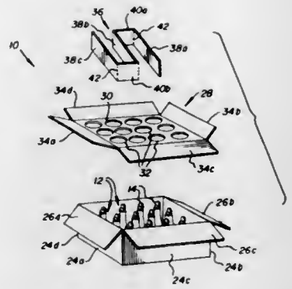
Int. Cl.[6] B65D *75/00*

U.S. Cl. 206—433 **3 Claims**

1. A packaging system for a plurality of upright, one-piece, plastic beverage bottles having twist-away ends where each bottle has an uppermost end and a downwardly-diverging upper portion beneath the uppermost end, said packaging system comprising:

a rectangular package having a rectangular floor on which the bottles stand in a preset pattern of a series of rows and four side walls extending upwardly from said floor;

a collar, made of die-cut chipboard, which maintains the bottles in the preset pattern in said package, said collar including (a) a rectangular base which extends between said side walls of said package and which is provided with a preset pattern of



holes matching the preset pattern of the bottles such that the uppermost ends of the bottles are received through said holes of said base and such that said base positively rests on the upper portions of the bottles at a predetermined height of the bottles, and (b) four, upstanding sides projecting from a periphery of said rectangular base parallel and immediately adjacent a respective said side wall of said package, said sides having a height from said base which is greater than a distance of the uppermost ends of the bottles from said base;

a top for said package which is supported by said side walls; and

at least one support element, formed of corrugated cardboard, said support element having at least two respective legs, each leg formed by a rectangular planar member and having a rectangular connecting member connecting adjacent ends of said planar members,

said planar members having a length substantially equal to a length of the rows of the bottles and wherein a planar member extends between each adjacent row of bottles,

said connecting member having a length substantially equal to a row to row spacing of the bottles, and

said planar members and said connecting member having a height from said base which is greater than a distance of the uppermost ends of the bottles from said base for maintaining said top separated from the uppermost ends of the bottles as said support element rests on said base and said base is supported by the upper portions of the bottles.

5,624,033

PACKAGE FOR FILM PRODUCT

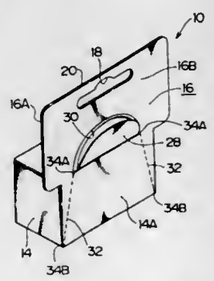
Takuya Arai, Tokyo, and Kazunori Mizuno, Minami-Ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 10, 1995, Ser. No. 500,132

Claims priority, application Japan, Jul. 11, 1994, 6-158723; Jun. 16, 1995, 7-150373

Int. Cl.[6] B65D *73/00*

U.S. Cl. 206—469 **11 Claims**



1. A package for a film product, comprising:

first containing means for containing said film product, which is made of a moisture-proof and flexible material, said first containing means having a flat sealed portion that does not define a cavity therein;

second containing means having a cavity defined therein for containing said first containing means, which is made of a different material from said first containing means, said second containing means having a holding part that comprises two flat pieces, said flat sealed portion being sandwiched between said two flat pieces; and,

tearing means formed on said flat sealed portion for tearing said first containing means and said second containing means at the same time.

5,624,034

LAMINATED BAGS FOR CONTAINERIZATION OF TOXIC OR HAZARDOUS MATERIALS

David B. Edwards; William J. McCarthy, both of Ongar, England; Leonard E. Hodakowski, Raleigh, N.C.; Chi-Yu R. Chen, Raleigh, N.C.; Samuel T. Gouge, Raleigh, N.C., and Paul J. Weber, Durham, N.C., assignors to Rhone-Poulenc AG, Lyons, France

Division of Ser. No. 147,602, Nov. 4, 1993, Pat. No. 5,428,242, which is a continuation-in-part of Ser. No. 41,521, Mar. 31, 1993, Pat. No. 5,280,835, which is a continuation of Ser. No. 713,681, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 680,321, Apr. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,290, Apr. 2, 1991, abandoned, and a continuation-in-part of Ser. No. 554,615, Jul. 18, 1990, Pat. No. 5,080,226. This application May 22, 1995, Ser. No. 447,079

Claims priority, application United Kingdom, May 2, 1990, 9009898

Int. Cl.[6] B65D *65/46;85/82*

U.S. Cl. 206—484 **19 Claims**

1. A package which comprises a bag containing hazardous chemical, said hazardous chemical being dissolved or dispersed in a liquid or gel,

said bag being made of a laminated film of two or more layers, said laminated film being comprised of two or more originally separated water soluble or water dispersible layers which are joined together to form said laminated film, wherein each of said two or more layers of said laminated film completely enclosing said hazardous chemical in said bag and said layers of the laminated film made of the same material.

5,624,035

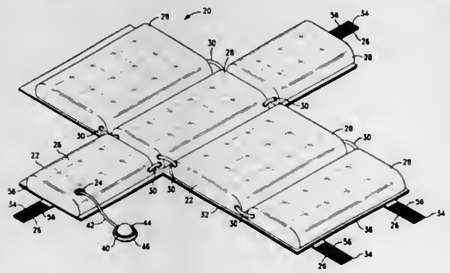
CARRYING CASE WITH INFLATABLE SECTIONS

Young S. Kim, Los Altos, Calif., assignor to Inno Design, Inc., Palo Alto

Filed Jun. 7, 1995, Ser. No. 485,109

Int. Cl.[6] B65D *81/02*

U.S. Cl. 206—522 **19 Claims**



1. A carrying case for holding an item comprises:

an enclosure assembly, the enclosure assembly being divided into at least two inflatable sections, each section being foldably connected to an adjacent section for folding the enclosure assembly from an open configuration to a closed configuration, in the closed configuration the enclosure assembly defining a central portion for holding an item;

a foldable frame attached to the enclosure assembly, the frame being formed in sections corresponding to each section of the enclosure assembly, the sections of the enclosure assembly fold with the sections of the frame to close the enclosure assembly;

an air valve attached to at least one section to selectively regulate airflow into and out of the sections; and

an attachment mechanism attachable between sections for maintaining the enclosure assembly in the closed configuration,

whereby, when the enclosure assembly is in the closed configuration, the attachment mechanism attaches between the sections and maintains the enclosure assembly in the closed configuration, the air valve regulates air flow into the sections to inflate the sections.

5,624,036

BLISTER PACK

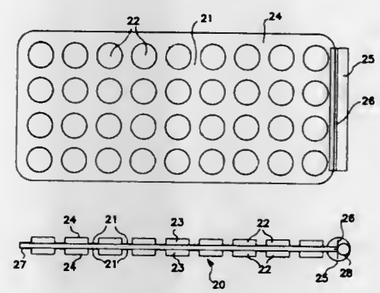
Monique Roulin, Aesch, Switzerland; Manfred Gerber, Singen, Germany, and Heinz Oster, Feuerthalen, Switzerland, assignors to Alusuisse Technology & Management Ltd., Switzerland

Filed Nov. 2, 1995, Ser. No. 552,239

Claims priority, application Switzerland, Dec. 8, 1994, 3718/94

Int. Cl.[6] B65D *83/04;85/58*

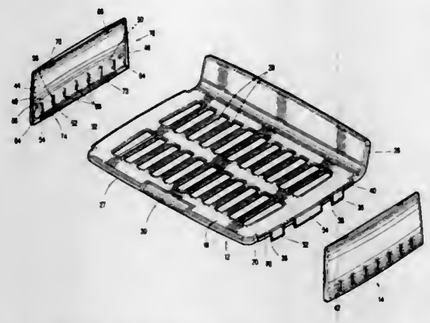
U.S. Cl. 206—534 **14 Claims**



1. Blister pack, having a base with a plurality of recesses therein, a shoulder of the base surrounding the recesses, and a lid foil attached to the shoulder, wherein removable contents are accommodated in the recesses for removal therefrom by pressing the recesses and penetrating the lid foil or by removing the lid foil over the recesses, and an accompanying leaflet, wherein the accompanying leaflet is integral with the blister pack, wherein the blister pack features a compartment accommodating the accompanying leaflet integral with said blister pack, wherein said blister pack includes two long sides and two short sides with at least the long sides being delimited by the shoulders, and wherein said compartment is integral with at least one of said sides, wherein the blister pack is made up of a blister pack strip folded in halves such that the lid foil halves lie against each other and both open ends of the folded blister pack strip are held together by a gripping facility including a clamping element, and the leaflet is situated in the gripping facility.

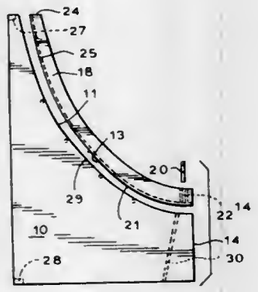
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5,624,037
COLLAPSIBLE LETTER TRAY KIT
Maria J. Kozo, Maryville, Tenn., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Jul. 12, 1995, Ser. No. 501,667
Int. Cl.[6] B65D 6/24
U.S. Cl. 206—565 17 Claims



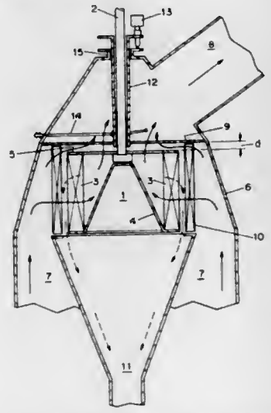
12. A storage tray assembly comprising multiple component parts, the parts comprising:
a floor panel having a forward end and a rearward end, oppositely facing sides, and at least one outwardly projecting protrusion extending from each of the panel sides;
a first and a second detached side panel, each having a forward end and a rearward end and an inward and an outward facing side, the inward facing side comprising at least one outwardly directed socket defined by elongate first and second cantilever flanges, the flanges being spaced apart a distance and closely receiving a respective protrusion of a respective floor panel side therebetween, whereby attaching the side panel against the respective floor panel side, and the first and second cantilever flanges having a respective elongate aperture adjacently positioned thereto, the aperture extending at least coextensively in length and width as the cantilever flange adjacent thereto.

5,624,038
CURVED FREE STANDING GARDEN SIEVE
Thomas M. Curtis, 1385 York Ave., New York, N.Y. 10021
Filed Aug. 28, 1995, Ser. No. 520,051
Int. Cl.[6] B07B 1/06
U.S. Cl. 209—281 3 Claims



1. A sieve comprising:
(a) a fixed base with an upper edge having a curved surface with an upper end generally perpendicular to the ground and substantially in a vertical plane and with the lower end generally parallel to the ground substantially in a horizontal plane;
(b) an upper chute-like sieve frame with a lower surface conforming to the shape of the base frame; and
(c) a screen supported at the interface of the base and sieve frame.

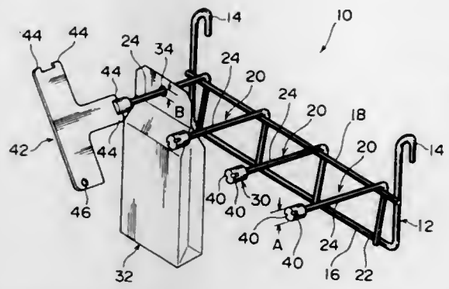
5,624,039
SEPARATOR FOR SORTING OF PARTICULAR MATERIAL
Jan Folsberg, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark
PCT No. PCT/EP94/01069, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/25185, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 7, 1994, Ser. No. 500,963
Claims priority, application Denmark, Apr. 27, 1993, 478/93
Int. Cl.[6] B04B 5/12
U.S. Cl. 209—714 2 Claims



1. A separator for sorting particulate material suspended in a conveying gas into a fine fraction and a coarse fraction, which separator comprises a rotor with a shaft; a housing encasing the rotor and having an inlet for material/gas suspension entering the housing radially outside the rotor, an outlet for a fine fraction leading from radially within the rotor and an outlet for a coarse fraction leading from radially outside the rotor; whereby a major part of the material/gas suspension passes radially inwardly into the rotor while the remaining minor part of the suspension flows directly to the fine fraction outlet duct bypassing the rotor; said housing being separated from the top of the rotor by a distance that is variable depending upon the axial position of the rotor relative to the housing, and wherein an increase in said distance from the housing to the top of the rotor causes an increased amount of said remaining minor part of the suspension to bypass the rotor and flow directly to the fine fraction outlet duct, said separator further comprising a regulating means for adjusting the axial position of the shaft, and hence of the rotor relative to the housing in order to adjust the amount of unseparated material bypassing the rotor to the fine fraction outlet.

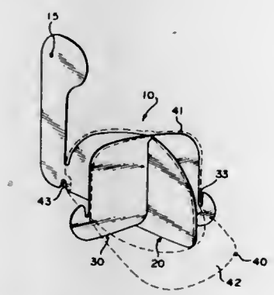
5,624,040
THEFT-PREVENTIVE DISPLAY HOOK SYSTEM
Eiji Hono, 4-13-2 Seijo, Setagaya-ku, Tokyo, Japan
Filed Feb. 21, 1995, Ser. No. 391,720
Int. Cl.[6] E05B 73/00
U.S. Cl. 211—4 9 Claims

1. A theft preventive display hook system to prevent unauthorized removal of a merchandise container having a mounting hole of a first diameter, said system comprising a hanging member further comprising a hanging rod for said container, means for rigidly and fixedly supporting said hanging rod in an outwardly



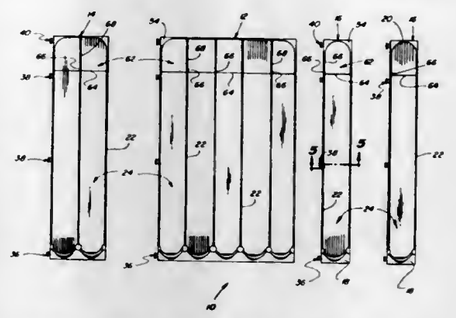
extending direction, a threaded free end on said hanging rod about which said merchandise containers are placed and suspended from said rod, a cap threadedly engageable with said threaded free end, said cap having an outer diameter greater than said first diameter, a slippery or smooth exterior surface substantially preventing hand rotation of said cap and opposed, outwardly open grooves in said cap, and key means for rotating said cap into and out of threaded engagement with said hanging rod, said key means having portions drivingly engageable with the open grooves in said cap.

5,624,041
HAT DISPLAY
Albert F. Van Druff, Jr., Lawrenceville, and Richard M. Fossum, Jr., Atlanta, both of Ga., assignors to Cornerstone Products, Inc., Norcross, Ga.
Filed Aug. 8, 1994, Ser. No. 287,279
Int. Cl.[6] A47F 7/06
U.S. Cl. 211—30 18 Claims



1. A display for a hat comprising:
a first vertical member with a crown supporting portion and a cap suspending portion extending above said crown supporting portion;
a second vertical member perpendicular to said first member; and,
said crown supporting portion of said first member and said second member each including a slot which cooperate with one another to interlock the members together and form a frame which is adapted to be disposed interiorly of the hat in order to maintain the hat's crown fully extended; and
wherein one of said first vertical member or said second vertical member includes a slot for receiving an adjustment band located at the rear of the hat to be displayed.

5,624,042
VARIABLE WIDTH PRODUCT MERCHANDISING DISPLAY UNIT HAVING DETACHABLE/REATTACHABLE SIDE TRACK PORTIONS
Paul L. Flum, Ladue; Dewalt W. Fowler, Manchester, both of Mo., and Donald J. Miller, Jr., Belleville, Ill., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Jun. 15, 1994, Ser. No. 259,889
Int. Cl.[6] A47F 1/04
U.S. Cl. 211—59.2 48 Claims



1. A product support module adaptable for interlocking engagement with substantially similarly constructed modules to form a selectable width composite display assembly for merchandising products therefrom, said module comprising a floor member having front and rear wall portions and opposed side edge portions, said front wall portion having a side portion associated respectively with each opposite end thereof, said rear wall portion having a side portion associated respectively with each opposite end thereof, said rear wall side portions extending partially along each respective opposite side edge portion of said floor member, said module including cooperatively engageable means associated with the respective side edge portions thereof enabling said module to be coupled together with a substantially similarly constructed module, said cooperatively engageable means including a plurality of elongated friction keeper members associated with one of said side edge portions of said product module and a plurality of corresponding keying slots associated with the opposite side edge portion thereof, said plurality of keeper members including at least a front keeper member and a rear keeper member, said front keeper member being positioned and located on the outer surface of one of said front wall side portions and said rear keeper member being positioned and located on the outer surface of one of said rear wall side portions, the corresponding keying slots for engaging said front and rear keeper members being positioned in opposed relationship to said keeper members on the opposite front and rear wall side portions associated with the opposite side edge portion of said product module, said front keying slot being cut into said corresponding front wall side portion such that the thickness of the opposed wall portions forming said front keying slot is thinner at their respective lower portions as compared to their respective upper end portions, said plurality of keeper members each including a stem portion and an overhanging flange portion, the stem portion associated with said front keeper member being tapered in a direction which extends outwardly away from the front wall side portion of said product module along its entire length from its lower portion to its upper terminal end portion such that the mating surface between said stem portion and said overhanging flange portion forms an angle with the front wall side portion of said product module, the taper associated with said front keeper stem portion causing the thickness of said stem portion to be thinner at its lower portion as compared to its upper end portion, the taper associated with said front keeper stem portion in conjunction with the variation in thickness associated with the wall portions forming the front keying slot enabling said corresponding front keying slot to become progressively tighter thereby drawing adjacent units closer together as said slot is moved progressively downwardly over said front keeper stem portion.

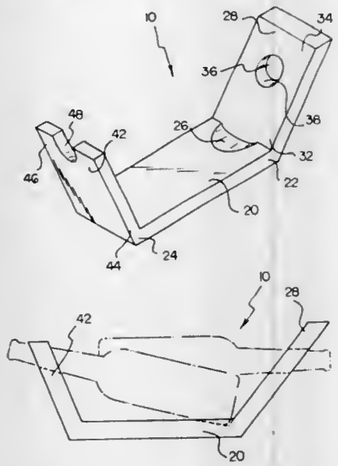
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5,624,043

WINE BOTTLE SUPPORTING AND SERVING TRAY

Nelson L. Baptista, 204 Dovercourt Road, Apt. 102, Toronto, Ontario, Canada

Filed Mar. 19, 1996, Ser. No. 617,570
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—74 **4 Claims**



1. A new and improved wine bottle supporting and serving tray, comprising, in combination:

a wooden base having a lower surface, an upper surface and a peripheral edge therebetween, the base further including a first end and a second end, a depression formed upon the upper surface of the first end, the depression having a straight edge along the first end of the base and a curved edge opposite the straight edge;

a wooden display stand having a lower end, an upper end, an interior surface and an exterior surface, the lower end being integral with the first end of the base and extending upwardly at a 45 degree angle relative to the base, a circular aperture formed in the display stand intermediate the upper and lower ends, the circular aperture having an upper half and a lower half, a bevel formed adjacent the lower half of the circular aperture within the interior surface;

a wooden serving stand having a lower end and an upper end and a top edge, an interior surface and an exterior surface, the serving stand extending upwardly at an angle of 30 degrees relative to the base, the lower end of the serving stand being integral with the base, a semi-circular recess formed within the top edge of the serving stand;

a pair of apertures formed within the peripheral edge of the base; and

a napkin clip having an open upper end and a closed lower end, the napkin clip functioning to receive a napkin, a pair of dowels secured to the napkin clip, the dowels secured within the apertures of the base.

5,624,044

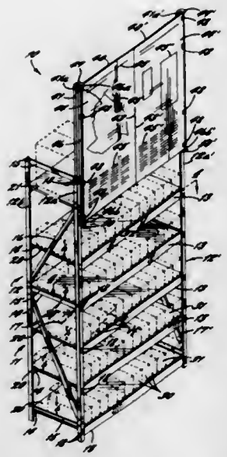
CUSTOMIZIBLE DISPLAY APPARATUS WITH PRINTED SIGNAGE

William H. Black, Jr., Edenton, N.C., assignor to Tee-Lok Corporation, Edenton, N.C.

Filed May 18, 1995, Ser. No. 444,159
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—186 **27 Claims**

1. A display apparatus comprising:

a frame including a pair of upright support members;



a plurality of generally horizontal elongate shelves connected with said frame, said shelves being vertically spaced apart from each other;

wherein said upright support members have upper end portions extending above an uppermost one of said shelves; and

a pair of generally vertically-oriented frameless display signs, each of which is pivotally interconnected to a respective upright support member upper end portion, via pivotal interconnection means such that each respective display sign is pivotable between a closed position, in which said display signs are generally parallel and obscure from view items stored on said uppermost shelf, and an open position, in which each respective display sign is pivoted so that an inner edge portion moves forwardly and outwardly to enable said uppermost shelf to be forwardly accessed;

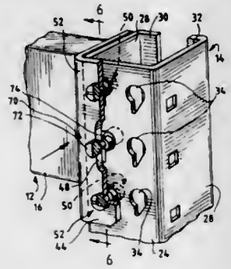
said display signs being formed of polymeric sheet material and having printed indicia on a front side thereof.

5,624,045

STORAGE RACK HAVING LATCHED BEAM-TO-COLUMN CONNECTION

Charles E. Highsmith, and Joseph F. Benton, both of Springfield, Tenn., assignors to Unarco Material Handling, Inc., Springfield, Tenn.

Filed Mar. 16, 1995, Ser. No. 405,509
Int. Cl.[6] A47B *43/00*
U.S. Cl. 211—192 **13 Claims**



1. A storage rack comprising a column, a beam, and means for connecting the beam to the column at one end of the beam and latching the beam to the column, even if the beam is lifted in relation to the column, the column having a front wall with a vertical array of similar, spaced apertures and a side wall, each aperture having an upper region and a lower region with the lower

region being narrower in width than the upper region, and each aperture having a continuous margin defined by the front wall, the connecting means comprising

(a) a flanged member having a side flange integral with the end of the beam and a front flange, the side flange being fitted against the side wall of the column, the front flange being fitted against the front wall of the column, the front flange having a vertical slot extending between an upper margin defined by the front flange and a lower margin defined by the front flange,

(b) a connecting pin mounted rigidly to the front flange and projecting through a selected one of said apertures of the vertical array, the connecting pin defining an axis and having an inner head sized and shaped so as to be capable of passing axially through the upper region of the selected aperture but not axially through the lower region of the selected aperture and a shank interposed between the inner head of the connecting pin and the front flange, sized and shaped so as to be capable of passing axially through either of the upper and lower regions of the selected aperture, the inner head of the connecting pin being spaced axially from the front flange by a fixed distance, and

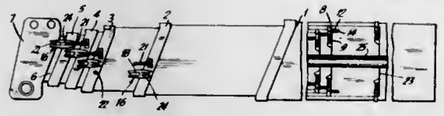
(c) a latching pin mounted to the front flange so as to be slidably movable along the vertical slot of the front flange and projecting through a separate one of the apertures of the vertical array, the latching pin defining an axis and having an outer head sized and shaped so as not to pass axially through the vertical slot and an inner head sized and shaped so as to be capable of passing axially through the upper region of the separate aperture but not axially through the lower region of the separate aperture, the latching pin having a shank interposed between the outer and inner heads of the latching pin and sized and shaped so as to be capable of passing axially through the vertical slot of the front flange and axially through either of the upper and lower regions of the separate aperture, the latching pin being biased gravitationally along the vertical slot of the front flange so that the shank of the latching pin rests on the lower margin of the separate slot so as to latch the beam to the column, even if the beam is lifted in relation to the column to a position where the inner head of the connecting pin can pass axially through the upper region of the selected aperture, unless the latching pin is lifted along the vertical slot, above a latching zone, in which the inner head of the latching pin is prevented by the margin at the lower region of the separate aperture from being removed through the separate aperture, to a position where the inner head of the latching pin can pass axially through the upper region of the separate aperture.

5,624,046

TELESCOPIC RODS FOR A CRANE

Horst Zimmermann, Suchardstrasse 23, A-6700 Bludenz, Austria

Filed Feb. 15, 1995, Ser. No. 388,808
Claims priority, application Austria, Mar. 18, 1994, 576/94
Int. Cl.[6] B66C *23/04*; **B65B** *63/04*
U.S. Cl. 212—349 **10 Claims**



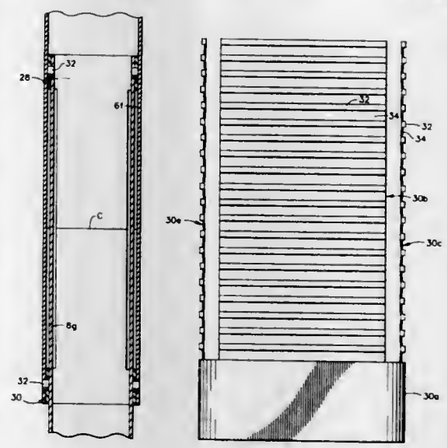
1. A telescopic rod comprising a plurality of tubular rod sections which are mounted so as to be telescopically axially slidable relative to each other between an extended position and a retracted position, the rod sections including a first outermost rod section, an inner rod section, and a plurality of intermediate rod sections between the outermost rod section and the inner rod section, a multistage piston-cylinder unit connected to the outermost rod section and to the inner rod section, the rod sections having inner end faces and outer end faces, locking bars being mounted at the inner end faces of the intermediate rod sections, an opening located in each rod section, wherein, when the telescopic rod is in the extended position, the locking bars are in positively locking engagement with the openings of each adjacent outer rod section, catches mounted at the inner end faces of the rod sections which are located inwardly adjacent the intermediate rod sections, the locking bars being moveable into and out of an unlocking position, wherein the catches hold the locking bars in the unlocking position when the telescopic rod is in the retracted position, spring-biased clamps mounted at the outer end faces of the intermediate rod sections, bolts provided at the outer end faces of the rod sections arranged inwardly adjacent the intermediate rod sections, wherein the clamps engage the bolts in a positively engaging manner when the telescopic rod is in the retracted position, spring-biased locking bolts being mounted at the inner end faces of the rod sections arranged outwardly adjacent the rod sections having the clamps, wherein the locking bolts engage the clamps and hold the clamps in a closed position when the telescopic rod is in the retracted position.

5,624,047

TELESCOPING MAST WITH ZERO CLEARANCE FOR REFUELING MACHINE

Roy C. Challberg, Livermore, and Cecil R. Jones, Saratoga, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 24, 1995, Ser. No. 428,811
Int. Cl.[6] F16C *25/02*
U.S. Cl. 212—350 **12 Claims**



1. A telescoping mast comprising:

first and second cylindrical tube segments, said first tube segment being fittable inside said second tube segment;

an upper spacer asse,bly attached to the outside of said first tube segment and slidable inside said second tube segemnt; and

a lower spacer assembly attached to the inside of said second tube segment and slidable outside said first tube segment, said upper and lower spacer assemblies maintaining a predetermined spacing between said first and second tube segments during relative longitudinal displacement of said first and second tube segments,

wherein said spacer assembly comprises an upper spacer ring which surrounds said first tube segment and a plurality of corrugated members connected at one end to said upper spacer ring and extending downward between said first and second tube segments, and said lower spacer assembly comprises a lower spacer ring which surrounds said first tube segemnt and a plurality of corrugated members connected at one end to said lower spacer ring and extending upward

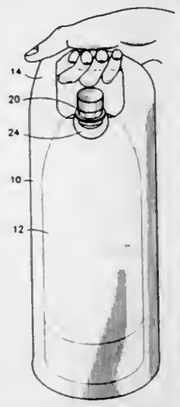
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between said first and second tube segments, said corrugated members having corrugations which extend generally transverse to a direction of relative sliding of said first and second tube segments.

5,624,048
INSULATED CARRYING CONTAINER

Rooen Sander, 201 Bnei Efraim Street, POB 53121, Tel Aviv 61531, and Leor Seef, Moshav Orot, Kiryat Malachi 83810, both of Israel

Filed Feb. 16, 1995, Ser. No. 389,458
Claims priority, application Israel, Nov. 1, 1994, 111.492
Int. Cl.[6] B65D *81/38*
U.S. Cl. 215—395 **4 Claims**

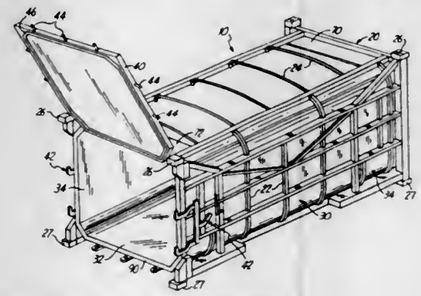


1. A thermally insulated container for a bottle, said container being formed of multiwall flexible plastic heat sealed to define a multiplicity of air bubbles, said container defining a pair of carrying handles and a pair of attachment flaps for retaining said container in engagement with said bottle, each of said attachment flaps having a central aperture, each of said flaps being separated from a corresponding handle by a cut.

5,624,049
INTERMODAL CONTAINER WITH INNER RECEPTACLE

Dean Kovash, Manning; Bill Reiter, and Tom Knutson, both of Dickinson, all of N. Dak., assignors to WasteCo Maoufacturing, Dickinson, N. Dak.

Filed Dec. 5, 1995, Ser. No. 567,673
Int. Cl.[6] B65D *88/26*
U.S. Cl. 220—1.5 **20 Claims**



1. An intermodal container comprising:

a) an inner receptacle forming a bottom wall, two side walls, and a front wall of the container, the side walls and bottom wall of the inner receptacle defining a rear opening in the container, the rear opening located opposite the front wall, wherein the bottom wall and the two side walls are formed of a one-piece, completely integral sheet of non-metallic material;
b) a frame located outside of the inner receptacle;
c) a door connected to the frame proximate the rear opening of the container, the door being movable between open and closed positions, wherein in the closed position, the door forms a rear wall of the container;
d) top corner fittings located on each of the upper corners of the frame; and
e) bottom corner fittings located on each of the lower corners of the frame.

5,624,050
LID AND STRUCTURAL ARRANGEMENT FOR RECYCLING AND REFUSE RECEPTACLES

Philip C. Haas, R.D. #2 Box 159, Kempton, Pa. 18529

Continuation-in-part of Ser. No. 857,379, Mar. 25, 1992. This application Sep. 1, 1993, Ser. No. 105,905
The portion of the term of this patent subsequent to Oct. 7, 2012, has been disclaimed.
Int. Cl.[6] B65F *1/16;* **B65D** *8/00*
U.S. Cl. 220—4.05 **13 Claims**

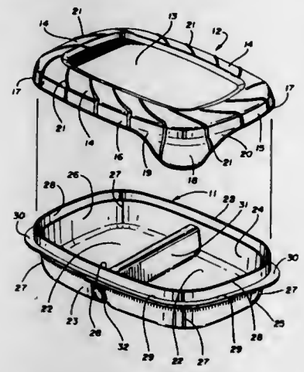


1. A recycling and refuse receptacle comprising:
(a) a series of vertical slats of different lengths formed from a plastic resin composition arranged in substantially a side-by-side circular configuration providing a smoothly slanted top configuration of said receptacle,
(b) at least one substantially horizontal ring positioned within the side-by-side circular configuration of the slats to which the slats are attached in a sequence providing said smoothly slanted top,
(c) a rigid structural ring having an ovoid configuration with a smoothly curved outside inclination slanted or angled inwardly at a first position on the ring, slanted or angled outwardly at a second position substantially 180 degrees from the first position, arranged substantially vertically at positions 90 degrees to said first and second positions and angled at intermediate inclinations at intermediate positions,
(d) said structural ring being secured to said slats at the upper end of the slats in an inclined orientation by fastening means traversing both the structural ring and the slats, and
(e) a seat surface positioned upon a top surface of the structural ring,
(f) a lid or cover means configured for receipt into the seat positioned upon the top surface of the structural ring,
(g) said lid or cover having at least two orifices disposed in it for receipt of recyclables and refuse, and
(h) an orifice use designation means upon the lid comprising at least two templates formed of thin durable plastic sheet material surrounding each of said orifices and having contrasting colors, each of the templates including a cutout portion providing a worded designation of the type of materials to be passed through the orifices into the receptacles and exposing an underlying surface of a contrasting color.

5,624,051
CONTAINER WITH HANDLES AND COVER

Richard B. Abern, Jr., Akron, and Dennis K. Jenkins, Medina, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Continuation of Ser. No. 345,650, Nov. 25, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 635,772
Int. Cl.[6] B65D *43/04*
U.S. Cl. 220—553 **16 Claims**



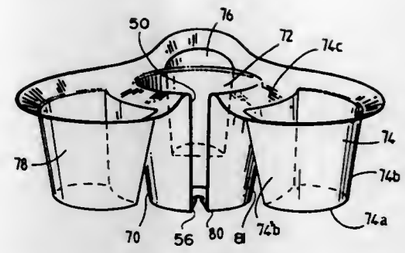
1. A generally rectangular container comprising a bottom surface, opposed side walls extending upwardly from said bottom surface, opposed end walls extending upwardly from said bottom surface and intersecting said side walls to form four corners, said side walls and end walls forming an upper open top, a cover for closing said open top, said cover having corners corresponding to said corners formed by said side walls and said end walls, a flap formed only on one said corner of said cover such that when said cover is positioned to close said open top said flap is selectively positioned only at one of two opposed corners formed by said side walls and end walls, said flap extending downwardly from said one corner and being positioned generally parallel to, adjacent to, and spaced from one said side wall and one said end wall, and a handle formed near said open top on at least one of only the other two of said corners formed by said side walls and end walls such that said flap is not located at said one corner.

5,624,052
REFRESHMENT HOLDER WITH HANDLE

Michel Caldi, 9 chemin de l'Aunay, 78550 Bazainville, France

PCT No. PCT/FR93/00554, § 371 Date Dec. 9, 1994, § 102(e) Date Dec. 9, 1994, PCT Pub. No. WO93/25127, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 10, 1993, Ser. No. 351,342
Claims priority, application France, Jun. 10, 1992, 92 06994; Dec. 9, 1992, 92 14848; Dec. 9, 1992, 92 14849
Int. Cl.[6] A47G *19/06*
U.S. Cl. 220—575 **2 Claims**

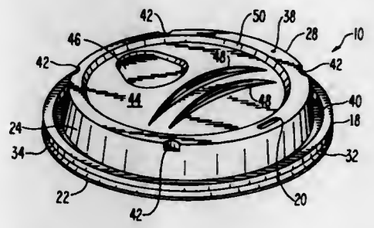
1. A refreshment holder comprising handle means for grasping in a user's hand and receptacle-forming means for receiving foods, said handle means including a first end for connecting to the receptacle forming means and a second end that is free, the distance between the two ends of said handle means being in the range of 4–7 cm, said receptacle-forming means defining a plurality of separated distinct compartments and being connected to said first end of said handle means and including a bottom portion that lies substantially in the same radially extending plane that includes the second end of the handle means, said handle means occupying a substantially central position and extending along a central axis relative to the receptacle-forming means, said handle means being open at its first end, said receptacle-forming means being spaced from the handle means to permit access by the hand of a user around the handle means; said handle means being in the form of a hollow truncated cone forming an internal housing, said first end of the handle means having a diameter greater than the diameter of said second end; said receptacle-forming means including a radial opening extending to the space that surrounds the handle means for receiving a wrist of a user.



5,624,053
DRINK-THRU CUP LID

Mike Freek, and Raya Berkovich, both of Toronto, Canada, assignors to James River Corporation of Virginia, Richmond, Va.

Filed Jun. 6, 1995, Ser. No. 467,718
Int. Cl.[6] A47G *19/22*
U.S. Cl. 220—713 **15 Claims**



1. A disposable lid for a drinking cup comprising:
an annular mounting portion for sealingly engaging the drinking cup;
an annular side wall extending upwardly from an inner periphery of said annular mounting portion to an asymmetrical annular ridge adjacent said annular side wall, said asymmetrical annular ridge forming a substantially planar surface;
a drinking opening formed in said substantially planar surface; and
a crown region having a periphery adjacent said annular ridge having a surface covering a remaining portion of the drinking cup;
wherein said asymmetrical annular ridge includes a widened region for accommodating said drinking opening and a narrowed region diametrically opposed to said widened region.

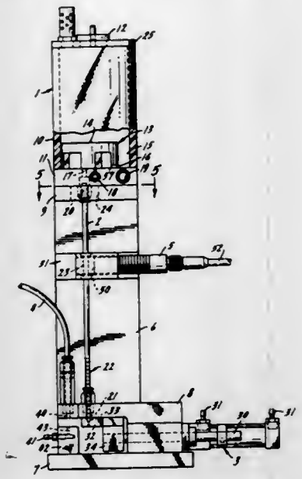
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5,624,054

METHOD AND APPARATUS FOR FEEDING BALLS AT A UNIFORM RATE

James Buns, Grayslake, Ill., assignor to Wes-Tech Automation Systems, Buffalo Grove, Ill.

Filed Jun. 7, 1995, Ser. No. 483,611
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—6 10 Claims



1. An apparatus for feeding ball bearings in an assembly production process, comprising:

a container maintaining a supply of ball bearings;

means for transferring said ball bearings from said container to an ejecting area along a single-file path;

means for placing a first ball bearing from said single-file path in an ejecting position;

means for ejecting said first ball bearing from said ejecting position to an assembly destination point; and

support members by which said apparatus may be affixed to an automatic assembly machine,

said means for placing a first ball bearing in an ejectment position including a two-position, pneumatically-actuated piston assembly, said piston assembly having a ball shuttle capable of receiving said first ball bearing in a loading position and subsequently positioning said first ball bearing in an ejecting position,

said means for ejecting said first ball bearing from said ejecting position including a small pneumatic orifice and an elongated delivery robe, said orifice and said delivery tube positioned on substantially opposite sides of said ball shuttle when said piston assembly is in said ejectment position such that compressed air from said orifice forces said first ball bearing out of said ball shuttle and through said delivery robe to said assembly destination point,

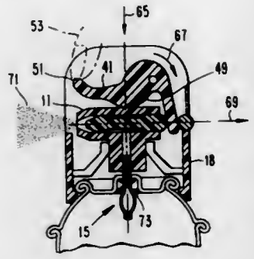
said container including a removable cap, a ball trap and a floor assembly, said ball trap mounted in spaced-apart relation to said floor assembly to simultaneously support a pile of ball bearings while allowing a single horizontal layer of ball bearings to pass underneath to said floor assembly, said floor assembly having both an opening through which a single ball bearing may pass through to said means for transferring and a plurality of pneumatic input and output apertures to agitate said single layer of ball bearings to move toward said opening.

5,624,055

DISPENSER DEVICE WITH SEALED CLOSURE FOR THE CONTENTS OF A RECEPTACLE THAT IS PRESSURIZED OR THAT HAS A PUMP

Frank Clanet, and Anne Dellerm, both of 4 bis, Sentier des Voisinoux, 92190 Meudon, France

Filed Mar. 2, 1995, Ser. No. 397,493
Claims priority, application France, Mar. 3, 1994, 94 02447
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—135 20 Claims



1. A dispenser assembly connected to a receptacle for discharging a substance contained in the receptacle, the dispenser assembly comprising:

a support member adapted to be mounted to a receptacle;

a dispensing head mounted to the support member for movement relative thereto and including an internal conduit having an inlet end adapted to be connected to an actuator of the receptacle for supplying the substance to the conduit, the conduit forming a dispensing orifice for discharging the substance;

a shutter mounted to the dispensing head for movement relative thereto between an orifice-opening position and an orifice-closing position; and

a manually actuable control member mounted on the support member for movement relative thereto and being operably connected to the shutter and the dispensing head and movable from a rest position to an operating position for moving the shutter to its orifice-opening position and substantially simultaneously moving the dispensing head for actuating the actuator of the receptacle;

wherein the conduit includes a chamber having a narrowed portion forming the orifice; the shutter comprising a pin slidably movable within the chamber toward and away from the orifice between the orifice-opening and orifice-closing positions.

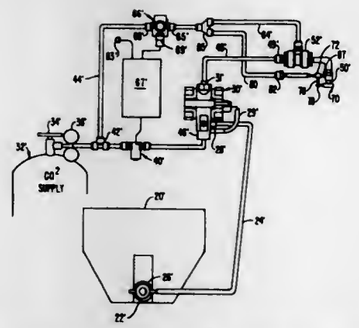
5,624,056

CONDIMENT DISPENSING SYSTEM

Richard A. Martindale, Vacaville, Calif., assignor to Automatic Bar Controls, Inc., Vacaville, Calif.

Filed May 19, 1995, Ser. No. 444,691
Int. Cl.[6] B67D *5/02;1/10*
U.S. Cl. 222—148 8 Claims

1. A condiment dispensing system comprising a rack for holding a source of condiment having an outlet port; a pump having a condiment inlet and a condiment outlet; means for operating said pump; conduit means connecting the outlet port of the source of condiment with the condiment inlet of said pump; a delivery nozzle; delivery conduit means connecting said delivery nozzle with the condiment outlet of said pump; pinch valve means on said delivery conduit means between said condiment outlet and said delivery nozzle, said pinch valve means including a normally open central flow path for condiment flow; means for closing said flow path; and control means for activating said pump for dispensing condiment through said delivery nozzle, said control means including means to open said pinch valve and simultaneously start said



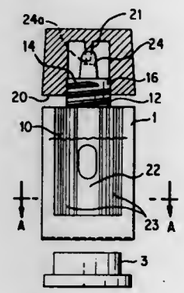
pump to provide condiment delivery through said nozzle and means to stop said pump to close said pinch valve.

5,624,057

OPHTHALMIC PACKAGE AND DELIVERY DEVICE

Arthur L. Lifshey, East Brunswick, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 200,076, Dec. 22, 1993, abandoned. This application May 1, 1995, Ser. No. 432,500
Int. Cl.[6] B65D *47/18*
U.S. Cl. 222—212 5 Claims



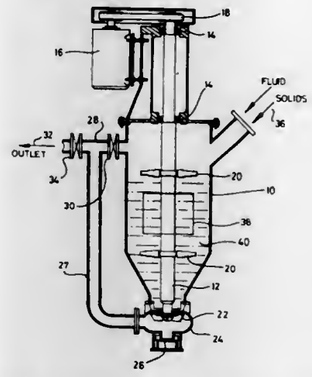
1. A package for a storage and dispensing of a liquid in droplet form comprising a vial, a cap member having an internal screw thread and a bottom plug, the vial being injection molded and having a wall which forms an ovoid midsection, the ovoid midsection having a top and bottom, the top being formed to provide an integral reduced diameter neck portion, the bottom being open and circular and able to receive the bottom plug, the bottom plug being of different sizes and shapes to allow for various fill levels while keeping the outside dimension of the vial constant, the bottom plug being sealed to the vial; the ovoid midsection being further defined by two smaller radiused opposing segments and two larger radiused opposing segments, the smaller radiused opposing segments having a radius and axis corresponding to that of the circular bottom of the ovoid midsection, the larger radiused opposing segments having a significant radius so as to form an ovoid cross section, the axis of the larger radiused opposing segments being parallel to the longitudinal axis of the vial, but offset in order to create an intersection defining to ovoid shape; the wall of the ovoid midsection being of a rigid plastic suitable for injection molding, a target area being confined to one of the larger radiused segments of the oval shaped cross section, the wall in the target area being thinner than the remainder of the vial wall, the central longitudinal portion of the target area being bounded on either side by longitudinal pleats which make the target area compliant and easy to push for small displacements, the longitudinal pleats terminating at the top and bottom of the ovoid midsection and terminating to the left and right where they are affixedly attached to the rigid thicker wall section, the transition to the left and right occurring at the intersection between the larger and the smaller radius of the ovoid midsection, the longitudinal pleats creating a spring action due to distortion of their original pleated shape during displacement; the neck portion having external helical screw threads mateingly adapted to engage the cap internal threads, the neck portion having at its further most end a nozzle having a barrier membrane across the opening; the cap member having an internal piercing point which may serve to open the barrier membrane of the nozzle.

5,624,058

APPARATUS FOR PUMPING A SLURRY

Marshall G. Bailey, Banchory, United Kingdom, assignor to Rig Technology Limited, Aberdeen, Scotland

PCT No. PCT/GB93/02287, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/10448, PCT Pub. Date May 11, 1994
PCT Filed Nov. 5, 1993, Ser. No. 433,433
Claims priority, application United Kingdom, Nov. 5, 1992, 9223239
Int. Cl.[6] F04B *15/02*
U.S. Cl. 222—240 3 Claims



1. Apparatus for pumping a slurry, comprising a vessel serving as a reservoir for slurry and having an upper inlet and a lower outlet, and a centrifugal pump having a vertical shaft and a rotatable pumping impeller secured to the shaft and situated in the vicinity of the outlet, wherein the pump shaft extends downwardly into the vessel, and paddle means is drivingly secured thereto above the impeller for agitating the slurry in the vessel as the pump impeller is rotated, and further including means for recirculating part of the exiting slurry through a control valve and into the top of the vessel.

5,624,059

DEVICE FOR DISPENSING CORROSIVE LIQUIDS ACCURATELY AND WITHOUT CONTAMINATION

Timothy Y. T. Lo, Victoria, Canada, assignor to Axys Environmental Systems Ltd., Canada

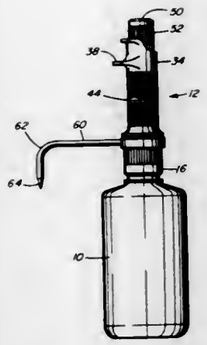
Filed Apr. 5, 1995, Ser. No. 417,760
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—309 11 Claims

1. A liquid dispensing device for use in association with a liquid container comprising:

a tubular barrel having a thumb stop at a top end and a cap at a bottom end for connection to the liquid container, the barrel having a cavity therein;

a hand grip fitting over the barrel slidable thereon, having a connection link to a plunger slidable within the cavity in the barrel;

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a liquid intake tube extending down from the base of the cavity in the barrel, through the cap, into the liquid container with a first non-return valve therein such that sliding movement of the hand grip upwards on the barrel draws liquid through the intake tube into the cavity, and

a liquid dispensing tube connected to the cavity with a second non-return valve therein, such that sliding movement of the hand grip downwards on the barrel dispenses liquid from the cavity through the dispensing tube.

5,624,060

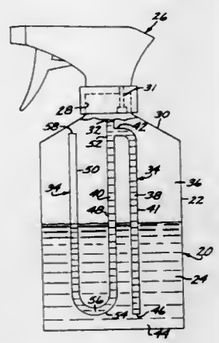
INVERTIBLE DISPENSING SYSTEM AND DIP TUBE

M. Edmund Ellion, P.O. Box 645, Santa Ynez, Calif. 93460, and James C. Pfautz, 12630 Hogue La., Bealeton, Va. 22712

Filed May 2, 1995, Ser. No. 432,250

Int. Cl.[6] B67D *5/40*

U.S. Cl. 222—376 **16 Claims**



1. A dip tube used in combination with a container and a liquid transfer device operable to transfer a liquid from the container, the dip tube comprising:

a first segment having a first end in communication with the liquid transfer device inlet and a second end extending to a bottom of an interior of the container, the second end being open;

a second segment having a first end in communication with the liquid transfer device inlet and a second end extending to the bottom of the interior of the container; and

a third segment having a first end in communication with the second end of the second segment and a second end extending to a top of the interior of the container, the second end being open.

5,624,061

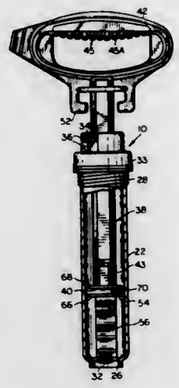
PUMP FOR COMPRESSION SPRAYERS

Steven J. Gager, Kentwood, and Paul D. Hurley, Holland, both of Mich., assignors to H.D. Hudson Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 218,767, Mar. 28, 1994, Pat. No. 5,435,469. This application Mar. 28, 1995, Ser. No. 411,481

Int. Cl.[6] B65D *83/00*

U.S. Cl. 222—402 **6 Claims**



1. A pump assembly for a compression sprayer comprising:

a cylinder having a closed inner end and an open outer end and a tubular sidewall interposed therebetween, the closed inner end having an opening and a valve disposed across the opening;

a cap coupled with the outer end of the cylinder;

a reciprocal piston in the cylinder having an inner end and an outer end, an outer handle and a shaft interposed between the handle and piston, the piston being reciprocal between an inserted position and a retracted position during a pumping cycle;

interengaging surfaces of the outer end of the cap and handle forming releasable latching means for releasably latching the piston in a fully inserted position in the cylinder;

the handle being rigid and being provided with a relatively soft grip for engagement by the fingers of the user of the sprayer for added comfort and for reducing hand fatigue during sprayer use.

5,624,062

FLEXIBLE SPOUT CONTAINER

Knud A. Pedersen; Sloane K. Pedersen, and Constance R. Pedersen, all of 16532 Cotuit Cr., Huntington Beach, Calif. 92649

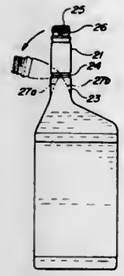
Filed Aug. 29, 1995, Ser. No. 520,383

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—528 **8 Claims**

1. A container for holding liquid and dispensing the liquid into a port, the container comprising;

a body having a reservoir portion unitarily formed with a generally rigid spout, the reservoir portion having a lateral side portion and a top portion, the spout having an outer portion having an open outlet end and an inner portion extending from the top portion, the spout further having a passageway permitting communication of liquid between the reservoir and the outlet end when the spout is in an extended position, the spout further having means for folding the outer portion of the spout downwardly from the extended position to a folded position where the outlet end extends away from the top portion and outwardly from the side portion to permit insertion of the outlet end of the spout into the port, the means for folding being a bend portion formed between the outer portion and the inner portion of the spout to permit folding of opposing portions of the spout inwardly together to restrict flow of liquid through the passageway.



5,624,063

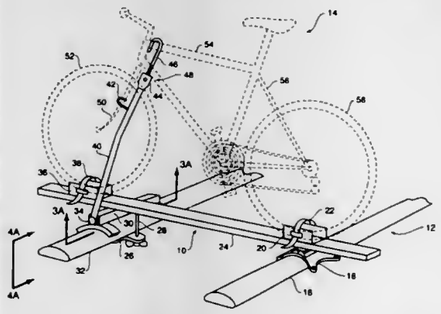
RIDE-READY BICYCLE CARRIER

Richard Ireland, Rancho Cucamonga, Calif., assignor to Sport Carriers, Inc., Grand Terrace, Calif.

Filed Mar. 14, 1996, Ser. No. 615,448

Int. Cl.[6] B60R *9/04*

U.S. Cl. 224—324 **18 Claims**



1. A bicycle carrier for mounting a bicycle having a frame onto an existing vehicle roof rack, said bicycle carrier comprising:

a pivot support member adapted to attach to the existing vehicle roof rack;

a support arm pivot pivotally connected to said pivot support member, said support arm pivot being free to rotate about said pivot support member;

a support arm having a first end and a second end, the first end connected to said support arm pivot;

an upper support member having a first end adapted to secure a first portion of the bicycle to said bicycle carrier, said upper support member having a second end adjustably connected to said second end of said support arm;

a locking device attached to said second end of said support arm and adjustably connected to said second end of said upper support member, said locking device being adapted to lock said upper support member in a fixed position relative to said support arm; and

a lower support member connected to said support arm, said lower support member adapted to secure a second portion of the bicycle to said bicycle carrier.

5,624,064

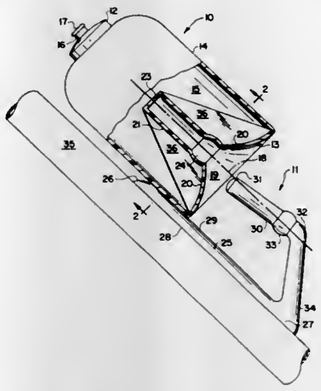
FLUID-CONTAINER AND MOUNT THEREFOR

John W. McGee, Jr., Richmond, Va., assignor to M-J Partnership, Chester, Va.

Filed Apr. 26, 1995, Ser. No. 427,822

Int. Cl.[6] B62J *11/00*

U.S. Cl. 224—414 **31 Claims**



1. A combination of a container and a holder for securement of said container to an object, said combination comprising:

a container having a bottom portion and sidewalls connected to said bottom portion, said bottom portion and said sidewalls defining an interior region, said bottom portion including a first section concave towards said interior region and attached to said sidewalls and a second section defining a channel along a central longitudinal axis of said container, said second section extending into said interior region and being substantially parallel to said sidewalls; and

a holder having a base portion for mounting to said object, said base portion adapted to be attached to said object, a bridging portion connected to said base portion, and a securing post extending from said bridging portion, said securing post adapted to engage said second section, said base portion including a first surface to press against said object and a second surface opposite said first surface configured so as to contact at least a portion of said sidewalls.

5,624,065

SAFETY SPORT BELT

Frank Steffe, 1025 Jassamine Way, Fort Lee, N.J. 07024

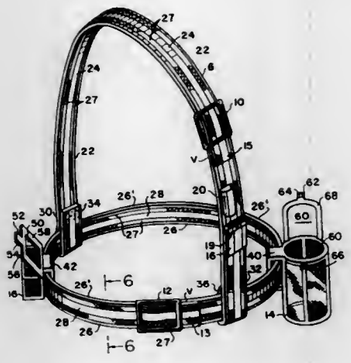
Filed Dec. 18, 1995, Ser. No. 574,074

Int. Cl.[6] F42B *39/02*

U.S. Cl. 224—625 **1 Claim**

1. A safety sport belt comprising a wide waist belt portion having buckling means, at least one shoulder strap having opposite ends slidingly and laterally connected at each said end thereof to said belt portion, said belt portion and strap each comprised of a polyester mesh fabric coated with red reflective material, side edges of said mesh fabric being stitched with a border stiffening material and edging fabric to inhibit unraveling, a transparent yellow/green strip centrally and axially aligned on outer surfaces of said strap and belt portions, said strip stitched over a non-transparent strip of a bright white polyester reflective material which is secured centrally longitudinally on said strap and said belt portions, said belt portion having ends securable to each other, a holder for a radio and a holder for a liquid container mounted on said belt, said holders being flexible, said strap having a front portion, adaptable to face a user's chest, said front portion of said

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strap having secured thereto a container suitable for carrying a lock key and a second container suitable for carrying a defensive spray applicator.

5,624,066

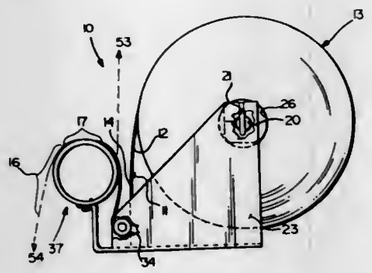
NON-STICK COATED LINERLESS LABEL DISPENSERS

Stephen Michalovic, Williamsville, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation-in-part of Ser. No. 135,999, Oct. 14, 1993, Pat. No. 5,375,752. This application Oct. 28, 1994, Ser. No. 330,666

Int. Cl.[6] B26F *3/02*

U.S. Cl. 225—106 **13 Claims**



1. Apparatus for manually dispensing linerless labels having a pressure sensitive adhesive face and a non-adhesive face, comprising:

means for mounting for ready dispensing a roll of linerless labels having the adhesive surface thereof as an inner surface of the labels on the roll;

means for providing label unwind tensioning of the roll by providing a brake drag effect to prevent excess label unwind;

means for insuring straightening of the labels, and no scuffing of the non-adhesive face, as the labels are dispensed from the roll; and

tear surface means including a first surface portion having low adhesion to the adhesive of the labels, and a non-stick second surface portion having much lower adhesion to the adhesive of the labels than the first surface, the second surface located further from the means for mounting the roll, along a path of movement of the labels, than the first surface, and said second surface portion comprising rigid material covered with a material selected from the group consisting essentially of non-stick varnishes including silicone epoxy coatings, polypropylene baked enamels, polytetrafluoroethylene coatings, and is polytetrafluoroethylene strips.

5,624,067

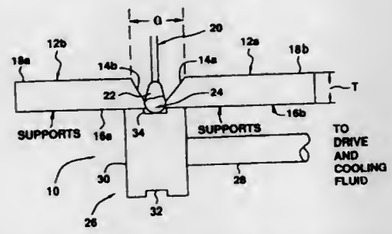
METHOD AND APPARATUS FOR WELD JOINING PIPE SECTIONS

Dennis D. Harwig; John M. Sanders, both of Canton, and Stephen W. Manring, Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 26, 1995, Ser. No. 533,896

Int. Cl.[6] B23K *37/06*

U.S. Cl. 228—216 **8 Claims**



1. A method of groove weld joining two pipe segments comprising the steps of:

preparing the joining ends of each pipe segment;

placing the joining ends of each pipe segment on a ceramic rotating preform;

providing an inert gas for shielding the welding process; forming a weld bead in the joining ends of the pipe segment; and

flowing the weld bead into the ceramic rotating preform to form an underbead on the inside surfaces of the joining ends of the pipe segment.

5,624,068

DIAMOND TOOLS FOR ROCK DRILLING, METAL CUTTING AND WEAR PART APPLICATIONS

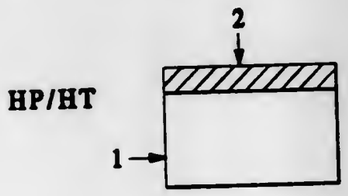
Mats G. Waidenström, Bromma; Udo K. R. Fischer, Vällingby; Lars H. Hillert, Saltsjö-Boo, all of Sweden, and Mahlon D. Dennis, Kingwood, Tex., assignors to Sandvik AB, Sandviken, Sweden, and Diamant Boart Stratabit S.A., Brussels, Belgium

Division of Ser. No. 297,905, Aug. 29, 1994, Pat. No. 5,496,638, which is a continuation of Ser. No. 73,480, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 774,897, Oct. 11, 1991, Pat. No. 5,264,283. This application Dec. 6, 1995, Ser. No. 568,293

Claims priority, application Sweden, Oct. 11, 1990, 9003251

Int. Cl.[6] B24D *18/00*; B23K *20/02*

U.S. Cl. 228—262.21 **6 Claims**



1. A method of making a composite body for rock drilling, metal cutting and wear part applications comprising prefabricating a diamond portion by CVD-or PVD-technique, prefabricating a cemented carbide portion, and bonding the diamond portion and cemented carbide portion by high pressure and high temperature, the diamond portion being a diamond body which is embedded in at least a part of the cemented carbide portion prior to said bonding.

5,624,069

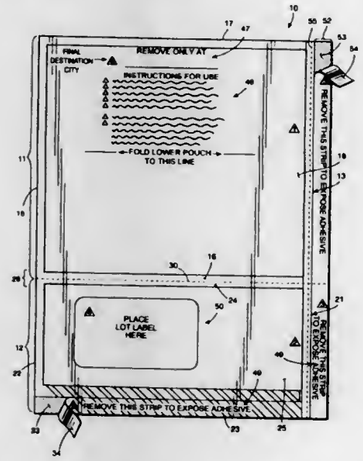
INTERNATIONAL DOCUMENT SHIPPING POUCH

Garry R. Coats, Dallas, and Marci S. Hayes, Fort Worth, both of Tex., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,383

Int. Cl.[6] B65D *27/08*

U.S. Cl. 229—74 **22 Claims**



1. A shipping envelope assembly comprising:

a first envelope having a first, open side allowing insertion of documents therein, a second side substantially parallel to said first side, and third and fourth sides substantially perpendicular to said first and second sides, and first and second faces;

a second envelope having a first, open side allowing insertion of documents therein, a second side substantially parallel to said first side, and third and fourth sides substantially perpendicular to said first and second sides, and first and second faces;

said first and second envelopes having a connection along a cooperating side of each, connecting said envelopes together;

a line of weakness formed at said connection of said first and second envelopes;

a first manually activatable adhesive pattern provided on at least one of said first and second envelopes first face for securing said second envelope first face to said first envelope first face when said second envelope is folded with respect to said first envelope along said line of weakness; and

a second manually activatable adhesive pattern provided on said second face of said first envelope for attachment of said first envelope to a package.

5,624,070

REUSABLE PACKAGING BOX

Gérard Guéniot, Lavigny, Switzerland, assignor to Tramapack S.A., Crisser, Switzerland

PCT No. PCT/CH95/00068, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/26909, PCT Pub. Date Oct. 12, 1995

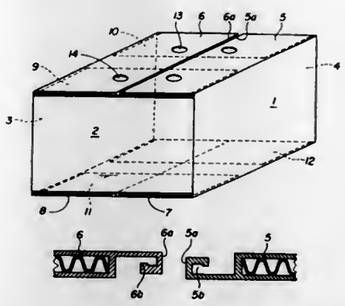
PCT Filed Mar. 30, 1995, Ser. No. 553,578

Claims priority, application Switzerland, Mar. 31, 1994, 972/94-8

Int. Cl.[6] B65D *5/66*

U.S. Cl. 229—155 **8 Claims**

1. A reusable packaging box, in the form of a rectangular parallelepiped, having four lateral walls joined together in such a manner that the lateral periphery of the box is closed, as well as at least two cover parts and at least two bottom parts substantially rectangular, forming each one an edge with a respective lateral wall and having a free border parallel to said edge, said free borders of said two cover and/or bottom parts including each one a profile, the cross-section and the construction of which are such that said free borders can be joined together by mutual engagement of said profiles.



5,624,071

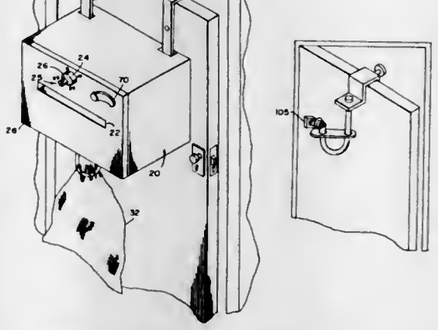
METHOD AND APPARATUS FOR RECEIVING PACKAGES

Folarin O. Sosan, 117 Varum St. NE. #6, Washington, D.C. 20011

Continuation-in-part of Ser. No. 937,162, Aug. 31, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 199,545

Int. Cl.[6] B65D *91/00*; E05B *73/00*

U.S. Cl. 232—17 **27 Claims**



1. A method of securing an article to a door mounted within a door frame, the method comprising the steps of: providing containment means for surrounding the article; providing securing means for securing the containment means to the door, the securing means comprising receiving means for receiving the containment means and locking means, including a lock, for securing the containment means to the receiving means and for preventing unauthorized removal of the article from the containment means when the containment means is received by the receiving means and secured by the lock;

surrounding the article with the containment means;

manipulating the containment means so as to position the containment means on the receiving means;

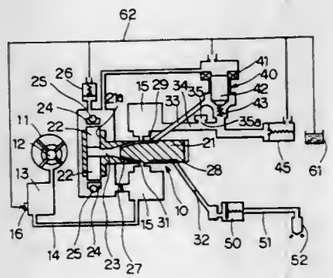
employing the lock to secure the containment means to the receiving means, whereby the unauthorized removal of the article is prevented;

wherein the containment means is flexible and comprises a sack having a mouth, wherein the mouth of the sack is secured in a

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closed condition by the securing means when the containment means is secured to the receiving means by the lock.

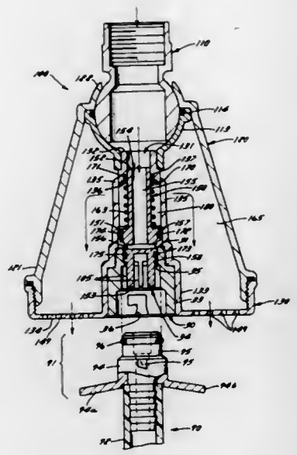
5,624,072
FUEL INJECTION PUMP HAVING REDUCED REFLUX PULSATION EFFECTS
Masahiro Okajima, Anjo, and Masaaki Kato, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed May 3, 1995, Ser. No. 434,399
Claims priority, application Japan, May 13, 1994, 6-099682
Int. Cl.[6] F02M *45/02*
U.S. Cl. 239—92 **16 Claims**



1. A fuel injection pump comprising:
a pressurizing feed pump for pressurizing fuel from a fuel tank;
an intake gallery downstream from the pressurizing feed pump for receiving pressurized fuel from the pump;
a fuel pressurizing part for press feeding fuel taken in from the intake gallery via an intake passage, the fuel pressurizing part including a rotatably displaceable distributing rotor within a plunger chamber and a plunger for pressurizing and depressurizing fuel within the plunger chamber by rotating integrally with the distributing rotor and reciprocating;
an injection nozzle for injecting fuel press fed from the fuel pressurizing part through a distribution passage;
a spill valve for opening to spill fuel from the fuel pressurizing part through a spill passage when fuel injection is terminated; and
a reflux passage for refluxing fuel to the intake gallery when the spill valve opens; wherein
the distributing rotor includes a distribution port communicating with the distribution passage when fuel within the plunger chamber is pressurized, an intake port communicating with the intake passage when fuel within the plunger chamber is depressurized, and a spill port communicating with the spill passage when fuel injection is terminated; and
the fuel injection pump further comprises a pulsation reducing means in the reflux passage for reducing pulsation of fuel refluxed to the intake gallery.

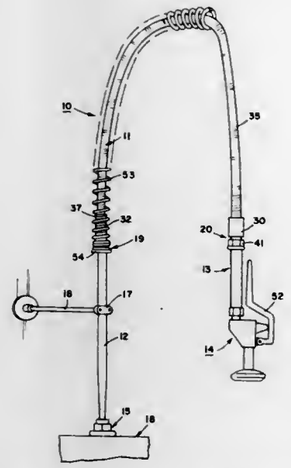
5,624,073
DIVERTER VALVE FOR SHOWER SPRAY SYSTEMS
John R. Mueller, 4066 Menomonee River Pkwy., Wauwatosa, Wis. 53222, and Henry M. Anderson, Jr., 7652 Dream Isle, N.E., Belding, Mich. 48809
Division of Ser. No. 333,849, Nov. 3, 1994, Pat. No. 5,560,548. This application Apr. 22, 1996, Ser. No. 635,590
Int. Cl.[6] B05B *1/16;* **F16K** *21/00*
U.S. Cl. 239—442 **24 Claims**

1. In a diverter valve for attaching a rinsing system in line with a shower head, wherein the rinsing system has a flexible conduit, said diverter valve comprising:
a. a valve housing having an annular cavity defined within said valve housing, a fluid inlet, a first fluid outlet, and a second fluid outlet, wherein the annular cavity allows fluid communication between the fluid inlet, the first fluid outlet and the second fluid outlet;
b. a valve runner slidingly mounted in the annular cavity of said valve housing;
c. means for constraining said valve runner within said cavity; and
d. a spring riding in the annular cavity adjacent said valve runner,
e. wherein said valve runner is slidable within the annular cavity to a first position in which said valve runner is seated adjacent said means for constraining such that fluid flows between the fluid inlet and the first fluid outlet,
f. wherein said valve runner is slidable within the annular cavity to a second position in which said valve runner is seated in the annular cavity of said valve housing such that fluid flows between the fluid inlet and the second fluid outlet.



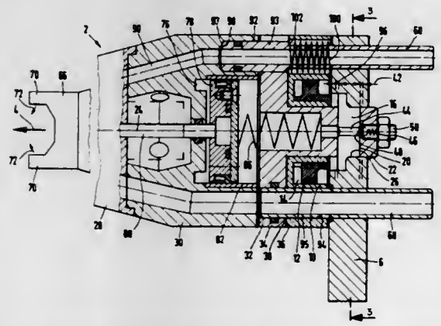
5,624,074
HOSE SUB-ASSEMBLY
Bernard Parisi, Barnegat, N.J., assignor to Component Hardware Group, Inc., Lakewood, N.J.
Filed Oct. 26, 1995, Ser. No. 548,405
Int. Cl.[6] B05B *15/00*
U.S. Cl. 239—588 **16 Claims**

13. A hose sub-assembly comprising
a flexible hose for conveying water therethrough;
a nozzle assembly at at least one end of said hose for expelling water therefrom, said nozzle assembly including a hollow fitting secured to said hose for passage of water therethrough, said fitting having an outwardly directed flange with a transverse end surface;
a first sleeve telescopically receiving said hose and said nozzle assembly therein, said sleeve having an internal shoulder abutting said flange and an internal thread;
a first nut having an externally threaded stem threaded into said internal thread of said sleeve, said stem including a flat end surface opposite said end surface of said fitting;
a first O-ring disposed between said surfaces of said fitting and said nut to seal said surfaces relative to each other;
a second nozzle assembly at an opposite end of said hose for passage of water into said hose, said second nozzle assembly having a second hollow fitting secured to said hose for passage of water therethrough, said second fitting having a flange with a transverse end surface;
a second sleeve telescopically receiving said hose and said second nozzle assembly therein, said second sleeve having an internal shoulder abutting said flange of said second fitting;



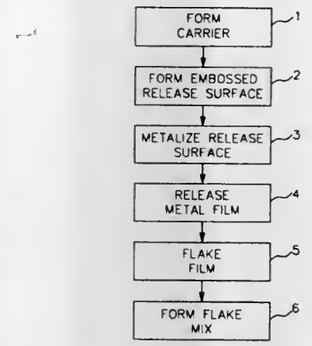
a spiral wound metal casing threaded into said sleeves in stretching relation with said hose received telescopically therein;
a second nut having an externally threaded stem threaded into said second sleeve and including a transverse end surface; and
a second O-ring disposed between said end surfaces of said second fitting and said second nut in sealing relation.

5,624,075
SPRAY APPARATUS ATTACHMENT DEVICE
Manfred Dankert, Rodermark, Germany, assignor to ITW Oberflachentechnik GmbH, Dietzenbach, Germany
Filed May 9, 1995, Ser. No. 438,009
Claims priority, application Germany, May 9, 1994, 44 16 311.8
Int. Cl.[6] B05B *5/00*
U.S. Cl. 239—690 **15 Claims**



1. A system for fixedly mounting an implement upon a support carrier, comprising:
a support carrier having a first mounting surface defined thereon;
an implement to be mounted upon said support carrier and having a second mounting surface defined thereon for engaging said first mounting surface of said support carrier;
fastener means operatively connected to said implement and said support carrier for securing said implement upon said support carrier in such a manner that a predetermined amount of play, comprising a predetermined space defined between said first and second mounting surfaces of said support carrier and said implement, may exist between said first and second mounting surfaces of said support carrier and said implement; and
means defined between said implement and said support carrier for moving said implement relative to said support carrier, when said implement is secured upon said support carrier by said fastener means, so as to tightly engage said first and second mounting surfaces of said support carrier and said implement and thereby eliminate said predetermined space and any play that may have existed between said first and second mounting surfaces of said support carrier and said implement despite said securing of said implement upon said support carrier by said fastener means.

5,624,076
PROCESS FOR MAKING EMBOSSED METALLIC LEAFING PIGMENTS
Richard G. Miekka, St. Petersburg, Fla.; Dennis R. Benoit, Simpsonville, S.C.; Richard M. Thomas, Dyer; James P. Rettker, Glenwood, both of Ill., and Karl Josephy, Los Angeles, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.
Division of Ser. No. 15,205, Feb. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 882,174, May 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,307
Int. Cl.[6] B02C *19/00;* **B22D** *23/00;* **B22F** *9/00*
U.S. Cl. 241—3 **28 Claims**



1. A process for preparing finely divided metal particles for use in producing a diffraction or a holographic image pattern, each of which has at least one embossed surface, comprising the steps of:
(a) providing a carrier sheet having a first side and a second side;
(b) applying a release coating onto at least one side of the carrier sheet, said coating having an inside surface and an outside surface, with an embossment pattern comprising a diffraction grating having from about 5,000 to about 11,000 grooves per cm;
(c) depositing, in the form of a thin film having an inside surface and outside surface, a metal onto said outside surface of said release coating, so that the inside surface of the film adopts the complement of the embossment pattern of the outside surface of the release coating;
(d) passing said carrier sheet with said release coating and said film of said metal through a release environment which causes the said release coating to separate the film and carrier but which is non-destructive of said metal;
(e) removing said film of said metal from said carrier sheet in a particulate form to produce the metal particles substantially free of said release coating, and collecting the metal particles in a solvent which is non-reactive with said metal; and
(f) breaking the metal particles into pigment particles.

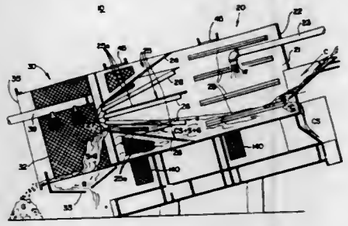
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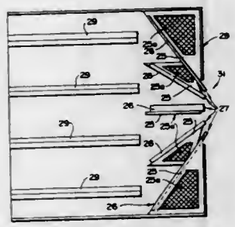
5,624,077

CONCRETE CYCLONE RECLAIMER

Henry S. Branscome, Williamsburg, Va., assignor to Henry Mfg. Co., Williamsburg, Va.

Continuation-in-part of Ser. No. 315,624, Sep. 30, 1994, Pat. No. 5,540,395. This application Apr. 7, 1995, Ser. No. 418,459
Int. Cl.[6] B02C *19/00;19/12*
U.S. Cl. 241—20 **12 Claims**





12. A concrete reclaiming method for separating concrete into its constituent parts, said method comprising the steps of:

feeding concrete into a rotating closed chamber oriented in a non-horizontal position;

said non-horizontal position enabling the mixture egress through the closed chamber by the force of gravity;

producing a cement slurry in the closed chamber by the addition of water to the cement;

draining said cement slurry out of the closed chamber leaving a mixture of sand and gravel;

rotating a plurality of blades about a center-point of said closed chamber,

further separating said cement slurry from said sand and gravel through a screen portion in each of said plurality of blades;

said rotating the plurality of blades, and the force of gravity, directing said mixture through an aperture into a screen chamber with a rotating screen;

subjecting said mixture to a high pressure wash;

said high pressure wash and rotation of said screen chamber result in sand particles permeating said screen and gravel chunks remaining in said screen chamber;

discharging said gravel from the screen chamber;

collecting said cement slurry, said sand and said gravel in separate containers.

5,624,078

METHOD OF MAKING CRUMB RUBBER

Donald H. Bredbeck, Houston, Tex., assignor to Hahn & Clay, Houston, Tex.

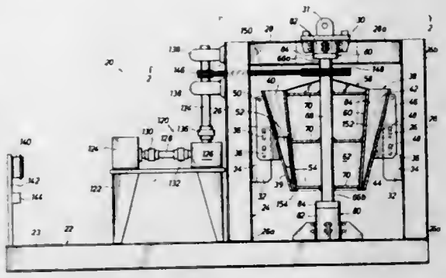
Division of Ser. No. 229,727, Apr. 19, 1994, Pat. No. 5,522,559. This application Apr. 3, 1996, Ser. No. 627,945
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—24.14 **20 Claims**

1. A method for making crumb rubber from tire chips, the method comprising the steps of:

feeding a tire chip into an annular space between a second cone positioned substantially within a first cone;

rotating one of said cones relative to said other cone;

tearing small pieces of rubber off of the edge of the tire chip; and



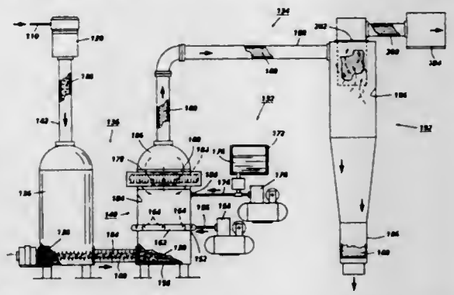
allowing the crumb rubber to fall through a bottom annular opening between the first and second cones.

5,624,079

INJECTION BLENDING OF TONER DURING GRINDING

Fumii Higuchi, Mississauga, and Marsha A. Butler, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 10, 1995, Ser. No. 402,230
Int. Cl.[6] B02C *19/06*
U.S. Cl. 241—39 **16 Claims**



1. An apparatus for the mixing toner having a first composition and a material having a second composition substantially different from the first composition to form a toner mixture, comprising:

a grinder defining a grinding chamber for receiving therein a supply of toner having the first composition and the material having a second composition;

means for adding the material into the grinding chamber;

means for adding the toner into the grinding chamber; and

means for mixing the toner and the material within the grinding chamber to form the toner mixture.

5,624,080

AGITATOR MILL

Norbert Stehr, Grünstadt, and Philipp Schmitt, Lampertheim, both of Germany, assignors to EVV-Vermögensverwaltungs-GmbH, Wiesloch, Germany

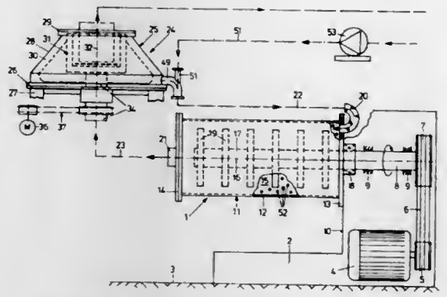
Filed Sep. 8, 1995, Ser. No. 525,142
Claims priority, application Germany, Sep. 9, 1994, 44 32 200.3
Int. Cl.[6] B02C *17/16*
U.S. Cl. 241—80 **11 Claims**

1. An agitator mill comprising

a grinding receptacle (**11**) enclosing a grinding chamber (**15**) with a central longitudinal axis (**16**),

an agitator unit rotatably disposed in the grinding chamber (**11**) concentrically of said central longitudinal axis (**16**),

a drive motor (**4**) coupled with the agitator unit,



a grinding-stock/auxiliary-grinding-body discharge line (**23**) leading out of the grinding chamber (**15**),

a grinding-stock/auxiliary-grinding-body separator device (**24**, **24'**, **24"**, **24"'**) separate from the agitator mill (**1**) and connected to the discharge line (**23**),

a grinding-stock supply and auxiliary-grinding-body return line (**22**), which has a direction and is connected to the separator device (**24**, **24'**, **24"**, **24"'**) and a grinding-stock supply line (**51**) on the one hand, and to the grinding chamber (**15**) on the other hand,

a grinding-stock pump (**53**) arranged in the grinding-stock supply line (**51**),

wherein the grinding receptacle (**11**), the grinding-stock/auxiliary-grinding-body discharge line (**23**), the separator device (**24**, **24'**, **24"**, **24"'**) and the grinding-stock supply and auxiliary-grinding-body return line (**22**) form a closed system, and

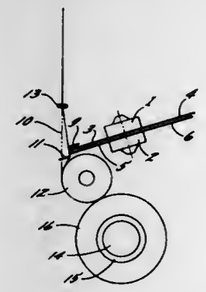
wherein the grinding-stock pump (**53**) disposed in the grinding-stock supply line (**51**) serves as a pumping device for grinding stock and auxiliary grinding bodies (**52**) in the grinding-stock supply and auxiliary-grinding-body return line (**22**).

5,624,081

YARN WINDING APPARATUS

Herbert Turk, Remscheid, and Herbert Schiminski, Huckeswagen, both of Germany, assignors to Barmag AG, Remscheid, Germany

PCT No. PCT/EP93/03527, § 371 Date Aug. 1, 1995, § 102(e) Date Aug. 1, 1995, PCT Pub. No. WO94/14694, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 14, 1993, Ser. No. 491,880
Claims priority, application Germany, Dec. 23, 1992, 42 43 671.0; Mar. 20, 1993, 43 08 989.5
Int. Cl.[6] B65H *54/28*
U.S. Cl. 242—43 A **6 Claims**



1. A yarn traversing apparatus comprising

means for reciprocating an advancing yarn transversely to its advance direction over a predetermined traverse stroke and so as to define a traverse plane,

at least two guide arms mounted for rotation about closely adjacent parallel or coaxial axes so that the rotating arms define closely adjacent parallel planes and the extremity of each rotating arm is adapted to pass along the traverse plane,

means for rotating each of the arms in opposite directions so that one arm moves in a direction toward one end of the traverse stroke and the other arm moves in the opposite direction and from the one end of the traverse stroke toward the other end thereof,

a yarn guide rail mounted on one side of the traverse plane and defining a main guide edge which extends in a direction generally parallel to the traverse stroke and through the traverse plane in a medial portion of the yarn traverse stroke to thereby guide the yarn and control its traversing speed, and wherein the main guide edge does not extend through the traversing plane adjacent either of the end regions of the traverse stroke, and

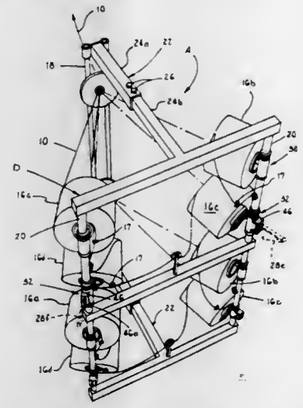
an auxiliary guide edge in each of the end regions of the traverse stroke and mounted on the other side of the traverse plane, with the auxiliary guide edges each extending through the traverse plane so that in the end regions the auxiliary guide edges guide the yarn and control its transverse speed.

5,624,082

IN-LINE YARN FEED CREEL

Lang S. Ligon, P.O. Box 5578, Station B, Greenville, S.C. 29606

Filed Sep. 11, 1995, Ser. No. 526,405
Int. Cl.[6] B65H *49/02;* **D03D** *47/34*
U.S. Cl. 242—131 **19 Claims**



1. A yarn creel for feeding yarn to an associated textile machine in a generally in-line yarn delivery path comprising:

an upstanding creel having a front frame and a rear frame;

a first pair of yarn package holders carried by said rear frame in a laterally spaced relation;

a second pair of yarn package holders carried by said rear frame in a laterally spaced relation, and said second pair of yarn package holders being vertically spaced from said first pair of yarn package holders;

a yarn eyelet carried by said front frame;

said first pair of yarn package holders being disposed so that yarn packages mounted on said yarn package holders have a center line which extends along a substantially horizontal plane towards said yarn eyelet; and

said second pair of yarn package holders being disposed in an upwardly inclined position so that yarn packages mounted on said yarn package holders have a center line which extends upwardly towards said yarn eyelet; whereby

said first and second pairs of yarn package holders are positioned to mount four yarn packages tailed together to feed yarn sequentially along at least two linear planes through said

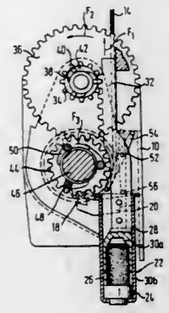
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yarn eyelet and on to a single associated textile machine with a minimum of bends in said yarn delivery path.

5,624,083
BELT RETRACTOR WITH A BELT PRETENSIONER ACTING ON THE BELT DRUM

Thomas Mödinger, Alfdorf-Vordersteinenberg, and Johannes Schmid, Schwäbisch Gmünd-Hussenhofen, both of Germany, assignors to TRW Repa GmbH, Alfdorf, Germany

Continuation-in-part of Ser. No. 88,823, Jul. 8, 1993, Pat. No. 5,443,222. This application Jun. 2, 1995, Ser. No. 458,888
Claims priority, application Germany, Jul. 13, 1992, 42 22 993.6
Int. Cl.[6] B60R *22/46*
U.S. Cl. 242—374 **2 Claims**



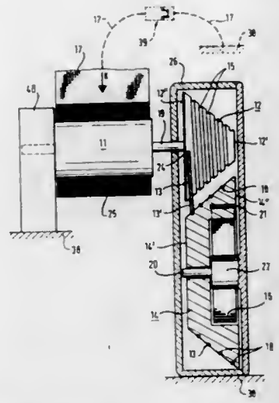
1. A belt retractor for vehicle safety belts comprising:
a housing;
a belt drum rotatably mounted in said housing;
a linear drive for providing a linear drive stroke;
an intermediate wheel rotatably supported on said housing;
conversion means for converting said linear drive stroke into rotation of said intermediate wheel to cause said intermediate wheel to rotate at a first rate;
a step-up gear having an input connected with said intermediate wheel and an output connected with said belt drum for transmitting rotation of said intermediate wheel to said belt drum to rotate said belt drum at a second rate substantially higher than said first rate; and
said linear drive being formed by a slidable piston and cylinder drive having a pyrotechnical gas generator, said piston being hollow, and said gas generator being positively fitted into said piston to slide with said piston.

5,624,084
TENSION REDUCER

Robert Kopetzky, Lonsee; Sabine Dreizler, Stuttgart; Ulrich Diepold, and Matthias Pleyer, both of Ulm, all of Germany, assignors to Takata Vehicle Safety Technology GmbH, Ulm, Germany

Continuation-in-part of Ser. No. 103,248, Aug. 9, 1993, Pat. No. 5,409,176. This application Feb. 1, 1995, Ser. No. 382,080
Claims priority, application Germany, Mar. 16, 1994, 44 09 009.9; Jul. 6, 1994, 44 23 729.4
Int. Cl.[6] B60R *22/44*
U.S. Cl. 242—375.3 **15 Claims**

1. Spring-driven reeling mechanism for safety belts (**17**) in motor vehicles comprising a belt reel (**11**) which can be blocked against rotation in the pull-out direction by a pull-out lock (**40**) triggerable by accelerations caused by an accident and/or with an attempted rapid pull-out of the safety belt (**17**) and which is rotationally fixedly connected to a first draw reel (**12**) which tapers in an axial direction and has a spirally-shaped groove (**15**) on its

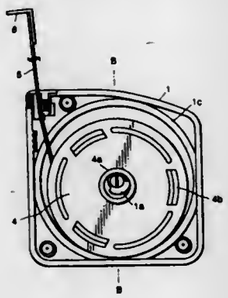


periphery; wherein the first draw reel (**12**) is rotationally fixedly connected, via a flexible draw member (**13**) wound contrary to the direction of winding of the safety belt (**17**) on the belt reel (**11**) into the guide groove (**15**) and secured at one end to the first draw reel (**12**), to a second draw reel (**14**) which tapers in the opposite axial direction and is arranged parallel to and aligned sideways relative to the first draw reel (**12**), with the second draw reel (**14**) having a spiral guide groove (**18**) and with the other end of the draw member (**13**) being secured to the second draw reel (**14**) and being wound into the guide groove (**18**), wherein said second draw reel (**14**) is biased by a spring arrangement (**16**) in a direction such as to wind the draw member (**13**) onto the second draw reel (**14**) and the safety belt (**17**) onto the belt reel (**11**), and wherein the two guide grooves (**15**, **18**) are so shaped and arranged on the draw reels (**12**, **14**) that the tensioned draw member (**13**) which connects the two draw reels (**12**, **14**) passes essentially kink-free into the two draw member windings on the draw reels (**12**, **14**), characterized in that the spring arrangement (**16**) is accommodated in a hollow cavity (**21**) of the second draw reel (**14**) which is surrounded at least partly by the guide groove (**15**), and the hollow cavity (**21**) is covered by a cover (**52**) secured axially to the second draw reel (**14**) in such a way that the spring arrangement (**16**) is only surrounded by parts which rotate with the second draw member (**14**).

5,624,085
TAPE MEASURE

Tsutomu Usami, Kyoto, Japan, assignor to Kyoto Measuring Instruments Corp., Kyoto, Japan

Filed Apr. 20, 1995, Ser. No. 425,527
Claims priority, application Japan, Jun. 15, 1994, 6-132741; Jun. 15, 1994, 6-132742
Int. Cl.[6] B65H *75/48*; **G01B** *3/10*
U.S. Cl. 242—381 **17 Claims**

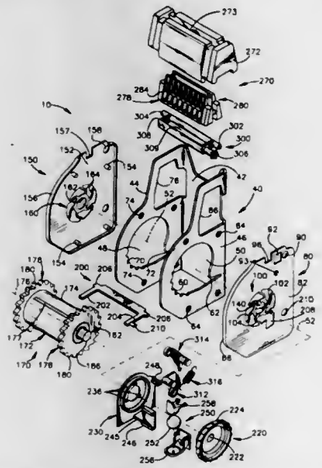


1. A tape measure comprising a housing, a support shaft in said housing, a winding reel having a winding spring and a measuring strip, said winding reel having a bearing bore, said support shaft being disposed in said bearing bore, said shaft having a first cross-sectional area, said bearing bore having a second cross-sectional area which is greater than said first cross-sectional area to thereby provide a clearance space between said shaft and said bearing bore which enables said bearing bore to freely move eccentrically relative to said shaft due to the weight of the winding reel and the rotation of said winding reel on said shaft, whereby during winding of the measuring strip by the force of said spring, said winding reel is freely moveable eccentrically in said housing, said winding reel having an outer engaging surface, said housing having an inner engaging surface, said eccentric movement of said winding reel in said housing effecting contact between said outer engaging surface of said winding reel and said inner engaging surface of said housing to thereby provide a braking action during winding of said winding strip onto said winding reel in said housing.

5,624,086
SEAT BELT RETRACTOR

Lloyd M. Snyder, Sterling Heights, and Joseph G. Dick, Macomb, both of Mich., assignors to TRW Vehicle Safety Systems, Inc., Lyndhurst, Ohio

Filed Sep. 1, 1995, Ser. No. 523,011
Int. Cl.[6] B60R *22/42*
U.S. Cl. 242—381.1 **16 Claims**

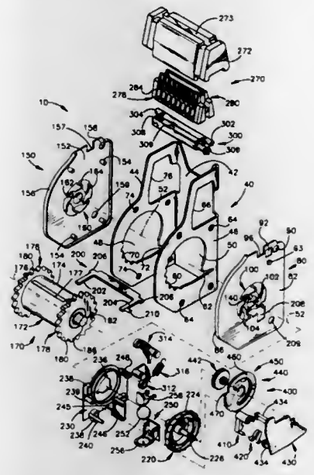


1. A seat belt retractor comprising:
a length of seat belt webbing which is extensible about a vehicle occupant to restrain the vehicle occupant;
a spool on which said belt webbing is wound, said spool being rotatable in a belt retraction direction and in an opposite belt withdrawal direction;
a belt webbing clamp mechanism having a released condition in which said belt webbing is movable through said clamp mechanism and a clamping condition in which said clamp mechanism clamps said belt webbing to block the withdrawal of belt webbing from said retractor;
sensing means for sensing a vehicle emergency situation;
an actuator which is movable in a first direction from a first position to a second position in response to said sensing means sensing an emergency situation; and
first means forming a force-transmitting connection between said actuator and said clamp mechanism for actuating said clamp mechanism when said actuator moves to its second position, said first means including second means for disabling the force-transmitting connection in the event of inability of said clamp mechanism to block the withdrawal of belt webbing from said retractor.

5,624,087
SEAT BELT RETRACTOR WITH CINCH MECHANISM

Joseph G. Dick, Macomb, and Lloyd M. Snyder, Sterling Heights, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

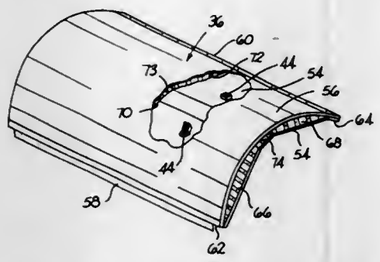
Filed Sep. 1, 1995, Ser. No. 522,864
Int. Cl.[6] B60R *22/415;22/42*
U.S. Cl. 242—381.1 **15 Claims**



1. A seat belt retractor comprising:
a length of seat belt webbing which is extensible about a vehicle occupant to restrain the vehicle occupant;
a spool on which said belt webbing is wound, said spool being rotatable about an axis in a belt retraction direction and in an opposite belt withdrawal direction;
an actuator supported for movement on said retractor;
sensing means for sensing a vehicle emergency situation;
said actuator being movable with said spool from a first position to a second position in response to said sensing means sensing a vehicle emergency situation;
a primary belt locking mechanism which is actuatable in response to movement of said actuator from the first position to the second position to block withdrawal of belt webbing from said retractor; and
a locking mechanism for actuating said primary belt locking mechanism to block withdrawal of belt webbing from said retractor in response to withdrawal of a predetermined amount of seat belt webbing from said spool, said locking mechanism including a drive mechanism which is driven by rotation of said spool and a member actuated by said drive mechanism when said predetermined amount of seat belt webbing is withdrawn from said spool;
said locking mechanism, including said drive mechanism and said member, being supported on said actuator for movement with said actuator.

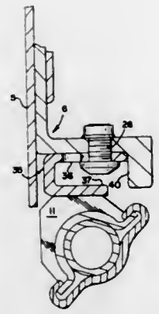
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5,624,088
SPACECRAFT STRUCTURE AND METHOD
John N. Fiore, Hagerstown, Md., assignor to Fairchild Space and Defense Corporation, Germantown, Md.
Division of Ser. No. 193,465, Feb. 8, 1994, Pat. No. 5,474,262. This application Aug. 31, 1995, Ser. No. 521,366
Int. Cl.[6] B64G *1/27*
U.S. Cl. 244—158 R **3 Claims**



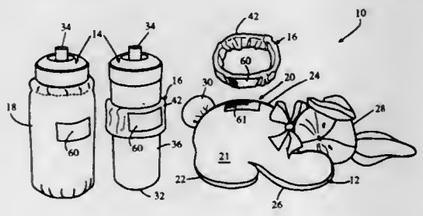
1. A method of manufacturing a spacecraft structure with a curved outer spacecraft surface having a plurality of spacecraft panel members with at least one of said panel members being adapted for carrying a payload comprising:
A. providing an exterior panel for said spacecraft panel member being adapted for carrying a payload;
B. providing an interior panel for said spacecraft panel member being adapted for carrying a payload;
C. providing at least one payload mounting insert;
D. locating said payload mounting insert in said interior panel;
E. providing at least one honeycomb member having a honeycomb material;
F. locating said honeycomb member between said exterior and interior panels;
G. bonding said exterior and interior panels together with said honeycomb member located there between to form said panel member being adapted for carrying a payload;
H. combining said bonded panel member being adapted for carrying a payload to form part of said plurality of spacecraft panel members providing said curved outer surface for said spacecraft structure with said panel members providing the sole load support for said spacecraft structure and said spacecraft structure being of frameless construction; and
I. while combining said bonded panel member being adapted for carrying a payload to form part of said plurality of spacecraft panel members locating said interior panel with said mounting insert in position to be used to mount said payload.

5,624,089
PIPE ANCHORING SYSTEM
Rudolph E. Nadherny, Naperville, and Mark Kampf, Crystal Lake, both of Ill., assignors to Ireco, Inc., Chicago, Ill.
Filed Aug. 21, 1995, Ser. No. 517,204
Int. Cl.[6] E21F *17/02*
U.S. Cl. 248—62 **6 Claims**



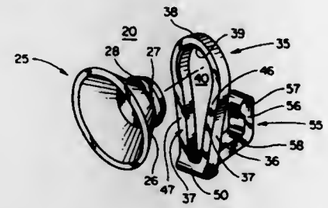
1. In combination, one-piece pipe anchor base and permanently fastened thereto a bracket for mounting the pipe anchor base to the inside of a right angle structural part having a bolt receiving hole extending through one leg thereof,
said pipe anchor base comprising, a longitudinally extending pipe receiving saddle portion in the interior of which a longitudinally extending pipe may be seated and clamped by means of an interengaging wedge clamp, a pair of spaced transversely extending flanges adjacent the opposite ends of said saddle portion, and longitudinally extending wedge clamp receiving and retaining flanges projecting laterally on opposite sides of said saddle portion, and
said bracket being interfittable within said right angle structural part and having a first portion which fits flatwise against the inside of said one leg of said right angle structural part and a second portion which is juxtaposed to or engages the inside of the other leg of said right angle structural part, said first portion of said bracket having a single elongated bolt receiving opening therein elongated in at least one direction and an end portion of which is registrable with said bolt receiving hole in said one leg of said right angle structural part,
whereby upon tightening a bolt extending through said hole and said portion of said elongated opening registrable with said hole said bracket is retained against appreciable movement relative to said right angle structural part, and said anchor base and the pipe clamped therein are by means of said bracket anchored to said right angle structural part.

5,624,090
INFANT FEEDING SYSTEM
Rebecca Gammelgaard, 466 Oak Hill Rd., Chaska, Minn. 55318
Filed Mar. 27, 1995, Ser. No. 410,843
Int. Cl.[6] F10M *11/00*
U.S. Cl. 248—102 **14 Claims**



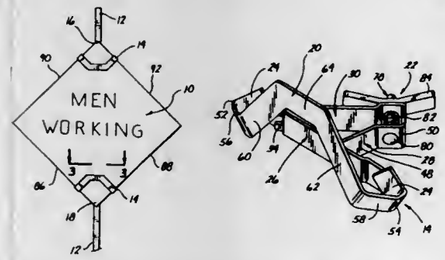
1. An infant feeding system comprising:
a baby bottle having a nipple end, a bottom end, and side walls connecting the nipple end to the bottom end;
a support member providing a stable resting support for the baby bottle when positioned thereon;
a grasping member sized to receive and hold the baby bottle therein; and
a mount that grasps the grasping member at a point on the support member so that the grasping member and baby bottle are rotationally adjustable with respect to the support member to accommodate a variety of feeding positions.

5,624,091
SUCTION CUP AND HANGER
William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.
Continuation-in-part of Ser. No. 386,076, Feb. 9, 1995. This application Nov. 8, 1995, Ser. No. 555,152
Int. Cl.[6] A45D *42/14*
U.S. Cl. 248—205.5 **16 Claims**



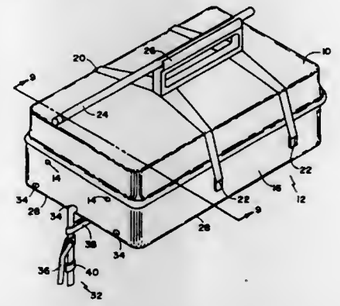
1. A suction cup and hanger combination, comprising a suction cup having a flexible cup shaped member with mounting means on one end thereof, an elongated hanger member having a hook at one end and mechanism including spaced apart concave arms forming an arcuate opening at the other end for loosely and detachably mounting said hanger member on said suction cup mounting means, said flexible cup shaped member being adapted to be mounted on a vertical support surface with the juncture of said hanger member and said hook being positioned either in contact with the vertical support surface on which the suction cup is mounted or the flexible cup shaped member of said suction cup.

5,624,092
ADJUSTABLE SIGN MOUNTING BRACKETS
Jack H. Kulp, San Juan Capistrano, Calif., and John D. McKenney, Arroyo Seco, N.M., assignors to Traffix Devices, Inc., San Clement, Calif.
Filed Aug. 16, 1994, Ser. No. 291,121
Int. Cl.[6] E04G *3/00*
U.S. Cl. 248—219.3 **33 Claims**



1. An adjustable bracket for mounting a display sign on a post, said bracket being adapted for removable installation on said post and comprising:
a first surface adapted to abut said post along a first line of contact;
a second surface adapted to abut said post along a second line of contact; and
an adjustable clamping plate comprising a third surface which is adapted to translate through a range of positions when said bracket is installed on said post, from a position wherein it does not contact said post, to a position wherein it firmly abuts said post along a third line of contact which lies at an acute angle with respect to each of said first and second lines of contact, the clamping plate having a first end which is adapted for removable attachment to said first surface, and having a second end which is adapted for adjustable removable attachment to said second surface, the clamping plate being adapted to contact said post only along said third line of contact;
wherein the clamping plate first end has first and second tangs extending therefrom, and said first surface has a pair of notches therein which are adapted to correspond and engage with said first and second tangs, respectively, such that said clamping plate first end may be attached to said first surface by engaging said first and second tangs with their corresponding notches, and may be detached from said first surface by disengaging said tangs from their corresponding notches;
such that when said third surface does not contact the post or only loosely abuts the post along said third line of contact, the bracket may be moved vertically along the post or removed therefrom, and when said third surface is adjusted to more firmly abut the post, the bracket is fixed at a predetermined vertical location thereon.

5,624,093
CLAMPING PAINT TRAY ASSEMBLY WITH HOLDING APPARATUS
R. Wayne Gemmell, 2520 Pasqua Street, Regina, Saskatchewan, Canada
Filed Jun. 5, 1995, Ser. No. 463,712
Int. Cl.[6] E04G *5/06*
U.S. Cl. 248—231.41 **5 Claims**

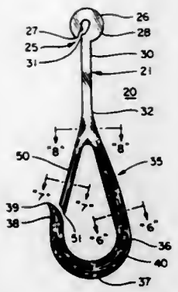


1. A paint tray assembly comprising a base having radiused corners extending around the bottom perimeter thereof, a paint holding container supported by said base and means for clamping said paint tray assembly to an object comprising:
(i) a clamp rod mountable in said paint tray assembly extending downwardly therefrom,
(ii) a clamp jaw and a locking collar each slideably engaging said clamp rod
(iii) a clamping handle pivotably engaging said clamp jaw, and
(iv) locking means interposed between said clamping handle and said locking collar
whereby closing said clamp handle will lock said locking collar to said clamp rod and cause said clamp jaw to compressably engage an object below said base.

5,624,094
SMALL ORNAMENT HANGER
William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.
Filed Feb. 9, 1995, Ser. No. 386,094
Int. Cl.[6] F16B *45/00*
U.S. Cl. 248—231.81 **6 Claims**

1. An ornament hanger comprising:
an elongated loop shaped structure having an arcuate portion at one end and another end in the form of a substantially closed loop with a slit opening having a protrubence extending thereinto;

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a bendable closure member for cooperation with said arcuate portion;

a part of said arcuate portion having an enlarged portion dumb bell shaped in transverse cross section to provide strengthening of said arcuate portion permitting heavy ornaments to be supported by said ornament hanger, at least a part of the enlarged portion dumb-bell shaped in transverse cross section being asymmetrical such that one end of the dumb-bell shape is larger than the other end of the dumb-bell shape.

5,624,095

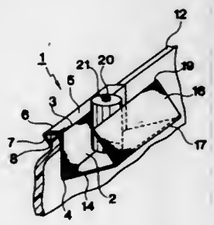
RESILIENT SUPPORT CADDY

Diane M. Zissu, 5 Fox Chase Dr., Watchung, N.J. 07060

Continuation of Ser. No. 89,836, Jul. 12, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 524,110

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—231.81 **3 Claims**



1. A caddy consisting of:

a first planar wall having first and second parallel edges;

a second planar wall having a third parallel edge, said first edge connecting said first and second planar walls to form a first resilient joint about which the second wall rotates relative to the first wall, said first and second walls forming an acute angle;

a third planar wall having a fourth edge, the third edge connecting said second and third planar walls to form a second resilient joint about which the third wall rotates relative to the second wall, said second and third walls forming an acute angle;

a fourth planar all having a fifth edge, the second edge connecting said first and fourth planar walls the fourth all being approximately normal to the first wall, the second edge forming a third resilient joint about which the fourth wall rotates relative to the first wall, said first and fourth walls forming an acute angle; and

a fifth planar wall having a sixth edge parallel to the fifth edge, the fifth edge connecting the fifth wall to the fourth wall to form a fourth resilient joint about which the fifth wall rotates relative to the fourth wall.

5,624,096

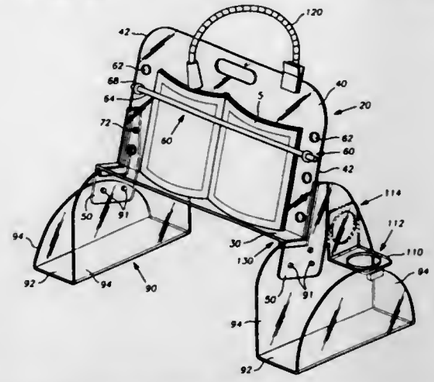
BOOK SUPPORT APPARATUS

Debra Haynes, 943 Dogwood, Costa Mesa, Calif. 92627

Filed Feb. 12, 1996, Ser. No. 600,299

Int. Cl.[6] A47B *97/04*

U.S. Cl. 248—451 **9 Claims**



1. A book support apparatus comprising:

a means for supporting a book, the supporting means including a first, near horizontal, and a second, near vertical, supporting surfaces for supporting the book;

a pair of means for mounting the book supporting means, the book supporting means mounting means being positioned in a mutually spaced apart relationship each extending downwardly from the near horizontal supporting surface and terminating in a downwardly facing rest edge so that, with the rest edges in contact with a flat support surface, the apparatus is able to support the book with stability on the flat support surface;

the near vertical supporting surface providing a means for holding the book in an open state, and a means for magnifying printed matter of the book to a viewer in front of the book, the apparatus further including a pair of supporting bases, each of the bases being formed from a single sheet, as a U-shape having a flat horizontal portion interconnected to a pair of vertical, spaced apart upwardly extending arms, the bases providing means for dismountable engagement with the book supporting means, such that with the flat horizontal portions of the bases in resting contact with a flat support surface, the book supporting means is positioned above the flat support surface by an amount to allow the torso or legs of a horizontal person resting on the flat support surface to fit comfortably under the book supporting means.

5,624,097

SHEET-SUPPORTING STAND

David J. Potter, 13 High Street, Loddon, Norfolk NR146ET, England

Filed Jun. 24, 1994, Ser. No. 265,841

Claims priority, application United Kingdom, Jun. 26, 1993, 9313260; Jun. 6, 1994, 9411259

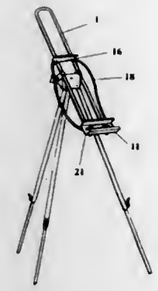
Int. Cl.[6] A47B *97/04*

U.S. Cl. 248—464 **14 Claims**

1. A sheet-supporting stand, comprising:

a pair of side legs and a rear leg, the rear leg having an end affixed to a cylindrical boss, the side legs having free ends, the side legs being pivotably mounted on pivot means, wherein a first angle between the side legs can be adjusted by pivoting one or both of the side legs,

a sheet supporting element, the boss being held between two pairs of plates, each pair of plates including means for holding the sheet-supporting element between members of said each pair of plates, and



means for tightening the pairs of plates, the tightening means comprising means for simultaneously tightening both the cylindrical boss and the sheet-supporting element in a fixed position, the tightening means also simultaneously fixing a second angle made by the rear leg relative to a plane defined by the side legs.

5,624,098

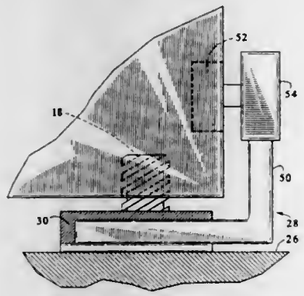
ANTI-TIP ANCHOR DEVICE FOR AN APPLIANCE IN COMBINATION WITH AN INTERLOCK SWITCH

Marvin J. McDowell, Covington, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 11, 1995, Ser. No. 420,584

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—550 **18 Claims**



1. A combined electrical interlock and tip prevention device for an appliance having legs for standing on a horizontal support surface, the device comprising:

a first bracket attached to the support surface having an opening formed in a plane parallel to the support surface wherein the opening is capable of receiving one of the legs of the appliance wherein the leg is in continuous contact with the support surface;

an interlock switch electrically connected to control circuitry of the appliance; and

a second bracket attached to the first bracket wherein the second bracket contacts the interlock switch of the appliance when the leg of the appliance is properly positioned in the opening of the first bracket.

5,624,099

ELASTIC MOUNTING APPARATUS FOR MOUNTING A TURBOCHARGER HOUSING ON AN INTERNAL COMBUSTION ENGINE

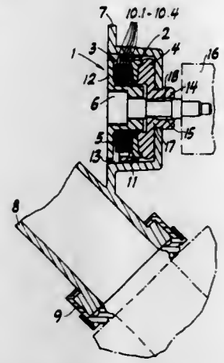
Karl-Heinz Spies, Birkenau; Willi Schweikert, Heidelberg; Armin Barth, Gorxheimertal, and Hans-Gerhard Sander, Weinheim, all of Germany, assignors to Firma Carl Freudenberg, Germany

Filed Apr. 10, 1995, Ser. No. 419,332

Claims priority, application Germany, Apr. 18, 1994, 44 13 393.6

Int. Cl.[6] F02B *37/00;* **F02M** *35/10;13/00;* **F16L** *17/073*

U.S. Cl. 248—562 **7 Claims**



1. An apparatus for mounting a turbocharger housing including an intake pipe on an internal combustion engine comprising:

a clamping element comprising a first spring element and a second spring element arranged in series, said clamping element connecting said housing to said internal combustion engine so as to allow relative vibration between said housing and said internal combustion engine, said first spring element comprising at least one annular spring member made of an elastomeric material, said second spring element comprising at least four disk springs, each said disk spring being oriented in a direction opposite to that of an adjacent disk spring;

a clamping screw, said second spring element being compressible by said clamping screw such that a spring rate of said second spring element, after compression to an intended preload, is substantially zero, said clamping screw being connectable to a crankcase of said internal combustion engine; and

a sealing element of an elastic material connecting said intake pipe to a cylinder head of said internal combustion engine.

5,624,100

DEVICE FOR ACTUATING A CONTROL MEMBER

Ekkehard Bolte, Aachen-Waldheim; Bernd Ackermann, Aachen, and Leo Bertram, Stolberg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 488,309

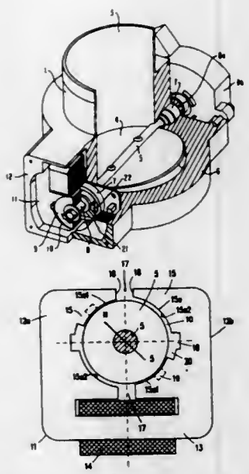
Claims priority, application Germany, Jun. 10, 1994, 44 20 369.1; Feb. 9, 1995, 195 04 243.3

Int. Cl.[6] F16K *31/08*

U.S. Cl. 251—65 **20 Claims**

1. A device for actuating a throttle valve (4) in a gas conduit (3), which valve is pivotable from an idling position into operating positions by means of a valve shaft (5), the valve shaft (5) carrying an actuator body comprising a magnetic rotor body (9) which body, via an air gap (10), cooperates with spaced-apart facing pole shoes (15) of a stationary excitation section (11) which is electrically energizable by a regulator and which pole shoes surround said rotor body, characterized in that the excitation section (11) comprises a U-shaped stator whose limbs (12*a* and 12*b*) form the pole shoes (15) which, owing to a non-uniform shape, produce a

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strong detent torque which tends to pull the rotor body (**9**) into a preferential rest position determined by the detent torque and in that the pole shoes (**15**) define gaps (**17**) between the respective limbs (**12***a*, **12***b*) or pole shoe ends (**18**) and the pole shoes (**15**) have slots (**16**) substantially in the center of pole arcs at the air gap.

5,624,101

DUAL SEAL VALVE

John Beson, 10938 Leaning Ash, Houston, Tex. 77079

Continuation-in-part of Ser. No. 280,473, Jul. 26, 1994, Pat. No. 5,542,645, Ser. No. 758,018, Sep. 12, 1991, abandoned, and Ser. No. 284,909, Aug. 2, 1994, Pat. No. 5,494,256, which is a continuation of Ser. No. 889,792, May 28, 1992, Pat. No. 5,338,003, said Ser. No. 280,473is a continuation-in-part of Ser. No. 889,792, May 28, 1992, which is a continuation-in-part of Ser. No. 798,448, Nov. 26, 1991, Pat. No. 5,320,327, which is a continuation of Ser. No. 685,219, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 493,045, Mar. 12, 1990, abandoned, said Ser. No. 758,018is a continuation-in-part of Ser. No. 504,512, Apr. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 493,045, Mar. 12, 1990, which is a continuation of Ser. No. 343,474, Apr. 26, 1989, abandoned, which is a continuation of Ser. No. 189,574, May 8, 1988, abandoned, which is a continuation of Ser. No. 49,231, May 13, 1987, abandoned, which is a continuation of Ser. No. 659,614, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 551,589, Nov. 14, 1983, Pat. No. 4,566,671. This application Jun. 7, 1995, Ser. No. 478,911

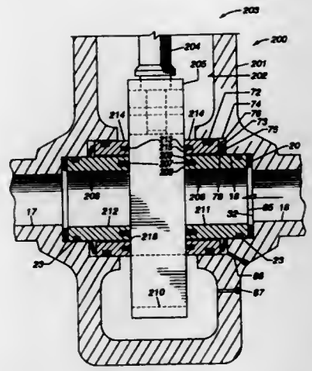
Int. Cl.[6] F16K *3/16*

U.S. Cl. 251—172 **13 Claims**

1. A valve subject to fluid pressure from fluid under pressure passing through the valve, the fluid under pressure originating from an upstream flow passage connected to the valve, comprising:

(a) a valve body having a valve chamber therein and a flow passage aligned at opposite sides of the valve chamber, and additionally having a pair of stepped recesses around the inner end of each of the aligned flow passages, the stepped recesses having an outer diameter wall and an end wall, one of the stepped recesses of each of said pair of stepped recesses being of larger diameter than the other stepped recess of each of said pair of stepped recesses;

(b) a member having an imperforate section and a section having a valve flow passage therethrough, the member being disposed within the valve chamber and being movable within the valve chamber between the flow passages, between a first position in which the valve is open and the flow passage of the member aligns with the valve chamber flow passages and



a position in which the valve is closed and the imperforate section aligns with the valve chamber flow passages;

(c) a downstream primary valve seat in the downstream flow passage smaller diameter recess and an upstream primary valve seat in the upstream flow passage recess of smaller diameter, each of the valve seats comprising a ring shaped seat between which the member moves between the open and closed position such that the member forms a seal with each of the ring shaped seats when the member is in the valve closed position;

(d) a first spring member having selected spring value and located in each of the smaller diameter recesses to provide initial contact of the primary valve seats with the member;

(e) a downstream seal support ring disposed in the downstream larger diameter recess, said downstream seal support ring being slidably disposed around the outside of the downstream primary ring shaped seat which is disposed in the smaller diameter recess, the seal support ring having an inner recess therearound at the end adjacent the member;

(f) an elastomeric seal member disposed in the inner recess of the seal support ring;

(g) a spring member having selected spring value to provide initial contact of the elastomeric seal member against the member;

(h) responsive means responsive to fluid pressure for providing sealing engagement force of said elastomeric seal member against said member to form a secondary seal member;

(i) after the primary downstream seal is formed, the responsive means acts to form the secondary seal; and

(j) the responsive means includes means to provide engagement force commensurate with the fluid pressure, whereby the secondary seal acts to maintain a sealing engagement with the member only should the downstream primary seal leak.

5,624,102

STRUCTURE FOR SEALING AN INNER PERIPHERAL PORTION OF A METALLIC DIAPHRAGM

Ryutaro Nishimura; Michio Yamaji, and Kenji Yamamoto, all of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Oct. 11, 1995, Ser. No. 540,971

Claims priority, application Japan, Oct. 17, 1994, 6-250256

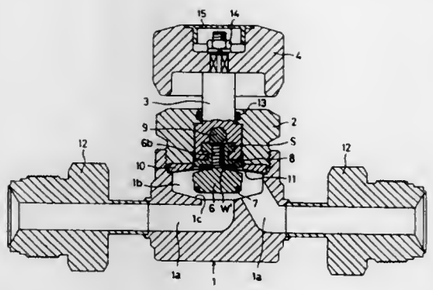
Int. Cl.[6] F16K *31/00*

U.S. Cl. 251—335.2 **3 Claims**

1. A structure for sealing hermetically in an air-tight state an inner peripheral portion of a metallic diaphragm at an upper part of a valve chamber formed in a body of a valve wherein:

the inner peripheral portion of the metallic diaphragm is formed with a mounting hole at a central portion thereof;

a metallic welding fitting and a metallic holding member are positioned on opposite sides of the metallic diaphragm, each respectively forming an annular flat portion to contact said



inner peripheral portion of the diaphragm, the inner peripheral portion of the metallic diaphragm and portions of the metallic welding fitting and the metallic holding member contacting the inner peripheral portion of said metallic diaphragm being welded together about entire peripheries thereof in order to secure these three components as one body;

wherein the metallic welding fitting, and the metallic holding member are welded in a vicinity of the mounting hole of the metallic diaphragm;

wherein the metallic diaphragm is formed of a plurality of thin metal sheets laid on one another; and

wherein the metallic welding fitting has a ring shape and is provided with a welding fitting hole having approximately the same diameter as the mounting hole of the metallic diaphragm, the flat portion of the welding fitting being formed at an inner periphery edge defining the welding-fitting hole at a lower surface of the metallic welding fitting, a thickness of the inner periphery edge of the metallic welding fitting forming the welding fitting hole being smaller than a thickness of an outer periphery edge of the metallic welding fitting.

5,624,103

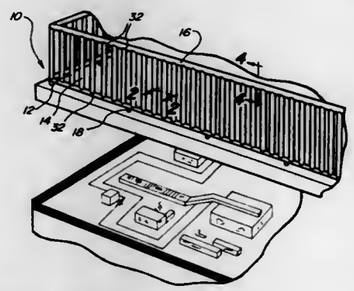
GUARD RAIL ASSEMBLY

Frank Venegas, Jr., 4165 Homestead, Howell, Mich. 48843

Continuation of Ser. No. 368,593, Jan. 4, 1995, abandoned. This application Sep. 12, 1996, Ser. No. 714,018

Int. Cl.[6] E04F *11/18*

U.S. Cl. 256—66 **6 Claims**



1. A guard rail assembly comprising:

two spaced apart hollow metal horizontal rails;

a hollow polymerized sheathing extending the length of each of said horizontal rails and having an interior diameter slightly greater than the outer diameter of each of said horizontal rails so that said sheathing slip fits around each of said horizontal rails;

a pair of spaced apart metal vertical rails extending between said horizontal rails;

a hollow polymerized sheathing extending the length of each of said vertical rails and having an interior diameter slightly greater than the outer diameter of each of said vertical rails so that said sheathing slip fits around each of said vertical rails; wherein said space between said vertical rails is no greater than four inches.

5,624,104

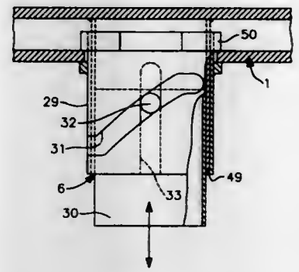
VIBRATION ISOLATING SUPPORTER

Koumei Hukuda, Tokyo; Kenji Takuma, Kisarazu; Minori Kuriyama, Kisarazu; Yoshimitsu Murahashi, Kisarazu; Hiroaki Kawakami, Kisarazu; Yuji Iida, Himeji; Kazuki Inaba, Futtsu; Hiroyuki Tanaka, Tachikawa, and Katsumi Shimizu, Hiratsuka, all of Japan, assignors to Nippon Steel Corporation, and Showa Electric Wire and Cable Co., Ltd., both of Japan

Continuation of Ser. No. 343,417, Nov. 23, 1994. This application Jan. 16, 1996, Ser. No. 584,939

Int. Cl.[6] B60G *11/56*

U.S. Cl. 267—34 **2 Claims**



1. A vibration isolating structure, comprising:

an upper frame and a lower frame disposed in vertically spaced apart relation to one another;

said upper frame including a top surface plate and a bottom surface plate disposed in vertically spaced relation to one another;

at least one coil spring disposed between said upper and lower frames;

at least one upstanding partition means mounted on said lower frame in surrounding relation to said at least one coil spring, said at least one partition means having a predetermined length;

a damping material contained within said at least one upstanding partition means so that said at least one coil spring is at least partially submerged in said damping material;

a resisting member ensleeved by said at least one coil spring;

said resisting member being at least partially immersed within said damping material;

said resisting member including an outside resisting member, an inside resisting member, and an intermediate cylindrical member disposed therebetween, said outside and inside resisting members being slideably mounted with respect to said intermediate cylindrical member;

a nut rotatably secured to a top surface of said bottom surface plate of said upper frame;

said outside resisting member having an uppermost end secured to said nut;

said intermediate cylindrical member having an uppermost end secured to said top surface plate of said upper frame;

a vertically extending slot formed in said intermediate cylindrical member;

a radially outwardly extending pin secured to said inside resisting member;

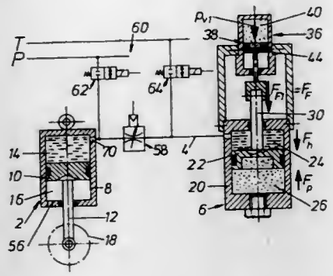
an elongate, inclined groove formed in said outside resisting member;

said pin being slideable within said inclined groove;

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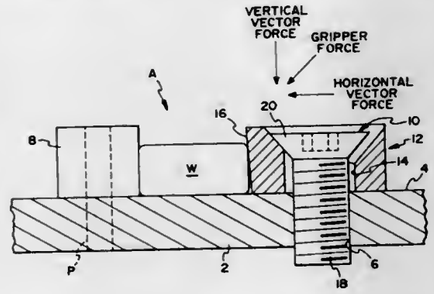
whereby rotation of said nut effects vertical adjustment of said inside resisting member with respect to said outside resisting member.

5,624,105
HYDROPNEUMATIC SUSPENSION SYSTEM
Walter Runkel, Wuppertal, Germany, assignor to Hemscheidt Fahrwerktechnik GmbH & Co., Wuppertal, Germany
PCT No. PCT/EP93/02779, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/08808, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 11, 1993, Ser. No. 416,778
Claims priority, application Germany, Oct. 10, 1992, 42 34 217.1; May 1, 1993, 9306581 U
Int. Cl.[6] B60G *17/04;11/30;* **F16F** *9/06;* **F15B** *1/24*
U.S. Cl. 267—64.15 **11 Claims**



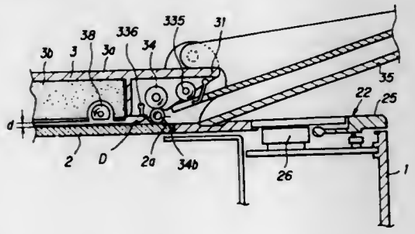
1. Hydropneumatic suspension system for motor vehicles, comprising:
at least one hydraulic strut (2) that during deflection and rebound movement acts via a hydraulic medium upon at least one hydropneumatic piston-type accumulator (6) that has a separating piston (22) being guided within an accumulator cylinder (20) in a freely movable fashion, and separating inside of said accumulator cylinder (20) a hydraulic accumulator chamber (24) from a spring chamber (26);
said hydraulic accumulator chamber (24) being connected to said hydraulic strut (2) via a hydraulic connection (4);
said spring chamber (26) containing a compressible medium;
a hydraulic pressure (ph) that originates from the accumulator chamber (24) and a pneumatic pressure (pp) that originates from the spring chamber (26) acting upon two opposite sides of said separating piston (22);
at least one supplementary spring having a supplementary spring force (FF;F1;F2) acting upon the separating piston (22) of the piston-type accumulator (6) in addition to the forces (Fh,Fp) resulting from charging the separating piston (22) with the hydraulic pressure (ph) and the pneumatic pressure (pp);
the separating piston (22) of the piston-type accumulator (6) being connected with a separating piston rod (30) extending through the hydraulic accumulator chamber (24) and out of the accumulator cylinder (20) in a sealed fashion; and
the supplementary spring force (FF;FF1;FF2) being generated by at least one spring element (34;36) comprising a piston/cylinder unit (38) located outside of the piston-type accumulator (6) and having at least one pressure chamber (40,42) inside of which is a medium exerting an elastic prestress pressure (p_{v1}+p_{v2}) directly operatively associated with the separating piston rod (30) to apply the supplementary spring forte acting on the separating piston (22) within the accumulator (6),
thereby reducing the volume of the compressible medium required for a particular load ratio of the strut.

5,624,106
GRIPPING DEVICE
Gene Weber, 5373 E. Lowe, Fresno, Calif. 93727
Filed Nov. 13, 1995, Ser. No. 555,869
Int. Cl.[6] B23Q *3/02*
U.S. Cl. 269—138 **12 Claims**



1. A gripping device for holding a workpiece comprising:
a) a fixture having a working surface and at least one hole;
b) a stop rising above said working surface;
c) a fastener;
d) a gripping member having a through bore for receiving said fastener and a gripper wall adapted to engage a workpiece;
e) said through bore comprises a conical surface, one side of which is more recessed than the other; and
f) whereby said gripping member slides toward said stop and said gripper wall applies a downward inward holding force on a workpiece when said fastener bears against said other conical side thereby creating the downward inward holding force and securing the fastener to said at least one hole of said fixture.

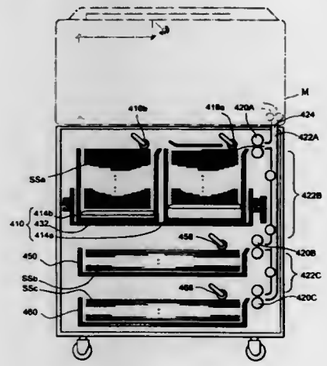
5,624,107
IMAGE FORMING APPARATUS WITH A DOCUMENT FEEDER
Masanobu Deguchi, Kashiba; Junichi Kajiwara, Teuri; Masakiyo Okuda, Ikoma-gun; Michiyuki Suzuki, Yamatokoriyama; Shinji Kato, Osaka; Hideaki Hagihara, Nara, and Kazuhiko Yamakawa, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 8, 1995, Ser. No. 570,003
Claims priority, application Japan, Dec. 16, 1994, 6-313083; Feb. 21, 1995, 7-031913; Mar. 16, 1995, 7-057259; Mar. 22, 1995, 7-062553
Int. Cl.[6] B65H *5/22*
U.S. Cl. 271—3.2 **9 Claims**



1. An image forming apparatus equipped with a document feeder, comprising:
an original table disposed on the top surface of the image forming apparatus body and having an original document placed thereon and exposing the original image to light; and

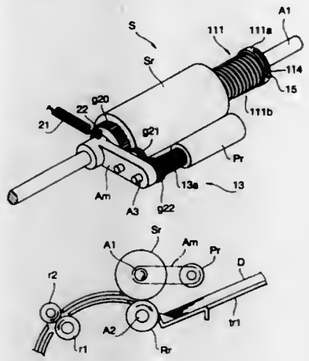
an original cover hinged pivotably on one side thereof to be opened and closed for pressing a document onto said original table,
said document feeder comprising:
a rotational member hinged pivotably on the opposed side to the hinged portion of said original cover so as to be rotatable between the top surface of said original cover and the top panel surface of the image forming apparatus body in which said original table is formed;
a feeding means disposed in a document inserting portion formed between said original cover and said top panel surface when said original cover is closed, for conveying an inserted document toward said original table; and
a lifting mechanism for raising said original cover from said original table when said rotational member is rotated toward said panel surface of the image forming apparatus body.

5,624,108
SHEET FEEDING DEVICE WITH TWO OR MORE STACKERS FOR IMAGE PROCESSING DEVICE
Masayoshi Kubo, Kofu, Japan, assignor to NISCA Corporation, Yamanashi-ken, Japan
Division of Ser. No. 214,381, Mar. 17, 1994, Pat. No. 5,472,183. This application Aug. 31, 1995, Ser. No. 521,684
Int. Cl.[6] B65H *3/44*
U.S. Cl. 271—9.12 **9 Claims**



7. A sheet feeding device for feeding sheets one by one to an image processing device, comprising:
a housing having a sheet discharge port through which a sheet is fed into the image processing device,
at least one sheet feeding unit having a plurality of sheet stackers arranged abreast,
said sheet stackers each having: an elevating tray for stacking sheets thereon, a sheet exit through which the sheet stacked on said tray is discharged, and a sheet draw-out roller for drawing out the sheets stacked on said elevating tray,
said elevating trays being movable between an upper sheet send-out position and a lower limit position defined in said sheet stackers in accordance with an amount of sheets stacked on each of the trays being adapted to be held at said upper sheet send-out position when no sheet is stacked thereon,
said sheet draw-out roller for each of said stackers being placed over said associated elevating tray so as to come into contact with said associated elevating tray when said associated elevating tray is positioned at said sheet send-out position, each elevating tray at said upper sheet send-out position forming a portion of a single sheet transfer path,
sheet separating means disposed at said sheet exit of at least one of said sheet stackers for permitting only one sheet to pass therethrough, and
said sheet transfer path further extending from at least one of the sheet stackers having its elevating tray at said upper sheet send-out position to said sheet discharge port through which the sheet is fed into the image processing device.

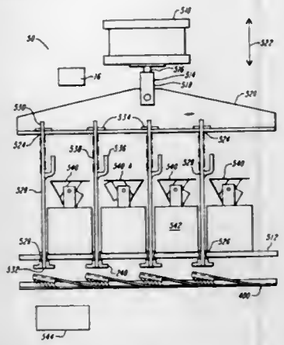
5,624,109
SHEET FEEDING APPARATUS WITH ROTARY POWER TRANSMISSION MECHANISM
Makoto Tanaka, Nagaokakyo, Japan, assignor to Murata Kikai Kabushinki Kaisha, Kyoto, Japan
Filed Dec. 8, 1994, Ser. No. 351,802
Claims priority, application Japan, Dec. 9, 1993, 5-309115
Int. Cl.[6] B65H *5/00;3/06*
U.S. Cl. 271—10.13 **4 Claims**



1. A sheet feeding device, comprising:
a rotary shaft rotatable in a sheet feeding direction;
a separation roller mounted on the rotary shaft;
a retardation roller in contact with the separation roller with a certain pressure;
an arm adapted to move vertically relative to the rotary shaft;
a pick up roller mounted on an end of the arm;
a rotary power transmission mechanism connected with the arm for transmitting rotary power from the rotary shaft to the pick up roller and moving the arm downward,
a rotatable member for transmission of the rotary power to the rotary power transmission mechanism, the rotatable member and the separation roller being rotatable relative to the rotary shaft; and
a coil spring fixed to the rotary shaft at one end thereof and to the separation roller at the other end, the coil spring being in spaced relationship with the rotatable member, having a diameter that is modifiable by rotation of the rotary shaft and being loosely fitted over the rotary shaft to form a spring clutch,
wherein as the diameter of the coil spring becomes smaller upon rotation of the rotary shaft, the coil spring tightly engages the rotatable member to transmit the rotary power of the rotary shaft to the rotatable member, whereas as the separation roller performs an idle rotation relative to the rotary shaft, the diameter of the coil spring is enlarged and the engagement between the coil spring and the rotatable member is released, whereby the rotary power of the rotary shaft is not transmitted to the rotatable member.

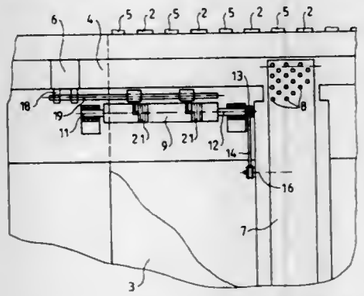
VOL 1197 ISS 5 AP 29 1997 UMI

5,624,110
CUT SEGMENT PICK-UP ASSEMBLY
Donald C. Fyler, Needham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Nov. 6, 1995, Ser. No. 553,874
Int. Cl.[6] B65H *3/22*
U.S. Cl. 271—18.3 **12 Claims**



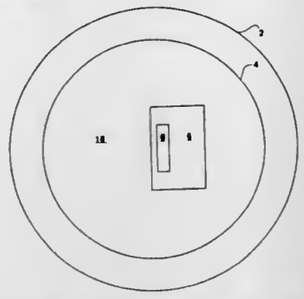
12. A picker assembly comprising:
A. a central portion lying substantially in a reference plane;
B. at least one row of elongated resilient arms, each of said arms extending from said central portion to a carding end, each of said carding ends being positionable relative to said central portion in a picking position and in a resting position, each of said carding ends including a base portion and a linear array of substantially parallel, elongated, resilient needle-like elements extending from said base portion to a distal tip such that when any one of said carding ends is positioned in said resting position each of said distal tips of that carding end lie above a picking plane, said picking plane being substantially parallel to said reference plane, and when any one of said carding ends is positioned in said picking position each of said distal tips of that carding end lie substantially in said picking plane.

5,624,111
DEVICE FOR ALIGNING SHEETS AT THE FRONT LAYS OF A SHEET PROCESSING MACHINE
Burkhard Maass, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Sep. 29, 1995, Ser. No. 536,960
Claims priority, application Germany, Oct. 1, 1994, 44 35 263.8; Jul. 13, 1995, 195 25 549.6
Int. Cl.[6] B65H *9/04;9/16*
U.S. Cl. 271—236 **9 Claims**



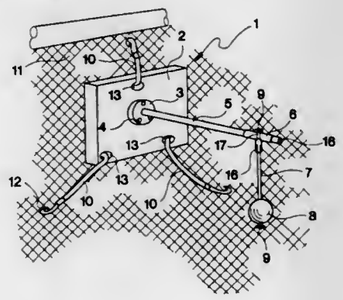
1. In a sheet-processing machine for processing sheets of a smallest format width and of a largest format width, the sheet-processing machine having front lays and a lateral pulling device, a device for correctly-registered feeding of sheets supplied thereto in a sheet stream in a sheet transport direction, to the front lays of the sheet-processing machine, comprising: a sheet-advancing device disposed within the smallest format width to be processed, at least one permanently driven drive roller disposed in the vicinity of the front lays, and at least one contact pressure device in continuous operative engagement with said at least one drive roller, said drive roller having a rotational axis directed crosswise to the sheet transport direction, and at least part of said drive roller is disposed laterally of the sheet-advancing device.

5,624,112
PORTABLE PITCHING MOUND BASE
Gregory Hummel, and Robert Kurschinski, both of 265 Lexington Ct. P.O. Box 337, Waterloo, Ontario, Canada
Filed Oct. 27, 1995, Ser. No. 549,333
Int. Cl.[6] A63B *71/00*
U.S. Cl. 473—497 **12 Claims**



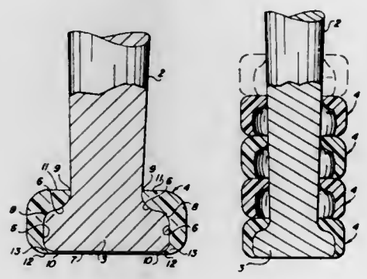
1. A portable base for a movable pitching mound comprising:
a network of structural elements having their bottom sides in a common generally horizontal plane, and defining a generally circular circumference;
a covering supported on said structural elements capable of supporting dirt for a pitcher's mound, and presenting a generally horizontal portion in the centre and inclined sides sloping downwards to a level near said horizontal plane at said circumference,
said base being bisected into more than one parts along at least one mutual interface which is substantially upright and extending from one side of the circumference to the other.

5,624,113
PORTABLE BATTING SYSTEM
Matthew S. Rabine, 6448 W. Colter St., Glendale, Ariz. 85301
Filed Oct. 17, 1995, Ser. No. 544,175
Int. Cl.[6] A63B *69/40*
U.S. Cl. 473—430 **3 Claims**



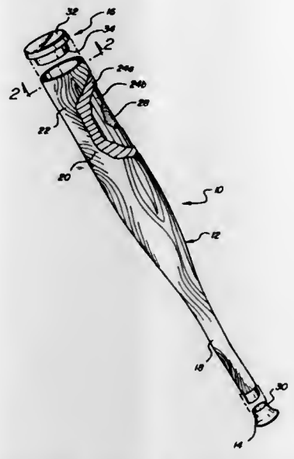
1. A batting practice system, comprising
a base having means for attaching a horizontal element to said base,
said horizontal element having a member with a vertical portion attached thereto,
said vertical portion being hollow and attached to said horizontal portion at substantially a right angle,
a flexible element passing completely through said vertical portion and said horizontal portion, and
a ball attached to one end of said flexible element,
said base having means for securing resilient bands thereto, and resilient bands secured to said base at one end and secured to a support at an opposite end.

5,624,114
BALL BAT SHOCK DAMPER
Douglas A. Kelsey, P.O. Box 1534, Alvarado, Ariz. 76009
Continuation of Ser. No. 189,458, Jan. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 11,531, Aug. 6, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,133
Int. Cl.[6] A63B *59/06*
U.S. Cl. 473—520 **9 Claims**



1. A shock damper for a ball bat, which bat includes a handle having a handle diameter and terminating in an enlarged end knob having an end knob diameter, the shock damper comprising:
a first resiliently-deformable, generally cylindrical sleeve disposed about a longitudinal axis, the first sleeve having a first end having a first substantially circular opening, a second end having a second substantially circular opening and an interior hole extending longitudinally through the length of the sleeve between the first opening and the second opening;
the first opening having a diameter approximately equal to the bat handle diameter;
the hole having a diameter substantially equal to the end knob diameter;
the second opening having a diameter smaller than the end knob diameter but at least about as large as the bat handle diameter;
the first end including a substantially flat surface perpendicular to the longitudinal axis for resting a heel of a hand when the bat is gripped during use;
the second end having a substantially flat surface perpendicular to the longitudinal axis for contacting the first end flat surface of a second sleeve of the same design as the first sleeve when the first sleeve is stacked on the second longitudinally; and
the first sleeve being compressible for dampening vibrations transmitted through the end knob, being sufficiently stretchable to slide over the end knob and onto the bat handle past the end knob, and being elastic for retaining its original shape.

5,624,115
COMPOSITE BASEBALL BAT WITH CAVITIED CORE
Charles S. Baum, Traverse City, Mich., assignor to The Baum Research & Development Co., Inc., Traverse City, Mich.
Continuation-in-part of Ser. No. 262,432, Jun. 20, 1994, Pat. No. 5,458,330, which is a continuation-in-part of Ser. No. 137,694, Oct. 15, 1993, Pat. No. 5,460,369, which is a continuation of Ser. No. 883,263, May 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 518,782, May 4, 1990, Pat. No. 5,114,144. This application Aug. 25, 1995, Ser. No. 519,538
Int. Cl.[6] A63B *59/06*
U.S. Cl. 473—567 **15 Claims**

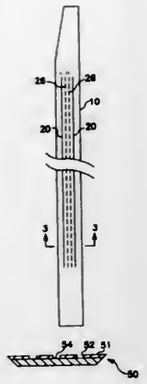


1. A ball bat having a bulbous end portion tapering to a narrow handle portion comprising:
an elongated central core, extending substantially the full length of the bat;
an inner cylindrical tube of fibrous reinforcement fabric impregnated with resin, surrounding the core; and
an outer tube formed of cellulose material, said cellulose material being coated and impregnated with resin, and surrounding said inner tube and adhered thereto by said resins,
wherein the combined thickness of said inner cylindrical and outer tubes is substantially less than the diameter of said elongated central core, at least in the vicinity of said bulbous end portion.

5,624,116
GRIP FOR SPORTS RACQUET
Kent Yeh, Plainsboro, N.J., assignor to Prince Sports Group, Inc., Bordentown, N.J.
Filed Oct. 23, 1995, Ser. No. 553,723
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—538 **14 Claims**

1. A grip for a handle of an implement comprising:
a thin layer of polymeric material having an outer surface and a longitudinal axis; and
a backing material having an upper surface bonded to said thin layer, said backing material being porous;
wherein said grip is sized for wrapping helically about an elongated handle such that said backing material contacts the handle and said layer outer surface forms a gripping surface for the hand; and wherein said grip has channel means comprising at least one channel, each channel of said channel means extending from the layer outer surface through said layer to expose the backing upper surface, thereby allowing moisture to pass directly to said backing material, and

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wherein said channel means extend generally axially and are substantially coextensive with the length of said grip.

5,624,117

GAME MACHINE CONTROLLER

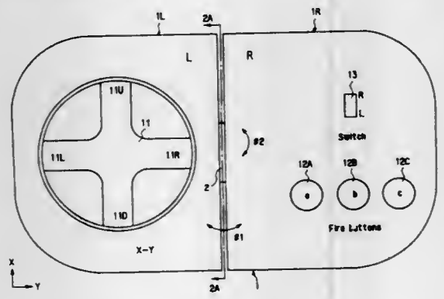
Yuuichi Ohkubo, and Takashi Yamaguchi, both of Shizuoka, Japan, assignors to Sugiyama Electron Co., Ltd., Japan

Filed Mar. 9, 1995, Ser. No. 401,551

Claims priority, application Japan, Jul. 28, 1994, 6-196127; Sep. 29, 1994, 6-259510

Int. Cl.[6] A63F *9/22*

U.S. Cl. 273—148 B **14 Claims**



1. A game machine controller with keys for controlling the movement of an image subject displayed on a monitor screen in an X- and a Y-axis direction, comprising:

a first and a second controller section coupled to each other by a coupling member, each having at least one key which is operable by a user's finger and rotatable with respect to the coupling member for controlling the image subject movement, whereby when relative displacement information of the first and second controller sections with respect to the coupling member is detected, the movement of the image subject in a Z-axis direction is controlled based on the displacement information.

5,624,118

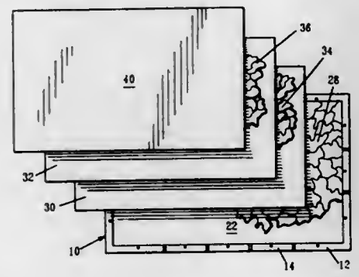
PUZZLE WORK STATION AND STORAGE CASE INCORPORATING SPECIAL ADJUSTABLE FRAME

Elaine Gottesman, 453 Boca CiegaPtS, St. Petersburg, Fla. 33708

Filed Sep. 3, 1996, Ser. No. 706,782

Int. Cl.[6] A63F *9/10*

U.S. Cl. 273—157 R **13 Claims**



1. A combination puzzle work station, puzzle carrying case and adjustable puzzle picture frame kit, comprising:

(a) a work station border constituted by selectable sizes of interlocking right angle frame corner sections and straight frame sections providing, first, a bordered puzzle workstation and, then second, a puzzle picture frame for the completed puzzle, each said frame section including a shoulder portion extending out from an interior wall of said frame section, and each said frame section having an end wall adapted to abut with the end wall of an adjacent frame section and locking means in said end walls for interlocking said frame sections together;

(b) a baseboard made of a flat board sized to fit within said work station border with the baseboard edges lying against said shoulder portion such that said baseboard and said work station border provide the work station for assembly of a puzzle thereon;

(c) at least one coverboard, for placing on top of the puzzle in progress, to contain the puzzle during travel;

(d) fastener clip means adapted for mounting in the back of each frame section and for retaining said coverboard and baseboard within said work station border, both as a puzzle carry case during transport of the puzzle, and for the mounting of the completed framed puzzle; and

(e) a handle and puzzle picture hanger cord adapted for securing to selected ones of said frame sections;

whereby the selected sizes of interlocking frame sections provide both a bordered puzzle workstation and, also, an adjustable puzzle picture frame.

5,624,119

MULTIPLE VARIABLE GAME EQUIPMENT AND SYSTEM FOR GENERATING GAME FACES

Deborah L. Leake, Mars Hill, N.C., assignor to Prisms, LLC, Asheville, N.C.

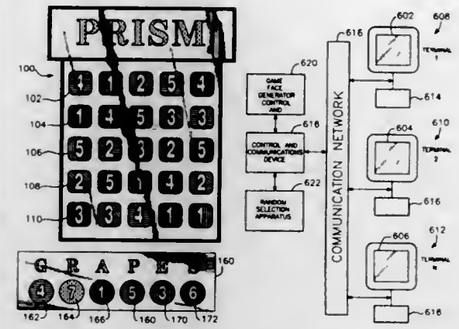
Filed Apr. 24, 1995, Ser. No. 427,434

Int. Cl.[6] A63F *3/06*

U.S. Cl. 273—269 **54 Claims**

1. Game equipment comprising:

a plurality of game faces, each game face having a plurality of individual positions organized as m rows by n columns, where m is an integer and n is an integer greater than one; and



within each column of each of said game faces the individual positions are filled with a random sequence of elements from each of at least two sets of different entities.

5,624,120

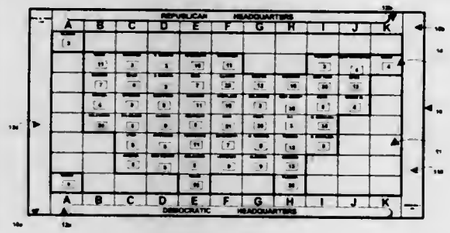
U.S. PRESIDENTIAL CAMPAIGN AND ELECTION GAME

Emmanuel A. Frank-Opigo, P.O. Box 550, Port Harcourt, Nigeria

Filed Oct. 10, 1995, Ser. No. 540,490

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—279 **2 Claims**



1. A game board apparatus for playing a United States Presidential election game comprising two six-sided dice, a playing board with the fifty states and the District of Columbia arranged in grids or zones and approximately outlining the map of the United States, fifty-one playing cards designated Trump Cards, each inscribed with the state's name, Electoral College vote, one of the letters A to K designating the zone in which the state is located and a number designated the Trump Number which is obtained from the sum of the numbers rolled on the two dice, such numbers assigned in inverse proportion of frequency to the state's Electoral College vote in a given zone.

5,624,121

STACKED POGS WITH STRIKING TOOL METHOD

Israel Stern, Raanana, Israel, assignor to N. B. Hopples Marketing (1994) Ltd., Raanana, Israel

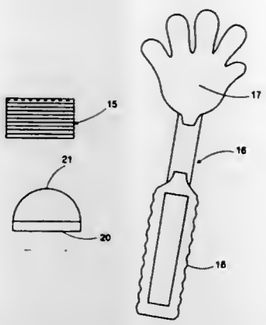
Filed Sep. 30, 1996, Ser. No. 723,349

Int. Cl.[6] A63F *9/02*

U.S. Cl. 273—317 **11 Claims**

1. A method of playing a game comprising:

providing a plurality of substantially rigid playing discs, each disc comprising a substantially planar lower surface, an upper surface and a circumferential ridge upraised with respect to said upper and lower surfaces so as to provide a recess in the upper surface for accommodating therein the lower surface of an adjacent playing disc placed thereon, said upper surface having a visual image thereon;



stacking said discs one atop another so that said recess of a lower disc in the stack accommodates therein the lower surface of an adjacent disc placed thereon; and

a player striking the topmost one of said discs so as to thereby upturn a number of the playing discs in the stack and claiming those discs whose upper surfaces are downmost.

5,624,122

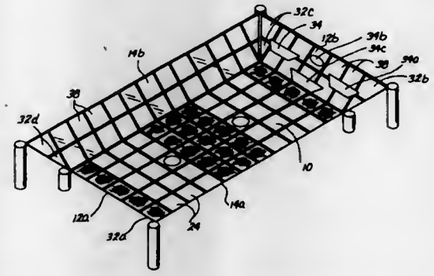
SPORT GAME AND FIELD

Karin-Maria K. Winkelhorn, 1107 S. Fifth Pl., Las Vegas, Nev. 89104

Filed Jul. 17, 1996, Ser. No. 683,669

Int. Cl.[6] A63B *71/00*

U.S. Cl. 473—471 **9 Claims**



1. A supported surface for transitional movement, said surface being formed of:

a. a grid of elongated steel cables disposed above a ground level, said grid being formed of a plurality of first parallel cables spaced from each other, and a plurality of second steel cables disposed transversely of and in abutment with the first cables, said second steel cables being parallel to, and spaced from, each other, said first and second cables defining a plurality of open spaces between the cables;

b. means to support each of said cables at their respective extremities;

c. a plurality of first panels, each of said first panels being formed of a yieldable heavy fabric having edges and each panel being configured to space its edges from either a first or second cable defining a space;

d. a plurality of resilient elements extending outwardly from each edge of each panel for attachment to the nearest of said first and second cables, thereby to support the panel on said first or second cables within a space defined by said cables; and,

e. a plurality of elongated cover means, the last said means each comprising a padded sheet material having a width greater than the distance between parallel edges of adjacently disposed panels, each said cover means being disposed over at

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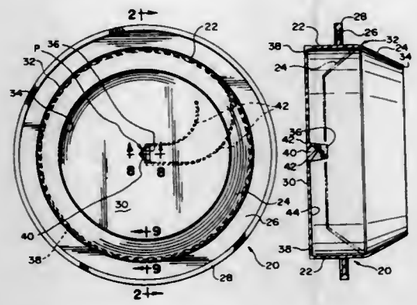
least a portion of one of the first and second cables and the resilient means attached thereto and extending from the edge of a first panel.

5,624,123

PIPE SEAL ASSEMBLY FOR POURED CONCRETE ON-SITE WASTE DISPOSAL SYSTEM COMPONENTS

Theodore W. Meyers, Inverness, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.

Filed May 11, 1994, Ser. No. 241,019
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—9 7 Claims



1. In an improved seal apparatus for use in on-site waste disposal systems of the type having a poured concrete box member with side walls and a plurality of side wall openings for receiving inlet and outlet lines extending therethrough, the seal apparatus being cast in place in the side wall openings and having a cylindrical seal wall member which has a radially outwardly directed attachment member for casting in place within the side wall of the poured concrete box member for securement thereto, the improved seal apparatus being capable of being held in place during the casting process by a mandrel member having a gripper element for releasably gripping the improved seal apparatus, the improvement comprising in combination:

an angled, flexible wiper blade member integrally connected to the cylindrical seal wall member at one end by a living hinge member, and at its other end having an open free end, said wiper blade member initially extending radially inwardly of said seal wall member along a first outwardly-directed position, said wiper blade member capable of being readily folded about said living hinge member to a second reverse-angled inwardly-directed position, whereby in said folded position said free end of said wiper blade member is capable of being releasably retained by the gripper element of the mandrel member during casting in place, and further whereby said free end is capable of sealably receiving a drainpipe extended therethrough;

a removable membrane integrally formed across said cylindrical wall member at an end opposite said living hinge member, said membrane having configured score line means for enabling quick severing removal of said membrane from said wall member when desired, to thereby open said seal apparatus to permit insertion of a drainpipe through said open free end of said wiper blade member;

said living hinge member comprising a reduced wall section at a peripheral end of said cylindrical wall member interconnected to a reduced thickness section of said wiper blade member; and

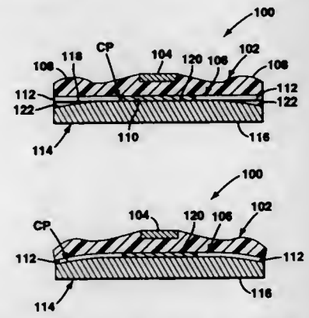
wherein said reduced wall section is formed by an obtuse angle between said wall member and said wiper blade member and said reduced thickness portion is formed by a substantially perpendicular angle between said wall member and said wiper blade member.

5,624,124

BORE SEAL ASSEMBLY WITH WEAR RING HAVING CURVILINEAR SPRING SUPPORT SURFACE

Tep Ungchusri, Woodlands, and Sergio A. Castillo, Jr., Spring, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 15, 1996, Ser. No. 680,093
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—167.5 2 Claims



1. A bore seal assembly for sealing between adjoining tubular members having a seal pocket formed in the adjacent ends thereof, the bore seal assembly comprising:

a cylindrical seal sleeve having a bore and two radially outwardly extending sealing lips for engaging the seal pocket;

a cylindrical finger spring mounted within the bore, the finger spring comprising an annular central section and a plurality of fingers extending axially outwardly therefrom for urging the sealing lips against the seal pocket; and

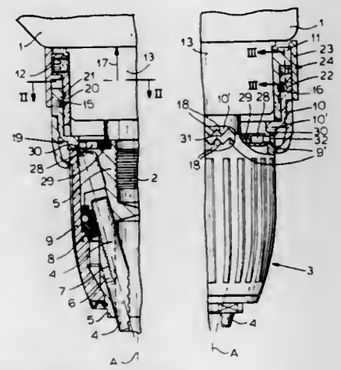
a cylindrical wear sleeve positioned within the finger spring, the wear sleeve comprising a curvilinear outer diameter surface for supporting the fingers and transferring the contact point between the fingers and the wear sleeve toward the ends of the fingers as the bore seal assembly is installed in the seal pocket.

5,624,125

KEYLESS POWER-DRILL CHUCK ASSEMBLY

Günter H. Röhm, Heinrich-Röhm Strasse 50, D-89567 Sontheim, Germany

Filed Dec. 19, 1995, Ser. No. 574,513
Claims priority, application Germany, Dec. 22, 1994, 44 45 858.4
Int. Cl.[6] B23B *31/12*
U.S. Cl. 279—62 7 Claims



1. A drill assembly comprising:

a drill housing;

a spindle projecting from the housing along an axis and rotatable about the axis;

a chuck body rotatably fixed on the spindle;

respective jaws on the chuck body;

a tightening body rotatable on the chuck body about the axis in a forward direction and in a reverse direction;

formations interconnecting the chuck body, jaws, and tightening body for moving the jaws radially together on rotation of the tightening body in the forward direction on the chuck body and radially apart on rotation of the tightening body in the reverse direction on the chuck body;

a setting element rotationally fixed on the drill housing and displaceable axially on the chuck body between axially offset end positions;

formations between the setting element and the tightening body rotationally coupling the setting element with the tightening body only in one of the end positions of the setting element;

a latching element on one of the bodies displaceable between a locking position engaging the other of the bodies and arresting the tightening body rotationally on the chuck body and an unlocking position disengaged from the other body;

a spring urging the latching element into the locking position; and

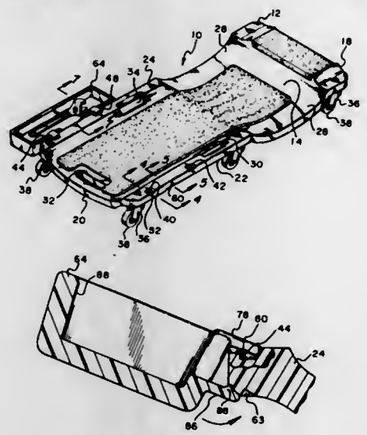
interengaging formations on the latching and setting elements for displacing the latching element into the unlocking position when the setting element is in the one end position, whereby in the one end position of the setting element the tightening body is rotationally locked to the drill housing and in the other end position of the setting element the tightening body is rotationally locked to the chuck body.

5,624,126

MECHANIC'S CREEPER WITH DETACHABLE TOOL BOX

Jack Vosbikian, and Mark S. Wellner, both of Cherry Hill, N.J., assignors to International Rollforms Inc., Deptford, N.J.

Filed Dec. 21, 1995, Ser. No. 576,570
Int. Cl.[6] B60R *9/055;11/06*
U.S. Cl. 280—32.6 5 Claims



1. A creeper comprising:

a torso supporting platform having a front wall, a rear wall and a pair of opposing side walls;

a pair of spaced apart recesses formed in one of said side walls;

a plurality of casters extending downwardly from said platform;

a tool box having a front wall, a rear wall and a pair of opposing side walls;

two spaced apart locking tabs, each of said locking tabs extending outwardly from one of said side walls of said tool box and being adapted to engage a corresponding one of said recesses in said side wall of said torso supporting platform;

a flange extending outwardly from said side wall of said tool box between said locking tabs and below a horizontal plane thereof, and

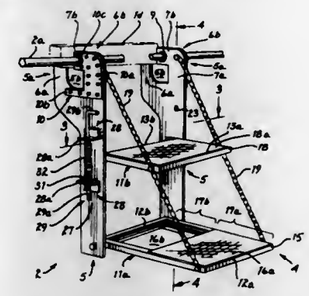
means for securing said flange to said torso supporting platform.

5,624,127

STEPPING STRUCTURE FOR VEHICLES AND METHOD OF USE

Byron A. Arreola, 2324 W. Michelle Dr., Phoenix, Ariz. 85023; Peter D. Braden, 7437 E. Halifax Cir., Mesa, Ariz. 85207, and Cesar A. Arreola, 2101 W. Morningside Dr., Phoenix, Ariz. 85023

Filed Mar. 24, 1995, Ser. No. 409,411
Int. Cl.[6] B60R *3/02*
U.S. Cl. 280—163 33 Claims



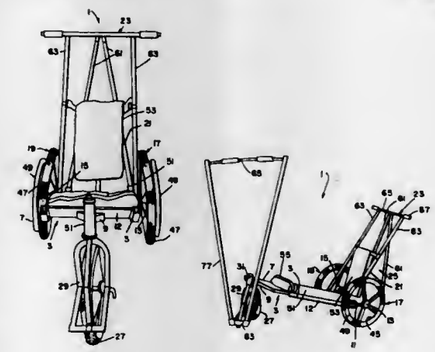
26. A stepping structure for entering and exiting vehicles comprising an assembly having a pair of spaced supports, and at least one step mounted on said supports, at least one of said supports being provided with a socket for accommodating a portion of a vehicle, said one support has a bifurcated end which includes a first leg and a second leg, said socket being located between said legs, said first leg is substantially L-shaped and includes a longer arm and a shorter arm, said longer arm being substantially parallel to, and said shorter arm projecting from said longer arm towards, said second leg.

5,624,128

TRANSPORT SYSTEM FOR DISABLED PEOPLE

Jesse L. Owens, P.O. Box 1417, Palmer, Ak. 99645

Filed Mar. 6, 1995, Ser. No. 399,363
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—250.1 21 Claims



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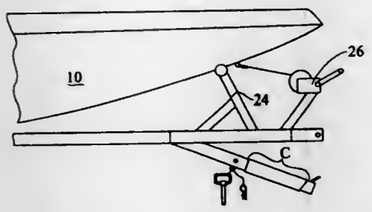
1. A transport apparatus for disabled individuals comprising a frame for carrying a user, the frame having a first side member, a second side member, a front and a rear, a first drive wheel mount connected to the first side member of the frame near the rear, a second drive wheel mount connected to the second side member of the frame near the rear, a front wheel fork mount connected to the front of the frame, a fork connected to the fork mount, a front wheel on a front axle connected to the fork and turning with the fork relative to the frame, an universal joint provided forward of the front wheel below the front axle of the frame for connecting the fork mount and a steering device, a back support connected to the rear of the frame, a push structure extending upward from the rear of the frame behind the back support, first and second drive wheels removably connected to the first and second wheel mounts, and tires having treads suitable for rugged travel secured around the wheels.

5,624,129

RETRACTABLE TRAILER TONGUE

Anderson L. Clark, Jr., 203 Clark La., Tullahoma, Tenn. 37388

Filed Oct. 4, 1995, Ser. No. 539,272
Int. Cl.[6] B60D *1/155;1/54*
U.S. Cl. 280—478.1 **8 Claims**



1. An improved tongue for a trailer having wheels intended to roll over a surface constituting the travel path of the trailer, a frame forming a perimeter of the trailer, and a tongue having opposing ends, one end connected to said frame and the other end extending from said frame and having a socket at said other end for connection to the ball of a trailer hitch mounted on a towing vehicle; the improvements including:

a. an elongated slide housing mounted to said frame and extending from a point inside the perimeter of the frame and terminating at a point proximately outside the perimeter of the frame;

b. a slide within said slide housing;

c. means connecting said slide to said slide housing whereby said slide can telescopically move from an at rest position within said slide housing to a towing position extending out of said slide housing;

d. means connecting said slide to said slide housing whereby said slide can rotate relative to said slide housing in a direction toward the surface over which the wheels are designed to pass;

e. means limiting the rotational movement of said slide relative to said slide housing to prevent said slide from being rotated 180° relative to said slide housing; and

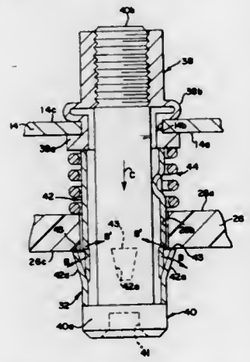
f. means for locking said slide in a fixed relationship to said slide housing when said slide has been retracted within said housing and rotated relative to said slide housing in a direction toward the surface over which the wheels are designed to pass.

5,624,130

AIR BAG INFLATOR FOR SNAP-ACTION ATTACHMENT TO A STEERING WHEEL

Merle K. Ricks, Layton, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 21, 1995, Ser. No. 505,793
Int. Cl.[6] B60R *21/20;* **F16B** *21/08*
U.S. Cl. 280—728.2 **34 Claims**



1. A fastening system for an air bag inflator module adapted for snap-action attachment onto a support provided in a motor vehicle therefor, said fastening system comprising:

an air bag inflator module having a base facing and movable directly toward a support provided in a motor vehicle for fixed attachment thereto; and

at least one snap-action fastener extending between said base and the support, one of said base and the support having an opening for receiving a first portion of said at least one fastener extended therethrough and the other of said base and the support having a second portion of said at least one fastener permanently mounted thereon for supporting said first portion projecting outwardly of said one of said base and the support, holding means on said first portion of said at least one fastener for engaging a surface of said one of said base and the support after extension of said first portion of said at least one fastener through said opening for retaining said at least one fastener in interconnecting relation between said base and the support, biasing means on said first portion of said at least one fastener between said base and the support for urging said base and the support apart after said holding means is engaged, said biasing means including a resilient compression spring mounted on said first portion having opposite ends bearing against said base and the support, and release means for disconnecting said first and second portions of said at least one fastener for permitting said inflator module to be detached from said support.

5,624,131

DRIVER SIDE AIRBAG COVER

John Papandreou; Shiegeo Numata, and James Froehlich, all of Patchogue, N.Y., assignors to Izumi Corporation, Yaphank, N.Y.

Continuation of Ser. No. 389, Jan. 4, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 336,322
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **5 Claims**

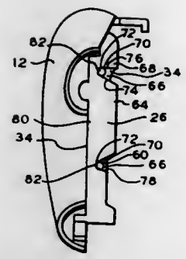
1. A cover for an automotive inflating occupant restraint device, comprising:

a lid portion; and

mounting side wall portions having outer and inner ends, said outer ends connected to said lid portion,

said mounting side wall portions comprising,

an upper, a lower and a pair of lateral members,



one of said upper, and lower members and said lateral members having connecting means adapted for connection to a fixed part of a vehicle or another part,

said connecting means of said lateral members for detaching from said fixed part of said vehicle or said other part when said automotive inflating occupant restraint device is deployed,

wherein said connecting means of said lateral members comprise at least one portion of reduced thickness at the inner end of said lateral members forming a tearing portion which opens along said tearing portion when said inflating occupant restraint device is deployed,

wherein said portion of reduced thickness has a height which increases inwardly, and

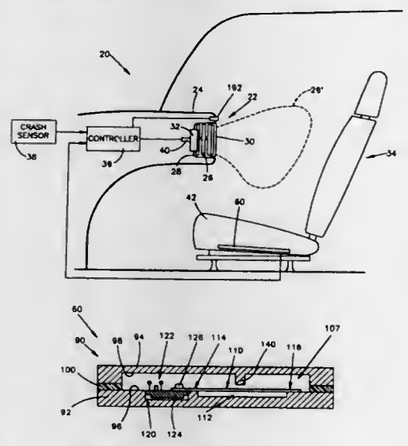
said connecting means of one of said upper and lower members for remaining attached to said fixed part of said vehicle or said other part when said connecting means of said lateral members detach from said fixed part of said vehicle or said other part.

5,624,132

OCCUPANT SENSING APPARATUS

Brian K. Blackburn, Rochester; Joseph F. Mazur, Washington, and Scott B. Gentry, Shelby Township, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation of Ser. No. 22,341, Feb. 24, 1993, Pat. No. 5,494,311, which is a division of Ser. No. 682,908, Apr. 9, 1991, Pat. No. 5,232,243. This application Oct. 20, 1995, Ser. No. 545,902
Int. Cl.[6] B60R *21/22;21/32*
U.S. Cl. 280—735 **5 Claims**



1. An occupant sensing apparatus for use in an occupant restraint system, comprising:

a film having an electrical characteristic with changeable states;

means for mounting said film in a vehicle seat so that presence of an occupant on said seat effects deformation of said film, deformation of said film effecting a change in a state of said electrical characteristic of said film;

electric circuit means connected to said film for providing a first signal when said film characteristic is indicative of an occupant not being present, a second signal when said film characteristic is indicative of an occupant being present, and a third signal if a fault condition is monitored; and

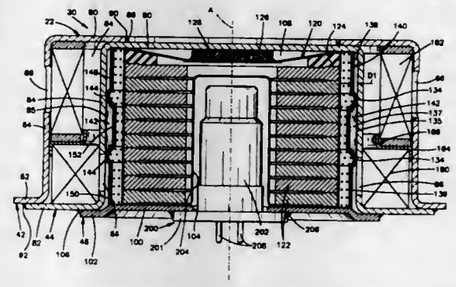
means for enabling the occupant restraint system when said electric circuit means either monitors a film characteristic indicative of an occupant being present or a fault condition.

5,624,133

PREFILTER FOR GAS GENERATING AIR BAG INFLATOR

Hung S. Wong, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Oct. 26, 1995, Ser. No. 548,432
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—740 **18 Claims**



1. An apparatus for inflating an air bag, said apparatus comprising:

a housing having a cylindrical inner surface defining a chamber;

an ignitable gas generating material in the chamber for, upon being ignited, producing a flow of combustion products, including gas to inflate the air bag and hot particles; and

a filter for removing hot particles from the flow of combustion products, said filter being a tubular cylinder and located in said chamber between said gas generating material and said housing, said filter forcefully engaging said cylindrical inner surface of said housing, said filter being contractible circumferentially and radially from a first condition for insertion into the chamber, said filter expanding circumferentially and radially toward the first condition to provide the forceful engagement with said cylindrical inner surface of said housing when the force contracting the filter is removed;

said filter engaging said cylindrical inner surface of said housing at spaced apart locations, said filter being spaced radially from said cylindrical inner surface between said locations.

5,624,134

GAS GENERATOR FORMED WITH ELECTRON BEAM WELDING

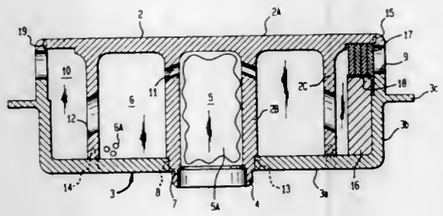
Yasunori Iwai, Osaka; Akihisa Ogawa, Hyogo; Hiroaki Shinto, and Masaru Masaki, both of Aichi, all of Japan, assignors to Daicel Chemical Industries, Inc., Japan

Division of Ser. No. 348,760, Dec. 2, 1994, Pat. No. 5,527,067, which is a continuation of Ser. No. 35,439, Mar. 24, 1993, abandoned. This application Jun. 14, 1995, Ser. No. 490,123
Claims priority, application Japan, Apr. 15, 1992, 4-095229
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 **18 Claims**

1. A gas generator for an air bag comprising:

a housing comprising:

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a diffuser shell comprising:

a first annular portion having a first peripheral edge,

a center cylindrical wall extending from the first annular portion to define a center chamber, the center cylindrical wall comprising:

an end portion,

a caulking portion constructed and arranged at the end portion for sealing the center chamber,

a step portion formed on the center cylindrical wall,

an intermediate cylindrical wall extending from the first annular portion to define an intermediate closed chamber arranged concentrically about the center cylindrical wall;

a closure shell comprising:

a second annular portion extending to a sidewall terminating in a second peripheral edge,

an aperture extending through the second annular portion for receiving the step portion of the center cylindrical wall,

at least one gas discharge port extending through the sidewall,

a first weld to join the diffuser shell with the closure shell, the first weld formed to extend from an exterior surface of the second annular portion of the closure shell to the center cylindrical wall of the diffuser shell along a first line where the second annular portion and the center cylindrical wall are in perpendicular abutment at a junction of the step portion and the second annular portion adjacent to the aperture,

a second weld formed to extend from the exterior surface of the second annular portion of the closure shell to the intermediate cylindrical wall of the diffuser shell,

a third weld formed to extend from an exterior surface Of the first peripheral edge of the first annular portion of the diffuser shell to the second peripheral edge of the sidewall; and

a coolant and filter chamber disposed between the sidewall and the intermediate cylindrical wall, the coolant and filter chamber comprising:

a retainer disposed within the coolant and filter chamber to separate the chamber into a first stage for a filter and a second stage for a coolant.

5,624,135

PORTABLE SEAT BELT

Barbara J. Symonds, Houston, Tex., assignor to Portabelt Joint Venture, Houston, Tex.

Filed Jan. 9, 1995, Ser. No. 369,895

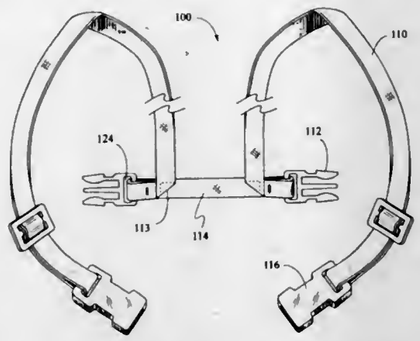
Int. Cl.[6] B60R *22/00*

U.S. Cl. 280—801.1 **6 Claims**

1. A portable seat belt, comprising:

a length of material having a center portion and two ends;

each of said ends including buckle means;



said center portion including means for engaging each of said buckle means such that each of said ends can be affixed to said center portion, whereby two restraining loops are formed.

5,624,136

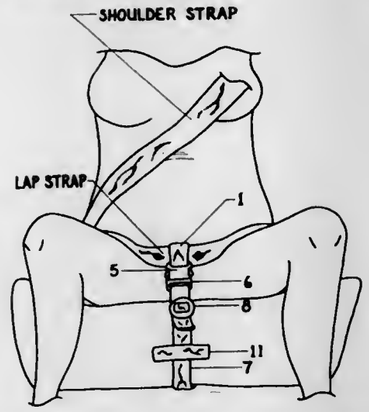
SAFETY SYSTEM ATTACHED TO SEAT BELT IN A MOTOR VEHICLE

Mark D. McGlothlin, and Charles J. Fagan, both of P.O. Box 725, Bremerton, Wash. 98337

Filed Jul. 28, 1995, Ser. No. 508,665

Int. Cl.[6] B60R *22/00*

U.S. Cl. 280—801.1 **3 Claims**



1. A device for use in connection with an automobile seat and lap strap of an automobile seat belt restraint system of said automobile seat for holding said lap strap of said automobile seat belt in a downward direction on the pelvic bones of a pregnant woman or user, comprising:

(a) a two piece elongated strap made up of a top member and a bottom member adjustable in length and coupled together by a releasable fastening means to accommodate proper fit for various sizes of pregnant women or users;

(b) a means for securing one end of said two piece elongated strap to an underside framework of an automobile seat which can be pulled free of said automobile seat;

(c) a means for securing a remaining end of said two piece elongated strap to the lap strap of an automobile seat belt and being removable from said lap strap and reinforced so as to prevent said lap strap from gathering or bunching;

(d) a holder attached to an automobile seat for supporting the bottom member of said two piece elongated strap when said bottom member of said two piece elongated strap is released from the top member of said two piece elongated strap in which said bottom member is held to said automobile seat, whereby making it easier for a pregnant woman or user to retrieve said bottom member of said two piece elongated strap when seated;

(e) wherein said means for securing one end of said two piece elongated strap is made from a loop of a thin strap wrapping around an underside portion of said automobile seat framework and attaching itself with a fastening element; and

(f) wherein said means for securing the remaining end of said two piece elongated strap is made from a thin strap wrapping around the lap strap of the automobile seat belt with ends of said thin strap being secured to each other with a fastening element.

5,624,137

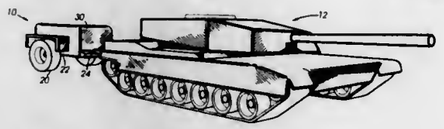
TOWABLE AUXILIARY FUEL TANK

Edward R. Lesesne, PSC #4, Box 253, APO, AA 34004-5000, Panama

Filed Sep. 15, 1995, Ser. No. 528,730

Int. Cl.[6] B60P *3/22*

U.S. Cl. 280—839 **20 Claims**



1. A fuel transfer system comprising;

a vehicle;

a trailer having a container capable of holding a quantity of fuel;

means for transferring said fuel from said container to said vehicle so that said fuel is immediately consumed by said vehicle; and

means for releasably disconnecting said trailer from said vehicle, said disconnecting means being operable when said vehicle is moving.

5,624,138

DICTIONARY PROVIDED WITH LETTER INDEXES

Sae J. Park, 175-20, Sadang 3-dong,, Dongjak-ku, Seoul, Rep. of Korea

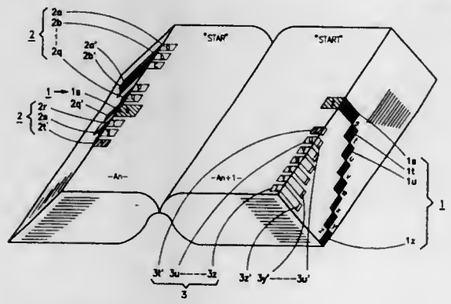
PCT No. PCT/KR94/00135, § 371 Date Aug. 16, 1995, § 102(e) Date Aug. 16, 1995, PCT Pub. No. WO95/16573, PCT Pub. Date Jun. 22, 1995

PCT Filed Oct. 8, 1994, Ser. No. 501,043

Claims priority, application Rep. of Korea, Dec. 16, 1993, 1993/27992 U

Int. Cl.[6] B42D *1/00;* **B42F** *21/00*

U.S. Cl. 283—36 **16 Claims**



1. A dictionary, comprising:

a) a plurality of inner pages having front and back sides with words recorded thereon, said inner pages being grouped into a number of sets, each inner page in each set having words recorded thereon with the same first letter;

b) each front and back sides of each inner page in each set including a first letter index block indicative of the first letter, said first letter index block being disposed adjacent an outer edge of said front and back sides, each of said first letter index blocks indicative of the same letter being vertically aligned on top of each other when said dictionary is closed;

c) each front side of each inner page in each set including a first plurality of second letter index blocks indicative of the second letter of the words recorded in the set, said first plurality of second letter index blocks being arranged in alphabetical order, starting with the first letter of an alphabet to an intermediate letter of the alphabet corresponding to the second letter of the words on said front side, said first plurality of second letter index blocks being disposed adjacent the outer edge of said front side;

d) each back side of each inner page in each set including a second plurality of second letter index blocks indicative of the second letter of the words recorded in the set, said second plurality of second letter index blocks being arranged in alphabetical order, starting with a letter corresponding to the second letter of the words on said back side to the last letter of the alphabet, said second plurality of second letter index blocks being disposed adjacent the outer edge of said back side; and

e) each of said second letter index blocks indicative of the same letter being aligned vertically on top of each other when said dictionary is closed.

5,624,139

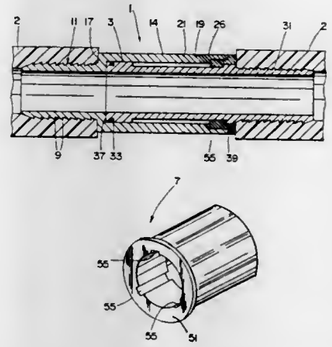
ELASTOMERIC HOSE COUPLING

Dwayne Van Kooten, 8990 E. Jewell Cr., Denver, Colo. 80231, assignor to Dwayne Van Kooten, Denver, Colo.

Continuation-in-part of Ser. No. 241,760, May 12, 1994, Pat. No. 5,403,046. This application Jan. 19, 1995, Ser. No. 375,809

Int. Cl.[6] F16L *21/08;27/12*

U.S. Cl. 285—31 **5 Claims**



1. A coupler for joining elastomeric hoses, comprising:

(a) an outer tubular coupling member having a longitudinal axis and distal and proximal ends; having a nipple at the distal end for sealably seating within a predetermined length of a first elastomeric hose to be joined; with at least a portion of the internal diameter of the outer tubular coupling member being of a suitable dimension to telescopically receive an inner tubular coupling member;

(b) an inner tubular coupling member having a longitudinal axis and distal and proximal ends; having a nipple at the distal end for sealably seating within a second elastomeric hose to be joined to said first elastomeric hose; at least one annular

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groove at the proximal end for receiving a ring shaped distortable sealing member; and a plurality of projections on the outer surface of said inner tubular coupling member, the projections circumferentially arrayed on said inner tubular coupling member; the proximal end of said inner tubular coupling member fitting telescopically inside of the proximal end of said outer tubular coupling member; and

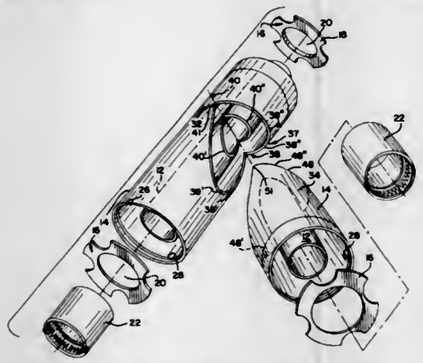
(c) a substantially tubular locking cap member having a longitudinal axis and distal and proximal ends; having an internal diameter of a suitable dimension to telescopically fit over said inner tubular coupling member such that said locking cap, when fitted over said inner tubular coupling member comes into juxtaposed contact with said outer tubular coupling member after assembly of the cap, the inner tubular coupling member and the outer tubular coupling member; said locking cap additionally having a plurality of substantially longitudinal grooves in the locking cap's inner surface of sufficient dimension to slideably receive said plurality of projections on said inner tubular coupling member to prevent rotational movement of the inner tubular coupling member with respect to the cap, yet allowing such rotational movement when, after assembly of the cap, the inner tubular coupling member and the outer tubular coupling member, at least a portion of the inner tubular coupling member is pulled along a substantially longitudinal axis for a sufficient distance such that said projections are pulled past the end of said cap, thereby allowing such rotational movement.

5,624,140

DOUBLE CONTAINMENT PIPE FITTING

John Allen, Lindenhurst, Ill.; Alec Ewen, Nazeing, United Kingdom, and Robert Gurney, Lake Bluff, Ill., assignors to Enfield Industrial Corporation, Lake Bluff, Ill.

Filed Nov. 15, 1993, Ser. No. 152,849
Int. Cl.[6] F16L *47/02*
U.S. Cl. 285—133.1 **15 Claims**



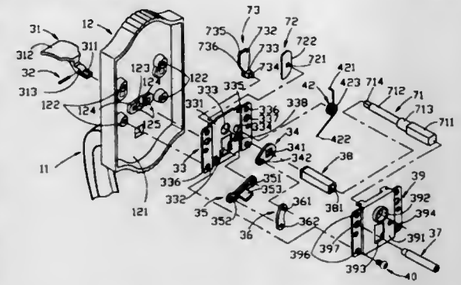
1. A fitting for use in installation of double containment piping systems, comprising a header section having a primary pipe portion located within an outer secondary pipe portion thereof, a branch section having a primary pipe portion located within a hollow secondary pipe portion thereof, the header and branch sections each having a distinct longitudinal axis, said header section primary and secondary pipe portions and said branch section primary and secondary pipe portions being joined together at a joint of said fitting in a manner such that said header and branch section longitudinal axes intersect, said joint being defined along respective opposing engagement faces of said the header and branch section the engagement face of said header section including pair angularly divergent, intersecting a surfaces formed in each of said header section primary and secondary pipe portions and the engagement face of said branch section including pair of angularly divergent, intersecting surfaces formed in each of said branch section primary and secondary pipe portions.

5,624,141

LOCK ASSEMBLY FOR RETRACTING A DOOR LATCH

Ching-Chuan Kuo, Chia-Yi Hsien; Ming-Shyang Chiou, Chia-Yi; Tong-Pei Wu, Chia-Yi Hsien, and Sheen-Youl Gao, Yun-Lin Hsien, all of Taiwan, assignors to Tong-Lung Metal Industry Co., Ltd., Taiwan

Filed Aug. 23, 1995, Ser. No. 518,798
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—165 **8 Claims**



1. A lock assembly for controlling a latch which locks a door comprising:

a housing to be mounted on an outside of the door, having a base wall;

an outside operating member mounted on said base wall for manipulation at the outside of the door and having a drive end which extends into said housing through said base wall;

a linkage mechanism operable by said outside operating member which is mounted on said base wall inside said housing adjacent to said drive end;

a transmission rod connected to said linkage mechanism to retract said latch when said outside operating member is operated, said transmission rod having an axis of rotation;

an inside operating spindle for extending into said housing from an inside of the door for manipulation;

said linkage mechanism including a transmission plate mounted coaxially with and drivingly connected to said transmission rod for simultaneous rotation;

a spindle operated mechanism mounted inside said housing and including a cam member and a crank member;

said cam member being turnable, independently of said linkage mechanism, about an axis parallel to and offset from said axis of rotation of said transmission rod, said cam member being connected to said inside operating spindle for simultaneous rotation therewith;

said crank member being turnable about an axis parallel to and offset from said axis of said cam member, said cam member having a camming face capable of pushing said crank member, said crank member transmitting movement of said cam member to said linkage mechanism so as to retract said latch when said inside operating spindle operates.

5,624,142

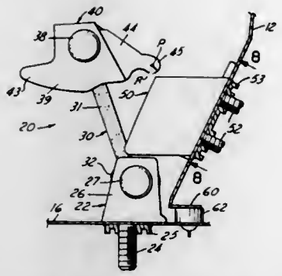
VEHICLE OVERCENTER CLOSURE LATCH

Earl L. Watson, Walled Lake; Glenn D. Holland, Southfield, and Elden E. Schneck, Troy, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 24, 1995, Ser. No. 506,450
Int. Cl.[6] E05C *3/04*
U.S. Cl. 292—241 **8 Claims**

1. An overcenter latch assembly for securing a pair of relatively movable members together comprising:

a bracket for securement to one member and a striker for securement to a second member in opposed relation with said bracket, an elastomeric link having its respective ends pivotally connected to said bracket and to a latch handle, with each connection defining a longitudinal pivot axis;



said striker having fore and aft longitudinally spaced apart transversely extending recesses formed therein, each said recess formed with a transversely extending raceway ending in opposed inboard and outboard pivot sockets;

longitudinally spaced apart fore and aft prongs extending from said handle with each prong free end defining an arcuate cam, each said cam adapted to be received in an associated inboard socket for pivotal movement of said handle about an inboard axis in a latching direction from an initial unlatched position;

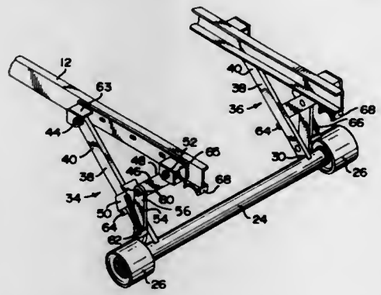
said raceways being oriented in a direction substantially perpendicular to a longitudinal axis of the elastomeric link with the latch in a latched position such that initially rotating said handle and link in a latching direction pivots said handle about said inboard axis through a predetermined first angle so as to tense said link to a first overcenter length that causes said cams to snap outboard on their raceways and seat in their associated outboard sockets, whereby continued rotation of said handle about an outboard axis to the latched position causes said link length to diminish to a tensed length a predetermined dimension less than said overcenter tensed length resulting in reduced effort to latch said assembly.

5,624,143

DROP DOWN BUMPER

Tom Waldschmitt, 2509 NW. 3rd, Ankeny, Iowa 50021

Filed May 15, 1995, Ser. No. 441,345
Int. Cl.[6] B60R *19/48*
U.S. Cl. 293—118 **20 Claims**



1. A drop down bumper for attachment to a rear portion of a frame, said drop down bumper comprising:

(a) a transverse impact protection bar having a first end and a second end;

(b) a first loading roller mounted to said first end of said transverse protection bar and a second loading roller mounted to said second end of said transverse protection bar;

(c) a linkage movable between a folded position and an extended position;

(d) means for attaching said linkage to said frame; and

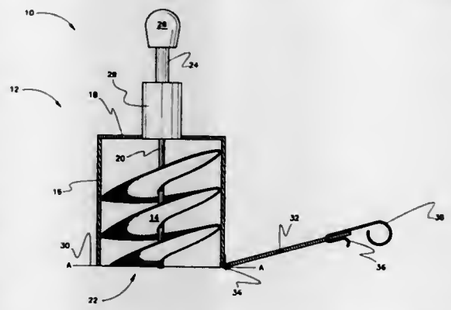
(e) means for attaching said impact protection bar to said linkage such that when said linkage is in said folded position said impact protection bar is substantially proximate to said frame, and when said linkage is in said extended position said impact protection bar is moved a distance below said frame.

5,624,144

EXCREMENT SCOOP

Mortimer P. Roche, 8516 Blounts La., Fulton, Md. 20759

Filed Dec. 26, 1995, Ser. No. 587,789
Int. Cl.[6] A01K *29/00*; **E01H** *1/12*
U.S. Cl. 294—1.3 **6 Claims**



1. A scoop for lifting and storing semisolid materials by hand, comprising:

a housing having a lateral wall having a bottom edge, a top wall, and means defining an open bottom end;

a screw blade vertically disposed within and supported by said housing, said screw blade having a central shaft passing through and extending above said top wall of said housing, said screw blade having a bottom which is coextensive with said bottom edge of said housing;

a handle for driving said screw blade connected to said central shaft above said top wall; and

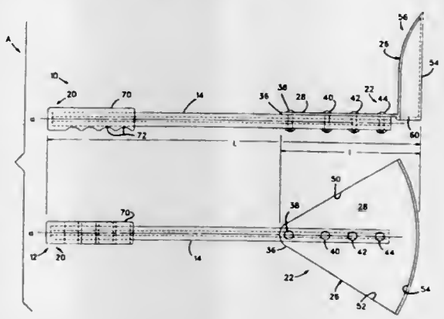
a bottom closure selectively movable to a deployed position and a closed position, for exposing said bottom of said screw blade and for retaining gathered material within said housing.

5,624,145

PLASTERING MATERIAL SCOOP APPARATUS

Anthony T. Swilley, Talmadge, Ohio, assignor to Premier Plastering, Inc., Akron, Ohio

Filed Nov. 30, 1995, Ser. No. 564,993
Int. Cl.[6] A47L *17/06*
U.S. Cl. 294—55 **6 Claims**



1. A plastering tool comprising:

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a rigid, elongated generally cylindrical handle portion having first and second spaced apart opposite ends thereon, the handle portion generally extending along a longitudinal axis;

a scoop fixed to the first of the spaced apart ends, the scoop including,

a generally planar base portion having a first radial wall and a second radial wall that intersect at a vertex end such that the base portion has an acute angle at the vertex end,

the vertex end of the base portion being rounded in a generally circular circumferential portion, and

a rounded side wall, is disposed at generally a right angle to the base portion coincident to and at an arc end of the base portion, the arc end located radially opposite the vertex end, the handle portion is disposed along a radius of curvature from the vertex end to the arc end; and whereas

the scoop is fixed generally symmetrically to the handle portion such that the scoop is substantially symmetrical to the longitudinal axis;

the base portion is generally parallel to the longitudinal axis; and

the vertex end is disposed toward the second spaced apart end of the handle portion.

5,624,146

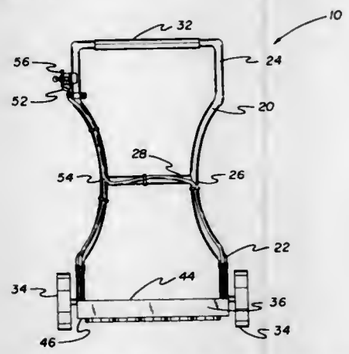
DEVICE FOR USE IN PICKING UP METALLIC OBJECTS

Elmer De Los Reyes, 5295 Martin St., P.O. Box 136, Mira Loma, Calif. 91752, and Robert R. Hernandez, Sr., 4080 Pedley Rd., SP 84, Riverside, Calif. 92509

Filed Apr. 5, 1996, Ser. No. 630,945

Int. Cl.[6] B03C *1/00*; **B25J** *15/06*

U.S. Cl. 294—65.5 **5 Claims**



1. A device for use in picking up metallic objects, the device comprising, in combination:

an H-shaped frame having a lower extent and an upper extent with an intermediate extent therebetween, a transverse support element positioned spanning the intermediate extent of the frame, a transverse handle bar spanning the upper extent of the frame, a first and a second wheel rotatably positioned upon the lower extent of the frame;

a magnetic head housing having a forward extent and a rearward extent, an upper surface and a lower surface, an opening positioned within the lower surface, the opening defining five generally circular portions, the rearward extent of the housing being slidably positioned upon the lower extent of the frame;

a pivotal lever positioned proximate the upper extent of the frame, a cable having a first end, a second end and an intermediate extent therebetween, the first end of the cable being interconnected with the pivotal lever such that movement of the lever effects movement of the cable, the second end of the cable secured to the upper surface of the housing, the intermediate extent of the cable positioned along the intermediate extent of the frame, an affixing means associated with the pivotal lever, the affixing means holding the pivotal lever at a select orientation, the pivotal lever, affixing means, and cable together constituting adjustment means with the pivotal movement of the lever effecting the slidable positioning of the housing relative to the frame and the affixing means keeping the pivotal lever in a selected orientation; and

five circular magnetic elements, each of the magnetic elements being positioned within one of the circular portions of the magnetic head housing.

5,624,147

LIFTING RING

Marcel Arteon, 16 rue Cino-del-Duca, F-92200 Neuilly-sur-Seine, France, and Lucien Joannet, 37 rue de Portzmorguer, Le Couregant, F-56270 Ploemeur, France

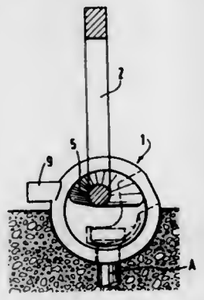
PCT No. PCT/FR94/01000, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO95/05335, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 11, 1994, Ser. No. 416,677

Claims priority, application France, Aug. 12, 1993, 93 09892

Int. Cl.[6] B66C *1/66*

U.S. Cl. 294—89 **6 Claims**



1. A lifting ring for prefabricated building elements, provided with an anchoring piece having a cylindrical head and a shank about an axis of symmetry, the lifting ring comprising both a coupling piece or yoke for coupling with the head of the anchoring piece, the coupling piece being generally spherical in shape having two parallel truncated faces and including a downwardly open circular groove of dimensions corresponding to those of the anchoring piece head and shank, and a lifting shackle on which said coupling piece is pivotally mounted by means of an eye that is eccentric relative to the center of the yoke and that extends in a direction that is orthogonal to the plane of the circular groove, wherein

the eye of the coupling piece is circular in section and opens out into the truncated faces of the yoke via respective toroidal surfaces whose bottom portions are defined by two toroidal coupling faces coupling with two inclined faces that are inclined about the direction perpendicular to the axis of symmetry of the anchoring device when the coupling piece surrounds the head of the anchoring device.

5,624,148

WINDOW TRIM MOLDING

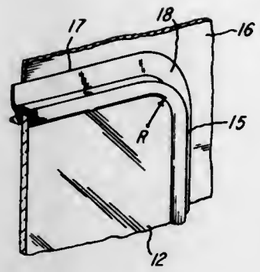
Jack D. Young, Montgomery County, Ohio, and James R. Biondo, Oakland County, Mich., assignors to Creative Extruded Products, Inc., Tipp City, Ohio

Filed Feb. 13, 1995, Ser. No. 387,226

Int. Cl.[6] B60J *1/00*

U.S. Cl. 296—93 **22 Claims**

1. In an automobile having a body panel and an adjacent fixed window, a window trim molding configured to fit around said window and having bent areas for fitting around corners of said window, said molding comprising a principal body and segments composed of a first elastomeric material; the improvement comprising a layer of a second elastomeric material at least partially embedded within said principal body and said segments, said second elastomeric material being harder than said first elastomeric material, and a reinforcement completely embedded within said layer, said segments retaining an edge of said window, said layer and said reinforcement cooperating to permit said bent areas to be formed around a radius of between 5 and 12 millimeters no provide for a tight fit of said molding around said corners and to overcome dimensional inconsistencies in said window.



5,624,149

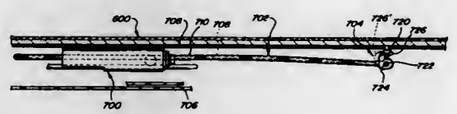
APPARATUS AND METHOD FOR SECURING A CONVERTIBLE ROOF TO AN AUTOMOTIVE VEHICLE

Stephen P. Tokarz, Flat Rock, Mich., assignor to ASC Incorporated, Southgate, Mich.

Continuation-in-part of Ser. No. 940,570, Sep. 4, 1992, Pat. No. 5,301,987. This application Mar. 30, 1994, Ser. No. 220,294

Int. Cl.[6] B60J *7/185*

U.S. Cl. 296—121 **9 Claims**



1. An apparatus for securing a convertible roof to a body of an automotive vehicle, said apparatus comprising:

a striker affixed to said roof;

a catch mechanism disposed on said body of said automotive vehicle, said catch mechanism being pivotable only about a single fixed and substantially horizontal pivot axis; and

a drive mechanism coupled with said catch mechanism for providing pivotal movement to said catch mechanism for selectively engaging said striker, said catch mechanism being substantially vertically pivotable for engaging a substantially horizontal member of said striker;

said striker being defined as a forward striker projecting from a substantially forwardmost portion of said roof; and

said catch mechanism being defined as a forward catch mechanism entirely disposed within a front header assembly portion of said body when engaged with said forward striker.

5,624,150

HINGE FASTENING STRUCTURE AND METHOD OF CREATING A HINGE PILLAR JOINT

Fabio Venier, Holland Landing, Canada, assignor to Multimatic, Inc., Markham, Canada

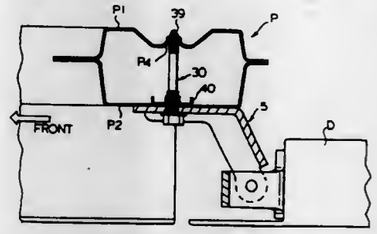
PCT No. PCT/CA94/00423, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO95/04864, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 4, 1994, Ser. No. 592,342

Claims priority, application Canada, Aug. 9, 1993, 2103599; Aug. 9, 1993, 2116877; Mar. 23, 1994, 2119919

Int. Cl.[6] B62D *25/00*

U.S. Cl. 296—146.11 **13 Claims**



13. A method of fastening hardware to a box section structure, the box section structure having an inner panel and an outer panel having openings; the opening in the outer panel including a self-adjusting threaded retaining plate for engaging the threads of a bolt; the opening in the inner panel being located in a concave formation of the inner panel suitable for guiding the tip of the bolt into the second opening; the bolt comprising a head and a tip and having disposed adjacent the head a first threaded portion of a predetermined first outer diameter and first inner diameter, and having a predetermined pitch; the tip of the bolt having a self-tapping second threaded portion of a predetermined second outer diameter and second inner diameter, and having a pitch substantially equal to the pitch of the first threaded portion; the second outer diameter sized to be smaller than the first inner diameter; the method comprising the steps of:

(a) mounting the hardware onto the box section structure;

(b) inserting the bolt through an opening in the hardware into the opening of the outer panel until the leading thread of the first threaded portion engages the threaded retaining plate;

(c) advancing the bolt into the box section structure by rotating it in the fastening direction;

(d) engaging the opening in the inner panel with the self-tapping second threaded portion,

(e) turning the bolt in a fastening direction to engage both first and second threaded portions in their respective panels;

(f) assisting the alignment of the bolt by means of the concave formation of the inner panel and the self-adjusting ability of the threaded retaining plate;

(g) substantially maintaining the distance pre-established between the inner panel and the outer panel with hardware clamping torque maintained through the joint formed by the self-adjusting threaded retaining plate on the outer panel and the first threaded portion.

5,624,151

HEADLINER RETAINER

Gerald W. Guswiler, 1785 Perry Rd., Green Cove Springs, Fla. 32043

Filed Sep. 15, 1995, Ser. No. 528,562

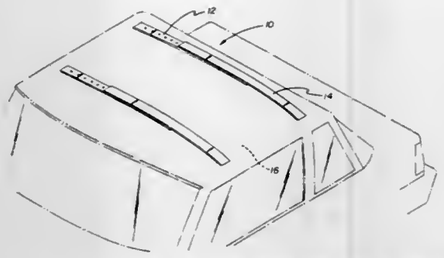
Int. Cl.[6] B60R *13/02*

U.S. Cl. 296—214 **2 Claims**

1. A new vehicle headliner support structure for securing a sagging headliner in a vehicle cab to an interior roof surface of said vehicle cab, said headliner support structure comprising:

first support means selectively engageable with one edge of said interior roof surface;

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second support means selectively engageable with an opposed edge of said interior roof surface; and

connection means for facilitating a connection between said first support means and said second support means, said second support means being adjustably connectable to said fist support means;

an adjustment means forming a part of said connection means and facilitating an adjustable fit of said first and second support means into secure engagement proximate said interior roof surface;

a number of through extending apertures provided on said first support means, a number of outwardly extending projections provided on said second support means, said outward extending projections being positionable within said apertures, thereby to effect a connection between said first and second support means so as to retain said headliner support structure proximate said interior roof surface of said vehicle cab;

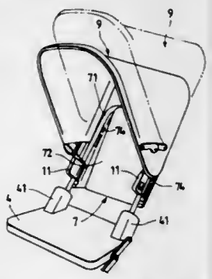
said outwardly extending projections being rotatably attached to a planar surface of said second support means at an axis of rotation and included in said adjustment means;

said outwardly extending projections are each eccentrically positioned relative to its axis of rotation, whereby said outwardly extending projections effect a relative lateral movement of said second support means when said outwardly extending projections are rotated within said apertures, thereby to effect consequent relative movement between said first and second support means so as to provide a tightening effect of said headliner support structure proximate said interior roof surface.

5,624,152
SUN-SHADING HOOD HEIGHT ADJUSTING DEVICE FOR STROLLER

Toshiro Yoshie; Tsutomu Nagai; Hiroaki Matsuda, and Hitoshi Nakamura, all of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan

Filed Sep. 12, 1994, Ser. No. 304,695
Claims priority, application Japan, Sep. 30, 1993, 5-057339 U
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—184.13 **2 Claims**



1. A sun-shading hood height adjusting device for a stroller comprising:

a U-shaped frame pole;

a first hood holder disposed on a first side of said U-shaped frame pole; and

a second hood holder disposed on the other side of said U-shaped frame pole;

wherein each of said first and second hood holders includes a frame pole engaging portion including a circular through-hole for allowing said U-shaped frame pole to be slidably inserted therethrough,

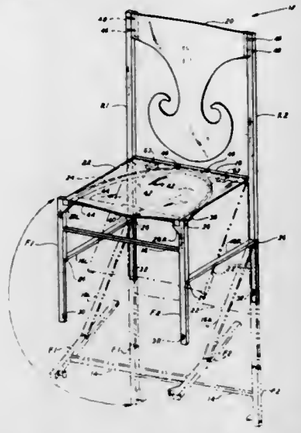
wherein each of said first and second holders includes a first engaging unit, wherein a second engaging unit is disposed along each of said first and other sides of said U-shaped frame, wherein said first engaging unit comprises recessed grooves, wherein said second engaging unit comprises projections, and

wherein the device further comprises a pair of slender plate-like portions disposed adjacent the first and other sides of said U-shaped frame, respectively, said plate-like portions including said projections.

5,624,153
FOLDABLE CHAIR

Mario Censullo, Jr., 5108 Fort Hamilton Pky., Brooklyn, N.Y. 11219

Filed Sep. 15, 1995, Ser. No. 529,001
Int. Cl.[6] A47C *4/10;* **A47D** *1/02*
U.S. Cl. 297—59 **8 Claims**



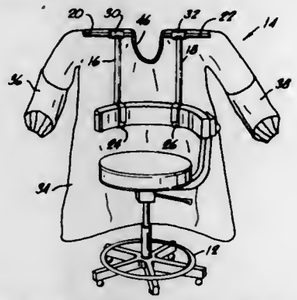
1. A folding chair comprising rear legs including bottommost ends and uppermost ends, a rear crossbar connecting said rear legs, a back rest secured to said rear legs above said rear crossbar, a seal member comprising a rearward portion connected to said rear crossbar by a hinge means assembly, said seat member comprising a detachable frontal edge including detachable frontal lateral ends, said seat member rotates at said hinge means assembly from a substantially horizontal position to a substantially vertical position, said detachable lateral ends including front legs comprising bottommost ends and uppermost ends, said front legs connected by a front crossbar near the uppermost ends of said front legs, bracket means attached to the uppermost end of said front legs flanking the frontal lateral ends of said seat member, said bracket conforming to the frontal lateral ends of said seat member in a manner to brace said seat member for lateral support, sidebars connecting said front legs to said rear legs, said sidebars including a top and bottom surface, a first pivot means connected at points substantially midway between the uppermost ends and the bottommost ends of said front legs, a second pivot means connected at points from the bottommost ends of said rear legs substantially equal to the bottommost ends of said front legs to said first pivot means, whereby said sidebars are substantially parallel to said seat member when said chair is unfolded, said front legs rotate forwardly and underneath into parallelism to said sidebars at the first pivot means, therefrom said sidebars rotate forwardly at the second pivot means

with said front legs into parallelism to said rear legs, whereby the bottommost ends of said front legs abut the bottommost ends of said rear legs, said chair in an unfolded condition further comprising a given height from a horizontal support of the uppermost ends of said rear legs whereby the height of said chair in a folded condition is increased substantially equal to the height of said front legs from the horizontal support.

5,624,154
DENTAL OPERATORY CHAIR BARRIER SYSTEM

Shigeo R. Kishi, 6561 Red Coach Dr., Huntington Beach, Calif. 92647

Continuation of Ser. No. 159,432, Nov. 29, 1993, abandoned.
This application Jan. 16, 1996, Ser. No. 586,540
Int. Cl.[6] A47C *7/64;* **A61G** *15/14*
U.S. Cl. 297—217.1 **19 Claims**



1. In combination with a dental operatory chair having opposing front and rear sides and a seating surface, wherein the periphery of the seating surface is substantially unobstructed on both the front and rear sides to permit dental personnel to enter the operatory chair from the rear side and to sit on the seating surface with the dental personnel's legs extending over the front side of the operatory chair, a barrier system comprising:

a support frame mounted on the operatory chair at the front side thereof, said support frame including at least one upright member and at least one cross member, said upright member having an upper end to which said cross member is attached and a lower end which is attached to the operatory chair, said upright member configured and positioned on the operatory chair with said cross member spaced above the seating surface so as to leave a substantially unobstructed space for the dental personnel's legs to extend underneath said cross member when sitting on the operatory chair facing the front side thereof; and

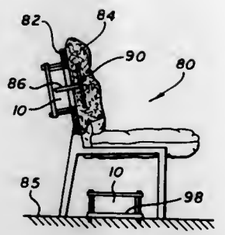
a gown of flexible material draped on said support frame, said gown supported at an upper end on said cross member so that the remainder of said gown hangs down therefrom on the front side of the operatory chair, whereby said gown will cover at least a portion of the dental personnel's anterior when sitting on the operatory chair with the dental personnel's legs extending underneath said cross member of said support frame.

5,624,155
ELECTROMAGNETIC TRANSDUCER

Jeffrey Bluen, Studio City; Dennis C. Bulgatz, Resoda, and Drew Kallen, Buena Park, all of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Division of Ser. No. 86,622, Jul. 1, 1993, Pat. No. 5,424,592.
This application Jan. 17, 1995, Ser. No. 374,939
Int. Cl.[6] A61H *1/00*
U.S. Cl. 297—217.3 **2 Claims**

1. A vibrating transducer attached to an article of furniture generally having a rigid shell and a foam cushion adjacent said shell, said vibrating transducer comprising:



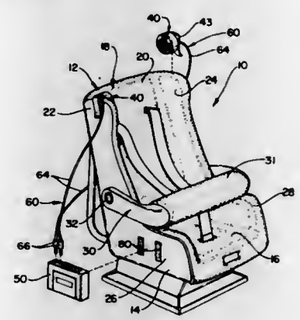
an electromagnetic transducer having a case and an output shaft extending outwardly therefrom said output shaft oscillating in response to an input current applied to said transducer, said case being mounted to said shell;

a substantially pusher plate attached to said output shaft, said pusher plate being enclosed by said foam cushion.

5,624,156
CHILD SAFETY SEAT WITH ENTERTAINMENT SYSTEM

Horacio Leal; Teresita Leal, both of 11500 SW. 92nd Ave., Miami, Fla. 33176, and Israel Kaganas, 3802 NE. 207th St., Apt. 2901, Miami, Fla. 33180

Filed Mar. 25, 1996, Ser. No. 618,070
Int. Cl.[6] A47C *7/72;1/08*
U.S. Cl. 297—217.4 **10 Claims**



1. An entertainment assembly comprising:

a seat including a base having an upper support surface, and a vertical portion including a backrest and opposite sides,

a safety bar hingedly attached at opposite ends to said seat, said safety bar being movable between a raised position and a lowered, secured position and including a mid-section extending across a front of said seat and generally disposed in front of a user's lower torso and above a user's waist when seated in said seat with said safety bar in said lowered position,

speaker means removably supported on the opposite sides of said vertical portion of said seat and structured to project sound therefrom in a direction which is audible to a user seated in said seat,

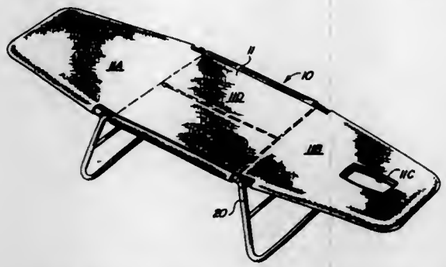
an audio source, remote from said speaker means, for generating sound signals to be delivered to said speaker means,

means for removably carrying said audio source on said seat, and

conductor means for electrically interconnecting said audio source to said speaker means.

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5,624,157
COVER FOR FOLDING LOUNGE
Teresa Kostuk, 505 Fifth Ave. South, Ste. A, Naples, Fla. 33940
Filed Jun. 26, 1995, Ser. No. 494,949
Int. Cl.[6] A47C *31/00*
U.S. Cl. 297—228.13 **2 Claims**



1. A removable unitary fabric cover for covering a folding metal lounge frame which has two adjustable cantilevered U-shaped tubular end members and two elongated tubular side members, said cover comprising

an elongated first panel constructed of sturdy woven fabric, said panel having a center portion and two ends, one end being formed into a pocket adapted to fit over one end member of the metal frame and the opposite end of the panel also being formed into a pocket adapted to fit over the other end member of the frame, each pocket having a top portion adapted to lie above the end member of the frame and a bottom portion adapted to lie beneath the end member of the frame,

one of the pockets having a layer of padding affixed to the underside of the top portion of the pocket and also having a hole through the middle portion of both the top and bottom portions of the pocket and its layer of padding, said hole being positioned and sized to comfortably support the face of a person on the lounge who is lying on his stomach,

a pair of similar rectangular side panels of the same woven fabric used to construct the first panel, the edge of one side of each side panel permanently affixed to one side of the center portion of the first panel, and

means located along the edge of each side panel opposite to the edge affixed to the first panel for joining together the two side panels and permits each side panel to pass over one of two tubular side members of the metal frame and then join the two side panels together beneath the first panel to firmly secure the cover onto the metal frame.

5,624,158
ADJUSTABLE BACKREST
Riyaz Adat, Don Mills; Kevin Mar, Toronto; Craig Pirie, Etobicoke, and Tim Poupore, Toronto, all of Canada, assignors to Bosaro Biotech Inc., Scarborough, Canada
PCT No. PCT/CA94/00428, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/04488, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 5, 1994, Ser. No. 591,430
Claims priority, application Canada, Mar. 31, 1994, 2120456
Int. Cl.[6] A47C *7/46*
U.S. Cl. 297—230.14 **10 Claims**

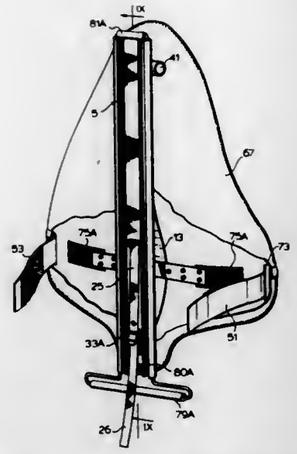
1. An adjustable backrest for supporting a human back comprising:

a) a spine member;

b) a lumbar support member projecting from said spine member;

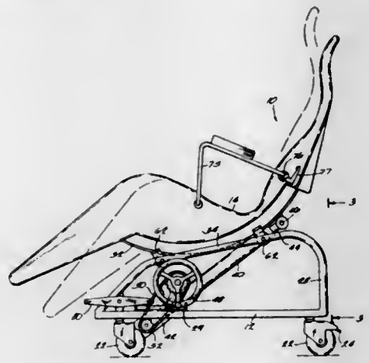
c) a back pad resting on said lumbar support member for supporting the lumbar portion of said human back;

d) lumbar adjustment means connected to said lumbar support member for adjusting curvature of said lumbar support member to accommodate different sizes and shapes of said lumbar portion of said human back; and



e) length adjustment means for adjusting length of said spine member to accommodate different lengths of said human back.

5,624,159
ADAPTIVE SEATING DEVICE FOR DIAGNOSTIC TESTING
Michael J. Celoni, Glendale; Judith I. Kulpa, and Michael F. Conmy, both of Milwaukee, all of Wis., assignors to Vess Chairs, Inc., Wauwatosa, Wis.
Filed May 11, 1993, Ser. No. 64,459
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—325 **9 Claims**



1. An adaptive seating device comprising:

a support;

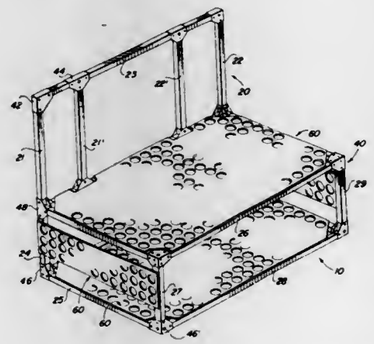
a seat portion for accommodating a person mounted on and tiltably positionable on said support,

said seat portion having an arcuately curved surface on its underside;

rotatable means mounted on said support and engaged with said curved surface on said seat portion to support said seat portion and to enable said seat portion to be tiltably moved by rolling movement of said arcuately curved surface on said rotatable means to any one of a plurality of tilt positions relative to said support; and

a linear actuator having first and second ends, said first end being attached to said support and said second end being connected to said seat portion to whereby said seat portion is tiltably movable relative to said support.

5,624,160
AIRCRAFT DIVAN
Roger Koch, 311 NE. 103rd St., Miami Shores, Fla. 33138, and Michael L. Oleson, 1721 NE. 17th Ave., Fort Lauderdale, Fla. 33305
Filed Sep. 12, 1994, Ser. No. 304,799
Int. Cl.[6] A47C *5/04;7/02*
U.S. Cl. 297—452.2 **12 Claims**



1. An aircraft divan for use within a passenger compartment of an aircraft, comprising:

(a) a strong rigid base structure adapted to be secured to a support surface within the aircraft,

said base structure including a plurality of substantially strong, yet lightweight tubular frame members,

(b) a plurality of substantially strong, yet lightweight connectors,

each one of said plurality of connectors being structured and disposed to connectingly receive at least two of said tubular frame members,

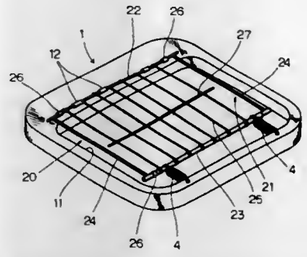
each of said connectors including an exterior wall structure defining at least one interior cavity and at least two tube receiving openings,

each of said connectors comprising a first interlocking segment and a second interlocking segment, said first interlocking segment structured to at least partially receive said second interlocking segment and said first and second interlocking segments being structured to be interlockingly connected with one another in sandwiching relation about at least one end zone of said tubular frame members;

each of said tube receiving openings being structured and disposed to receive and surround one of said end zones of one of said tubular frame members therethrough and to maintain said end zone of said tubular member in a secured, fixed position within said interior cavity of said connector, and

(c) fastening means structured to securely maintain said tubular frame members within said connectors so as to define said strong, rigid base structure.

5,624,161
SEAT CUSHION PAD SUPPORTING CONSTRUCTION
Yuuichi Sorimachi; Wataru Itou; Yasushi Yoshino, all of Toyota, and Teruhiko Yamamoto, Higashikamo, all of Japan, assignors to Takashimaya Nippatsu Kogyo Co., Ltd., Aichi-ken, Japan
Filed Dec. 28, 1994, Ser. No. 365,220
Claims priority, application Japan, May 31, 1994, 6-118430; Jul. 7, 1994, 6-155784; Jul. 11, 1994, 6-158426; Oct. 28, 1994, 6-265414
Int. Cl.[6] A47C *7/35*
U.S. Cl. 297—452.52 **28 Claims**



1. A seat cushion pad supporting construction comprising:

a seat cushion base frame having an opening;

a generally planer spring deck comprising a boundary frame and flexible support means disposed substantially over the opening, said flexible support means being connected between a front portion of the seat cushion pad supporting construction and a rear boundary frame portion of the boundary frame, said rear boundary frame portion having a rigidity such that the rear boundary frame portion substantially resists deformation during application of a load, wherein the rear boundary frame portion of the boundary frame includes means for providing greater rigidity to the boundary frame than other portions of the boundary frame;

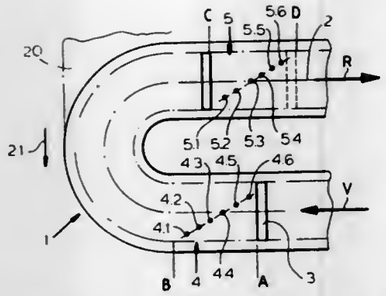
non-resilient connecting means for non-resiliently connecting the front boundary frame portion of the boundary frame to a front portion of the seat cushion base frame adjacent the opening to substantially prevent the front boundary frame portion of the boundary frame from moving at least in right-to-left directions and rolling about axes extending substantially in the fore-to-aft directions and up-and-down directions relative to the seat cushion base frame; and

resilient connecting means for resiliently connecting the rear boundary frame portion of the boundary frame to a rear portion of the seat cushion base frame adjacent the opening so that at least a rear portion of the planer spring deck is shiftable substantially in said up-and-down directions.

5,624,162
LONG-WALL MINING MACHINE WITH A WORKING CHAIN
Kuno Guse, Witten; Peter Kröninger, Gelsenkirchen; Bernd Hölling, Bochum, and Roland Becker, Gelsenkirchen, all of Germany, assignors to Bochumer Eisenhutte Heintzmann GmbH & Co KG, Bochum, Germany
Filed Oct. 6, 1995, Ser. No. 540,234
Claims priority, application Germany, Oct. 7, 1994, 44 35 842.3
Int. Cl.[6] E21C *35/12;35/24*
U.S. Cl. 299—1.6 **12 Claims**

11. A method of monitoring the operation of a long-wall mining machine having a machine trough, an endless chain in the machine trough formed with a plurality of mining tools and having deflection stations around which said chain passes in a forward stretch and a return stretch, at least one of the stations being formed with a drive station, the method comprising the steps of:

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generating respective measurement pulse sequences from at least one row of inductive proximity sensors spaced apart in said trough along said forward stretch and at least one row of inductive proximity sensors spaced apart in said trough along said return stretch in a region of at least one of said stations and responsive to passage of said tool by said sensors, said measurement pulse sequences representing functional parameters of operation of the chain including chain sag; and

comparing at least one measurement pulse sequence from at least one of said rows of sensors with a setpoint pulse sequence thereby monitoring operation of the chain or diagnosing problems with operation thereof.

5,624,163

PRESSURE MEDIUM ACTUATED VEHICLE BRAKING SYSTEM

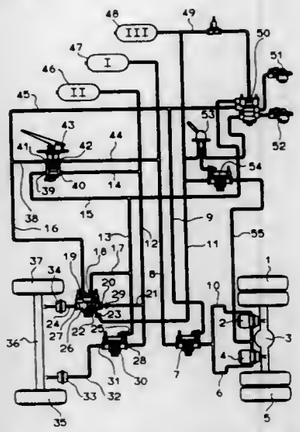
Bernd Kiel, Wunstorf, and Karl-Heinz Unser, Muggensturm, both of Germany, assignors to WABCO GmbH, Hanover, and Mercedes-Benz AG, Stuttgart, both of Germany

Filed Feb. 5, 1996, Ser. No. 596,832

Claims priority, application Germany, Feb. 10, 1995, 195 04 394.4

Int. Cl.[6] B60T *17/18;13/36;15/18*

U.S. Cl. 303—6.01 **23 Claims**



1. Pressure-medium actuated vehicle braking system, comprising:

a multi-circuit braking power imparting device,

at least first and second braking circuits,

said first braking circuit comprising a first pressure medium storage container, at least a first braking cylinder, and a first control valve system which connects said first braking cylinder of said first braking circuit to said first pressure medium storage container or to a pressure medium sink in dependence on a first control signal for said first braking circuit produced by said braking power imparting device,

said second braking circuit comprising a second pressure medium storage container, first and second braking cylinders, and a second control valve system,

said second control valve system comprising first and second control valves assigned to said first and second braking cylinders of said second braking circuit, respectively,

said first control valve being connected to said braking power imparting device so as to receive said first control signal for said first braking circuit and a second control signal produced by said braking power imparting device for said second braking circuit,

said first control valve connecting said first braking cylinder of said second braking circuit to one of two pressure medium sources which are independent of each other, or to a pressure medium sink in dependence on said first and second control signals received by said first control valve,

said second control valve connecting said second braking cylinder of said second braking circuit to said second pressure medium storage container or to a pressure medium sink in dependence on said second control signal.

5,624,164

BRAKING FORCE DISTRIBUTION CONTROL SYSTEM

Kenji Tozu, Kariya; Kenji Asano, Toyota, and Noriaki Hattori, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

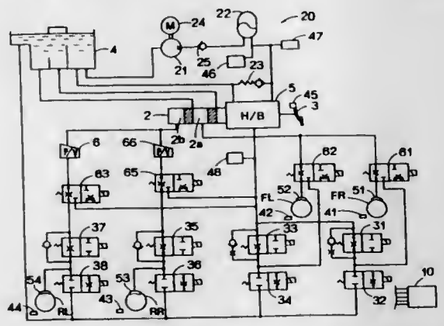
Division of Ser. No. 144,434, Nov. 2, 1993, Pat. No. 5,547,264.

This application Mar. 13, 1996, Ser. No. 614,723

Claims priority, application Japan, Nov. 4, 1992, 4-319475; Nov. 16, 1992, 4-330062; Nov. 16, 1992, 4-330071

Int. Cl.[6] B60T *8/40*

U.S. Cl. 303—9.62 **7 Claims**



1. A braking force distribution control system for controlling a braking force applied to a pair of rear wheels of an automotive vehicle in a certain relationship with a braking force applied to a pair of front wheels of said automotive vehicle, comprising:

a pair of front wheel brake cylinders, each of which is operatively connected to a respective one of said front wheels for applying a braking force to the respective front wheel;

a pair of rear wheel brake cylinders, each of which is operatively connected to a respective one of said rear wheels for applying a braking force to the respective rear wheel;

a reservoir for storing brake fluid;

a master cylinder for pressurizing the brake fluid fed from said reservoir and supplying hydraulic braking pressure to said pair of front wheel brake cylinders in response to depression of a brake pedal;

an auxiliary power source communicated with said reservoir for pressurizing the brake fluid fed from said reservoir and discharging a power pressure;

dynamic hydraulic braking pressure regulating means communicated with said auxiliary power source for regulating said power pressure to a pressure regulated in a certain relationship with the hydraulic braking pressure discharged from said master cylinder in response to depression of said brake pedal;

pressure control valve means disposed in respective hydraulic circuits communicating said regulating means with said rear wheel brake cylinders for controlling the hydraulic braking pressure in said rear wheel brake cylinders; and

control means for actuating said valve means to control the hydraulic braking pressure in said rear wheel brake cylinders in a certain relationship with the hydraulic braking pressure in said front wheel brake cylinders.

5,624,165

APPARATUS FOR CONTROLLING BRAKE PRESSURE APPLIED TO THE WHEELS OF AUTOMOBILES USING PRESSURE FLUID

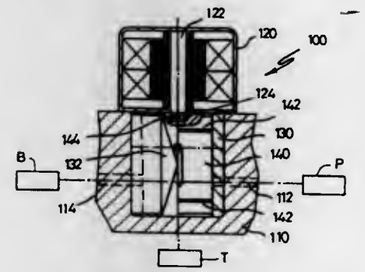
Sung Dai Moon, Kumee-si, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 26, 1995, Ser. No. 548,420

Claims priority, application Rep. of Korea, Oct. 26, 1994, 94-27510

Int. Cl.[6] B60T *13/68*

U.S. Cl. 303—119.2 **14 Claims**



1. A brake pressure control apparatus for controlling a brake pressure in an automobile which has a hydraulic pump, a wheel cylinder, and a fluid tank, the apparatus comprising:

a housing connected to the hydraulic pump so as to receive a pressurized fluid from the hydraulic pump, the housing having a first fluid path connected to the hydraulic pump so as to receive the pressurized fluid, and a second fluid path connected to the wheel cylinder so as to introduce the pressurized fluid into the wheel cylinder;

a first means for generating a rotational force according to an operating signal from an electrical control unit, the first means being mounted on an upper surface of the housing;

a second means for guiding the pressurized fluid which has flowed through the housing, the second means being securely inserted in the housing, the second means including a bushing which has a substantially hollow cylindrical shape, the bushing being formed at its outer wall with a planar portion so as to return the pressure fluid to the fluid tank, the bushing having a first cutting portion and a second cutting portion at its outer wall, the first cutting portion being located so as to correspond to the first fluid path of the housing in such a manner that the pressure fluid flows from the first fluid path of the housing into the bushings, and the second cutting portion being located so as to correspond to the second fluid path of the housing in such manner that the pressurized fluid that has passed through the bushing flows into the second fluid path of the housing, the first cutting portion having an inlet hole for receiving the pressure fluid from the housing at a bottom of the first cutting portion, the second cutting, portion having an outlet hole for guiding the pressure to the wheel cylinder at a bottom of the second cutting portion, and the planar portion having a perforation hole for communicating with the fluid tank at a bottom of the planar portion, the perforation hole being longitudinally upwardly spaced by a predetermined length from the inlet and outlet holes; and

a third means for receiving the pressure fluid from the second means, and then for transferring the pressure fluid to the wheel cylinder or the fluid tank alternately, the third means being rotatably accommodated in the second means and rotated by the first means.

5,624,166

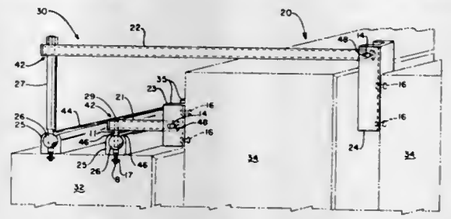
ANTI-TIP GUARD FOR MOBILE FILING CABINETS

Randall R. Theken, 1115 Robinson Ave., Barberton, Ohio 44203, and Jack W. Jeter, 1008 Margate Dr., Akron, Ohio 44313

Filed Jun. 1, 1995, Ser. No. 456,494

Int. Cl.[6] A47F *5/00*

U.S. Cl. 312—201 **14 Claims**



1. A storage cabinet comprising:

an upright storage compartment, a compartment carriage and floor-mounted track, and an anti-tip means, said storage compartment being supported by said compartment carriage and said compartment carriage being movable in a first longitudinal direction along said compartment track, said anti-tip means comprising an anti-tip track and a follower movable along said anti-tip track in a second longitudinal direction which is substantially parallel to the first longitudinal direction, said follower being operatively connected to said storage compartment by link means, said link means being pivotable with respect to said storage compartment and wherein said follower has longitudinal axis aligned with said second longitudinal direction and is rotatable about its longitudinal axis in response to the pivoting of said link means.

5,624,167

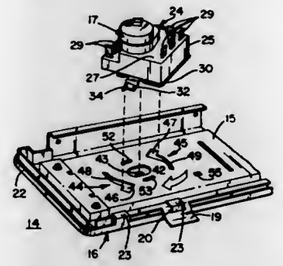
APPLIANCE CONTROL MOUNTING

Jonathan M. Katz, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1995, Ser. No. 416,059

Int. Cl.[6] G12B *9/00*

U.S. Cl. 312—223.1 **6 Claims**



3. An electric control mounting assembly comprising:

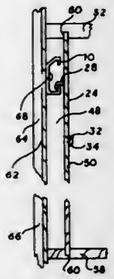
an electric control housing having a front, a lateral periphery and a control shaft extending forward of said front, a planar base

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covering said front and including an opening through which said shaft extends, a pair of mounting ears extending from said base outward of said control housing lateral periphery on substantially opposite sides of said shaft, said ears lying in a plane parallel to said base; and

a mounting plate, an opening formed in said plate to receive said control shaft, a pair of mounts formed in said plate on substantially opposite sides of said control shaft receiving opening and adapted to mate with said corresponding ones of said ears, said mounts comprising a pair of arcuate openings formed in said plate, each of said arcuate openings including a first portion sized to permit a corresponding ear to pass through said plate and a slot portion adapted to permit said base to be rotated to bring said corresponding ear into an overlapping relationship with said mounting plate.

5,624,168
CABINET MOUNTING APPARATUS
Morris F. Licciardello, Sr., 236 Mill St., Bristol, Pa. 19007
Filed Aug. 24, 1994, Ser. No. 294,904
Int. Cl.[6] A47B 96/06
U.S. Cl. 312—245 **7 Claims**



1. An apparatus comprising in combination:

(a) an elongated rigid rail member having an upper edge portion, a lower edge portion and a central portion; said central portion connecting the upper edge portion and lower edge portion and having a flat surface adapted to fit flush against a linear wall surface and means for securing the rail member to a wall; said lower edge portion extending along the length of the rail member and being formed in a generally J shaped configuration spaced outwardly a first predetermined distance from the central portion,

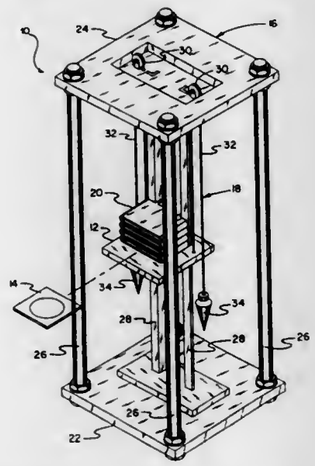
(b) a cabinet including

(1) elongated rigid bracket having a support portion extending the length of the bracket and a downward hook shaped portion extending along substantially the entire the length of the support portion; said hook shaped portion being of a given size and shape and being spaced a second predetermined distance from the support portion; said first and second predetermined distance and the size and shape of the hook shaped portion being selected so that to the hook shaped portion of the bracket is insertable in and supportable by the J shaped lower edge portion of the rail,

(2) said cabinet further having a top panel, side panels and a bottom panel secured together to form top, side and bottom walls of the cabinet, said side and top panels each having an interior side and edges; said cabinet having a recessed back section formed by locating a back wall panel within the interior of the cabinet a third predetermined distance from the back edges of the side panels; the interior sides of the side panels of the cabinet have defined therein aligned grooves of a given width at said third predetermined distance from the back edges of the cabinet; said support portion of the bracket has opposing terminal lengthwise ends and a support edge extending the length of the upper edge of the bracket, said terminal ends having a width substantially equal to the given width; and the bracket being secured in the cabinet by having the terminal ends thereof being inserted and held by the aligned grooves,

said bracket being secured within the recessed back of the cabinet at a location where when the rail member is secured horizontally to a vertical wall and the hook shaped portion of the bracket is inserted and supported by the J shaped lower edge portion of the rail member the cabinet will be held in position with the back edges of the cabinet substantially flush against the vertical wall and the third predetermined distance is selected to allow the rail member and the bracket when the cabinet is hung on a wall to be received in the recessed back section of the cabinet.

5,624,169
MODULAR SUSPENDED MEDIA RACK
Bobby W. Bishop, Jr., 12481 Archer, Lemont, Ill. 60439
Filed Mar. 15, 1995, Ser. No. 404,561
Int. Cl.[6] A47B 88/00
U.S. Cl. 312—319.4 **5 Claims**



1. A modular suspended media rack comprising:

a platform upon which a plurality of recording media can be positioned;

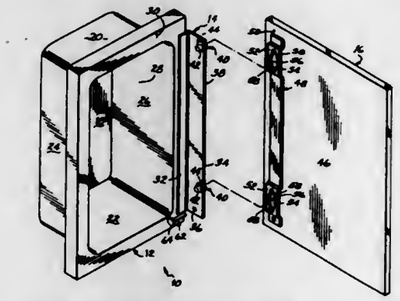
a support means for movably supporting the platform relative to a support surface, the support means including a lower plate positionable upon a support surface, an upper plate, and a plurality of vertical stanchions extending between the upper and lower plates to support the upper plate in a spaced orientation relative to the lower plate, and a plurality of elongated members extending between the lower plate and the upper plate, the platform being movably mounted relative to the guide members of the support means;

a biasing means coupled to the platform for urging the platform towards an upper portion of the support means; and

a plurality of media receivers arranged upon the platform in an infinitely adjustable vertical manner with respect to the platform, wherein recording media is individually positionable into each of the media receivers, the media receivers each comprise a substantially flat receiver body having a cavity directed thereinto within which recording media can be positioned, and a pair of mounting arms projecting from a rear of the receiver body and into a substantially spaced and parallel orientation for positioning between the elongated guide members of the support means, each of the mounting arms terminating in an outer distal end, a lateral projection extending from the outer distal ends of each of the mounting arms, wherein the mounting arms are constructed of a substantially resilient material whereby an inward deformation thereof is

permitted during insertion of the mounting arms between elongated guide members such that the guide members can reside between the lateral projections and a rear of the receiver body to movably secure the media receivers relative to the support means.

5,624,170
QUICK CONNECT AND DISCONNECT DOOR AND HINGE APPARATUS
Robert K. Hasty, Union, Ky., assignor to NuTone Inc., Cincinnati, Ohio
Filed Apr. 25, 1996, Ser. No. 637,863
Int. Cl.[6] A47B 88/00
U.S. Cl. 312—329 **13 Claims**



1. A hinge and door apparatus comprising:

a first hinge leaf adapted to be mounted along a door frame;

a second hinge leaf pivotally connected to said first leaf, said second leaf having at least one aperture therein;

at least one mounting post projecting from an outer face of the second leaf, said mounting post having an enlarged head;

a door having an aperture and at least one slot along one edge thereof, said slot having an enlarged opening for receiving said enlarged head and a first slot portion dimensioned smaller than said enlarged head; and

a locking plug adapted to be inserted through the respective apertures in the second leaf and the door;

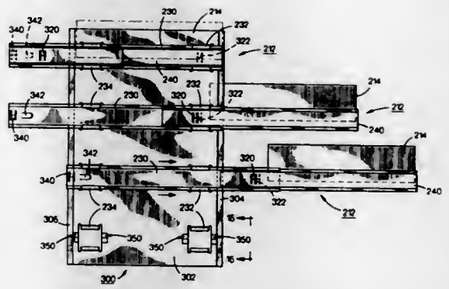
whereby the door is removably mounted to the second leaf by engaging the enlarged head with the enlarged opening and sliding the door to engage the first slot portion with the enlarged head and align the aperture in the second leaf with the aperture of the door thereby allowing insertion of the locking plug through the aligned apertures to prevent the door from sliding off the mounting post.

5,624,171
TWO-TRACK DRAWER SLIDE HAVING FUNCTION OF THREE-TRACK SLIDE
Joseph F. Soja, Wethersfield, and Chester M. Fudge, Middletown, both of Conn., assignors to Durham Manufacturing Company, Durham, Conn.
Filed Jul. 24, 1995, Ser. No. 506,229
Int. Cl.[6] A47B 88/10;88/12;88/16
U.S. Cl. 312—334.8 **19 Claims**

1. A drawer cabinet having first and second, spaced apart, parallel, vertical side walls joined at front edges thereof by a front surface, said drawer cabinet having at least one two-track drawer slide assembly having the function of a three-track drawer slide assembly, said two-track drawer slide assembly comprising:

(a) first and second horizontal, parallel, oppositely disposed outer tracks axially slidably mounted in support means attached to said first and second side walls, respectively;

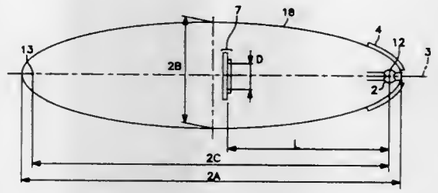
(b) said support means comprising at least one longitudinally vertical support member for each of said side walls of said cabinet, each vertical flanges formed along front and rear edges of the support member for mounting said vertical support member to and inside of each of said side walls, at least one U-shaped channel formed as one piece with said support member, said U-shaped channel located on said central portion of each vertical support member, said U-shaped channel comprising first and second legs receiving said outer-tracks therebetween; first and second, parallel, inner tracks telescopingly axially moveable within said first and second outer tracks, said inner tracks being moveable between: (1) a first, closed position, with said inner tracks fully inserted in, and supported by, said outer tracks, and with said outer tracks fully disposed within said drawer cabinet, and (2) a second, withdrawn position, with said inner tracks being substantially fully withdrawn from said outer tracks past said front surface of said drawer cabinet, yet remaining supported by said outer tracks, and with said outer tracks fully disposed within said drawer cabinet;



(c) a frame fixedly attached to said first and second inner tracks, said frame not being fully withdrawn past said front surface of said drawer cabinet when said inner tracks are in said second, withdrawn position; and

(d) co-engaging means attached to said inner and outer tracks to become engaged when said inner tracks are withdrawn to said second, withdrawn position, with further withdrawal of said inner tracks past said front surface of said drawer cabinet causing said outer tracks to move axially partially outwardly of said front surface of said drawer cabinet in response to said co-engaging means becoming engaged when said inner tracks are withdrawn to said second, withdrawn position, to move said inner tracks to a third, withdrawn position, to permit said frame to be fully withdrawn past said front surface of said drawer cabinet.

5,624,172
PROJECTION TYPE IMAGE DISPLAY APPARATUS
Shigekazu Yamagishi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 30, 1995, Ser. No. 550,530
Claims priority, application Japan, Nov. 1, 1994, 6-267913
Int. Cl.[6] G03B 21/14
U.S. Cl. 353—98 **8 Claims**



1. A projection type image display apparatus comprising:

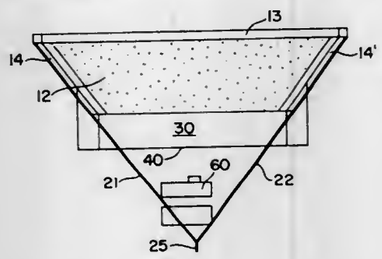
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a) an illumination means including a light source having a light emitting area and a reflector for reflecting the light from said light source in one direction;
b) an image display means including a light valve for controlling the light from said illumination means according to external input signals; and
c) a projection means including projection lens for projecting the light that passed through said image display means,
wherein said reflector is an oval mirror with an opening, said oval mirror has two focal points, a first focal point being located on one side of the light valve near said oval mirror and a second focal point being located on the opposite side of said light valve, at least a part of said light emitting area is arranged to include said first focal point and said light valve is located at a position on the light axis connecting said reflector and said light valve to satisfy the following inequality:

$$0.6<(L/C)<1.1$$

wherein 'L' is the distance, from said first focal point to the light valve, that governs the effective light flux area of said light valve and '2C' is the distance from said first focal point to said second focal point.

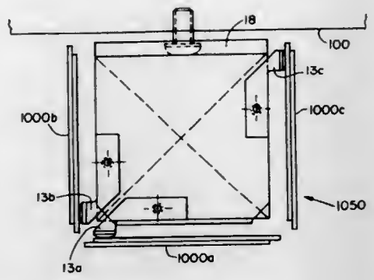
5,624,173
VIDEO FRAME SYSTEM
Steven Davidson, P.O. Box 1181, Back Bay Station, Boston, Mass. 02117
Filed Mar. 19, 1996, Ser. No. 618,641
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—119 **8 Claims**



1. A portable video frame system, comprising:
video projector image receiving means having a surface and defining a rear vertical plane;
a V-shaped video projector top support frame extending substantially orthagonally from said rear vertical plane for removable mounting of a video projector at a spaced and predetermined distance from said image receiving means; and
a base providing a support for said video projector receiving means and said top support frame.

5,624,174
DISPLAY PANEL MOUNT FOR PROJECTION DISPLAY SYSTEM
Bryan E. Loucks, Los Altos Hills, Calif., assignor to Kopin Corporation, Taunton, Mass.
Continuation of Ser. No. 111,171, Aug. 25, 1993, abandoned. This application Oct. 17, 1995, Ser. No. 544,251
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—122 **48 Claims**

28. A projection display system comprising:
three display panels, a first display panel generating a red-color image, a second display panel generating a green-color image, and a third display panel generating a blue-color image;



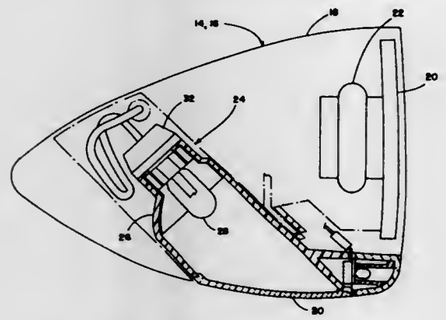
a prism having an optical axis for optically combining the generated images to form a synthesized image; and
a plurality of three-point mounts, each display panel being fixed in an image plane positioned relative to the optical axis of the prism by a respective mount such that the generated images are registered to form the synthesized image.

5,624,175
BICYCLE SAFETY LIGHT
Scott Gelormino, Winsted, and Serafino Canino, Torrington, both of Conn., assignors to ICC Corporation, Torrington, Conn.
Filed Aug. 13, 1993, Ser. No. 106,417
Int. Cl.[6] B62J *6/00*
U.S. Cl. 362—72 **19 Claims**



1. A safety light for a bicycle, comprising: a housing member; a power source; at least one light source supported by the housing member and electrically connectable to the power source; motion switching means for switching between an open condition and a closed condition in response to motion of the housing member; and a control circuit activated dependent on the open and the closed condition of the motion switching means, the control circuit having flashing means for producing a flashing voltage pulse effective to cause the at least one light source to flash an on-off cycle each time the switching means switches between the open condition and the closed condition in response to motion of the housing member and for controlling the flashing means to produce the flashing voltage pulse for a predetermined length of time after detecting a last on-off cycle wherein the housing member comprises a first half shell having an observable surface and engageable with a second half shell having an observable surface for forming in an engaged position a hollow interior therebetween; the at least one light source comprises a first light source positioned in the interior so that an emanating first light is visible through the observable surface of the first half shell and a second light is visible through the observable surface of the second half shell; and wherein the light further comprises mounting means for mounting the housing member on spokes of a bicycle tire the first light is visible when viewing one side of the tire and the second light is visible when viewing another side of the tire.

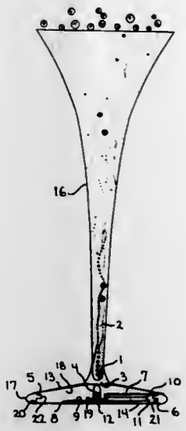
5,624,176
ILLUMINATED POWER TILT EXTERIOR MIRROR FOR VEHICLE
Desmond J. O'Farrell, and Roger L. Veldman, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Oct. 25, 1995, Ser. No. 547,953
Int. Cl.[6] B60Q *1/22*
U.S. Cl. 362—83.1 **30 Claims**



1. A mirror system for a vehicle having a reverse gear selector, comprising:
a first exterior mirror assembly having a first reflective element, a first housing for said first reflective element, and a first positioning device for selectively positioning said first reflective element at least about a first horizontal axis;
a control that is responsive to said vehicle reverse gear selector being placed in a reverse gear mode for causing said first positioning device to position said first reflective element about said first horizontal axis to a downwardly tilted position to view a first area adjacent a first side of the vehicle; and
a first light for emitting light generally downwardly from said first housing on said first area;
wherein said control actuates said first light at least as a function of said first reflective element being in said downwardly tilted position in order to illuminate objects in said first area and wherein said control actuates said first light also as a function of light conditions outside of said vehicle wherein said control actuates said first light only during low light conditions.

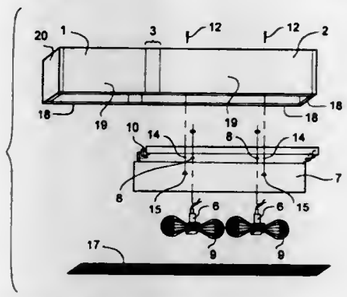
5,624,177
I.C.B. ILLUMINATING UNITY RING FOR DRINKING GLASS
Kirk S. Rosaia, Burlingame, Calif., assignor to Joseph Carrabino, Brisbane, Calif.
Filed Feb. 22, 1995, Ser. No. 392,031
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—101 **11 Claims**

1. An illuminated drinking glass comprising:
a ring having an upper recessed circumference and a lower angular recessed circumference, said upper recess slightly greater than an outer circumference of a drinking glass foot, said drinking glass foot fitted into said upper recess;
a snap on integrated circuit board including a light source located at a center of said circuit board, said circuit board fitted into said lower angled recess, wherein said light source transmits light into said glass foot;



a retainment disk engaged below said circuit board in the lower recess, said disk defining an underside of said glass foot and adapted to cover and hold said circuit board in place.

5,624,178
UNIVERSAL DECORATIVE FACADE TELESCOPING FIXTURE
Robert T. Lee, Jr., 313 West Shore, So. Hero, Vt. 05486
Filed Oct. 3, 1995, Ser. No. 538,384
Int. Cl.[6] F21S *3/00*; F21V *19/02*
U.S. Cl. 362—220 **17 Claims**

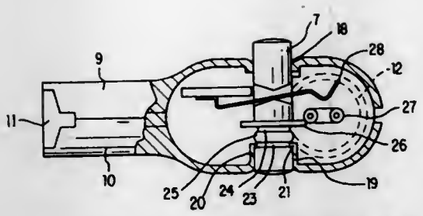


1. A lighting fixture, comprising:
an outer frame that includes a mainbox and an extender that is slidably engaged to said mainbox, whereby the outer frame may be adjusted to any desired length by adjusting a relative position of the mainbox and the extender;
a fixture retaining slide mounted within said outer frame;
a light fixture mounted to said fixture retaining slide; and
means for adjusting a position of the fixture retaining slide within the outer frame to a desired position, wherein the adjusting means includes elongated slots formed in a surface of the outer frame and fasteners for fastening the fixture retaining slide to the mainbox through the elongated slots.

5,624,179
LAMP FOR FLUORESCENT TUBES
Heinrich Korte, Am Rennschloot, DE-26810 Ihrhove, Germany
Filed Mar. 3, 1995, Ser. No. 399,713
Int. Cl.[6] F21S *3/00*
U.S. Cl. 362—222 **24 Claims**

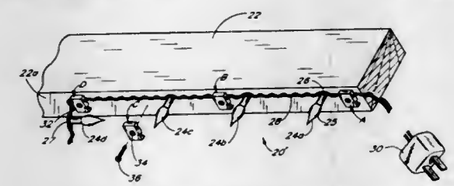
1. Lamp for fluorescent tubes comprising:

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a plastic housing (2) comprising two half-shells (9,10) that can be divided laterally,
a plug element (3) molded out of the housing,
an illumination field having an optional illumination field cover (5), and electrical equipment for operating a fluorescent tube (12),
the lamp having a switching element (7) guided through the housing (2), the switching element being held in a desired switching position by a catch element (19) provided on the housing (2), the catch element comprising a slotted spring cage projecting into the housing.

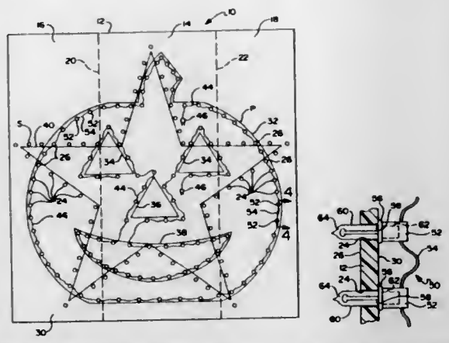
5,624,180
LIGHT STRING MOUNTING BRACKET
William C. Lanning, 2632 E. Adams Ave., Orange, Calif. 92667
Filed Apr. 3, 1995, Ser. No. 415,346
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—249 **24 Claims**



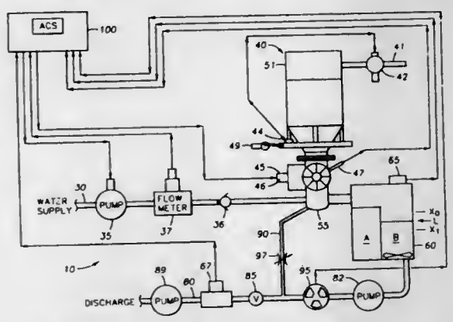
1. A bracket for mounting a string of lights, comprising:
a body portion having a throughbore from a lower face to an upper face; and
a pair of parallel channels opens to said upper face of the body, said channels aligned substantially perpendicular to the throughbore axis and located on either side of the throughbore, said channels being sized differently to accommodate different sized wires.

5,624,181
LIGHTED DISPLAY USING DECORATIVE LIGHT STRING
Kenneth C. Miller, 280 Easy St. #117, Mountain View, Calif. 94043; Warren D. Hyland, 1720 W. Mountain Ave., Ft. Collins, Colo. 80521, and David A. Greenlee, P.O. Box 4516, Troy, Mich. 48099
Filed Nov. 7, 1995, Ser. No. 553,181
Int. Cl.[6] F21V *33/00;* **F21L** *15/08*
U.S. Cl. 362—252 **17 Claims**

1. A mounting support for mounting a string of lights which comprises a plurality of spaced sockets that are interconnected by electrical wiring, each socket mounting an elongated bulb having a lighting portion smaller than the surrounding socket, said support comprising a sheet of resilient support material having a plurality of spaced apertures formed into a predetermined pattern, each aperture being sized to enable forced insertion of a bulb lighting portion therethrough and to enable the support material surrounding the aperture to frictionally grip the bulb lighting portion when inserted and provide a barrier to prevent insertion of the sockets into said apertures, whereby the frictional gripping of the bulb lighting portions by the support material provide the only means securing the bulb lighting portions to the mounting support.

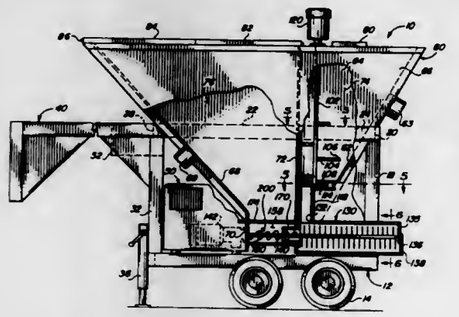


5,624,182
AUTOMATIC CEMENTING SYSTEM WITH IMPROVED DENSITY CONTROL
Michael P. Dearing, Sr., Cypress; Bruce A. Vicknair, Baytown; Randall R. Price, Houston; Robert A. Baten, Friendsword; Greg L. Cedillo, and John H. Craig, both of Houston, all of Tex., assignors to Stewart & Stevenson Services, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 178,659, Jan. 7, 1994, and a continuation-in-part of Ser. No. 308,477, Sep. 19, 1994, which is a continuation of Ser. No. 969,944, Oct. 30, 1992, said Ser. No. 178,659is a continuation-in-part of Ser. No. 969,944, which is a division of Ser. No. 389,923, Aug. 2, 1989, Pat. No. 5,281,023. This application Feb. 27, 1995, Ser. No. 394,476
Int. Cl.[6] B01F *15/04*
U.S. Cl. 366—2 **20 Claims**



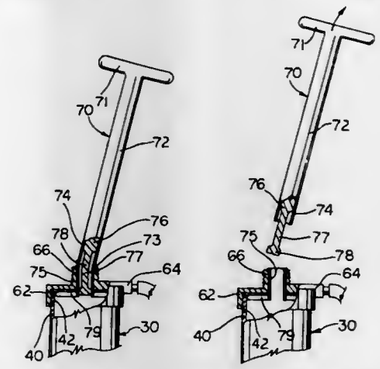
1. An automatic cementing system, comprising:
a mixing chamber for receiving liquid and dry cement, said mixing chamber mixing the liquid and dry cement together to form a cement slurry;
an input line for supplying the liquid to said mixing chamber;
means for supplying the dry cement to said mixing chamber, said supplying means including a means for regulating the rate at which dry cement is delivered;
means for discharging the slurry from said mixing chamber;
a level sensor for measuring the slurry level in said mixing chamber and generating an electrical signal representing the real time value of the slurry level;
a system controller electrically connected to said regulating means of said supplying means and to said level sensor, said controller including:
means for receiving the real time slurry level values from said level sensor;
means for storing a plurality of said slurry level values periodically sensed by said level sensor;
means for generating a reference signal by averaging said plurality of slurry level values;
means for comparing said reference signal with the real time slurry level in said mixing chamber; and
means for transmitting a signal to said regulating means to change the rate of delivery of dry cement to the mixing chamber in response.

5,624,183
APPARATUS FOR METERING AND MIXING AGGREGATE AND CEMENT
David A. Schuff, 420 S. 19th Ave., Phoenix, Ariz. 85009
Continuation-in-part of Ser. No. 234,934, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 38,238, Mar. 29, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 422,858
Int. Cl.[6] B28C *5/14;7/10*
U.S. Cl. 366—20 **13 Claims**



1. Mixing apparatus, comprising, in combination:
a first chamber for holding a quantity of first material to be mixed;
a second chamber beneath the first chamber for receiving the first material from the first chamber;
a third chamber for bolding a quantity of second material to be mixed with the first material;
a partition disposed between the first and third chambers;
mixing chamber means for receiving material from the first and third chambers and for mixing the first and second materials, including
a mixing chamber, and
a plurality of mixing blades in the mixing chamber for mixing the first and second materials;
means for transporting the first material from the first chamber to the mixing chamber, including an auger blade disposed in the second chamber;
a metering sleeve disposed about a portion of the auger in the second chamber adjacent to the mixing chamber for insuring that only a portion of the auger blade is in direct communication with the material in the second chamber;
means for controlling the speed of the auger blade for metering the first material to the mixing chamber; and
vane feeder means in the third chamber adjacent to the partition for metering the second material to the mixing chamber means, including
a vane feeder having a rotatable shaft and a rotor secured to the shaft and openings in the rotor through which the second material moves as the shaft and the rotor rotate, and
a plurality of arms secured to and rotatable with the shaft and spring ends secured to the arms remote from the shaft which bend as the spring ends contact the partition and straighten as the arms rotate away from the partition to provide a maximum length for the arms for agitating the second material.

5,624,184
BONE CEMENT PREPARATION KIT HAVING A BREAKABLE MIXING SHAFT FORMING AN OUTPUT PORT
Kwan-Ho Chan, 4803 1st Pl., Lubbock, Tex. 79416
Filed Oct. 10, 1995, Ser. No. 541,543
Int. Cl.[6] B01F *13/06*
U.S. Cl. 366—139 **10 Claims**

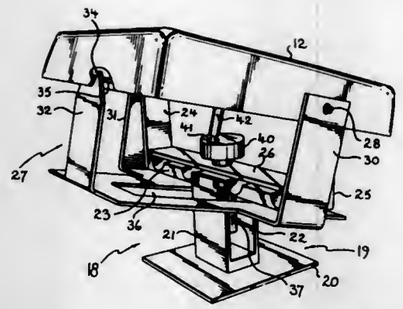


1. An apparatus for manufacturing bone cement by mixing a plurality of constituent components and for delivering the same, said apparatus comprising:
a cartridge including a tubular cylinder having an open proximal end and a distal end;
a cap connectable to said cylinder proximal end, said cap including means for connecting said cartridge to a vacuum pump to draw a vacuum within said cartridge, said cap defining an opening therethrough;
a piston plug shiftably disposed within said cylinder for axial movement within said cylinder towards said cap to expel cement from said cartridge;
agitator means for mixing the constituent components of the bone cement within said cartridge, said agitator means including an elongated shaft having a detachable tubular distal end reciprocally received through said cap opening, and a paddle connected to said shaft distal end for axial reciprocation within said cartridge;
end plug means extending from the shaft into the shaft distal end; and
frangible means disposed in said shaft for breaking away and detaching said shaft distal end from said shaft and removing said end plug means from said shaft distal end;
whereby the bone cement can be expelled through said shaft distal end.

5,624,185
DEVICE FOR MIXING AND MEASURING A QUANTITY OF LIQUID
Maxwell E. Whisson, Nedlands, Australia, assignor to Max-Medical Pty Ltd., Nedlands, Australia
PCT No. PCT/AU94/00449, § 371 Date Apr. 25, 1996, § 102(e) Date Apr. 25, 1996, PCT Pub. No. WO95/04591, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 5, 1994, Ser. No. 592,339
Claims priority, application Australia, Aug. 5, 1993, PM0420
Int. Cl.[6] B01F *11/00*
U.S. Cl. 366—141 **23 Claims**

1. A mixer, comprising: a support element, a first transverse beam extending laterally from opposite sides of the support element, a first pair of pivots provided on the first transverse beam, on opposite sides of the support element and equidistant from the support element, to provide a first pivot axis, a support pivotally supported from the first pivots to be pivotable about the first pivot

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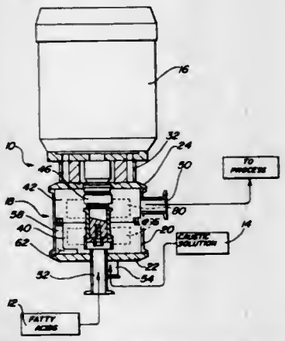
axis, the support having a pair of second pivots on opposite sides of the first pivot axis to provide a second pivot axis which is perpendicular to the first pivot axis and which is located between the first pivots, a platform pivotally supported from the second pivots to be pivotable about the second pivot axis, a drive motor supported from the first transverse beam, said drive motor having a drive shaft which is coupled to the platform, whereby rotation of the drive shaft causes joint pivotable movement of the platform about the second pivot axis and the support about the first pivot axis, said first transverse beam being deflectable proportionally to the weight of an item on the platform, and measuring means, connected to the first transverse beam, for measuring the degree of deflection of the beam to provide an indication of the weight and/or volume of the item on the platform.

5,624,186

MULTI-CHAMBER HIGH PRESSURE DISPERSION APPARATUS

Ray Ogier, Milton, Canada, assignor to Chem Financial, Inc., Canada

Filed Feb. 6, 1996, Ser. No. 597,692
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—176.1 **9 Claims**



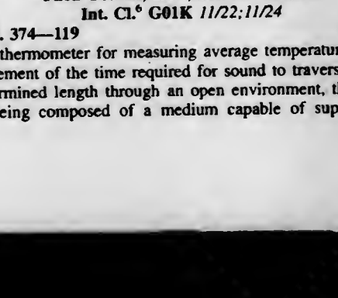
1. A dispersion apparatus for mixing a plurality of materials, said apparatus comprising:
- a housing having a bottom chamber and an upper chamber;
- a motor mounted to said housing for turning a shaft extending into said housing;
- a baffle plate mounted to said housing to separate said upper chamber from said lower chamber, said baffle plate having an aperture for receiving said shaft therethrough and forming an annular passage therebetween;
- at least two kinetic baffles mounted within said lower chamber to form pressure zones;
- an inlet cap mounted to said housing and having a primary inlet and a secondary inlet for delivering said plurality of materials into said lower chamber; and
- a pair of blades mounted to said shaft, one of said blades disposed in said lower chamber and an other of said pair disposed in said upper chamber.

5,624,187

METHOD AND APPARATUS FOR GAS FLOW MODULATED DIFFERENTIAL SCANNING CALORIMETRY

Michael Reading, London, England, assignor to TA Instruments, Inc., New Castle, Del.

Continuation-in-part of Ser. No. 171,656, Dec. 22, 1993, Pat. No. 5,439,291, which is a continuation-in-part of Ser. No. 60,214, May 7, 1993, Pat. No. 5,346,306, which is a continuation of Ser. No. 844,448, Mar. 2, 1992, Pat. No. 5,224,775. This application Jun. 2, 1995, Ser. No. 459,022
Int. Cl.[6] G01N *25/00*
U.S. Cl. 374—11 **52 Claims**



1. A gas flow modulated differential scanning calorimeter comprising:
- (a) means for varying the temperature of a sample/reference in a cell in the differential scanning calorimeter according to an underlying heating rate;
- (b) means for selecting a modulation frequency and a modulation amplitude;
- (c) means for controlling the temperature of the sample/reference according to the selected underlying heating rate, modulation frequency and modulation amplitude;
- (d) means for detecting the heat flow to and from the sample/reference with respect to a reference as a function of temperature, as the temperature of the sample/reference is varied according to the modulation frequency and modulation amplitude;
- (e) means for recording a signal representative of differential changes in the heat flow to and from the sample/reference; and
- (f) means for deconvoluting the signal representative of differential changes in the heat flow to compute at least one deconvoluted signal,

wherein the temperature of the sample/reference is modulated by controlling the characteristics of a flow of gas in thermal contact with the sample/reference.

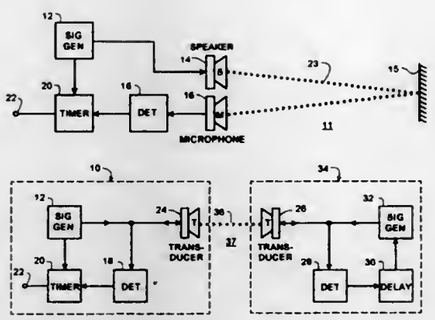
5,624,188

ACOUSTIC THERMOMETER

David A. West, 283 Whitewood Dr., Streamwood, Ill. 60107

Filed Oct. 20, 1994, Ser. No. 326,542
Int. Cl.[6] G01K *11/22;11/24*
U.S. Cl. 374—119 **18 Claims**

1. A thermometer for measuring average temperature based on measurement of the time required for sound to traverse a path of predetermined length through an open environment, the environment being composed of a medium capable of supporting the



propagation of sound waves, the measured time being an indicator of the average temperature of the medium along the path of the sound, the thermometer comprising:
- means for generating an electrical signal burst of predetermined frequency and duration, and for modualting the signal burst to convey an identity code;
- a sound transmitting transducer for converting the electrical signal burst into a sound burst, the sound burst having substantially the same frequency and duration as the electrical signal burst and conveying the identity code, the transmitting transducer being connected to the generating means and positioned to transmit the sound burst along the path through the medium;
- a sound receiving transducer for receiving a reflection of the sound burst and converting the reflected sound burst into a received electrical signal, the reflection being returned from a predetermined distance on the path, the receiving transducer being positioned proximate to the transmitting transducer,
- means for detecting the presence of the received electrical signal having the identity code, the detecting means having an input connected to the sound receiving transducer and having an output for indicating the presence of the received electrical signal; and
- a timer, connected to the generating means and to the output of the detecting means, for measuring elapsed time between the generation of the electrical signal and the indication of the detection of the received electrical signal having the identity code, the timer further having an output connection for communicating information related to the elapsed time measurement.

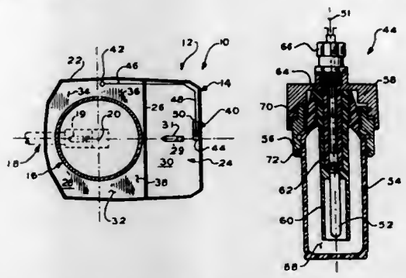
17. A method for measuring average temperature based on measurement of the time required for sound to traverse a path of predetermined length through an open environment, the environment being composed of a medium capable of supporting the propagation of sound waves, the measured time being an indicator of average temperature of the medium along the path of the sound, the method comprising the steps of:
- generating an electrical signal burst of predetermined frequency and duration;
- modulating the electrical signal burst to convey an identity code;
- converting the electrical signal burst into a sound burst having substantially the same frequency and duration and transmitting the sound burst along the path through the medium;
- returning the sound burst from a predetermined distance on the path;
- receiving the returned sound burst and converting it into a received electrical signal;
- detecting the presence of the received electrical signal;
- identifying the presence of the identity code within the received electrical signal;
- measuring the elapsed time the generation of electrical signal burst and the detection of the received electrical signal having the identity code; and
- providing information related to the elapsed time measurement to an output connection wherein said information corresponds to average temperature.

5,624,189

TEMPERATURE EMULATING SYSTEM FOR DETERMINING THE TEMPERATURE OF GUN AMMUNITION PROPELLANT

Patrick M. Vottis; Philip C. Wheeler, both of Schenectady; John M. Kenna, Rensselaer, and Karol A. L. Madulka, Ballston Spa, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 9, 1995, Ser. No. 370,134
Int. Cl.[6] G01K *1/16;13/00;* **F41A** *31/00*
U.S. Cl. 374—141 **4 Claims**



1. A temperature emulating system for use in gun systems, having ammunition with a propellant, said system comprising:
- a means having a gauge for providing a temperature reading of a sensor bulb which emulates the temperature of the ammunition, said means having a conductor;
- means connected to the conductor for sensing the temperature at the bulb and for transmission of such temperature to the gauge;
- a vacuum bottle having a sealed cavity which receives the sensor bulb; and
- a thermal insert which is disposed in the cavity and which has a time constant that is about equal to a time constant of the propellant of the ammunition.

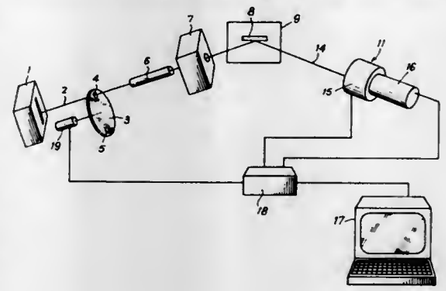
5,624,190

METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF AN OBJECT, IN PARTICULAR A SEMICONDUCTOR, BY ELLIPSOMETRY

Jacques Joseph, Ecully, France; Yao-Zhi Hu, and Eugène Irene, both of Chapel-Hill, N.C., assignors to Ecole Centrale de Lyon, Ecully Cedex, France

PCT No. PCT/FR93/01142, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/12857, PCT Pub. Date Jun. 9, 1994
PCT Flied Nov. 19, 1993, Ser. No. 446,598
Claims priority, application France, Nov. 25, 1992, 92 14430
Int. Cl.[6] G01K *11/00*
U.S. Cl. 374—161 **11 Claims**

1. A method of accurately measuring the surface temperature of



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an object (8) on which at least one layer of material is deposited, the method being characterized in that it consists in:

performing ellipsometric measurements on the object in order to determine, on the basis of measured parameters (PE_1, PE_2), firstly at least one first photon energy (E_1) for an electromagnetic beam at which measurements are substantially independent of temperature, and secondly at least one second photon energy (E_2) for an electromagnetic beam at which measurements are dependent on temperature;

creating and directing towards the object, an incident electromagnetic beam including at least the first and second photon energies (E_1, E_2);

measuring the change of polarization in the first and second photon energies (E_1, E_2) of the beam(s) reflected by the object on the basis of ellipsometric parameters ($P'E_1$, $P'E_2$);

determining the thickness of the layer of material on the basis of the measured change in polarization at the first photon energy (E_1) of the beam; and

determining the surface temperature of the object on the basis of the measured change in polarization for the second photon energy (E_2) of the beam, while taking account of the previously determined thickness of the layer of material.

5,624,191

METAL LUBRICATED PLAIN BEARING HAVING A BEARING PART ADJOINING A BEARING SURFACE WETTED WITH LIQUID METAL DURING OPERATION

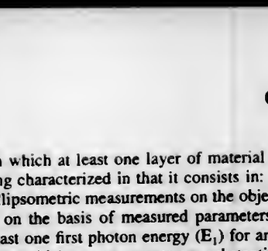
Manfred Fuchs, Nuremberg, and Erich Hell, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 11, 1995, Ser. No. 500,587

Claims priority, application Germany, Jul. 12, 1994, 44 24 507.6

Int. Cl.[6] F16C *32/06;* **H01J** *35/10*

U.S. Cl. 384—100 **8 Claims**



1. In a liquid metal-lubricated plain bearing, the improvement comprising a plain bearing part having a bearing surface in contact with a liquid metal during operation, said bearing surface of said plain bearing part having a metal layer applied to said bearing surface by physical vapor deposition and forming a diffusion barrier for said liquid metal and being well wetted by said liquid metal.

5,624,192

ROLLING-CONTACT BEARING EQUIPPED WITH A BUILT-IN DEVICE FOR DETECTING THE SPEED OF ROTATION

Christian Rigaux, Artannes-sur-Indre; Claude Caillault, Sain-Roch, and Christophe Houdayer, Tours, all of France, assignors to SKF France, Clamart, France

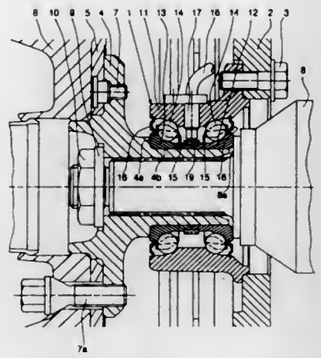
Filed May 6, 1996, Ser. No. 642,863

Claims priority, application France, May 30, 1995, 95 06376

Int. Cl.[6] F16C *19/08*

U.S. Cl. 384—448 **17 Claims**

1. Rolling-contact bearing (1) comprising at least one outer race (11), two inner races (12,13), two rows of rolling bodies (14) held



in cages (15) and a built-in device for detecting the speed of rotation, of the type comprising a sensor means (17) and an encoder means (19) which are located in the annular cheer defined between the inner races and outer race and the rolling bodies, the encoder means (19) comprising an active part (20) capable of creating in the sensor means (17) a periodic signal of frequency proportional to the rotational speed of the bearing (1), characterized in that the encoder means (19) comprises a support part (21) secured to the inner races (12,13) and made of a nonmagnetic material, and equipped with means for axially holding the inner races (12,13) against each other before the bearing (1) is mounted in the mechanical assembly for which it is intended, the active part (20) being made from magnetic steel sheet.

5,624,193

BALL OR ROLLER BEARING ASSEMBLY, IN PARTICULAR A BACK BEARING ASSEMBLY FOR A MOTOR VEHICLE ALTERNATOR

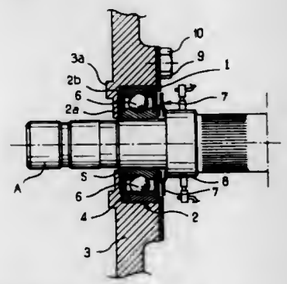
Marcel Vogelsberger, Wissous, and Daniel Davolgneau, Mitry-Mory, both of France, assignors to Valeo Equipements Electriques Moteur, Creteil, France

Filed Jan. 16, 1996, Ser. No. 587,226

Claims priority, application France, Jan. 17, 1995, 95 00455

Int. Cl.[6] F16C *19/08;* **F16F** *1/32*

U.S. Cl. 384—517 **9 Claims**



1. A bearing assembly for a rotary shaft machine, the assembly comprising a ball or rotary bearing mounted between a bearing support and the shaft, the bearing comprising an outer ring and an inner ring between which rolling elements are interposed, the outer ring being held rigidly to the support, the inner ring and the shaft being slidable relative to each other, the bearing assembly further comprising at least one washer mounted between the inner ring and a shoulder of the shaft and exerting force between the inner ring and the shoulder tending to move them apart to take up operating slack, wherein the washer presents a flat annulus and a plurality of substantially trapezium-shaped resilient tabs extending radially from the annulus, each presenting a portion that is inclined relative to the plane of the annulus and each being terminated by an end flat parallel to the plane of the annulus.

5,624,194

PRINTER DEVICE WITH FACSIMILE FUNCTION FOR SWITCHING FUNCTIONS OF INPUT KEYS AND FOR MANAGING RESERVATION DATA

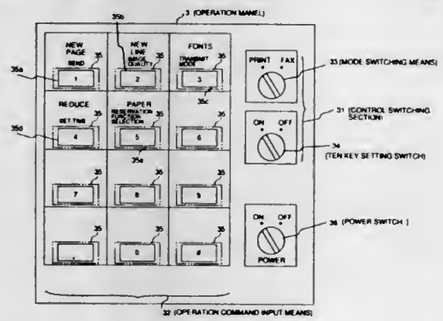
Kunihiko Matsuzawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,312

Claims priority, application Japan, Dec. 24, 1993, 5-347894

Int. Cl.[6] B41J *5/28*

U.S. Cl. 400—477 **2 Claims**



1. A printer device with a facsimile function, said device consisting of:

a printer means for printing data;

a facsimile means for transmitting data input from a scanner to another party's facsimile using a telephone line;

an operation panel provided with an operation command input means having a plurality of depressible keys which each alternately function as command input keys or numerical data input keys, a first switch for selecting one of a facsimile function and a printer function, and a second switch for switching at least some of said plurality of command input keys to numerical data input keys;

a storing means for storing reservation data, input from said plurality of input keys operating as command input keys, to be used for facsimile communications; and

a control section for setting said at least some of said plurality of command input keys as said numerical data input keys when said first switch is operated to select said facsimile function and said second switch is operated to switch said at least some of said plurality of command input keys to said numerical data input keys, for converting numerical data input from said numerical data input keys to dial data, and for controlling a storing operation of said reservation data to said storing means and a reading operation of said reservation data from said storing means.

5,624,195

LIGHT-WEIGHT MINIATURE LINEAR GUIDE DEVICE

Yasushi Abe, and Toru Tsukada, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 355,347

Claims priority, application Japan, Dec. 10, 1993, 5-310858

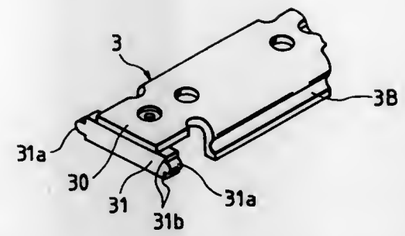
Int. Cl.[6] F16C *33/72;29/06*

U.S. Cl. 384—15 **18 Claims**

1. A tape printing device comprising:

a cassette receiving bay for receiving a cassette of printing medium tape;

a single cutting blade having a cutting surface in which there is defined a notch;



an anvil for supporting printing medium tape during cutting, said blade being arranged to cooperate with the anvil during cutting; and

moving means for causing relative movement between the single cutting blade and the anvil so that the cutting blade is arranged during cutting to cut through the printing medium tape to leave an uncut area corresponding to said notch.

5,624,196

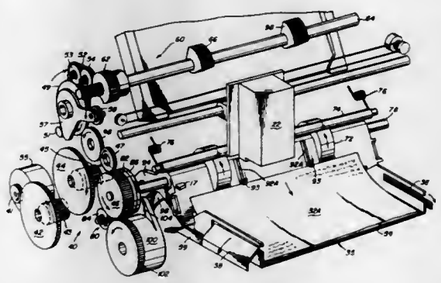
METHOD AND APPARATUS FOR PAPER CONTROL INCLUDING KICKERS

Larry A. Jackson, and Kieran B. Kelly, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 461,231, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 169,472, Dec. 17, 1993, Pat. No. 5,427,462, which is a continuation-in-part of Ser. No. 52,140, Apr. 23, 1993, abandoned, which is a division of Ser. No. 686,214, Apr. 16, 1991, Pat. No. 5,226,743. This application Sep. 6, 1996, Ser. No. 706,547

Int. Cl.[6] B41J *13/00*

U.S. Cl. 400—625 **21 Claims**



13. Apparatus for control of individual sheets of print media in a printer mechanism, each sheet of media having an edge, said apparatus comprising:

a frame;

a supply assembly that supplies individual sheets of media to a print zone;

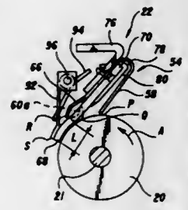
a printing assembly that records information on a sheet of media as the sheet advances through the print zone;

a roller assembly mounted in said frame and having rollers to engage and advance individual sheets of media in a forward direction from said supply assembly through said print zone; and

a kicker movable in the forward direction with respect to said frame to engage an edge of a sheet of media to urge the sheet in the forward direction from the print zone to a point forward of said print zone, said kicker engaging an edge of the sheet of media spaced from, and not in contact with, the information recorded on the sheet of media.

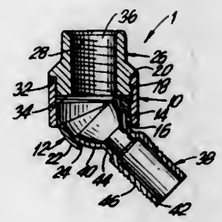
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5,624,197
AUTOMATIC PAPER FEEDER AND FRAME STRUCTURE OF DOCUMENT INPUT DEVICE
Shuichi Morikawa; Masahiko Futatsuka; Satoshi Ishida; Yasunori Miyauchi, and Minoru Masuda, all of Kahoku-gun, Japan, assignors to PFU Limited, Ishikawa, and Fujitsu Limited, Kanagawa, both of Japan
Division of Ser. No. 507,292, Aug. 24, 1995, Pat. No. 5,573,338. This application Apr. 15, 1996, Ser. No. 632,163
Claims priority, application Japan, Dec. 27, 1993, 5-330267; Dec. 28, 1993, 5-336651; Mar. 17, 1994, 6-073839; Apr. 8, 1994, 6-095775; May 11, 1994, 6-123009; May 13, 1994, 6-124234
Int. Cl.[6] B41J *11/58*
U.S. Cl. 400—629 **7 Claims**



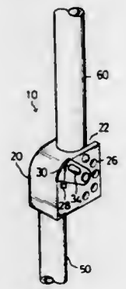
1. An automatic paper feeder comprising:
a pick roller means disposed at a position where it comes into contact with a leading end of a paper to be taken out, the pick roller means having a roller axis and a predetermined conveying direction;
a separator pad disposed to come into contact with said pick roller means; and
a pick spring disposed to come into contact with said pick roller means;
said separator pad being arranged in an elongated manner in the axial direction of the roller means to have elongated contact surfaces in the axial direction of the roller means, said pad being divided into a plurality of pad pieces along the roller axis at least at a portion where it comes into contact with said pick roller means; and
urging means for separately urging said divided pad pieces onto said pick roller means by separate urging means.

5,624,198
SWIVEL CONNECTOR
Patrick Fuchs, Garfield, N.J., assignor to Zumtobel Staff Lighting, Inc., Garfield, N.J.
Filed Feb. 6, 1996, Ser. No. 596,019
Int. Cl.[6] F16D *1/12*
U.S. Cl. 403—76 **5 Claims**



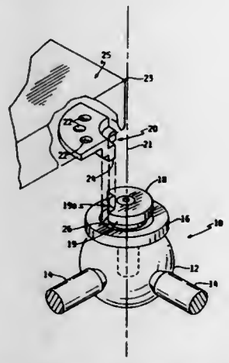
1. A swivel connector for supporting a fixture, comprising:
a swivel socket;
a spherically shaped hollow swivel member received in the swivel socket and defining therewith a first universal joint;
a first adapter connectable with the swivel socket for connecting the swivel connector to one of a support and the fixture; and
a second adapter for connecting the swivel connector to another of the support and the fixture, the second adapter having a first spherically shaped portion received within the swivel member and defining therewith a second universal joint.
wherein the swivel member is formed as a ball segment, and the swivel socket has a first end having a complementary arcuate inner surface cooperating with the ball segment, and a second end connectable with the first adapter, and
wherein the first end of the swivel socket has an apex forming an integral part thereof and acting as a stop limiting pivotal movement of the second adapter relative to the swivel member by direct contact with the second adapter.

5,624,199
SETTING DEVICE FOR A JOINT
Chin-chang Cheng, No. 20, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan
Filed Sep. 29, 1995, Ser. No. 536,799
Int. Cl.[6] F16C *11/00*
U.S. Cl. 403—100 **10 Claims**



1. A setting device for a joint comprising:
a body with an opening defined in one edge thereof, a plurality of location holes in one side thereof, a central hole extending through the side and a stop projecting from the side;
a pivot arm defining a hole near a first end thereof and a grasping element projecting from a second end thereof, wherein said pivot arm is operable between a first position where the pivot arm abuts said stop and a second position where said grasping element may align with one of said location holes;
an upper member pivotally secured in the opening of the body and containing a flexible retaining device therein, said flexible retaining device having a first end secured to the upper member and a second end terminating in a lug which extends through a hole defined in a wall of the upper member and an aligned one of the location holes to protrude beyond the body; and
connecting means disposed through the hole of the pivot arm, the central hole of the body, and the upper member to pivotally secure the pivot arm and the upper member to the body;
wherein said pivot arm being in said first position when said lug extends through and beyond said body and said pivot arm covers said aligned one of said location holes in the second position thereby depressing said lug and minimizing a locking effect between said lug and said body for enabling the upper member to be moved to align the lug with another one of said location holes.

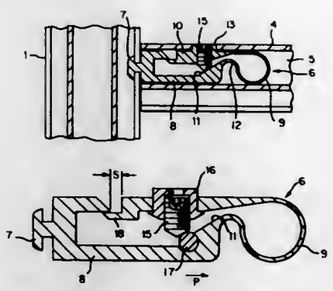
5,624,200
PANEL FASTENER AND SPACE FRAME HUB
Bryan J. Beaulieu, Burnsville, Minn., assignor to Skyline Displays, Inc., Burnsville, Minn.
Filed May 2, 1996, Ser. No. 643,015
Int. Cl.[6] F16B *12/02*
U.S. Cl. 403—217 **13 Claims**



1. A panel fastener and space frame hub, comprising:
a) a hollow spherical hub having a plurality of threaded openings spaced about a circumference and diametrically opposite openings aligned along an axis normal to said circumference;
b) a turntable plate attached to said hub by a fastener passing through one of said diametrically opposite openings, said fastener attached to a nut insertable through the other of said diametrically opposite openings; said turntable plate having a circular groove and a raised shoulder spaced above said groove, said shoulder having a keyed portion of unique shape; and
c) a panel bracket having means for attachment to a corner of a panel section, said panel bracket having a downwardly depending curved shoulder sized for fitting in said groove and having a shape complementary to said keyed portion unique shape;
whereby said turntable plate may be rotatably positioned to accept said panel bracket shoulder in said groove, and may be further rotatably positioned to lock said panel bracket shoulder in said groove.

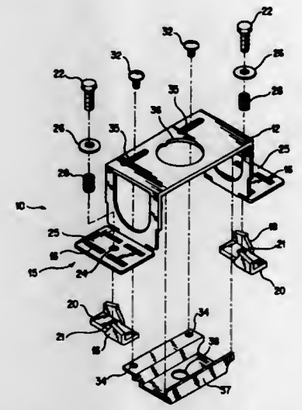
5,624,201
CLAMPING DEVICE
Adrian Offenbroich, Pionierstrasse 46, D-40215, Düsseldorf, Germany
PCT No. PCT/EP93/03497, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO95/16138, PCT Pub. Date Jun. 15, 1995
PCT Filed Dec. 10, 1993, Ser. No. 505,306
Int. Cl.[6] F16B *9/00*
U.S. Cl. 403—231 **13 Claims**

1. A clamping device for releasably connecting two profile pieces, wherein a first one of the profile pieces has an undercut longitudinal groove delimited by lips and a second one of the profile pieces has a box-shaped hollow profile, said clamping device comprising:
a clamping piece for being inserted into the second profile piece;
said clamping piece comprising a dimensionally stable, hook-shaped head piece and a hammer head for engaging the longitudinal groove of the first profile piece by engaging behind the lips, said hammer head connected to a free end face of said head piece;
said head piece having an inner sidewall with a slanted surface remote from said hammer head, said slanted surface extending at an angle to a longitudinal axis of said clamping piece;



said clamping piece further comprising a flat drawing piece;
said head piece and said drawing piece displaceable relative to one another in the longitudinal direction of said clamping piece;
a clamping screw having a conical tip cooperating with said slanted surface, said clamping screw inserted in said drawing piece so as to be accessible through an opening in the second profile piece, wherein tightening of said clamping screw causes displacement of said drawing piece relative to said head piece such that said hammer head is able to be fastened in said longitudinal groove;
said clamping piece further comprising an elastic loop bent around at least 180° and connected between said head piece and said drawing piece;
wherein said clamping piece, comprised of said head piece, said hammer head, said drawing piece, and said elastic loop, is a unitary part; and
wherein the elasticity of said elastic loop is sufficient to disengage said head piece with said hammer head upon releasing said clamping screw.

5,624,202
INTEGRAL JOINT AND MOUNTING ASSEMBLY FOR SUSPENDED LINEAR STRUCTURES
Dean Grierson, Port Coquitlam, Canada, assignor to Ledalite Architectural Products, Inc., Canada
Filed Oct. 19, 1995, Ser. No. 545,401
Int. Cl.[6] B25G *3/18*
U.S. Cl. 403—327 **12 Claims**



1. An integral assembly for mounting a plurality of structures end-to-end, in locked alignment, comprising:
(a) retainer bars joinable to the ends of the structures to be brought into locked alignment, wherein each retainer bar has a longitudinal axis and two side edges along their longitudinal

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axes and at least one aperture, said aperture being positioned along the retainer bars so as to be in an opposing relationship to an aperture on the retainer bar joined to the end of the structure to be brought into locked alignment; and

(b) a pin subassembly having at least two wedge pins protruding outwardly from a base, wherein the wedge pins are configured to engage opposing apertures of each of the retainer bars, each wedge pin having an upper edge which is sloped in an upward incline toward an inner edge of the wedge pin providing an interface for locking against the opposing aperture of the corresponding retainer bar, and having an inner edge which is sloped in a downward incline toward the base of the wedge pin for fitting against the opposing aperture when engaged thereby so as to join the side edges of the retainer bars in longitudinal alignment; and

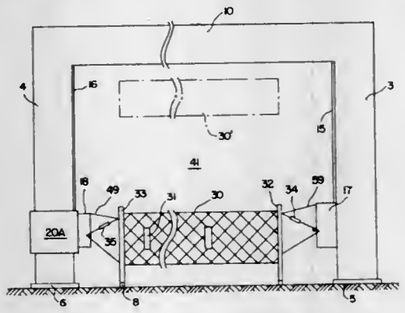
(c) a bracket joinable to the retainer bars, wherein the bracket comprises apertures corresponding to the wedge pins, and wherein the bracket is interfitted between the retainer bars and the base of the pin subassembly such that the wedge pins successively engage corresponding apertures of the bracket and each of the retainer bars in locked engagement.

5,624,203

ENERGY ABSORBING BARRIER SYSTEM WITH CRASH INDICATION

Martin A. Jackson, Warwick, R.I.; Gerald L. Gorham, Ashby, and John M. Rhatigan, Hudson, both of Mass., assignors to The Entwistle Company, Hudson, Mass.

Filed Oct. 27, 1995, Ser. No. 549,510
Int. Cl.[6] E01F *15/06;* **B61L** *25/00;* **B60Q** *9/00*
U.S. Cl. 404—6 **7 Claims**



1. A restraining barrier system including means for indicating the status of restraining barrier comprising:

(a) first and second vertically disposed towers, having a restraint zone defined between the lower portions thereof,

(b) a crossing structure substantially horizontally disposed between and connected to corresponding upper portions of said first and second towers,

(c) first and second transport means slidably mounted in said first and second towers respectively,

(d) drive means for moving said transport means to selectable vertical positions, and wherein:

(1) each of said transport means comprises energy absorbing means, a restraining barrier for support between said first and second transport means and being vertically movable therewith,

(2) cable means for supporting opposite ends of said barrier means to said first and second transport means and for coupling said end of said barrier means to an energy absorbing means,

said selectable positions including a deployed position in which said restraining barrier blocks the path of travel of a vehicle through the restraint zone and a passive position in which said restraining barrier is positioned vertically in the vicinity of said crossing structure above the restraint zone so as to permit a vehicle to pass therethrough,

the improvement comprising:

(e) at least one sensing cable means coupling an end of said barrier means to at least one of said first transport means,

(f) indicator means for indicating operation of said barrier means for restraining a vehicle,

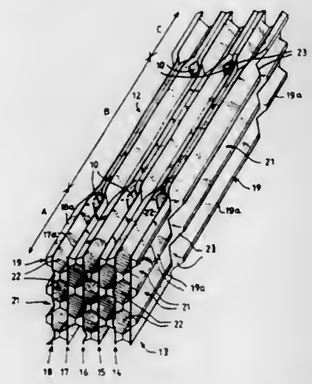
(g) activator means for operating said indicator means, said activator means comprising an element coupled to said sensing cable means such that said activator means is impeded by said sensing cable means from operating said indicator means and said activator means being operated in response to breaking of said sensing cable means in a crash event.

5,624,204

WATER-RETENTION RESERVOIR STRUCTURE

Jean-Pierre Dorsemaine, Vendome, France, assignor to Hamon Industrie Thermique, Paris, France

PCT No. PCT/FR92/00930, § 371 Date Jun. 8, 1994, § 102(e) Date Jun. 8, 1994, PCT Pub. No. WO93/07345, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 7, 1992, Ser. No. 211,561
Claims priority, application France, Oct. 11, 1991, 91 12573
Int. Cl.[6] E02B *11/00;13/00*
U.S. Cl. 405—52 **9 Claims**



1. A rigid, non-flexible water-retention and -drainage reservoir block (**12**), of directly joined juxtaposed identical sheets, without separation therebetween, for use in a water-retention and -drainage reservoir structure (**3**) having a water inlet (**7**) and a water outlet (**8**), wherein each sheet has transversely opposite faces extending longitudinally and transversely, wherein said sheets are joined face-to-face, and wherein said identical sheets are shaped so as to define between them a set of straight longitudinal cells (**22**), which form a reservoir for storing water, and straight transverse cells (**10**) which establish water flow paths between the longitudinal cells, the longitudinal cells being open at opposite ends thereof.

5,624,205

LANDFILL WATER TREATMENT SYSTEM

Frank Caropolo, 1009 Park La. North, Franklin Square, N.Y. 11010

Filed Nov. 8, 1995, Ser. No. 559,885
Int. Cl.[6] B09B *1/00*
U.S. Cl. 405—129 **1 Claim**

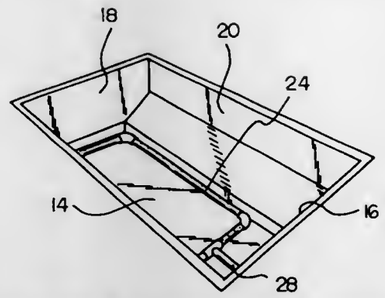
1. A landfill water treatment system for removing landfill effluent via a series of drainage tubes comprising, in combination:

a singular fluid impermeable containment portion comprised of an open top, a closed bottom, a front wall, a rear wall, and two side walls, the closed bottom being of a reduced area as compared to the open top, the two side walls including upper extents and lower extents, the upper extents being essentially perpendicular to the open top and the closed bottom, the lower extents angling inwardly from lower ends of the upper extents to the closed bottom, the containment portion secured within a landfill area, the containment portion receiving landfill effluent thereinto via the open top;

a series of drainage tubes arranged within and extending around a perimeter of the closed bottom of the fluid impermeable containment portion in an essentially rectangular configuration, the drainage tubes having a plurality of perforations therein, the drainage tubes having an exit tube extending outwardly of the front wall of the containment portion;

a gravel base disposed within the closed bottom of the containment portion over the series of drainage tubes therein;

a pump secured outwardly of the front wall of the containment portion, the pump being coupled with the exit tube of the series of drainage tubes, the pump having a discharge tube extending outwardly therefrom to couple with a storage tank.

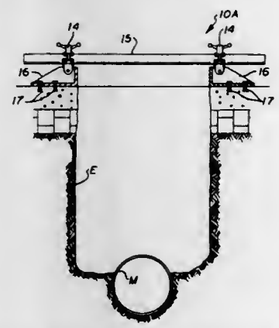


5,624,206

APPARATUS AND METHOD FOR SUPPORTING PIPE MAIN REPAIR TOOLS IN AN EXCAVATION

John H. Cohen; Curtis E. Leitko; Gerard T. Pittard; Terry P. Clifton, all of Houston, Tex., and Gerald Rockower, Brooklyn, N.Y., assignors to Brooklyn Union Gas Co., Brooklyn, and Consolidated Edison Company of New York, Inc., New York, both of N.Y.

Division of Ser. No. 221,891, Mar. 31, 1994, Pat. No. 5,462,077. This application Oct. 30, 1995, Ser. No. 550,152
Int. Cl.[6] F16L *55/18;* **E02D** *5/00*
U.S. Cl. 405—157 **19 Claims**



1. Apparatus for supporting pipe main repair tools in an excavation while repairing a pipe main at the bottom of the excavation comprising;

anchoring means adapted to be firmly engaged on opposed sides of the excavation,

an elongate support member having opposite ends adapted to be supported on said anchoring means and span the excavation in a generally horizontal position above the pipe main, and

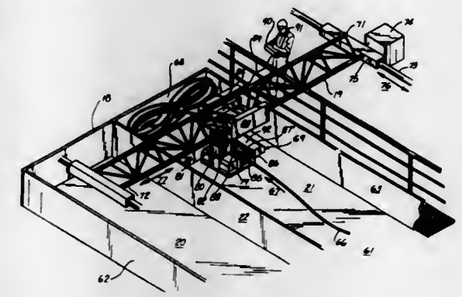
an adjustable clamping assembly on said support member for releasably connecting an upper portion of a pipe main repair tool which has a bottom end engaged on said pipe main and supporting said tool on said pipe main in selective radially extending positions relative to the longitudinal axis of said pipe main.

5,624,207

OCEAN BOTTOM CABLE HANDLING SYSTEM AND METHOD OF USING SAME

Larry Berges, New Iberia, La., assignor to Regional Fabricators, Inc., New Iberia, La.

Filed Sep. 13, 1995, Ser. No. 527,630
Int. Cl.[6] B65H *59/00;* **B66D** *3/0026*
U.S. Cl. 405—173 **11 Claims**



1. A cable handling system for retrieving or deploying cable to or from a body of water to a marine vessel having a longitudinal axis, a bow and stern, and a deck with a cable storage area, comprising:

a floating cable puller for pulling cable, said floating cable puller suspended over said deck, said floating cable puller further comprising a trolley assembly for positioning said floating cable puller in various locations above or upon said deck, said trolley assembly further comprising;

a gantry having first and second ends, said first and second ends of said gantry slidingly affixed to first and second longitudinal support members, respectively, said first and second longitudinal support members suspended above said deck, said first and second longitudinal support members generally longitudinally aligned with said longitudinal axis of said vessel;

gantry motivation means for motivating said gantry along said first and second longitudinal support members;

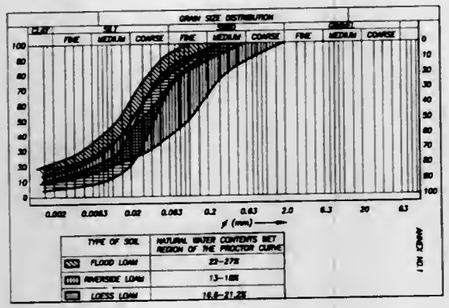
said trolley assembly having a vertical support member having first and second ends, said first end slidingly affixed to said gantry, said second end affixed to said floating cable puller;

trolley motivation means for motivating said trolley along said gantry;

control means for selectively controlling said gantry motivation means, said trolley motivation means, and said floating cable puller.

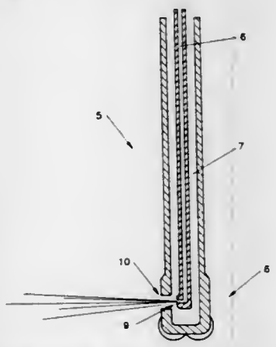
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5,624,208
PROCESS FOR SEALING SOIL FORMATIONS
Jost-Ulrich Kuegler, Im Teelbruch 61, 45219 Essen, Germany
PCT No. PCT/EP95/00539, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO95/21966, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 14, 1995, Ser. No. 532,794
Claims priority, application Germany, Feb. 14, 1994, 44 04 644.8
Int. Cl.[6] E02D *3/02;3/046;3/12;* **C09K** *17/12*
U.S. Cl. 405—263 **10 Claims**



1. A process for sealing soil formations in which a mineral sealing layer of a cohesive soil is applied, with addition of pulverulent waterglass, and is compacted mechanically, said process comprising:
(a) preparing a homogeneous mixture from a cohesive soil having a water content in the wet region of the Proctor curve, with addition of a pulverulent aluminate-free agent which forms a soft gel,
(b) homogeneously incorporating pulverulent waterglass after the agent which forms a soft gel has dissolved in the soil water, and
(c) mechanically compacting the mixture.

5,624,209
LAND RECLAMATION METHOD AND EQUIPMENT INVOLVING THE INTRODUCTION AND MIXING OF A FLUID AND SUBSTANCES DISPERSED IN AIR
Cesare Melegari, P.za Garibaldi, 11, I-43052 Colorno (PR), Italy
Filed Oct. 30, 1995, Ser. No. 549,881
Claims priority, application Italy, Jul. 13, 1995, PC95A0015
Int. Cl.[6] E02D *3/12*
U.S. Cl. 405—269 **12 Claims**



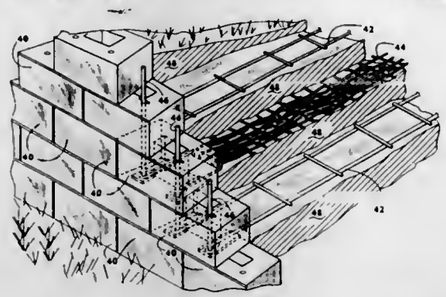
1. A soil decontamination method comprising:
providing a drilling rod having an outer pipe with a closed lower end and a radially extending outlet nozzle near the lower end, the outer pipe having an outer surface which is free of outer structures;
providing an inner pipe co-axially positioned in the outer pipe, the inner pipe having a lower closed end with a radially extending nozzle which is co-axial with and spaced inwardly from the nozzle of the outer pipe;
providing a drill bit on an outer surface of the lower end of the outer pipe;
drilling a hole into a layer of soil using the outer pipe and drill bit;
with the outer pipe and drill bit in the hole, supplying a dry mixture of air and solid aggregate particles under relatively low pressure into a space between the outer and inner pipes; and
supplying a high pressure fluid into the inner pipe under a relatively high pressure, the high pressure fluid leaving the nozzle of the inner pipe and taking with it some of the dry mixture which passes out of the outer pipe through the nozzle of the outer pipe to disaggregate and mix with decontaminate soil of the layer which is around the hole.

5,624,210
COLLISION TOLERANT PILE STRUCTURE
Kenneth C. Baldwin, Lee, and Moses R. Swift, Durham, both of N.H., assignors to The University of New Hampshire, Durham, N.H.
Filed Jan. 30, 1995, Ser. No. 380,527
Int. Cl.[6] E02D *7/00;* **B63B** *22/18*
U.S. Cl. 405—232 **16 Claims**



1. A collision tolerant marine pile structure for placement on the bottom of a body of water comprising a base member that is adapted to be driven into the bottom and a vertical member received in said base member, said vertical member being comprised of a plurality of sections one of which is positively buoyant but said vertical member being overall negatively buoyant and having means for returning it to a vertical position after being contacted by a ship or other vessel.

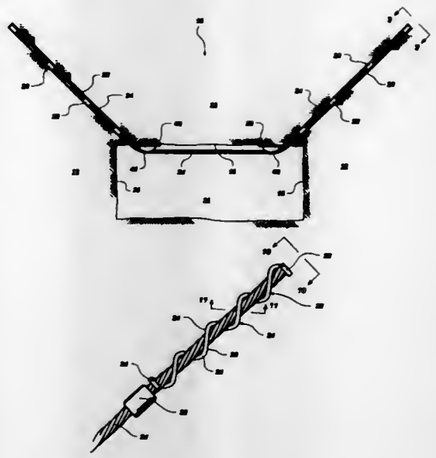
5,624,211
MODULAR BLOCK RETAINING WALL CONSTRUCTION AND COMPONENTS
Peter L. Anderson, North Reading, Mass.; Michael J. Cowell, Leesburg, and Dan J. Hotek, Reston, both of Va., assignors to Societe Civile Des Brevets Henri C. Vidal, France
Continuation-in-part of Ser. No. 40,904, Mar. 31, 1993, and Ser. No. 108,933, Aug. 18, 1993. This application Feb. 14, 1994, Ser. No. 192,801
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—286 **34 Claims**



1. An improved wall construction comprising, in combination:
a plurality of facing block members arrayed in overlapping courses, one upon the other, each block member having a generally planar front face, a back face, first and second side faces from the front face to the back face, and generally parallel, planar top and bottom surfaces extending from the front face to the back face;
each block member also including at least two generally parallel counterbores in one of the parallel top and bottom surfaces extending from adjacent the front face through the back face, and a cross-counterbore connecting the parallel counterbores, each block member also including at least two bores in the parallel counterbores extending into the block for receipt of a pin, said two bores aligned with bores of vertically adjacent blocks extending into the blocks;
stabilizing elements, at least one of said stabilizing elements including a pair of tension arms positioned in the counterbores of selected block members, each pair of said tension arms of each such stabilizing element being generally parallel and connected together by a cross member positioned in the cross-counterbore, said stabilizing elements also including soil engaging means extending therefrom projecting away from the back face of each block into compacted soil;
pins in the bores of overlapping courses of blocks to hold the blocks one upon the other; and
compacted soil for receipt of the soil engaging means for engagement with the soil.

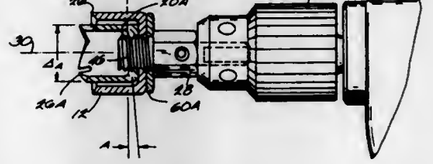
5,624,212
ANCHORED CABLE SLING SYSTEM
Harvey D. Gillespie, 4848 S. 2200 West, Salt Lake City, Utah 84118
Continuation-in-part of Ser. No. 270,745, Jul. 5, 1994. This application Mar. 1, 1995, Ser. No. 397,759
Int. Cl.[6] E21D *21/00*
U.S. Cl. 405—302.2 **12 Claims**

12. An anchored cable sling system for supporting a mine tunnel roof, comprising:
a length of multi-strand cable;
first and second anchor collars permanently attached to said cable along respective first and second ends for preventing said cable from slipping relative to resin adhesive material within respective first and second bore holes in the mine roof;
respective first and second mixing means for shredding chemical resin capsules and mixing chemical resin within the respective bore holes; and



a roof plate for positioning adjacent the mine roof borehole, wherein said cable urges said roof plate against the mine tunnel roof.

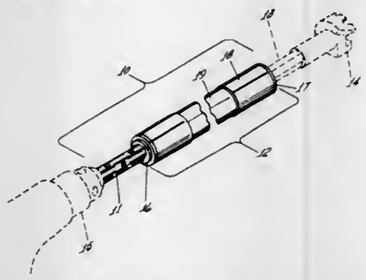
5,624,213
HOLE PRODUCING ASSEMBLY
James R. Anderson, Menominee, Mich., assignor to Evergreen Tool Co., Inc., Menominee, Mich.
Filed May 11, 1995, Ser. No. 439,307
Int. Cl.[6] B23B *51/04*
U.S. Cl. 408—206 **34 Claims**



1. A hole producing assembly for use with a power drill including a motor having an output shaft, said assembly comprising:
an adapter having an axis of rotation and first and second ends, said first end adapted to be operably connected to the motor such that the motor causes said adapter to rotate about said axis of rotation, said second end including a threaded shaft;
a first cutter having a base, said base having first and second surfaces and having therein a bore extending from said first surface to said second surface, said base being threadably connectable to said threaded shaft of said adapter, said first cutter including a cutting projection extending from said first surface, said base having a diameter with respect to a plane transverse to said bore; and
a second cutter having a base and a cutting projection, said base of said second cutter having therein a bore, said base of said second cutter having a diameter with respect to a plane transverse to said bore of said second cutter less than said diameter of said first cutter, said base of said second cutter being threadably connectable to said threaded shaft of said adapter such that said second cutter abuts said first surface of said first cutter.

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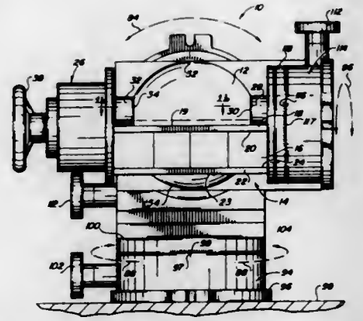
5,624,214
ADJUSTABLE DRILL BIT EXTENSION
Stuart Carroll, 3823 Pueblo Ave., Santa Barbara, Calif. 93110
Filed Dec. 15, 1995, Ser. No. 573,183
Int. Cl.[6] B23B *31/36*
U.S. Cl. 408—226 **4 Claims**



1. An extendible tool having a proximal end adapted for attachment to the spindle of a drill and a distal end adapted to engage and securely hold the shank of a drill bit, the tool comprising in combination:
(a) a hollow outer sleeve having an elongate cylindrical outer wall with retractable detent means mounted thereon and a proximal end and a distal end and an axial lumen therebetween wherein said axial lumen has a polygonal cross-section and wherein at least a semispherical portion of said retractable detent means in said cylindrical outer wall projects into said axial lumen; and
(b) an elongate shaft having a proximal end and a distal end and a body portion therebetween wherein said shaft has a polygonal cross-section dimensioned to be matingly received and slideably disposed within said polygonal axial lumen of said outer sleeve wherein said proximal end of said shaft is adapted to lockingly and releasably engage the spindle of the drill and wherein the surface of said body portion of said shaft comprises a plurality of planar surfaces wherein the angle between adjacent planar surfaces is equal to 360 degrees divided by the number of edges on said polygonal cross-section and wherein each said planar surface has at least one detent rest comprising a semispherical indentation dimensioned to matingly accommodate said semispherical portion of said retractable detent therein.

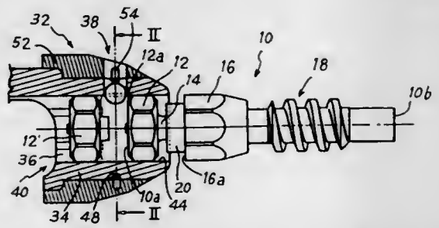
5,624,215
BOWLING BALL DRILLING
John N. Boucher, 110 Coveridge La., Longwood, Fla. 32750, and David E. Bajune, 6800 W. S.R. 46, Sanford, Fla. 32773
Division of Ser. No. 129,750, Sep. 30, 1993, Pat. No. 5,427,478.
This application Jun. 26, 1995, Ser. No. 494,702
Int. Cl.[6] B23C *3/00;* **B23B** *35/00*
U.S. Cl. 409—131 **7 Claims**

1. A method for drilling holes in a bowling ball, the holes having a predetermined pitch, the drilling method comprising the steps of:
providing a frame for receiving a bowling ball;
rigidly affixing the bowling ball within the frame;
exposing a substantial portion of the ball for drilling finger and thumb holes;
selecting a bit sized for drilling a hole having a predetermined dimension;
placing the bit in a chuck affixed proximate the frame for drilling the bowling ball;
selecting a reference point on the surface of the bowling ball;
aligning the axis of the bit with the reference point, wherein a line extending through the axis passes through the ball center;
rotating the frame through a first arc about a first axis, an extension of the first axis passing through the ball center;
rotating the frame through a second arc about a second axis, an extension of the second axis passing through the ball center,



the rotating through the first and second arcs for positioning the bit in an orientation parallel to a hole to be drilled;
displacing the frame a predetermined distance for positioning the bit for providing a hole having a desired lateral pitch;
displacing the frame a predetermined second distance for positioning the bit for providing a desired vertical pitch; and
drilling a hole in the ball, the axis orientation of the hole resulting from the ball rotating and displacing steps for providing desired lateral pitch and vertical pitch.

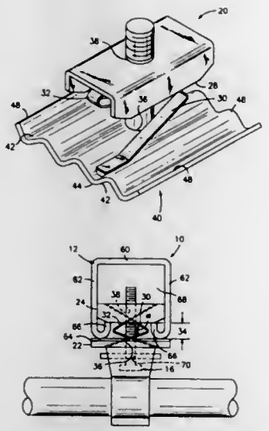
5,624,216
SCREW WITH A SHEARABLE HEAD, AND A TOOL FOR TIGHTENING SUCH A SCREW
Pascal Detable, Villedieu; Michel Andre, and Fabienne Covello, both of Romorantin, all of France, assignors to Etablissements Caillau, Issy-les-Moulineaux, France
Filed Jan. 11, 1996, Ser. No. 584,557
Claims priority, application France, Jan. 17, 1995, 95 00440
Int. Cl.[6] F16B *31/00;33/04*
U.S. Cl. 411—5 **3 Claims**



1. A screw comprising, in succession between a first end and a second end thereof: a first polygonal head; a breakable neck; a second polygonal head; and a threaded shank; the diameter of the breakable neck being smaller than the diameters of the heads and of the shank, wherein the screw further comprises a cylindrical bearing surface portion situated between the breakable neck and the second head, and having a diameter not less than that of the breakable neck, but less than that of the second head.

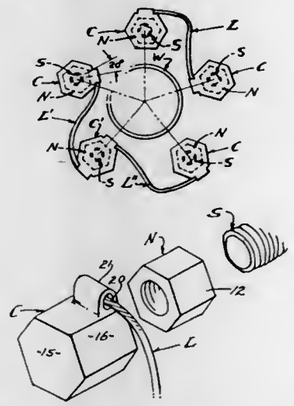
5,624,217
CONNECTOR FOR FACILITATING A CONNECTION BETWEEN A CHANNEL MEMBER AND A SUPPORT MEMBER
Charles S. Hungerford, Jr., 135 East Ave., New Canaan, Conn. 06840
Filed Dec. 29, 1995, Ser. No. 580,939
Int. Cl.[6] F16B *21/00;37/04;* **F16L** *3/24*
U.S. Cl. 411—85 **12 Claims**

1. A connector for facilitating a connection between a channel member and a support member, said connector having first and



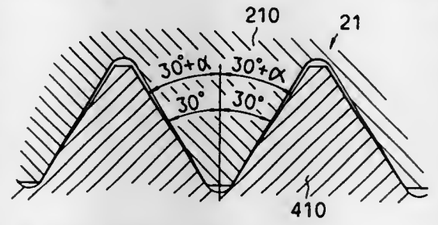
second opposed, spaced apart locking lugs having first and second opposed, spaced apart faces, respectively, flexible means integral with said opposed faces of said locking lugs for joining said locking lugs together in a unitary structure such that the space between the opposed faces of said locking lugs may be varied; and axially aligned bore means for receiving a fastener provided in said first and second locking lugs, the improvement comprising said first locking lug comprises a substantially rectangular corrugated body having a plurality of corrugations each having a top surface and a bottom surface, said corrugated body having terminal ends wherein the terminal ends extend toward the second locking lug a distance d below a plane formed by the bottom surfaces of the corrugations.

5,624,218
SAFETY LOCK DEVICE FOR SCREW FASTENERS
Charles G. Dauwalter, 13964 Stroud St., Van Nuys, Calif. 91402-6516
Filed Sep. 12, 1995, Ser. No. 509,429
Int. Cl.[6] F16B *39/00;39/08;37/14*
U.S. Cl. 411—87 **29 Claims**



1. In combination with screw fasteners threaded to screw members, a safety lock device for indicating looseness of a screw fastener and for stopping counter rotation of said screw fasteners from a tightened condition thereof, and including;
a pair of two like next adjacent screw fasteners threaded to a pair of said screw members spaced a fixed distance,
a pair of two caps carried by and each with means for attachment to one of said pair of like next adjacent screw fastener threaded to said member for the caps to rotate therewith respectively,
and a flexible lanyard extending between the two caps and secured by anchor means to extend from the peripheries of said two caps in directions of pull in tension against counter rotation of either of said two caps,
the lanyard being longer than the distance between the anchor means of said two caps so as to be loose between said pair of two caps for indicating when the screw fasteners are in tightened conditions, and to be taut bewteen said pair of two caps for indicating that either or both screw fasteners are in a loose condition, and for limiting either or both screw fasteners to a part turn only in counter rotation.

5,624,219
HIGH-STRENGTH BOLT AND HIGH-STRENGTH NUT
Shigenobu Hamanaka, Himeji, Japan, assignor to Hamanaka Nut Manufacturing Co., Ltd., Hyogo, Japan
Filed Dec. 29, 1994, Ser. No. 365,948
Int. Cl.[6] F16B *39/30;37/16*
U.S. Cl. 411—308 **13 Claims**

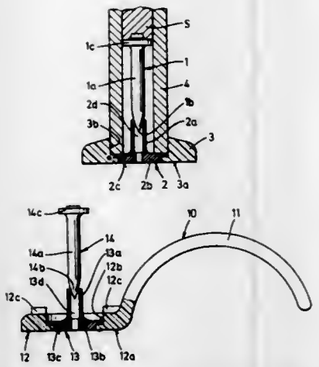


1. A clamping member comprising:
a bolt having an external triangular thread with a plurality of thread ridges with inclined flanks;
a nut having an internal triangular thread with a plurality of thread ridges with inclined flanks; and wherein
the angle between the flanks of the thread ridges of said external triangular thread differs from the angle between the flanks of the thread ridges of said internal triangular thread by an angle of no greater than a range of 0°55' to 2°.

5,624,220
ATTACHMENT MEMBER INCLUDING A NAIL AND A PRESTRESSING ELEMENT
Rupert Janssen, Meiningen; Markus Frowis, Frastanz, both of Austria, and Luc Guillon, Sax, Switzerland, assignors to Hitti Aktiengesellschaft, Schaan, Liechtenstein
Filed Sep. 15, 1995, Ser. No. 529,119
Claims priority, application Germany, Sep. 15, 1994, 44 32 783.8
Int. Cl.[6] F16B *15/00;15/02;* **F16L** *3/08*
U.S. Cl. 411—441 **6 Claims**

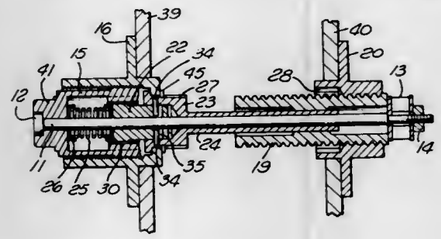
1. An attachment member arranged to be secured to a surface of a hard receiving material (6) includes a fastening element (1, 14) to be driven into the hard receiving material by an explosive powder charge operated setting tool and a prestressing element (2, 13) extending in the axial direction of said fastening element, said fastening element (1, 14) comprising an axially extending shank (1a, 14a) having a tip (1b, 14b) at a leading end thereof arranged to be driven first into the receiving material and a head (1c, 14c) at a trailing end thereof, said prestressing element laterally enclosing at least said tip (1b, 14b), said prestressing element comprising an axially extending sleeve portion (2a, 13a) with a flange-like contact part (2b, 13b) having a leading end planar face surface (2c, 13c) at a leading end thereof and said contact part having a

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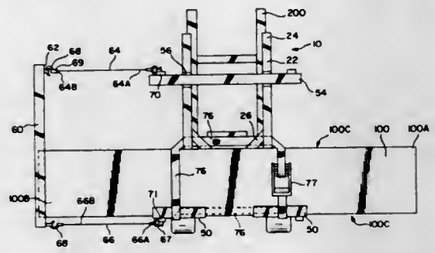
maximum outside diameter, wherein the improvement comprising that said prestressing element (**2**, **13**) is partially laterally enclosed by a plastics material part (**3**, **12**) extending in the axial direction of said fastening element and having a leading end planar contact surface (**3***a*, **12***a*) forming a common continuous contact surface with the leading end face surface (**2***c*, **12***c*) of said flange-like contact part and a trailing end recess (**3***b*, **12***b*) open at the trailing end thereof and extending toward the leading end thereof and said recess having a diameter corresponding substantially to said maximum outside diameter of said contact part (**2***b*, **13***b*), and said recess (**3***b*, **12***b*) being stepped inwardly towards said leading end planar contact surface.

5,624,221
MULTIPLE SPEED FASTENER
L. Richard Poe, Palm Desert, Calif., assignor to Hartwell Corporation, Placentia, Calif.
Filed Jul. 21, 1995, Ser. No. 505,471
Int. Cl.[6] F16B *35/02*
U.S. Cl. 411—383 **16 Claims**



1. In a multiple speed fastener, the combination of:
a first pair of interengageable threaded members having a first pitch and a first thread direction of rotation for advancement;
a second pair of interengageable threaded members having a second pitch different from said first pitch and a second thread direction of rotation for advancement opposite that of said first thread direction of advancement;
said first pair including a first actuator and a first threaded member threadably engagable with said first actuator;
said second pair including a second actuator and a second threaded member threadably engageable with second said actuator;
a shaft with said first and second pairs slidably and rotatably mounted on said shaft;
coupling means for coupling said first pair to said second pair;
said first actuator and said coupling means having first means for selectively engaging said first actuator and said coupling means to rotate said coupling means with said first actuator;
said coupling means and said second actuator having second means for engaging said second actuator to rotate said second threaded member when said first actuator and coupling means are engaged; and
said first and second threaded members including means for attachment to structures to be fastened together.

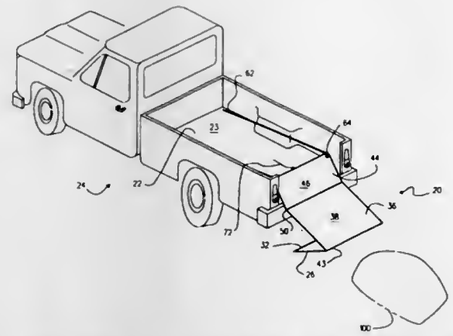
5,624,222
PANEL INSTALLER
Steven A. Hiatt, DeWitt, and Lyle J. Heeg, Grand Ledge, both of Mich., assignors to HNH, Inc., DeWitt, Mich.
Filed Jun. 30, 1995, Ser. No. 496,969
Int. Cl.[6] B66F *9/18*
U.S. Cl. 414—11 **18 Claims**



1. An apparatus for use with a lifting vehicle having wheels for installing divider wall panels into ceiling rails where the panels have opposed ends with spaced apart sides therebetween, the apparatus which comprises:
(a) a base with attachment means for attaching to the lifting vehicle;
(b) a frame rotatably mounted on the base and having a top and a bottom with opposed sides extending therebetween when the frame is oriented for mounting a panel on the apparatus;
(c) a support channel mounted on the bottom of the frame wherein when the panel is positioned in the apparatus, the support channel is adjacent one side of the panel;
(d) an adjustable holding means mounted on the frame so as to hold the panel in the support channel; and
(e) a support means connected to, spaced apart from and extending between the support channel and the holding means wherein the support means is extendable to engage one of the ends of the panel when the panel is positioned in the apparatus and wherein to position the panel for installation into the ceiling rails, the frame with the panel is rotated approximately about 90° on the base so that the support means is adjacent a ground surface.

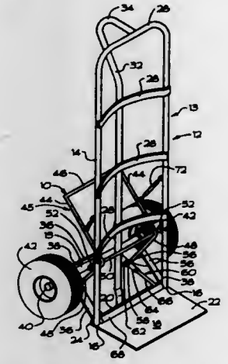
5,624,223
TRUCK BED UNLOADING APPARATUS
Timothy J. Lovato, 4696 Josephine St., Denver, Colo. 80216
Filed Mar. 22, 1996, Ser. No. 620,253
Int. Cl.[6] B60P *1/00*
U.S. Cl. 414—480 **20 Claims**

1. A device for carrying and unloading a load of material from a bed on a truck, the bed having a surface, the device comprising:
a main panel having an upper surface, a forward edge and a lower surface, the lower surface having means for sliding over the surface of the bed;
a front panel having an upper surface, a rearward edge, and a lower surface, the lower surface having means for sliding over the surface of the bed; and
front hinge means connecting said forward edge of said main panel to the rearward edge of said front panel to allow said main panel and said front panel to lie in an initial substantially planar position and allow said front panel to swing at least



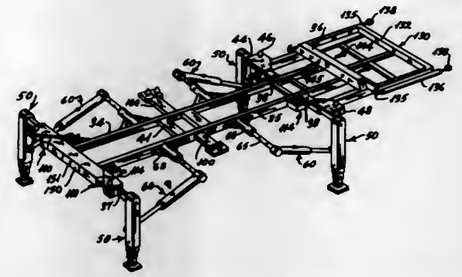
ninety degrees in a direction facing the lower surface of the front panel, so that the load of material together with device can be slid over and out of the bed of a truck when unloading, and so that said front panel may flip under said main panel as the load, together with the device, slides out of the bed of the truck, thereby causing separation of the load of material from the device when the load is unloaded from the bed of the truck.

5,624,224
HAND TRUCK UNLOADING APPARATUS
Thomas L. Brandenburg, 1018 Shawnee Dr., Elizabethtown, Ky. 42701
Filed Feb. 6, 1996, Ser. No. 597,662
Int. Cl.[6] B02B *1/12*
U.S. Cl. 414—490 **18 Claims**



1. A hand truck unloading apparatus, for a hand truck having a frame attached to a wheel assembly, said frame having a pair of side rails connected to a platform base extending outwardly normal thereto, said hand truck unloading apparatus, comprising:
a pair of spaced apart support members comprising a pair of side arms and a pair of leg members extending downwardly normal thereto;
a central support depression member connecting said side arms;
an axle rotatably supporting said support members said axle being attached to said frame;
a pair of adjustable pivot arms connecting to said support members for adjusting the length of said pivot arms a selected distance of travel, wherein said pair of adjustable pivot arms are substantially normal to a lower and of said leg members through a range of motion; and
means for pushing attached to said adjustable pivot arms, wherein said means for pushing extends outwardly in a straight forward motion parallel to said platform base.

5,624,225
CARGO CONTAINER HANDLING SYSTEM
Henry Cox, 141 Glass Hill Dr., Conway, S.C. 29526
Continuation-in-part of Ser. No. 144,036, Nov. 1, 1993, Pat. No. 5,147,540. This application May 23, 1995, Ser. No. 447,960
Int. Cl.[6] B60P *1/64*
U.S. Cl. 414—495 **20 Claims**

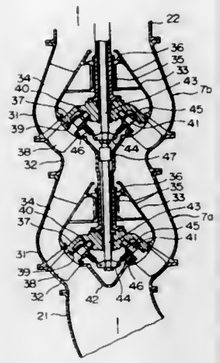


1. A system for transporting and supporting cargo containers whereby the containers are hauled on a transport vehicle, the system comprising:
a frame having a front portion and a rear portion and a pair of spaced rails extending from said front to said rear portion, each of said rails having an outwardly inclined lower surface, a first transverse beam mounted adjacent said front portion of said frame and above said rails and a second transverse beam mounted to said rear portion of said frame, a pair of third beams extending perpendicularly outwardly on opposite sides of said rails adjacent to said front portion of said frame, a first pair of spaced leg assemblies pivotally mounted with respect to outer end portions of said third beams and a second pair of spaced legs pivotally mounted relative to opposite end portions of said second beam, each of said leg assemblies being vertically extensible, an alignment cradle means mounted to said transport vehicle and including a pair of spaced centering rails having inclined upper surfaces of a configuration to cooperatively engage the inclined lower surfaces of said rails of said frame, locking pin means extendable through said rails of said frame and into engagement with said cradle means for locking said frame to said cradle means, a plurality of lift means for elevating said frame with respect to said transport vehicle, and means for controlling said plurality of lift means to raise and lower said frame relative to said transport vehicle.

5,624,226
UNDERGROUND DRAINAGE FACILITY, VERTICAL-SHAFT MULTI-STAGE ADJUSTABLE VANE PUMP, AND METHOD OF RUNNING DRAINAGE PUMP
Masayuki Yamada, Tsuchiura; Saburo Maru, and Sumio Sudo, both of Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 988,755, Dec. 10, 1992, Pat. No. 5,360,290. This application Nov. 1, 1994, Ser. No. 332,085
Claims priority, application Japan, Apr. 24, 1991, 4-106673; Dec. 13, 1991, 3-330301
Int. Cl.[6] F01D *5/02*
U.S. Cl. 415—129 **2 Claims**

1. A vertical-shaft multi-stage adjustable-vane pump comprising a plurality of vertical-shaft pump stages connected to each other on the same axis in a multi-stage manner; at least two of said pump stages having a vertical-shaft impeller in the form of an adjustable vane impeller supported such that a vane angle is variable with respect to a drive shaft, and a vane-angle operating mechanism for rotating said adjustable vane impeller about a support shaft to change the vane angle, wherein said vane-angle operating mechanism sets the vane angle of the lower stage of said at least two

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stages to be slightly greater than a minimum vane angle when the vane angle of the upper stage of said at least two stages is at the minimum vane angle.

5,624,227

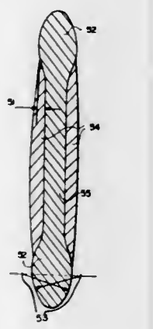
SEAL FOR GAS TURBINES

Thomas R. Farrell, Rexford, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Nov. 7, 1995, Ser. No. 553,172

Int. Cl.[6] F01D *25/26*

U.S. Cl. 415—139 **8 Claims**



1. A seal comprising:

a central section;

a first end integral with said central section and having a thickness greater than said central section;

a second end integral with said central section and having a thickness greater than said central section, said first and second ends forming a recessed section about said central section; and

a filler disposed in said recessed section, said filler being formed of a material that will one of dissipate, melt and vaporize at normal engine operating temperatures.

5,624,228

Patent Not Issued For This Number

5,624,229

SPIRAL HOUSING FOR A TURBOMACHINE

Joachim Kotzur, Oberhausen; Franz-Arno Richter, Dorsten, and Lubomyr Turanskyj, Oberhausen, all of Germany, assignors to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

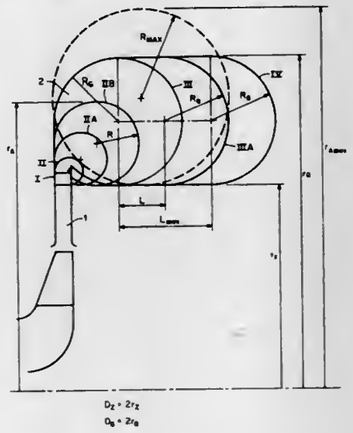
PCT No. PCT/EP94/02171, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/08050, PCT Pub. Date Mar. 23, 1995

PCT Filed Jul. 2, 1994, Ser. No. 436,355

Claims priority, application Germany, Sep. 17, 1993, 43 31 606.9

Int. Cl.[6] F04D *29/42*

U.S. Cl. 415—204 **5 Claims**



1. A spiral housing with a spiral cross-section for a turbomachine, comprising: a disk diffuser with an upstream annular disk space is asymmetrical to said spiral cross-section, said spiral cross-section having a base circle of substantially constant diameter; said spiral cross-section having a tongue region and a region adjacent said tongue region with circular spiral cross-sections extending to where an outside diameter of said spiral cross-section equals a specific diameter and said circular spiral cross-sections continue thereafter to increase in cross-section only axially.

5,624,230

CEILING FAN AIR FRESHENER DIFFUSION DEVICE

John C. Taylor, and Becky M. Taylor, both of 5512 Crescent Dr., North Little Rock, Ark. 72118-3538

Filed Dec. 20, 1995, Ser. No. 580,068

Int. Cl.[6] F01D *25/00*

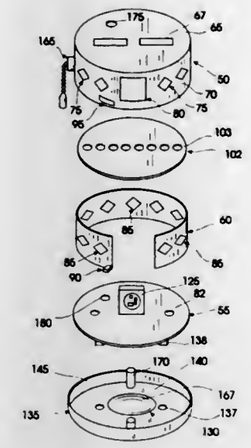
U.S. Cl. 416—5 **20 Claims**

1. A ceiling fan air freshener diffusion device comprising:

a scent receptive chamber, said chamber comprising:

a housing comprising a cap for mounting to a ceiling fan and a continuous sidewall extending downward from said cap, said sidewall defining scent diffusion orifices and a drawer receptive opening;

a floor secured to said housing, abutting said sidewall;



a removable drawer for holding a volatile scented medium, said drawer received by said drawer receptive opening for insertion of said drawer into said chamber; and,

volatilization means for heating said scent medium.

5,624,231

COOLED TURBINE BLADE FOR A GAS TURBINE

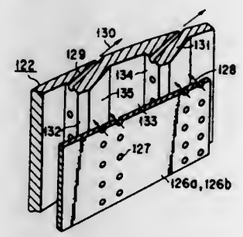
Fumio Ohtomo, Zama; Yoshitaka Fukuyama, Yokohama; Yuji Nakata, Yokohama; Asako Inomata, Yokohama; Hisashi Matsuda, Yokohama, and Shoko Ito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 364,686

Claims priority, application Japan, Dec. 28, 1993, 5-335454

Int. Cl.[6] F01D *5/18*

U.S. Cl. 416—97 R **6 Claims**



1. A cooled turbine blade for a gas turbine which comprises:

an outer wall having an inner surface;

an inner space surrounded by said outer wall;

a hollow insert provided in said inner space;

a plurality of projections formed on the inner surface of said outer wall, having a front side surface and an inclined rear side surface, for supporting said hollow insert, said outer wall being thick at portions where said projections are formed;

a plurality of partition chambers provided between said outer wall and said hollow insert, divided by said projections;

a plurality of impingement holes formed in said insert corresponding to said partition chambers, for jetting out a cooling medium to the inner surface of said outer wall; and

a plurality of film cooling holes going through said outer wall, opening on the front side surface of said projections, through which the cooling medium flows from said partition chambers to outside of said outer wall to perform film cooling, and said film cooling holes pierce the thick portions of said outer wall where said projections are formed, and the holes are substantially parallel to the rear side surface.

5,624,232

DEVICE FOR CONTROLLING THE PITCH OF THE BLADES OF A ROTORCRAFT ROTOR

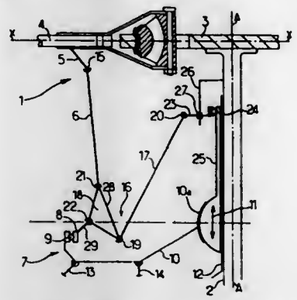
Nicolas Certain, Aix-en-Provence, France, assignor to Eurocopter France, France

Filed Oct. 6, 1995, Ser. No. 540,130

Claims priority, application France, Oct. 13, 1994, 94 12228

Int. Cl.[6] B64C *11/06;11/32;27/605*

U.S. Cl. 416—114 **15 Claims**



1. A device for controlling pitch of blades of a rotorcraft rotor, in which each blade is, firstly, driven in rotation about an axis of rotation of a rotor mast via a hub and, secondly, secured in terms of rotation about a longitudinal pitch-change axis to a pitch lever articulated to a pitch rod joined to a plate which rotates with the rotor mast and belonging to a swashplates mechanism, in which the rotating plate is mounted to rotate on a non-rotating plate which can slide axially along the rotor mast and be inclined in any direction with respect to the rotor mast under the action of flight-control actuators, wherein said device comprises a secondary rotating plate secured in terms of rotation to the rotor mast and secured in terms of axial translation to the non-rotating plate but which cannot be inclined with respect to the rotor mast and, for each blade, an articulated link with two levers and four articulations, such that the articulated link's two levers are articulated together by a first of said articulations, a first of said levers being articulated by a second of said articulations to a point which is stationary in a reference frame which rotates with the secondary rotating plate, and the second lever being articulated to the corresponding pitch rod by a third of said articulations, distinct from the articulation by means of which the pitch rod is articulated to the pitch lever, and the second lever is furthermore articulated to a point which is stationary in a reference frame which rotates with the rotating plate by the fourth articulation which is distinct from the other articulations so that the inclinations given to the swashplates by the actuators give rise to angular maneuvers of the levers of each articulated link controlling the pitch of the corresponding blade through the maneuvering of the corresponding pitch rod.

5,624,233

GAS TURBINE ENGINE ROTARY DISC

Michael J. King; Jonathan P. Throssell, both of Derby; David S. Knott, Leicestershire, and Martyn Richards, Derbyshire, all of England, assignors to Rolls-Royce plc, London, England

Filed Feb. 28, 1996, Ser. No. 608,545

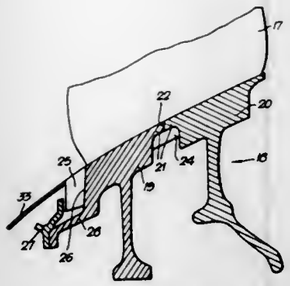
Claims priority, application United Kingdom, Apr. 12, 1995, 9507569

Int. Cl.[6] F01D *5/30*

U.S. Cl. 416—219 R **10 Claims**

1. A rotor disc for carrying an annular array of radially extending aerofoil blades each having a root and a tip in a gas turbine engine,

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said disc being provided with a plurality of generally axially extending circumferentially spaced apart slots in its periphery to receive said roots of said aerofoil blades, said disc comprising at least two sub-discs which are maintained in axially spaced apart relationship by a plurality of axially extending circumferentially spaced apart spacer members positioned in the peripheral regions of said sub-discs, said spacer members at least partially defining the radially inner boundary of the gas flow path over said disc between adjacent ones of said slots, each of said slots containing a said root of an aerofoil blade, each said root having a key associated therewith which interacts with at least one of said sub-discs to provide axial locking of an associated aerofoil blade root, each said aerofoil blade root having a mid-region and said key being located in said mid-region of an associated aerofoil blade root so as to protrude beyond the periphery of said root into the space between two of said sub-discs, said sub-discs having radial surfaces and said key interacting with said radial surfaces to facility said axial locking of said aerofoil blade root.

5,624,234

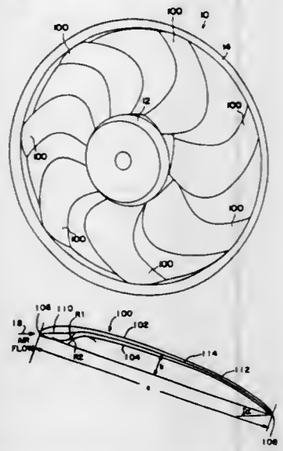
FAN BLADE WITH CURVED PLANFORM AND HIGH-LIFT AIRFOIL HAVING BULBOUS LEADING EDGE

Michael J. Neely, Dayton, and John R. Savage, Kettering, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 342,358, Nov. 18, 1994. This application Jun. 6, 1995, Ser. No. 471,270

Int. Cl.[6] F04D *29/38*

U.S. Cl. 416—238 **20 Claims**



1. A planform defining the shape of blades of a vehicle engine-cooling fan assembly, each blade having a root, a tip, and a span between the root and tip, said planform comprising:

a first region adjacent the root of the blade having forward curvature;

a second region adjacent the tip of the blade having backward curvature; and

an intermediate region disposed between said first region and said second region having substantially straight curvature.

5,624,235

STEAM TURBINE, ROTOR SHAFT THEREOF, AND HEAT RESISTING STEEL

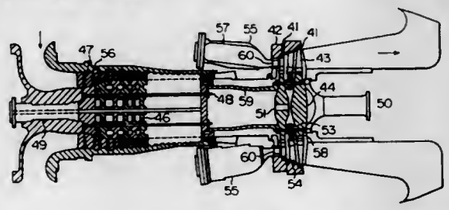
Masao Siga; Yutaka Fukui, both of Hitachi; Mitsuo Kuriyama, Ibaraki-ken; Yoshimi Maeno, Hitachi; Masateru Suwa, Ibaraki-ken; Ryoichi Kaneko; Takeshi Onoda, both of Hitachi; Hidefumi Kajiwara; Yasuo Watanabe, both of Katsuta; Shintaro Takahashi, Hitachi, and Toshimi Tan, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 461,521, Jun. 5, 1995, Pat. No. 5,569,338, which is a division of Ser. No. 305,186, Sep. 13, 1994, Pat. No. 5,536,146, which is a division of Ser. No. 893,079, Jun. 3, 1992, Pat. No. 5,383,768, which is a continuation-in-part of Ser. No. 472,838, Jan. 31, 1990, abandoned. This application Sep. 20, 1995, Ser. No. 530,960

Claims priority, application Japan, Feb. 3, 1989, 01-023890; May 22, 1989, 01-126622

Int. Cl.[6] C22C *38/44*

U.S. Cl. 416—241 R **29 Claims**



1. A steam turbine having a rotor provided with a mono-block rotor shaft, multi-stage blades fixed on the mono-block rotor shaft from a high pressure side at which a steam inlet temperature of first stage blades is not less than 530° C., and a casing covering the rotor, said rotor shaft being fabricated from a Ni-Cr-Mo-V low alloy steel having a bainite structure and a ratio (Mn/Ni) not more than 0.12 or a ratio (Si+Mn)/Ni not more than 0.18 by weight, a 538° C., 100,000 hour creep rupture strength of said low alloy steel being not less than 11 Kgf/mm^2, and the final stage blades at the low pressure side of steam having a length not less than 30 inches.

5,624,236

OIL COOLED AIR COMPRESSOR

Kazuo Kubo, and Koji Akashi, both of Kako-gun, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 12, 1995, Ser. No. 420,566

Int. Cl.[6] F04B *49/00;49/10*

U.S. Cl. 417—12 **1 Claim**

1. An oil-cooled air compressor comprising:

a compressor unit having inlet and exit ports;

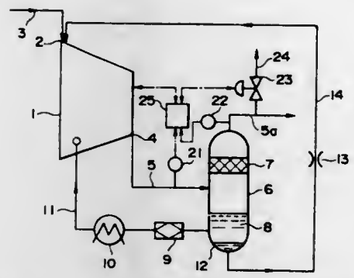
an oil separator connected to the exit port of said compressor unit;

a water removal line connecting the bottom of said oil separator to one or more low pressure locations of said compressor unit;

a gas release valve connected to the top of said oil separator;

a temperature sensor for detecting the temperature of the gas exiting said compressor unit;

and a control unit having first means for effecting operation of said compressor based upon a demand and second means for effecting operation of said compressor unit for a specified dewatering period of time above a specified temperature, as measured by said temperature sensor, in the condition that a second specified period of time has elapsed since the last



operation of the compressor unit for the specified period of time or more at a temperature greater than the specified temperature dewatering.

5,624,237

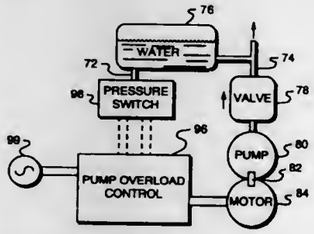
PUMP OVERLOAD CONTROL ASSEMBLY

Russell E. Prescott, 8 Little River Rd., Kingston, N.H. 03848, and Perrin T. Prescott, 110 Watson Rd., Exeter, N.H. 03833

Filed Mar. 29, 1994, Ser. No. 219,939

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—33 **15 Claims**



1. A pump overload control circuit, comprising:

at least one current receiving conductor, for receiving current from a power source;

a power switch, coupled between said at least one current receiving conductor and a resettable overload protector;

said resettable overload protector coupled between said power switch and a fluid responsive switch;

said fluid responsive switch coupled between said resettable overload protector and at least one current transmitting conductor, wherein said fluid responsive switch is responsive to fluid contained in an external source; and

said least one current transmitting conductor coupled to said fluid responsive switch, for transmitting current to a pump, for forming a pump overload control circuit having a power switch which can shut off power to said fluid responsive switch and said pump.

5,624,238

PORTABLE WATER PUMP FOR USE WITH SWIMMING POOLS

Graham R. Herbert, 406 S. Cherrywood Ave., West Covina, Calif. 91791

Filed May 28, 1996, Ser. No. 654,083

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—61 **7 Claims**

1. A portable water pump for use with swimming pools for floating in a swimming pool to allow for pool water to be pumped out of the pool for dousing a fire comprising, in combination:

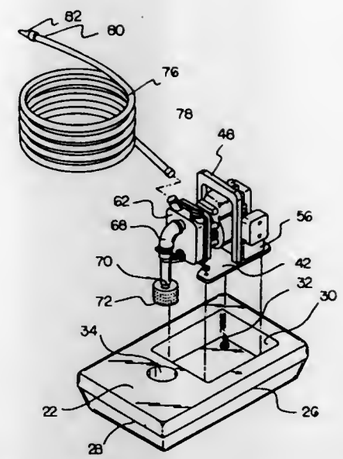
a swimming pool having a body of water disposed therein;

a flotation collar comprised of a housing having a generally rectangular configuration, the housing having a planar upper surface, a planar lower surface, two long side surfaces and two short side surfaces, the upper surface having a recess formed therein, the recess having bolts extending upwardly therefrom disposed in four corners thereof, a circular aperture extends from the upper surface outwardly of the lower surface adjacent to the recess, the floatation collar adapted for floating in the swimming pool;

a gasoline engine having a planar generally rectangular base plate secured to a lower surface thereof, the base plate having apertures therethrough in four corners thereof for receiving the bolts on the recess therethrough for securement of the engine to the floatation collar, a U-shape handle extends over the engine and having free ends secured to the base plate;

a water pump secured and operably coupled with the gasoline engine, the water pump having a water inlet and a water outlet, the water inlet having a pipe extending outwardly and downwardly therefrom through the circular aperture of the housing of the flotation collar, a free end of the pipe having a suction strainer coupled thereto whereby the suction strainer in contact with the body of water of the swimming pool; and

a water hose having a first free end coupleable to the water outlet of the water pump, a second free end of the water hose having a spray nozzle coupled thereto.



5,624,239

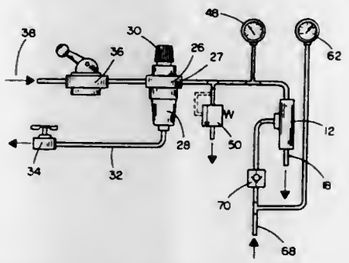
PORTABLE PNEUMATIC VACUUM SOURCE APPARATUS AND METHOD

Thomas W. Osika, 3321 Bridgeford Rd., Omaha, Nebr. 68124

Filed Dec. 14, 1994, Ser. No. 355,499

Int. Cl.[6] F04F *5/48*

U.S. Cl. 417—187 **10 Claims**



1. A portable pneumatic vacuum source comprising;

a source of pressurized fluid;

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vacuum pump means in fluid connection with said pressurized fluid source, said vacuum pump means operative to generate a vacuum in response to pressurized fluid flow therethrough;

nozzle means in vacuum connection with said vacuum pump means;

filter means intermediate and in fluid connection with said pressurized fluid source and said vacuum pump means for removing particulates and liquids from said pressurized fluid;

pressure regulator means intermediate and in fluid connection with said pressurized fluid source and said vacuum pump means for adjusting pressure of said pressurized fluid entering said vacuum pump means;

relief valve means intermediate and in fluid connection with said pressurized fluid source and said vacuum pump means for limiting pressure of said pressurized fluid; and

check valve means intermediate and in vacuum connection with said vacuum pump means and said nozzle means for preventing loss of vacuum.

5,624,240

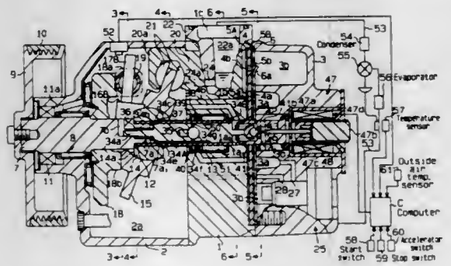
PISTON TYPE VARIABLE DISPLACEMENT COMPRESSOR

Masahiro Kawaguchi; Shigeki Kanzaki; Ken Suitou; Toshiro Fujii; Tomohiko Yokono, and Masanori Sonobe, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 27, 1994, Ser. No. 266,130

Int. Cl.[6] F04B *1/29*

U.S. Cl. 417—222.2 **16 Claims**



1. A compressor having a drive shaft in a crank chamber and a swash plate supported on the drive shaft for integral rotation therewith to drive a piston in a cylinder bore, wherein the piston compresses gas sucked from a suction chamber into the cylinder bore and discharges to a discharge chamber said compressed gas, and whereby the amount of said discharged gas is variable between a minimum value and a maximum value based on variation of the inclined angle of the swash plate between a minimum inclined angle and a maximum inclined angle, said compressor comprising:

mechanical control means for controlling said inclined angle of said swash plate to selectively hold the swash plate at said minimum inclined angle and to release the swash plate for movement;

passage means for leading the gas into the crank chamber from the discharge chamber to alter the inclined angle of the swash plate to said minimum inclined angle so that said mechanical control means can hold the swash plate at the minimum inclined angle;

valve means for selectively opening and closing said passage means to lead the gas into the crank chamber via the passage means when the valve means opens the passage means;

the operation of said mechanical control means being responsive to the operation of said valve means to hold the swash plate at the minimum inclined angle when the valve means opens the passage means, and to release the swash plate when said valve means closes said passage means.

5,624,241

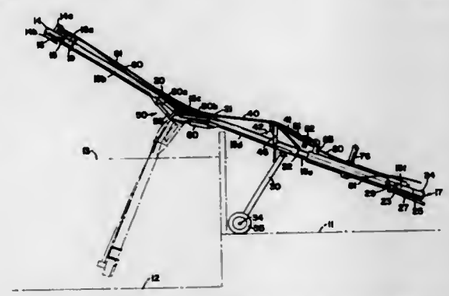
FLEXIBLE HYDRAULIC PUMP AND AGITATOR APPARATUS

Clinton A. Nesseth, Cameron, Wis., assignor to NTH, Inc., Barron, Wis.

Filed Mar. 11, 1994, Ser. No. 212,031

Int. Cl.[6] F04B *17/06*

U.S. Cl. 417—234 **19 Claims**



1. A towable hydraulic beam apparatus for processing manure slurries, comprising:

(a) a wheeled transport support frame of a type suitable for towing over a support surface and having one end configured for operative detachable connection to a towing vehicle;

(b) an elongated conduit beam mounted to said transport frame and longitudinally extending between first and second oppositely spaced ends; said first end being located near said one end of said transport support frame and said second end being distally positioned therefrom; said conduit beam being generally rigid except for an elongate flexible section lying intermediate said first and second ends; said elongated conduit beam further defining a continuous fluid passageway between said second and said first ends; wherein said second end defines a fluid input end and said first end defines a fluid discharge end;

(c) flex control means operatively connected with said conduit beam for flexibly bending said conduit beam at said flexible section thereby controlling the vertical orientation of said second end of the conduit beam; and

(d) hydraulic pump means operatively connected to said conduit beam at said second end thereof for pumping slurry material through said conduit passageway.

5,624,242

HAND AIR PUMP FOR DIFFERENT TYPES OF VALVES

Scott Wu, No. 2, Lane 296, Ming Sheng Road, Wu Feng Hsiang, Taichung Hsien, Taiwan

Filed Jun. 17, 1996, Ser. No. 664,743

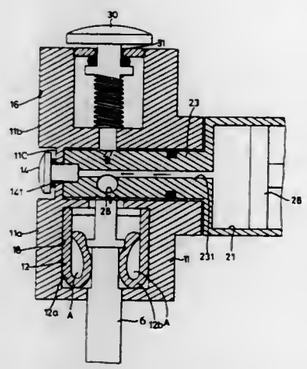
Int. Cl.[6] F04B *39/10*

U.S. Cl. 417—238 **9 Claims**

1. A hand air pump comprising:

a cylinder having a chamber defined therein and having a first end and a second end, a piston being slidably received in the chamber and manually operable at the first end of the cylinder;

a spindle projecting outwardly from the second end of the cylinder and having a first air passage extending therethrough along a longitudinal direction thereof and having a first end in fluid communication with the chamber and a second end, the spindle further comprising at least one annular groove defined in a mediate portion of an outer periphery thereof, a push pin formed on the mediate portion of the outer periphery thereof, and a second air passage extending therethrough along a diametrical direction thereof and having two ends in fluid communication with said at least one annular groove and a mediate portion in fluid communication with the second end of the first air passage;



a head portion including a first compartment defined in a mediate portion thereof for fittingly and sealingly receiving the spindle, and a second compartment for receiving a valve of a bicycle tire to be inflated and in fluid communication with said at least one annular groove; and

a positioning means for securing the spindle in an angular position relative to the head portion in response to the type of the valve of the bicycle tire to be inflated.

5,624,243

SCROLL COMPRESSOR CAPABLE OF EFFECTIVELY COOLING MOTOR THEREOF

Masatoshi Omodaka; Hiroki Kamiishida; Yoshitaka Shibamoto, and Hiroyuki Taniwa, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

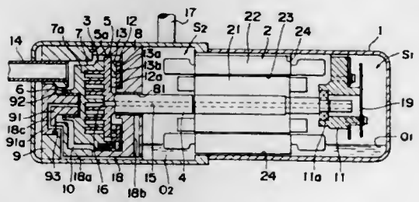
PCT No. PCT/JP95/00361, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO95/24561, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 7, 1995, Ser. No. 537,739

Claims priority, application Japan, Mar. 9, 1994, 6-38118

Int. Cl.[6] F04B *39/06*

U.S. Cl. 417—366 **8 Claims**



1. A scroll compressor comprising:

a substantially horizontal type hermetic casing;

a scroll type compressing section is disposed in one side portion of the hermetic casing and discharges compressed gas from a discharge outlet;

a motor is disposed in the other side portion for driving the compressing section by a drive shaft, wherein a middle chamber is formed between the compressing section and the motor in the substantially horizontal type hermetic casing, a chamber formed in the substantially horizontal type hermetic casing opposite to the compressing section which faces a surface of the motor opposite from a surface of the motor that faces the compressing section;

a middle chamber oil reservoir formed at a bottom portion of the middle chamber;

an oil supply passage in communication with the middle chamber oil reservoir and in communication with a sliding portion;

a discharge passage provided axially through the drive shaft and communicating with the discharge outlet of the compressing section to discharge the compressed gas to the chamber opposite to the compressing section;

passage means for making the chamber opposite to the compressing section communicate with the middle chamber; and

an outward discharge pipe opened at the middle chamber.

5,624,244

CIRCULATING PUMP FOR COOLING WATER TO BE FORCIBLY CIRCULATED

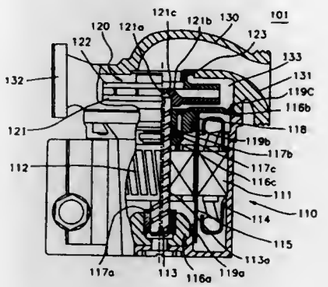
Sung-Dai Moon, Kyeongsangbook-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 581,935

Claims priority, application Rep. of Korea, Jul. 25, 1995, 95-22075

Int. Cl.[6] F04B *39/06*

U.S. Cl. 417—366 **11 Claims**



1. A circulating pump for cooling water to be forcibly circulated comprising a motor, an impeller and a pump housing wherein:

the motor includes a motor housing, a stator fixed inside the motor housing, a stator can, a motor end shield and a plurality of sealing members for separating the stator from fluid, a rotor rotating by means of an electromagnetic interaction with the stator when an electric current is applied to the stator, and a motor shaft integrally combined with the rotor, one end of the motor shaft being rotatably supported by a lower bush bearing at the inner bottom of the motor housing, the other end of the motor shaft being projected passing through a through hole formed at the motor end shield, the motor shaft being supported rotatably by an upper bush bearing at the through hole of the motor end shield, at the outer periphery of the motor shaft a spiral groove being formed, and at the center of the motor shaft a cooling water discharging passage is formed along the axis of the motor shaft;

the impeller includes an impeller body having a plurality of blades for pressurizing fluid and fixedly assembled with the other end of the motor shaft, at the center of a lower surface of the impeller body a curved projecting portion forming a cooling water inflow chamber by joining together with an upper end of the motor shaft being formed and at the curved projecting portion one or more cooling water outlet holes being formed, and a shroud integrally fixed onto the impeller body, and at the center of the shroud a through hole being formed for allowing fluid to flow into the impeller; and

the pump housing includes a housing body disposed onto the motor and comprising an inlet passage and an outlet passage provided at both sides thereof respectively and an impeller chamber communicated with the inlet passage and the outlet passage, at the center of the impeller chamber the impeller being disposed, and a suction ring fixed at an inner end of the inlet passage of the housing body and guiding fluid through the inlet passage into the impeller.

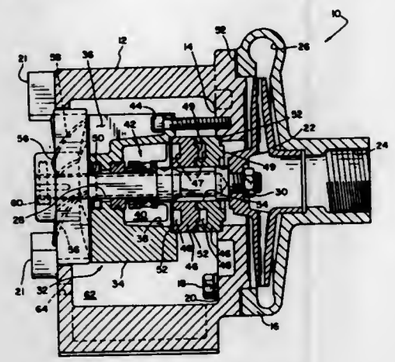
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CENTRUFUGAL PUMP WITH THERMALLY ISOLATED AND DYNAMICALLY AIR COOLED SHAFT SEAL ASSEMBLY

David M. DeClerck, Utica, and Gregory S. Muller, Troy, both of Mich., assignors to MP Pumps, Inc., Fraser, Mich.

Filed Oct. 26, 1994, Ser. No. 329,172
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—373 **6 Claims**



1. A high temperature liquid pump comprising:
a pump housing having an end wall;
an impeller rotatably disposed in said pump housing;
a drive shaft connected to said impeller, said drive shaft passing through said end wall;
a seal housing enclosing a mechanical seal located about said drive shaft, said seal housing spaced apart from said pump housing; and
a thermal insulator disposed between said pump housing and said seal housing and spacing apart said housings to reduce heat transfer from said pump housing to said seal housing;
wherein said insulator is formed of plural elements axially juxtaposed to each other; and
wherein each said element includes a protuberance on one side and a recess on an opposite side, said protuberance of one element interfitting into the recess of an axially juxtaposed element.

5,624,246

HYDRAULIC AMMONIA SOLUTION PUMP

Donald Kuhlenschmidt, Evansville, Ind., assignor to Gas Research Institute, Chicago, Ill.

Filed Sep. 25, 1995, Ser. No. 533,620
Int. Cl.[6] F04B *9/08;35/02*
U.S. Cl. 417—386 **14 Claims**

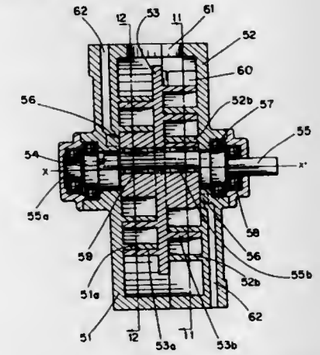
1. A hydraulic pump for pumping a solution through a system comprising:
a pump housing for storing a predetermined amount of lubricant, said pump housing communicating with inlet and outlet valves for regulating a flow of pumped solution through said pump housing;
a cylinder located within said pump housing;
a reciprocating piston located within said cylinder, said piston moving between compressed and decompressed positions during compression and decompression strokes, respectively;
a transfer chamber, communicating with inlet and outlet ports, for receiving and discharging the pumped solution, said transfer chamber being in fluid communication with said piston, said transfer chamber including a diaphragm driven by said piston to pump the solution;
a sleeve slidably received between said piston and cylinder; and
a biasing member received between said piston and cylinder for applying a biasing force upon said sleeve in a compression direction during said compression and decompression strokes of said piston, said piston, cylinder and sleeve cooperating to define a lubricant holding chamber therebetween, said cylinder having a lubricant intake port and intake valve associated with said intake port, said intake valve regulating a flow of lubricant to said lubricant holding chamber, said lubricant holding chamber fluidly communicating with said transfer chamber, said piston, cylinder, sleeve and biasing member forcing lubricant from said lubricant holding chamber into said transfer chamber during at least one of said compression and decompression strokes.

5,624,247

BALANCE TYPE SCROLL FLUID MACHINE

Mitsuo Nakamura, 303, Banfurito-Neyagawa, 47-1, Shimizu-cho, Neyagawa, Osaka 572, Japan

Filed Jun. 15, 1995, Ser. No. 491,191
Claims priority, application Japan, Jun. 17, 1994, 6-169906; Aug. 11, 1994, 6-222382
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.2 **1 Claim**



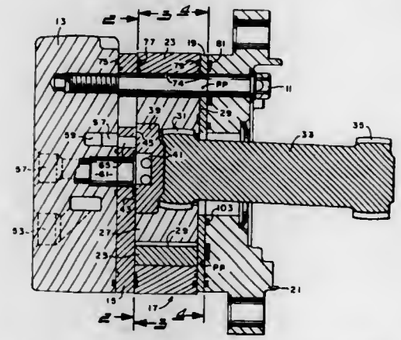
1. A balance type scroll fluid machine, comprising:
a central mirror disk of a circling scroll, having two sides and mounted to circle through a bearing rotatably provided about an eccentric drive shaft, the mirror disk having scroll teeth on each of said two sides, said scroll teeth on each of said two sides having the same configuration and each of said two sides having a respective boss at a central portion, the scroll teeth on one of said two sides being positioned 180° out of phase relative to the scroll teeth on the other of said two sides about a drive shaft axis in order to achieve a weight balance therebetween; and
fixed scrolls located on opposite sides of said mirror disk, each fixed scroll having scroll teeth respectively engaged with corresponding scroll teeth on an adjacent one of said two sides of the mirror disk, one of said scroll teeth of the fixed scrolls having an arcuate shape with an end located above a center point thereof (G2) which is downwardly off-centered relative to said drive shaft axis by an eccentricity which is the same as an eccentricity of the eccentric drive shaft of said mirror disk relative to said drive shaft axis, the other of said scroll teeth of the fixed scrolls having an arcuate shape with an end located below said center point (G2), whereby the ends of said one scroll tooth and said other scroll tooth of the fixed scrolls, disposed cooperatively on said opposite sides of said mirror disk alternately perform compression operations separated by 180°.

5,624,248

GEROTOR MOTOR AND IMPROVED BALANCING PLATE SEAL THEREFOR

Gary R. Kassen, Chanhassen, and Marvin L. Bernstrom, Eden Prairie, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 21, 1996, Ser. No. 604,589
Int. Cl.[6] F01C *1/10;19/06;* **F03C** *2/08*
U.S. Cl. 418—61.3 **11 Claims**



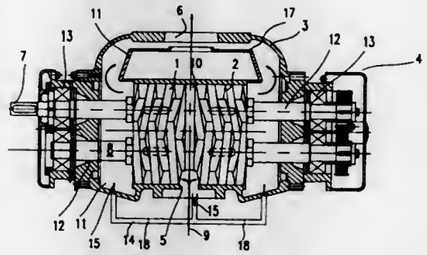
1. A fluid pressure operated device comprising housing means defining a fluid inlet port and a fluid outlet port; a fluid pressure displacement mechanism is associated with said housing means and including an internally-toothed ring member and an externally-toothed star member eccentrically disposed within said ring member; said ring member and said star member having relative orbital and rotational movement, and inter-engaging to define expanding and contracting fluid volume chambers in response to said orbital and rotational movement; valve means cooperating with said housing means to provide fluid communication between said fluid inlet port and said expanding volume chambers, and between said contracting volume chambers and said fluid outlet port; said housing means comprising an end cap member disposed rearwardly of said ring member and a housing member disposed forwardly of said ring member; seal means disposed between said ring member and said endcap member and seal means disposed between said ring member and said housing member, and a plurality of fasteners disposed in fastener bores, said fasteners maintaining said end cap member and said housing member in tight, sealing engagement relative to said ring member, said fasteners being disposed radially inward from said seal means; a balancing plate disposed between said ring member and said housing member and adapted to be closely disposed to an adjacent end surface of said star member, to minimize fluid leakage therebetween; characterized by:
(a) one of said housing member and said balancing plate defining a seal chamber in open communication with said fastener bores;
(b) a seal assembly disposed in said seal chamber, said seal assembly including a seal support member conforming substantially to an outer peripheral surface of said seal chamber and to said plurality of fasteners; and
(c) said seal assembly further including a seal member disposed radially inward from said seal support member, and restrained in the radially outward direction thereby when said seal member is subjected to fluid pressure.

5,624,249

PUMPING PROCESS FOR OPERATING A MULTI-PHASE SCREW PUMP AND PUMP

Gerhard Rohlfing, Hille, Germany, assignor to Joh. Heinrich Bornemann GmbH & Co. KG, Obernkirchen, Germany

PCT No. PCT/DE94/00477, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/27049, PCT Pub. Date Nov. 24, 1994
PCT Filed Apr. 28, 1994, Ser. No. 530,345
Claims priority, application Germany, May 19, 1993, 43 16 735.7
Int. Cl.[6] F01C *2/04;1/16*
U.S. Cl. 418—102 **15 Claims**



1. A pumping method for operating a multi-phase screw pump with at least one feed screw surrounded by a housing that contains at least one inlet, and at least one outlet, said feed screw having a pressure side, said method comprising steps of:
drawing a medium into said inlet in a continuous low-pulsed feed stream in a direction parallel to a screw shaft of said feed screw;
expelling said medium continuously at the outlet;
separating a liquid phase of said medium from a gas phase of said medium, wherein the medium flow emerging from the pressure side of said feed screw has its flow direction diverted;
removing a partial liquid volume flow from the liquid phase;
recycling and metering said partial liquid volume flow into the inlet; and
recombining a surplus liquid volume flow of said partial liquid volume flow with the gas phase in the outlet,
wherein approximately 3% of a normal delivery flow is kept in said partial liquid volume flow.

5,624,250

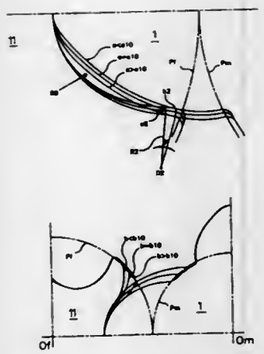
TOOTH PROFILE FOR COMPRESSOR SCREW ROTORS

Kil-Won Son, Seoul, Rep. of Korea, assignor to Kumwon Co., Ltd., Rep. of Korea

Filed Sep. 20, 1995, Ser. No. 531,041
Int. Cl.[6] F04C *18/16*
U.S. Cl. 418—150 **3 Claims**

1. A screw compressor comprising:

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a male rotor having four lobes and four helical grooves, each of the lobes of the male rotor having a following side curve generated to meet a quadratic function $f(x)=a_{10}x^2+b_{10}x+c_{10}$; and

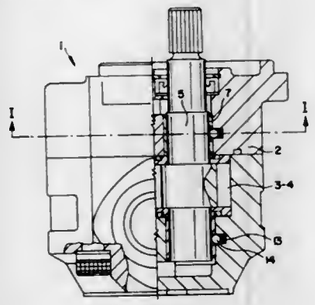
a female rotor having five lobes and five helical grooves and being in mesh with the male rotor at a pitch circle, the lobes of the female rotor each having a leading-side first curve defining a trapped pocket with the following-side curve of the respective male rotor lobes, extending to an outer circle larger than the pitch circle, and having a rib width, the helical grooves of the female rotor defining a cell area between the lobes thereof, the leading-side first curve of the female rotor lobes being generated to become an arc, the radius and center of the arc allowing a specific sliding of the male rotor lobes about the pitch circle of the female rotor to approach zero;

wherein the constant a_{10} of the quadratic function is of a value requiring the arc of the leading-side first curve of the female rotor to extend through at least 11° and minimizing the trapped pocket, the constant b_{10} is of a value requiring a rib width of the female rotor lobes to be not less than 15% of the outside circle radius of the female rotor and to maximize the cell area between the lobes of the female rotor, and the constant c_{10} is approximately zero.

5,624,251
GEAR PUMP

Stefano Negrini, Sala Baganza, and Umberto Verza, Reggio Emilia, both of Italy, assignors to Casappa S.p.A., Cavalli Di Collecchio, Italy

Filed Jul. 7, 1995, Ser. No. 499,612
Claims priority, application Italy, Jul. 14, 1994, PR94A0029; Jan. 31, 1995, PR95A0005
Int. Cl.[6] F01C *1/18*
U.S. Cl. 418—206.1 **5 Claims**



1. A gear pump, comprising:

a casing that consists in a body enclosed by two covers and having two parallel cylindrical bores;

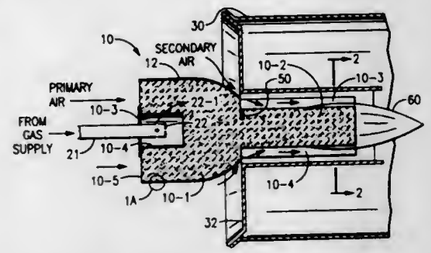
two gears accommodated rotatably in the parallel bores, engaged in constant mesh and associated rigidly with respective shafts supported rotatably by bushings located in corresponding seats afforded by the body;

means housed in the body of the pump casing and designed to exert a force on the shaft associated with each gear, of a direction and a strength such as will combine with the resultant of the pressure forces and gear tooth contact forces to eliminate backlash between the teeth of the gears wherein said means housed in the body of the pump affords a radial hole accommodating a spring impinging on a ball compassed substantially in its entirety by the radial hole and positioned to bear directly against the shaft of a corresponding gear.

5,624,252
LOW NO BURNER

John G. Charles, Sr., Tyler, Tex.; Benny P. Dimarco, Cicero, and Dennis C. Jones, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 26, 1995, Ser. No. 578,408
Int. Cl.[6] F23D *3/40*
U.S. Cl. 431—7 **16 Claims**



1. A method of combustion comprising the steps of:

supplying gaseous fuel within a porous ceramic member;

flowing said gaseous fuel within said member so as to aspirate air into said flowing gaseous fuel so as to cause a mixture of gaseous fuel and air to be flowing in said member;

igniting said mixture within said member;

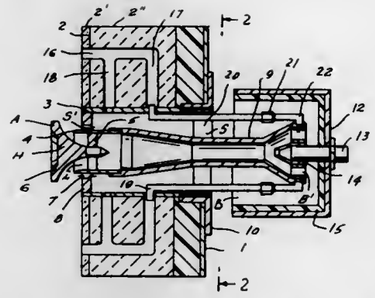
flowing said ignited mixture through said member into a heat exchanger while continuing to aspirate air into said member whereby said ignited mixture is cooled so as to avoid reaching undesirable temperatures.

5,624,253
RADIATION BURNER

Nikolai Sulzhik; Pavel Timoshchenko, and Vitaly Trotsenko, all of Kiev, Ukraine, assignors to Ilya Zborovsky, Dix Hills, N.Y.

Filed Jul. 11, 1994, Ser. No. 273,204
Int. Cl.[6] F24D *7/00*
U.S. Cl. 431—116 **6 Claims**

1. A radiation gas burner, comprising a burner stone having an axis and a front surface over which a flame is distributed and which is heated by the flame so as to radiate heat, said burner stone being ring-shaped; an outlet pipe arranged radially inwardly of said burner stone and having an inner cylindrical space with an axially rear inlet and an axially front outlet; means for supplying fuel into said rear inlet of said inner cylindrical space of said outlet pipe; first passage means extending from said front surface of said burner stone and through said burner stone rearwardly; second passage means through which a primary air is supplied into said rear inlet of said inner cylindrical space of said outlet pipe to form a fuel-gas mixture which is supplied through said outlet pipe and exits through said front outlet; and third passage means through

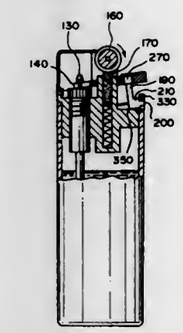


which secondary air passes through said burner and exits at said front surface, said first passage means for recirculating combustion products through said burner stone communicating with at least one of said second passage means and said third passage means so as to ballast at least one of the primary air and the secondary air with the combustion products which have passed through said burner stone.

5,624,254
CIGARETTE LIGHTER

Wong T. Kee, New Territories, Hong Kong, assignor to Capital Line Industries, Ltd., Hong Kong

Continuation of Ser. No. 251,139, May 31, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,399
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—153 **5 Claims**

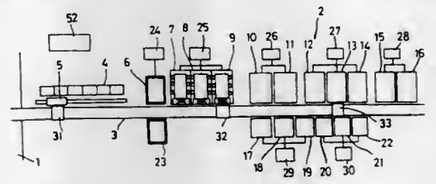


1. A lighter comprising a gas receptacle for containing a compressed gas; a housing; a gas release means; an ignition means for igniting gas released by said gas release means from said gas receptacle; an actuating means for actuating said gas release means; and a safety mechanism movable relative to said housing between an outer locked position in which said safety mechanism prevents said actuating means from actuating said gas release means, and an inner unlocked position in which said safety mechanism allows said actuating means to actuate said gas release means; wherein said actuating means includes an actuating lever having an underside with a recess formed therein such that downward movement of said actuating lever actuates said gas release means; wherein said safety mechanism comprises a substantially upwardly extending locking arm which, when said safety mechanism is in said locked position, abuts a non-recessed portion of said underside of said actuating lever and thereby prevents downward movement of said actuating lever, thus preventing actuation of said gas release means, but which when said safety mechanism is in said unlocked position, is aligned with said recess in said underside of said actuating lever so that downward movement of said actuating lever and consequent actuation of said gas release means are made possible; wherein said safety mechanism comprises an upper step portion and a lower step portion; wherein said upper step portion abuts against an underside surface of a shelf of said housing and a portion of said locking arm abuts against an inner side surface of said shelf when said safety mechanism is in said locked position; wherein said lower step portion abuts against the underside surface of said shelf when said safety mechanism is in said unlocked position wherein said safety mechanism is biased towards said locked position by a biasing action of a spring; wherein said safety mechanism is releasably held in said unlocked position by a portion thereof which is between said upper step portion and said lower step portion and abuts against the inner side surface of said shelf in response to said biasing action of said spring; and wherein said safety mechanism returns to said locked position in response to said biasing action of said spring upon release of a downward depression force being applied to said actuating lever.

5,624,255
MULTIPURPOSE CONTROLLED ATMOSPHERE HEAT TREATMENT SYSTEM

Hideo Hisada; Naoji Hamasaka, both of Osaka; Hayao Takahashi, and Junji Mizoguchi, both of Ishikawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP93/01747, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/13841, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 1, 1993, Ser. No. 424,543
Claims priority, application Japan, Dec. 4, 1992, 4-325771
Int. Cl.[6] F27B *9/02*
U.S. Cl. 432—128 **11 Claims**



1. A multipurpose controlled atmosphere heat treatment system comprising:

(a) at least one automatic guided vehicle for delivering workpieces, capable of shutting out external air and which has a holding chamber capable of maintaining an inert-gas atmosphere;

(b) a plurality of treatment cells arranged along a predetermined path along which the automatic guided vehicle travels, in each of which a unit heat treatment process is carried out;

(c) shifting means for shifting the workpieces between each of the treatment cells and the automatic guided vehicle; and

(d) a control unit for controlling travel of the automatic guided vehicle and shifting of the workpieces by the shifting means.

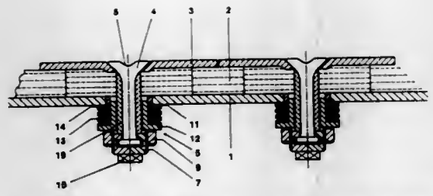
5,624,256
CERAMIC LINING FOR COMBUSTION CHAMBERS

Andreas Pfeiffer, Lauchringen, Germany, and Hugo Wetter, Buchs, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Jan. 17, 1996, Ser. No. 586,159
Claims priority, application Germany, Jan. 28, 1995, 195 02 730.2
Int. Cl.[6] F27D *1/14*
U.S. Cl. 432—252 **10 Claims**

1. A ceramic lining for a combustion space, the combustion space having a supporting wall, comprising:

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at least one wall panel of high temperature resistant structural ceramic, the wall panel having at least one through-opening;

one or more fastening elements corresponding in number to the at least one opening, each fastening element having a foot and a head and consisting of a high temperature resistant structural ceramic;

one or more holding devices corresponding in number to the at least one opening, each holding device being fastened on the supporting wall, each fastening element being arranged with its foot in a corresponding one of the holding devices such that each fastening element is resiliently linked to the corresponding holding device;

the head of each fastening element being disposed in a corresponding opening; and

an insulating layer arranged between the supporting wall and the ceramic wall panel.

5,624,257

ORAL APPLIANCE

Christopher J. Farrell, P.O. Box 7699, Gold Coast Mail Centre, Queensland 4217, Australia

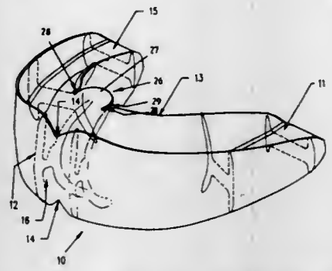
PCT No. PCT/AU92/00592, § 371 Date May 2, 1994, § 102(e) Date May 2, 1994, PCT Pub. No. WO93/08761, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 838,198, Mar. 6, 1992, Pat. No. 5,259,762. This PCT application Nov. 2, 1992, Ser. No. 232,012

Claims priority, application Australia, Oct. 31, 1991, PK9220

Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—6 **20 Claims**



1. An oral appliance adapted for repositioning the temporomandibular joint, said appliance including a base portion having a generally U-shaped plan form and including opposite integrally formed side arms adapted for location between the teeth of the upper and lower jaws of a user, said side arms having leading and trailing edges, and outer and inner flange portions integrally formed with said side arms and extending along the leading and trailing edges thereof so as to form upper and lower channels for accepting the teeth of the upper and lower jaws, each said side arm having a leading end and a trailing end and tapering in thickness along said channels on each side of said appliance from regions forwardly of but adjacent to the trailing ends of said arms towards the leading end thereof whereby the side arms may be adapted to substantially occupy space between said teeth of said upper and lower jaws so as to provide a support for the jaws of the user, and said inner flange portion on the upper side of said arms being provided with a slot or cutaway region arranged at or adjacent the midline of said appliance to permit said arms to move towards and away from each other and thus allow said appliance to adjust laterally to fit the jaws of the user.

5,624,258

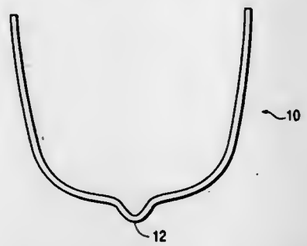
ORTHODONTIC ARCH WIRE AND APPLIANCE EMPLOYING THE SAME

Arthur L. Wool, 267 Faust Rd., Sinking Spring, Pa. 19608

Filed Jan. 12, 1995, Ser. No. 372,162

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—20 **14 Claims**



1. An orthodontic arch wire, comprising a continuous wire having a generally parabolic shape defining a principal plane, said wire having a bend extending substantially in said principal plane, said bend being located approximately midway along a length of said wire and having a length in a mesial-distal direction of 1–6 mm and an offset in a labial or palatal direction of 1–4 mm.

5,624,259

DENTAL HAND INSTRUMENT

Derek E. Heath, and Jerry A. Mooneyhan, both of Johnson City, Tenn., assignors to Tulsa Dental Products, L.L.C., Tulsa, Okla.

Filed May 8, 1995, Ser. No. 435,041

Int. Cl.[6] A61C *19/04*

U.S. Cl. 433—72 **6 Claims**



1. A dental hand instrument comprising:

an elongate rod-like rigid handle having a length of at least about two inches and sized for being readily engageable by the hand of a dentist, and

an elongate highly flexible blade connected to and extending outwardly from the handle and terminating in a sharp point at a distal end, with said blade being non-linear along its length, and with said blade comprising an alloy comprising at least about 40% titanium and at least about 50% nickel.

5,624,260

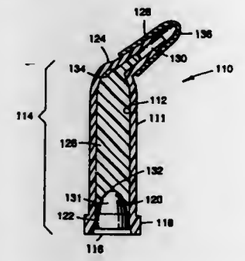
DELIVERY SYSTEM FOR AQUEOUS PASTE DENTAL MATERIALS

Malcolm W. Wilcox, Woodbury; Thomas W. Martin, Little Canada, and Joan V. Brennan, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1994, Ser. No. 202,390

Int. Cl.[6] A61C *5/04*

U.S. Cl. 433—90 **5 Claims**



1. A cartridge for delivery of aqueous paste dental materials, said cartridge comprising

a) a cartridge body made from an injection moldable material comprising a polymer selected from the group consisting of amorphous polyolefin polymers, said cartridge body having a Moisture Permeability less than or equal to about 0.16 g mil/m^2 day atm. and an Oxygen Permeability greater than or equal to about 3720 cm^3 mil/m^2 day atm., said cartridge body comprising at least one chamber adapted for holding an aqueous paste dental material and simultaneously dispensing same; and

b) a polymerizable aqueous paste dental material contained within said at least one chamber of said cartridge body;

wherein said cartridge is specially adapted to be mounted in a hand-held ejector-type gun.

5,624,261

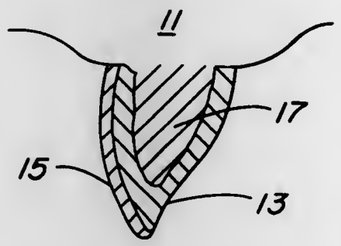
COMPOSITE RESIN VENEER

Kenneth R. Wiedenfeld, 13818 Seahorse Ave., Corpus Christi, Tex. 78418

Filed Aug. 9, 1995, Ser. No. 512,928

Int. Cl.[6] A61C *5/08;5/10*

U.S. Cl. 433—222.1 **4 Claims**



1. A kit for restorative dentistry, comprising:

a plurality of metal crowns for fitting over teeth:

a plurality of pre-formed composite resin veneers for affixing to crowned teeth in situ; and

a composite resin cement for affixing said pre-formed composite resin veneers to said metal crowns.

5,624,262

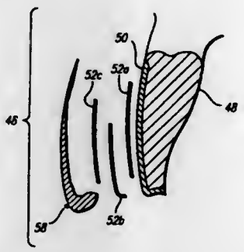
ANTERIOR TOOTH CHARACTERIZATION GUIDE AND PROCESS FOR SELECTING CHARACTERIZATIONS AND FABRICATING A CHARACTERIZED ANTERIOR TOOTH PROSTHESIS

Uriel Yarovesky, Woodland Hills, and Daniel Materdomini, Topanga Canyon, both of Calif., assignors to Dental Illusions, Woodland Hills, Calif.

Continuation-in-part of Ser. No. 367,742, Jan. 4, 1995, Pat. No. 5,529,492, which is a continuation-in-part of Ser. No. 297,251, Aug. 26, 1994, Pat. No. 5,482,459. This application Aug. 25, 1995, Ser. No. 519,514

Int. Cl.[6] A61C *5/10*

U.S. Cl. 433—223 **25 Claims**



1. A process for fabricating a characterized tooth prosthesis, comprising the steps of:

forming a base for the prosthesis having a selected color;

placing an applique including a tooth characterization and a substantially transparent backing material compatible with the base, on an exterior surface of the base; and

applying an enamel laminate over the applique.

5,624,263

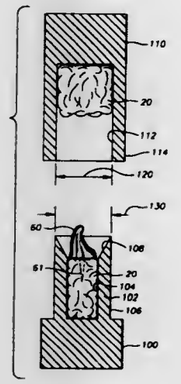
DENTAL FOIL COMPRESSION DEVICE

Armen A. Babaian, 9345 Belvoir Ave., La Crescenta, Calif. 91214

Filed Jan. 11, 1996, Ser. No. 583,779

Int. Cl.[6] A61C *5/10;5/08;13/00*

U.S. Cl. 433—223 **5 Claims**



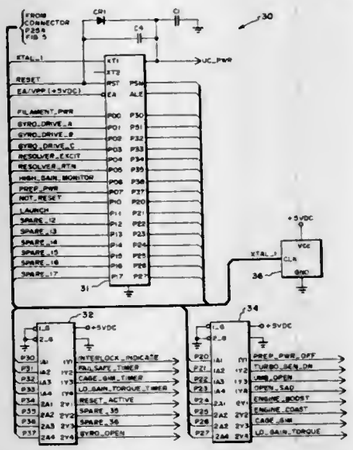
1. A method for compressing a foil onto the face of a dental model, the method comprising the steps of:

a) providing a first cylindrical walled fixture defining a first cavity with a conically shaped mouth;

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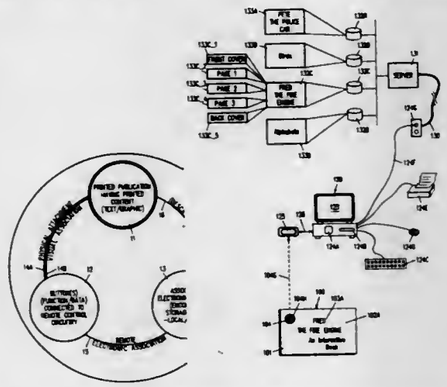
b) providing a second cylindrical walled fixture defining a second cavity, the volume of the cavities being approximately equal to the volume of the first cavity when the fixtures are mutually engaged;
c) filling the first cavity, except the conically shaped mouth, with a viscous incompressible material;
d) placing a foiled dental model on the viscous material in the first fixture, in a position wherein the dental model is approximately enclosed within the mouth of the first cavity;
e) filling the distal, approximate one-half, of the second cavity with the viscous material;
f) forcing the fixtures energetically into mutual engagement so that the force of engagement compacts the viscous material within the cavities generating a hydrostatic compressive force within the cavities compressing the foiled dental model;
g) separating the fixtures to obtain access to the dental model.

5,624,264
MISSILE LAUNCH SIMULATOR
Christian L. Houlberg, Ventura, Calif., assignor to The United States of America as Represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 29, 1995, Ser. No. 536,309
Int. Cl.[6] F41A *33/00*
U.S. Cl. 434—12 **20 Claims**



1. A missile launch simulator for simulating a launch of a missile from an aircraft on board launcher, said missile launch simulator comprising:
a plurality of signal conditioning circuits means for receiving power and control signals from said aircraft on board launcher, said signal conditioning circuits conditioning said power and control signals to provide digital signals indicative of the presence or absence of said power and control signals;
processing means coupled to said plurality of signal conditioning circuit means for receiving and processing said digital signals from said plurality of signal conditioning circuit means;
said processing means, responsive to the processing of said digital signals thereby, generating a plurality of relay energizing logic signals; and
a plurality of relay circuits coupled to said processing means, each of said relay circuits receiving one of said relay energizing logic signals and one of said power signals;
each of said relay circuits being energized by an active state of the one of said relay energizing logic signals received thereby;
each of said relay circuits being de-energized by an inactive state of the one of said relay energizing logic signals received thereby;
at least some of said relay circuits being energized during a simulated launch of said missile to allow said power signals to pass through said relay circuits being energized to said missile to provide power to said missile after said simulated launch, the remainder of said relay circuits being de-energized during said simulated launch of said missile.

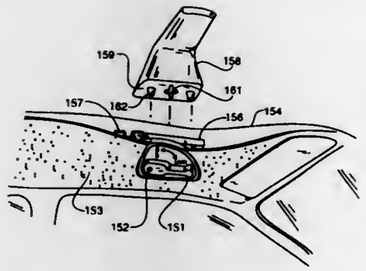
5,624,265
PRINTED PUBLICATION REMOTE CONTOL FOR ACCESSING INTERACTIVE MEDIA
Peter M. Redford, Los Gatos, and Donald S. Stern, San Jose, both of Calif., assignors to TV Interactive Data Corporation, San Jose, Calif.
Filed Jul. 1, 1994, Ser. No. 269,492
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—307 R **66 Claims**



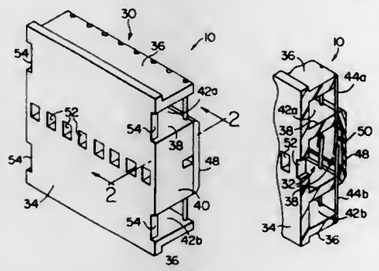
1. A remote control for remotely controlling a host device, said remote control comprising:
a printed publication comprising a page having printed content;
remote control circuitry physically attached to at least a portion of said printed publication, said remote control circuitry comprising a signal transmitter capable of transmitting a wireless signal, said wireless signal being capable of controlling said host device;
a button physically attached to said page of said printed publication, said button being customized by at least a portion of said printed content located directly on said button, wherein said button is coupled to said remote control circuitry; and
electronic content having a representative associated with said printed content, said electronic content being encoded on a storage media, wherein activating said button causes said host device to access said electronic content from said storage media.

5,624,266
MECHANICAL AND/OR ELECTRO-MECHANICAL INTERCONNECT SYSTEM FOR VEHICLE LOAD CARRYING COMPONENTS/ACCESSORIES
Andrew H. Gibbs, and Douglas P. Gibbs, both of Yuba City, Calif., assignors to Advanced Accessory Systems LLC, Port Huron, Mich.
Continuation of Ser. No. 165,733, Dec. 10, 1993, Pat. No. 5,431,570, which is a continuation of Ser. No. 863,200, Apr. 3, 1992, Pat. No. 5,306,156. This application May 18, 1995, Ser. No. 443,782
Int. Cl.[6] H01R *11/30*
U.S. Cl. 439—34 **29 Claims**

1. In a vehicle accessory latch, an accessory mounting structure permanently securable to a vehicle and having a connection component which includes one or more connectors for passing electrical energy to the exterior of said vehicle, each of such connectors being configured to mate with a corresponding connector associated with an accessory requiring electrical energy, and an actuator within the interior of said vehicle and communicating with said accessory mounting structure for manipulating the same between securing and non-securing positions from within said vehicle.

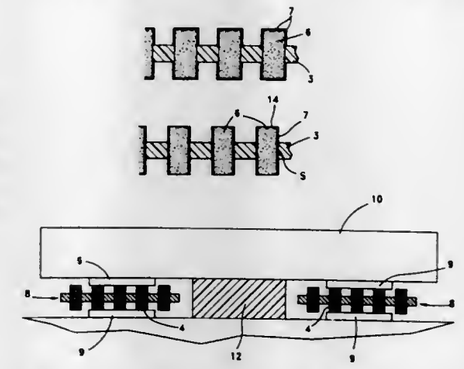


5,624,267
CROSS-CONNECT BUS
James J. Johnston, Newington, Conn., assignor to The Wiremold Company, West Hartford, Conn.
Filed Jan. 31, 1995, Ser. No. 381,713
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—54 **26 Claims**



1. A cross-connect bus for plugging connection to a cross-connect panel having parallel rows of projecting insulation displacement connectors, said cross-connect bus comprising first and second rectilinear axially extending resilient spring wire contact elements having outer end portions and inner end portions, and supporting means retaining said outer end portions of said first and second contact elements in coaxial alignment with each other for plugging engagement of said outer end portions with respectively associated insulation displacement contacts in two of the rows, said outer end portions supporting said inner end portions of said first and second contact elements in cantilever positions, said inner end portions having overlapping free ends biased into electrical contacting engagement with each other.

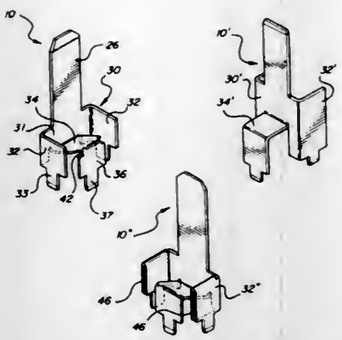
5,624,268
ELECTRICAL CONNECTORS USING ANISOTROPIC CONDUCTIVE FILMS
Ryu Maeda, Urawa; Akira Tateishi, Hachioji, and Shunsuke Tazai, Fuchu, all of Japan, assignors to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 336,138, Nov. 8, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 590,078
Claims priority, application Japan, Nov. 10, 1993, 5-304787
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—66 **4 Claims**



1. An electrical connector for electrically interconnecting conductive pads of electrical circuit members, said electrical connector comprising:
an insulating member having multiple throughholes;
conductive elastomer members filled with conductive particles, each conductive elastomer member having a portion disposed in one of said throughholes and protruding outwardly from upper and lower surfaces of said insulating member so that outer surfaces of said conductive elastomer members are located in planes parallel to said insulating member whereby a number of the conductive elastomer members engage aligned conductive pads of the electrical circuit members; and
a coating of precious metal covering substantially all surfaces of said conductive elastomer members except that the portion of each conductive elastomer member located within its associated throughholes is substantially uncoated.

5,624,269
ELECTRICAL CONTACT TERMINAL FOR PRINTED CIRCUIT BOARD
Hiroyasu Kanamori, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jun. 7, 1995, Ser. No. 487,286
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—83 **13 Claims**

1. A terminal mountable on a printed circuit board to facilitate electrical contact between a first circuit of the printed circuit board and a separate electrical component, comprising:
a blade portion adapted to engage the separate electrical component and make electrical contact therewith;
a base portion contiguous with the blade portion and adapted to rigidly engage the printed circuit board such that the blade portion and the base portion define a load-bearing path for transferring physical forces applied on the blade portion to the circuit board;
a circuit connection portion adapted to make electrical contact with the first circuit of the printed circuit board when the terminal is mounted thereon; and
a conductive spring member joining the base portion with the circuit connection portion, the spring member extending away from the load-bearing path and being spaced from the printed



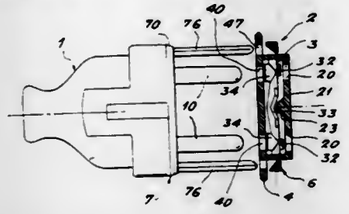
circuit board when the terminal is mounted on the printed circuit board, the spring member being sufficiently flexible to substantially isolate the circuit connection portion from the physical forces applied on the blade portion.

5,624,270

SAFETY AND/OR POLARIZING DEVICES OF ELECTRIC-POWER CONNECTORS

Michele Blanchot, Cravent, and Yves Palisson, Huisseau sur Mauves, both of France, assignors to Professional General Electronic Products P.G.E.P., Courbevoie, France

Continuation of Ser. No. 312,868, Sep. 27, 1994. This application May 6, 1996, Ser. No. 643,398
Claims priority, application France, Sep. 29, 1993, 93 11556
Int. Cl.[6] H01R *13/453*
U.S. Cl. 439—136 **12 Claims**



1. An electric-power connector consisting of a plug and a socket, said socket further comprising a mask moved by a return means back into a closed position in front of orifices of said socket in order to render said socket inoperative by blocking said orifices, the socket orifices becoming operative again when the said mask is driven by an actuating means on the plug, said mask being kept in its closed position by a lock, characterized in that said lock is constituted by elements distinct from the mask, the plug being fitted with an unlocking control-means which drives the lock of the mask, actuation of said mask being determined by the actuating means affixed to the plug, said unlocking control-means being separate from said actuating means.

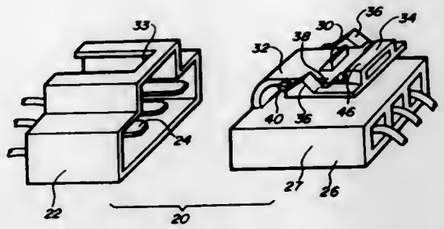
5,624,271

CONNECTOR LATCH INTERLOCK PLATE

Christopher J. Childs, Rochester Hills, and Brian M. Hood, Clinton Township, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Oct. 26, 1994, Ser. No. 329,293
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **14 Claims**

1. An electrical connection comprising:



a first electrical connector, comprising at least one electrical connection element, and a channel to receive a latch from a second electrical connector;

said second electrical connector having at least one electrical connection element for mating with said at least one electrical connection element of said first electrical connector, said second electrical connector also having a tongue including said latch to be selectively biased into said channel to secure said first and second electrical connectors; and

an interlock plate to selectively prevent movement of said latch out of said channel and maintain the connection between said first and second connectors, said plate being selectively moveable over said tongue between locked and unlocked positions, and said plate ensuring said latch is in said channel when moved to said locked position, said plate being secured to one of said first or said second electrical connectors in said unlocked position, and at least one stop secured to one of first and second electrical connectors preventing movement of said plate off of said one of said first or said second electrical connectors when said plate is in said unlocked position, said latch being moveable into said channel when said plate is in said unlocked position; and

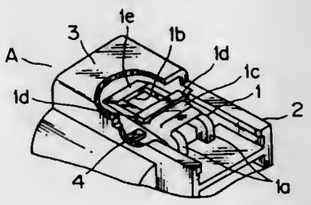
said plate including a guide channel which is slidable on a guide surface of said tongue, said plate including a top surface positioned outwardly of said guide surface.

5,624,272

CONNECTOR HAVING LOCKING MECHANISM

Hideki Ohsumi, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,795
Claims priority, application Japan, May 11, 1994, 6-097319
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—353 **3 Claims**



1. A connector comprising:

a first connector housing having a resilient locking arm containing an engagement portion at a free end thereof and side walls provided on said housing on both transverse sides of said locking arm to protect said locking arm;

a second connector housing having a locking protrusion for engagement with said engagement portion of said resilient locking arm; and

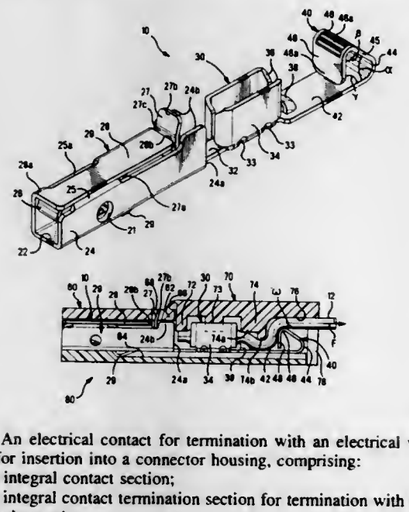
means for preventing an excessive shift of said locking arm when the resilient locking arm is unlocked from the locking protrusion, said means for preventing an excessive shift of said locking arm including an engagement member arranged on said locking arm with ends that project beyond the opposite transverse sides of the locking arm and receipt members extending from said side walls, each of said receipt members underlying said ends of said engagement member so as to hit thereon when said locking arm is pushed down.

5,624,273

INSULATION DISPLACEMENT CONTACT WITH STRAIN RELIEF

John M. Myer, Millersville, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 21, 1995, Ser. No. 426,308
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—399 **34 Claims**



1. An electrical contact for termination with an electrical wire and for insertion into a connector housing, comprising:

an integral contact section;

an integral contact termination section for termination with said wire; and

an integral strain relief section for engaging said wire and preventing the transmission of tensile forces acting on said wire to said contact section, said strain relief section comprises first and second bends formed in said electrical contact, and said second bend comprises a surface for engaging said wire.

5,624,274

TELEPHONE CONNECTOR WITH CONTACT PROTECTION BLOCK

Mike H. Lin, Cerritos, Calif., assignor to International Connectors and Cable Corporation, Cerritos, Calif.

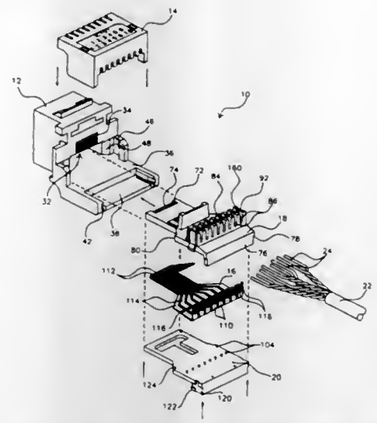
Filed Nov. 7, 1995, Ser. No. 551,839
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—417 **10 Claims**

1. A jack assembly for termination of a plurality of communication wires, the jack assembly comprising:

a housing having a front surface defining an opening for receiving a standard telephone plug;

a plurality of contact pins each having a first portion to conductively engage a corresponding terminal of the standard telephone plug and an insulation displacement portion to terminate a communication wire;

a contact pin carrier mounted to the housing and supporting the plurality of contact pins with their insulation displacement portions disposed rearwardly of the front surface of the housing and arranged upwardly in a single row transverse to the front surface opening;



the contact pin carrier further including a contact protection block formed around the insulation displacement portions of the plurality of contact pins the contact protection block having two outer side walls, one at each end of the single row of insulation displacement portions and an intermediate wall located between and extending above the insulation displacement portions of adjacent contact pins, the contact protection block defining a plurality of slots for receiving and guiding a plurality of communication wires, respectively, into conductive engagement with the insulation displacement portions of the contact pins;

a termination cap having communication wire engagement portions that secure the communication wires in conductive engagement with the insulation displacement portions of the contact pins when the termination cap is pushed down over the contact protection block to an assembled position, the termination cap further including two opposed end walls, each disposed in opposed alignment with and contiguous with a respective side wall of the contact protection block; and

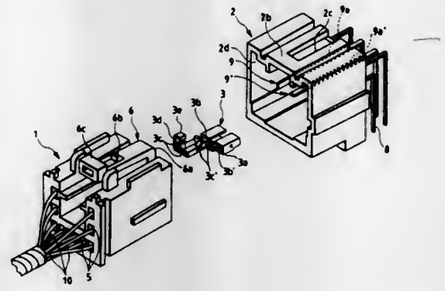
means for retaining the termination cap in the assembled position wherein the end walls of the termination cap form the exterior surface of the jack assembly at the outer side walls of the contact protection block.

5,624,275

CONNECTOR ASSEMBLY WITH A CONNECTION DETECTING DEVICE

Masaru Fukuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jan. 5, 1996, Ser. No. 583,806
Claims priority, application Japan, Jan. 9, 1995, 7-001081
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **6 Claims**



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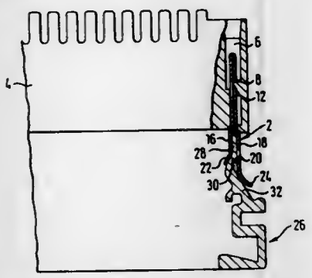
1. A connector assembly with a connection detecting device comprising:
a first connector housing having a flexible lock arm;
a second connector housing having an engaging frame in correspondence to the flexible lock arm;
a short-circuiting contactor set in said first connector housing, said short-circuiting contactor having two pairs of elastic pieces, the elastic pieces in each pair being confronted with each other; and
a pair of connection detecting terminals provided in said second connector housing,
wherein when said first and second connector housings are engaged with each other, said connection detecting terminals are held between one of said pairs of elastic pieces, respectively, and are electrically connected to said short-circuiting contactor.

5,624,276

SECURING AND CONTACTING ADAPTER FOR A CONNECTOR BLOCK

Hans-Dieter Otto, Wipperfürth; Norbert Gaertner; Helmut Schlafhorst, both of Wuppertal, and Frank Kaufhold, Schwerte, all of Germany, assignors to Quante Aktiengesellschaft, Germany

Filed May 23, 1995, Ser. No. 447,963
Claims priority, application Germany, Aug. 17, 1994, 9413265 U
Int. Cl.[6] H01R *9/26*
U.S. Cl. 439—532 **13 Claims**



1. A securing and contacting adapter for making a releasable connection with a connector block and with a receiving arm of a carrier profile rail in telecommunication apparatus, the receiving arm having an undercut formed therein for connection with said adapter, said adapter being made of an elastic, electrically conducting material and comprising:
a first contacting and securing section having an upper end and provided with a first securing element for making a releasable connection with the connector block, the first securing element being arranged at a predetermined distance from said upper end of the first contacting and securing section, and
a second contacting and securing section provided with a second securing element for making a releasable connection with the undercut of the receiving arm of the carrier profile rail.

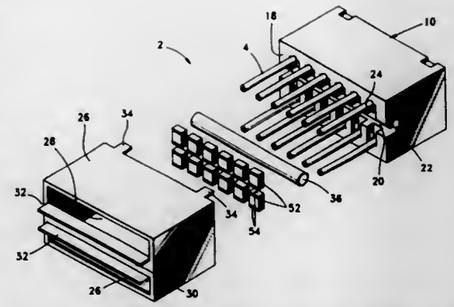
5,624,277

FILTERED AND SHIELDED ELECTRICAL CONNECTOR USING RESILIENT ELECTRICALLY CONDUCTIVE MEMBER

Bobby G. Ward, King, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 28, 1995, Ser. No. 520,221
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **8 Claims**

1. An electrical connector comprising:



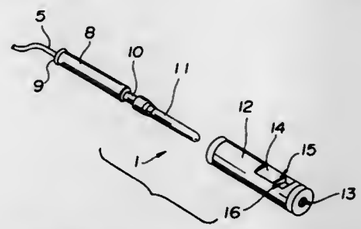
a housing, the housing comprises conductive members, and electrical component receiving areas;
a resilient conductive member disposed in a portion of said electrical component receiving areas, between said conductive members;
at least two electrical components disposed laterally of said resilient conductive member, on opposed sides of and in electrical engagement with said resilient member;
each electrical component is biased against a respective conductive member by spring-like forces which are generated by the resilient conductive member, as said resilient conductive member presses on said electrical components;
whereby said electrical components are each pushed into electrical contact with a respective conductive member.

5,624,278

ELECTRIC WIRE CONNECTOR COAXIAL CABLE CONNECTOR AND COAXIAL CONNECTOR APPARATUS

Hiroyuki Kuroda; Yasuo Komatsu, both of Hachioji, and Kenji Kimura, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 3, 1995, Ser. No. 434,405
Claims priority, application Japan, Jul. 15, 1994, 6-164207
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—675 **10 Claims**



1. A coaxial cable connector comprising:
an insulating member having a cylindrical main body portion with an annular cross-section, an outer peripheral wall and an inner peripheral wall, wherein said inner peripheral wall defines a tunnel through a central axis of said insulating member and said outer peripheral wall has a cutout therein, said cutout having a rectangular surface including a flat section and an open section, a periphery of said open section coinciding with an outer circumference of an aperture provided between said open section of said cutout and said tunnel in a direction transverse to said central axis of said tunnel, said aperture also having an inner circumference where said aperture and said tunnel intersect;
a lengthy inner conductor which is inserted in said tunnel so that an electrical contact section protrudes out of an end of said tunnel and which has a fitting structure that comes to rest in a position adjacent said inner circumference of said aperture;

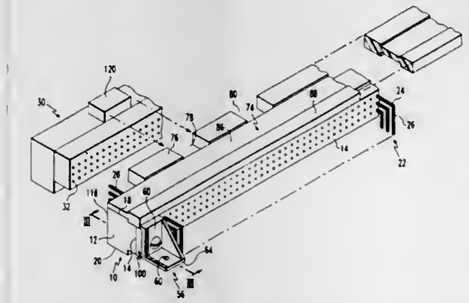
an outer conductor which is disposed around said insulating member and which has first and second outer windows through which said outer and inner circumference of said aperture are exposed: and
a position restricting member made of an insulating material, said position restricting member being inserted through said open section of said cutout and said outer circumference of said aperture to mate with said fitting structure of said inner conductor to restrict said electrical contact section from further sliding movement.

5,624,279

ELECTRICAL HEADER ASSEMBLY HAVING BRIDGED CODING BAR

Stephen L. Clark, Dillsburg, and William K. Nailor, III, Camp Hill, both of Pa., assignors to Berg Technology, Inc., Reno, Nev.

Filed Dec. 30, 1994, Ser. No. 367,797
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—680 **6 Claims**



1. An electrical connector header assembly comprising:
(a) an insulative housing having a mating side, a mounting side, a top side and a bottom side and having a first plurality of pins extending from the mounting side and a second plurality of pins extending from the mating side wherein said mounting and mating sides are in opposed relation;
(b) at least one attachment bracket having a first section and a second section wherein said first section is positioned in spaced adjacent relation to the mounting side of said insulative housing; and
(c) an insulative coding member having a coding bar thereon, and said insulative coding member being positioned on one of said top or bottom sides adjacent one of said mating or mounting sides of the insulative housing and having a depending footer engaging a rear portion of the insulative coding member and positioned between said attachment bracket and said insulative housing, wherein said footer is fixed to the first section of the attachment bracket and the mounting side of the housing such that the insulative coding member and its depending footer serves to structurally support the entire assembly as well as perform a coding function.

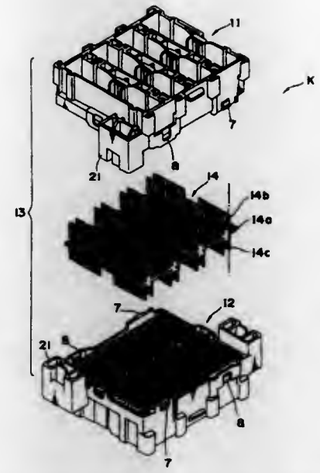
5,624,280

BRANCH JOINT BOX ACCOMMODATING BUS BARS AND BUS BAR BLANK

Shinshu Kato, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 20, 1994, Ser. No. 327,785
Claims priority, application Japan, Nov. 8, 1993, 5-278446
Int. Cl.[6] H01R *11/09*
U.S. Cl. 439—724 **2 Claims**

1. A bus bar blank comprising:



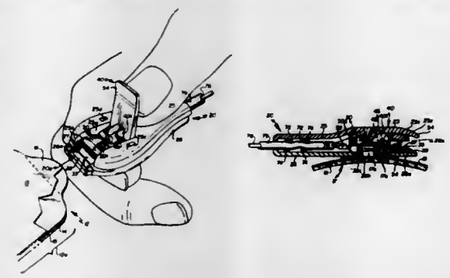
a plurality of bus bars which are arranged in a plurality of rows in a longitudinal direction of the bus bar blank, a plurality of pairs of first and second terminal portions in each bus bar extending longitudinally symmetrically in opposite directions from a laterally extending coupling portion, respectively, at a predetermined lateral interval;
first and second carrier portions which are, respectively, coupled with opposite lateral sides of the coupling portion of each of the bus bars;
wherein first and second terminal portions of the bus bars of even rows project into regions into which first and second terminal portions of the bus bars of odd rows do not project;
wherein the first and second terminal portions of the bus bars of odd rows are aligned with each other and the first and second terminal portions of the bus bars of even rows are aligned with each other such that the bus bar blank can be subjected to sequential feed during continuous process working.

5,624,281

CLASP STRUCTURE FOR BIOMEDICAL ELECTRODES

Eddy K. G. Christensson, 4016 Inglewood Ave. S., Edina, Minn. 55416

Filed Dec. 14, 1994, Ser. No. 355,954
Int. Cl.[6] H01R *4/48;13/15*
U.S. Cl. 439—729 **22 Claims**



1. A clasp structure capable of being releasably secured to a planar tab-type contact of a biomedical monitoring or stimulating electrode for carrying current to or from a body of a patient comprising,
a) a clasp body having an upper body portion and a lower body portion,

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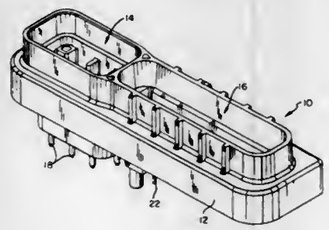
b) a pair of opposed jaw members at a front end of the clasp body with a jaw opening therebetween,
c) at least one jaw member having an electrical contact at a free end thereof and the jaw members being aligned in opposed relationship confronting each other at the front end of the clasp,
d) a resilient spring means operatively supported between the upper and lower body potions and associated with the jaw members for biasing the jaw members toward an open position wherein the jaw members are spaced apart from one another,
e) a lever means movably mounted as a part of the clasp and operatively associated with the jaw members, said lever having an exposed portion to which pressure can be applied with a finger or a thumb toward said front end of the clasp for closing the clasp,
f) said lever is movably supported on the clasp body and has a jaw-actuating protrusion that extends toward the jaws,
g) said jaw-actuating protrusion closes the jaws when the lever is moved toward the front end of the clasp body where the jaw members are located so that a closing direction of the lever coincides with a direction of movement of the clasp as the clasp is being attached to the electrode to facilitate one-handed operation, and
h) means for electrically connecting at least one of the jaw members to an electrical lead wire.

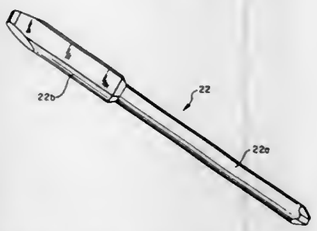
5,624,282

ELECTRICAL CONNECTOR AND METHOD OF MAKING THE SAME

Arthur Eggers, Moore, S.C., and Kevin Henderson, Gastonia, N.C., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Sep. 30, 1994, Ser. No. 316,184
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—733.1 **8 Claims**





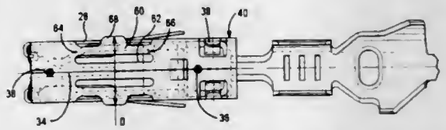
1. An electrical connector comprising a housing of electrically insulative material defining an interior compartment and passages extending from said interior compartment to an exterior surface of said housing, and electrical contact members resident in said housing passages, at least one of said passages being circular in configuration, the contact member resident in said at least one circular passage having a portion being circular in configuration and in press-fit sealed relation with said at least one circular passage in said housing, said contact member resident in said at least one passage having a further portion resident in said interior compartment having a blade-shaped configuration.

5,624,283

ELECTRICAL TERMINAL BACK-UP SPRING WITH ANTI-CHATTERING SUPPORT MEMBERS

Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 27, 1995, Ser. No. 411,005
Claims priority, application United Kingdom, Apr. 7, 1994, 9406934
Int. Cl.[6] H01R *13/434*
U.S. Cl. 439—751 **8 Claims**



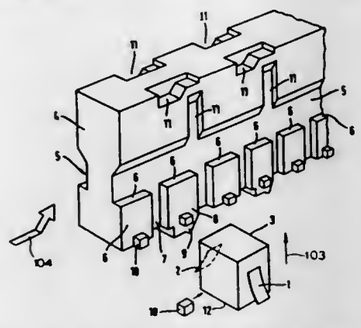
1. An electrical terminal mountable in a cavity of a connector housing, the terminal comprising a connection section for electrical connection to a conductor, extending into a contact section for electrical connection to a complementary terminal, and a longitudinal box-shaped section positioned close to walls of the housing cavity when mounted therein, the box-shaped section comprising opposing top and bottom walls and opposing side walls extending between longitudinal lateral edges of the top and bottom walls, characterized in that the top and bottom walls comprise longitudinal spring beams joined at their ends to the walls, the beams comprising substantially centrally positioned protrusions extending beyond the side walls such that they resiliently interfere with the housing cavity walls for resilient support of the terminal therein to prevent chattering.

5,624,284

ELECTRICAL PLUG-TYPE CONNECTOR HAVING AN INTERLOCK MECHANISM

Michael Glb, Landau, Germany, and Joris Dobbelaere, Beernem, Belgium, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 8, 1995, Ser. No. 400,825
Claims priority, application Germany, Mar. 9, 1994, 44 07 950.8
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—752 **13 Claims**



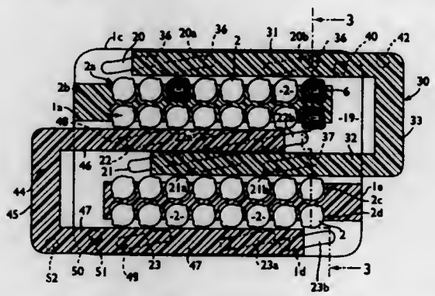
1. In an electrical plug-type connector having a housing with at least one contact chamber for a pluggable contact element, said contact element having at least a first catch tongue and a second catch tongue that project outwardly arrow-like in the plug-in direction from opposite sides of the contact element, said connector having an interlock mechanism for the contact element for defining a primary latched position and allows the contact element to be introduced unimpeded into the contact chamber, the improvements comprising a first contact chamber wall having a primary catch edge that interacts with the first catch tongue to form a primary securing means, a second contact chamber wall lying opposite the first contact chamber wall at a constant distance therefrom being provided on a slide movable at least transversely relative to the plug-in direction and parallel to the first contact chamber wall between an initial position and a final position, said slide having a segmented catch edge formed by gaps extending in the plug-in direction to form a path for the second catch tongue of the contact element to pass through, said segmented catch edge having a portion forming a second catch edge that interacts with the second catch tongue to form a secondary securing means, means for moving a portion of the second catch edge from a position offset from a plane of the primary catch edge into the plane of the primary catch edge as the slide moves from the initial position to the final position so that a latched position of both catch tongues as a result of engagement behind the respective catch edges occurs upon transfer of the interlock mechanism from an unlatched position to a final latched position by moving the slide from an initial position to a final position.

5,624,285

ELECTRICAL CONNECTOR HOUSING ELEMENT

Gérard Pethieu, Craches; Jean Ittah, Villeneuve la Garenne, and Olivier Plessis, Chaville, all of France, assignors to Connecteurs Cinch, Societe Anonyme, Montigny le Bretonneux, France

Filed Aug. 11, 1995, Ser. No. 514,222
Claims priority, application France, Sep. 15, 1994, 94 11034
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **20 Claims**



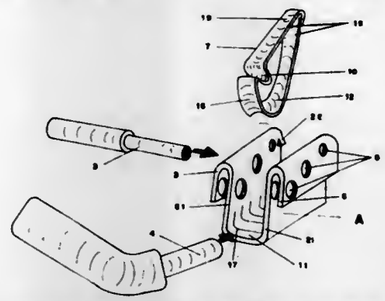
1. Electrical connector housing element comprising:
an insulative material body having two series of passages, each of said two series of passages comprising two rows of passages including a first row and a second row, said passages comprising longitudinal axes which are positioned substantially parallel to each other, and each of said passages being adapted to receive an electrical contact member, each electrical contact member having a length and comprising a shoulder positioned partway along said length;
a groove in said body, said groove being perpendicular to said axes of said passages;
two U-shape keys including a first U-shape mobile key and a second U-shape mobile key, each of said two keys including two branches, said two keys being positioned and movable in said groove between a first prelocking position enabling insertion of electrical contact members into said passages, and a second locking position wherein said two keys cooperate with the shoulders of the electrical contact members to lock the electrical contact members in said passages, said two keys being positioned in a head-to-tail arrangement with each key being mounted so that one of the two branches of one of said two keys extends between the two branches of the other of said two keys, said first key being movable in two perpendicular directions with respect to said axes of said passages, said second key being movable in two perpendicular directions with respect to said axes of said passages, and said two perpendicular directions of movement of said second key are opposite to said two perpendicular directions of movement of said first key, said two branches of said first key, in said locking position, immobilizing the electrical contact members of the first rows of said two series of passages, and said two branches of said second key, in said locking position, immobilizing the electrical contact members of the second rows of said two series of passages.

5,624,286

TRANSVERSAL CONNECTOR FOR ELECTRIC WIRE AND CABLE APPLICATIONS

Antonio M. Marco, Sao Paulo, Brazil, assignor to The Whitaker Corporation, Wilmington, Del.

PCT No. PCT/BR94/00038, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO95/14313, PCT Pub. Date May 26, 1995
PCT Filed Nov. 16, 1994, Ser. No. 491,836
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—786 **18 Claims**



1. Transversal connector for Wire and Cable Applications, comprising: a body consisting of electrically conductive material which has a generally "U" shaped form, with at least two lateral wings folded downward, the wings being provided with a plurality of holes coplanar with identical holes provided in the body, adjacent to the wings; the body having a lower part provided with a plurality of grooves in the inner part of the body adjacent to the holes, a projecting slit is also provided, the connector having a latch consisting of the same material of the body, the latch having a central slot, at least two actuating arms and a convex part in the lower part adjacent to the central slot and an eccentric part adjacent to the convex part, the latch being totally provided with a plurality of grooves.

5,624,287

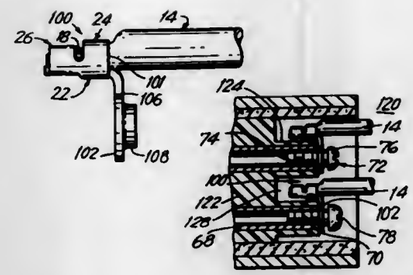
REVERSE WIRE TERMINATION DEVICE

Walter Newman, Bayside, and Paul Endres, Glen Oaks, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 184,424, Jan. 19, 1994, Pat. No. 5,533,916. This application Dec. 15, 1995, Ser. No. 573,470
Int. Cl.[6] H01R *4/30*
U.S. Cl. 439—801 **5 Claims**

1. A conductor termination device for attachment to the free end of an elongate insulated conductor having a central conducting means surrounded by insulation comprising:
crimp barrel means having a first end and a second end and extending along a longitudinal axis;
said crimp barrel means having a conductor gripping portion adjacent said first end of crimp barrel means to be positioned adjacent the free end of an elongate insulated conductor and adapted to be crimped to said free end of said conductor and make electrical contact with said central conducting means of said elongate insulated conductor adjacent said free end of said conductor;

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said conductor gripping portion having an outside surface and an inside surface, said inside surface of said conductor gripping portion having a plurality of insulation piercing teeth thereon to pierce the insulation of the elongate insulated conductor and make electrical contact with the central conducting means when said conductor gripping portion is crimped to said elongate insulated conductor;

said crimp barrel means having an insulation gripping portion adjacent said second end of said crimp barrel means adapted to be crimped to said insulation of said elongate insulated conductor and provide _ain relief for said elongate insulated conductor; and

lug means formed integrally with said crimp barrel means and extending away from said crimp barrel means second end to a free end, said lug means extending from said second end of said crimp barrel means to said free end in a plane perpendicular to said longitudinal axis of said crimp barrel means;

said lug means having an aperture therein to receive a terminal screw therethrough to attach said termination device to a support structure.

5,624,288

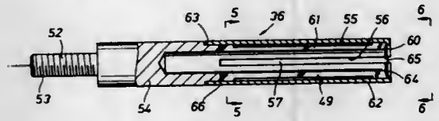
FIELD-REPLACEABLE SOCKET FOR SEISMIC CONNECTOR

Timothy D. Becker, Cypress, Tex., assignor to Houston Geophysical Products, Inc., Houston, Tex.

Filed Jan. 3, 1995, Ser. No. 368,300

Int. Cl.[6] H01R *13/187*

U.S. Cl. 439—843 **4 Claims**



1. An electrical connector for use in seismic exploration or the like, comprising:

a body;

a tubular member on said body defining an axial bore having an open outer end and closed inner end; contact means mounted in said bore and including an elongated generally tubular receptacle, said receptacle having an inner portion, and an outer portion having angularly spaced slots extending inwardly from the outer end thereof to divide said outer portion into a plurality of longitudinally extending resilient fingers; and

a sleeve member mounted around said fingers to provide lateral support therefor, said sleeve member being fixed to said inner portion of said receptacle, a threaded counterbore at said inner end of said tubular member, a threaded shank on said inner portion of said receptacle and engageable with said threaded counterbore to releasably secure said contact means in said bore of said tubular member, said sleeve member having an outer end portion that extends outward of the adjacent outer ends of said fingers, and further including diametrically opposed axial slots in the outer end portion of said sleeve member for operating said threaded shank and counterbore.

5,624,289

HIGH CURRENT RECEPTACLE TERMINAL

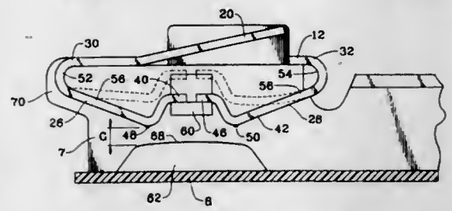
Friedrich J. A. Kourimsky, Bensheim, and Johann Kilzer, Egelsbach, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 1, 1995, Ser. No. 432,300

Claims priority, application United Kingdom, Jun. 6, 1994, 9411287

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—852 **10 Claims**



1. A receptacle terminal comprising a box-shaped contact portion for receiving a tab terminal therein, the contact portion extending longitudinally between a mating end and a connection end, and comprising a base wall, side walls and a top wall enclosing a tab receiving cavity, characterized in that the contact portion comprises a first mating end cantilever beam contact arm extending from the mating end to a free end, and a second connection end cantilever beam contact arm extending from the connection end to free end, the arms reversely bent into the tab receiving cavity and held in a prestressed position above one or more contact protrusions projecting from the base wall.

5,624,290

SEAL ARRANGEMENT FOR PROPELLER SHAFTS OF SHIPS

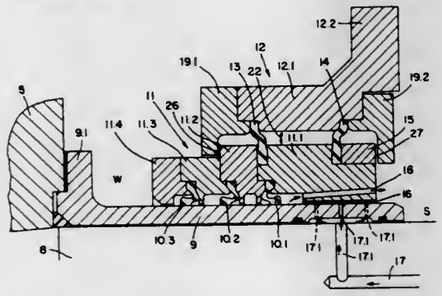
Ernst-Peter Von Bergen, Ahlefeld, and Günter Pietsch, Hamburg, both of Germany, assignors to Blohm + Voss Holding AG, Hamburg, Germany

Division of Ser. No. 313,755, Sep. 28, 1994, Pat. No. 5,492,492, which is a division of Ser. No. 88,872, Jul. 8, 1993, Pat. No. 5,356,320. This application Nov. 17, 1995, Ser. No. 560,006

Claims priority, application Germany, Jul. 9, 1992, 42 22 564

Int. Cl.[6] B63H *5/10*

U.S. Cl. 440—80 **6 Claims**



1. A seal arrangement for providing seals about a propeller shaft arrangement of a ship, the shaft arrangement including inner and outer propeller shafts disposed concentrically to one another and passing through the hull, said seal arrangement comprising:

first seal means for sealing between the outer propeller shaft and the hull, said first seal means being disposed to provide a fluid-tight seal between the outer propeller shaft and the hull; and

second seal means for being disposed between the inner and outer propeller shafts, said second seal means being disposed to provide a fluid tight seal between the inner and outer propeller shafts, said second seal means comprising:

a housing for being disposed about the inner shaft, said housing having an inner portion disposed towards the inner shaft, and an outer portion disposed away from the inner shaft;

support means for maintaining a position of said housing about the inner shaft, said support means for being mounted to the outer propeller shaft, said support means being disposed about said housing and spaced radially from said outer portion of said housing to define at least a first clearance between said support means and said housing;

at least two sealing elements for being disposed between the inner shaft and said housing, said at least two sealing elements being first and second sealing elements, each of said first and second sealing elements having a portion for being disposed in sealing engagement with the inner shaft;

two flexible members disposed between said housing and said support means to seal said at least a first clearance between said housing and said support means, each of said two flexible members being configured for allowing radial movements between the inner shaft and the outer shaft;

said two flexible members being a first flexible member and a second flexible member;

each of said first and second flexible members sealing between said housing and said support means comprising an element separate and distinct from said first and second sealing elements sealing between said housing and the inner shaft;

each of said first and second flexible members extending between said support means and said housing;

each of said first and second sealing elements extending between said housing and the inner shaft;

each of said first and second flexible members being disposed at a substantial distance from said first and second sealing element;

said housing comprising a tubular member for being disposed about the inner propeller shaft, said housing having an exterior surface disposed towards said support means, an interior surface for being disposed towards the inner shaft, a first axial end for being disposed towards the hull of the ship, and a second axial end disposed opposite said first end;

each of said first and second flexible members comprising an outer peripheral edge connected to said support means, and an inner edge connected to said housing;

each of said first and second sealing elements comprising an outer peripheral edge connected to said housing and an inner edge for being disposed about the inner shaft, said inner edge of each of said first and second sealing elements comprising said sealing portion;

said housing comprising means for separately clamping each of: said outer peripheral edges of said first and second sealing elements, and said inner edges of said first and second flexible members, to said housing;

said means for separately clamping comprising:

a first annular recess and a second annular recess both being disposed about said exterior surface of said housing;

said first annular recess being disposed for receiving said inner edge of said first flexible member therewithin;

said second annular recess being disposed for receiving said inner edge of said second flexible member therewithin;

a third annular recess being disposed about said interior surface of said housing for receiving said outer peripheral edge of said first sealing element therewithin; and

first ring means being disposed adjacent each of said first, second, and third annular recesses to clamp said inner edge of each of said first and second flexible members to said housing and clamp said outer edges of said first and second sealing elements to said housing;

said support means comprising a tubular member disposed concentrically about said housing, said support means having an interior surface disposed towards said housing;

said support means comprising a first annular recess and a second annular recess both being disposed about said interior surface thereof;

said first annular recess of said support means being disposed for receiving said outer peripheral edge of said first flexible member therein;

said second annular recess of said support means being disposed for receiving said outer peripheral edge of said second flexible member therein;

said support means comprising second ring means disposed about said support means and adjacent said first annular recess and said second annular recess of said support means to clamp said outer peripheral edge of each of said first and second flexible members to said support means;

said first flexible member being disposed adjacent said first axial end of said housing, and said second flexible member being disposed adjacent said second axial end of said housing;

each of said first and second flexible members comprising a flexible ring-shaped member having an inner edge disposed towards said housing and an outer peripheral disposed towards said support means;

each said inner edge of said first and second flexible members being fixedly attached by said first ring means to said housing in a corresponding one of said first and second annular recesses of said housing, and each said outer peripheral edge of said first and second flexible members being fixedly attached by said second ring means to said support means in a corresponding one of said first and second annular recesses of said support means;

said first sealing element being disposed adjacent said second axial end of said housing;

said first ring means comprising a first ring being disposed axially adjacent said second axial end of said housing for axially clamping both said second flexible member and said first sealing element to said second axial end of said housing;

said first ring having a first side disposed towards said support means and a second side disposed axially opposite said first side;

said second side comprising an annular recess for receiving said second sealing element therein; and

said first ring means additionally comprising a second ring being disposed axially adjacent said first ring for axially clamping said second sealing element in said annular recess of said second side of said first ring.

5,624,291

WAKE BOARD BINDINGS

Darryl W. McClaskey, 12552 Hinton Way, Santa Ana, Calif. 92666

Filed Dec. 14, 1995, Ser. No. 579,026

Int. Cl.[6] B63B *35/85*

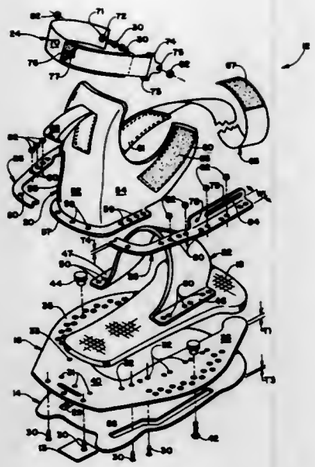
U.S. Cl. 441—70 **12 Claims**

1. A wake board binding comprising:

a bottom support plate having a front end, a rear end, a left edge, a right edge, a top surface, a bottom surface, a predetermined thickness T1; a first row of apertures extending from front to rear along said left edge, a second row of apertures extending from front to rear along said right edge;

a heel receptacle having a front end, a rear end, a top edge, a bottom edge, a rear wall, a left side wall, a right side wall, and an outwardly extending flange adjacent its bottom edge; said flange having a plurality of apertures for securing said heel receptacle to the top surface of said bottom support plate;

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a transversely extending elongated top-of-the-foot retainer strap having a left end, a right end, and an outwardly extending flange adjacent said left end and said right end; said flanges each having a plurality of apertures for securing said top-of-the-foot retaining strap to the top surface of said bottom support plate; and

plate stiffener means for clamping the respective left and right end flanges of said top-of-the-foot retainer strap to the top surface of said bottom support plate; said plate stiffener means also clamping the left and right flanges of said heel receptacle to the top surface of said bottom support plate; said plate stiffener means comprising an elongated left side plate stiffener member and an elongated right side plate stiffener member; said plate stiffener members each having a front end, a rear end, an inner edge, an outer edge, and a width W1; a plurality of apertures are formed along the length of said plate stiffener members and they align with said apertures in the respective flanges of said heel receptacle and said top-of-the-foot retainer strap; said plate stiffener members each have an upstanding flange along their inner edges adjacent their front end; said upstanding flanges each have an elongated slot for receiving a fastening strap.

5,624,292

LADDER BRIDGE MAT

John H. Wiseman, Jr., 2625 Mas-Que Farm Rd., Annapolis, Md. 21403

Filed Mar. 5, 1996, Ser. No. 610,931

Int. Cl.[6] B63C *9/32*

U.S. Cl. 441—80 **5 Claims**

1. A life saving device for use on ice or in the water comprising:

a platform having a length and a width and having at least one aperture,

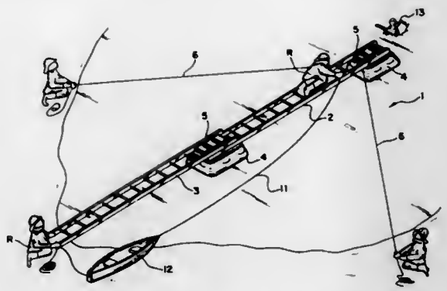
at least one inflatable flotation device adapted to be affixed to said platform, and

wherein said platform is a ladder and said at least one aperture is a space between adjacent rungs on said ladder,

said flotation device comprising two parts,

one of said parts comprising a flexible enclosure means for holding a gas and,

a second part integrally attached to said first part,



said second part being rigid and having a length and a width which is larger than said at least one aperture in said platform,

whereby said second part can be tilted into said aperture before said first part is inflated, and when said first part is inflated said flotation device will be securely attached to said platform.

5,624,293

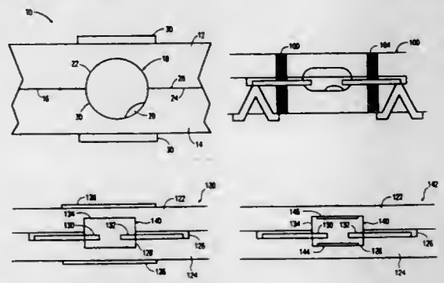
GAS DISCHARGE LAMPS AND LASERS FABRICATED BY MICROMACHINING METHODOLOGY

Babar A. Khan, Ossining; David A. Cammack, Scarborough; Ronald D. Pinker, Peekskill, and Nikhil R. Taskar, Ossining, all of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Division of Ser. No. 484,256, Oct. 27, 1994, which is a continuation of Ser. No. 922,707, Jul. 28, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,903

Int. Cl.[6] H01J *9/26;* **H01S** *3/032*

U.S. Cl. 445—25 **21 Claims**



1. A method for fabricating a gas discharge lamp comprising the steps of:

a) providing a first and second substrate of transparent material capable of withstanding heat and pressure;

b) etching a lamp cavity in at least one of said substrates;

c) charging the lamp cavity with gas discharge material that luminesces when activated; and

d) wafer bonding said first and second substrates together so as to seal said lamp cavity.

5,624,294

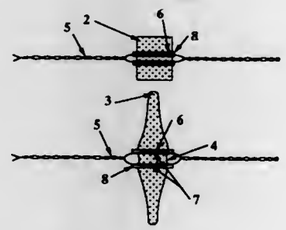
HUMDINGER, GEL SPINNER

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 114,688, Aug. 30, 1993, and a continuation-in-part of Ser. No. 935,540, Aug. 24, 1992, and a continuation-in-part of Ser. No. 876,118, Apr. 29, 1992, and a continuation-in-part of Ser. No. 705,096, May 23, 1991, and a continuation-in-part of Ser. No. 957,290, Oct. 6, 1992, and a continuation-in-part of Ser. No. 705,711, May 23, 1991, Pat. No. 5,262,468, which is a continuation-in-part of Ser. No. 211,426, Jun. 24, 1988, Pat. No. 5,153,254, which is a continuation-in-part of Ser. No. 921,752, Oct. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 572,172, Jan. 18, 1984, Pat. No. 4,618,213, which is a continuation-in-part of Ser. No. 458,703, Jan. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 134,977, Mar. 28, 1980, Pat. No. 4,369,284, which is a continuation-in-part of Ser. No. 916,731, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, abandoned. This application Nov. 15, 1993, Ser. No. 152,734

Int. Cl.[6] A63H *1/32*

U.S. Cl. 446—253 **12 Claims**



1. A rotating string toy, which comprises a variable torque humdinger including:

(a) a highly elastic gel body having

(b) a selected shape,

(c) a selected volume, and

(d) a selected surface; said gel body being capable of elongated deformation by the action of centrifugal force of rotation on said shape, said volume and said surface of said gel body and

(e) an equal opposite action of

(f) an elastic force equal to the centrifugal force by said gel body; said gel body suspended on

(g) a selective length of string having

(h) two ends; said string threaded into said gel body at

(i) two adjacent entry points on said surface at about

(j) a selected, x, distance apart forming string lines substantially parallel to and approximately equal distance along

(k) a selected axis of rotation through said volume, and out of said gel body at

(l) two adjacent exit points at approximately said x distance apart on said surface substantially opposite the surface of said entry points; said string forming

(m) a string loop through said gel body and with said ends tied together to provide for alternatively twisting and untwisting of said string loop and the application of

(n) a variable torque by said string loop to said entry and said exit points and through said volume of said gel body about said selected axis of rotation and maintaining rotation of said gel body by the continue twisting and untwisting of said string loop; said torque being varied by a change in the separation of the distance of said string lines within said volume of said gel body cause by the centrifugal force of rotation;

(o) said gel body having a gel rigidity of at least 80 gram Bloom; and

(p) said gel body capable of withstanding an elongation of at least 50% during spinning.

5,624,295

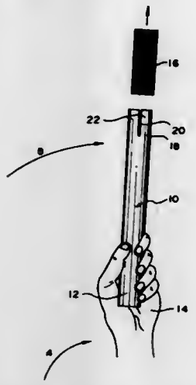
CONFETTI LAUNCHING DEVICE

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Continuation-in-part of Ser. No. 368,500, Jan. 4, 1995, Pat. No. 5,556,319, which is a continuation-in-part of Ser. No. 80,534, Jun. 24, 1993, Pat. No. 5,403,225, which is a continuation-in-part of Ser. No. 51,355, Apr. 23, 1993, Pat. No. 5,352,148. This application Nov. 14, 1995, Ser. No. 557,293

Int. Cl.[6] A63H *37/00*

U.S. Cl. 446—475 **12 Claims**



1. A wand means for launching confetti upwardly into the air comprising:

(a) an elongated hollow tube of constant diameter having a longitudinal axis;

(b) said hollow tube having a handle portion and a barrel portion;

(c) a plurality of slits in said barrel portion of said hollow tube, said slits extending parallel to said longitudinal axis of said tube and forming flexible finger portions extending axially along said barrel portion and,

(d) a stack of confetti of a size and shape such as to be insertable between said flexible finger portions.

5,624,296

ITEM OF CLOTHING WITH HANDLING DEVICE FOR SEPARATING ELEMENTS

Georg Weber-Unger, Kufstein, Austria, assignor to Anita International Dr. Helbig GmbH. & Co. KG, Brannenburg, Germany

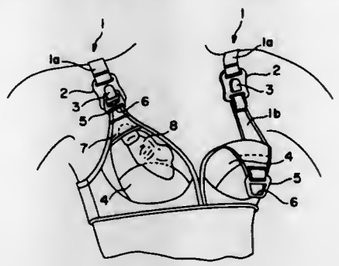
Filed May 1, 1995, Ser. No. 432,286

Claims priority, application Germany, May 6, 1994, 44 16 799.7

Int. Cl.[6] A41B *3/04;* **A41D** *27/00*

U.S. Cl. 450—36 **14 Claims**

1. A nursing bra having at least one arrangement for connecting



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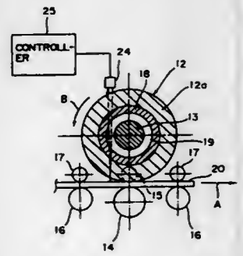
and separating first and second coupling elements, each of said first and said second coupling elements being fixedly connected to different parts of said nursing bra, and a handling aid adapted to be actuated by a thumb or finger positioned proximate to one of said first and second coupling elements for selectively connecting and separating said first and second coupling elements, said handling aid comprising a pocket (7) which is fixed on said nursing bra and comprises a stationary abutment for the end of said thumb or finger provided to actuate said handling aid.

5,624,297

BUFFING APPARATUS SUITABLE TO BUFF THIN PLATE WORK AND CONTROLLING METHOD FOR THE APPARATUS

Eishirou Kawana, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 117,928, Sep. 8, 1993, Pat. No. 5,501,629.
This application Dec. 29, 1995, Ser. No. 580,923
Claims priority, application Japan, Sep. 10, 1992, 4-241658; Oct. 16, 1992, 4-278661
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 **5 Claims**



1. A method of controlling a buffing apparatus which includes at least one buffing roll and a backup roll disposed in parallel to said buffing roll, said method comprising the steps of:
detecting, by means of a sensor provided on the upstream side in a work feeding direction in the proximity of said buffing roll, a plate work to be buffed;
holding, when no plate work to be buffed is detected by said sensor, said buffing roll at a standby position spaced by a predetermined distance from said backup roll;
driving, when a plate work to be buffed is detected by said sensor, said buffing roll to rotate and moving said buffing roll to a buffing position at which said buffing roll contacts with the plate work; and
stopping the rotation of said buffing roll substantially at the same time when said sensor detects a trailing end of the plate work.

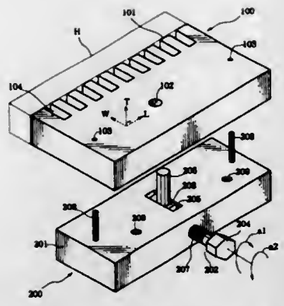
5,624,298

JIG FOR HEADPIECE AGGREGATE MACHINING AND METHOD FOR MANUFACTURING A THIN FILM MAGNETIC HEAD

Kenji Yumoto, Miyota-machi, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 417,769
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **7 Claims**

1. A jig for head piece aggregate machining, comprising:
a first jig member having a mounting surface to which a head piece aggregate may be mounted;
a second jig member having a mating surface with which a mating surface said first jig member mates so that said second jig member can move on said first jig member in a direction parallel to said mating surfaces;



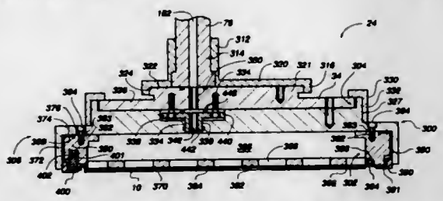
means for positioning said first jig member on said second jig member such that said first jig member can distort in a plane extending parallel to said mating surfaces and substantially perpendicular to the length of said mounting surface while said mating surfaces remain mated; and
means in said second jig member for distorting said first jig member in the plane extending parallel to said mating surfaces and substantially perpendicular to the length of said mounting surface.

5,624,299

CHEMICAL MECHANICAL POLISHING APPARATUS WITH IMPROVED CARRIER AND METHOD OF USE

Norman Shendon, San Carlos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 205,276, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 173,846, Dec. 27, 1993.
This application May 1, 1995, Ser. No. 431,951
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **26 Claims**



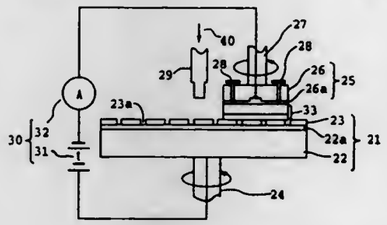
6. A method of polishing a substrate on a polishing surface, comprising the steps of:
providing a carrier selectively positionable over the polishing surface;
providing a recess, having an opening facing the polishing surface when the carrier is positioned over the polishing surface, in the carrier;
extending a plate having at least one aperture therein over the opening;
extending a flexible member over the plate and intermediate of the plate and the polishing surface so as to create a sealed cavity within the perimeter of the flexible member and the recess;
positioning a substrate against the flexible member;
providing a vacuum in the sealed cavity to create at least one vacuum region between the substrate and the flexible member;
providing a retainer ring on the exposed surface of the flexible member;
positioning the substrate within a region defined by the inner perimeter of the retainer ring; and
providing an expansion seam radially outwardly of the retainer ring to enable relative motion of the retainer ring without distorting the flexible member within the inner perimeter of the retainer ring.

5,624,300

APPARATUS AND METHOD FOR UNIFORMLY POLISHING A WAFER

Sadahiro Kishii, and Yoshihiro Arimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 131,949, Oct. 8, 1993, Pat. No. 5,562,529.
This application Jul. 10, 1996, Ser. No. 676,663
Claims priority, application Japan, Oct. 8, 1992, 4-270438; Oct. 8, 1992, 4-270440
Int. Cl.[6] B24B *1/00;7/16*
U.S. Cl. 451—36 **8 Claims**



1. An apparatus for polishing comprising:
a polisher having a polishing cloth, a plurality of through-holes for passing a polishing slurry containing ions, and a pair of electrodes formed in at least two pieces of a plurality of said through-holes in such a manner as to be electrically separated from each other;
a wafer holder having a wafer holding surface with conductivity, on which holding a substrate having conductive layers covered with an insulating film;
a current detecting means connected to a pair of said electrodes for detecting the magnitude of a current flowing by way of said one electrode, said conductive layers, and the other electrode by the interposition of said abrasive.

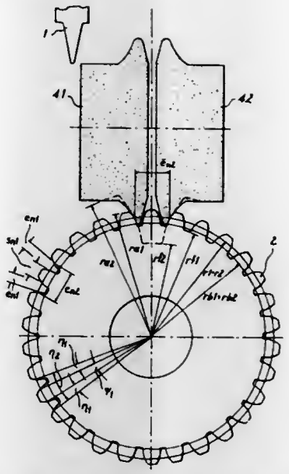
5,624,301

METHOD AND MECHANISM FOR THE GRINDING OF GROOVE-SHAPED EXTERNAL PROFILES ON WORK PIECES

Sieghart Lenz; Hans-Joachim Ulrich, both of Berlin, and Jürgen Rühle, Nassenheide, all of Germany, assignors to NILES Werkzeugmaschinen GmbH Berlin, Berlin, Germany

PCT No. PCT/DE93/00244, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO93/19881, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 12, 1993, Ser. No. 302,904
Claims priority, application Germany, Mar. 27, 1992, 42 10 710.5
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—47 **8 Claims**

1. Method for grinding a groove shaped external profile of a work piece, in which profile sections of one work piece are simultaneously machined by two grinding wheels which are profiled according to the groove-shaped external profile of the work piece and metal is removed by opposite feed movement and joint stroking travel of the two grinding wheels, said method comprising the following steps:
a) a control unit calculates an axial distance between the two grinding wheels according to a distance of the groove-shaped external profile of the work piece and consequently, determines finish-grinding positions of the two grinding wheels,
(b) then the two grinding wheels are removed into these finish-grinding positions and remain positioned there,
(c) then a dressing tool is moved along the two grinding wheels by controlling a continuous path according to an existing computer program and work profile, and said dressing tool profiles the two grinding wheels, one after the other, and generates a surface roughness, suitable for rough-grinding the workpiece, on the two grinding wheels,



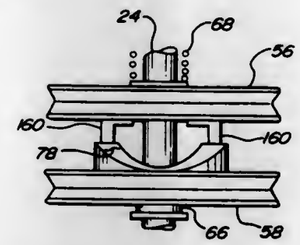
(d) after this dressing procedure for rough-grinding, the two grinding wheels are moved into the rough-grinding positions which have been calculated by the control unit under consideration of the grinding stock, and they remain positioned there,
(e) then the work piece is rough-ground,
(f) after termination of the rough-grinding the two grinding wheels are moved into the finish-grinding positions, which also are used as dressing positions, and remain positioned there,
(g) then the two grinding wheels are re-profiled one after the other by the dressing tool, in a finish-dressing procedure analogous to the dressing procedure for rough-grinding, to generate a surface suitable for finish-grinding on the two grinding wheels,
(h) after this finish-dressing procedure for finish-grinding, the two grinding wheels remain in their positions and finish-grinding of the work piece takes place in those positions.

5,624,302

OSCILLATING SPINDLE SANDER

Toshimitsu Hashii, Clemson, S.C., and Robert G. Everts, Chandler, Ariz., assignors to Ryobi Motor Products Corp., Easley, S.C.

Division of Ser. No. 48,326, Mar. 17, 1993, Pat. No. 5,402,604.
This applicatioo Dec. 30, 1994, Ser. No. 368,031
Int. Cl.[6] B24B *47/10*
U.S. Cl. 451—157 **9 Claims**



1. An oscillating spindle sander comprising:
a cabinet having a substantially horizontal work table and an internal cavity located below the work table;
a spindle oriented normal to the work table and mounted to the cabinet facilitating free rotation and limited axial oscillation

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about a central spindle axis, the spindle having an external portion extending from the work table external to the cabinet and an internal portion extending into the internal cavity, the external portion provided with a fastener for mounting a sanding drum thereon;

a single electric motor mounted within the internal cavity and cooperating with the spindle to cause the spindle to rotate;

a cam and follower responsive to the rotation of the spindle to axially drive the spindle upward during an upward portion of the spindle's axial oscillation and to limit the spindle movement during the downward portion of the spindle's axial oscillation, one of the cam and follower being connected to the spindle and axially oscillating therewith, and the other of the cam and follower located at a fixed axial position relative to the work table, the cam having an annular generally sinusoidal face surface extending about the spindle axis for rotatably cooperating with the follower; and

a coil spring surrounding the spindle below the work table, resiliently biasing one of said cam and follower in an axial downward direction relative to the work table to maintain the follower and cam in engagement with one another, thereby causing the spindle to axially oscillate relative to the horizontal work table as the spindle rotates.

5,624,303

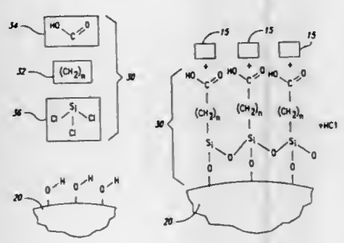
POLISHING PAD AND A METHOD FOR MAKING A POLISHING PAD WITH COVALENTLY BONDED PARTICLES

Karl M. Robinson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 22, 1996, Ser. No. 589,774

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—285 **27 Claims**



1. A semiconductor wafer polishing pad comprising:

a body made from a polymeric matrix material; bonding molecules covalently bonded to the matrix material; and

abrasive particles covalently bonded to the bonding molecules in a substantially uniform distribution throughout the body, the bonding molecules affixing the abrasive particles to the matrix material in a manner capable of substantially maintaining the affixation between the abrasive particles and the matrix material in the presence of an electrostatic chemical-mechanical planarization slurry.

5,624,304

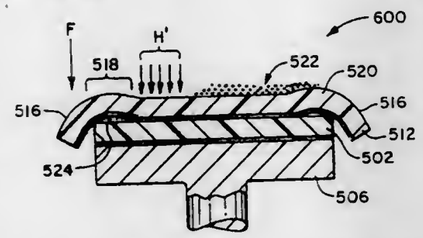
TECHNIQUES FOR ASSEMBLING POLISHING PADS FOR CHEMI-MECHANICAL POLISHING OF SILICON WAFERS

Nicholas F. Pasch, Pacifica; Thomas G. Mallon, Santa Clara, and Mark A. Franklin, Scott's Valley, all of Calif., assignors to LSI Logic, Inc., Milpitas, Calif.

Division of Ser. No. 239,493, May 9, 1994, Pat. No. 5,516,400, which is a continuation of Ser. No. 911,814, Jul. 10, 1992, Pat. No. 5,310,455. This application Aug. 23, 1994, Ser. No. 294,570

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—287 **18 Claims**



4. A chemical-mechanical polishing apparatus using a slurry mixture, said polishing apparatus comprising:

a generally circular platen having a generally flat surface of a defined diameter; and

a generally circular top polishing pad concentrically mounted to said platen and having a defined diameter D, wherein D is greater than said defined platen diameter and wherein an edge portion of said top polishing pad extending beyond the platen flat surface is bent downward to at least the flat surface.

5,624,305

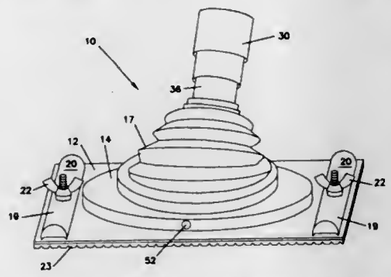
POLE MOUNTED VACUUM SANDER

Geoffrey P. Brown, 1923 West 41st Avenue, Vancouver, British Columbia, Canada

Filed Jan. 30, 1996, Ser. No. 594,084

Int. Cl.[6] B24B *23/00*

U.S. Cl. 451—354 **10 Claims**



1. A pole mounted sanding device for sanding a working surface, said device comprising a pole receiving section, a base for attaching a back-up pad, said backing pad having a broad surface and means for releasably attaching an abrasive sheet to said back-up pad, said pole receiving section connected to said base by universal joint means, wherein said universal joint means comprises a contact surface on said pole and a camming surface mounted on said base whereby said pole is adapted to be pivoted between a first position wherein said pole is perpendicular to the broad surface of said back-up pad and said contact surface is spaced from said camming surface to a second intermediate position where said contact surface bears against said camming surface to a third position where said pole is angled to said broad surface of said back-up pad and said contact surface is spaced from said camming surface or bears against said camming surface with less force than in said intermediate position.

5,624,306

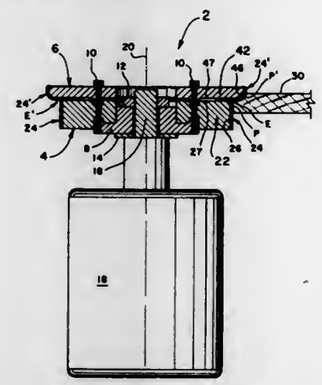
STACKED SANDING WHEEL FOR RADICAL PROFILES

Abel R. Casillas, Los Angeles; Jose R. Gutierrez, Long Beach, and Frederick C. Schneider, III, Palos Verdes Estates, all of Calif., assignors to Visser Irrevocable Trust 1992-1, Englewood, Colo.

Continuation-in-part of Ser. No. 157,886, Nov. 23, 1993, Pat. No. 5,394,652. This application Oct. 14, 1994, Ser. No. 323,353

Int. Cl.[6] B24B *9/18*

U.S. Cl. 451—358 **22 Claims**



1. A multi-piece sanding wheel primarily intended for sanding a profile of a workpiece, said workpiece profile having first and second surfaces meeting substantially at an angle of 90° to form a substantially sharp, linear edge, said multi-piece sanding wheel including:

first and second sanding members, drive means for rotating said first and second sanding members about an axis, and means for removably securing said first and second sanding members to said drive means in a stacked relationship for rotation about said axis,

said first sanding member including a substantially rigid backing portion with an outer surface extending substantially continuously about and along said axis of rotation, at least a part of said outer surface of said backing portion matching and corresponding in profile to the first surface of the workpiece profile to be sanded, said first sanding member further including a flexible sanding strip means with an abrasive, outer surface and means for removably attaching said flexible sanding means to and about at least the part of the outer surface of said backing portion matching and corresponding to the first surface of the workpiece profile to be sanded wherein said abrasive, outer surface of said flexible sanding strip means assumes the profile of said part of the outer surface of the backing portion and the first surface of the workpiece profile to be sanded,

said second sanding member including a substantially rigid backing portion with an outer surface extending substantially continuously about and along said axis of rotation, at least a part of said outer surface of said backing portion matching and corresponding in profile to the second surface of the workpiece profile to be sanded, said second sanding member further including a flexible sanding strip means with an abrasive, outer surface and means for removably attaching said flexible sanding means to and about at least the part of the outer surface of said backing portion matching and corresponding to the second surface of the workpiece profile to be sanded wherein said abrasive, outer surface of said flexible sanding strip means assumes the profile of said part of the outer surface of the backing portion and the second surface of the workpiece profile to be sanded, and

said means for removably securing said first and second sanding members to said drive means in said stacked relationship includes means for removably positioning said first and second sanding members adjacent one another along said axis with said parts of said outer surfaces of said backing portions thereof substantially meeting one another substantially at said angle and with said abrasive, outer surfaces of the respective sanding strip means of said first and second sanding members abutting one another substantially at said angle to form a relatively sharp edge corresponding to the edge of the workpiece profile formed where said first and second surfaces of said workpiece profile meet.

5,624,307

METHOD FOR REDUCING FECAL LEAKAGE AND CONTAMINATION DURING MEAT PROCESSING

Ted Lenear, Chicago, Ill., and Jim C. Stockam, Carthage, Mo., assignors to Swift-Eckrich, Inc., Downers Grove, Ill.

Filed May 15, 1995, Ser. No. 440,825

Int. Cl.[6] A22C *21/00*

U.S. Cl. 452—176 **18 Claims**

1. A method for processing a live animal to provide a meat food product comprising:

slaughtering an animal;

inserting a tampon-like plug into the rectum of the slaughtered animal, so that the distal end of the plug is positioned in the rectum spaced apart from the rectum vent;

causing the plug to come into contact with intestinal fluids after insertion into the rectum, to cause the plug to swell so as to conform to and form a seal with the rectal wall to obstruct the rectum and substantially prevent fecal leakage past the plug; and then

eviscerating the animal.

5,624,308

SYSTEM FOR SORTING AND/OR COUNTING COINS BY MEANS OF A CIRCULAR SORTING TRACK

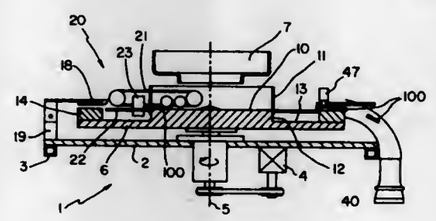
Karl F. Rumbach, Alfter-Witterschlick, Germany, assignor to Standardwerk Eugen Reis GmbH, Bruchsal, Germany

Filed Sep. 12, 1995, Ser. No. 527,164

Claims priority, application Germany, Sep. 15, 1994, 44 32 803.6

Int. Cl.[6] G07D *3/14;3/16*

U.S. Cl. 453—3 **17 Claims**



1. A system for handling coins and similar disk-shaped objects, comprising:

a circular turntable having a loading tray for receiving the coins;

a circular sorting ring disposed on the periphery of the turntable;

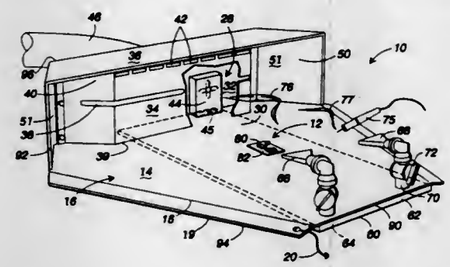
a fixed circular ring provided with deflection devices and disposed adjacent to the sorting ring, whereby said sorting ring engages and transports the coins along the circular ring;

a control track disposed between said loading tray and said sorting ring, wherein said control track singularizes the coins and transports the coins at spaced intervals from the loading tray to the sorting ring; and

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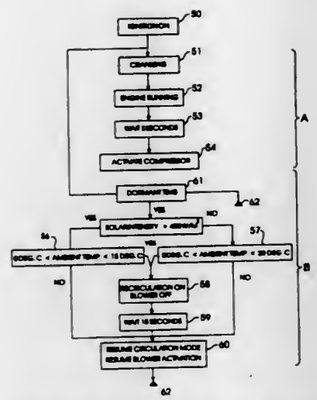
at least one of a coin recognition device and a coin counting device is operatively disposed along said control track.

5,624,309
FUME REMOVAL WORK STATION
Karl H. Schuepstuhl, 5369 Walker Rd., Stone Mountain, Ga. 30088, and Michael A. Wegner, 3202 Cloudland Ct., Buford, Ga. 30519
Filed Sep. 18, 1995, Ser. No. 529,311
Int. Cl.[6] B08B *15/04*
U.S. Cl. 454—66 **10 Claims**



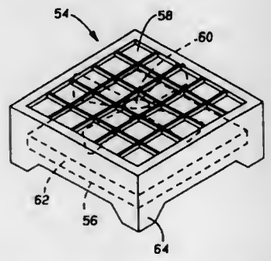
10. A work station for removing solder fumes from a work area, comprising:
a platform that defines a work area;
an air extraction plenum extending upwardly from a back side of the platform for communicating fumes generated by soldering in the work area through at least one intake slot in a side of the air extraction plenum facing the work area to a vent from which the fumes are discharged;
a pair of spaced-apart nozzles connected to a supply of low pressure air flowing at a first flow rate, said nozzles each mounted on respective elevated stanchions at a front portion of the work area opposite the air extraction plenum and defining outlets for discharging low pressure air towards the air extraction plenum, whereby the low pressure air induces flow of the solder fumes from the work area towards the air extraction plenum; and
means for creating adjacent the air extraction plenum a negative pressure air flow at a second flow rate exceeding the first flow rate for inducing flow of air through the air extraction plenum to the vent,
whereby the mass of air communicated through the air extraction plenum exceeds the mass of air moved by the flow of air from the nozzles for maintaining a slight negative pressure through the intake slot.

5,624,310
SYSTEM AND METHOD FOR AIR CONDITIONING OF VEHICLES PREVENTING WINDOW INSIDE FOGGING
Bernt Fredriksson, Vanersborg, and Thomas Andersson, Bralanda, both of Sweden, assignors to Saab Automobile Aktiebolag, Sweden
PCT No. PCT/SE93/01105, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO95/17315, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 23, 1993, Ser. No. 505,320
Int. Cl.[6] B60S *1/54*
U.S. Cl. 454—121 **17 Claims**



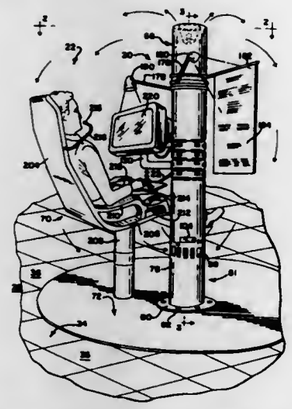
1. An air conditioning system for a vehicle having a compartment with at least one window which is heatable by an air flow of controlled temperature, the air conditioning system comprising:
a heat exchange system which includes an evaporator;
an air conditioning compressor connected to the evaporator;
a first distribution system for directing air flow to the evaporator;
a second distribution system for directing air flow from the evaporator to the window;
a fan in the first distribution system for forcing air over the evaporator; and
control means connected to the air conditioning compressor and to the fan, the control means including means for activating the air conditioning compressor and for deactivating the fan for a predetermined deactivation period after activation of the air conditioning compressor.

5,624,311
METHOD AND APPARATUS FOR ROOM TEMPERATURE EQUALIZING AND AIR TREATMENT
Walter W. Peludat, 2218 E. Wattles Rd., Troy, Mich. 48098
Continuation of Ser. No. 294,817, Aug. 26, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 624,341
Int. Cl.[6] F24F *3/16*
U.S. Cl. 454—230 **4 Claims**



1. A portable air treatment and circulation apparatus for use in a room for substantially balancing the ceiling-to-floor air temperature of the air distributed in the room and for improving the quality of the air in the room, said apparatus being positionable upon a ground surface and comprising:
a polygonal-shaped housing having a top, a bottom and an inner space established between said top and said bottom;
an air inlet formed across said bottom and an air outlet formed across said top, a cross-sectional area of said air inlet being equivalent to a cross-sectional area of said air outlet;
a plurality of set-offs elevating said air inlet a predetermined distance above the ground surface;
a fan assembly mounted within said inner space and power means for operating said fan assembly, said fan assembly including a plurality of fan blade portions which define, upon rotation, a blade path having a cross sectional area approximate to an area of both said inlet and outlet; and
a planar shaped air treatment compound positioned substantially horizontally within said inner space in proximity to said fan assembly and extending across said cross-sectional area between said air inlet and said air outlet;
said fan assembly drawing untreated air upwardly into said housing through said air inlet, across said air treatment compound and exhausting treated air upwardly through said outlet.

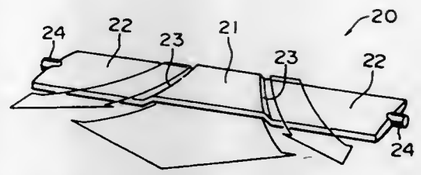
5,624,312
WORK-STATION WITH CLIMATE CONTROL CAPABILITIES
William R. Collier, 305 De La Commune, Apt. 42, Montreal, Quebec, Canada
Filed Jun. 9, 1995, Ser. No. 489,042
Int. Cl.[6] F24F *7/08*
U.S. Cl. 454—247 **11 Claims**



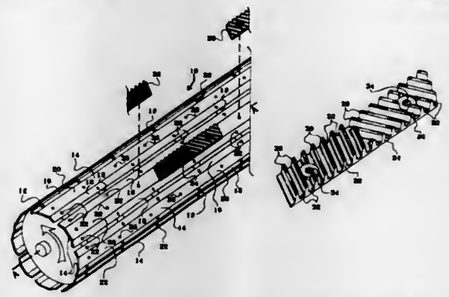
6. A combination work station and climate control apparatus comprising, in combination, a main support plate, a user seat supported on and positioned by said support plate, a vertically extending, hollow air supply column permitting air to flow from a space beneath said support plate through an inlet at the bottom of said column to an outlet above said user seat, borizontal and vertical walls defining an inner air return space having inlet openings adjacent said user seat and at least one outlet communicating with a space beneath said support plate, additional walls defining an electrical conductor space separated from said air spaces and extending from beneath said support plate to a receptacle mounting area adjacent said user seat, and a plurality of adjustable equipment positioning rings mounted for movement about at least one of said air and electrical spaces, said apparatus further including a control for regulating the volume of air flow through said air supply column to provide climate control for said user.

5,624,313
LOUVER
Katsuya Nonaka, and Toru Koyama, both of Kawasaki, Japan, assignors to Fujitsu General Limited, Kawasaki, Japan
Filed Dec. 1, 1995, Ser. No. 566,171
Claims priority, application Japan, Oct. 18, 1995, 7-294811
Int. Cl.[6] F24F *13/075*
U.S. Cl. 454—202 **10 Claims**

1. A louver for changing the blast direction comprising:
a first wind rectification surface which is in a plane form parallel to the blast direction; and
a second wind rectification surface which is in the plane form positioned in a parallel state to said first wind rectification surface, to which said second wind rectification surface is connected in a stair state by a difference of elevation surface, which is positioned so as to face the blast source on a slant.



5,624,314
COMBINATION OF CYLINDER BARS USED WITH A THRESHING CYLINDER
Terry J. Welch, 714 Prairie, St. John, Kans. 67576
Filed Oct. 11, 1995, Ser. No. 541,113
Int. Cl.[6] A01F *12/20*
U.S. Cl. 460—72 **14 Claims**

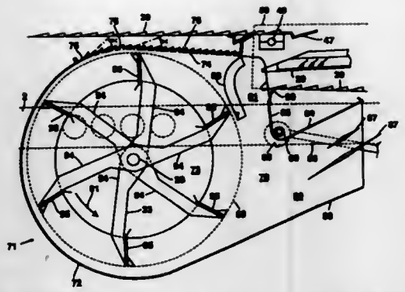


1. A combination of cylinder bars used with a backing plate for mounting on different lengths of threshing cylinders, the cylinders used with different models of combines for the threshing of grain, chaff and straw, the combination comprising:
a forward cylinder bar adapted for mounting on the backing plate, said forward cylinder bar having teeth thereon, the teeth angled from a length of said forward cylinder bar in a first direction for directing the grain, chaff and straw in the first direction;
a reverse cylinder bar adapted for mounting on the backing plate, said reverse cylinder bar having teeth thereon, the teeth angled from a length of said reverse cylinder bar in a second direction for directing the grain, chaff and straw in the second direction; and
a center cylinder bar adapted for mounting on the backing plate and disposed between said forward and reverse cylinder bars, said center cylinder bar including a forward tooth configuration section having teeth thereon and angled in the first direction and a reverse tooth configuration section having teeth thereon and angled in the second direction.

5,624,315
CLEANING MEANS FOR AN AGRICULTURAL HARVESTING MACHINE
Marc R. M. Jonckheere, Snellegem, Belgium, assignor to New Holland North America, Inc., New Holland, Pa.
Filed Sep. 14, 1995, Ser. No. 528,489
Claims priority, application United Kingdom, Sep. 17, 1994, 9418803
Int. Cl.[6] A01F *12/44*
U.S. Cl. 460—99 **12 Claims**

1. An agricultural harvesting machine (1), comprising

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a threshing and separating mechanism (**11**) for threshing and separating crop material, and

a cleaning device (**12**) for cleaning the threshed and separated crop material,

said cleaning device (**12**) including fan means (**71**),

said fan means comprising a generally volute-shaped fan housing (**72**) having a primary air inlet (**73**) in at least one side wall, a secondary air inlet (**74**) in its circumference wall and a generally rearwardly directed air outlet (**80**, **81**), and a fan rotor (**33**), installed for rotation within said housing (**72**) and operable to draw in air through said primary air inlet (**73**) and said secondary air inlet (**74**) and to propel it through said air outlet (**80**, **81**),

said cleaning device (**12**) further including sieve means (**29**, **32**) and/or grain pan means (**30**), installed for oscillation near said air outlet (**80**, **81**) and operable to move the threshed and separated crop material therethrough and/or therealong, the improvement comprising

said secondary air inlet (**74**) having a set of louvres (**76**) operable to return crop particles, falling from said sieve means (**29**, **32**) or falling from said grain pan means (**30**), and being engaged by said fan rotor (**33**), into said fan housing (**72**),

said secondary air inlet (**74**) also having a substantially flat portion wherein the angle (α) between said louvres (**76**) and said flat portion falls in the range of 20 to 40 degrees.

5,624,316

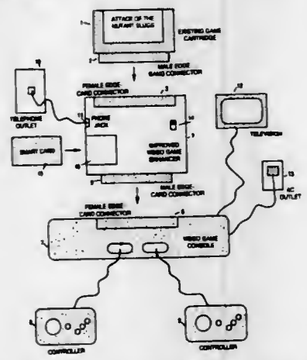
VIDEO GAME ENHANCER WITH INTERGRAL MODEM AND SMART CARD INTERFACE

Steven G. Roskowski, San Jose, and Stephen G. Perlman, Mountain View, both of Calif., assignors to Catapult Entertainment Inc., Cupertino, Calif.

Filed Jun. 6, 1994, Ser. No. 254,154

Int. Cl.[6] **A63F** *9/24*

U.S. Cl. 463—45 **18 Claims**



1. A video game enhancement apparatus for modifying and enhancing the operation of a video game, said apparatus coupled to a processor and a first memory, said first memory having a means for executing said video game, said apparatus comprising:

a processor interface for coupling said apparatus with said processor;

a memory interface for coupling said apparatus with said first memory;

a second memory having a means for enhancing the operation of said video game in said first memory, said means for enhancing the operation of said video game including:

a means for generating a first trigger signal upon a predetermined processor access to said first memory;

a means for redirecting said predetermined processor access from said first memory to a patch address in said second memory, said patch address having a pointer to a patch table having a plurality of instructions, each of said plurality of instructions corresponding to a plurality of data;

a means for activating an exception mode; and

a means for executing one of said plurality of instructions in said patch table in said second memory.

5,624,317

FRICTION BEARING FOR A FLYWHEEL WITH TWO CENTRIFUGAL MASSES AND GUIDING ARRANGEMENT FOR SPRINGS ASSOCIATED THEREWITH

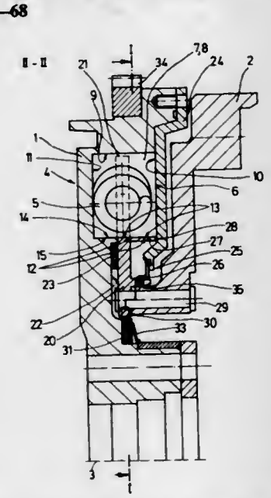
Bernhard Schierling, Kürnach, and Reinhard Feldhaus, Ebenhausen, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jan. 18, 1994, Ser. No. 182,582

Claims priority, application Germany, Jan. 20, 1993, 43 01 311.2

Int. Cl.[6] **F16D** *3/14*; **F16F** *15/12*

U.S. Cl. 464—68 **12 Claims**



1. Torsional damping device, for being connected between a motor vehicle clutch and a motor vehicle crankshaft, said torsional damping device comprising:

first flywheel arrangement and a second flywheel arrangement;

said first flywheel arrangement and said second flywheel arrangement having means for being mounted for movement with respect to one another about a common axis of rotation;

said first flywheel arrangement having means for being connected to the crankshaft and said second flywheel arrangement having means for being connected to the motor vehicle clutch;

said first flywheel arrangement and said second flywheel arrangement defining a circumferential direction about the common rotational axis;

means for transmitting torque between said first flywheel arrangement and said second flywheel arrangement;

means for damping torsional vibrations of said first flywheel arrangement and said second flywheel arrangement with respect to one another; and

said damping means comprising:

spring means for damping the torsional vibrations of said first flywheel arrangement and said second flywheel arrangement with respect to one another;

means for connecting said spring means with said first flywheel arrangement;

means for connecting said spring means with said second flywheel arrangement;

said spring means comprising at least one set of a plurality of springs;

each said at least one set of a plurality of springs extending over a substantial circumferential extent about the common axis of rotation;

means for connecting neighboring pairs of springs within said at least one set of a plurality of springs;

within said at least one set of a plurality of springs, said springs being connected in series with one another, one after the other, in the circumferential direction of said first flywheel arrangement and said second flywheel arrangement;

each of said springs having a first end and a second end, said second end being disposed remotely from said first end; and

each said connecting means comprising means for accommodating a second end of one of said springs and a first end of a neighboring one of said springs;

means for mounting said connecting means being independently displaceable both with respect to said first flywheel arrangement and with respect to said second flywheel arrangement;

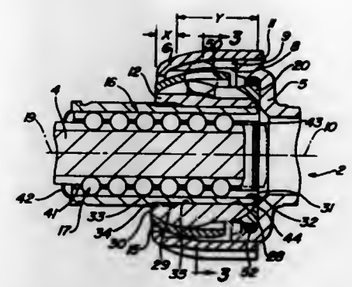
each said connecting means comprising a guide member for connecting the corresponding neighboring pair of springs;

said first flywheel arrangement and said second flywheel arrangement forming a channel for accommodating said guide member and said plurality of springs;

each said guide member being slidably disposed within said channel;

said damping means further comprising slide bearing means for slidingly supporting a portion of said first flywheel arrangement and a portion of said second flywheel arrangement with respect to one another to permit rotation of said first flywheel arrangement and said second flywheel arrangement with respect to one another and for further damping the torsional vibrations of said first flywheel arrangement and said second flywheel arrangement with respect to one another; and

said connecting means comprising said slide bearing means.



5,624,318

CONSTANT VELOCITY JOINT WITH A CONNECTING SHAFT

Werner Jacob, Frankfurt; Manfred Niederhüfner, Hanau, and Jürgen E. Heyne, Saarbrücken, all of Germany, assignors to Löhr & Broomkamp GmbH, Offenbach am Main, Germany

Filed May 24, 1995, Ser. No. 448,838

Claims priority, application Germany, Jun. 3, 1994, 44 19 341.6

Int. Cl.[6] **F16D** *3/22*

U.S. Cl. 464—140 **6 Claims**

1. A constant velocity joint with a connecting shaft, said constant velocity joint comprising:

an outer part defining a cavity, an outer running grooves extending in an inner face of said outer part, said outer running grooves in meridian planes with reference to the longitudinal axis of the outer part;

an inner part pivotably accommodated in the cavity of the outer part, an outer face on said inner part including inner running grooves which form a pair with respective opposed outer running grooves, said inner running grooves extend in meridian planes with reference to a longitudinal axis of the inner part and serve jointly to accommodate a ball for torque transmitting purposes;

a cage arranged between the outer face of the inner part and the inner face of the outer part, said cage including windows for guiding the balls;

inner teeth formed in a through-bore of the inner part, said through-bore being centered on the longitudinal axis of the inner part, and corresponding outer teeth for non-rotatingly connecting the connecting shaft to the inner part;

said inner teeth of the inner part form a first portion of the through-bore, which starts from an end face of the inner part facing the connecting shaft and which is followed by a circular-cylindrical bore portion constituting the second portion;

said outer teeth for connecting the connecting shaft to the inner teeth of the inner part are associated with a coupling sleeve, said coupling sleeve including a circular-cylindrical portion adjacent said outer teeth, and said coupling sleeve and connecting shaft are received in a centered way, via said sleeve circular-cylindrical portion in the circular-cylindrical bore portion of the inner part;

said coupling sleeve axially projects from the inner part towards the connecting shaft and includes a bearing through-bore with circumferentially distributed first longitudinal grooves which extend parallel to the longitudinal axis of the inner part;

said connecting shaft outer face includes second longitudinal grooves positioned opposite said first longitudinal grooves;

and said connecting shaft enters the coupling sleeve and is adjustable therein in the direction of the longitudinal axis of the inner part by rolling contact members received in the first and second longitudinal grooves.

5,624,319

PROCESS FOR PRODUCTION OF A TWO-PART CAGE NUT

Ralph Golczyk, Grenzach-Wyhlen, and Klaus Hullmann, Lörrach, both of Germany, assignors to A. Raymond GmbH & Co. KG, Germany

Filed Sep. 15, 1995, Ser. No. 528,813

Claims priority, application Germany, Sep. 20, 1994, 44 33 470.2

Int. Cl.[6] **B21D** *53/24*

U.S. Cl. 470—21 **8 Claims**

1. A method of forming a two-piece metal cage nut, said method comprising the steps of:

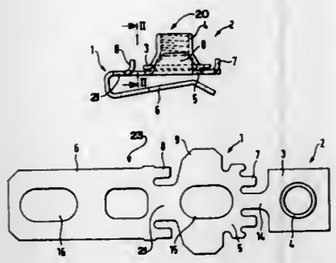
forming a base plate having a sleeve adjacent one end;

stamping said base plate to form a connecting web joining a nut to a holding portion having a slide path between a pair of side walls;

bending said nut about the connecting web to a position over said slide path between said pair of side walls;

bending said side walls inwardly to extend over a pair of edge portions of said nut portion; and

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shearing said web to separate said nut portion from said holding portion.

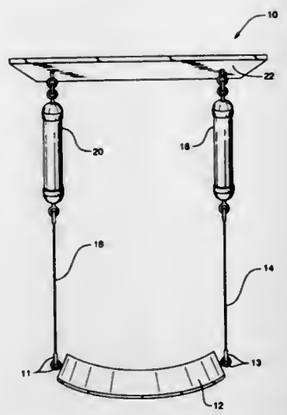
5,624,320
FLOWER PRESENTATION DEVICE
Benjimin P. Martinez, 190 W. Patterson, Ogden, Utah 84401
Filed Mar. 11, 1996, Ser. No. 613,666
Int. Cl.[6] A63H *37/00*
U.S. Cl. 472—51 **17 Claims**



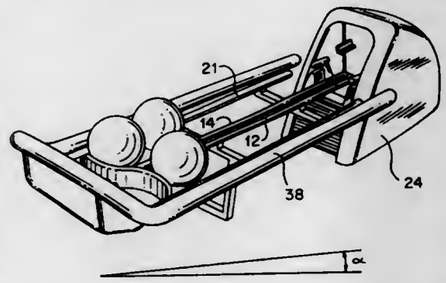
1. A person-to-person flower presentation device, comprising:
a hollow body having wall means enclosing a space therewithin, having a substantially open uppermost end; wherein
the space within the body encloses a group of at least one flower assembly comprising at least a blossom;
means securing the blossoms together into a single bundle thereof;
a flexible bundle pull string having a pair of opposite ends, one of which is fastened to the blossom securing means; and
pull string guide means positioned upon the body so that the bundle of blossoms is raised by pulling upon the other of said pair of ends outside of the hollow body.

5,624,321
SPRING-ACTUATED SWING DEVICE
Stephen D. Snyder, 17721 SW. 75th Ave., Miami, Fla. 33157
Filed Dec. 23, 1994, Ser. No. 372,812
Int. Cl.[6] A63G *9/14*
U.S. Cl. 472—118 **21 Claims**

1. A spring-actuated swing device, comprising:
a seat including a receiving surface;
at least one line having a bottom connecting point which attaches to said receiving surface, said at least one line removeably attached directly to said receiving surface and fully supporting said seat, and said at least one line having a top connecting point removeably attached to a support beam; and
at least one spring mechanism removeably attached to at least one intermediate connecting point of said at least one line intermediate said receiving surface and said support beam, said at least one spring mechanism displacing a portion of said at least one line, said at least one spring mechanism being sufficiently elastic to produce prolonged swinging.

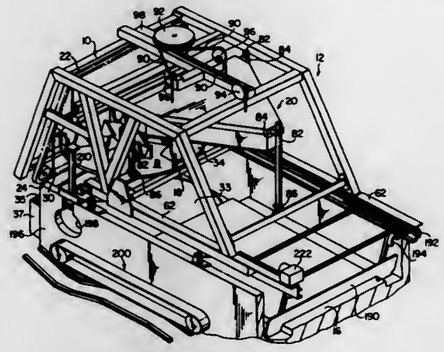


5,624,322
BOWLING ALLEY RETURN AND STORAGE RACK
William M. Riley, Richmond, Va., assignor to AMF Bowling, Inc., Richmond, Va.
Filed Apr. 23, 1996, Ser. No. 636,383
Int. Cl.[6] A63D *5/02*
U.S. Cl. 473—54 **7 Claims**



1. A bowling ball storage rack for a ball return for receiving bowling balls from a return runway comprising an infeed track and a pair of storage racks extending generally parallel to said infeed track and disposed on opposite sides thereof, said storage racks disposed in a generally horizontal plane with an infeed track having a slight downward slope from a first end adjacent a return runway and said storage racks having a length to accommodate a plurality of bowling balls, said infeed track including a first pair of rails for transporting a bowling ball along its length, each of said storage racks including an outer rail which is parallel with said first pair of rails, and said first pair of rails of said infeed track serving as inner rails for said storage racks and in which said outer rail of each of said storage racks is disposed slightly below and transversely removed from said first pair of rails by a distance which is less than the diameter of a bowling ball, each of said rails comprising a rigid tubular member and a plastic covering thereon, and stop means disposed at a second end of said infeed track which is the end opposite to the return runway for directing a first of a returned bowling ball to a first of said storage racks and causing each subsequently returned ball to contact a previous ball in order to direct the subsequent ball to the storage rack having a lesser number of bowling balls therein or in the event that the racks have an even number of bowling balls therein, to said first rack.

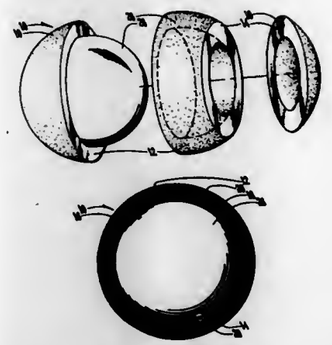
5,624,323
AUTOMATIC PINSETTER
Francois Delaney, L'Assomption; Viateur Guay, Charlesbourg; Carol Simard, Beaupre; Jean-Yves Dion, Chrysostome, and Lucien Rochefort, Beauport, all of Canada, assignors to Mendes Inc., Ste-Foy, Canada
Continuation of Ser. No. 261,725, Jun. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 79,164, Jun. 18, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 524,099
Int. Cl.[6] A63D *5/08*
U.S. Cl. 473—73 **30 Claims**



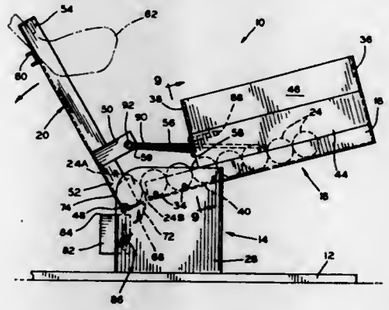
1. An automatic pinsetter for use in retrieving magnetically responsive bowling pins from a pit area adjacent a rear end of a bowling alley and for arranging and depositing the same on the bowling alley; said pinsetter comprising a pin discharge station, an elevator mechanism operable to retrieve bowling pins from the pit area and to transport the same upwardly to said pin discharge station, a pin delivery station, a transfer mechanism operable to receive bowling pins discharged from said elevator mechanism and to transfer the pins to said pin delivery station, a vertically movable pinsetting mechanism positioned above and operable to accept the pins at said pin delivery station and to deposit the same on the bowling alley, said pinsetting mechanism including magnetic means for selectively magnetically holding and releasing the magnetically responsive pins whereby to remove the same from said transfer mechanism and thereafter to deposit the same on the bowling alley.

5,624,324
BOWLING BALL
Paul L. Ellis, and Brian C. Hearl, both of Newton, Iowa, assignors to Thombert, Inc., Newton, Iowa
Filed Apr. 3, 1996, Ser. No. 627,150
Int. Cl.[6] A63B *37/10*
U.S. Cl. 473—125 **14 Claims**

1. A ten-pin bowling ball comprising:
a spherical ball including a first spherical segment, a second spherical segment and an annular band interposed therebetween so as to collectively define an outer peripheral surface of the ball;
the first and second spherical segments having respective outer peripheral surfaces formed of a first substantially nondeformable material having a sliding and rolling hook potential, whereas the annular band has an outer peripheral surface formed of a second substantially nondeformable material having a sliding and rolling hook potential different from the sliding and rolling hook potential of the first material.



5,624,325
GOLF BALL TEEING APPARATUS
Michael Smith, 475 W. Main St. Lot #4, Delta, Ohio 43515
Filed Oct. 2, 1995, Ser. No. 537,453
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—137 **15 Claims**



1. A golf ball teeing apparatus for depositing a golf ball on a tee, said apparatus comprising:
a. a frame;
b. a golf ball storage container mounted on said frame, said container being adapted for storing a plurality of golf balls;
c. an elongate discharge channel formed in a bottom of said container and including a discharge aperture in said container at one end of said channel for discharging the golf balls in sequence from said container;
d. a channel arm pivotably connected to said frame and positioned to receive a golf ball discharged from the discharge aperture in the discharge channel of said container, said channel arm having an elongate body, a pivot end for receiving the golf ball and a free end for depositing the golf ball;
e. an actuator bar connected to the body of said channel arm proximate the free end for pivoting said channel arm, in relationship to said frame, between an upwardly sloping retracted position when receiving the golf ball and a downwardly sloping extended position when transferring the golf ball along said channel arm and depositing the golf ball; and
f. at least one agitator rod connected to the body of said channel arm and spaced apart from the pivot end, said agitator extending through a side wall of said container for agitating the plurality of golf balls in said container when said channel arm is pivoted between the retracted position and the extended position.

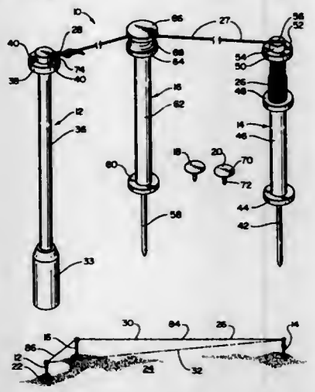
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5,624,326

PRACTICE PUTTING APPARATUS AND METHOD

Thomas H. Hohl, 3824 94th Ave. NE., Bellevue, Wash. 98004, and Ronald L. Bidleman, 17522 NE. 142nd. St., Redmond, Wash. 98052

Filed Mar. 21, 1996, Ser. No. 621,155
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—176 **20 Claims**



15. An apparatus for practicing a putting stroke at a putting area where there is a putting surface and a putting cup location, said apparatus comprising:

a. a putting cup post having a base adapted to snugly fit in the socket in the bottom of a putting cup for enabling same to extend vertically upward from said putting cup location;

b. a stabilizing post adapted to be supported on said putting surface at a location spaced from said putting cup location to extend upwardly above said green surface;

c. an alignment cord arranged to be extended from said stabilizing post to said putting cup post in a manner that said cord is positioned above said putting position;

d. an alignment post adapted to be supported to extend upwardly from said putting surface and to be placed at an alignment location defining with said stabilizing post an initial alignment reference line which coincides with an initial portion of an intended putting line.

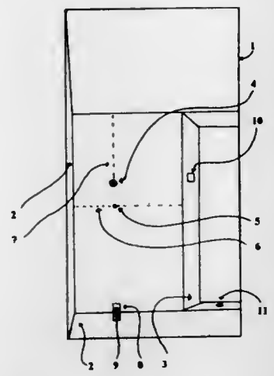
5,624,327

ELECTRONIC GOLF PRACTICE DEVICE

Martin O. Smith, 146 Ard Easmuinn, Dundalk Co. Louth, Ireland

PCT No. PCT/IE92/00025, § 371 Date Oct. 21, 1994, § 102(e) Date Oct. 21, 1994, PCT Pub. No. WO93/10867, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 2, 1992, Ser. No. 244,587
Claims priority, application Ireland, Dec. 4, 1991, 4204/91
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—268 **8 Claims**

1. A golf practice device for training a golfer to develop the degree of concentration necessary for successful putting comprising a base piece for positioning on the ground at a locus appropriate to the users feet, a ball position locating depression located on the surface of said base piece in order to accurately position a ball in relation to a head position indicator also located on said surface, said indicator being visible only when the user's head is in and remains in the correct position throughout the stroke until the appropriate interval after the ball has been struck, at which point said indicator, consisting of a narrow beam of light visible only when the correct position is adopted and maintained, changes in color to indicate to the user that he is free to move his head, and means for determining that the putter has been maintained close to the surface at the initial stage of the backswing consisting of a



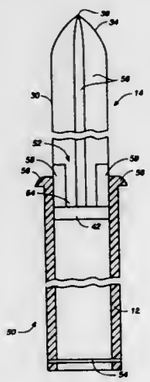
captive roller protruding above the surface which, when touched, rolls into a slot located on a tapered edge below the flat surface, thereby, ensuring non-interference with the forward swing, and an infra-red emittor- detector located on a raised pod to detect the presence of a ball or putter followed by its absence, which absence triggers the change in color of the head position indicator.

5,624,328

GOLF CLUB INCLUDING A STAND

Stephen F. Lovich, 4520 St. Andrews Ct., Suisun, Calif. 94585

Filed Apr. 29, 1996, Ser. No. 639,965
Int. Cl.[6] A63B *53/00;53/16*
U.S. Cl. 473—282 **15 Claims**



12. A golf club including a stand for supporting the golf club, the golf club including a shaft having a handle end, the stand comprising:

a hollow cylindrical sleeve retained in the handle end of the shaft of the golf club and secured thereto, the sleeve having an open end, closure means at a second end, and receiving means, the sleeve comprising a lightweight, rigid material and formed complementary to the shaft, so that the sleeve does not substantially alter the weight, conftguration, and length of the shaft; and

a rigid spike member, the spike comprising a coupling portion and an elongated spike portion, the spike portion comprising four equidistantly spaced side plates for forming a cross-shaped cross sectional configuration, the spike portion having a tapered end terminating in a blunt point, the cross sectional configuration and tapered end of the spike portion providing a spike that is facile to imbed in a ground surface, the coupling

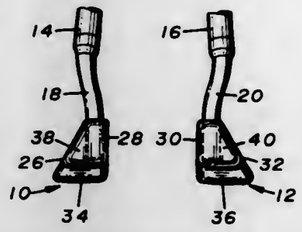
portion including locking means for engaging the receiving means of the sleeve for retaining the spike in an extended position and for preventing inadvertent movement between the spike and sleeve, the sleeve, in combination with the locking means engaging the receiving means, being sufficiently strong to retain the spike in the extended position to provide a stand that supports the golf club in a substantially vertical position to the ground, the stand sufficiently strong to support the golf club in a position that is substantially vertical to the ground for inhibiting a grip on the handle end of the shaft from becoming wet or soiled and for providing enhanced visibility of the club when supported by the stand.

5,624,329

MATCHED PUTTER/CHIPPER GOLF CLUBS

Robert E. Schneebeli, P.O. Box 1268, Renton, Wash. 98057

Filed May 3, 1996, Ser. No. 642,429
Int. Cl.[6] A63B *53/00;53/04;53/14*
U.S. Cl. 473—287 **7 Claims**



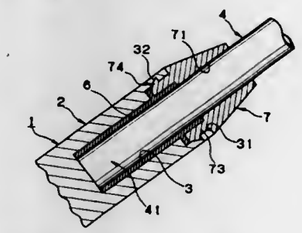
1. A matched pair of golf clubs designed for putting and chipping usage, said golf clubs having reversely identical heads with identical shafts with each head having a striking face with the loft of a putter and a reverse striking face with the loft of a chipper, with the angle of the lie of the centerline of each shaft being at an angle of about 70 relative to the heel-to-toe centerline of the associated club head, and with one said club being a right handed putter or a left handed chipper and the other said club being a right handed chipper or a left handed putter, said clubs being otherwise identical in weight, length, balance and feel.

5,624,330

JOINT STRUCTURE FOR A GOLF CLUB

Atsushi Tsuchida, Shizuoka-ken, Japan, assignor to Yamaha Corporation, Japan

Filed Oct. 20, 1995, Ser. No. 546,307
Claims priority, application Japan, Oct. 26, 1994, 6-284510
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—308 **6 Claims**



1. A joint structure for a golf club comprising

a hosel having a longitudinally extending shaft hole having an enlarged upper end section,

a shaft tip inserted into said shaft hole in said hosel,

a ferrule provided with a through hole receptive of said shaft tip, the ferrule further including a conical sleeve section embracing said shaft tip along the entire extent of said conical section and a cylindrical barrel section fitted into said upper end section of said shaft hole,

a bond layer present between said shaft tip and said barrel section of said ferrule, and

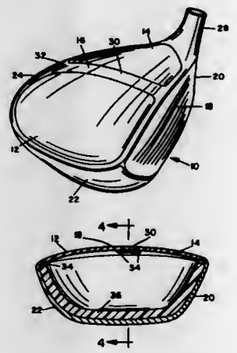
a rugged engagement arranged between said barrel section of said ferrule and a wall of said hosel defining said upper end section of said shaft bole, said rugged engagement including at least one projection formed on one of said ferrule and said hosel and a corresponding recess formed in the other of said ferrule and said hosel said projection forming a snap-fit with said recess.

5,624,331

COMPOSITE-METAL GOLF CLUB HEAD

Kun-Nan Lo; Wu-Hsiang Chung, and Hsueh-Cheng Liao, all of Taichung Hsien, Taiwan, assignors to Pro-Kennex, Inc., San Diego, Calif.

Filed Oct. 30, 1995, Ser. No. 544,965
Int. Cl.[6] A65B *53/04*
U.S. Cl. 473—345 **23 Claims**



1. A composite-metal wood-style golf club head having a crown, a hitting face, a back, a sole, a heel, a toe, a total surface area, and a total weight, comprising:

a generally hollow metal head casing, said metal head casing having first and second openings with an elongated stiffener portion between said first and second openings and extending over said crown between said hitting face and said back; and

at least one composite element disposed within said head casing and having portions disposed in said first and second openings.

5,624,332

GOLF BALL CORE PATCHING METHOD

Jeffrey L. Dalton, North Dartmouth, and Robert J. Cotter, Mattapoisett, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Filed Jun. 7, 1995, Ser. No. 482,523
Int. Cl.[6] A63B *37/08*
U.S. Cl. 473—354 **10 Claims**

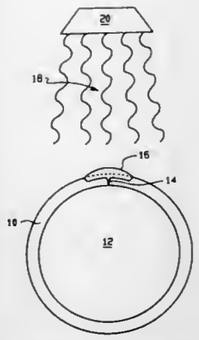
1. A method of producing a sealed, liquid filled spherical object for use in a golf ball core comprising the steps of;

(a) providing a hollow spherical object;

(b) injecting a flowable material into said spherical object wherein said injecting produces an aperture in said spherical object;

(c) sealing said aperture with a radiation curable polymer; and

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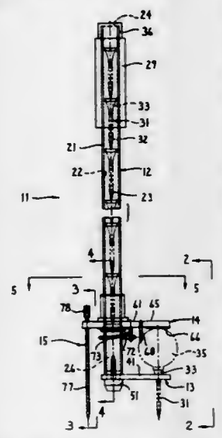
(d) exposing said radiation curable polymer to radiation in an amount and for a time sufficient to cure said polymer.

5,624,333

GOLF TEE PLACEMENT DEVICE

Michael T. Dayton, P.O. Box 316, Mattawan, Mich. 49071

Filed May 2, 1996, Ser. No. 641,945
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—386 **20 Claims**



1. A golf ball/tee placement device, comprising:

a vertically elongate support rod having a manually-engageable grip part fixedly associated therewith adjacent an upper end thereof;

a tee support member fixed to and projecting sidewardly from said support rod adjacent a lower end thereof, said tee support member having a tee receiving slot extending vertically therethrough and opening sidewardly through one side edge thereof, said tee support member being adapted to support a golf tee thereon so that an enlarged head part of the tee is disposed thereabove with a pointed pinlike lower part of the tee projecting downwardly through the slot;

a ball positioning member mounted on said support rod at a position closely adjacent but spaced vertically upwardly from said tee support member, said ball positioning member being rotatable relative to said rod about a longitudinal axis thereof;

ground-engaging means mounted on said ball positioning member for engaging the ground to maintain the ball positioning member stationary while permitting the support rod and the tee support member fixed thereto to be rotated generally about the longitudinal axis;

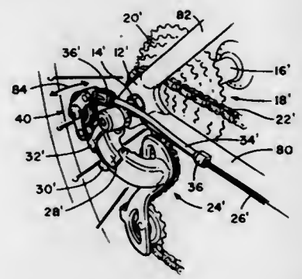
whereby a ball/tee combination can be supported between the ball positioning and tee support members and the tee inserted into the ground, after which the support rod and tee support member can be horizontally rotated about the longitudinal axis while the ball positioning member remains stationarily engaged with the ball, following which the placement device is lifted upwardly to disengage the ball.

5,624,334

LOW-FRICTION DERAILLEUR CABLE ROUTER

Wayne R. Lumpkin, Littleton, Colo., assignor to Avid Enterprises, Inc., Englewood, Colo.

Filed Nov. 3, 1995, Ser. No. 552,743
Int. Cl.[6] F16H *9/06;59/00*
U.S. Cl. 474—79 **17 Claims**



1. A derailleur cable router for changing the direction of a derailleur cable operatively attached to a rear derailleur mounted to a bicycle frame, the rear derailleur being actuated by variation in tension applied by the derailleur cable from a direction rearward of the derailleur, the tension in the derailleur cable being controlled by a shifter attached to a distal end of the derailleur cable, the shifter being mounted to the bicycle frame forward of the derailleur, the derailleur cable including a cable housing around at least a portion of the derailleur cable, the derailleur cable housing being attached to the bicycle frame to fix the cable housing against lengthwise movement relative to the bicycle frame, the derailleur cable router comprising:

a frame having at a first end means for attachment to a derailleur cable housing and at a second end means for attachment to a derailleur cable feed of a rear derailleur, the means for attachment to a derailleur cable housing including a first cable channel for receiving a derailleur cable from within a derailleur cable housing and the means for attachment to a rear derailleur cable feed including a second cable channel for passing a derailleur cable to a rear derailleur cable feed;

a pulley wheel having an axis of rotation and a circumferencial groove; and

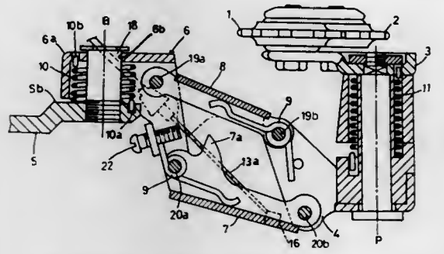
means for mounting the pulley wheel by its axis of rotation to the frame for rotation relative to the frame intermediate the first and second ends of the frame with the circumferencial groove of the pulley aligned with the first and second cable channels so that a derailleur cable can be received in the first cable channel, engaged with a portion of the circumferencial groove and passed through the second cable channel.

5,624,335

REAR DERAILLEUR FOR A BICYCLE

Yoshiaki Ando, Kawachinagano, Japan, assignor to Shimano, Inc., Osaka, Japan

Continuation of Ser. No. 334,591, Nov. 3, 1994, abandoned. This application Feb. 2, 1996, Ser. No. 597,537
Claims priority, application Japan, Nov. 12, 1993, 5-060910 U
Int. Cl.[6] F16H *9/06*
U.S. Cl. 474—80 **17 Claims**



1. A rear derailleur for a bicycle comprising:

a bracket for connecting at one end thereof to a bicycle frame, said bracket having a mounting section with a mounting surface facing a rear wheel of said bicycle;

a guide wheel for shifting a chain;

a support member for supporting said guide wheel;

a pivot member supported to said bracket and extending along a pivot axis;

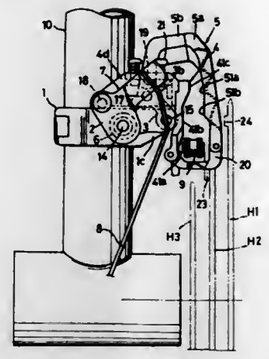
a base member pivotably attached to said mounting surface through said pivot member and extending toward said rear wheel, said base member having a contact surface that contacts said pivot member, said contact surface being located between said bracket and said rear wheel;

a first tension spring for biasing said base member in a predetermined pivoting direction, said first tension spring extending from said mounting surface toward said rear wheel;

linkage means for linking said support member and said base member;

wherein said linkage means includes an inner pivotal link and an outer pivotal link disposed farther from said rear wheel than said inner pivotal link to form a four-bar link mechanism with said support member and said base member, said inner pivotal link being connected at one end thereof to said base member by a first pivot pin, and at the other end to said support member by a second pivot pin, said outer pivotal link being connected at one end thereof to said base member by a third pivot pin, and at the other end to said support member by a fourth pivot pin; and

wherein said base member defines bores for receiving said first pivot pin and said third pivot pin, such that portions of said mounting surface adjacent to said base member are aligned between said first pivot pin and said third pivot pin transversely of the bicycle.



a second link (2) pivotably connected to the base member (1) at a second base member connection location (14);

an inner chain guide (4) pivotably connected to the first link (3) at a first inner chain guide connection location (17) and to the second link (2) at a second inner chain guide connection location (18) so that the inner chain guide (4) moves laterally when the first link (3) and the second link (2) pivot relative to the base member (1); and

an outer chain guide (5) pivotably connected to at least one of the first link (3) or the second link (2) at a first outer chain guide connection location (19,26) which differs from the corresponding first inner chain guide connection location (17) or second inner chain guide connection location (18) and which differs from the corresponding first base member connection location (15) or second base member connection location (14) so that the outer chain guide (5) moves laterally relative to the inner chain guide (4) when the first link (3) and the second link (2) pivot relative to the base member (1).

5,624,336

FRONT DERAILLEUR WITH INDEPENDENTLY MOVABLE CHAIN GUIDE PLATES

Satoru Kojima, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Dec. 20, 1995, Ser. No. 580,064
Claims priority, application Japan, Dec. 20, 1994, 6-316234
Int. Cl.[6] F16H *9/00*
U.S. Cl. 474—82 **17 Claims**

1. A front derailleur for a bicycle comprising:

a base member (1) for connecting to a bicycle frame (10);

a first link (3) pivotably connected to the base member (1) at a first base member connection location (15);

5,624,337

TOOTHED BELT TRANSMISSION FOR DRIVING DYNAMIC BALANCING SHAFTS IN ENDOTHERMIC ENGINES

Vincenzo Macchiarulo, Pescara; Carlo Fiordaliso, Cltiasangelo; Franco Cipollone, Chieti, and Tommaso Di Giacomo, Guardiaerele, all of Italy, assignors to Dayco PTI S.p.A., Chieti Scalo, Italy

Division of Ser. No. 343,913, Nov. 17, 1994, Pat. No. 5,536,213. This application May 20, 1996, Ser. No. 650,793
Claims priority, application Italy, Nov. 26, 1993, 93A002497
Int. Cl.[6] F16G *1/28*
U.S. Cl. 474—205 **23 Claims**

1. Toothed belt transmission in elastomer and similar materials for driving dynamic balancing shafts in endothermic engines, comprising:

a driving pulley (2) with pitch diameter (D) and number of teeth (z) keyed on a crankshaft rotatably supported by a base of an endothermic engine;

a first and a second driven pulley (3, 4) keyed on respective dynamic balancing shafts rotatably engaged with the base, said driven pulleys each having a pitch diameter equal to ½ of the pitch diameter of the driving pulley (2);

a toothed tensioning pulley (5) rotatably engaged with the base;

a toothed transmission belt (6) extending along a closed line that is partially wound over said driving (2), driven (3, 4) and tensioning (5) pulleys, said transmission belt (6) having a resistant insert (7) formed by at least one helically wound cord to form a plurality of turns lying consecutively side by side, incorporated in at least one layer of elastomer material in which there are defined an internal toothing (9) with pitch (P) that engages with respective toothings of the driving pulley (2), of the first driven pulley (3) and of the tensioning pulley

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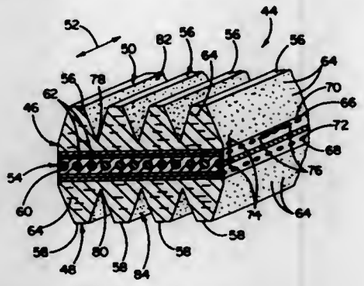
(5), and an external toothing (10) with pitch (P) that engages with respective toothings of the second driven pulley (4), both these toothings being coated with textile materials, characterized in that both the internal (9) and external (10) toothings of the toothed belt (6) are defined by respective teeth (11) reciprocally spaced with a pitch (P) ranging from 6.5 mm to 8.5 mm.

5,624,338

DOUBLE V-RIBBED BELT

Masahiko Kawashima, and Koji Kitahama, both of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Jul. 27, 1995, Ser. No. 508,161
Claims priority, application Japan, Jul. 27, 1994, 6-196012
Int. Cl.[6] F16G *5/06*
U.S. Cl. 474—263 **36 Claims**



1. A double V-ribbed belt comprising:
a body with an inside, an outside, a length, and laterally spaced sides;
at least a first rib exposed on the inside of the body and extending in a lengthwise direction;
at least a second rib exposed on the outside of the body and extending in a lengthwise direction;
a substantially inextensible layer between the first and second ribs; and
laterally extending reinforcing fibers in the body on at least one of the inside and outside of the inextensible layer,
wherein the concentration of reinforcing fibers on the inside of the inextensible layer is different than the concentration of reinforcing fibers on the outside of the inextensible layer.

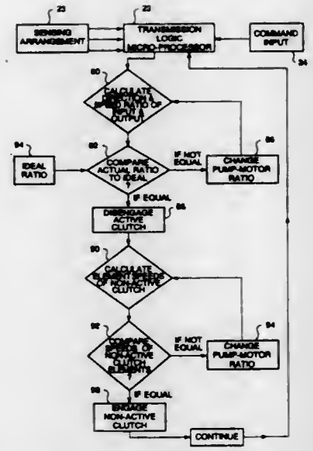
5,624,339

METHOD FOR CONTROLLING SHIFT POINTS IN A CONTINUOUSLY VARIABLE TRANSMISSION

Alan R. Coutant, Chillicothe, and Jerry D. Marr, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 6, 1995, Ser. No. 470,795
Int. Cl.[6] F16H *37/08;47/04*
U.S. Cl. 475—72 **4 Claims**

1. A method for controlling the shift points in a continuously variable transmission with a closed loop control, the output of the continuously variable transmission being generated by a hydrostatic transmission and by a combination of the hydrostatic transmission and a mechanical transmission having a summing planetary and high and low speed clutches, the method comprising the steps of:
sensing the input speed to the continuously variable transmission;
sensing the output speed from the hydrostatic transmission;
sensing the output speed of the continuously variable transmission;
comparing an operative transmission speed ratio of one of the hydrostatic transmission and the combined hydrostatic transmission and the mechanical transmission to a predefined established transmission speed ratio, the predefined established transmission speed ratio being the point of intersection of a predefined torque curve of the hydrostatic transmission with a predefined torque curve of the combined hydrostatic transmission and the mechanical transmission;
disengaging one of the high and low speed clutches in response to the operative transmission speed ratio of the hydrostatic transmission reaching the predefined established transmission speed ratio;
disengaging the other one of the high and low speed clutches in response to the operative transmission speed ratio of the combined hydrostatic transmission and mechanical transmission reaching the predefined established transmission speed ratio;
changing the speed of the output of the hydrostatic transmission when the speed of the input to the continuously variable transmission does not substantially equal the speed to the summing planetary arrangement;
changing the speed of the output of the hydrostatic transmission when the output speed of the hydrostatic transmission does not substantially equal the speed of the output from the continuously variable transmission; and
engaging the high speed clutch in response to the speed of the input to the continuously variable transmission substantially equaling the speed to the summing planetary arrangement so that the speed and output torque of the transmission before and after the shift is substantially equal;
engaging the low speed clutch in response to the output speed of the hydrostatic transmission substantially equaling the speed of the output from the continuously variable transmission so that the speed and output torque of the transmission before and after the shift is substantially equal.



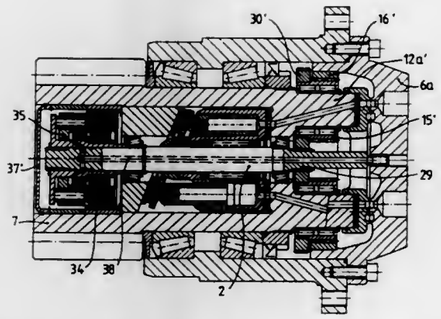
5,624,340

DRIVE UNIT WITH COAXIAL MOTOR, PLANETARY TRANSMISSION AND OUTPUT SHAFT

Franz Forster, Karlstadt-Mühlbach, Germany, assignor to Linde Aktiengesellschaft, Germany

Filed Sep. 7, 1995, Ser. No. 524,086
Claims priority, application Germany, Sep. 9, 1994, 44 32 134.1
Int. Cl.[6] F16H *47/04;* **B60K** *17/14;17/00*
U.S. Cl. 475—72 **24 Claims**

1. A drive unit including a stationary housing, a motor, a planetary gear coaxial with said motor located within said stationary housing downstream of said motor and operatively connected to said motor, a final output drive shaft having a longitudinal



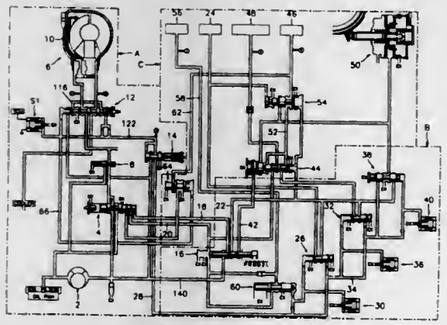
passage formed therein, means for rotationally mounting said final output drive shaft in said stationary housing coaxial with said motor and said planetary gear, and wherein said motor is non-rotationally mounted inside of said longitudinal passage in said final output drive shaft, whereby the radial dimension of said drive unit is minimized.

5,624,341

HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION FOR VEHICLES

Jongsul Park, Seoul, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Jun. 21, 1995, Ser. No. 493,027
Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14211
Int. Cl.[6] B60K *41/10*
U.S. Cl. 475—119 **7 Claims**



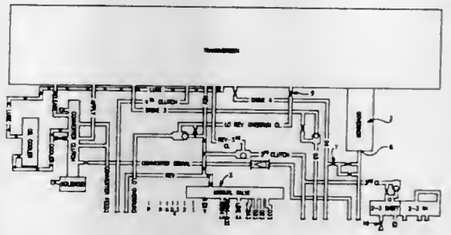
1. A hydraulic control system of automatic transmission for vehicles comprising:
(a) a torque converter control part including a damper clutch control solenoid valve for increasing power transmission efficiency according to vehicle speed and load and a regulator valve for regulating an oil pressure produced in a oil pump to the constant oil pressure;
(b) a manual valve for supplying the oil pressure supplied from the oil pump to another line according to a shift lever's position;
(c) a first indirect control valve, a second indirect control valve, a third indirect control valve, all of which are supplied the oil pressure if the manual valve is set in drive "D" range;
(d) a first solenoid valve, a second solenoid valve, a third solenoid valve, each of which controls the indirect control valves, respectively;
(e) a first friction element communicating with the first indirect control valve;
(f) a second friction element communicating with the second indirect control valve;
(g) a third friction element communicating with the second indirect control valve;
(h) a fourth friction element communicating with the third indirect control valve;
(i) a switch valve for supplying an operating pressure to the second friction element in drive "D" range and supplying the operating pressure to the third friction element in "L" range selectively; and
(j) a safety valve which is connected to the switch valve and prevents a gear train from locking when the operating pressure is applied to the friction elements simultaneously.

5,624,342

METHOD FOR MODIFYING AN ORIGINAL AUTOMATIC TRANSMISSION

Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Filed Jun. 26, 1995, Ser. No. 494,844
Int. Cl.[6] F16H *61/26*
U.S. Cl. 475—127 **20 Claims**



1. A method for modifying the hydraulic circuitry of an original automotive transmission having a governor, a "3-2" control valve, a "3-4" shift valve coupled in fluid flow relationship with said "3-2" control valve, said "3-4" shift valve and said "3-2" control valve being in fluid communication with said governor, and a manual valve coupled to a gear selector; said method comprising the steps of:
removing said "3-2" control valve from said hydraulic circuitry of said automotive transmission,
coupling a low valve in fluid flow relationship to said manual valve such that said low valve is actuated by low oil pressure flowing from said manual valve when said manual valve is moved into a first gear selector position, and
adjusting the flow of fluid through said governor such that governor pressure is equivalent to mainline pressure in said hydraulic circuitry.

5,624,343

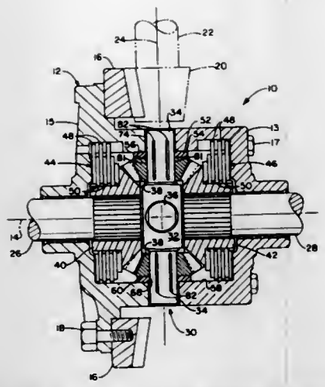
PINION MATE THRUSTWASHER

James A. Krisher, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 28, 1994, Ser. No. 365,200
Int. Cl.[6] F16H *48/08*
U.S. Cl. 475—160 **10 Claims**

1. A differential gear assembly comprising:
a rotatable case;
a spider comprising at least one shaft mounted on said case for rotation therewith;
a pinion gear rotatably mounted on said at least one shaft;
a thrustwasher mounted on said at least one shaft and disposed between said pinion gear and said case;
said thrustwasher having an outer, arcuate side disposed in opposition with said case and an inner, substantially flat side disposed in opposition with an outward side of said pinion gear;

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wherein said thrustwasher further includes a central opening comprising a pair of inner, substantially flat surfaces extending between said outer and inner sides and forming a portion of said central opening, said pair of flat surfaces cooperating with a pair of longitudinally extending flats formed on said at least one shaft for preventing rotation of said thrustwasher relative to said shaft; and,

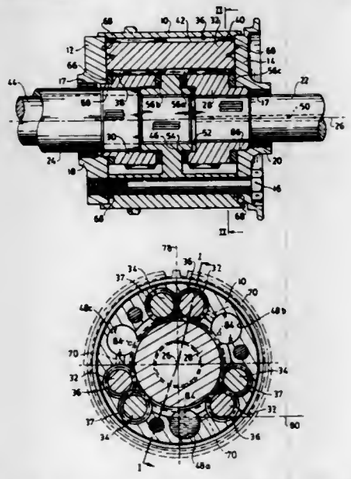
wherein said thrustwasher has a peripheral edge which is at least partially circular and includes opposing flat surfaces which correspond to the mating portions of outer peripheral edges of said pinion gear.

5,624,344

LUBRICATION SYSTEM FOR A PARALLEL-AXIS DIFFERENTIAL

Patrick J. Yehl, and Mark W. Damick, both of Rochester, N.Y., assignors to Zexel Torsen Inc., Rochester, N.Y.

Filed May 1, 1995, Ser. No. 432,960
Int. Cl.[6] F16H *57/04;* **F01M** *1/00*
U.S. Cl. 475—160 **30 Claims**



26. A lubricating system for a parallel-axis gear differential comprising:

a pair of output shafts rotatable about a common axis and supported in respective bearings;

a housing rotatable about said common axis and having a main body and two ends with respective openings for receiving said first and second output shafts;

first and second side gears respectively coupled to inner ends of said first and second output shafts within said housing;

planet gears having axes parallel to said common axis and interconnecting said first and second side gears for rotation in opposite directions;

planet-gear pockets formed in said main body and having respective bearing surfaces for rotatively mounting outside diameter surfaces of said planet gears about axes that extend parallel to said common axis;

a first passageway for conducting lubricant into said housing;

fluid-storage pockets formed circumferentially in said main body for storing lubricant within said housing;

said two ends of the housing being closed to retain lubricant within said fluid-storage pockets; and

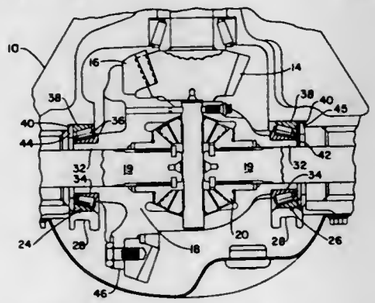
vents formed through said two ends for controlling the flow of lubricant through the differential.

5,624,345

APPARATUS FOR PRELOADING AXLE DIFFERENTIAL BEARINGS AND METHOD OF ASSEMBLING A DIFFERENTIAL

John T. Graft, Fort Wayne, and Richard E. Cleveland, Garrett, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed May 16, 1994, Ser. No. 243,460
Int. Cl.[6] F16H *48/06;* **F16C** *23/10*
U.S. Cl. 475—230 **8 Claims**



1. A vehicle axle differential comprising,

a differential housing having a differential case rotatably mounted within said housing, said differential housing supporting axially spaced differential case anti-friction bearing assemblies which rotatably support and center said case within said housing;

each of said bearing assemblies being mounted in a differential bearing seat formed in said housing, with one of said bearing seats housing at least a load deflection member acting on said bearing assembly to apply a predetermined force to preload said bearing assembly, said load deflection member maintaining said preload substantially constant upon wear of drive gears associated with said differential

wherein the other of said bearing seats houses spacer means, which in conjunction with said load deflection member sets backlash between a drive pinion and a ring gear of the drive gear assembly.

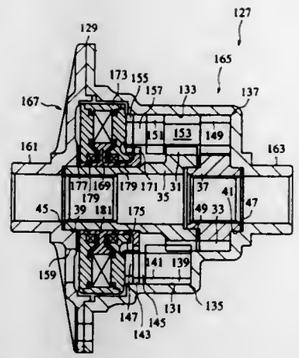
5,624,346

DIFFERENTIAL GEAR

Isao Hirota, Tochigi-ken, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Tochigi-ken, Japan

Filed Jun. 20, 1995, Ser. No. 492,636
Claims priority, application Japan, Jun. 23, 1994, 6-141461; Mar. 27, 1995, 7-067701
Int. Cl.[6] F16H *48/00;48/20*
U.S. Cl. 475—249 **19 Claims**

1. A differential gear comprising:



a differential gear case rotated and driven by a driving force of an engine;

pinion gears housed slidably and rotatably in housing holes formed in the differential gear case;

a pair of side gears on wheels coupled via the pinion gears; and

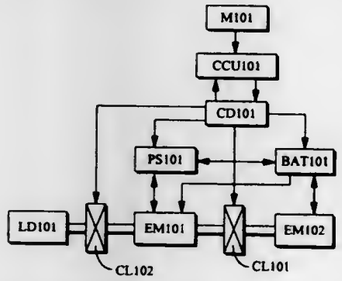
a limit slip differential of the speed-responsive type coupled to these side gears via the pinion gears.

5,624,347

ELECTRICAL MACHINE SYSTEM CAPABLE OF LOAD DRIVING AND POWER GENERATION FUNCTIONS AND INCLUDING AT LEAST TWO ELECTRICAL MECHINES

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Oct. 3, 1994, Ser. No. 320,405
Int. Cl.[6] B60K *41/02;1/00;6/00;* **F01C** *13/00*
U.S. Cl. 477—5 **6 Claims**



1. An electrical machine system comprising:

two electrical machines;

means for causing one of the two electrical machines to drive a load individually;

means for causing the two electrical machines to drive the load together;

means for causing one of the two electrical machines to be driven by the load for power regeneration;

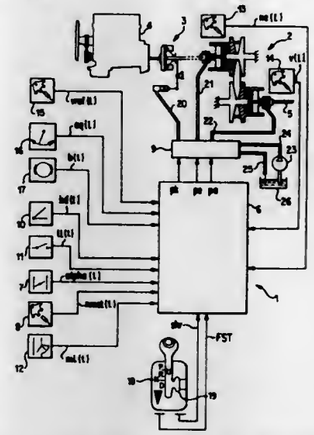
means for driving one of the electrical machines by an external power source to drive the other electrical machine as a generator and, when the other electrical machine is connected as a generator, for connecting the other electrical machine to a battery to charge the battery.

5,624,348

PROCESS FOR DETERMINING THE SHIFTING TIME FOR A TRANSMISSION RATIO CHANGE IN AN INFINITELY VARIABLE TRANSMISSION

Patric Lardy, Weil der Stadt, and Joseph Petersmann, Wimsheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Nov. 21, 1995, Ser. No. 561,309
Claims priority, application Germany, Nov. 24, 1994, 44 41 876.0
Int. Cl.[6] F16H *59/06;59/36;* **B60K** *41/16*
U.S. Cl. 477—46 **6 Claims**



1. Process for controlling a change of the transmission ratio in an infinitely variable transmission which simulates a stepped transmission, said process comprising the steps of:

determining a basic shifting time as a function of position and direction of a change of the transmission ratio;

determining a rotational speed factor as a function of a change of input torque of the transmission in changing the transmission ratio;

determining a load factor as a function of a load signal of the transmission;

determining a shifting time from the basic shifting time, the load factor and the rotational speed factor; and

controlling shifting of said transmission as a function of said shifting time.

5,624,349

INITIALIZING DEVICE OF SPEED CHANGE CONTROL SYSTEM FOR USE IN CONTINUOUSLY VARIABLE TRANSMISSION FOR AUTOMOTIVE VEHICLE

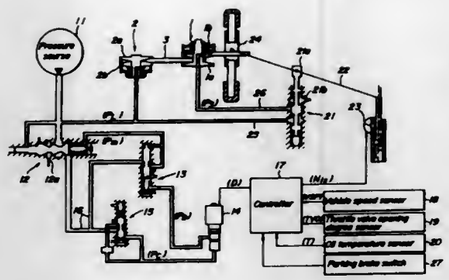
Masahiro Yamamoto, Zama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa Pref., Japan

Filed Dec. 27, 1995, Ser. No. 578,917
Claims priority, application Japan, Dec. 27, 1994, 6-325644
Int. Cl.[6] F16H *9/00;15/00;61/32*
U.S. Cl. 477—46 **8 Claims**

1. An initializing device of a speed change control system for use in a continuously variable transmission for an automotive vehicle according to the present invention, in which said speed change control system operates a speed change control valve by acting of a motor based on an instruction value corresponding to a target speed change ratio, to carry out speed change control of said continuously variable transmission with a speed change control pressure outputted by said speed change control valve in response to said operation of said speed change control valve; comprising,

a stopping condition detecting means for detecting that said automotive vehicle mounting said continuously variable transmission is in a stopping condition,

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a motor initializing operation making means for making said motor carry out an initializing operation in which said motor acts in one direction to a hardware limit position and then acts in the other direction to return to a reference position, at least when said stopping condition detecting means detects that said automotive vehicle is in a stopping condition, and

a motor instruction value initializing means for initializing said instruction value for said motor corresponding to said reference position, when said initializing operation of said motor made by said motor initializing operation making means is finished.

5,624,350

AUTOMATED CLUTCH CONTROL AND CALIBRATION

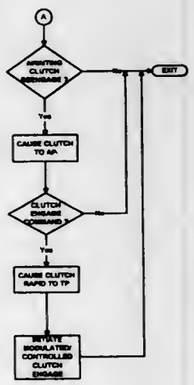
Ian R. J. Bates, W. Yorkshire, England, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 28, 1995, Ser. No. 520,360

Claims priority, application United Kingdom, Oct. 24, 1994, 9421350

Int. Cl.[6] B60K *41/02*

U.S. Cl. 477—78 **13 Claims**



1. A method for controlling an automated vehicular master friction clutch (16) drivingly interposed between an engine (14) and an input shaft (52) of a multiple-speed transmission (12), said clutch having an approach point condition, said method characterized by:

(a) determining a value (AP) of said clutch control parameter indicative of said clutch being at the approach point condition thereof; and

(b) after disengaging said clutch and while awaiting a clutch engagement command, causing said clutch to assume and remain in the approach point condition thereof.

5,624,351

SPEED CHANGE CONTROL METHOD FOR AN AUTOMATIC TRANSMISSION

Kenjiro Fujita; Katsuhiro Hatta, and Katsutoshi Usuki, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

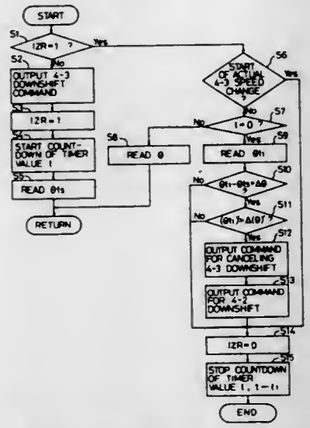
PCT No. PCT/JP94/01781, § 371 Date Jun. 22, 1995, § 102(e) Date Jun. 22, 1995, PCT Pub. No. WO95/12078, PCT Pub. Date May 4, 1995

PCT Filed Oct. 24, 1994, Ser. No. 454,178

Claims priority, application Japan, Oct. 25, 1993, 5-266527

Int. Cl.[6] F16H *61/02*

U.S. Cl. 477—148 **10 Claims**



1. A speed change control method for an automatic transmission arranged to establish a plurality of speeds, comprising:

(a) starting a speed change operation from a first speed to a second speed when a command for a speed change from a first speed to a second speed, which is lower than said first speed, is output;

(b) determining an elapsed time from a time when said command for speed change from said first speed to said second speed was output;

(c) determining whether a request for speed change to a third speed, which is lower than said second speed, is present, if it is judged that a predetermined time period has elapsed from said time when said command for speed change from said first speed to said second speed was output; and

(d) cancelling said speed change operation from said first speed to said second speed, re-establishing said first speed, and starting a speed change from said first speed to said third speed, if it is judged that said request for speed change to said third speed is present.

5,624,352

IGNITION-CONTROLLED PARKING BRAKE INTERLOCK

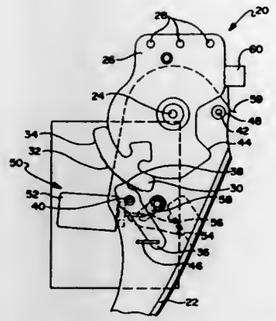
Randall D. Smale, Farmington Hills, Mich., assignor to Dura Automotive Systems, Inc., Rochester Hills, Mich.

Filed Sep. 5, 1995, Ser. No. 523,672

Int. Cl.[6] B60K *41/20*

U.S. Cl. 477—197 **12 Claims**

1. A parking brake lock for a vehicle having a parking brake operator which includes a lever movable between a brake-released position and a range of brake-applied positions, said lock comprising a latch member, biasing means biasing the latch member into engagement with the lever in any brake-applied position to latch the lever in said position, release means connected to the latch member for disengaging the latch member from the lever and permit movement of the lever to brake-released position, release



disabling means operable to provide a barrier which prevents the release means from disengaging the latch member from the lever, said release disabling means including a lock bar movable into and out of a position blocking movement of the latch member out of engagement with the lever, and control means for operating the release disabling means.

5,624,353

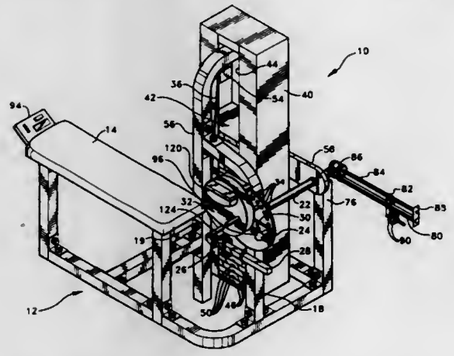
DYNAMICALLY CONTROLLED RESISTANCE EXERCISE MACHINE

Scott G. Naidus, 30 Schoolhouse Rd., Amherst, N.H. 03031

Filed Jul. 30, 1996, Ser. No. 689,075

Int. Cl.[6] A63B *21/06;23/04*

U.S. Cl. 482—5 **14 Claims**



1. An exercise machine comprising:

an exercise arm, a user using said exercise machine to perform an exercise by causing said exercise arm to pivot about an axis;

a pivot arm mechanically linked to said exercise arm, said pivot arm pivoting about said axis responsive to pivoting movement of said exercise arm;

a weight mechanically linked to said pivot arm, said weight having a gravitational force thereon, said weight being shiftable to a user selectable distance from said axis, said gravitational force generating a torque about said axis, said torque having a magnitude dependent at least in part on said user selectable distance, whereby said torque is user selectable and said torque provides at least in part a resistance which must be overcome by the user in order to perform the exercise; and

an interface engageable with a body part of the user for transmitting force exerted by the body part of the user to said exercise arm, said interface including:

first and second collars being dimensioned and configured to be slidably supportable by the exercise arm, said first and second collars each having a thumb screw for securing said first and second collars to the exercise arm;

a track fixed between said first and second collars and being movable therewith, said track having a middle;

a slide slidably supported on said track, said slide being biased toward about said middle of said track by a pair of springs provided on either side of said slide, each of said pair of springs extending between said slide and a respective one of said first and second collars, said slide adapted to being positioned under the exercise arm when said interface is mounted to the exercise arm; and

a pair of disks rotatably supported by said slide, each of said pair of disks having a face adjacent said slide and a face distal from said slide, and each said face of said pair of disks distal from said slide having a cushioned pad, a first peg, and a second peg being engageable by the body part of the user.

5,624,354

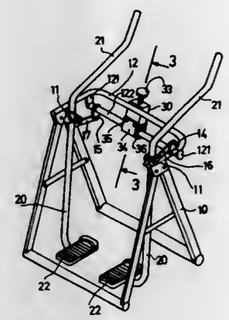
STRIDING EXERCISER HAVING A RESISTIVE DEVICE

Paul Chen, 5 F., No. 31, Gan Tzou 2nd Street, Shi Tun Chu, Taichung, Taiwan

Filed Aug. 9, 1996, Ser. No. 694,761

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—51 **5 Claims**



1. A striding exerciser comprising:

a base including an upper portion having a pair of pivot shafts provided in said upper portion and including a frame secured on said upper portion,

a rod rotatably secured to said frame, said rod including a first end having a first lever secured thereto and extended upward therefrom and including a second end having a second lever secured thereto and extended downward therefrom,

a pair of posts each including a middle portion pivotally coupled to said base at said pivot shaft so as to allow said posts to be rotated about said pivot shafts respectively, said posts each including an upper portion having a handle and each including a lower portion having a foot support,

a first link and a second link pivotally coupling said posts to said first and said second levers respectively so as to couple said posts together, said rod being rotated in a reciprocating rotational movement when said posts are moved forward and rearward in a reciprocating action, and

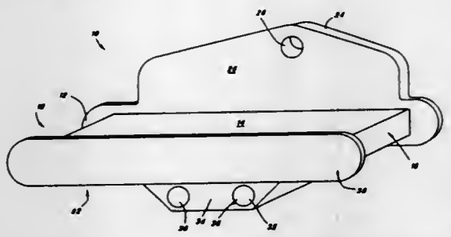
means for applying a resistance force against said rod and for resisting the rotational movement of said rod.

5,624,355

Patent Not Issued For This Number

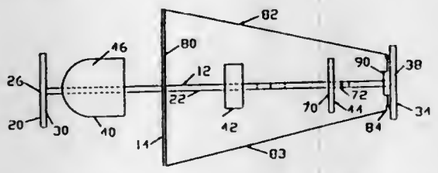
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5,624,356
FOOT PEDAL FOR EXERCISE EQUIPMENT
Jimmie L. Roberts, P.O. Box 694, Poway, Calif. 92074
Filed Apr. 25, 1996, Ser. No. 637,835
Int. Cl.[6] A63B 22/06; F16H 7/22
U.S. Cl. 482—57 15 Claims



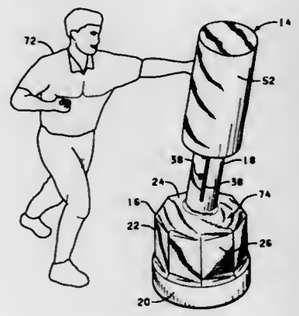
1. A foot pedal assembly for exercise equipment comprising:
a platform having an upper surface, side surfaces, and a lower surface;
a side plate attached to one of said side surfaces of said platform, said side plate having a flat surface disposed adjacent to and in a generally perpendicular orientation with said upper surface of said platform;
a removable pad substantially shrouding said upper surface of said platform and wherein said removable pad is laterally retained by said side plate and said retaining shoulder;
a retaining shoulder disposed on said upper surface of said platform opposite from said side plate and proximate to another of said side surfaces of said platform; and
said means for engaging said foot pedal assembly with said exercise equipment;
wherein said pedal assembly is adapted for receiving and retaining said removable pad, said removable pad being adapted for reducing impact forces encountered during the operational use of said exercise equipment.

5,624,357
KAYAK SIMULATOR MACHINE
Susan L. Englehart, and Richard J. Englehart, both of Middlefield, Ohio, assignors to Englehart Products Inc., Newbury, Ohio
Filed Jul. 22, 1991, Ser. No. 734,190
Int. Cl.[6] A63B 69/06
U.S. Cl. 482—72 6 Claims



1. A kayak simulator machine comprising a support assembly, a resistance-creating device coupled to said support assembly, a cord member coupled to said resistance-creating device, and a paddle-shaft coupled to said support assembly by said cord member;
said paddle-shaft having opposite ends rotatably attached to said cord member whereby said paddle-shaft may be twisted about its longitudinal axis relative to said cord member;
said cord member being coupled to said resistance-creating device in such a manner that a pulling-resistance is imposed when said paddle-shaft is pulled, said pulling-resistance being greater than the pushing-resistance imposed when said paddle-shaft is pushed;
said cord member also being coupled to said resistance-creating device in such a manner that said pulling-resistance is applied to the ends of said paddle-shaft;
said paddle-shaft being coupled to said support assembly in such a manner that a center portion of said paddle-shaft may pivot in a three-dimensional pivot space;
said support assembly including a support frame, a seat unit, a thigh brace unit and a foot brace unit which are coupled to said support frame in such a manner that a user properly interfacing with these components will be situated in a kayak simulator position; and
wherein said cord ends are connected to each of said paddle-shaft ends by a coupling means.

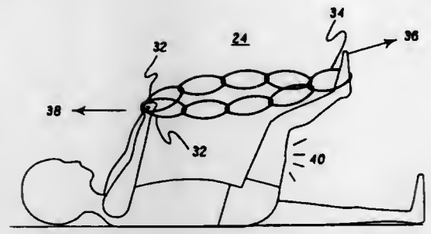
5,624,358
TRAINING BAG APPARATUS
Gary Hestilow, Midwest City, Okla., assignor to Century Incorporated, Midwest City, Okla.
Filed Nov. 16, 1995, Ser. No. 559,351
Int. Cl.[6] A63B 69/36
U.S. Cl. 482—90 18 Claims



1. A training bag apparatus comprising:
a pedestal having an upper end, a lower end, and a deck at the upper end thereof;
a column extending substantially vertically upward from the deck of the pedestal said column and said deck being an integral one piece unit; and
a striking pad assembly having a sleeve opening sized and shaped to receive the column such that the pedestal and column support the striking pad assembly for being struck;
wherein at least the deck of the pedestal is flexible to deform when the striking pad assembly is struck
and wherein the column is caused to move in a direction away from it's substantially vertical orientation.

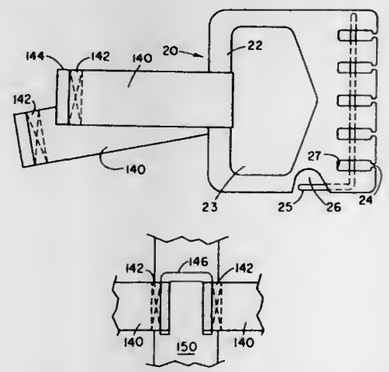
5,624,359
APPARATUS FOR STRETCHING MUSCLES AND USE THEREOF
Lewis Dean, RR #1, Box 2485, Manchester Center, Vt. 05255
Continuation of Ser. No. 198,550, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 842,458, Feb. 27, 1992, abandoned. This application Dec. 27, 1994, Ser. No. 364,504
Int. Cl.[6] A63B 21/00
U.S. Cl. 482—91 15 Claims

1. A method of stretching muscles in a limb utilizing an elongated inelastic apparatus, said elongated inelastic apparatus comprising a plurality of pliable, inelastic means for engaging a limb, said engaging means being connected adjacent to one another, said method comprising the steps of:
engaging a portion of a limb with one of said plurality of pliable, inelastic engaging means;



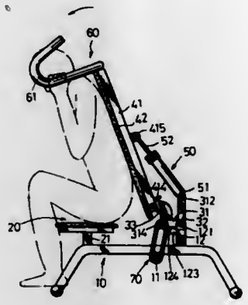
grasping pliable, inelastic engaging means on each side of said one pliable, inelastic engaging means;
moving the engaged limb in a direction; and
pulling the grasped pliable, inelastic engaging means in said direction, thereby enhancing stretching of muscles in said limb.

5,624,360
TOTAL GYM
Chester Wilkins, P.O. Box 1311, Anderson, Ind. 46015
Continuation-in-part of Ser. No. 985,260, Dec. 3, 1992, Pat. No. 5,277,683, and a continuation-in-part of Ser. No. 145,525, Nov. 4, 1993, abandoned, and a continuation-in-part of Ser. No. 145,698, Nov. 4, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,070
Int. Cl.[6] A63B 22/00
U.S. Cl. 482—129 18 Claims



1. A portable exercise gym kit transportable in a conventional container, said exercise gym kit comprising:
a handgrip including releasable attachment means and an aperture centrally disposed to selectively accommodate a hand or a foot of a user;
a wide elastic strap having two terminal ends with loops formed in each of the terminal ends
at least one U-shaped keeper pin having a pair of legs, each leg thereof being selectively insertable in the loops of each of the terminal ends of said wide elastic straps;
a plurality of elastic straps each having a first end and a second end, each of said elastic straps having first connection means at the first end for selectively connecting to the releasable attachment means on said handgrip, and a second connection means at the second end;
a rigid dual foot plate having positions for each foot upon which the user stands, said rigid dual foot plate selectively engageable with at least one of said elastic straps; and
an anchor bracket formed of an angle iron including a series of holes bored in a line along one leg of the .angle iron to provide attachment points for engaging said elastic straps at the second connection means; whereby
the portable exercise gym kit is easily transportable in any suitable container to enable a user to exercise in any selected environment by selectively connecting the several elements to provide selective exercises and suitable anchoring.

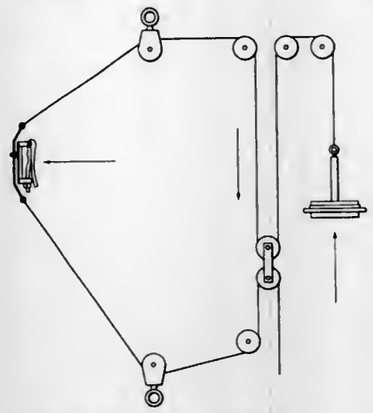
5,624,361
STRETCHING EXERCISER
Sbu-Chiung Lai, No. 437, Ta-Sheng St., Nan-Tung Dist., Taichung, Taiwan
Filed Jul. 29, 1996, Ser. No. 688,187
Int. Cl.[6] A63B 21/04
U.S. Cl. 482—130 9 Claims



1. A stretching exerciser, comprising:
an elongated base having front and rear end portions and an intermediate portion which extends between said front and rear end portions, said intermediate portion having front and rear sections and an intermediate section between said front and rear sections, said rear section being formed with an upright prop, said prop having a top end formed with a forwardly extending limiting projection;
a seat member mounted on said front section of said intermediate portion of said base;
a connector including: a horizontal lever portion with a front end, a rear end which is mounted pivotally on said top end of said prop, and a bottom side which abuts against said limiting projection on said prop when said connector pivots forwardly; a vertical lever portion having a top end and a bottom end which is connected to said rear end of said horizontal lever portion; and a pair of curved connecting plates, each of which has a top end and a bottom end connected to said front end of said horizontal lever portion;
a backrest member including: an elongated connecting frame unit with a front side and a bottom end that is mounted pivotally to said top ends of said connecting plates, said frame unit being provided with a limit plate, said connecting plates abutting against said limit plate to limit rearward pivoting movement of said backrest member relative to said base; and a backrest cushion secured to said front side of said connecting frame unit;
a resistance cylinder having a first end connected pivotally to said top end of said vertical lever portion of said connector, and a second end connected pivotally to said connecting frame unit of said backrest member, said resistance cylinder providing resistance to forward pivoting movement of said backrest member relative to said base;
a handle unit secured to a top end of said backrest member; and
a biasing unit which interconnects said base and said connector to provide resistance to rearward pivoting movement of said backrest member relative to said base.

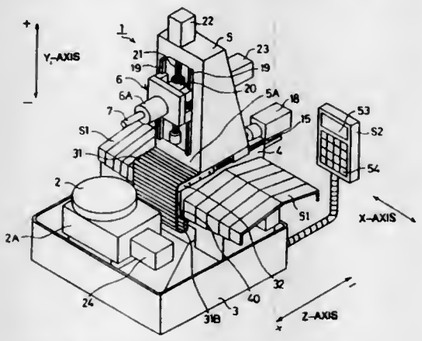
VOL 1197 ISS 5 AP 29 1997 UMI

5,624,362
PUNCHING HANDLE ACCESSORY
Thomas I. Wilson, 243 Soule R., Wilbraham, Mass. 01095
Continuation-in-part of Ser. No. 174,846, Dec. 29, 1993. This application May 6, 1996, Ser. No. 646,692
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—139 **11 Claims**



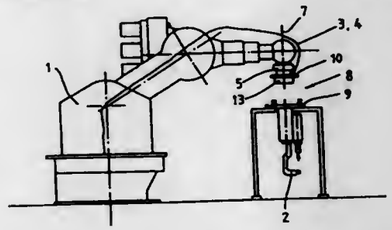
1. A punching handle accessory comprising:
a mounting bracket;
a pressure plate rotatably mounted to the mounting bracket for rotation about an axis generally normal to the side of the plate;
means for coupling a resistance to the mounting bracket at two places on generally opposite sides of the axis; and
a non-supportive handle attached to the plate generally parallel the side opposite the mounting bracket whereby a user may place their knuckles against the side of the plate and grasp the non-supportive handle.

5,624,363
MACHINE TOOL HAVING A PROTECTIVE COVER
Kazuteru Kuriki, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Dec. 22, 1995, Ser. No. 577,528
Claims priority, application Japan, Feb. 9, 1995, 7-021956
Int. Cl.[6] B23Q *11/00; B23C 9/00*
U.S. Cl. 483—3 **20 Claims**



1. A machine tool comprising:
a carriage having an open upper portion;
a column movably mounted on said carriage and having a tool mounted thereon;
a driving mechanism for moving said column positioned on said carriage, said driving mechanism being located in said open upper portion; and
a movable protective cover for covering at least a portion of said open upper portion of said carriage during movement of said column, said movable protective cover including,
a cover member having an end portion connected to said column, a hanging portion that covers said open upper portion of said carriage and hangs adjacent a side surface of said carriage, and an opposite end portion, and
dislodging means for dislodging chips formed during a machining operation of the machine tool that are trapped within said cover member.

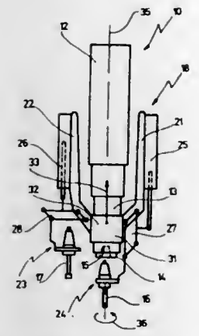
5,624,364
TOOL CHANGE DEVICE FOR MANIPULATORS
Ernst Zimmer, Friedberg, Germany, assignor to Kuka Schweissanlagen & Roboter GmbH, Augsburg, Germany
PCT No. PCT/EP94/02916, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/07168, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 2, 1994, Ser. No. 617,819
Claims priority, application Germany, Sep. 4, 1993, 9313310 U
Int. Cl.[6] B23Q *3/155; F16L 39/04*
U.S. Cl. 483—16 **6 Claims**



1. A tool change device for robotic manipulators, comprising:
a rotary connection for fluidic supply lines of the tool, the rotary connection including a fixed part and a rotary part;
one of said fixed part and said rotary part including ring channels connected to cross channels of said fixed part and said rotary part, said fixed part and said rotary part defining a contact plane directed at right angles to a power take-off axis of rotation of said manipulator, said ring channels being arranged in concentric circles around said power take-off axis of rotation, said fixed part and said rotary part having flat surfaces in contact at said contact plane;
a housing of said manipulator-side coupling part, said fixed part and said rotary part being disposed in said housing, said housing defining an adjustable tensioning connection with said rotary part and said fixed part disposed therein, for holding said fixed part and said rotary part together along said power take-off axis of rotation.

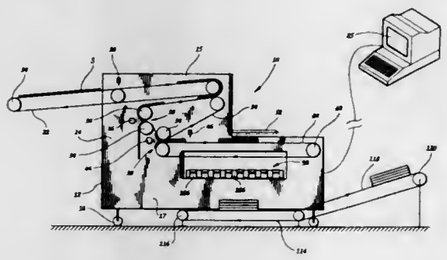
5,624,365
MACHINE TOOL
Rudolf Haninger, Seitingen, and Hans-Henning Winkler, Tuttlingen, both of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Germany
Filed Jun. 13, 1995, Ser. No. 489,759
Claims priority, application Germany, Jun. 18, 1994, 44 21 385.9
Int. Cl.[6] B23Q *3/155*
U.S. Cl. 483—50 **10 Claims**

1. A machine tool, comprising:
a spindle tube having a longitudinal axis;
a spindle rotatably mounted in said spindle tube and comprising at its lower end a receiving opening for locating tool holders in their working position;



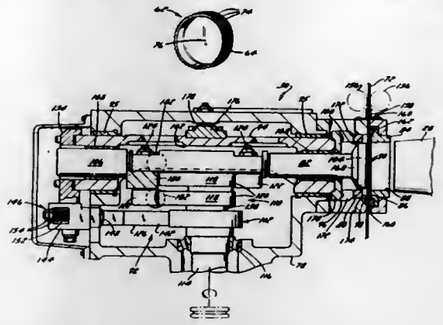
a tool magazine for holding tool holders to be inserted into said receiving opening;
a tool changer having at least two gripper arms for transporting tool holders between a respective transfer position located in the area of said tool magazine and a common spindle position located beneath the receiving opening in said spindle, and vice versa; and
a holding device bearing said tool changer and located on the spindle tube for longitudinal movement with respect to the latter in the sense of a stroke movement, and for rotational movement around the longitudinal axis thereof,
during said stroke movement a tool holder being transferred between its working position and its spindle position or vice versa; and
during said rotational movement said gripper arms changing position such that tool holders carried by said gripper arms have a common transfer position to the tool magazine.

5,624,366
LAUNDRY SHEET FOLDING APPARATUS
Avri A. Beeri, 3262 Smith Farm Rd., Matthews, N.C. 28105
Filed Jun. 29, 1994, Ser. No. 267,486
Int. Cl.[6] B31F *1/00; B31B 1/00*
U.S. Cl. 493—23 **15 Claims**



1. An apparatus for folding and stacking a multiplicity of individual sheets of material comprising:
an upstanding frame with the outermost extent thereof defining a frame perimeter, said frame including a primary frame defining said frame perimeter and a secondary frame mounted to said primary frame within said frame perimeter;
means mounted to said frame for feeding sheet material through said apparatus in a predetermined travel direction along a predetermined travel path for folding thereof;
folding means disposed along said travel path for folding said sheet material, said folding means including means for performing two lateral folds with the sheet remaining in continuous contact with said feeding means during said lateral folds and means for performing three crossfolds, said folding means being disposed within said frame perimeter with means for performing at least one fold mounted to said primary frame and means for performing at least one fold mounted to said secondary frame; and
means for stacking said sheets, said stacking means being disposed within said frame perimeter.

5,624,367
BOTTOM BLANK MAKER WORKSTATION FOR A CUP MAKING MACHINE
Mark J. Budziszewski, Wind Lake, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.
Filed Sep. 15, 1994, Ser. No. 306,461
Int. Cl.[6] B65H *45/12*
U.S. Cl. 493—167 **14 Claims**

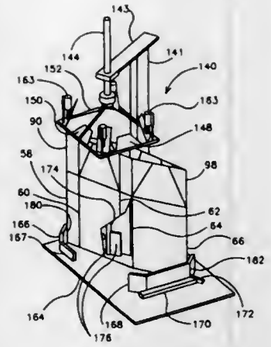


14. A bottom blank maker workstation, comprising:
a framework;
a reciprocal punch slidably mounted to the framework, wherein the reciprocal punch includes a cylindrical sidewall having a front surface configured for contacting a bottom blank, a back wall, and at least one opening extending through the cylindrical sidewall in proximity to the back wall; and
a reciprocal draw slidably mounted to the framework, the reciprocal draw including a front surface configured for contacting the bottom blank and a back surface having a taper that cooperates with the opening to squeeze debris through at least one opening and to the outside of the reciprocal punch.

5,624,368
OCTAGONAL BOX STRUCTURE AND SETTING UP APPARATUS
Arthur H. Cromwell, Columbus, Ohio, assignor to Williamette Industries Inc, Portland, Oreg.
Division of Ser. No. 489,433, Jun. 12, 1995, Pat. No. 5,533,666. This application Dec. 29, 1995, Ser. No. 580,589
Int. Cl.[6] B31B *1/78*
U.S. Cl. 493—312 **3 Claims**

1. A box forming apparatus for forming a planar, closed box form into an opened, erected octagonal configuration along predetermined score lines provided on said box comprising, in combination;
a) a supporting base;
b) a box folding frame mounted on said supporting base for opening a planar enclosed box form along preselected vertical score hinge lines into an open preselected octagonal configuration and including a first box folding frame portion mounted on said supporting base and having a plurality of upstanding wall portions disposed in angular relationship to one another generally conforming to a plurality of contiguous upstanding side wall panels of a preselected octagonal box configuration, a second box folding frame portion having at least two contiguous upstanding wall portions disposed in a fixed angular relationship to one another generally conforming to at least two contiguous upstanding side wall panels of said preselected box configuration, each of said wall portions of said

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second box folding frame portion disposed in opposing, spaced, relationship generally parallel to one of the wall portions of said first box folding frame portion, said first and second box folding frame portions being mounted for relative movement toward one another to engage a pair of vertically disposed opposing edges corresponding to opposing folded score lines of said closed box form and move said edges toward one another to cause said closed box form to open along a plurality of predetermined parallel score lines provided on said box form;

c) a closure flap folding fixture including an open generally rectangular frame conforming generally to the greatest width and length dimensions of the preselected box configuration being formed and movably mounted to said supporting base for reciprocal vertical movement above said box folding frame between a raised position and a lowered box engaging position;

d) four vertically extending inwardly inclined folding plates, a respective one fixed to a different side of said rectangular frame and configured to engage a preselected area of an upstanding, opened octagonal box configuration disposed in generally vertical alignment below said rectangular frame to cause inward folding of one of a first set of four preselected box closure flaps along preselected score lines provided on said box closure flaps upon moving said rectangular frame to said lowered position; and

e) four vertically disposed folding plates, each being mounted for vertical pivoting movement about a horizontal axis and disposed at a respective corner of said rectangular frame, each of said pivotally mounted folding plates disposed to engage a preselected area of said upstanding, opened octagonal box configuration when said rectangular frame is disposed in its lowered position upon pivoting downwardly to cause inward folding of a respective one of a second set of four different box closure flaps and to continue inward folding of said first set of four closure flaps toward a generally horizontal position.

5,624,369

METHOD AND APPARATUS FOR FORMING SLOTTED AND CREASED BOX BLANKS

Jerald D. Bidlack, East Aurora, and Igor Shmelkin, Amherst, both of N.Y., assignors to Griffin Automation, Inc., West Seneca, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,707

Int. Cl.[6] B31B *1/14*; B26D *1/14*

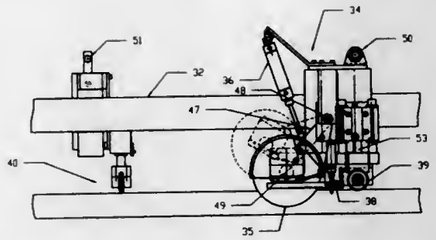
U.S. Cl. 493—355 **12 Claims**

1. An apparatus for forming a scored and slotted box blank from a generally rectangular sheet of material, comprising:

a frame for supporting and guiding said sheet;

advancement means for controllably moving said sheet relative to said frame through said apparatus along a longitudinal sheet travel direction;

guide means extending generally transverse to said longitudinal sheet travel direction;



a carriage mounted on said guide means for transverse movement along said guide means;

transverse slot cutting means mounted on said carriage for transverse movement with said carriage to transversely cut and form respective slots in said sheet, each slot having a slot root;

cutting actuator means mounted to said carriage for selectively causing said transverse slot cutting means to have a vertical component of movement relative to said carriage and said sheet;

punch means mounted to said carriage for selectively punching holes at said slot roots;

punch actuator means mounted to said carriage for selectively causing said punch means to have a vertical component of movement relative to said carriage and said sheet;

a transverse creasing roller mounted on said carriage adapted to selectively engage and transversely crease said sheet at selected locations; and

at least one longitudinal creasing roller means mounted on said guide means adapted to selectively engage and longitudinally crease said sheet at selected locations;

whereby, as said sheet is moved relative to said frame, said transverse creasing roller selectively creases said sheet in a transverse direction, each longitudinal creasing roller selectively creases said sheet in a longitudinal direction, said transverse slot cutting means selectively cuts transverse slots in said sheet from both longitudinal edges and said punch means selectively punches holes at said slot roots.

5,624,370

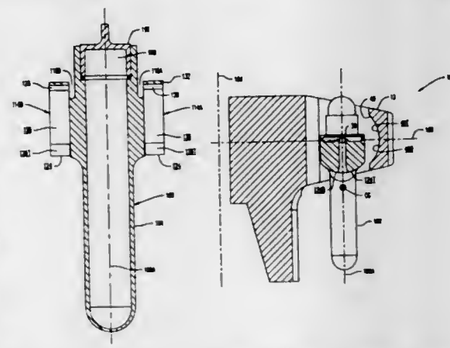
BUCKET FOR USE IN A SWINGING BUCKET CENTRIFUGE ROTOR

William A. Romanauskas, Southbury, Conn., assignor to Sorvall Products, L.P., Newtown, Conn.

Filed Dec. 15, 1995, Ser. No. 572,919

Int. Cl.[6] B04B *5/02*

U.S. Cl. 494—20 **5 Claims**



1. A bucket for use in a swinging bucket centrifuge rotor, the bucket having a predetermined swing axis defined therethrough about which the bucket may swing from a first to a second position, the bucket comprising:

a cylindrical body having a reference axis extending therethrough,

a pair of planar abutments formed on the body, the abutments being diametrically disposed about the reference axis of the body,

each of the planar abutments having a planar abutment surface, a planar side surface and a bottom support surface, each planar abutment surface being perpendicular to the swing axis,

a slot being defined between a portion of each of the abutments and the body,

each planar side surface of each of the abutments having a first groove that extends generally parallel to the reference axis of the body and a second groove that extends generally perpendicular to the reference axis of the body, the first groove and the second groove on each of the abutments communicating with the slot associated with that abutment, the first groove and the second groove and the slot cooperating to define a resilient spring element on each of the abutments,

the bottom support surface on each of the abutments being generally cylindrical in shape and having an axis of generation that lies along the reference axis of the body, whereby a portion of each bottom support surface lies on opposite sides of the reference axis of the body.

5,624,371

SELF-REGULATING CENTRIFUGAL SEPARATOR

Frank Mohn, London, Great Britain, assignor to Framo Developments (UK) Limited, London, Great Britain

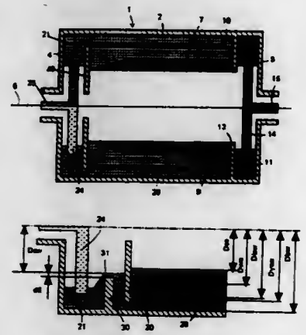
PCT No. PCT/GB92/02310, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/11877, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 11, 1991, Ser. No. 244,749

Claims priority, application United Kingdom, Dec. 12, 1991, 9126415

Int. Cl.[6] B04B *5/06; 11/02*

U.S. Cl. 494—22 **10 Claims**



1. A centrifuge for regulating flow of fluids so as to effect separation of first and second fluids of a first and a second, greater, specific gravity, respectively, from a mixture of the fluids regardless of the proportions of the fluids in the mixture, the centrifuge comprising:

a drum having a side wall, an axis and means for rotating the drum about the axis and forming an annular layer of the second fluid around an annular layer of the first fluid, and

first and second discharge means comprising first and second discharge chambers defined by respective first and second annular walls providing first and second annular weir edges controlling the respective discharge flows, for respective discharge of the first and second fluids from the respective layers outwardly of the drum, said first annular wall extending in a radial direction relative to and toward said axis from said side wall, and said second annular wall being spaced from said side wall and extending in said radial direction, said second annular wall being disposed between said axis and said side wall, the discharge means further comprising respective stationary members for drawing off respective fluids, and a sleeve concentric with the drum axis extending from the second annular wall towards the first annular wall and terminating at a free end spaced from said first annular wall, said sleeve providing a generally axial flow path for the second fluid which reverses direction at the free end and extends into the second discharge chamber between the second annular wall and the side wall of the drum, and a third annular wall extending radially inwardly from the drum side wall within the second discharge chamber to a position radially short of the second weir edge.

5,624,372

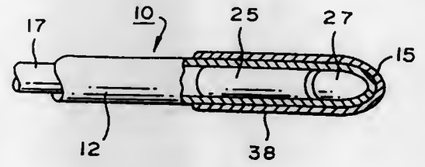
SOURCE WIRE FOR LOCALIZED INTERNAL IRRADIATION OF TISSUE

Samuel F. Liprie, Lake Charles, La., assignor to Omnitron International, Inc., Houston, Tex.

Continuation of Ser. No. 683,471, Oct. 25, 1990, Pat. No. 5,282,781. This application Jan. 31, 1994, Ser. No. 189,039

Int. Cl.[6] A61N *5/00*

U.S. Cl. 600—3 **22 Claims**



1. For use in a patient's body for localized in vivo irradiation of tissue therein with a radioactive source, at a predetermined tissue site accessible via a narrow path from a point external to the body, the improvement comprising:

a thin, cylindrical, flexible elongate tube having a proximal end and a distal tip,

a backbone wire running substantially the entire length of the tube from the proximal end thereof to a point defining a space of predetermined length from a distal end of the backbone wire to the distal tip of the tube, to strengthen and enhance the flexibility of the tube,

a radioactive source disposed securely within said space in the tube and abutting said distal end of the backbone wire,

a cylindrical plug closing the tube at the distal tip thereof and abutting against said radioactive source to secure the source tightly between said distal end of the backbone wire and said plug, said distal tip of the tube tightly encompassing said plug to form a closed tip portion,

said radioactive source being secured in said tube substantially solely by pressure exerted by said tube on a surface of said source along said tube and by pressure exerted on opposite ends of said source respectively by said backbone wire and said plug within said closed tip portion,

said tube and the backbone wire, radioactive source and plug within said tube forming a composite source wire having an overall diameter which is sufficiently small for longitudinal movement of the source wire along said path, whereby to permit advancement of said source to said predetermined site for irradiation of tissue thereat and to permit withdrawal of said source from the patient's body via said path following a prescribed period of irradiation of tissue at said predetermined site.

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5,624,373

METHOD AND APPARATUS FOR INFLUENCING SUCH CHARACTERISTICS OF A BIOLOGICAL MATERIAL WHICH CORRELATE WITH THE OCCURRENCE OF CERTAIN ATMOSPHERICS

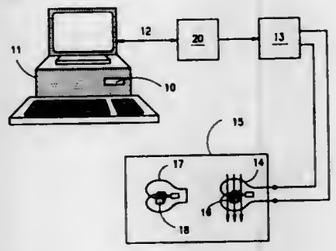
Gerhard Ruhenstroth-Bauer, Spietzelbergerstrasse 11, D-82166 Gräfeling, Germany

Filed Aug. 31, 1994, Ser. No. 298,751

Claims priority, application Germany, Sep. 6, 1993, 43 29 884.2

Int. Cl.[6] A61N 1/44

U.S. Cl. 600—9 8 Claims



1. A method for influencing characteristics of a biological material as are correlated with the occurrence of natural atmospherics, the natural atmospherics having a magnetic-field associated therewith, comprising the steps of:

receiving and storing the variations over time of the magnetic-field of observed natural atmospherics;

generating artificial atmospherics by reproducing said stored magnetic-field of the observed natural atmospherics within a coil arrangement; and

introducing biological material into the magnetic-field of the artificial atmospherics generated from the stored magnetic-field of the observed natural atmospherics.

5,624,374

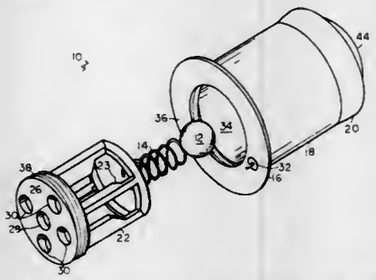
INVOLUNTARY URINE CONTROL APPARATUS, SYSTEM AND METHOD

Irwin F. Von Iderstein, 136 Cotuit Bay Dr., Cotuit, Mass. 02635

Filed Nov. 3, 1994, Ser. No. 333,860

Int. Cl.[6] A61F 2/00

U.S. Cl. 600—29 23 Claims



1. An involuntary urine control valve apparatus, which apparatus comprises:

a) a cylindrical jacket having a one outlet end and an other inlet end and an external diameter and surface adapted to fit slidably and comfortably in a snug fit and having a length to be inserted only a short distance into the open distal end of the urethra of a subject;

b) a collar chamber means extending circumferentially about the external diameter of and toward the other inlet end of the jacket;

c) a collar means about the collar chamber means to stabilize the jacket in position within and to the interior wall of the urethra, the collar means adapted to move between a radially outwardly extended, inflated position to stabilize the jacket against the internal wall of the urethra and a radially deflated position to permit the insertion into or removal from the urethra of the jacket;

d) a radially extended flange means having an external surface from the one end of the jacket adapted to fit about and adjacent the open distal end of the urethra;

e) a valve means on the external surface of the flange means to permit the introduction of a fluid into the collar means and to permit the release of the fluid from the collar means;

f) a valve chamber means in the jacket to connect the valve means with the collar means;

g) a head means secured to the outlet end of the jacket and having at least one urine flow passageway to permit the flow of urine externally from the subject;

h) a tension-biased, magnetically activated ball valve within the jacket, which ball valve is adapted to move generally longitudinally within the jacket between a tension-biased closed position against a valve seat to prevent the flow of urine through the jacket from the inlet to the passageway and a magnetically activated, open position with the ball valve removed from the valve seat to permit the flow of urine from the inlet to the passageway, by the external use of a magnet by the subject, the ball valve having sufficient tension to be placed in the closed position, but insufficient to prevent the ball valve to move to the open position unless magnetically activated.

5,624,375

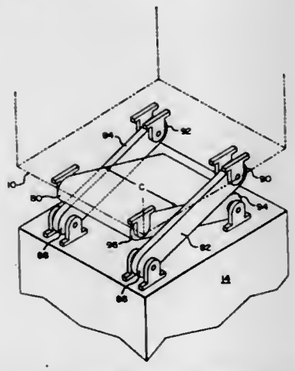
INCUBATOR TILT MECHANISM

Christopher A. Dykes, Odenton, and Robert M. Simenauer, Ellicott City, both of Md., assignors to Ohmeda Inc., Liberty Corner, N.J.

Filed Apr. 21, 1995, Ser. No. 427,182

Int. Cl.[6] A47G 29/00; A47F 5/12

U.S. Cl. 600—22 12 Claims



1. A tilt mechanism for selectively adjusting a tilt angle of an infant apparatus having a front and a rear and adapted to be positioned intermediate the infant apparatus and a fixed base, said tilt mechanism comprising:

at least one first link means having one end thereof rotatably affixed to the fixed base at a fixed point along the fixed base and the other end rotatably affixed to the infant apparatus at a first fixed point on the infant apparatus located adjacent the front of the infant apparatus, at least one second link means having one end thereof rotatably affixed to the fixed base at a fixed point along the fixed base and the other end rotatably affixed to the infant apparatus at a second fixed point on the infant apparatus located adjacent the rear of the infant apparatus, each of said at least one first link means and said at least one second link means crossed with respect to each other to form an X therebetween so as to allow said first point to move upwardly and downwardly while simultaneously causing said second point on the infant apparatus to move downwardly or upwardly, respectively, to tilt the infant apparatus to a desired tilt angle.

5,624,376

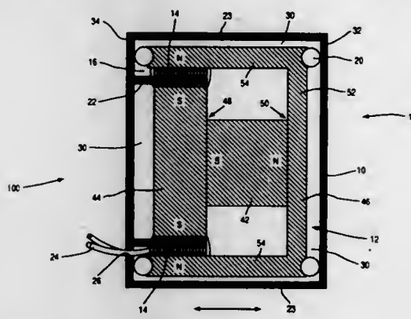
IMPLANTABLE AND EXTERNAL HEARING SYSTEMS HAVING A FLOATING MASS TRANSDUCER

Geoffrey R. Ball, Sunnyvale; James M. Culp, Woodside; Craig Mar, Fremont; Tim Dietz, Castro Valley, and John D. Salisbury, Scotts Valley, all of Calif., assignors to Symphonix Devices, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 225,153, Apr. 8, 1994, Pat. No. 5,554,096, which is a continuation-in-part of Ser. No. 87,618, Jul. 1, 1993, Pat. No. 5,456,654. This application Jan. 3, 1995, Ser. No. 368,219

Int. Cl.[6] H04R 25/00

U.S. Cl. 600—25 49 Claims



1. An apparatus for improving hearing, comprising:

a housing adapted to be mounted on a vibratory structure of an ear;

a mass mechanically coupled to the housing, wherein the mass vibrates relative to the housing in direct response to an externally generated electrical signal; and

whereby vibration of the mass causes inertial vibration of the housing in order to stimulate the vibratory structure of the ear.

5,624,377

APPARATUS AND METHOD FOR SIMULATING A HUMAN MASTOID

Larry J. Davis, Highland, Utah, assignor to Larson-Davis, Inc., Provo, Utah

Filed Feb. 16, 1995, Ser. No. 389,903

Int. Cl.[6] H04R 25/00

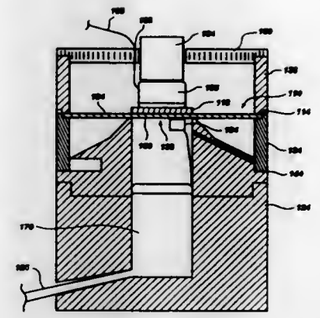
U.S. Cl. 600—25 8 Claims

1. An apparatus for simulating a human mastoid comprising:

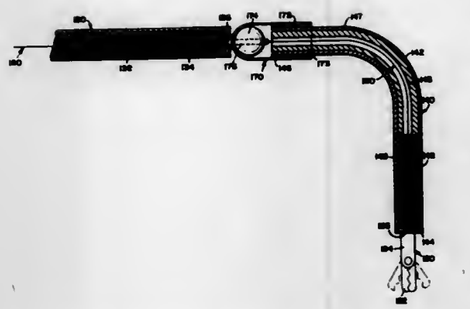
a diaphragm having a central section and a peripheral section which are configured in shape and composition to supply a desired reactance and resistance to a vibratory force such as is generated in a bone conduction transducer, based on mass and stiffness of the diaphragm, thereby simulating impedance of a human mastoid bone;

a housing having a void formed therein with an opening at one end so as to mechanically simulate a human ear, and a sensor means comprising an accelerometer disposed adjacent the void for detecting vibrational energy within the void,

wherein the diaphragm is disposed across the opening of the void such that when a bone conduction transducer is applied to the diaphragm, vibration is transferred into the void and detected by the sensor means.



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an elongate flexible member having a user accessible end and a remote end;

a second member rotatably mounted to said remote end and sized and configured for insertion into the endoscope; and

a rotating means, operatively connected to said second member, for rotating said second member, exclusive of said elongate flexible member, about the longitudinal axis of the endoscope.

5,624,380

MULTI-DEGREE OF FREEDOM MANIPULATOR

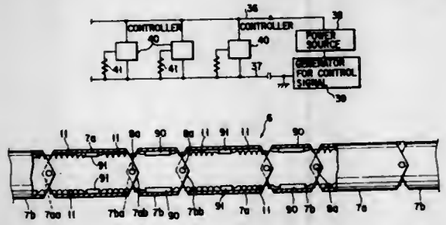
Shuichi Takayama; Takeaki Nakamura; Tatsuya Yamaguchi; Akio Nakada; Yasuhiro Ueda; Hideyuki Adachi; Katsunori Sakiyama; Yasukazu Tatsumi; Koji Fujio; Masaaki Hayashi; Shinji Kaneko; Yasuo Hirata, and Toshimasa Kawai, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 29,904, Mar. 11, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,347

Claims priority, application Japan, Mar. 12, 1992, 4-053643; Mar. 13, 1992, 4-055735; Mar. 13, 1992, 4-055739; Mar. 16, 1992, 4-272370

Int. Cl.[6] A61B *1/008*

U.S. Cl. 600—146 **12 Claims**



1. A multi-degree-of-freedom manipulator comprising:

an elongated main body having, at least at part thereof, a plurality of flex portions provided therealong;

a plurality of actuators, respectively provided near said flex portions to correspond to said flex portions, for flexing said flex portions;

two common energy transmission paths, extending along said main body, for transmitting an energy to said plurality of actuators;

a plurality of selective energy supply means, respectively provided near said flex portions and respectively coupled with said plurality of actuators electrically in circuit between said two common energy transmission paths, for controlling the energy supplied from said two common energy transmission paths to said plurality of actuators, thereby respectively independently driving said plurality of actuators; and

at least one common control signal transmission path independent of said two common energy transmission paths, for transmitting a control signal to said plurality of selective energy supply means, thereby causing said selective energy supply means to control said plurality of actuators.

6. A multi-degree-of-freedom manipulator comprising:

an elongated main body having, at least at part thereof, a plurality of articulated portions arranged therealong and connecting portions for flexibly connecting adjacent ones of said articulated portions;

actuators each having two ends attached, respectively, to two of said plurality of articulated portions to span at least one of said connecting portions positioned between said both ends, for flexibly driving at least one of said two articulated portions through the spanned one of said connecting portions;

at least one actuator control chip array having a plurality of drive control electronic circuit chips, attached to respective ones of said plurality of articulated portions and flexible wiring for electrically connecting adjacent said plurality of drive control electronic circuit chips in series, said plurality of drive control electronic circuit chips being electrically coupled to said actuators, respectively; and

means for supplying a driving energy to said actuators selected through said electronic circuit chips, wherein

said articulated manipulator has at least one degree of freedom with respect to each of said actuator control electronic circuit chips.

5,624,381

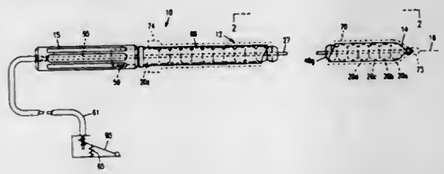
SURGICAL INSTRUMENT AND METHOD FOR RETRACTION OF AN ANATOMIC STRUCTURE DEFINING AN INTERIOR LUMEN

Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070

Filed Aug. 9, 1994, Ser. No. 287,580

Int. Cl.[6] A61B *17/00*

U.S. Cl. 600—206 **27 Claims**



1. A surgical instrument for retracting an anatomic structure in a body, the anatomic structure defining a lumen, comprising:

an elongate member having a proximal portion and a distal portion and defining an axis extending therebetween, wherein the elongate member is capable of articulation into a substantially linear shape for introduction into the lumen and a plurality of curvilinear shapes for retracting the anatomic structure surrounding the lumen;

a tensioning member incorporated into and coupled to the elongate member, wherein the elongate member is in one of a tensioned and non-tensioned positions dependent on tension provided by the tensioning member; and

a tensioning structure connected to a proximal end of the elongate member and to the tensioning member, thereby allowing the tensioning member to be in one of the tensioned and non-tensioned positions.

5,624,382

METHOD AND APPARATUS FOR ULTRASOUND TISSUE THERAPY

Arnulf Oppelt, Spardorf, and Helmut Reichenberger, Eckental, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

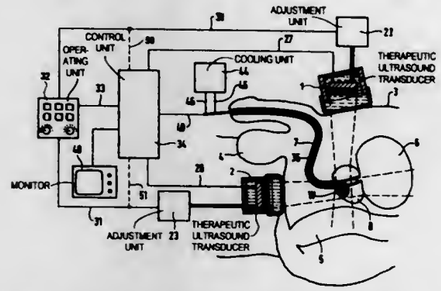
PCT No. PCT/DE93/00126, § 371 Date Sep. 9, 1994, § 102(e) Date Sep. 9, 1994, PCT Pub. No. WO93/17646, PCT Pub. Date Sep. 16, 1993

PCT Filed Feb. 15, 1993, Ser. No. 302,745

Claims priority, application Germany, May 10, 1992, 42 07 463.0

Int. Cl.[6] A61B *17/22*

U.S. Cl. 601—2 **44 Claims**



1. Therapy apparatus for the treatment of tissue in the body of a life form, comprising a therapeutic ultrasound transducer that emits therapeutic ultrasound having an effective therapeutic region with an ultrasound intensity therein, means for coupling the ultrasound generated with the ultrasound transducer into the body of the life form, pressure measurement means for obtaining a measurement of pressure present in the region of the tissue to be treated independently of the momentary position of the effective therapeutic region as indicative of the intensity of said therapeutic ultrasound in said region of the tissue to be treated, and means for displacing the effective therapeutic region and the body of the life form relative to one another dependent on the pressure measured by the pressure measurement means for causing at least a part of the tissue to be treated to be located in the effective therapeutic region.

5,624,383

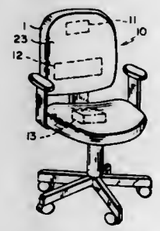
METHOD OF AND MEANS FOR PROVIDING FORCE FEEDBACK IN CONTINUOUS PASSIVE MOTION SYSTEMS

Rowland G. Hazard, Burlington, and Steven M. Reinecke, Hinesburg, both of Vt., assignors to Ergomedics, Inc., Winooski, Vt.

Continuation-in-part of Ser. No. 887,877, May 26, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,784

Int. Cl.[6] A61H *1/00*

U.S. Cl. 601—5 **7 Claims**



1. A method for providing force feedback in continuous passive motion systems, for use in treating or preventing low back pain and providing back comfort in an individual, comprising the steps of:

providing at least one static back support;

providing a mechanism adjacent to said static back support to initiate continuous passive motion for the lumbar area in order to produce lordotic motion for the spine;

providing a timer for the basic control of the mechanism;

providing a system for continuous measuring of the force exerted by the mechanism on an individual's lumbar area;

providing a logic system for continuous and automatic controlling of the force exerted by the mechanism on the individual's lumbar area in order to build up and then maintain a predetermined force on the lumbar area of the user for a predetermined period of time; and

providing a predetermined period of time to allow the lordotic position of the spine to be returned to its original state such that flexion and extension alternately occur between adjacent vertebrae of the spine.

5,624,384

JADE MADE MASSAGE-ROD

Liu-Kin Chen, Taipei, Taiwan, assignor to IMEI Chemical Enterprise Ltd., Taipei, Taiwan

Filed May 4, 1995, Ser. No. 434,865

Int. Cl.[6] A61H *15/00*

U.S. Cl. 601—84 **2 Claims**



1. A jade massage rod comprising:

a) a first massaging portion having a substantially circular configuration, a convex massaging surface and a second surface; and,

b) a substantially cylindrical second massaging portion extending from the second surface of the first massaging portion and having a curved distal massaging end, a diameter of the cylindrical second massaging portion being less than a diameter of the circular first massaging portion, wherein said massage rod is formed as a single piece of jade.

5,624,385

MASSAGING/SKIN-SCRAPING ROD FOR TRAVELLER

Shih M. Hwang, 17811 Sky Park Cir., Suite D&E, Irvine, Calif. 92714

Filed Jul. 25, 1995, Ser. No. 507,679

Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—135 **1 Claim**

1. A massaging rod comprising:

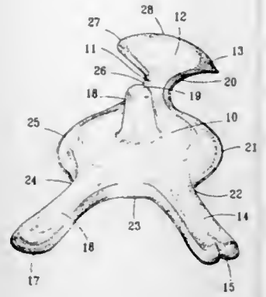
a main body that is generally Y-shaped, said main body includes a circular central body,

an elongated portion including an ellipse end extends from a first side of said central body, a neck portion of said elongated portion includes two sides, each having a different contour,

a first side of said ellipse end includes a projected boss, and a second side of said ellipse end includes a mallet portion,

a forked end extends from a second side of said central body, said forked end includes a first leg and a second leg.

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said first leg of said forked end includes a claw-shaped projection, while said second leg of said forked end is circular,

a first contoured area is defined between said first and second legs of said forked end, a second contoured area is defined between said first leg of said forked end and said elongated portion, and a third contoured area is defined between said second leg of said forked end and said elongated portion, each of said contoured areas having a different contour,

said central body includes a stem member with a rounded end, said stem member projects upward from a center portion of said central body, said central body includes a rounded periphery and a bottom side which is flat to facilitate scraping of a user's skin.

5,624,386

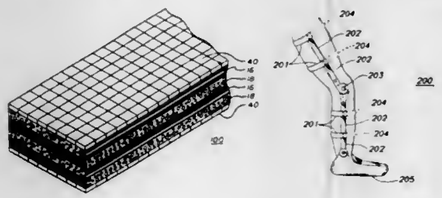
THERMOPLASTIC ORTHOPEDIC BRACE AND METHOD OF MANUFACTURING SAME

Dilip K. Tailor, Brampton; Mark F. Lang, Oakville; Paul S. Hruska, Mississauga; Kevin J. McConnell, and Beverly Lucek, both of Hamilton, all of Canada, assignors to Bay Mills Limited, Oakville, Canada

Continuation-in-part of Ser. No. 196,925, Feb. 15, 1994, Pat. No. 5,529,826. This application Nov. 1, 1994, Ser. No. 332,976

Int. Cl.[6] A61F *5/052*

U.S. Cl. 602—16 **11 Claims**



1. An orthopedic brace, comprising:

a mechanical joint for providing a degree of rotation to the joint of a patient's appendage;

first and second support bars affixed to said mechanical joint;

a plurality of shaped thermoplastic composite bands affixed to said first and second support bars respectively, said bands comprising at least a pair of laminated fiber-containing layers including a thermoplastic resin having a flexural modulus of at least about 1.2 GPa and a thermoplastic melting point of less than about 275° C.; and

retaining means for grasping distal and medial portions of said appendage.

5,624,387

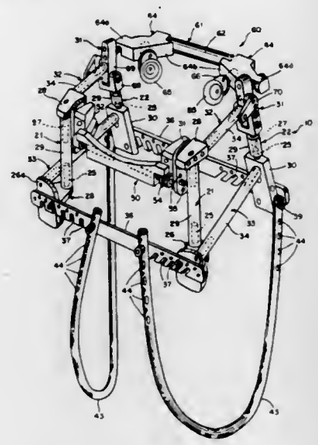
CERVICAL BRACE

Charles McGuinness, 10 Karen Ave., Plainview, N.Y. 11803

Filed Jul. 21, 1995, Ser. No. 505,685

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—18 **13 Claims**



1. A cervical brace comprising:

a support brace which, in use, is receivable about and circumferentially surrounds a wearer's neck and is generally supportable on the wearer's shoulders and upper torso, said support brace including a pair of spaced-apart generally vertically-extending, length-adjustable front struts, and a pair of spaced-apart, generally vertically extending, length-adjustable rear struts, spaced rearwardly from said front struts, each of which struts has a top end and a bottom end, and two pairs of upper and lower spaced-apart, generally horizontally extending, length-adjustable side struts, each pair of which connects one of said front struts to the rear strut disposed rearwardly thereof, a pair of generally horizontally-disposed front and rear cross braces having an adjustable effective length and connecting said front and rear struts, respectively, together adjacent to lower ends thereof, a generally horizontally disposed angle-, position- and length-adjustable chin support member assembly mounted between said front struts adjacent to top ends thereof, and a generally-horizontally disposed and length-adjustable bead support assembly member mounted between said rear struts adjacent to said top ends thereof for engaging and supporting the back of the head of the wearer.

5,624,388

THERAPEUTIC ELBOW SUPPORT METHOD

Jay H. Lehr, 2268 Worthingwoods Blvd., Powell, Ohio 43065

Filed Mar. 7, 1995, Ser. No. 399,506

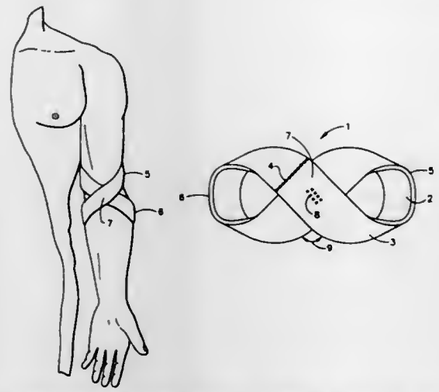
Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—20 **14 Claims**

1. A method for treating tendinitis or epicondylitis of the elbow joint of a patient, comprising the steps of:

(a) providing a therapeutic device consisting essentially of a loop of elastic material;

(b) positioning said loop about the elbow joint in a figure-8 formation, such that said loop is divided into an upper-band and a lower-band wherein said bands intersect at a crossover point, wherein said upper-band encircles the arm above and adjacent said elbow joint, said lower-band encircles the arm below and adjacent said elbow joint, and said crossover point is positioned in the crease of said elbow joint; and



(c) permitting said loop to remain positioned about said elbow joint for a period sufficient to provide the desired relief.

5,624,389

KNEE JOINT ORTHOSIS

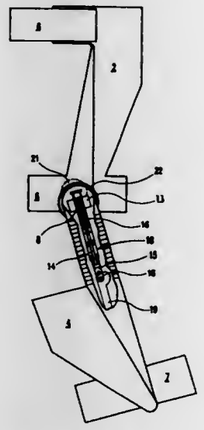
Armin Zepf, Duderstadt, Germany, assignor to Otto Bock Orthopadische Industrie Besitz-Und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany

Filed May 11, 1995, Ser. No. 439,379

Claims priority, application Germany, May 30, 1994, 44 18 806.4

Int. Cl.[6] A61F *5/01*

U.S. Cl. 602—26 **15 Claims**



1. A knee joint orthosis, comprising:

a thigh shell attachable to a thigh;

a lower leg shell connected to said thigh shell and attachable to a lower leg;

a pair of joint rods comprising a first joint rod and a second joint rod laterally opposing said first joint rod, said joint rods connecting said thigh shell to said lower leg shell in an articulated manner for allowing pivoting of said joint rods relative to said thigh shell and said lower leg shell, wherein when a leg is extended said joint rods are located within a plane perpendicular to a sagittal plane of said leg and are approximately parallel to said leg, wherein as a knee of said leg bends said joint rods move behind a fulcrum of said knee;

upper pivotal means for connecting each of said joint rods to said thigh shell and lower pivotal means for operatively connecting each of said joint rods to said lower leg shell;

wherein a distance between said upper pivotal means and said lower pivotal means has a maximum value when said leg is extended and a minimum value when said knee is completely bent;

said upper pivotal means each comprising a guide, wherein an upper section of each of said joint rods is slidably positioned within said guide; and

biasing means, connected to at least one joint rod of said joint rods, for providing a bias opposing pivoting of said at least one joint rod relative to at least one of said thigh shell and said lower leg shell during knee bending, said biasing means providing an opposing bias which varies corresponding to a joint angle varying, said joint angle comprising an angle of an axis of said thigh shell to an axis of said lower leg shell, wherein said bias has a first force value when said joint angle is 0°, a second three value when said joint angle is approximately 30°–40° and a third force value when said joint angle is 90°, wherein said second force value is greater than said first force value and said second force value is greater than said third force value.

5,624,390

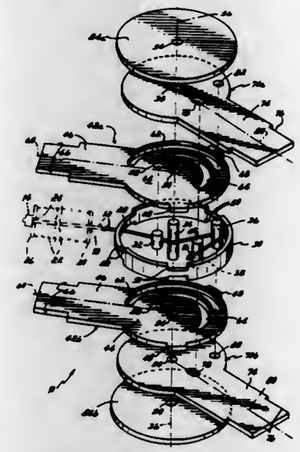
PROSTHETIC JOINT WITH DYNAMIC TORQUE COMPENSATOR

Leonard A. Van Dyne, 2638 Oakmont Dr., W. Harrison, Ind. 47060

Division of Ser. No. 355,605, Dec. 14, 1994, Pat. No. 5,575,764. This application Sep. 13, 1996, Ser. No. 713,494

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **6 Claims**



1. A method of providing constant torque and resistance to movement between two joint extensions coupled for relative angular movement with respect to each other at a joint, said method comprising the steps of:

coupling a cable to one end of a joint extension, the other end of said cable being mounted relative to the other joint extension, one of the joint extensions configured to adiust a length of said cable during angular movement of said joint extensions;

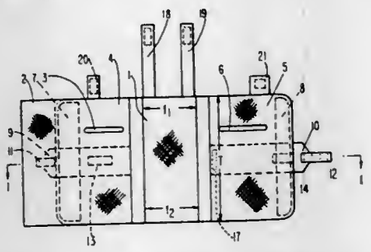
applying a force to one end of said cable;

producing a torque between the joint extensions upon angular movement of the joint extensions relative to each other, said torque being in-part a function of said force applied to said cable; and

adjusting a length of said cable as a function of the angular orientation of the joint extensions with respect to each other to compensate for vagaries of the force application to said cable and maintain said torque as a constant as said extensions move relative to each other.

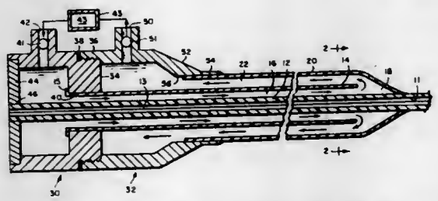
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5,624,391
ELASTIC BANDAGE
Lidi Fan, No. 18 Dong San Jia Li, Xiao Mu, Qiao Lu, Shanghai 200032; Dongfa Xu, 233/1 Xin Ma Lu, Pu Dong Zhou Pu, Shanghai 201318; Jinshu Cao, and Jianming Lu, both of No. 180 Feng Lin Lu, Shanghai 200030, all of China
Continuation of Ser. No. 193,788, Feb. 8, 1994, Pat. No. 5,395,307. This application Dec. 5, 1994, Ser. No. 349,430
Claims priority, application China, Feb. 9, 1993, 93203698.8
Int. Cl.[6] A61F *3/00*
U.S. Cl. 602—63 **7 Claims**



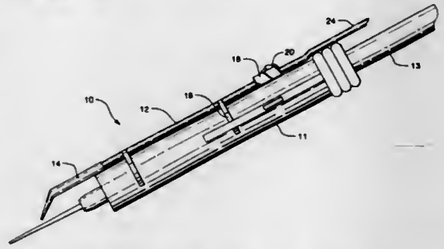
1. An elastic bandage for medical use, comprising:
a. a fabric base bandage member, having two longitudinal and two transverse sides;
b. two outlying bandage members made of elastic fabric, each having two longitudinal and two transverse sides,
each outlying bandage member respectively attached along a transverse side to an opposite transverse side of the base bandage member,
each outlying bandage member having a distal end opposite its attached transverse side,
the attached transverse sides of the outlying bandage members each being of a length substantially equal to that of the corresponding transverse sides of the base bandage member,
at least one outlying bandage member containing a drainage opening;
c. fasteners located on distal ends of the outlying bandage member.

5,624,392
HEAT TRANSFER CATHETERS AND METHODS OF MAKING AND USING SAME
Mark A. Saab, 396 Andover St., Lowell, Mass. 01852
Continuation-in-part of Ser. No. 929,305, Aug. 13, 1992, Pat. No. 5,342,301, and Ser. No. 59,725, May 10, 1993, Pat. No. 5,411,477, which is a continuation of Ser. No. 522,178, May 11, 1990, abandoned. This application Aug. 8, 1994, Ser. No. 287,114
Int. Cl.[6] A61M *3/00*
U.S. Cl. 604—43 **81 Claims**



1. A fluid circulation catheter apparatus comprising in combination: first and second elongated fluid lumens substantially coaxial relative to one another, said lumens being defined respectively by inner and outer walls extending from a proximal end of each lumen to a distal end; fluid inlet or outlet openings at the proximal ends of said fluid lumens; an elongated tubular member substantially coaxial with respect to said fluid lumens and extending from at least the proximal ends of said fluid lumens to at least the distal end of the outermost of said lumens, said tubular member being of smaller diameter than the innermost of said fluid lumens; means for positioning said fluid lumens and said tubular member in mutual coaxial relationship; further wherein said inner wall separates the interior of said innermost lumen from the interior of the outermost lumen and terminates before the distal end of said outermost lumen so as to create at least a partial opening at the distal end of said innermost lumen, and said outer wall is sealed at its distal end to the outer surface of said tubular member so as to create a sealed distal portion of said fluid lumens and a fluid passageway between said lumens at said sealed distal portion whereby substantially all fluid circulating in said lumens passes directly from one to the other.

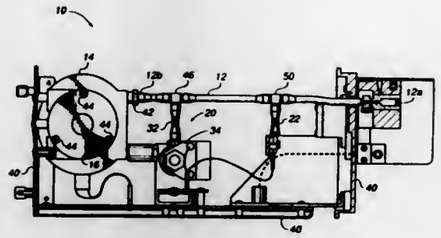
5,624,393
IRRIGATION SYSTEM FOR SURGICAL INSTRUMENTS
Eric L. Diamond, 8 Golden Grass Ct., Owings Mills, Md. 21117
Filed Jan. 3, 1996, Ser. No. 580,972
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—48 **7 Claims**



1. A retrofitting irrigation system for a surgical instrument, comprising:
a narrow tube means attached to a passive fluid source;
a conical nozzle fitting over the outside of a portion of one end of said tube means;
at least one resilient clip for attaching said narrow tube means to a surgical instrument; and
valve means attached to said narrow tube means for controlling the flow of fluid from said passive fluid source through said narrow tube means to a surgical site and positioned near said resilient clip for easy manipulation by a user during surgery.

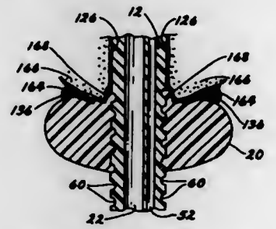
5,624,394
VACUUM SYSTEM AND A METHOD OF OPERATING A VACUUM SYSTEM
James C. Barnitz, Schwenksville; Joseph M. Curley, Lansdale, and David C. Downey, Holland, all of Pa., assignors to Iolab Corporation, Claremoot, Calif.
Filed Oct. 28, 1994, Ser. No. 330,920
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—67 **7 Claims**

1. A vacuum system comprising:
a vacuum line having an inlet and an outlet;
a pump connected to the outlet of the vacuum line for drawing fluid therefrom;
motor means connected to the pump to drive the pump;
a pressure adjusting assembly including a second fluid line forming a branch off said vacuum line having a second inlet for conducting fluid into the vacuum line at an adjustable rate to vary the pressure therein;
a pressure sensor connected to the vacuum line to sense the pressure therein and to generate a pressure signal representing the pressure in the vacuum line; and



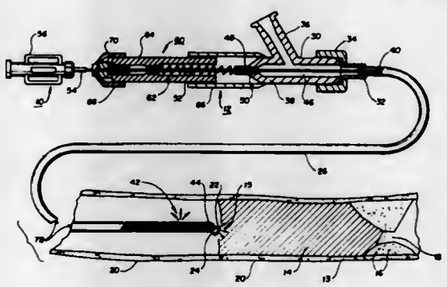
control means connected to the pressure sensor to receive the pressure signal therefrom, and including
i) means to generate a control signal representing the differences between the pressure in the vacuum line and a desired pressure,
ii) means to compare the pressure signal to a given value to determine whether the pressure in the vacuum line is above or below a set point value; and
iii) means to direct the control signal to the pressure adjusting assembly if the pressure in the vacuum line is above the set point value, and to direct the control signal to the motor means if the pressure in the vacuum line is below the set point value.

5,624,395
URINARY CATHETER HAVING PALPITATABLE VALVE AND BALLOON AND METHOD FOR MAKING SAME
Adel A. Mikhail, Bloomington; Gene E. Stobbs; Adel M. Hashw, both of Brooklyn Park, and Shelley N. Johnson, Minnetonka, all of Minn., assignors to CV Dynamics, Inc., Inver Grove Heights, Minn.
Continuation-in-part of Ser. No. 392,529, Feb. 23, 1995, abandoned. This application Oct. 20, 1995, Ser. No. 546,572
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 **15 Claims**



1. A urinary catheter for use by a person having a urethra with an orifice, said person further having an area of tissue surrounding said orifice of said urethra, said urinary catheter comprising:
a body member, said body member being at least partially received within the urethra of the person, said body member having an outer surface, said body member defining at least one recessed region extending radially inward from and relative to said outer surface of said body member;
a retaining member, said retaining member being mounted on said body member and movable between a first position and a second position on said body member, at least a portion of said retaining member traversing said at least one recessed region when said retaining member is moved from said first position to said second position, at least a portion of said retaining member being at least partially received within said recessed region when said retaining member is moved from said first position to said second position, said retaining member having a surface closely confronting the area of tissue surrounding the orifice of the urethra when the retaining member is at said second position on said body member; and
an antiseptic substance, said antiseptic substance being received within said recessed region of said body member such that said portion of said retaining member received within said recessed region contacts and moves at least a portion of said antiseptic substance from said recessed region to said surface of said retaining member when said retaining member is moved from said first position to said second position, such that said portion of said antiseptic substance moved to said surface accumulates on said surface of said retaining member and contacts the area of tissue surrounding the orifice of the urethra when the retaining member is in the second position.

5,624,396
LONGITUDINALLY EXTENDABLE INFUSION DEVICE
Thomas O. McNamara, Los Angeles, and Blair D. Walker, Long Beach, both of Calif., assignors to Micro Therapeutics, Inc., San Clemente, Calif.
Filed Oct. 30, 1995, Ser. No. 550,160
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 **18 Claims**



1. An infusion system for applying pressure against a firm obstruction in a blood vessel while infusing a drug or agent for dissolving the firm obstruction comprising:
an elongated infusion device having an elongated tubular body extending between a proximal end and a distal end thereof containing an internal infusion lumen and adapted to be advanced through a patient's vascular system until the distal end is located in proximity to the site of the obstruction, the elongated tubular body having at least one infusion port in a distal infusion segment thereof adjacent said distal end in fluid communication with the infusion lumen for infusing a dissolving agent in proximity to the obstruction, and proximal end hub means coupled to said proximal end of said elongated body for attachment to a source of dissolving agent for delivering the dissolving agent through the infusion device lumen and out of the infusion port and into the obstruction;
means for applying force axially along the elongated tubular body of the infusion device against the resistance of the obstruction in contact with the distal infusion segment, thereby storing potential energy in the infusion device;
means for longitudinally extending the infusion device distally under the force of the potential energy as the resistance of the obstruction to said force diminishes as it is dissolved.

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5,624,397

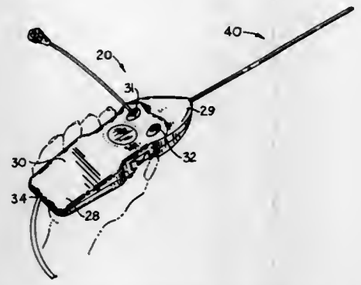
CATHETER HAVING A MULTIPLE DUROMETER

Phillip J. Snoke, 2785 Arden Rd. NW., Atlanta, Ga. 30327; David S. Rowley, 4581-J Valley Pkwy., Smyrna, Ga. 30082; David G. Lincoln, 2860 Parkwood Rd., Smyrna, Ga. 30080, and Kirk W. Charles, 1725 Blossom Ln., Austell, Ga. 30001

Continuation of Ser. No. 970,490, Nov. 2, 1992, Pat. No. 5,399,164. This application Sep. 19, 1994, Ser. No. 308,142

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 35 Claims



1. A catheter for easily inserting into a vessel, cavity or tissue of the buman body to thereby provide improved flexibility and manipulation of a portion of the catheter within the vessel, cavity or tissue, said catheter comprising:

a housing configured to be readily held in the hand of a user;

a tubular proximal portion connected to and extending outwardly from said housing, said proximal portion formed of a flexible polymeric material;

a tubular medial portion coaxial with and integrally formed as a unitary piece with said proximal portion, said medial portion being formed of a flexible polymeric material and being more flexible than said proximal portion;

a tubular distal portion coaxial with and integrally formed as a unitary piece with said medial portion, said distal portion formed of a flexible polymeric material and being less flexible than said medial portion; and

means responsive to a user of the catheter for controlling movement of at least said distal portion for manipulating said catheter within a human body.

5,624,398

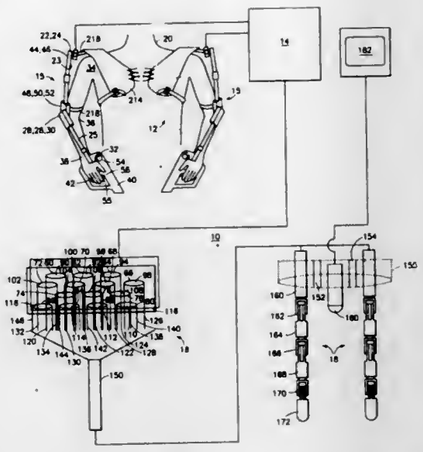
ENDOSCOPIC ROBOTIC SURGICAL TOOLS AND METHODS

Kevin W. Smith, Coral Gables; Juergen A. Kortenbach, Miami Springs; Charles R. Slater; Anthony I. Mazzeo, both of Fort Lauderdale; Theodore C. Slack, Jr., Miami, and Thomas O. Bales, Coral Gables, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Feb. 8, 1996, Ser. No. 597,423

Int. Cl.[6] A61M *37/00*; B25J *15/02*

U.S. Cl. 604—95 15 Claims



1. An endoscopic surgical instrument for use by a medical practitioner to perform an endoscopic procedure at a surgical site within a body of a patient, said instrument comprising:

a) encoder means for encoding movements of a first arm of the practitioner;

b) controller means coupled to said encoder means for translating the movements of the first arm of the practitioner into a transmissible signal;

c) drive means coupled to said controller means for generating mechanical energy in response to said transmissible signal; and

d) a first robotic arm having a plurality of joints, locatable within the body, and having a first end effector, wherein said drive means is coupled to said first robotic arm for transmitting mechanical energy to said first robotic arm to follow at least some of the movements of the first arm of the practitioner.

5,624,399

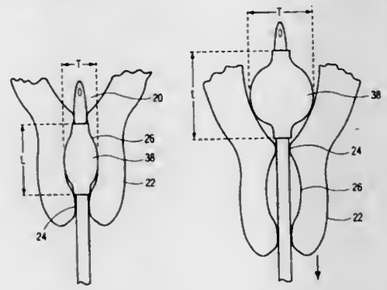
CATHETER HAVING AN INTRACERVICAL/ INTRAUTERINE BALLOON MADE FROM POLYURETHANE

Bernard Ackerman, Metuchen, N.J., assignor to Ackrad Laboratories, Inc., Cranford, N.J.

Filed Sep. 29, 1995, Ser. No. 536,682

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 20 Claims



1. A catheter for non-surgical entry into the cervical canal or the uterus, comprising:

an elongated tubular catheter body for insertion into the cervical canal or the uterus, said catheter body having a distal end and a proximal end; and

an inflatable balloon manufactured from a polyurethane material disposed adjacent to said distal end of said catheter body, wherein said inflatable balloon can be progressively inflated into a first predetermined shape which is operative within the cervical canal and a second predetermined shape which is operative within the uterus.

5,624,400

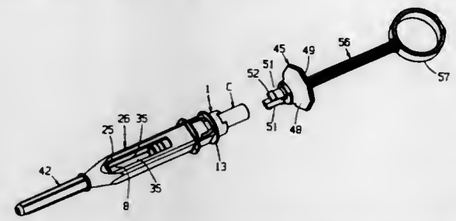
DISPOSABLE SELF-SHIELDING ASPIRATING SYRINGE

John R. Firth, Wilsonville, Oreg., and Anthony R. Perez, Pasadena, Calif., assignors to Safety Syringes, Inc., Arcadia, Calif.

Continuation-in-part of Ser. No. 104,182, Aug. 9, 1993, Pat. No. 5,437,647, which is a continuation-in-part of Ser. No. 783,825, Oct. 29, 1991, Pat. No. 5,279,581, which is a continuation-in-part of Ser. No. 581,734, Sep. 12, 1990, Pat. No. 5,108,378, which is a continuation-in-part of Ser. No. 521,243, May 9, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,625

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 5 Claims



1. A medical syringe for injecting medication into a human, comprising a syringe body, and a protector case movable with respect to the body to expose a needle connected to the body for injection and to cover the needle for disposal, the body having a cavity for receiving a medicine cartridge, the body having a first forward end to which the needle is attached and which needle also is capable of penetrating a cartridge for injecting medicine through the needle into a human, and the body having a second end into which a cartridge can be inserted,

a protector case adapted to slidably fit on the body, and having a first open end through which a needle may extend and a second end, the case and the body have cooperating detents for facilitating placement of the case with respect to the body for uncovering and covering, respectively, an exposed end of the needle, and wherein the first open end of the case is substantially cylindrical with a plurality of radially disposed slots and wherein an outer area of the first open end thereof is in the shape of a solid annular ring, and

a plunger assembly for cooperatively mating with the second end of the body and comprising a movable plunger which is movable with respect to the body for causing medicine from a cartridge to be administered through the needle, the plunger comprising a first end adapted to be manipulated by the user of the syringe and a second end adapted to be inserted into the body for engaging a stopper of a cartridge therein, the plunger being molded of plastic and the second end thereof having an integrally molded harpoon thereon which is adapted to engage and connect with a stopper of a cartridge disposed in the body.

5,624,401

CANNULA WITH PROTECTIVE DEVICE

Nicklas Leijd, Haninge, Sweden, assignor to Bo Andersson, Madrid, Spain

PCT No. PCT/SE94/00353, § 371 Date Oct. 13, 1995, § 102(e) Date Oct. 13, 1995, PCT Pub. No. WO94/23778, PCT Pub. Date Oct. 27, 1994

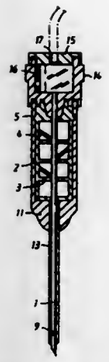
PCT Filed Apr. 20, 1994, Ser. No. 532,665

Claims priority, application Sweden, Apr. 20, 1993, 9301291

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 4 Claims

1. A cannula comprising internally in a fixed position in the front part of the cannula chassis an automatically functioning protective device (protective capsule) for the point of the cannula injection needle, said protective device having a hollow cylindrical construction and including two bottoms each having a respective hollow space and including internally a latching and locking system which by application of the protective device protectively encapsulates the injection needle during the process of separating the needle from the cannula, characterized in that the protective device includes internally radially functioning latching flaps which are constructed to permit forward movement of the injection needle but which when the needle is retracted manually hook firmly to a vertical surface forming part of perforations on the front part of the needle, so that the needle will be deformed and locked firmly in a fixed position in the protective device, which accompanies the needle as the needle is separated from the cannula chassis.



5,624,402

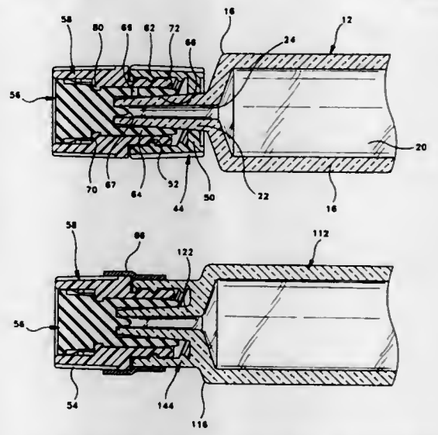
SYRINGE TIP CAP

Claude Imbert, La Tronche, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Dec. 12, 1994, Ser. No. 355,447

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—111 2 Claims



1. A tip cap assembly for a glass syringe barrel having a distally projecting tip with a fluid passage extending therethrough, said tip cap assembly comprising:

a luer collar formed from a thermoplastic material and having means for securely locking said luer collar to said tip, said luer collar having an array of internal threads in spaced concentric relationship around said tip;

a resilient inner cap having opposed proximal and distal ends, said proximal end being configured for sealingly engaging said tip, said proximal end having at least one axially extend-

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ing projection, portions of said inner cap intermediate said proximal and distal ends defining a locking surface;

a rigid outer cap disposed in generally surrounding relationship to said inner cap, said outer cap including at least one axially extending projection engaged with said rib of said inner cap for controlling relative rotation between said inner and outer caps, said outer cap further comprising at least one surface engaged with said locking surface of said inner cap for preventing relative axial movement therebetween, and said outer cap comprising an array of external threads threadedly engaging said threads of said luer collar, said threads being disposed for urging said inner cap into tight sealing engagement with said tip in response to tightening of said outer cap to said luer collar whereby threaded disengagement of said outer cap from said luer collar disengages said inner cap from said tip; and

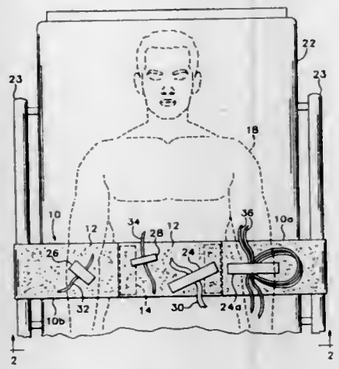
vent means in said inner cap for minimizing vacuum during separation of said inner cap from said tip.

5,624,403

MANAGEMENT SYSTEM FOR MEDICAL TUBES AND CABLES

Jerrie L. Jaquith, 23030 SW. Jaquith Rd., Newberg, Oreg. 97132

Filed May 30, 1995, Ser. No. 454,089
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—179 **16 Claims**



1. A management system for flexible lines, such as tubes and cables, used in the medical treatment of a patient, said system comprising;

(a) an elongate flexible member having opposite ends and including a flexible expanse of material;

(b) a plurality of separate connectors mounted at different positions on said expanse of material;

(c) each of said connectors including separately operable means for selectively attaching and detaching a respective one of said lines with respect to said expanse of material independently of the attachment and detachment of other ones of said lines;

(d) a patient reclining support having a torso-supporting portion;

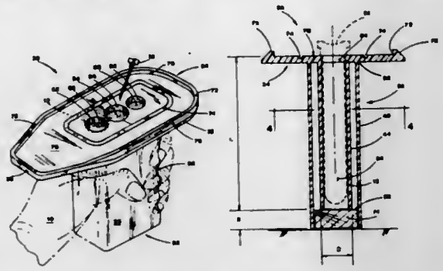
(e) said elongate flexible member including, adjacent said opposite ends, respective fasteners detachably fastened to said patient reclining support at respective fastening locations on said support on opposite sides of said torso-supporting portion of said support, said elongate flexible member having means for adjusting the length thereof between said respective locations when lying atop the torso of a patient to enable said fasteners to operably engage different types of patient reclining supports having substantial differences with respect to said locations.

5,624,404

HAND HELD PHLEBOTOMY PROTECTION DEVICE

Mitchell E. Fisler, 1030 Smyzer Rd., Townville, S.C. 29689

Filed Jun. 29, 1995, Ser. No. 496,400
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—187 **3 Claims**



1. A device held in the hand of an operator for a safe transfer of a body fluid from a syringe to a plurality of test tubes, said device comprising:

a resilient handle for being held in the hand having a plurality of adjustable tubular shafts with walls that are generally uninterrupted over the full length of said test tubes placed within a respective tubular shaft, said handle having an upper end and a lower end;

an uninterrupted resilient exterior handle wall included in said handle and enclosing said shafts between said upper and lower ends for being gripped by said operator's hand and to protect said hand from contact with a needle of said syringe in the process of said safe transfer of said body fluid to said each test tube;

a shield disk extending laterally from said handle near said upper end to a lateral distance such that a clenched fist of said hand about said handle wall is shielded from sustaining a puncture from a needle of said syringe;

a plurality of cutouts within said disk to communicate with said plurality of tubular shafts in said handle; and

each one of said adjustable tubular shafts having an initial cross-section for receiving a respective test tube, and said adjustable tubular shaft having a deformed position in which said initial cross-section is deformed when a sufficient gripping force is imparted to said resilient handle wall by said operator's hand for gripping said test tube to prevent removal.

5,624,405

PREFILLED SYRINGE AND SYRINGE TIP ASSEMBLY

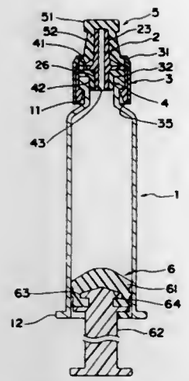
Hitoshi Futagawa, Kusatsu; Masafumi Aramata, Neyagawa; Yoji Arifuku, Kusatsu, and Kenji Himeshima, Sanda, all of Japan, assignors to Nissho Corporation, Osaka-fu, Japan

Filed May 24, 1995, Ser. No. 449,545
Claims priority, application Japan, May 27, 1994, 6-137975
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—199 **20 Claims**

1. A syringe tip assembly for attachment to a mouth portion of a syringe body, said syringe tip assembly comprising:

a sealing member insertable into the mouth portion of said syringe body, said sealing member including a through-hole extending therethrough;

a tip member including a top wall, a skirt portion extending therefrom, and a tubular projection passing through said top wall, said skirt portion having at least one inwardly facing engaging projection and engaging means thereon, said tubular projection including an outwardly extending projection and an inwardly extending projection, said outwardly extending projection extending from the top wall for attachment of a needle thereto, said inwardly extending projection extending from the top wall and fitted in the through-hole of said sealing member;



covering means for closing the outwardly extending projection of said tubular projection; and

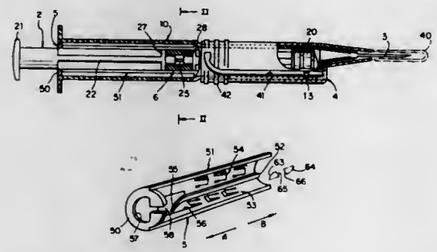
a holding member for holding said covering means and said tip member in place on the mouth portion of said syringe body, said holding member including a top wall member and a skirt member, said skirt member having an engaging projection thereon engagable with the engaging means of the skirt portion of said tip member.

5,624,406

SYRINGE FOR ADMINISTERING A GIVEN NUMBER OF INJECTIONS

Joseph Labouze, Soisy-sous-Montmorency, France, assignor to S.C.E.R. Securingue (Society Civile), Paris, France

PCT No. PCT/FR94/00107, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/16753, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 28, 1994, Ser. No. 500,901
Claims priority, application France, Jan. 29, 1993, 93 00988; Apr. 29, 1993, 93 05108
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—207 **16 Claims**



1. Syringe for administering a given number of injections comprising a body (**10**) in which is disposed a piston (**2**), of the kind comprising at least two racks (**53, 54; 180, 190; 91, 92; 93, 94**) borne by the body (**10**), one (**53, 180, 91, 93**) of these racks authorizing outward motion of the piston (**2**) and the other (**54, 190, 92, 94**) authorizing the return thereof towards a bottom of the body (**10**), and at least one lug borne by the piston (**2**) and driven in translation by the latter, each of said racks being capable of being shifted in a single direction in relation to a lug, and at least one needle (**3**) attached to an end of said body, wherein:

said racks (**53, 54; 180, 190; 91, 92; 93, 94**) are fitted onto the body (**10**), each rack having tongues,

said racks (**53, 54; 180, 190; 91, 92; 93, 94**) are separated longitudinally by a rib (**52, 170, 71, 72, 73**) disposed onto the body (**10**),

the piston (**2**) bears two lugs (**63, 64**), one lug (**63**) being intended to come into abutment against the tongues of a rack (**53**) in order to block all reverse motion of the piston (**2**) during filling of the syringe, the other lug (**64**) being intended to come into abutment against the tongues of the other rack (**54**) to prevent any withdrawal motion of the piston when the piston is pushed inward towards the bottom of the syringe,

said lugs (**63, 64**) are borne by a yoke (**6**) which straddles the piston (**2**) and is rotatably mobile about the axis of said piston (**2**) so as to be driven in translation by the piston (**2**) while rotating freely in relation to the latter,

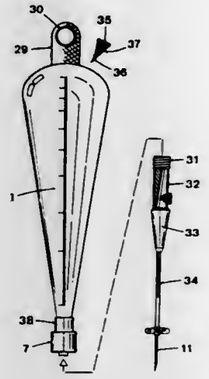
a curved tip or oblique tongue (**55, 81, 83**) is formed at an end of the rib (**52, 71, 73**) so as to bring the lugs (**63, 64**) opposite the rack enabling the piston (**2**) to return towards the bottom of the syringe body.

5,624,407

MEDICATION INJECTING DEVICE AND ACCESSORIES THEREFOR

Jorge A. R. Claro, R. Alfredo Whatley, 536 -Resende - RJ, Brazil

PCT No. PCT/BR94/00007, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/22509, PCT Pub. Date Oct. 13, 1994
PCT Filed Apr. 4, 1994, Ser. No. 343,532
Claims priority, application Brazil, Mar. 31, 1993, 9301376
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—216 **1 Claim**



1. A medication injecting device comprising:

a main recipient containing a fluid for injection, said recipient having distal and proximal ends; and

a terminal element having distal and proximal ends heat sealed at its proximal end to said distal end of said recipient, said terminal element having a fitting connection male luer-lock for receiving a conventional hypodermic needle and having a tubular section with a reinforcement wing, said terminal element proximal end being preferably tapered along the longitudinal main axis and enlarged at the transversal plane;

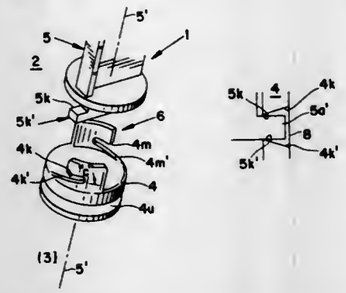
a hypodermic needle;

a flow control valve with an integral dropping chamber said flow control valve having a female luer-lock and being coupled to said male luer-lock via said female leur-lock; and

tubing, said tubing having first and second ends wherein said tubing first end is connected to said needle and said tubing second end is connected to said flow control valve dropping chamber.

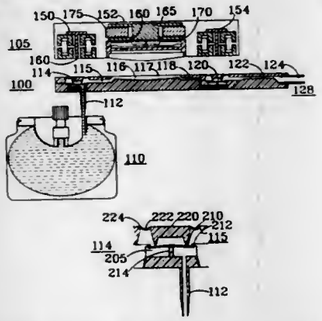
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5,624,408
SYRINGE
Nils G. Helldin, Götene, Sweden, assignor to Dille Safe AB, Ås, Sweden
PCT No. PCT/SE93/00698, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO94/04208, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 23, 1993, Ser. No. 387,945
Claims priority, application Sweden, Aug. 25, 1992, 9202423
Int. Cl.[6] A61M *5/315*
U.S. Cl. 604—224 **11 Claims**



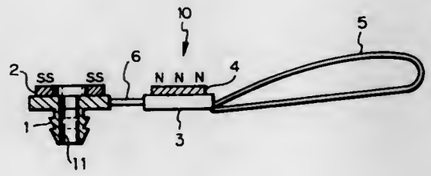
1. A syringe comprising:
a container having a center line, a piston end, and a needle end;
a rod which can be moved reciprocatingly within the container;
a piston which coacts with the rod, and
coupling means for connecting and disconnecting the piston to and from the rod,
said coupling means assumes a connected state when the piston is drawn by the rod from a position proximate to the needle end toward the piston end, and the coupling means is brought to a disconnected state when the piston is pressed by the rod towards the needle end,
said coupling means includes surfaces on a part of the rod which is proximal to the needle end and includes opposing and coacting surfaces on the piston,
a first one of the surfaces located on the piston is inclined at an inclination to an extent such as to cause the piston to rotate about the center line as the rod moves towards the needle end.

5,624,409
VARIABLE-PULSE DYNAMIC FLUID FLOW CONTROLLER
Joseph B. Seale, Gorham, Me., assignor to FluidSense Corporation, Bedford, N.H.
Filed Jun. 10, 1994, Ser. No. 257,872
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—246 **20 Claims**



1. A system for controlling the flow of a fluid from a source to a sink comprising:
a. a source valve couplable to a fluid source containing a deliverable fluid, wherein said source valve is capable of regulating flow of said deliverable fluid from said source;
b. a fluid pathway connecting said source valve to a sink;
c. a volume displacement sensor couplable to said fluid pathway, wherein said sensor converts displacement into an electrical signal; and
d. controller means responsive to said electrical signal from said sensor, said controller means acting on said source valve so that said source valve delivers a controlled selectable bolus volume of said deliverable fluid to said sink.

5,624,410
MAGNETIC CAP FOR MEDICAL APPLIANCE TO BE RETAINED IN HUMAN BODY
Osamu Tsukada, Nagano-ken, and Satoshi Takasaka, Tokyo, both of Japan, assignors to Tsukada Medical Research Co., Ltd., Tokyo, Japan
Filed Mar. 23, 1995, Ser. No. 409,032
Claims priority, application Japan, Jul. 4, 1994, 6-152072
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—256 **4 Claims**



1. A magnetic cap for medical appliance to be retained in a human body, comprising:
a connecting plug body having an upper face;
an annular magnet secured to said upper face of said connecting plug body which is adapted to be removably secured to the medical appliance;
a lid body having an upper face;
a disk like magnet secured to said upper face of said lid body which is detachably coupled to said connecting plug body through a flexible band secured to said lid body at a first radial position, each of said magnets having a contact face; and
a strap attached to an end of said lid body at a second radial position substantially opposing said first radial position such that said lid body can be detached from said connecting plug body;
wherein said magnets contact each other along respective contact faces, magnetic poles on said contact faces of said annular and disk like magnets being directed in opposition to each other.

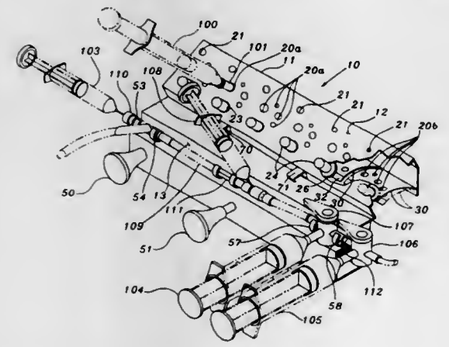
5,624,411
INTRAVASCULAR STENT AND METHOD
Ronald J. Tuch, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 52,878, Apr. 26, 1993, Pat. No. 5,464,650. This application Jun. 7, 1995, Ser. No. 483,005
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—265 **27 Claims**

1. A device for delivery of a drug into a body lumen comprising:
(a) a generally cylindrical, radially expandable stent body;
(b) a coating on the stent body a first coating layer comprising a therapeutic substance and a second coating layer comprising a porous polymer overlaying the first coating layer;
(c) means for introducing the stent body and coating translumenally into a selected portion of the body lumen; and



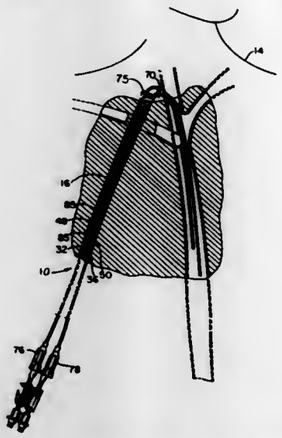
(d) means for radially expanding the stent into contact with the body lumen.

5,624,412
I-V CADDY
Jack L. Weekley, 3358 S. Old State Rd. 15, Wabash, Ind. 46992
Filed Jul. 11, 1995, Ser. No. 500,824
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 **8 Claims**



1. An I-V Caddy comprising:
a support bracket;
a platform body having a first portion with a plurality of openings therethrough that are arranged in a pattern and sized to receive a needle cap, attached to a second portion with a surface having an opening therein and attached to a base portion that mates to said support bracket;
means, attached to said platform body, for removably holding a needle cap received in one of said plurality of openings;
means, attached to said platform body, for removably holding an I-V port device against said surface in a substantially fixed position relative to said platform body;
wherein said means for removably holding a needle cap includes a portion of said plurality of openings having threads capable of engaging a needle cap;
wherein said means for removably holding a needle cap further includes at least one cap holder having a base part attached to said platform body, a free end and a plurality of clearance holes therethrough that are arranged in a second pattern and sized to receive a needle cap;
said base part including a biased hinge portion that biases said free end toward a gripping position in which a needle cap is wedged in one of said clearance holes, but said free end being movable to a release position against the action of said biased hinge portion a sufficient distance that a needle cap becomes unwedged in said one of said clearance holes; and
at least one needle release mounted on said platform and being in contact with one of said at least one cap holder and being capable of moving said free end to said release position.

5,624,413
METHOD FOR INSERTING A MULTIPLE CATHETER ASSEMBLY
David F. Markel, Collegeville, and Anthony J. Madison, Harleysville, both of Pa., assignors to Medical Components, Inc., Harleysville, Pa.
Filed Feb. 23, 1996, Ser. No. 606,152
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 **20 Claims**

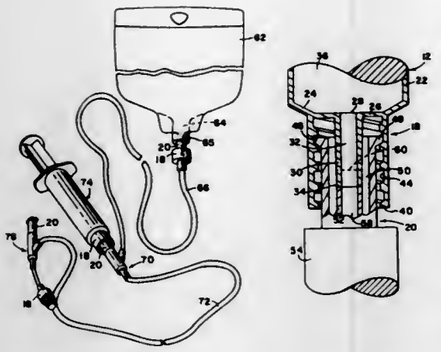


1. A method for inserting a multiple catheter assembly into an area of a body to be catheterized, the assembly comprising a first and a second catheter, each catheter having a distal portion and a proximal portion, the first catheter for withdrawing fluid from the area and the second catheter for delivering fluid to the area, the first and second catheters being independently movable with respect to each other along their entire length, the method comprising the steps of:
(a) making an incision near the area;
(b) inserting the distal portions of the first and second catheters in juxtaposed relation through the incision and through a single insertion site into the area;
(c) adjusting a longitudinal distance between the proximal portions of the first and second catheters to provide a predetermined longitudinal distance between the distal portions of the first and second catheters within the area; and
(d) securing the proximal portions of the first and second catheters.

5,624,414
NEEDLELESS STRAIGHT INFUSION PORT
Conrad H. Boettger, Hesston, Kans., assignor to St. Francis Research Institute, Wichita, Kans.
Continuation of Ser. No. 67,394, May 25, 1993, Pat. No. 5,464,399, which is a continuation of Ser. No. 837,263, Feb. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,373
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **2 Claims**

1. An improved needleless straight injection port comprising:
a generally centrally disposed housing;
a female luer end permanently secured to the housing at one axial extremity thereof,
said female luer end including a generally cylindrical, annular wall having external threads disposed for meshing engagement with internal threads on a component to be attached to the female luer end;
a normally closed check valve within said housing for controlling the movement liquid through the port,

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said check valve including a one-piece, resilient poppet yieldably biased into a closed position and having an actuating stem that projects axially into surrounded relationship with the wall for opening depression by the cannula of a component attached to the port;

a male luer end permanently secured to the housing at an opposite axial extremity thereof,

said male luer end including a generally cylindrical, annular collar having internal threads disposed for meshing engagement with external threads on a device connected with the male luer end; and

an axially extending, blunt cannula circumscribed by said collar and disposed within a space defined by the collar,

said cannula having an internal passage for permitting the flow of liquid through the port when the check valve is open.

5,624,415

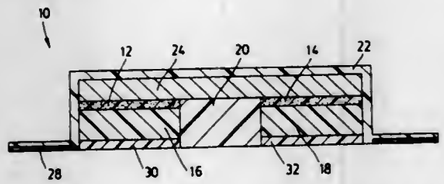
REDUCTION OF SKIN IRRITATION AND RESISTANCE DURING ELECTROTRANSPORT

Michel J. N. Cormier, Mountain View, Calif.; Philip W. Ledger, Bedford, United Kingdom; Juanita Johnson, Brisbane, Calif.; Joseph B. Phipps, Maple Grove, Minn., and Stella Chao, San Carlos, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Apr. 24, 1995, Ser. No. 427,336

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—290 **17 Claims**



1. In a method of delivering an agent by electrotransport through a body surface, said method including placing an anodic reservoir and a cathodic reservoir of an electrotransport agent delivery device in ion-transmitting relation with said body surface, at least one of the reservoirs containing the agent to be delivered, applying an electrical potential across the anodic and cathodic reservoirs in order to deliver the agent through the body surface by electrotransport; the improvement comprising during said electrotransport agent delivery, performing a step selected from the group consisting of:

(a) maintaining, during electrotransport agent delivery the anodic reservoir at a pH above 4 and maintaining, during electrotransport agent delivery, the cathodic reservoir at a pH below 4; and

(b) maintaining, during electrotransport agent delivery, the cathodic reservoir at a pH below 4.

5,624,416

DEVICE FOR CLEANING SKIN PORES

Viktor Schatz, Deutschherranstrasse 92, D-53177 Bonn, Germany

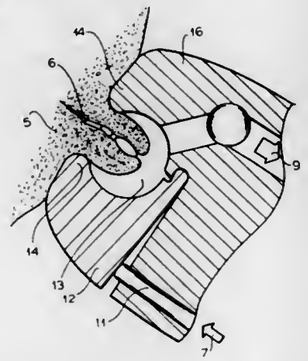
PCT No. PCT/EP93/01856, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/02186, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 15, 1993, Ser. No. 373,242

Claims priority, application Germany, Jul. 17, 1992, 42 23 516.2

Int. Cl.[6] A61M *1/00;35/00*

U.S. Cl. 604—313 **6 Claims**



1. A device for cleaning skin pores of the skin of a person to be treated which comprises:

a pair of jaws relatively movable to spread said jaws apart and cause said jaws to approach one another;

a suction source for applying suction between said jaws, thereby drawing a skin pore between said jaws when said jaws are spread apart; and

means for pressing said jaws against said skin and squeezing contaminants from said skin pore, said suction force being pulsed to massage said skin with repetitive drawing of skin pores between said jaws and the squeezing of contaminants therefrom as said device is moved on the skin of the person, said jaws defining a slot between them, said slot being formed with spaced-apart chambers to which suction is applied and for receiving respective pores of the skin.

5,624,417

NON-REFLUXING SUCTION CANISTER SYSTEM AND COMPONENTS THEREOF

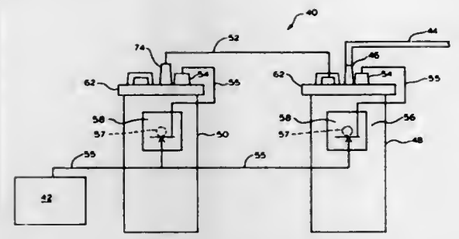
Charles Cook, Whitehouse, Tex., and Mostafa Zomorodi, Palmdale, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 86,782, Jul. 1, 1993, Pat. No. 5,470,324. This application Jun. 7, 1995, Ser. No. 484,964

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—319 **9 Claims**

1. A medical suction fluid collection system comprising: a first suction fluid collection reservoir for collecting medical or biological fluids; a second suction fluid collection reservoir for collecting medical or biological fluids; a fluid conduit for connecting the first and second suction fluid collection reservoirs; wherein said first and second suction fluid collection reservoirs further include respective vacuum ports adapted for connection to a vacuum source when said fluid conduit is connecting said first and second suction fluid collection reservoirs; and a moveable valve formed in the fluid conduit and separate from the first and second suction fluid collection reservoirs for allowing fluid flow in the fluid conduit in a first direction when the conduit is engaged with the second suction fluid collection reservoir, and for preventing fluid flow in a reverse direction relative to the first direction when the fluid conduit is disengaged from the second suction fluid collection reservoir.



5,624,418

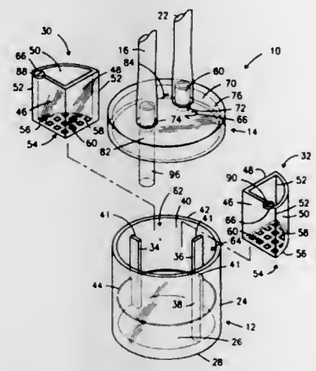
COLLECTION AND SEPARATION DEVICE

R. David Shepard, 38135 Market Sq., Zephyrhills, Fla. 33540

Filed Oct. 4, 1995, Ser. No. 539,193

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—319 **34 Claims**



1. A collection and separation device for use in combination with a fluid collection container operatively coupled to a suction source to withdraw body fluids and collect tissue specimens from a patient comprising a tissue collection container operatively coupled between the patient and the fluid collection container having a first tissue collection basket removably disposed therein to receive body fluids and tissue specimens from the patient including a separator to separate the body fluids and tissue specimens such that body fluids and tissue specimens from the patient are received in said first tissue collection basket where specimens are separated whereby tissue specimens are retained in said first tissue collection basket for subsequent removal from said tissue collection container and the body fluids are collected in the fluid collection chamber, said collection and separation device further including a first tissue collection basket retention means comprising a first and second substantially vertically disposed spaced apart substantially parallel ribs extending inwardly from the inner surface of said tissue collection container to cooperatively form a first tissue collection basket sector to selectively retain said first tissue collection basket therein.

5,624,419

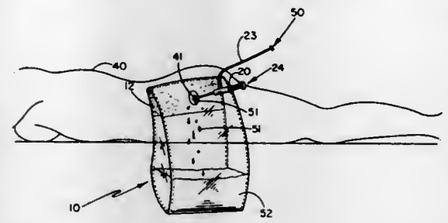
CLOSEABLE, DISPOSABLE WOUND CARE SYSTEM

Robert A. Ersek, 62 Pascal, Austin, Tex. 78746, and Arthur A. Beisang, 5009 Lake Ave., Unit 304, White Bear Lake, Minn. 55110

Filed Apr. 24, 1995, Ser. No. 427,671

Int. Cl.[6] A61F *5/44;13/00;* **A61B** *19/00;* **A61M** *1/00*

U.S. Cl. 604—355 **11 Claims**



1. A receptacle for use in the collection, transportation, storage and disposal of contaminated wound fluids from a patient having a wound, comprising:

a moisture impermeable film container for receiving contaminated wound fluids, said container having opposing first and second generally planar surfaces, generally parallel opposing lateral edges, an upper periphery, and a lower periphery;

a first closeable opening formed in said first generally planar surface proximates said upper periphery;

a continuous adhesive film layer disposed on said first generally planar surface proximate said first closeable opening defining an adhesive patient surface; and

a releasable protective film member removably secured to said adhesive patient surface to cover said adhesive film layer prior to use;

wherein, during use, said protective film member is removed from said adhesive patient surface to avail said adhesive film lawyer for securing said container to said patient, and said adhesive patient surface is positioned on said patient such that said first closeable opening exposes said wound of said patient; and

wherein, following use, said adhesive patient surface is removed from said patient and folded to sealably close said first closeable opening.

5,624,420

DISPOSABLE TRAINING PANTS HAVING A NON-PERFORATED TEAR LINE THROUGH ELASTIC

Russell P. Bridges, Cincinnati; James R. Golan, Ginti; Stephen J. Lange, Cincinnati; Michael J. Madill, Wyoming, and Robert H. Siegfried, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 83,069, Jun. 25, 1993, abandoned. This application Jul. 17, 1995, Ser. No. 503,330

Int. Cl.[6] A61F *13/15;* **A41B** *9/00;* **B29C** *65/06;* **B32B** *31/20*

U.S. Cl. 604—365 **11 Claims**

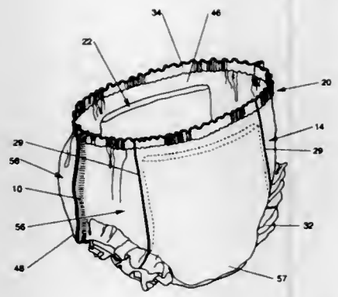
1. An easily removable elasticized disposable undergarment, comprising:

a chassis having a front portion and a rear portion, said front portion and said rear portion contiguous through a crotch portion;

an elastic band located in said chassis;

at least one tear line comprising a series of periodically spaced bond sites separated by unbonded areas located on said chassis and said elastic band, said periodically spaced bond sites

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providing a zone of weakness such that said chassis tears at said tear line during removal of said undergarment.

5,624,421

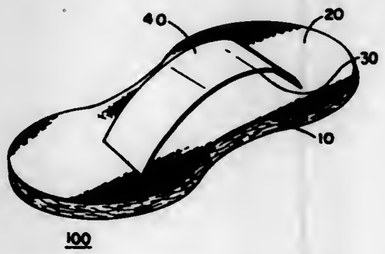
ABSORBENT PRODUCTS HAVING FLEXIBLE HYDROPHILIC WICK MEANS

Shmuel Dabi, Highland Park, and Kenneth Kraskin, Milltown, both of N.J., assignors to McNeill-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 334,449, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 24,879, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 777,427, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 649,281, Jan. 30, 1990, abandoned, which is a continuation of Ser. No. 431,059, Nov. 3, 1989, abandoned. This application Mar. 26, 1996, Ser. No. 621,702

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—378 **18 Claims**



1. A sanitary napkin comprising:

(a) an absorbent element having longitudinally extending sides, transverse ends, a body-facing side and an undergarment-facing side; and

(b) resilient wick means disposed on said body-facing side, said wick means having means for absorbing body fluid and thereafter transporting said body fluid to said absorbent element, said wick means being anchored to said absorbent element at at least two spaced apart anchoring locations interior of the transverse ends such that said wick means is arched and biased away from said body-facing side to provide a body-contacting portion intermediate of the anchoring locations, said wick means being supported in said arched shape by its resiliency and unsupported by any structure except the inherent support supplied by the resiliency of the wick means, wherein said body fluid is first drawn into said wick means and then into said absorbent element and, wherein said wick means has an absorbency less than the absorbency of said absorbent element.

5,624,422

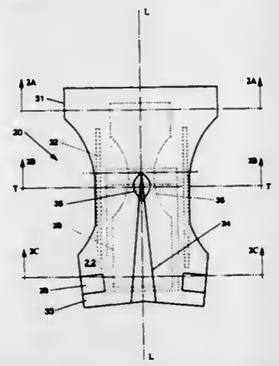
ABSORBENT ARTICLE HAVING AN EXTENDIBLE SPLIT CORE

Patrick J. Allen, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1994, Ser. No. 310,604

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **8 Claims**



1. A disposable absorbent article having a longitudinal axis, a transverse axis orthogonal thereto and longitudinally opposed front and rear waist regions, said disposable absorbent article comprising:

a substantially liquid pervious topsheet having opening and at least one elastically extendible panel, said panel spanning said longitudinal axis and increasing in transverse dimension as said rear waist region is approached; a liquid impervious backsheet at least partially peripherally joined to said topsheet and having at least one extendible panel corresponding in position to said panel of said topsheet; and an absorbent core intermediate said topsheet and said backsheet, said core having at least one longitudinal split, said split extending through a transverse edge of said core and diverging as said rear waist region is approached and corresponding in position to said topsheet panel and said backsheet panel, whereby fecal material deposited through said opening may cause elastic extension of said panels, and is isolated from said topsheet.

5,624,423

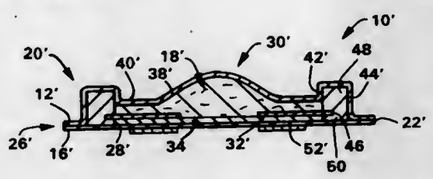
ABSORBENT ARTICLE HAVING BARRIER MEANS AND MEDIAL BULGE

Sowmya S. Anjur, Appleton, and Joseph DiPalma, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 30, 1994, Ser. No. 348,270

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—385.1 **23 Claims**



1. An absorbent article having an outer perimeter, said article comprising;

a) a bodyfacing liquid-permeable cover;

b) a garment faring liquid-impermeable baffle;

c) an absorbent core disposed between said cover and said baffle, said absorbent core having a periphery inward from said outer perimeter and an absorbent protuberance which extends above a plane parallel to said periphery; and

d) barrier means encircling said protuberance for intercepting body fluid migrating toward said outer perimeter, said barrier means being positioned between said periphery and said outer perimeter and having a height of between about 2 millimeters to about 25 millimeters, said barrier means having horizontal channel proximate said absorbent core partially dividing said barrier means into a too section and a bottom section wherein said absorbent core partially resides between top and bottom sections, said barrier means being sufficiently compressible so that a force of about 0.1 psi to about 2 psi is needed to compress said barrier at least 50 percent and said absorbent article having a flexure -resistance of less than about 1 kilogram.

5,624,424

DISPOSABLE DIAPER

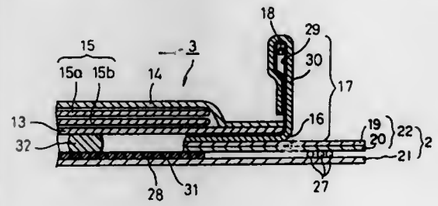
Miyuki Saisaka, Tokyo; Masaru Tsubata, Soka; Yoshio Hirai, Tokyo; Mie Takahashi, Kasugai, and Sadayoshi Terada, Kamakura, all of Japan, assignors to New OJI Paper Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,649

Claims priority, application Japan, Feb. 25, 1994, 6-051042; Nov. 11, 1994, 6-301694; Jan. 6, 1995, 7-015600

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **12 Claims**



1. A disposable diaper comprising:

(A) an outer member having front and back waist sections located at the front and back end portions of the outer member and a pair of crotch sections each having an inwardly indented portion by which a crotch opening is formed when side edge portions of the front waist section are connected to side edge portions of the back waist sections, and comprising (a) an outermost sheet layer capable of elongation in a transverse direction of the diaper and (b) a pair of side liner sheet layers covering both side portions of the outermost sheet layer and extending along a longitudinal direction of the diaper; and

(B) a liquid absorbent member arranged on a middle portion of the outer member, extending along the longitudinal direction of the diaper, and comprising (c) a liquid non-permeable back sheet layer located on a middle portion of the outermost sheet layer (a), (d) a liquid permeable top sheet layer superposed on the liquid non-permeable back sheet layer (c), and (e) a liquid absorbent pad layer interposed between the liquid non-permeable back sheet layer (c) and the liquid permeable top sheet layer (d),

wherein

each of the side liner sheet layers (b) consists of a composite sheet which consists of (i) an elastic sheet ply capable of expansion and contraction in the transverse direction of the diaper and (ii) at least one non-elastic sheet ply laminated on at least one surface of the elastic sheet ply (i) and capable of elongation in the transverse direction of the diaper,

the composite sheet for the side liner sheet layers (b) exhibits an elastic stress of 300 g/25 mm or less under an elongation of 50% in a direction in which the elastic sheet ply is capable of expansion and contraction, and a recovery of 80% or more from the elongation when the elastic stress is released,

the elastic sheet ply (i) of the composite sheet consists of an elastic, non-porous polyurethane resin film having a moisture-permeability of 2000 to 6000 g/m^2·24 hr, and the non-elastic sheet ply (ii) consists of a nonwoven fabric, and

a non-elastic intermediate sheet layer is interposed between a middle portion of the outermost sheet layer (a) and the liquid absorbent member (B) and connected to the side liner sheet layers (b).

5,624,425

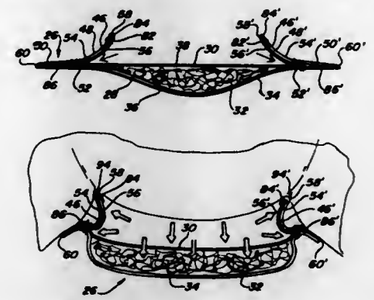
LOCALIZED APPLICATION OF FINE DENIER FIBERS ONTO A SPUNBONDED WEB FOR OPTIMIZATION OF LEG CUFF HYDROPHOBICITY IN DIAPERS AND PADS

Brian F. Gray, Burlington, and Pietro Cecchetto, Maple, both of Canada, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 5, 1995, Ser. No. 417,084

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—385.2 **24 Claims**



1. In a body fluid absorptive article, said article including:

a longitudinal body, said body having a long axis, said body including an absorbent core consisting of a central crotch zone having two opposed sides extending outwardly from each side of said crotch zone, each of said sides having a distal edge defining a leg opening, said crotch zone defining means for positioning adjacent the crotch of the wearer to absorb body fluids, said absorbent core being composed of fluid-absorbent material, said body further including a fluid-permeable topsheet and a fluid-impermeable backsheet, said fluid-absorbent material of said absorbent core being disposed between said topsheet and said backsheet; and

a pair of cuff assemblies, each of said pair of cuff assemblies including a cuff standing portion for fitting substantially within the groins of the wearer's crotch area and a cuff base portion for attachment to said longitudinal body, said cuff standing portion having a free end, each of said cuff assemblies having a first layer and a second layer, one of said layers extending from said free end of said cuff standing portion to said distal edge of said body and the other of said layers extending from said cuff standing portion and terminating between said cuff base portion and said distal edge of said body.

5,624,426

DIAPER HAVING AN IMPROVED LEG CUFF

Donald C. Roe, West Chester, and Kimberly A. Dreier, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

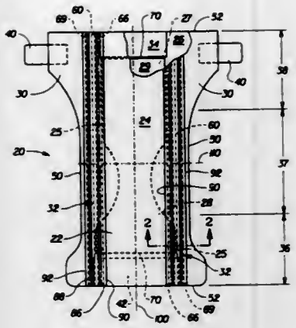
Filed May 3, 1996, Ser. No. 642,738

Int. Cl.[6] A61F *13/15*

U.S. Cl. 601—385.2 **18 Claims**

1. A disposable absorbent article to be fitted to a wearer having a front waist region, a rear waist region, a crotch region disposed between said front waist region and said rear waist region, a longitudinal centerline and a lateral centerline, the absorbent article comprising:

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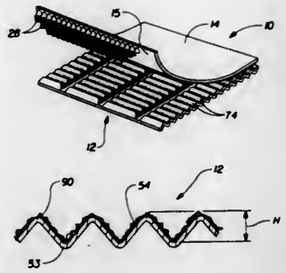
a topsheet;
a backsheet joined with said topsheet;
an absorbent core disposed between said topsheet and said backsheet, said absorbent core having opposed longitudinal edges; and
a leg cuff extending at least laterally outwardly from each one of said opposed longitudinal edges, each said leg cuff having an inner surface, an outer surface opposed to said inner surface, a proximal edge, a distal edge and an elasticized region disposed between said proximal edge and said distal edge, said elasticized region having an inner edge, an outer edge disposed laterally outwardly from said inner edge and a width of between about 3 mm and about 15 mm, each said proximal edge extending generally longitudinally along and adjacent to at least a portion of one of said opposed longitudinal edges, said distal edge of each respective leg cuff disposed laterally outwardly from said proximal edge of each said respective leg cuff, at least a portion of each said leg cuff comprising:
an inner bond disposed adjacent at least a portion of said proximal edge of each said leg cuff, said inner bond joining each said leg cuff to the absorbent article;
an outer bond spaced laterally outwardly from said inner bond, said spacing between said inner bond and said outer bond defining a leg cuff base width, said outer bond joining at least a portion of each said leg cuff adjacent said distal edge to the absorbent article,
an inner wall extending upwardly and laterally outwardly from said inner bond to said inner edge of said elasticized region, said inner wall having a first height between about 30 mm and about 80 mm;
an outer wall extending upwardly and laterally inwardly from said outer bond to said outer edge of said elasticized region, said outer wall having a second height between about 15 mm and about 50 mm; and
an elastic disposed in said elasticized region of each said leg cuff;
said elasticized region of each said leg cuff being provided generally parallel to the skin of the wearer when the absorbent article is fitted to the wearer.

5,624,427
FEMALE COMPONENT FOR REFASTENABLE FASTENING DEVICE

Carl L. Bergman, Loveland; Kimberly A. Dreier; Miguel A. Robles, both of Cincinnati; Donald C. Roe, West Chester; Mark J. Kline, and Margaret H. Hasse, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 18, 1995, Ser. No. 374,269
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—391 **13 Claims**

1. A female component of a refastenable fastening device, said female component comprising:
a base web material exhibiting an elastic-like behavior in response to an applied axial elongation along at least one axis thereof, said base web material including a strainable network

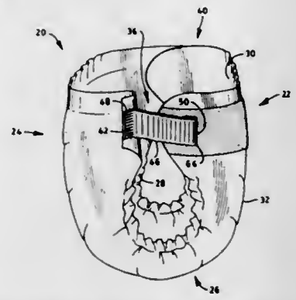


having first and second regions formed of substantially the same material composition, said first region providing a first, elastic-like resistive force to said applied axial elongation, and said second region providing a second resistive force to further applied axial elongation, said second resistive force being different in magnitude from said first resistive force, thereby providing at least two stages of resistive forces, said second region of said base web having a plurality of raised rib-like elements; and
a plurality of filaments joined to said rose web material, whereby said filaments are supported by said rib-like elements such that said filaments are capable of entangling hooks of a complementary male fastening component.

5,624,428
ABSORBENT ARTICLE HAVING A PANTLIKE PULL DOWN FEATURE

Barbara O. Sauer, Fremont, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 29, 1995, Ser. No. 564,770
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **21 Claims**



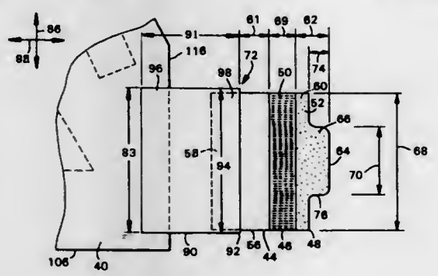
1. An absorbent article which includes a front portion, a rear portion, a crotch portion which extends between and connects said front portion to said rear portion, and a pair of longitudinal side portions, said absorbent article comprising a pair of fastening means which are located along said longitudinal side portions of said absorbent article and which are configured to releasably connect said rear portion of said absorbent article to said front portion of said absorbent article to create a waist opening in said absorbent article and secure said absorbent article about a waist of a wearer when in use wherein each of said fastening means comprises:
a) a primary fastener which is connected to said rear portion of said absorbent article and which is releasably engageable with said front portion of said absorbent article to secure said absorbent article about said waist of said wearer when in use;
b) an expansion member which defines a first surface and a second surface opposite said first surface and which includes an attached end which is connected to said rear portion of said

absorbent article and a free end which remains unconnected to said rear portion of said absorbent article; and
c) a secondary fastener which is connected to said free end of said expansion member and which is releasably engageable with said front portion of said absorbent article wherein said primary fastener is connected to said first surface of said expansion member at said attached end and said secondary fastener is connected to said second surface of said expansion member at said free end and wherein, in use, said secondary fastener is capable of remaining releasably engaged with said front portion of said absorbent article after said primary fastener has been disengaged from said front portion of said absorbent article to allow said waist opening of said absorbent article to expand such that said absorbent article can be pulled up or down over said wearer's hips.

5,624,429
MECHANICAL FASTENING SYSTEM WITH GRIP TAB

Andrew M. Long; Andrew E. Huntoon; Sang V. Tran; Lori A. Roocks, all of Appleton; Patrick R. Lord, Neenah, and Gordon A. Shaw, Greenville, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 6, 1996, Ser. No. 603,477
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **31 Claims**

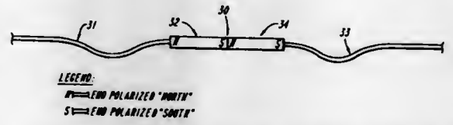


1. An article, comprising:
a side panel having a longitudinal dimension and a lateral dimension;
a first mechanical fastening component operably connected to a first, laterally outboard edge portion of said side panel, said first mechanical fastening component including a base layer which has an appointed fastening region and an appointed grip region, said fastening region having a plurality of first mechanical fastening elements which are integrally formed with said base layer and extend away from a base plane of said base layer, said first mechanical fastening elements configured to operably engage a cooperating, second mechanical fastening component, said grip region having a relatively lower density of said first mechanical fastening elements per unit area, as compared to said fastening region, said fastening region interposed between said side panel and said grip region, said grip region of said base layer of each hook material member including a plurality of non-engaging protrusions extending therefrom, and said grip region of said base layer providing a laterally terminal edge of said article.

5,624,430
MAGNETIC DEVICE TO ASSIST TRANSCORPOREAL GUIDEWIRE PLACEMENT

Darwin Eton, 822 N. East Ave., Oak Park, Ill. 60302; Richard Torti, 9 Maud Graham Cir., Burlington, Mass. 01803, and Vijay Gondhalekar, 357 Commercial St., #501, Boston, Mass. 02109

Filed Nov. 28, 1994, Ser. No. 345,939
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—1 **15 Claims**



1. A magnetic device for establishing a continuous guide way in a system of interconnected body vessels, organs, and passages in tissue where the magnetic device enters the system at a first access site and exits the system at a second access site remote from the first access site, comprising:
(a) a pair of thin wires sized for insertion into the system and each having a distal end and a proximal end, said wires being of sufficient length to traverse the system,
(b) a pair of elongate magnetic elements sized and configured for axial insertion into the system, each of said magnetic elements having a distal end and a proximal end,
(c) means for attaching said distal end of each of said pair of wires to the proximal end of one of said pair of magnetic elements of a first polarity, and means for attaching said distal end of the second of said pair of wires to said proximal end of the second of said pair of magnetic elements of a second polarity opposite to that of said first polarity, said proximal ends of said pair of wires being free and said distal ends of the said pair of magnetic elements being free, whereby said free distal ends of said pair of magnetic elements are drawn into an axially self-aligning, magnetic element end-to-magnetic element end coupling connection when said distal ends of said magnetic elements are near one another in the system, said coupling connection and said magnetic elements individually being sized and configured for movement in narrow and curved portions of said interconnected body vessels, organs and passages and the magnetic axis of each one of said magnetic elements being aligned with (i) the axis of the portion of said wire attached to said one magnetic element and (ii) with the magnetic axis of the other one of said magnetic elements when they are coupled.

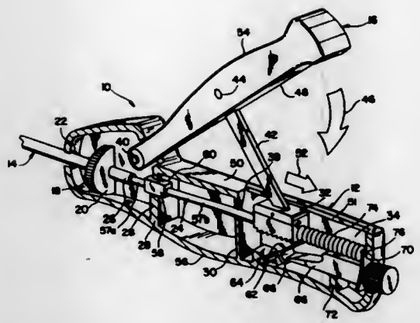
5,624,431
HANDLE FOR MANIPULATING A LAPAROSCOPIC TOOL

Stephen W. Gerry, Bethel; David T. Green, Westport, and Henry Bolanos, East Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 39,520, Mar. 29, 1993, Pat. No. 5,409,478, which is a continuation of Ser. No. 770,543, Oct. 3, 1991, abandoned. This application Apr. 5, 1995, Ser. No. 417,241
The portion of the term of this patent subsequent to Mar. 29, 2013, has been disclaimed.
Int. Cl.[6] A61B *19/00*
U.S. Cl. 606—1 **18 Claims**

1. A handle for a laparoscopic instrument, comprising:
a) an elongated casing defining a longitudinal axis and having a proximal end and a distal end;
b) an outer shaft extending distally from the distal end of the elongated casing;
c) an actuating shaft concentrically positioned and interconnected within the outer shaft, the actuating shaft at least partially supported within the elongated casing for longitudi-

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nal movement in a first direction and a second direction, the actuating shaft extending distally from the elongated casing;

d) a gripping member pivotably mounted to the elongated casing;

e) a link member having one portion pivotably connected to the gripping member and a second portion pivotably connected to the actuating shaft for moving the actuating shaft in the first direction when the gripping member is pivoted toward the elongated casing in a corresponding first direction;

f) biasing means to normally bias the actuating shaft in the second direction; and

g) detent means disposed on the elongated casing and structured for allowing incremental movement of the actuating shaft in the first direction while restraining the longitudinal movement of the actuating shaft in the second direction.

5,624,432

ILLUMINATING BOUGIE AND METHODS FOR DIAGNOSTIC, THERAPEUTIC AND SURGICAL PROCEDURES

Jean P. Angelchik, 522 W. Northview, Phoenix, Ariz. 85012

Continuation of Ser. No. 131,995, Oct. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 73,172, Jun. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 772,332, Oct. 7, 1991, abandoned. This application Feb. 17, 1995, Ser. No. 390,624

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—2 **2 Claims**



1. An illuminated bougie for insertion into a human body through a normal body opening or a surgical incision comprising:

a) an elongate bougie having a proximal end and a distal end, and being formed of a flexible plastic material which transmits and diffuses light laterally to illuminate adjacent body tissue along the entire length of said bougie;

(b) means for attaching the proximal end of said bougie to the light-transmitting end of a fiber optic bundle.

5,624,433

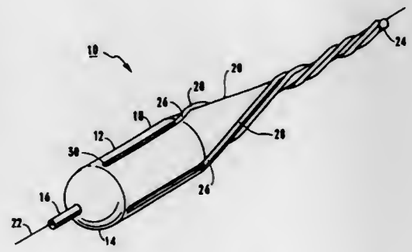
ANGIOPLASTY BALLOON WITH LIGHT INCISOR

Herbert R. Radisch, Jr., San Diego, Calif., assignor to Interventional Technologies Inc., San Diego, Calif.

Filed Apr. 24, 1995, Ser. No. 429,917

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—7 **12 Claims**



1. A device for dilating a stenosis in a vessel which comprises:

a laser rod having a distal portion, said distal portion of said laser rod being formed with a light groove for emitting laser light from said rod to incise the stenosis;

means for placing said distal portion of said laser rod against the stenosis;

means for directing laser light through said laser rod for emission from said light groove;

an inflatable balloon mounted on said placing means and having an exterior surface for urging said distal portion of said laser rod against the stenosis, wherein said distal portion of said laser rod is bonded to said exterior surface of said balloon.

5,624,434

LASER PREPARATION OF RECIPIENT HOLES FOR GRAFT IMPLANTATION IN THE TREATMENT OF ICEPICK SCARS

Robert P. Abergel, Pacific Palisades, Calif.; Michael Slatkine, Herziiah, Israel, and Douglass Mead, Allendale, N.J., assignors to Laser Industries, Ltd., Tel Aviv, Israel

Filed Feb. 3, 1995, Ser. No. 383,074

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—9 **12 Claims**

1. A method for treating an ice pick scar in the skin of a human comprising:

bloodlessly ablating with a laser beam the epidermal and dermal layers surrounding said ice pick scar to provide a recipient hole, said recipient hole having a depth greater than its diameter;

obtaining a plug of skin having epidermal and dermal layers from an area of skin of said human other than from said ice pick scar; and



grafting said plug of skin into said recipient hole providing a grafted area.

5,624,435

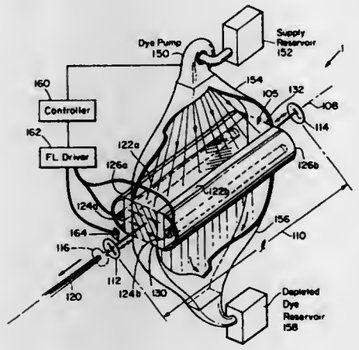
ULTRA-LONG FLASHLAMP-EXCITED PULSE DYE LASER FOR THERAPY AND METHOD THEREFOR

Horace W. Furumoto, Wellesley; Harry L. Ceccon, Boston, both of Mass., and Antonio G. Rizzo, Nashua, N.H., assignors to Cynosure, Inc., Bedford, Mass.

Filed Jun. 5, 1995, Ser. No. 461,952

Int. Cl.[6] A61M *5/06*

U.S. Cl. 606—10 **3 Claims**



1. A method of operation for a flashlamp-excited pulse dye laser, the method comprising:

exciting original dye solution in a cavity with a flashlamp;

generating a laser light output pulse from the cavity with the excited original dye solution to at least partially exhaust the original dye solution;

replacing the at least partially exhausted original dye solution in the cavity with new dye solution at least once during a duration of the laser light output pulse;

exciting the new dye solution in the cavity during the duration of the laser light output pulse to extend the duration of the laser light output pulse beyond a time at which the original dye solution in the cavity would be exhausted and would quench the output laser light pulse if not replaced; and

delivering the laser light output pulse to tissue of a patient.

5,624,436

LASER BEAM AND ABLATING APPARATUS AND RELATED METHOD

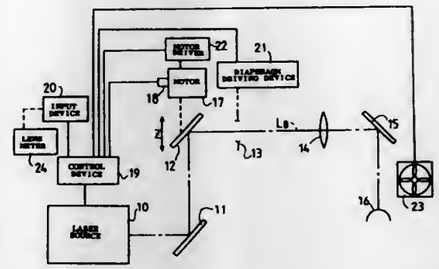
Takua Nakamura, Aichi, and Kazuharu Sugiyama, Anjo, both of Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

Filed Jan. 28, 1994, Ser. No. 187,735

Claims priority, application Japan, Jan. 29, 1993, 5-034061

Int. Cl.[6] A61H *5/02*

U.S. Cl. 606—12 **23 Claims**



1. An ablating apparatus, comprising:

a controller;

a laser beam source coupled to and governed by the controller;

an optical system responsive to a laser beam from the laser beam source for directing the laser beam along a path to an ablation area position of a first object to be ablated;

means disposed in the laser beam path responsive to the controller for changing the position of the ablation area of the first object to be ablated,

a second object for positioning in the path of the laser beam, said second object having a known ablation rate relative to the first object to be ablated;

first means coupled to the controller for instructing said ablation area position changing means and the laser source to ablate the second object by forming a curved surface having a first refractive power;

means coupled to the controller for measuring the first refractive power of the curved surface of the second object to obtain a second measured refractive power; and

means coupled to the measuring means for inputting the measured second refractive power to the controller said controller also including means for comparing the first refractive power to the second measured refractive power, and second means for controlling the laser source and the ablating area position changing means to ablate the first object by forming a curved surface based upon the comparison between the first and second refractive power.

5,624,437

HIGH RESOLUTION, HIGH SPEED, PROGRAMMABLE LASER BEAM MODULATING APPARATUS FOR MICROSURGERY

Jerre M. Freeman, 6485 Poplar Ave., Memphis, Tenn. 38119; Ronald G. Driggers, 1121 Natchez Point #95, Memphis, Tenn. 38104; Roy E. Williams, 3982 Mary Lee Dr., Memphis, Tenn. 38116; Carl E. Halford, 1538 Cordova Mills Cove, Cordova, Tenn. 38018, and William R. Clayton, 3573 Phillwood Ave., Memphis, Tenn. 38122

Filed Mar. 28, 1995, Ser. No. 411,944

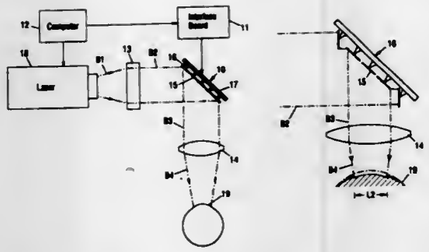
Int. Cl.[6] A61D *5/02*

U.S. Cl. 606—12 **13 Claims**

1. A surgical apparatus for receiving, modulating, and redirecting an ablating laser beam onto a target for ablating a surface thereof, comprising:

a micromirror array positioned in said ablating laser beam for reflecting selected portions thereof onto said target, said micromirror array comprising a plurality of independently

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addressable and movable mirrors, each of said mirrors being movable between an ON position for reflecting an incident portion of said ablating laser beam onto said target, and an OFF position for reflecting said incident portion of said ablating laser beam away from said target; and

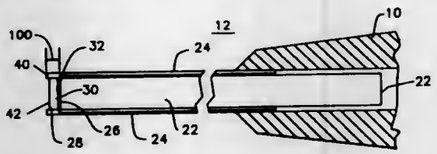
means for moving a predetermined pattern of said mirrors to said ON position and the remaining mirrors to said OFF position, so as to partly reflect said ablating laser beam onto said target and ablate a corresponding pattern of material from said surface thereof.

5,624,438

RETINAL WIDE-ANGLE ILLUMINATOR FOR EYE SURGERY

R. Scott Turner, 620 Carpenter La., Philadelphia, Pa. 19119

Filed May 9, 1994, Ser. No. 239,865
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—15 **8 Claims**



1. In a stem to illuminate the retina of an eye, apparatus comprising:

a fiber optic cable within said stem having a light output end delivering coherent light;

a support tube, having an inner diameter and an outer diameter, surrounding said fiber optic cable and and extending a portion beyond said light output end of said fiber optic cable;

a transparent thin disc material within said extending portion of said support tube, with said transparent material having a light dispersing straight-sided first surface facing said light output end of said fiber optic cable; and

an air gap between said light dispersing first surface of said transparent material and said light output end of said fiber optic cable; and

wherein said transparent material is held within said extending portion of said support tube by a press-fit to provide a seal about said transparent material for preventing vitreous eye fluids from reaching said air gap;

wherein said transparent material is of a diameter 0.001 inch larger than said inner diameter of said support tube to provide said press-fit; and

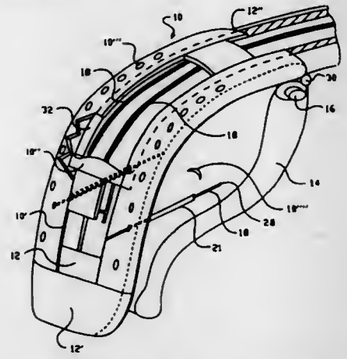
wherein said transparent material is of a thickness of 0.010 inch.

5,624,439

METHOD AND APPARATUS FOR TREATMENT OF AIR WAY OBSTRUCTIONS

Stuart D. Edwards, Los Altos; Edward J. Gough, San Carlos, and David Douglass, Woodside, all of Calif., assignors to Somnus Medical Technologies, Inc., Sunnyvale, Calif.

Filed Aug. 18, 1995, Ser. No. 516,779
Int. Cl.[6] A61B *1/24*
U.S. Cl. 606—45 **27 Claims**



1. An apparatus for treating air way obstructions, comprising:

a first arm including a proximal end and a distal end, the first arm distal end being insertable into an oral cavity and adapted to be positioned adjacent to a surface of a tongue;

a second arm including a proximal end and a distal end, the second arm being adapted to be positioned under a jaw;

a coupling member mechanically coupling the first arm with the second arm permitting rotational movement of each arm about a longitudinal axis of the coupling member; and

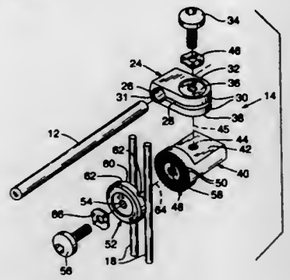
a plurality of RF electrodes at least partially positioned in the first arm and adapted to be configured to be precisely positioned through a selected surface of the tongue into an interior of the tongue and adapted to be retracted out of the tongue and into the first arm.

5,624,440

COMPACT SMALL BONE FIXATOR

Randall J. Huebner, 18560 SW. Hart Rd., Aloha, Oreg. 97005

Filed Jan. 11, 1996, Ser. No. 587,210
Int. Cl.[6] A61B *17/60*
U.S. Cl. 606—59 **15 Claims**



1. A compact external fixator comprising:

an elongate cylindrical support rod;

first and second rod clamps mounted to the support rod, the rod clamps having a loosened condition in which they can rotate about and translate along the elongate axis of the rod, and a tightened condition in which they are substantially fixed relative to the rod;

first and second pin carrier blocks, one mounted to each rod clamp with each carrier block being pivotally moveable relative to the rod clamp to which it is mounted about a first pivot axis offset from and substantially perpendicular to the elongate axis of the rod, the pivotal movement between the carrier blocks and the rod clamps being selectively lockable to fix or release the relative pivotal position therebetween, each carrier block further including a generally planar circular pin mounting shelf with a central axis normal to the plane of the shelf, where the plane of the shelf is substantially parallel to and offset from the first pivot axis;

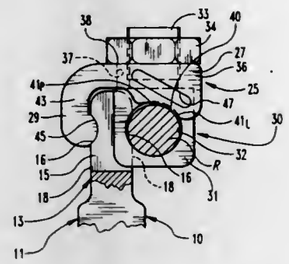
first and second pin clamp rings, each pin clamp ring being generally planar and disk-like and including an inner face in which are formed a pair of spaced apart, parallel pin guide tracks, each pin clamp ring further being disposed centered coaxially over the central axis of one of the pin shelves with the inner face oriented toward, generally parallel to and spaced apart from the pin shelf to capture therebetween a pair of pins, of the pin guide tracks being adapted to receive the pins with the pin clamp ring and pins being rotatable relative to the pin shelf about the central axis when the pin clamp ring is loosened and fixed relative to the pin shelf when the pin clamp ring is tightened.

5,624,441

ATTACHMENT PLATE FOR TOP-TIGHTENING CLAMP ASSEMBLY IN A SPINAL FIXATION SYSTEM

Michael C. Sherman, Memphis; John A. Pafford, Bartlett, both of Tenn., and Richard B. Ashman, Dallas, Tex., assignors to Danek Medical, Inc., Memphis, Tenn.

Continuation of Ser. No. 109,088, Aug. 19, 1993, Pat. No. 5,437,670. This application Apr. 10, 1995, Ser. No. 423,019
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **18 Claims**



1. A top-loaded attachment plate for use with a spinal fixation system that includes an eyebolt with an aperture and a threaded post, a spinal rod extending through the aperture, a nut engaging the post, and a vertebra fixation element having a vertebra engaging portion and a rod engaging portion with opposite surfaces, one of the opposite surfaces contacting the spinal rod, said attachment plate comprising:

a plate body having an upper surface and an opposite lower surface and defining an elongated slot through said upper and lower surfaces, said elongated slot having a closed end and an open end opposite said closed end, said open end being configured to slidingly receive the eyebolt threaded post therein;

a flange projecting from said lower surface of said body, said flange being generally perpendicular to at least a portion of said lower surface, said flange having end positioned anterior to said slot, said end having a curved end surface being configured for contacting the rod engaging portion of the vertebra fixation element at the other of the opposite surfaces: and

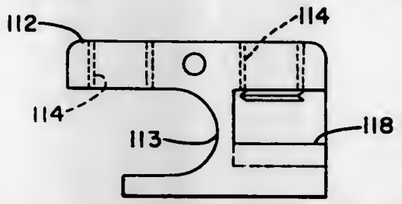
wherein at least one of said upper and lower surfaces defines a cam segment to promote clamping of the vertebra fixation element between the rod and said flange when the nut is threaded on the post of the eyebolt.

5,624,442

TRANSVERSE LINK FOR USE WITH A SPINAL IMPLANT SYSTEM

Philip Mellinger, Worthington, Ohio; J. Abbott Byrd, III, Virginia Beach, Va., and Rolando M. Puno, Prospect, Ky., assignors to Cross Medical Products, Inc., Columbus, Ohio

Continuation of Ser. No. 154,986, Nov. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,319, Oct. 26, 1992, Pat. No. 5,360,431. This application Oct. 5, 1995, Ser. No. 539,532
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **20 Claims**



17. A spinal fixation system which links a first spinal stabilizer rod and a second spinal stabilizer rod, the linking member comprising:

a first clamping member and a second clamping member each having rod clamping means comprising a recess having an opening, and biasing means for biasing a respective rod into a compressive contact with the recess; and

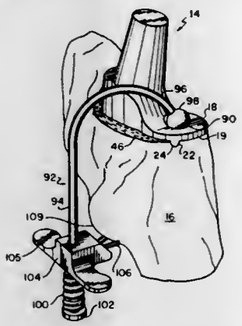
means linking the first clamping member and the second clamping member and the opening of the recess of the first clamping member and the opening of the recess of the second clamping member facing the same direction relative to the means linking the first clamping member and the second clamping member.

5,624,443

CLAMP FOR FEMORAL IMPLANT

Dennis W. Burke, 245 Highland St., Milton, Mass. 02186

Division of Ser. No. 183,077, Jan. 18, 1994, Pat. No. 5,480,453, which is a continuation of Ser. No. 979,615, Nov. 20, 1992, abandoned. This application May 26, 1995, Ser. No. 451,129
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—86 **5 Claims**



1. A clamp for clamping a prosthetic device which is adapted to be inserted into a cavity of a bone, the cavity having an opening on an upper proximal surface of the bone, the prosthetic device having

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an upper surface and a lower surface adapted to rest in contact with the upper proximal surface of the bone, said clamp comprising:

an elongated stem having a distal end and a proximal end;

a rigid, curved surface disposed on said distal end of said stem for nesting in a correspondingly curved depression on the upper surface of the prosthetic device;

a carriage freely slideable along the stem in its direction of elongation, said carriage being entirely disposed between said distal end and said proximal end of said stem, said carriage having a spike extending outwardly therefrom in a direction generally transverse to a direction of elongation of said stem and at a point spaced away from said distal end of said stem toward said proximal end thereof, said spike being configured to non-threadably engage a bone; and

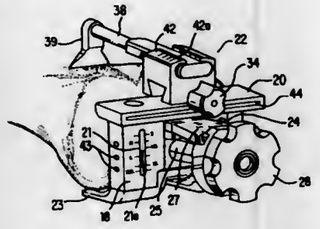
apparatus configured to continuously apply a force on said carriage toward said distal end of said stem while said spike is in engagement with a bone at a point spaced from the proximal end of the stem toward the distal end thereof and while said curved surface on said distal end of said stem is nested on the upper surface of the prosthetic device.

5,624,444

FEMORAL RESECTION INSTRUMENTATION INCLUDING THREE-DIMENSIONAL JIG AND METHOD OF USE

Richard Wixon, 55 W. Goethe St. #1224, Chicago, Ill. 60610, and Christine Chernesky, 626 Third Ave., Lyndhurst, N.J. 07071

Filed Feb. 10, 1995, Ser. No. 386,405
Int. Cl.[6] A61B *17/15;17/17*
U.S. Cl. 606—88 **14 Claims**



1. A set of instruments for use in the preparation of the distal end of a femur for the implantation of a femoral prosthesis, which implantation requires resecting the anterior femoral condyles by making an anterior cut, distal femoral condyles by making a distal cut and first and second angle cuts, and posterior femoral condyles by making a posterior cut, said set comprising:

a jig comprising a body portion having parallel distal and proximal base faces, connected by parallel posterior and anterior base faces, wherein the proximal base face is adapted to abut the distal end of the femur;

said jig further including a posterior portion slideably engaged with said body portion for movement parallel to the proximal and distal base faces and the distal base face of the body portion including a first sizing indicator, wherein the sliding movement of the posterior portion indicates varying sizes on the first sizing indicator, said posterior portion including first and second skids extending in the proximal direction from the body portion, paid skids having anterior faces adapted to contact the posterior femoral condyles;

said body portion of said jig further including an aperture through its distal and proximal faces for receiving a bushing;

a bushing extending through said distal face and adapted to receive an intramedullary rod, said bushing further including a valgus angle guide means adapted to adjust the angular position of said intramedullary rod within the range of 15 degrees below and 15 degrees above an angle of ninety degrees with the distal face of the body portion of the jig;

a stylus removably attachable to the anterior face of said body portion, said stylus including a cross bar slideably engaged with the stylus for movement in the proximal-distal direction and a second sizing indicator, wherein the sliding movement of the cross bar indicates varying sizes on the second sizing indicator; and

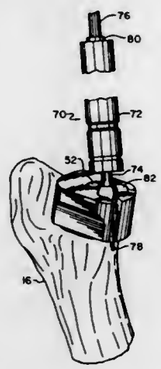
a distal cutting guise removably attachable to the anterior face of said body portion, said distal cutting guide having a plurality of fixation holes and a slot for guiding a saw blade for making the distal cut for resection of the distal femur, wherein the stylus and the distal cutting guide are both attachable to the anterior face but not simultaneously.

5,624,445

APPARATUS FOR CUTTING GROOVES IN A BONE

Dennis W. Burke, 245 Highland St., Milton, Mass. 02186

Division of Ser. No. 183,077, Jan. 18, 1994, Pat. No. 5,480,453, which is a continuation of Ser. No. 979,615, Nov. 20, 1992, abandoned. This application May 26, 1995, Ser. No. 452,182
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—89 **7 Claims**



5. Apparatus for cutting grooves in a surface on a proximal end of a bone adjacent an opening of a cavity formed in the bone into which a prosthetic device is to be inserted, said apparatus comprising:

a guide adapted to be mounted adjacent to the surface on the proximal end of the bone, said guide having a lower surface and an upper surface, said guide having at least one slot extending from said upper surface thereof to said lower surface and being adapted to overlie the surface on the proximal end of the bone, said guide having a curved depression disposed on said upper surface contiguous with said slot; and

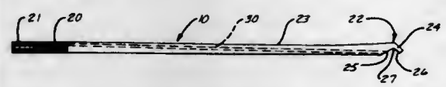
a milling tool, said milling tool having a curved surface disposed thereon and a distal end, said curved surface corresponding in shape with said depression and being adapted to seat in said depression on said upper surface of said guide to limit penetration of said milling tool into the surface on the proximal end of the bone, said guide being configured to facilitate pivoting of said milling tool about said depression during activation of said milling tool to cause said distal end of said milling tool to move within said slot in said guide in a direction generally parallel to said lower surface of said guide to form a groove in the surface on the proximal end of the bone.

5,624,446

SYSTEM FOR REPAIR OF CAPSULO-LABRAL SEPARATIONS

Douglas T. Harryman, II, Bellevue, Wash., assignor to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 943,814, Sep. 11, 1992, Pat. No. 5,342,369. This applicatioo Aug. 10, 1994, Ser. No. 288,629
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—96 **17 Claims**



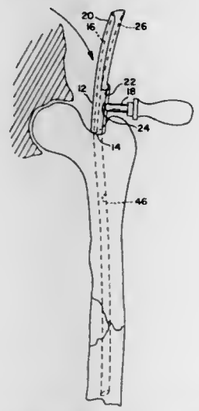
1. A guide for a drill implement for use during arthroscopic repair, through an arthroscopic cannula, of a capsulo-labral separation, said guide comprising an elongated unitary shaft for insertion through the arthroscopic cannula and having a proximate end and a distal end, said shaft having a recess opening transversely of the length of said shaft, said recess having a first face near said distal end and a second substantially planar beveled face farther from said distal end, said recess being sized and positioned for hooking over the rim of the glenoid cavity in the area of the capsulo-labral separation with said second beveled face fitted against the margin of the glenoid cavity adjacent to the glenoid rim, said shaft having a longitudinally extending bore opening into said recess through said second beveled face, said bore having an axis bridging across said recess for reception of the drill implement through said bore to drill through the portion of the rim received in said recess.

5,624,447

SURGICAL TOOL GUIDE AND ENTRY HOLE POSITIONER

Reese K. Myers, Warsaw, Ind., assignor to Othy, Inc., Warsaw, Ind.

Filed Mar. 20, 1995, Ser. No. 407,216
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—96 **17 Claims**



1. A surgical tool guide and entry hole positioner comprising an outer sleeve having a distal end and a proximal end and a longitudinal axis, a soft tissue shield extending proximally and axially from the proximal end of said outer sleeve, a handle secured to said outer sleeve, said outer sleeve having an interior passage extending therethrough and interior guide surfaces for insertion of a surgical tool, the size of said surgical tool being limited by the diameter of said interior passage of said outer sleeve, said surgical tool being inserted into the proximal end of said outer sleeve with the distal end of said outer sleeve being directed toward an intramedullary canal of a bone so as to accurately form an entry hole from an external surface of the bone to the intramedullary canal of the bone coaxial with the longitudinal anatomical axis of said bone, a plurality of removably nested sleeves, each of said nested sleeves having a distal end and an enlarged proximal end, each of said nested sleeves having an interior passage, each of which nested sleeves may also guide a surgical tool so as to accurately form an entry hole from the external surface of a bone to an intramedullary canal of said bone coaxial with the longitudinal anatomical axis of said bone.

5,624,448

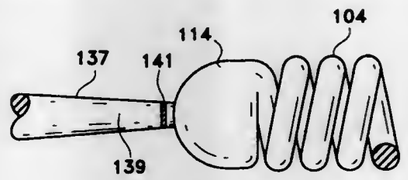
Patent Not Issued For This Number

5,624,449

ELECTROLYTICALLY SEVERABLE JOINT FOR ENDOVASCULAR EMBOLIC DEVICES

Pete P. Pham, Fremont; Hong Doan, Santa Clara; Ivan Sepetka; Joseph Eder, both of Los Altos, and Edward Snyder, San Jose, all of Calif., assignors to Target Therapeutics, Fremont, Calif.

Continuation-in-part of Ser. No. 147,529, Nov. 3, 1993, Pat. No. 5,423,829. This application Apr. 28, 1995, Ser. No. 431,827
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—108 **10 Claims**



1. A guidewire for use in the formation of a vascular occlusion, in combination with a catheter, comprising:

a core wire, said core wire having an axis and not being susceptible to electrolytic disintegration in blood,

a discrete, sacrificial, severable link having a diameter and which is susceptible to electrolytic disintegration in blood distal to and severably connected to said core wire,

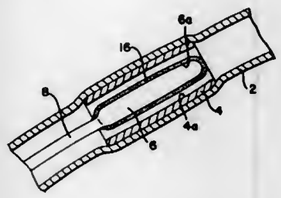
wherein said link has a length no greater than the diameter of the link or that the surface of the link after disintegration is not substantially greater than would be a circle having the diameter of the link, and

wherein said core wire is insulated proximally of the link with at least one layer of an adherent polymeric covering and

an elongate tip portion extending distally beyond said core wire and adapted to form said occlusion at a selected site within a mammal vasculature, said elongate tip portion not being susceptible to the electrolytic disintegration in blood, insulated just distally of the link with at least one layer of an adherent polymeric covering, and said elongate tip is severable from the core wire upon an electrolytic disintegration of the sacrificial link.

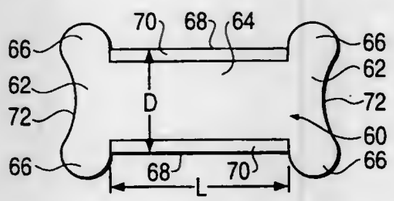
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5,624,450
STENT REMOVAL
Hendrik Glastra, Enschede, Netherlands, assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Sep. 27, 1995, Ser. No. 534,639
Claims priority, application Netherlands, Sep. 27, 1994, 9401571
Int. Cl.[6] A61F *11/00*
U.S. Cl. 606—108 19 Claims



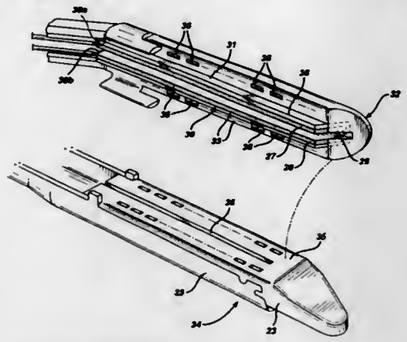
1. An assembly for the removal of a stent from a body vessel, comprising: a pulling device suitable for slidably moving within the body vessel, an inflatable, expandable element connected to a distal end of said pulling device, the expandable element having an outer surface with an adhesive medium disposed thereon effective to adhere to both said expandable element and the stent when they are being removed from the body vessel, and wherein, when the expandable element is positioned inside the body vessel and within the stent and is then expanded, said outer surface of the expandable element is brought into contact with an inner surface of the stent, thereby effecting an attachment and the adhesion between said outer surface of the expandable element and the inner surface of the stent such that the stent adhered thereto can be removed by pulling on said pulling device.

5,624,451
FLEXIBLE BLADE FOR REMOVING SKIN LESIONS
Robert J. Segal, Quincy, Ill., assignor to American Safety Razor, Verona, Va.
Continuation of Ser. No. 137,727, Oct. 18, 1993, abandoned.
This application Oct. 6, 1994, Ser. No. 319,054
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—131 14 Claims



1. A unitary flexible blade body having a cutting edge formed between opposed end margins and along at least a portion of at least one of two longitudinal margins of said body; the end margins of said body defining projecting portions located proximate to said blade body extending longitudinally beyond said cutting edge and transversely beyond at least the one frontal longitudinal margin having said cutting edge, said cutting edge recessed between said projecting portions, said projecting portions providing digital grippers having a non-slip digital engagement surface suitable for longitudinal flexing of said cutting edge by a user and protruding guards to preclude inadvertent slippage of a user's digit from around the end margins to said cutting edge of said blade body.

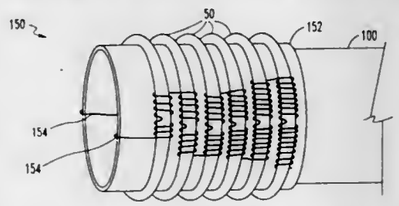
5,624,452
HEMOSTATIC SURGICAL CUTTING OR STAPLING INSTRUMENT
David C. Yates, West Chester, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Filed Apr. 7, 1995, Ser. No. 418,750
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—139 6 Claims



1. A surgical instrument comprising:
a shaft having a distal end and a longitudinal axis;
an end effector located at the distal end of the shaft, comprising:
a distal end;
a cutting element movable in a cutting path to form a cutting line;
at least one fastener and at least one applier adapted to apply said at least one fastener through tissue;
first and second elements comprising first and second opposed tissue contacting surfaces respectively, said surfaces moveable relative to each other from an open, spaced-apart positioning tissue therebetween, to a closed position for approximating the tissue, at least a portion of one of said tissue contacting surfaces comprising a heating element adapted to transmit energy to tissue engaged by said end effector, said heating element comprising:
a first elongated bar arranged on a first side of said cutting line;
a second elongated bar arranged on a second side of said cutting line.

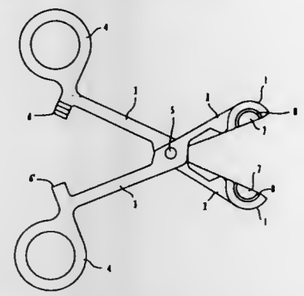
5,624,453
ENDOSCOPIC LIGATING INSTRUMENT
Munir Ahmed, Greenwood, S.C., assignor to Wilson-Cook Medical, Inc., Winston-Salem, N.C.
Continuation-in-part of Ser. No. 260,380, Jun. 14, 1994, Pat. No. 5,462,559, which is a continuation-in-part of Ser. No. 21,036, Feb. 23, 1993, Pat. No. 5,320,630. This application Oct. 30, 1995, Ser. No. 550,531
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—140 6 Claims

1. An attachment for a flexible endoscopic instrument for ligating a multiplicity of lesions within a hollow body organ, such as the alimentary tract, said attachment comprising:



(a) a tubular member having a forward distal end, a rearward end and a longitudinal axis, said rearward end having means for providing attachment to the insertion end of the endoscopic instrument;
(b) a plurality of string-like cords of flexible substantially inelastic material, each said cord being folded over the distal end of the tubular member with a first portion of each said cord overlaying a part of the exterior of said tubular member and a second portion thereof being disposed internally of said tubular member, said cords being oriented in angular spacing about the longitudinal axis of said tubular member;
(c) a plurality of elastic ligating rings removably mounted in stretched condition on said tubular member in coaxial relation thereto, said rings being spaced from one another in the longitudinal direction of the tubular member at successively greater different distances from the distal end of the tubular member, wherein each of the plurality of cords is wound around each of the plurality of ligating rings in a first direction and in a second, opposite direction.

5,624,454
PADDED VASCULAR CLAMP
Yoram Palti, 51 Ruth St., Haifa, Israel, and Robert Schnall, 5 Hadasna St., Kiryat Bialik, Israel
Filed Jul. 31, 1995, Ser. No. 509,203
Claims priority, application Israel, Jul. 31, 1994, 110517
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—151 11 Claims



1. A vascular clamp for occluding a blood vessel or duct, the vascular clamp comprising:
a pair of pivoting arms, each arm comprising a handle end and a distal end, each pivoting arm comprising a clamping jaw rigidly attached to the distal end thereof, the clamping jaw comprising a concave substantially semi-cylindrical chamber, the clamping jaws being movable between an open position and a closed position, the clamping jaws being aligned so as to form a substantially cylindrical chamber in the closed position;
a balloon mounted in the concave semi-cylindrical chamber of each clamping jaw, each balloon comprising a substantially semi-cylindrical rigid shell conforming to the concave semi-cylindrical chamber and a thin, elastic material pre-filled with a liquid or gaseous fluid at a predetermined pressure, the balloons being configured to completely surround and occlude the blood vessel or duct in the closed position of the vascular clamp; and
means for attaching the rigid shell of each balloon to its associated clamping jaw.

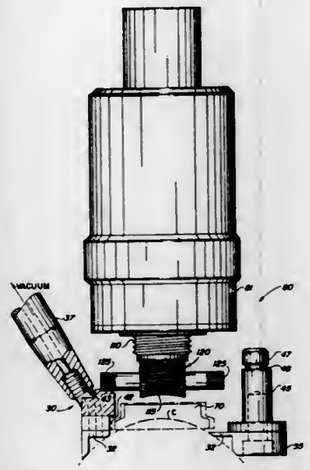
5,624,455
FREELY PROJECTABLE/SINKABLE VALVULOTOME AND FREELY PROJECTABLE/SINKABLE VENOUS VALVE VALVULOTOME
Kiyotaka Matsuno, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 299,411, Sep. 1, 1994, abandoned.
This application Oct. 27, 1995, Ser. No. 549,196
Claims priority, application Japan, Nov. 26, 1993, 5-297061
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—159 40 Claims



1. A freely projectable/sinkable valvulotome, comprising:
an armor;
an operating wire lying in said armor so as to advance or withdraw freely and having the distal portion thereof bifurcating into two arms; and
two cutters attached to tips of said two arms, said cutters having blades,
wherein at least parts of said two cutters and said two arms are capable of projecting from or sinking into said armor when said operating wire is advanced or withdrawn;
wherein said two arms have a plurality of bents so that when said arms project, said two cutters open at a predetermined angle in different directions, and so that when said arms are stowed in said armor, forces exerted from said armor change directions with said plurality of bents as boundaries, and
wherein said two arms include:
first opening sections formed to open out from bifurcated sections of said arms so that said cutters open out at a predetermined angle,
second opening sections formed as portions of said arms distal to said first opening sections, formed to lie in parallel with each other in a direction in which said first opening sections open out, and formed to open out in directions perpendicular to said direction in which said first opening sections open out so that said cutters lie outside an outer diameter of said armor but do not interfere with each other,
third opening sections formed as portions of said arms distal to said second opening sections, and formed to open out at a predetermined angle in directions substantially identical to said directions in which said first opening sections open out so that when said first opening sections are stowed in said armor, at least edges of said pair of cutters are oriented into said armor, and
junctions formed as portions of said arms distal to said third opening sections, and designed to couple said cutters so that when said first opening sections project from said armor, said pair of cutters lie in parallel with each other, and
wherein said armor is a substantially hollow member which accommodates therein said operating wire and at least parts of said arms, and wherein said substantially hollow member accommodates therein said at least parts of said cutters when said operating wire is withdrawn.

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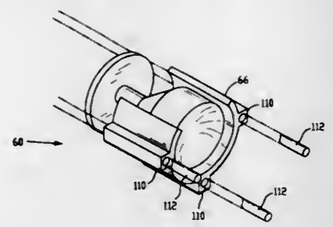
5,624,456
AUTOMATIC SURGICAL DEVICE FOR CUTTING A CORNEA
Johann F. Hellenkamp, 7740 SW. 75th Ter., Miami, Fla. 33143
Filed Feb. 7, 1996, Ser. No. 598,180
Int. Cl.[6] A61F 9/00
U.S. Cl. 606—166 **53 Claims**



1. A surgical device for cutting substantially across a cornea of an eye of a patient, said device comprising:
a) a positioning ring having means for temporary attachment to a portion of the eye surrounding the cornea to be cut; said positioning ring defining an aperture sized to receive and expose the cornea to be cut;
b) said positioning ring including guide means formed on an upper surface thereof in a generally arcuate path;
c) a cutting head assembly including a cutting element positioned therein for cutting the cornea, said cutting head assembly being structured and disposed to be at least partially received in said guide means and to be driven across said positioning ring along said generally arcuate path defined by said guide means;
d) drive means operably connected to said cutting head assembly for causing movement of said cutting head assembly across said positioning ring and for causing oscillating movement of said cutting element; and
e) a coupling member structured and disposed to detachably couple said cutting head assembly and said positioning ring and including means for permitting movement of said cutting head assembly relative to said positioning ring along said generally arcuate path.

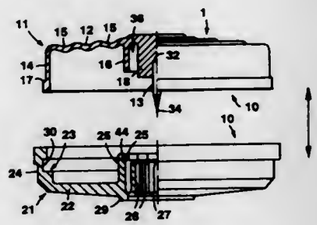
5,624,457
DIRECTIONAL ATHERECTOMY DEVICE WITH FLEXIBLE HOUSING
Brian Farley, Los Altos, and Anthony J. Castro, San Francisco, both of Calif., assignors to Devices for Vascular Intervention, Santa Clara, Calif.
Filed Apr. 7, 1994, Ser. No. 224,169
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—170 **2 Claims**

1. An atherectomy catheter device for severing atheroma, comprising:
a catheter body having a proximal end, a distal end, and a longitudinal axis which extends therebetween;
a housing connected to the distal end of the catheter body, the housing having an open interior and an aperture;



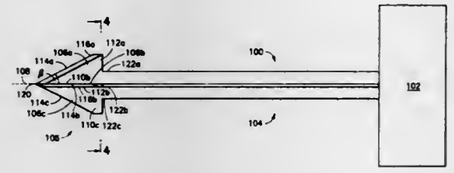
a cutter having an arcuate edge disposed within the housing, the cutter rotates and reciprocates along the longitudinal axis to sever atheroma;
a saddle surrounding a portion of the cutter to retain the cutter within the housing;
a retainer for connecting the saddle and the housing to enable the cutter to reciprocate within the housing, the retainer includes first and second rods within the housing and a keeper member slidably connected to the first and second rods, the keeper member retains the saddle in alignment with the longitudinal axis.

5,624,458
LANCET DEVICE
Ervin Lipscher, Budapest, Hungary, assignor to Anne Marie Varro, Mountain View, Calif.
PCT No. PCT/US94/11874, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO95/10977, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 19, 1994, Ser. No. 549,836
Claims priority, application Hungary, Oct. 20, 1993, 93 02966
Int. Cl.[6] A61B 5/00
U.S. Cl. 606—181 **12 Claims**



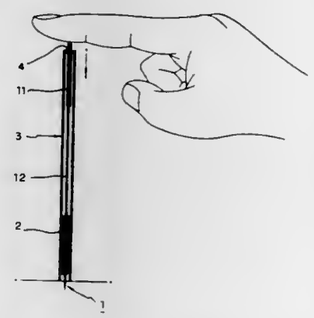
1. A lancet device, comprising:
a skin piercing device having a sharp tip and a blunt end;
a closed housing around the piercing device, the housing having a perforable wall adjacent the tip, and a flexible wall adjacent to the blunt end opposite the perforable wall for driving the piercing device through the perforable wall; and
a variable depth stop mechanism comprising at least one inwardly deformable column on the perforable wall, whereby downward pressure on the ring forces the column to deform inward, creating a physical barrier blocking downward movement of the piercing device and preventing the piercing device from reaching the perforable wall a second time.

5,624,459
TROCAR HAVING AN IMPROVED CUTTING TIP CONFIGURATION
Juergen A. Kortenbach, Miami Springs, Fla., and Philip O. Erwin, New York, N.Y., assignors to Symbiosis Corporation, Miami, Fla.
Filed Jan. 26, 1995, Ser. No. 378,741
Int. Cl.[6] A61B 17/34
U.S. Cl. 606—185 **32 Claims**



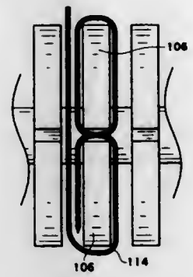
1. A surgical trocar comprising:
a) a proximal handle;
b) a distal cutting tip; and
c) a central shaft extending from said proximal handle to said distal cutting tip, wherein
said distal cutting tip has a longitudinal axis and a plurality of fins arranged about said longitudinal axis, each of said plurality of fins having first and second non-intersecting sides which are substantially parallel to each other and a distal bevel defining a cutting edge, said first side lying in a plane which substantially includes said longitudinal axis and said cutting edge.

5,624,460
NEEDLE FOR ACUPUNCTURE
Tae W. Yoo, 807, 1-Dong, Hanyang, Apt. 32-5, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea
Filed Nov. 6, 1995, Ser. No. 554,254
Claims priority, application Rep. of Korea, Jul. 19, 1995, 95-17676
Int. Cl.[6] A61B 17/34
U.S. Cl. 606—189 **20 Claims**



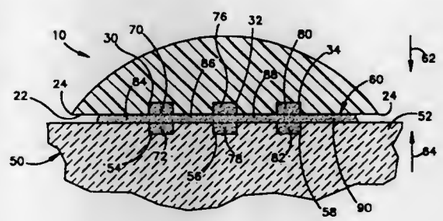
1. A needle assembly for acupuncture comprising:
a needle including:
a grip portion, and
a needle head having a sharp end;
a grip pipe engaged around said needle head;
a guide pipe surrounding said needle and said grip pipe; and
a release membrane releasably connecting together said grip portion and an upper end of said guide pipe.

5,624,461
THREE DIMENSIONAL IN-FILLING VASO-OCCLUSIVE COILS
Michael J. Mariant, San Jose, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.
Filed Jun. 6, 1995, Ser. No. 467,403
Int. Cl.[6] A61M 29/00
U.S. Cl. 606—191 **11 Claims**



1. A vaso-occlusive device comprising a helically wound primary coil which said primary coil is wound into a secondary form comprising a sequence of at least two decreasing diameter sections and when restrained within a catheter is generally linear and when released from said restraint forms a generally spherical shape.

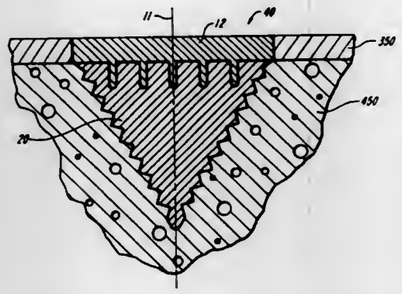
5,624,462
BONE IMPLANT AND METHOD OF SECURING
Peter M. Bonutti, 1303 W. Evergreen Plaza, Effingham, Ill. 62401
Division of Ser. No. 46,220, Apr. 12, 1993, Pat. No. 5,441,538. This application Jan. 24, 1995, Ser. No. 377,759
Int. Cl.[6] A61F 2/28; 5/04
U.S. Cl. 623—16 **74 Claims**



1. A method of securing an implant to bone comprising the steps of:
providing an implant having a bone engagement portion for engagement with the bone and having surfaces defining a first plurality of spaced apart cement compartments in the bone engagement portion;
making a second plurality of spaced apart cement compartments in the bone;
placing the bone engagement portion of the implant adjacent the bone;
aligning the spaced apart cement compartments in the implant with the spaced apart cement compartments in the bone to form spaced apart cement cells extending between the implant and the bone; and
placing cement in the cement cells to form spaced apart plugs of cement extending between the implant and the bone to secure the implant to the bone.

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5,624,463
PROSTHETIC ARTICULAR CARTILAGE
Kevin R. Stone, Mill Valley, Calif., and Shu-Tung Li, Oakland, N.J., assignors to ReGen Biologics, Inc., Redwood City, Calif.
Continuation of Ser. No. 809,003, Dec. 17, 1991, which is a continuation-in-part of Ser. No. 520,027, May 7, 1990, which is a continuation-in-part of Ser. No. 317,851, Mar. 2, 1989, which is a continuation-in-part of Ser. No. 75,352, Jul. 20, 1987. This application Apr. 25, 1994, Ser. No. 232,743
Int. Cl.[6] A61F 2/50
U.S. Cl. 623—18 **22 Claims**



1. A prosthetic articular cartilage device comprising a dry porous volume matrix of biocompatible and at least bioresorbable fibers and further comprising a base component,

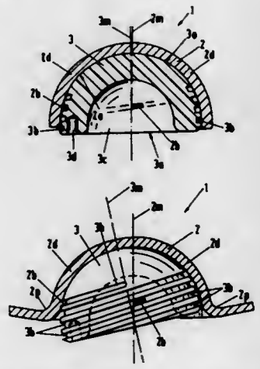
said fibers being natural polymers or analogs or mixtures thereof, said matrix being adapted to have an in vivo outer surface contour substantially the same as that of natural articular cartilage, and said matrix having a pore size in the approximate range of about 100 microns to about 400 microns,

whereby said matrix establishes a bioresorbable scaffold adapted for the ingrowth of articular chondrocytes, and for supporting natural articulating joint forces,

said base component configured to fit in a complementary aperture in cancellous bone thereby securing said articular cartilage device to said bone, said base component extending from portions of the outer surface of said matrix,

said base component being a composite material comprising a dispersion of collagen and a composition which is selected from the group consisting of tricalcium phosphate, hydroxyapatite, and a combination of tricalcium phosphate and hydroxyapatite.

5,624,464
ARTIFICIAL ACETABULUM
Heinz Wagner, Schwarzenbruck, Germany; Roland Willi, Neftenbach, and Heinrich Stutz, Frauenfeld, both of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, and Protek AG, Muensingen-Bern, both of Switzerland
Filed Jun. 13, 1995, Ser. No. 489,862
Claims priority, application European Pat. Off., Jun. 15, 1994, 94810353
Int. Cl.[6] A61F 2/32
U.S. Cl. 623—22 **22 Claims**



1. Artificial acetabulum, comprising a support shell and an inner shell which can be inserted therein, the support shell including a semispherical inner surface having at least three projecting retaining means arranged to lie in one plane, the inner shell including a semispherical outer surface having at least one recess extending in a helical manner so that the inner shell can be inserted into the support shell with a screw motion in order to bring the retaining means and the recess into an operative connection and to fix the mutual positions of the support shell and the inner shell.

5,624,465
INTERNALLY-CARBONATING CLEANING COMPOSITION AND METHOD OF USE
Robert D. Harris, Logan, Utah, assignor to Harris Research, Inc., Logan, Utah
Filed Nov. 7, 1994, Ser. No. 335,113
Int. Cl.[6] C11D 3/10;3/20;3/32
U.S. Cl. 8—137 **19 Claims**

1. A method of cleaning textile fibers which comprises applying to said fibers, an internally-carbonating cleaning composition at ambient pressure and at an elevated temperature of at least 140° F. said composition being prepared coincident with said application by combining solutions at said elevated temperature consisting essentially of

(a) an aqueous carbonate salt solution comprising 0.1 to 16% by weight of a carbonate salt, said carbonate solution having a pH of between about 8 and 11;

(b) an aqueous acidic solution comprising 0.1 to 16% by weight of an acid, said acidic solution comprising an acid having a pH of between about 3 and 6; and

(c) a cleaning effective amount of a surfactant wherein the relative proportions of carbonate salt, and acid are such that the carbonate reacts with the acid when said solutions are combined so as to create an aqueous composition having a generally neutral pH and from which carbon dioxide is released into the surrounding atmosphere causing carbon dioxide to come into contact with said textile fibers.

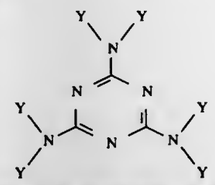
5,624,466
DYEING OF MELAMINE-FORMALDEHYDE CONDENSATION PRODUCTS
Wolfgang Schindler, Schwarzenbach a. d. Saale, and Uwe Nahr, Dannstadt-Schauernheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Sep. 7, 1995, Ser. No. 525,427
Claims priority, application Germany, Sep. 15, 1994, 44 32 833.8
Int. Cl.[6] D06P 1/16;1/18;1/19;1/20
U.S. Cl. 8—506 **8 Claims**

1. A process for dyeing condensation products obtainable by condensation of a mixture including as essential components

(A) from 90 to 99.9 mol % of a mixture consisting essentially of

(a) from 30 to 99 mol % of melamine and

(b) from 1 to 70 mol % of a substituted melamine of the formula I

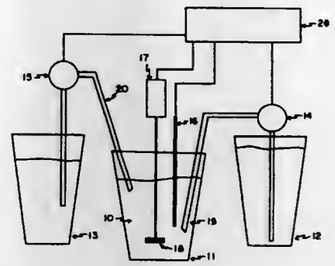

(I)

where each Y is independently of the others hydrogen, hydroxy-C_2–C_{10}-alkyl, hydroxy-C_2–C_4-alkyl-(oxa-C_2–C_4-alkyl)$_n$, where n is from 1 to 5, or amino-C_2–C_{12}-alkyl, with the proviso that at least one Y is not hydrogen, or mixtures of melamines of the formula I, and also

(B) from 0.1 to 10 mol %, based on (A) plus (B), of phenol, which is optionally C_1–C_9-alkyl or hydroxy-substituted, C_1–C_4-alkanes which are hydroxyphenyl-substituted, bis(hydroxyphenyl) sulfones or mixtures thereof,

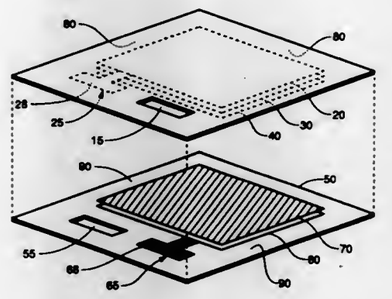
with formaldehyde or formaldehyde donor compounds in a molar ratio of melamines to formaldehyde within the range from 1:1.15 to 1:4.5, which comprises treating the condensation products in the form of fibers, yarns, threads, wovens, knits or nonwovens in an aqueous liquor which has a pH from 1 to 12 at a temperature from 20° to 250° C. with one or more dyes of the class of the azo dyes, anthraquinone dyes, coumarin dyes, methine or azamethine dyes, quinophthalone dyes or nitro dyes, said dyes being free of ionic groups.

5,624,467
MICROPRECIPITATION PROCESS FOR DISPERSING PHOTOGRAPHIC FILTER DYES
John Texter, Rochester; William B. Travis, Holcomb, and Vincent J. Flow, Kendall, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 20, 1991, Ser. No. 812,503
Int. Cl.[6] G03C 1/00
U.S. Cl. 23—295 R **30 Claims**



1. A process for preparing microprecipitated dispersions of filter dyes which comprises preparing a concentrated slurry in aqueous medium of a filter dye having ionizable acid sites on the filter dye molecule, adding sufficient aqueous hydroxide to dissolve the filter dye, acidifying the filter dye composition in the presence of a dispersing aid with a stoichiometric mount of acidic protons to reprotonate up to 100% of the total ionizable acid sites on the dye molecule and provide a microprecipitated dispersion of the filter dye that is insoluble in aqueous media at pH values less than 3 and soluble in aqueous media at pH greater than 10.

5,624,468
METHOD FOR FABRICATING A LEADLESS BATTERY EMPLOYING AN ALKALI METAL ANODE AND POLYMER FILM INKS
Rickie C. Lake, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jun. 2, 1993, Ser. No. 71,463
Int. Cl.[6] H01M 4/08;6/46
U.S. Cl. 29—623.5 **4 Claims**



1. A method of making an anode for a battery, the method comprising the steps of:

providing a nonconductive surface;

forming a conductive layer comprising a polymer superjacent the nonconductive surface; and

fusing an alkali metal to the conductive layer.

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5,624,469

METHOD AND APPARATUS FOR RECOVERING HEAT FROM SOLID MATERIAL SEPARATED FROM GASIFICATION OR COMBUSTION PROCESSES

Juhani Isaksson, Karhula, and Harry Ollila, Kauniainen, both of Finland, assignors to Foster Wheeler Energia Oy, Helsinki, Finland

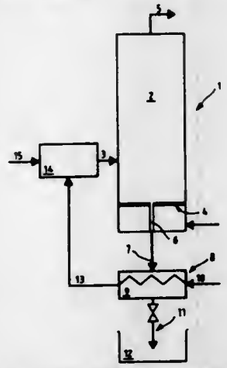
PCT No. PCT/FI90/00104, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/12253, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 11, 1990, Ser. No. 768,729

Claims priority, application Finland, Apr. 13, 1989, 891748

Int. Cl.[6] C10J *3/72*

U.S. Cl. 48—87 **16 Claims**



1. A method for recovering heat from hot solids discharged from the combustion chamber of a fluidized bed reactor, comprising the steps of:

(a) feeding solid material, including fuel, and fluidizing gas into the combustion chamber to establish a fluidized bed which produces hot gases and solid particles;

(b) removing the hot solid particles from the combustion chamber;

(c) passing the hot solid particles into indirect heat exchange relationship with water, to thereby produce hot water;

(d) mixing the hot water with the solid material to simultaneously heat and moisten the solid material; and

(e) using the heated and moistened solid material from step (d) for at least a part of the solid material in step (a).

5,624,470

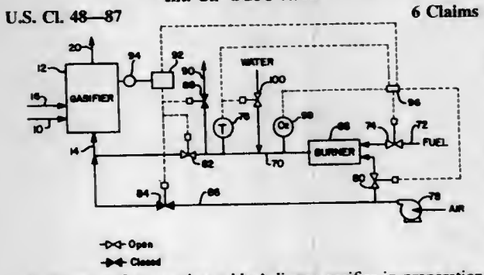
BLACK LIQUOR GASIFICATION WITH INTEGRATED WARM-UP AND PURGE

Michael C. Tanca, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1995, Ser. No. 577,386

Int. Cl.[6] D21C *11/12*

U.S. Cl. 48—87 **6 Claims**



1. A system for warming a black liquor gasifier in preparation for start-up and for purging said black liquor gasifier of flammable gas after a trip comprising:

a. a black liquor gasifier;

b. a hot flue gas generator;

c. means for feeding fuel and combustion air to said hot flue gas generator and burning said fuel and air therein to generate said hot flue gases;

d. means for feeding said hot flue gases from said hot flue gas generator to said black liquor gasifier to warm said gasifier;

e. means for terminating said fuel and air to said hot flue gas generator when said gasifier reaches a selected temperature;

f. means for detecting a gasifier trip requiring the purge of flammable gases therefrom;

g. means responsive to the detection of a gasifier trip for feeding fuel and combustion air to said hot flue gas generator and producing a hot flue gas purge stream;

h. means for feeding said hot flue gas purge stream to said tripped gasifier to purge said flammable gases therefrom.

5,624,471

WATERPROOF PAPER-BACKED COATED ABRASIVES

Anthony C. Gaeta, Lockport, and Gwo S. Swei, East Amherst, both of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Jul. 22, 1996, Ser. No. 681,236

Int. Cl.[6] B24D *11/00*

U.S. Cl. 51—295 **11 Claims**

7. A process for the production of a waterproof paper-backed coated abrasive said process comprising applying to a paper backing, in sequence, a maker coat, a layer of abrasive particles and a size coat, wherein at least one of the maker and size coats comprises a hydrophobic resin binder and curing the binder by radiation selected from the group consisting of electron beam radiation and UV radiation.

5,624,472

METHOD FOR DRY GRINDING WITH IMPROVED MAGNESIUM OXYCHLORIDE CEMENT BOND CONTAINING GRAPHITE

James P. Koch, and Allen T. Donahue, both of Janesville, Wis., assignors to Western Atlas, Inc., Paramus, N.J.

Continuation of Ser. No. 99,316, Jul. 30, 1993, Pat. No. 5,460,635. This application Jun. 2, 1995, Ser. No. 458,287

Int. Cl.[6] B24D *3/02*

U.S. Cl. 51—307 **12 Claims**

1. A method for dry grinding a workpiece, comprising grinding a workpiece with an abrasive tool comprising a magnesium oxychloride cement bond containing graphite in an amount of at least about 5% by wt. based on the MgO content of the bond and an abrasive material in an amount sufficient to effectively abrade the workpiece.

5,624,473

AUTOMATED CONTROLLER FOR GLASSWARE MANUFACTURE WITH ELECTRONICALLY LABELED MANUAL MODE PANEL SWITCHES

Daniel S. Farkas, Maumee, and D. Wayne Leldy, Perrysburg, both of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

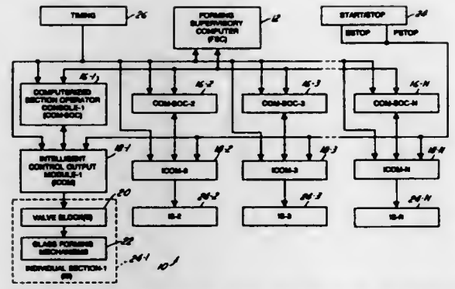
Filed Apr. 29, 1994, Ser. No. 235,817

Int. Cl.[6] G05B *19/10*

U.S. Cl. 65—158 **7 Claims**

1. A glass production system that includes a glass forming machine having a multiplicity of operating mechanisms for converting gobs of molten glass into glassware, solenoid valve means responsive to valve drive signals for operating said multiplicity of operating mechanisms, and electronic control means for generating said valve drive signals to operate said mechanisms in sequence to produce the glassware,

said electronic control means including an operator panel having a plurality of manual electronic switch means responsive to an operator, a controller responsive to said switch means in a



manual mode of operation when said operating mechanisms are otherwise inoperative for generating valve drive signals to manually initiate operation of selected ones of said operating mechanisms associated with said switch means, and means for identifying each of said switch means with an associated one of said operating mechanisms,

characterized in that said identifying means comprises a plurality of electronic display means on said operator panel each adjacent to an associated one of said electronic switch means and responsive to said controller for displaying to the operator the one of said operating mechanisms of said machine associated with said adjacent switch means for activation by the operator in said manual mode of operation.

5,624,474

OPTICAL FIBER PREFORM MANUFACTURING APPARATUS WHICH MEASURES A VERTICAL LOAD WITH THREE CELLS

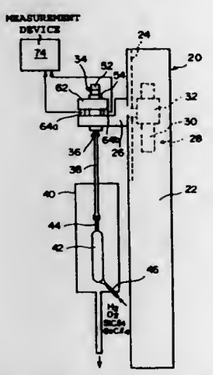
Ichiro Tsuchiya; Hiroaki Ohta, and Toshio Danzuka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,183

Claims priority, application Japan, Nov. 12, 1993, 5-283513

Int. Cl.[6] C03B *37/07*

U.S. Cl. 65—484 **10 Claims**



1. An optical fiber preform manufacturing apparatus for manufacturing an optical fiber preform by depositing fine glass particles on a first rod, said first rod being connected to a first end of a second rod and rotated with the second rod, said optical fiber preform manufacturing apparatus comprising:

an elevating unit having an elevating member and means for vertically moving the elevating member, the elevating member having a first surface;

a rotary support unit for gripping a second end of the second rod to suspend and support the second rod vertically and for rotating the second rod about a longitudinal axis of the second rod, the rotary support unit having a second surface which is vertically spaced from the first surface; and

at least three load cells disposed between the first surface and the second surface for supporting said rotary support unit and for determining a load vertically applied to the rotary support unit.

5,624,475

COPPER BASED NEUTRON ABSORBING MATERIAL FOR NUCLEAR WASTE CONTAINERS AND METHOD FOR MAKING SAME

Anil V. Nadkarni, Chapel Hill, and Jack D. Troxell, Hillsborough, both of N.C., assignors to SCM Metal Products, Inc., Research Triangle Park, N.C.

Filed Dec. 2, 1994, Ser. No. 349,074

Int. Cl.[6] C22C *29/04*; **P22F** *5/00*

U.S. Cl. 75—238 **25 Claims**

1. An essentially fully densified composite material comprising:

a dispersion-strengthened copper as a first phase;

a boron constituent as a second phase, wherein said boron constituent is elemental boron or boron carbide; said boron constituent being substantially uniformly distributed throughout the dispersion-strengthened copper, the proportion of said boron constituent being at least about 0.5 percent by weight of the material.

5,624,476

METHOD AND DEVICE FOR PURIFYING GASEOUS EFFLUENTS

Charles Eyraud, Lyons, France, assignor to Ecoprocess, Neuilly sur Seine, France

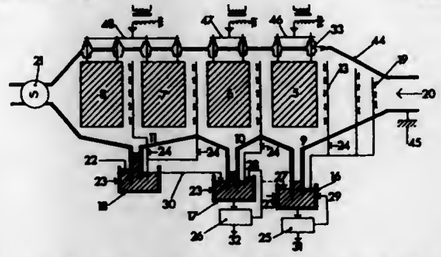
PCT No. PCT/FR92/00811, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO93/03849, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 20, 1992, Ser. No. 196,256

Claims priority, application France, Aug. 21, 1991, 91 10616

Int. Cl.[6] B03C *3/014*

U.S. Cl. 95—65 **7 Claims**



1. A method for purifying gaseous effluents including fine dust particles, said method comprising:

directing gas in a first direction within a common chamber having a plurality of stages, each of said stages including at least one liquid spraying nozzle;

spraying liquid through each said spraying nozzle of each of said stages and between and in contact with surfaces of a plurality of collector and emitting electrodes provided in each of said stages, said liquid making intimate contact with said gas;

collecting the liquid in accumulation tanks corresponding to each said plurality of stages;

increasing concentration of the fine dust particles within the liquid by recirculating the liquid from each accumulation tank back through a spraying nozzle corresponding to each of said stages; and

diluting the concentration of the fine dust particles within the liquid by transporting the liquid in a second direction countercurrent to the first direction, as a reflux from stage to stage until the fine dust particles are removed, at least a portion of said reflux providing one of intermittent and continuous flow of collected liquid from a selected accumulation tank to a downstream portion of a stage located upstream of the

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selected accumulation tank, and another portion of said reflux being provided directly from said selected accumulation tank to an upstream accumulation tank.

5. An apparatus for purifying gas by removing fine dust particles, said apparatus comprising:

a common chamber having at least first and second stages for electrostatically removing fine dust particles from a gas moving in a first direction, each of said stages having at least one spraying nozzle for directing liquid into intimate contact with an incoming gas stream;

at least first and second collecting and emitting atomizing electrodes provided, respectively, in each of said at least first and second stages;

liquid accumulation tanks provided within said common chamber, each of said liquid accumulation tanks corresponding to one of said at least first and second stages;

a liquid recirculation system for recirculating said liquid directly between a first accumulation tank and at least one of a first spraying nozzle corresponding to said first accumulation tank and a second spraying nozzle corresponding at least partially to a second accumulation tank positioned upstream of the first accumulation tank; and

a liquid circulation system for circulating said liquid from said first accumulartion tank directly to the second accumulation tank, and for diluting the concentration of the fine dust particles within the liquid by transporting the liquid in a second direction countercurrent to the first direction, as a reflux from stage to stage until the fine dust particles are removed, at least a portion of said reflux providing one of intermittent and continuous flow of collected liquid from a selected accumulation tank to a downstream portion of a stage located upstream of the selected accumulation tank, and another portion of said reflux being provided directly from said selected accumulation tank to an upstream accumulation tank,

wherein said at least first and second stages and said liquid circulation and recirculation systems contribute to removing of said fine dust particles from said gas.

5,624,477

PRESSURE SWING ADSORPTION PLANTS

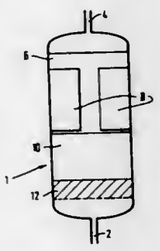
John W. Armond, Guildford, England, assignor to The BOC Group plc, Windlesham, England

Continuation-in-part of Ser. No. 878,796, May 5, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 210,117

Claims priority, application United Kingdom, May 9, 1991, 9110038

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—96 **18 Claims**



1. A process for separating at least one constituent from a gas mixture by pressure swing adsorption comprising passing said mixture through a layer of alumina, then through a first bed of molecular sieve adsorbent selected for optimum operational efficiency at a temperature below ambient and then through a second bed of molecular sieve adsorbent selected for optimum operational efficiency at ambient temperature.

5,624,478

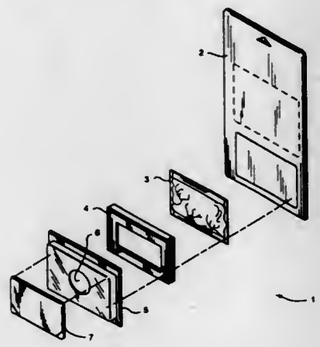
ETHYLENE ABSORPTION DEVICE

Edward Patapanian, 52 Stony Brook Rd., Belmont, Mass. 02178, and Cheryl Rieves, 25664 Donald Ave., Hayward, Calif. 94544

Filed Sep. 14, 1995, Ser. No. 528,373

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—108 **8 Claims**



1. An ethylene absorption device comprising a backing, a gas permeable envelope containing ethylene absorbing chemicals, a containment means comprising a containment structure covered by an access panel wherein said access panel includes at least one opening therethrough which overlaps a similar opening through said containment structure, wherein said opening through each of said access panel and said containment structure enable free passage of air flow, wherein said access panel is otherwise generally impervious to air flow and said containment means traps and retain said envelope therein, and a sealing means for placement over said access panel to seal said containment means from atmosphere until said sealing means is removed.

5,624,479

SOLUTION FOR PROVIDING CATALYTICALLY ACTIVE PLATINUM METAL LAYERS

Juergen Boecker, Stuttgart; Michael Butz; Alfred Frey, both of Jettingen; Petra Hofmeister, Rottenburg, and Hans D. Schmidt, Ammerbuch, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 42,303, Apr. 2, 1993. This application May 17, 1995, Ser. No. 443,132

Int. Cl.[6] C23C *18/18*

U.S. Cl. 106—1.11 **1 Claim**

1. A solution for the provision of catalytically active platinum metal, consisting essentially of:

a) an activator compound, said activator compound being an ionogenic compound capable of releasing platinum metal ions;

b) a solvent, said solvent including an organic or inorganic acid; and

c) an anionic surfactant, said anionic surfactant including a sulfonic acid.

5,624,480

COMPOSITION AND PROCESS FOR SUBSTITUTIONALLY PLATING ZINCIFEROUS SURFACES

Noriaki Yoshitake; Yoshiyuki Murasawa, and Shotaro Tsuda, all of Okayama-ken, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US94/03225, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/23089, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 28, 1994, Ser. No. 537,753

Claims priority, application Japan, Apr. 7, 1993, 5-080883

Int. Cl.[6] C23C *22/07*

U.S. Cl. 106—1.22 **20 Claims**

1. An aqueous substitutional plating bath composition having a pH of 2.0 to 4.5 and containing water and:

(A) from 1.5 to 40 g/L as metal atom of heavy metal ions selected from the group consisting of nickel, iron, cobalt, and mixtures of any two or more thereof;

(B) from 0.5 to 10 g/L of phosphate ions;

(C) from 1 to 250 g/L of sulfate ions; and

(D) from 1 to 20 g/L of organic acid.

5,624,481

PROCESS FOR THE WATER-REPELLENT IMPREGNATION OF PLASTER

Dieter Gerhardinger; Hans Mayer, both of Burghausen, and Johannes Mittermeier, Altoetting, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Continuation of Ser. No. 447,574, May 23, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 713,589

Claims priority, application Germany, Jun. 1, 1994, 44 19 257.6

Int. Cl.[6] C09K *3/18;* **C04B** *24/40*

U.S. Cl. 106—2 **9 Claims**

1. A process for the water repellent impregnation of plaster comprising treating plaster with

(A) from 0.1 to 5 parts by weight per 100 parts by weight of plaster of at least one H-siloxane and

(B) from 0.05 to 5 parts by weight per 100 parts by weight of plaster of an alkali metal silicate.

5,624,482

INK JET RECORDING SHEET

Hitoshi Kijimuta; Yukio Jitugiri, and Shinichi Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 396,788, Mar. 1, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 690,399

Claims priority, application Japan, Mar. 1, 1994, 6-031588

Int. Cl.[6] B41J *2/01;* **B41M** *5/00*

U.S. Cl. 100—31.37 **11 Claims**

1. A method of ink jet recording, which comprises:

applying an ink containing a water-soluble polymer onto a recording sheet comprising (i) a substrate and (ii) a porous alumina hydrate layer thereon which contains a gelling agent for said water-soluble polymer; and

gelling the water-soluble polymer.

5,624,483

HOT MELT INK UTILIZABLE FOR INK JET PRINTER

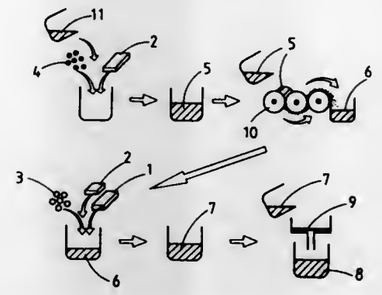
Masaya Fujioka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Apr. 10, 1995, Ser. No. 419,123

Claims priority, application Japan, Apr. 11, 1994, 6-071858

Int. Cl.[6] C09D *11/02;11/12*

U.S. Cl. 106—31.24 **14 Claims**



1. A hot melt ink utilizable for an ink jet printer, the hot melt ink existing in a solid state at a room temperature and being used in liquid state after melted, the hot melt ink comprising:

a vehicle which retains the solid state at the room temperature and is melted into the liquid state by heating over a melting point thereof; and

a colorant;

wherein a heat of melting lies in a range of 100– 200 mJ/mg, a softening point lies in a range of 50°–70° C. and a viscosity lies in a range of 10–30 cp at a fusible temperature higher than the melting point, wherein the vehicle further includes one or more resins selected from the group consisting of: olefinic resin selected from the group consisting of polyethylene resin, polypropylene resin; vinylic resin selected from the group consisting of ethylene-vinyl acetate copolymer resin, vinyl chloride-vinyl acetate copolymer resin, vinyl acetate resin, ethyl-vinyl chloride-vinyl acetate copolymer resin; acrylic resin selected from the group consisting of methacrylate resin, polyacrylate resin, ethylene-ethyl acrylate copolymer resin, ethylene-methacrylic acid copolymer resin; phenolic resin; polyurethane resin; polyamide resin; polyester resin; ketone resin; alkyd resin; rosin resin; petroleum resin; maleic acid resin; butyral resin and terpene resin.

5,624,484

LIQUID COMPOSITION AND INK SET, AND IMAGE-FORMING PROCESS AND APPARATUS USING THE SAME

Katsuhiko Takahashi, Yokohama, and Yutaka Kurabayashi, Tokorozawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 499,007

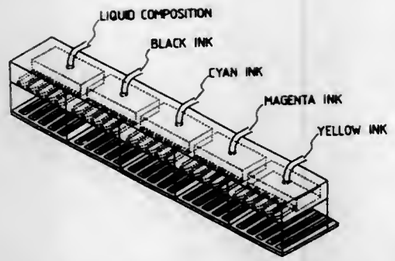
Claims priority, application Japan, Jul. 11, 1994, 6-180473; Jul. 3, 1995, 7-187659

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—31.75 **39 Claims**

1. A liquid composition containing no coloring material comprising polyallylamine, glycerol and a water-soluble organic solvent other than glycerol, said glycerol being contained in an

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amount of not less than 5% by weight based on the total weight of the liquid composition.

5,624,485

WATER BASED RECORDING FLUID

Larry G. Calhoun, Dayton, Ohio, assignor to Scitex Digital Printing, Inc., Dayton, Ohio

Filed Sep. 8, 1995, Ser. No. 524,998
Int. Cl.[6] C09D *11/02*
U.S. Cl. 524—386 **10 Claims**

1. An ink jet ink composition comprising a water soluble polymer present in an amount of from about 0.05 to 0.15 percent by weight, a glycol ether blend as a cosolvent present in an amount of from about 0.05 to 2.00 percent by weight, a water soluble dye, a surfactant present in an amount of from about 0.01 to 0.10 percent by weight, and a liquid vehicle.

5,624,486

MULTIPLY COATED METALLIC LUSTER PIGMENTS

Raimund Schmid, Neustadt, and Norbert Mronga, Dossenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 30, 1994, Ser. No. 297,857
Claims priority, application Germany, Feb. 21, 1994, 44 05 492.0
Int. Cl.[6] C09C *1/62*
U.S. Cl. 106—404 **10 Claims**

1. Luster pigments based on multiply coated platelet-shaped metallic substrates comprising

A) a first layer consisting essentially of silicon oxide, silicon oxide hydrate, aluminum oxide and/or aluminum oxide hydrate,

B) a second layer consisting essentially of metal and/or nonselectively absorbing metal oxide, and

C) if desired, a third layer consisting essentially of colorless or selectively absorbing metal oxide,

obtainable by

a) wet-chemical coating of the substrate particles with silicon oxide, silicon oxide hydrate, aluminum oxide and/or aluminum oxide hydrate by hydrolytic decomposition of organic silicon and/or aluminum compounds in which the organic radicals are attached to the metals via oxygen atoms in the presence of an organic solvent in which the metal compounds are soluble with or without subsequent drying,

b) further coating of the particles obtained in step a) with metal by

b1) gas phase decomposition of volatile metal compounds in an inert atmosphere or

b2) electroless, wet-chemical metal deposition with or without subsequent drying

or with nonselectively absorbing metal oxide by

b3) gas phase decomposition of volatile metal compounds in the presence of oxygen and/or water vapor and

c) if desired additional coating of the particles obtained in step b) with colorless or selectively absorbing metal oxide by

c1) gas phase decomposition of volatile metal compounds in the presence of oxygen and/or water vapor or

c2) wet-chemical coating by hydrolytic decomposition of organic metal compounds in which the organic radicals are attached to the metals via oxygen atoms in the presence of an organic solvent in which the metal compounds are soluble and subsequent drying.

5,624,487

PREPARATION OF BLUISH LUSTER PIGMENTS

Helmut Schmidt; Werner Ostertag, both of Osthofen; Hermann Bidlingmaier, Offenburg; Norbert Mronga, Dossenheim; Juan A. G. Gomez, Ludwigshafen; Claus Kaliba, Neuhofen; Raimund Schmid, Neustadt, and Raymond Ellinghoven, Marbach, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 26, 1996, Ser. No. 622,593
Claims priority, application Germany, Mar. 30, 1995, 195 11 697.6
Int. Cl.[6] C09C *1/00*; C04B *14/20*
U.S. Cl. 106—417 **11 Claims**

1. A process for producing bluish luster pigment platelets, comprising:

treating silicatic platelets having a titania coating of a geometric layer thickness of 10 nm to 60 nm with a reducing gas mixture of a vaporized organic compound and ammonia at a temperature of 800°–900° C.

5,624,488

ULTRAHIGH BRIGHTNESS CALCINED CLAY PIGMENT, MANUFACTURE & USE THEREOF

Ellen S. Forbus, Gray; Paul R. Suitch, Milledgeville, and Thomas Dombrowski, Macon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.

Filed Jun. 30, 1995, Ser. No. 497,241
Int. Cl.[6] C04B *14/10*
U.S. Cl. 106—484 **6 Claims**

1. An improved process for producing an ultra high brightness, low abrasion kaolin clay pigment from a soft kaolin clay crude which comprises:

a) selecting a crude that contains less than 2.0% by weight of quartz, mica and smectite minerals in the minus 2 micron fraction, removing grit from said crude and recovering degritted unfractionated crude that is from about 50–65% by weight finer than 2 microns, e.s.d.;

b) subjecting the degritted unfractionated crude to froth flotation, selective flocculation or combinations thereof to remove colored titania and optionally ferruginous impurities and produce a purified unfractionated kaolin product containing from 0–1.8% TiO_2 and 0–0.8% Fe_2O_3;

c) agitating the product of step (b) with particulate grinding media until about 85–92% by weight is finer than 2 microns e.s.d.;

d) removing sufficient kaolin particles from the product of step (c) to produce calciner feed that is about 95–100% by weight finer than 2 microns and about 88–92% by weight finer than 1 micron and represents at least 40% by weight of the degritted kaolin; recovering a resulting fractionated product;

e) spray drying the resulting recovered fractionated product from step (d) and pulverizing, fully calcining and repulverizing the spray dried product in a conventional manner;

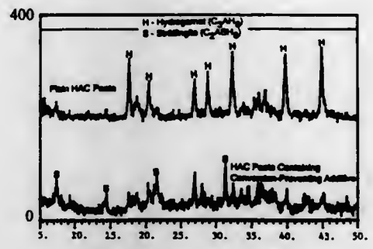
f) and recovering the calcined product having a G.E. brightness of at least 95%, an Einlehner abrasion below 25 and a white color as measured by an L value greater than 98.

5,624,489

CONVERSION-PREVENTING ADDITIVE FOR HIGH ALUMINA CEMENT PRODUCTS

Yan Fu; Jian Ding, both of Hull, and James J. Beaudoin, Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Jan. 23, 1995, Ser. No. 377,109
Int. Cl.[6] C04B *7/32*
U.S. Cl. 106—692 **8 Claims**



X-ray Diffraction Degree (2θ)

1. A method of preventing strength reduction due to conversion from hexagonal calcium aluminate hydrates to cubic tricalcium aluminate hydrates in a high alumina cement composition comprising high alumina cement, the method comprising, mixing from about 10% to about 100% by weight of the high alumina cement composition with a conversion-preventing additive which comprises

80–99 wt. % of a siliceous pozzolan and

1–20 wt. % of at least one inorganic salt having sodium or potassium cation and an anion selected from the group consisting of sulfate, carbonate, nitrate, silicate, phosphate, chloride, and bromide, wherein the resulting high alumina cement composition is such that, upon water hydration at 25°–40° C., stratlingite is formed preferentially and a formation of cubic hydrogarnet is limited therein, whereby the compressive strength of said resulting composition undergoes little or no reduction between its one-day value and its 28-day value.

5,624,490

PROCESS FOR TREATING METAL CHLORIDES

Peter Hill, Woodstown, N.J.; Michael T. Hyzny, Burns, Tenn., and John F. Wehner, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 242,920, Sep. 16, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 519,323
Int. Cl.[6] C08B *7/02*
U.S. Cl. 106—697 **7 Claims**

1. A process for preparing high strength, water-resistant aggregate comprising the steps of:

(a) high intensity mixing metal chlorides with alkaline substance consisting essentially of at least one cementitious material and optionally 0.1–50%, based on the total weight of the alkaline substance, of at least one neutralizing agent selected from the group consisting of lime, fly ash, soda ash, $CaCO_3$ and mixtures thereof, said high intensity mixing taking place in the presence of a low water ratio of less than 0.6 pounds of total water per pound of alkaline substance, at about 1 to about 50 meter/second within about 1 second to about 15 minutes, wherein the metal chlorides are simultaneously neutralized, stabilized and solidification of the mixture is initiated; and

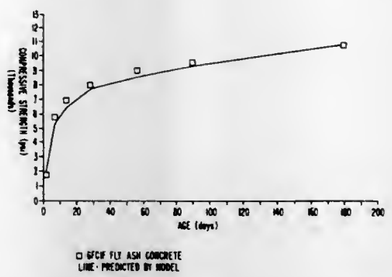
(b) curing the product resulting from step (a) wherein a compressive strength of greater than 1740 psig is achieved.

5,624,491

COMPRESSIVE STRENGTH OF CONCRETE AND MORTAR CONTAINING FLY ASH

John W. Liskowitz, Belle Mead; Methi Wecharatana, Parsippany, both of N.J.; Chai Jaturapitakkul, Bangkok THX, and Anthony E. Cerkanowicz, deceased, late of Livingston, N.J., assignors to New Jersey Institute of Technology, Newark, N.J.

Filed May 20, 1994, Ser. No. 246,875
Int. Cl.[6] C04B *7/13; 14/04*
U.S. Cl. 106—705 **12 Claims**



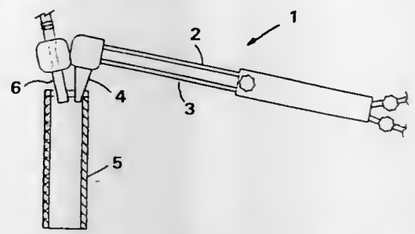
1. A high early strength concrete consisting essentially of about 1 part by weight cementitious materials, about 1 to about 3 parts by weight fine aggregate, about 1 to about 5 parts by weight coarse aggregate, and about 0.35 to about 0.6 parts by weight water, wherein the cementitious materials comprise from about 10% to about 35% by weight fly ash and about 65% to about 90% by weight cement, wherein the fly ash comprises at least 99% of particles having a particle size of less than 20 microns and having a fineness modulus of less than about 503, wherein the fineness modulus is calculated as a sum of the percent of fly ash particles having a size greater than 0, 1, 1.5, 2, 3, 5, 10, 20, 45, 75, 150, and 300 microns.

5,624,492

HEAT TREATMENT IN THE CONTROL OF THE SETTING OF CEMENT

Jerry P. Burkes; Clifford E. Grey, Jr.; Philip G. Malone; Toy S. Poole, all of Vicksburg, and Charles A. Weiss, Jr., Clinton, all of Miss., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1995, Ser. No. 518,349
Int. Cl.[6] C04B *7/43*
U.S. Cl. 106—723 **12 Claims**



1. A process for producing slow-hardening Portland cement comprising heating Portland cement particles to a temperature from about 1500° C. to about 3000° C. from about 0.5 seconds to about 10 seconds, and cooling the particles, said process resulting in the formation of an amorphous, glassy shell on the outside of the cement particles.

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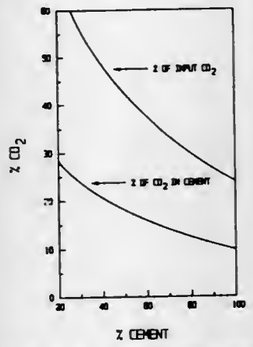
QUICK-SETTING CONCRETE AND A METHOD FOR MAKING QUICK-SETTING CONCRETE

Arun S. Wagh, Joliet; Dileep Singh, Westmont, both of Ill.; Jose D. Pullockaran, Trenton, N.J., and Lerry Knox, Glen Ellyn, Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 19, 1995, Ser. No. 424,947

Int. Cl.[6] G04B *7/38;7/43*

U.S. Cl. 106—817 **13 Claims**



1. A method for producing quick setting concrete comprising:

a.) heating a mixture consisting of a calcareous material and an argillaceous material to produce cement powder and carbon dioxide;

b.) mixing said carbon dioxide with an hydroxide solution to produce a carbonate solution;

c.) combining said cement powder with aggregate to produce a dry concrete mixture whereby 10 to 80 percent of the weight of the concrete mixture is cement;

d.) mixing said dry concrete mixture with said carbonate solution in a cement:carbonate solution weight ratio selected from approximately 4:1 to 6:1 to produce a slurry; and

e.) allowing the slurry cure.

5,624,494

PARAFFIN COATING DEVICE FOR TEXTILE MACHINES

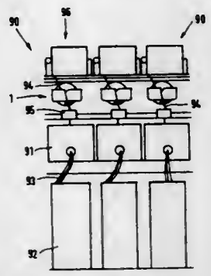
Werner Schmolke, and Romeo Pohn, both of Ingolstadt, Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed May 25, 1995, Ser. No. 450,206

Claims priority, application Germany, Sep. 28, 1994, 44 34 566.6

Int. Cl.[6] D02J *3/18;* **B65H** *71/00;* **D01H** *13/30*

U.S. Cl. 118—78 **10 Claims**



1. A textile machine paraffin coating device, comprising:

a support configured for mounting on a frame of a textile machine, said support further comprising an attachment device for receipt of a paraffin body;

a stop disposed relative said support to contact said paraffin body and define a fixed position for said paraffin body on said support;

a guiding hoop disposed relative said support to guide a yarn over said paraffin body;

a compact unit assembly detachably mounted on said support, said stop and said guiding hoop mounted on said compact unit assembly;

a positioning device configured relative said support and said compact unit assembly to assure a fixed position of said compact unit assembly on said support; and

a detaching mechanism configured with said compact unit assembly to releasably attach said compact unit assembly to said support.

5,624,495

COATING SYSTEM INCLUDING FLEXIBLE BLADE FOR COATING WEB MATERIAL

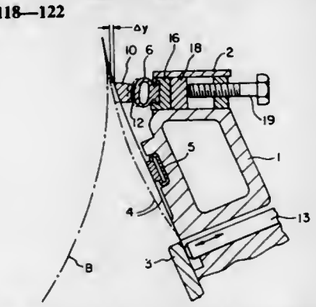
Michael Trefz, and Christoph Henninger, both of Heidenheim, Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Jan. 20, 1995, Ser. No. 377,024

Claims priority, application Germany, Jan. 24, 1994, 44 01 737.5

Int. Cl.[6] B05C *17/00*

U.S. Cl. 118—122 **3 Claims**



1. A coating system for a web material, comprising:

a doctor element fashioned as a doctor blade, said doctor blade having a dosing edge;

a substrate element comprising a backing for the doctor blade;

a mounting member for securing the doctor blade;

a first load system located in closely spaced relationship to the dosing edge of the doctor blade, said first load system including a contact element, said contact element comprising a pressure hose;

a second load system positioned between the mounting member and the first load system; and

a pressure bar positioned in the area of the dosing edge of the doctor blade, said pressure bar being either fastened to the doctor blade or bearing on the doctor blade, said pressure bar being oriented with respect to said first load system such that said first load system acts on the pressure bar via a slide element situated between the pressure hose and the pressure bar, said slide element being secured to the pressure hose.

5,624,496

AUTOMATED COATING SYSTEM

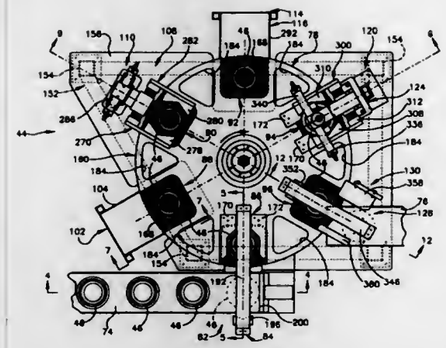
Donald R. Scharf, Amherst, and Raymond J. Baxter, Vermilion, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed May 23, 1995, Ser. No. 447,431

Int. Cl.[6] B05C *5/00*

U.S. Cl. 118—320 **30 Claims**

1. An automated coating system for use in coating bearing assemblies having inner and outer races, said automated coating system comprising a first coating station, apparatus at said first coating station to apply coating material to each of the bearing assemblies in turn while a first side of each of the bearing assemblies faces upward, a turning station, apparatus at said turning station to sequentially turn each of the bearing assemblies over so that the first side of each of the bearing assemblies faces downward and a second side faces upward, a second coating station, apparatus at said second coating station to apply coating material to each of the bearing assemblies in turn while the second side of each of the bearing assemblies faces upward, a rotating station, apparatus at said rotating station to effect relative rotation between inner and outer races of each of the bearing assemblies in turn, and a conveyor assembly extending between each of said stations and operable to sequentially move the bearing assemblies between said stations.



5,624,497

COATING APPARATUS

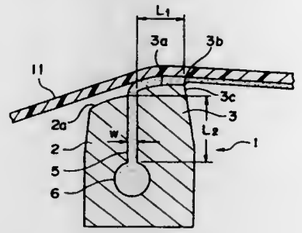
Hideki Tanaka, Saku; Eizo Tsunoda, Komoro; Ryuji Hosogaya; Akira Hatakeyama, both of Saku; Yoshihisa Osawa, Miyota-machi, and Seiichi Tobisawa, Hino, all of Japan, assignors to TDK Corporation, and Konica Corporation, both of Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 408,287

Claims priority, application Japan, Mar. 25, 1994, 6-077770

Int. Cl.[6] B05C *3/02*

U.S. Cl. 118—410 **10 Claims**



1. A coating apparatus comprising:

an extrusion coating head having a front edge and a back edge separated by slit, extrusion coating head continuously extruding a coating liquid from said slit to coat the surface of

wherein a back end edge of said back edge representing the farthest downstream end portion of said back edge with respect to a support feeding direction has a working value of 25 μm or less and a straightness of 5 μm or less.

5,624,498

SHOWERHEAD FOR A GAS SUPPLYING APPARATUS

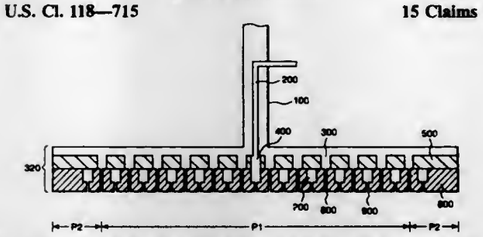
Gil-Gwang Lee; Kazuyuki Fujihara, both of Seoul, and Kyu-bwan Chang, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 8, 1994, Ser. No. 352,249

Claims priority, application Rep. of Korea, Dec. 22, 1993, 93-29053

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 **15 Claims**



1. A showerhead for a gas supply apparatus having a first gas supply pipe and a second gas supply pipe having a smaller diameter than that of the first gas supply pipe and disposed along a longitudinal axis thereof, the showerhead comprising:

a first plate having a plurality of first holes formed therein in fluid communication with the first gas supply pipe, and a central bore formed therein in fluid communication with the second gas supply pipe;

a second plate secured to said first plate, said second plate having a plurality of second holes longitudinally aligned with corresponding ones of said first holes, a plurality of interconnected gas distribution chambers in fluid communication with one another and with said central bore, and a plurality of third holes in fluid communication with corresponding ones of said gas distribution chambers;

wherein said second and third holes have smaller diameters than those of said first holes; and,

wherein said first and second holes provide a first gas pathway between the first gas supply pipe and the exterior of the showerhead, and said central bore, said gas distribution chambers and said third holes provide a second gas pathway between the second gas supply pipe and the exterior of the showerhead.

5,624,499

CVD APPARATUS

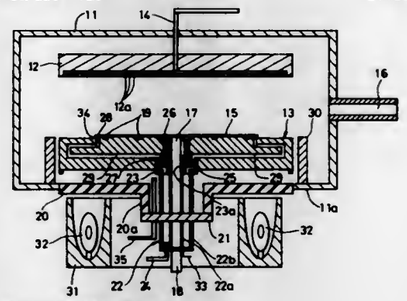
Shigeru Mizuno, Kawasaki; Masahito Ishihara, Fuchu; Manabu Tagami, Fuchu; Hajime Sahase, Fuchu, and Nobuyuki Takahashi, Mitaka, all of Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 634,676

Claims priority, application Japan, Apr. 28, 1995, 7-129206

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—725 **27 Claims**



1. A CVD apparatus comprising:

a reactor;

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a substrate holder for holding a substrate on a top surface thereof, which is disposed in said reactor;

an evacuation means for evacuating said reactor;

a reactive gas supply means for supplying a reactive gas into said reactor;

a heating means for heating said substrate holder;

a clamping means for clamping the substrate placed on said substrate holder without pressing the surface thereof to be processed; and

a purge gas supply means for supplying purge gas, wherein

said substrate holder is configured to have

a circular purge gas blowing channel on the top surface thereof, in which a diameter of an outside wall-surface is less than a diameter of the substrate, and

a plurality of purge gas passages in an inside thereof, which supply said purge gas introduced by said purge gas supply means into said purge gas blowing channel,

whereby said purge gas flows in said purge gas blowing channel and is blown off from a clearance between the outside periphery of the substrate and said substrate holder into said reactor, and further

each of said purge gas passages includes a radius-directed part directed in a radius direction of said substrate holder and has a purge gas outlet provided on the outside wall-surface of said purge gas blowing channel.

5,624,500

SYRUP OF NATURAL CAROB SUGARS AND A PROCESS FOR ITS PRODUCTION

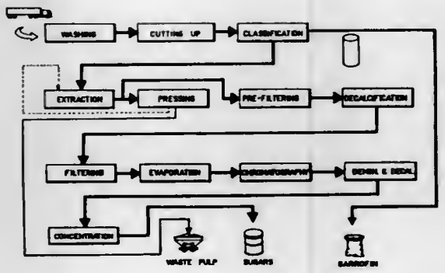
Carlos Sanjuan Diaz, Rocafort, Spain, assignor to Compania General del Algarrobo de Espana, S.A., Spain

Continuation of Ser. No. 216,655, Mar. 23, 1994. This application Mar. 29, 1995, Ser. No. 412,761

Claims priority, application Spain, Mar. 26, 1993, 9300628

Int. Cl.[6] C13D *1/00*; **B01D** *15/08*; **A23L** *1/05*; **A23G** *3/00*

U.S. Cl. 127—30 **6 Claims**



1. A syrup comprising natural carob sugars, substantially free of color, odor and taste of natural carob extract, the syrup having the following analysis:

Sucrose	55–75%
Fructose	7–15%
Glucose	5–16%
Other Sugars	0.5–3%
Cyclitols	4–14%
Organic and Inorganic Impurities	0.5–2%

where the percentages are expressed in weight of dry matter.

5,624,501

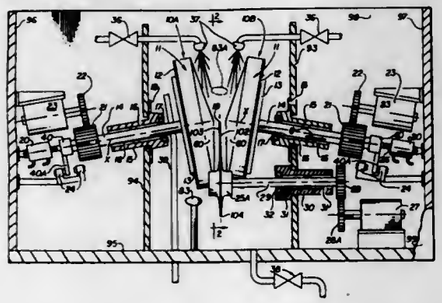
APPARATUS FOR CLEANING SEMICONDUCTOR WAFERS

Gerald L. Gill, Jr., 1812 Peaceful Mesa, Prescott, Ariz. 86301

Filed Sep. 26, 1995, Ser. No. 534,053

Int. Cl.[6] B08B *7/00*

U.S. Cl. 134—6 **19 Claims**



2. A method of cleaning opposed work surfaces of a wafer, comprising the steps of

(a) providing cleaning apparatus including

(i) a first cleaning assembly including a first conical cleaning surface extending around a first axis such that a line perpendicular to said first axis passes through a pair of separate points on said first conical cleaning surface which are each generally equidistant from said first axis,

(ii) a second cleaning assembly including a second conical cleaning surface said second conical cleaning surface extending around a second axis such that a line perpendicular to said second axis passes through a pair of separate points on said second conical cleaning surface which are each generally equidistant from said second axis, said first and second conical cleaning surfaces being canted with respect to one another and said first and second axes being canted with respect to one another such that a radial contact portion of said first conical cleaning surface is substantially parallel and opposed to a radial contact portion of said second conical cleaning surface;

(b) positioning the wafer intermediate said first and second conical cleaning surfaces such that each of said work surfaces contacts a different one of said radial contact portions of said first and second conical cleaning surfaces; and,

(c) moving at least one of the surfaces in the group consisting of

(i) said work surfaces of the wafer,

(ii) said first conical surface, and

(iii) said second conical cleaning surface, to cause relative movement between said wafer and at least one of said first and second conical cleaning surfaces to clean said work surfaces of the wafer.

5,624,502

METHOD OF CLEANING BOATS THAT HAVE BEEN CONTAMINATED WITH OIL AND GAS WELL DRILLING FLUIDS AND HAZARDOUS WASTE

Arthur A. Defraites, Jr., 300 Buena Vista Blvd., Houma, La. 70360

Filed Oct. 25, 1995, Ser. No. 548,143

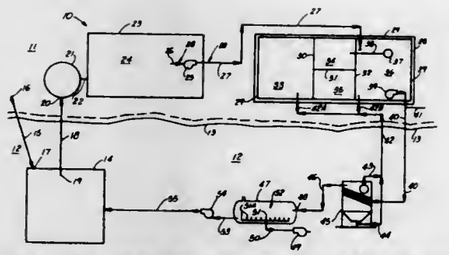
Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—10 **6 Claims**

1. A method of cleaning a floating vessel that has been contaminated with oil and gas well drilling fluids or hazardous waste comprising the steps of:

a) storing laundered wash water in a storage facility that is adjacent to the floating vessel to be cleaned;

b) cleaning the floating vessel with wash water transmitted to the vessel from the laundered wash water facility;



c) transmitting contaminated wash water from the floating vessel to a floating receiving barge that is floating adjacent to the vessel to be cleaned;

d) introducing a primary coagulation cationic polymer upstream of the receiving barge into the wash water in a flowline that extends between the vessel and the receiving barge;

e) settling and concentrating solid material within the receiving barge;

f) decanting supernatant wash water from the water surface area of water contained in the receiving barge after settling of solid material within the receiving barge;

g) introducing a cationic flocculent into the decant supernatant wash water from step "f" in a flowline that extends between the receiving barge and a settling tank that is downstream of the vessel and receiving vessel;

h) removing solid material from the wash water in the settling tank;

i) transmitting solid material from the settling tank to the receiving barge to concentrate solid material within the receiving vessel;

j) transmitting wash water from the settling tank to an aeration tank wherein the wasb water is aerated to oxidize waste material contained within the wash water;

k) returning wash water that has been laundered in steps "b" through "j" to the water storage facility; and

l) using at least some of the wasb water returned in step "k" to again clean a vessel that has been contaminated with oil and gas well drilling fluids or hazardous waste.

5,624,503

PROCESS FOR PRODUCING ND-FE-B MAGNET

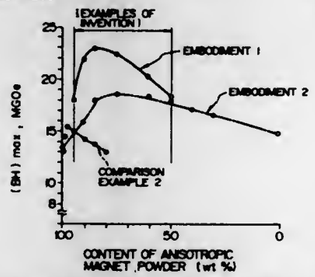
Fumitoshi Yamashita, Ikoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 163,721, Dec. 9, 1993, abandoned. This application Nov. 28, 1995, Ser. No. 563,355

Claims priority, application Japan, Dec. 24, 1992, 4-343943; Mar. 9, 1993, 5-047689

Int. Cl.[6] H01F *41/02*

U.S. Cl. 148—103 **8 Claims**



1. A process for producing a Nd-Fe-B magnet in which a content of anisotropic Nd-Fe-B magnet powder is from 95 to 50% by weight, said process comprising the steps of:

charging a powder mixture in a compacting mold, said powder mixture comprising said anisotropic Nd-Fe-B magnet powder and a powder containing a mixture of isotropic Nd-Fe-B magnet powder and solder powder which softens or melts when said solder powder is compressively heated;

magnetically orientating said powder mixture in a cavity in a magnetic field; and

compressing and Joule heating the orientated powder mixture so that said powder mixture is fixed to thereby obtain said magnet.

5,624,504

DUPLEX STRUCTURE STAINLESS STEEL HAVING HIGH STRENGTH AND ELONGATION AND A PROCESS FOR PRODUCING THE STEEL

Katsuhisa Miyakusu, Shinnanyo; Yukio Oda, Sakai, and Takashi Igawa, Kuga-gun, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01894, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO95/13405, PCT Pub. Date May 18, 1995

PCT Filed Nov. 10, 1994, Ser. No. 481,489

Claims priority, application Japan, Nov. 12, 1993, 5-306105

Int. Cl.[6] C22C *38/32*; **C21D** *8/00*

U.S. Cl. 148—325 **9 Claims**

1. A stainless steel of a duplex structure, comprised of from 60% to 95% by volume of martensite having an average grain diameter of not more than 10 μm, with the a balance being essentially ferrite, said steel having a high strength and an elongation as well as a hardness of at least HV 320, said steel comprising, by weight:

up to 0.10% C,

up to 2.0% Si,

up to 4.0% Mn,

up to 0.040% P,

up to 0.010% S,

up to 4.0%Ni,

from 10.0% to 20.0% Cr,

up to 0.12% N;

more than 0.0050% to 0.0300%B,

up to 0.02% O, and

up to 4.0% Cu, the balance being Fe and unavoidable impurities, and satisfying

$0.01\% \leqq C+N \leqq 0.20\%$

$0.20\% \leqq Ni+(Mn+Cu)/3 \leqq 5.0\%$ and the content amounts of C, N, Ni, Mn, Cu, Cr and Si in the steel satisfy a relationship for a γmax value of more than 65 and not more than 95, obtained from the equation

$$\gamma max = 420\,(\%C)+470\,(\%N)+23\,(\%Ni)+7\,(\%Mn)+9\,(\%C)-11.5\,(\%Cr)-11.5\,(\%Si)+189.$$

5,624,505

TITANIUM MATRIX COMPOSITES

Vladislav I. Mazur; Yuri N. Taran; Svetlana V. Kapustnikova, all of 4 Gagarin Avenue, 320636 One Propetrovsk; Viktor I. Trefilov, 3 Krzhizhanovsky Street, 252142 Kiev; Sergey A. Firstov, 3 Krzhizhanocsky Street, 252142 Kiev, and Leonid D. Kulak, 3 Krzhizhanocsky Street, 252142 Kiev, all of Ukraine

Division of Ser. No. 323,048, Oct. 14, 1994, Pat. No. 5,458,705, which is a division of Ser. No. 25,223, Mar. 2, 1993, Pat. No. 5,366,570. This application Feb. 8, 1995, Ser. No. 385,700

Int. Cl.[6] C02L *14/00*

U.S. Cl. 148—407 **10 Claims**

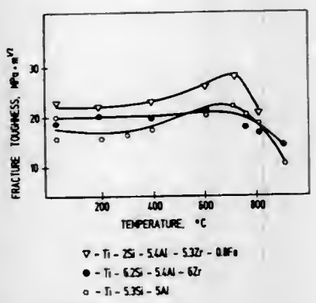
1. A titanium matrix composite having titanium-ceramic reinforcement therein, said composite not containing molybdenum and zirconium, said composite comprising:

between about 2% to about 20% by weight silicon,

between about 2% to about 13% by weight aluminum,

between about 0.01% to 2% by weight at least one element selected from the group consisting of manganese, chromium, carbon, iron and boron, and

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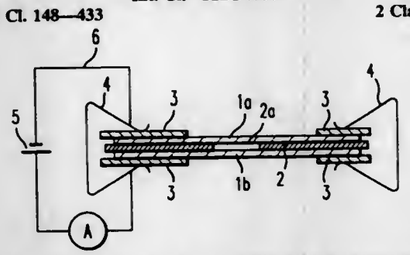


the balance is titanium.

5,624,506
COPPER ALLOY FOR USE IN ELECTRICAL AND ELECTRONIC PARTS

Yoshinobu Tsuzaki, Hatano; Tetsuo Kato, Shizuoka-ken; Yukio Ohota, Shizuoka-ken, and Naoki Kakuta, Shizuoka-ken, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, and Yazaki Corporation, Tokyo, both of Japan

PCT No. PCT/JP94/01636, § 371 Date Aug. 9, 1995, § 102(e) Date Aug. 9, 1995, PCT Pub. No. WO95/09252, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 30, 1994, Ser. No. 424,524
Claims priority, application Japan, Sep. 30, 1993, 5-245470
Int. Cl.[6] C22C *9/00*
U.S. Cl. 148—433 **2 Claims**



1. A copper alloy consisting essentially of Fe of 1.8–2.0 weight %, P of 0.025–0.040 weight %, Zn of 1.7–1.9 weight %, Sn of 0.40–1.0 weight %, Ca of 0.0001–0.01 weight %, Cr of 0.001–0.01 weight %, and S of 13-6 ppm, and the balance being Cu and inevitable impurities,

wherein said copper alloy has a tensile strength of not less than 510 N/mm^2, an elongation of not less than 13%, a hardness of not less than HV160, and a conductivity of not less than 43% IACS.

5,624,507
SYSTEM FOR PRODUCTION OF A QUENCHANT GAS MIXTURE

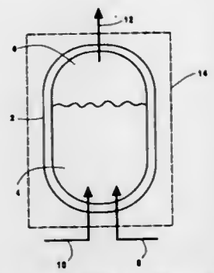
Thomas G. Halvorson, Lockport, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 29, 1995, Ser. No. 580,912
Int. Cl.[6] C21D *1/74*
U.S. Cl. 65—434 **9 Claims**

1. A process for producing a quench gas mixture, comprising the steps of:

a) providing an insulated vessel having an ullage space and containing a cryogenic liquid;

b) injecting warm helium gas into the insulated vessel substantially at the bottom of the vessel, bubbling the helium gas through the cryogenic liquid and allowing the helium gas to collect in the ullage space;



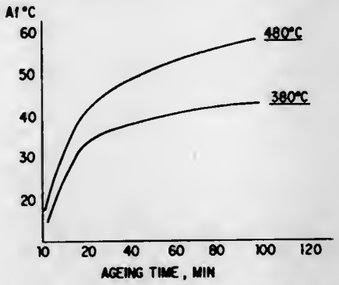
c) vaporizing cryogenic liquid by direct heat exchange with helium gas as the helium gas bubbles through the cryogenic liquid to produce cryogenic vapor, and mixing cryogenic vapor with the helium gas in the ullage space to form a gas mixture comprising helium and cryogenic vapor; and

d) withdrawing the gas mixture from the ullage space and passing the gas mixture to a cooling zone to cool an article.

5,624,508
MANUFACTURE OF A TWO-WAY SHAPE MEMORY ALLOY AND DEVICE

Josef Flomenblit, and Nathaly Budigina, both of 15/12 Akiva St., Holon 58824, Israel

Filed May 2, 1995, Ser. No. 432,802
Int. Cl.[6] A61M *29/00*; C22C *19/03*
U.S. Cl. 148—510 **15 Claims**



15. A process for the manufacture of a medical stent from a nickel-titanium based alloy having a first diameter, the stent having either the form of a wire with a second diameter or a form of a band, the stent exhibiting a two-way shape memory effect (SME) having an austenitic and a martensitic memory state with associated austenitic and martensitic shapes, respectively, the process comprising the steps of:

(a) heating a sample of the nickel-titanium based wire to a temperature of about 450°–550° C. for about 0.5–2.5 hours, and then testing the sample for temperature difference between A_s and A_f, wherein A_s is a temperature wherein austenitic transformation, namely transformation between the martensitic to the austenitic state, begins, and A_f is a temperature where the austenitic transformation ends;

(b) subjecting the wire to a first heat treatment based on the A_f–A_s difference obtained in step (a), as follows:

where the difference is less than about 7° C., heat treating the wire at a temperature of about 450°–500° C. for about 0.5–1.0 hours;

where the difference is more than about 7° C., heat treating the wire at a temperature of about 510°–550° C. for about 1.0–2.5 hours;

(c) subjecting the wire to a thermo-mechanical treatment, comprising warm rolling of the wire at a strain rate of less than 5 sec^{-1}, with simultaneous internal heating of a portion of the wire where the deformation occurs, by electro-stimulation at a

current density of about 500–2000 A/cm^2, the deformation in this step being less than 55%;

(d) if the deformation in step (c) does not yield a cross-sectional shape of the final stent form, subjecting the wire to an intermediate heat treatment at a temperature of about 500°–550° C., for about 0.5–2 hours and then repeating step (c); and

(e) subjecting the wire to a final heat treatment and to a memorizing treatment, which comprises:

(i) winding the wire or band obtained in step (c) on a mandrel having a conditioning diameter being different than the diameter to be assumed by the stent in the austenitic state,

(ii) subjecting the wire to a heat treatment at about 450°–500° C. for about 0.5–2 hours, then to polygonization and solution treatment at about 600°–800° C. for about 2–50 mins., and then to aging treatment at about 350°–500° C. for about 0–2 hours,

(iii) winding the wire or band on a mandrel having a diameter to be assumed by the stent in the austenitic state,

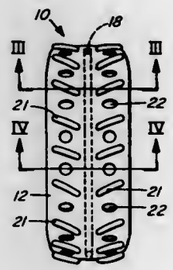
(iv) subjecting the alloy to a memorizing heat treatment at about 500°–600° C. for more than about 10 mins., and then to aging treatment at about 350°–500° C. for about 0.15–2.15 hours;

whereby a stent is obtained having an austenitic state with a diameter into which the wire was formed in step (iii), and a martensitic state in which the stent has a diameter which is an intermediate diameter between the conditioning diameter and the diameter of the stent in the austenitic state.

5,624,509
WHEEL TRACTION DEVICE

Corby H. Stanley, 1766 Balaclava Street, Vancouver, British Columbia, Canada

Continuation of Ser. No. 956,339, Oct. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 812,013, Dec. 23, 1991, abandoned. This application Nov. 5, 1993, Ser. No. 147,435
Int. Cl.[6] B60C *27/12*
U.S. Cl. 152—213 R **9 Claims**

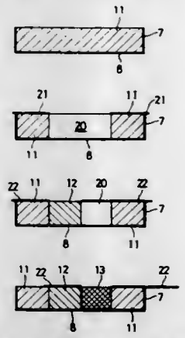


1. A removable traction device for a tire comprising an annular member of an elastomeric material for fitting around the tire in a stretch fit, said annular member having a thickness whereby it is easily stretchable for attachment in a stretch fit to a tire seated on a vehicle wheel and having an inner surface for contact with the ground-engaging tread of the tire and an outer surface for ground contact, wherein at least one opening is provided between said inner and outer surfaces and further comprising a circumferentially extending rib on said inner surface, said rib being elastic in its longitudinal direction for attaching the annular member to the tire; and traction assistance means on said outer surface in the form of transverse ribs spaced along the circumferential directing of the annular member and standing proud of the outer surface of the annular member.

5,624,510
METHOD FOR PRODUCING PATTERNED SHAPED ARTICLE

Hiroshi Uchida, Ashikaga; Mitsuhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

Continuation of Ser. No. 21,554, Feb. 24, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 340,443
Claims priority, application Japan, Feb. 25, 1992, 4-073221
Int. Cl.[6] B29C *39/12*
U.S. Cl. 156—62.2 **9 Claims**



1. A method for producing a patterned shaped article, comprising the steps of:

forming on a main form a layer of a first particulate dry material having a prescribed thickness, said first particulate dry material being readily amenable to pulverization before charging onto the given surface, said main form having a bottom plate and sidewalls surrounding said bottom plate;

removing part of said layer by using a mask to form at least one concave portion in said layer;

filling said at least one concave portion in said mask with at least one kind of second material different in color and quality from said first material; and

causing said first and second materials to set in said mask into an integral mass.

5,624,511
METHOD AND APPARATUS FOR JOINING HEAT SEALABLE MATERIAL

Glenn W. Lippman, 12150 Race St. Unit L-104, Northglenn, Colo. 80241, assignor to Glenn W. Lippman, North Glenn, Colo.; Gerald Lippman, Boca Raton, Fla., and Thomas T. Yanari, Boulder, Colo.

Filed Oct. 27, 1994, Ser. No. 331,033
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—64 **25 Claims**

23. A method for welding a section of heat sealable sheet to an underlying section of heat sealable sheet, said method comprising the steps of:

providing overlying and underlying sections of heat sealable sheet material and positioning them so that they are aligned as desired;

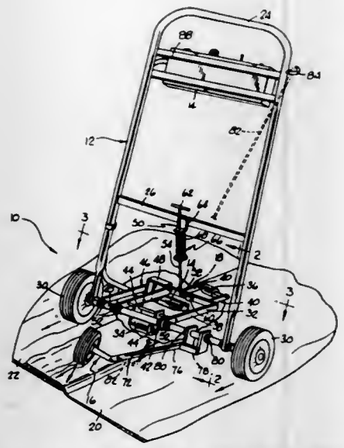
providing a welding apparatus having a heating body for being positioned between the overlying and underlying sections of heat sealable sheet material so that the heating body heats the sections as the apparatus and sections move relative to each other;

positioning the heating body of the apparatus between the overlying and underlying sections of heat sealable material;

heating the overlying and underlying sections with the heating body as the apparatus and sections move relative to each other;

controlling the alignment of the overlying and underlying sections of heat sealable sheet material as said apparatus and the sections move relative to each other by maintaining the lateral

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position of the section of heat sealable sheet material which has a tendency to move laterally as said apparatus and sections move relative to each other; and

pressing the heated sections together to weld them together.

5,624,512

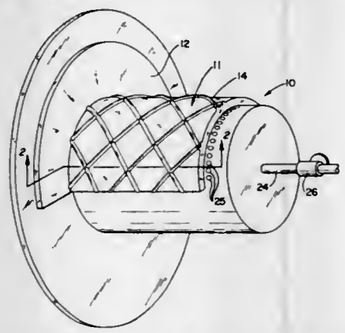
METHOD OF CURING COMPOSITE ARTICLES USING CONFORMABLE VACUUM BAGS

Samuel M. Boszor, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1992, Ser. No. 955,959

Int. Cl.[6] B32B *31/00*

U.S. Cl. 756—87 **5 Claims**



1. A method of curing a lay-up of a composite article in an autoclave, said method comprising:

face positioning said lay-up onto tooling supporting said lay-upon a first surface thereof;

coating a second surface of the lay-up with a releasing material;

applying a coat of silicone rubber to erasing material on said second surface;

curing said silicone rubber into a flexible sheet on the releasing material on said second surface, thereby creating an impression of the second surface in the sheet;

sealing all edges of the sheet to the tooling, said tooling and said sheet thereby forming a envelope about the lay-up, said tooling, sheet and lay-up comprising an assembly;

evacuating any gases from within the envelope to provide a vacuum therein; and,

placing said assembly into said autoclave and subjecting said lay-up to a pressure and temperature at which the lay-up cures.

5,624,513

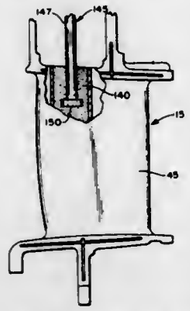
REMOVAL OF INSERTS FROM THE INTERIORS OF TURBINE AIRFOILS

David Desaulniers, New London, and Ramon Velez, Jr., South Meriden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1995, Ser. No. 490,187

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—98 **10 Claims**



1. A method of removing an insert from the interior of a hollow airfoil, said method being characterized by:

at least partially filling said component with an uncured adhesive;

curing said adhesive to form a bonded combination of said component and adhesive;

removing said insert by applying a force to said adhesive to extract said bonded combination of said component and said adhesive from said airfoil.

5,624,514

PROCESS FOR PRODUCING A SUPPORT OUTFITTED WITH AN ALARM TRIGGER OF AN ANTI-THEFT SECURITY SYSTEM

Bernhard Frowein, Schlangen, Germany, assignor to Friedrich Graf Soehne GmbH & Co. KG, Germany

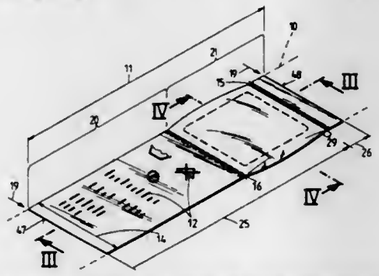
PCT No. PCT/EP94/01819, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/29503, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 379,507

Claims priority, application Germany, Jun. 9, 1993, 9308632 U

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—148 **20 Claims**



1. A process for producing a textile functional strip outfitted with an alarm trigger for use with an anti-theft security system, the textile functional strip outfitted with the alarm trigger being adapted for attaching to merchandise and the anti-theft security system including a detector which is arranged in a region through which the merchandise must pass and which responds when the alarm trigger is passed through the region, the process comprising the steps of:

a) producing a continuous textile web, said continuous textile web having successive zones and during production;

aa) constructing each said successive zone as two layers in at least one area;

bb) forming a pocket from said two layers in each of said successive zones, each pocket having an interior and a pocket opening;

cc) inserting an alarm trigger through each pocket opening into the interior of the pocket; and

dd) forming a pocket closure at each pocket opening to maintain the alarm trigger within the interior of the pocket;

b) cutting the continuous textile web at cutting points to separate said successive zones into individual textile functional strips.

5,624,515

METHOD OF PRODUCING SHORT FIBERS

Susumu Onoe; Kanji Kimoto; Keizou Nonaka, and Hiroshi Matsuoka, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Jun. 2, 1995, Ser. No. 460,427

Claims priority, application Japan, Jun. 6, 1994, 6-123833

Int. Cl.[6] D02G *1/20;* **D03D** *25/00;* **F16G** *5/08*

U.S. Cl. 156—148 **5 Claims**

1. A method of producing short fibers, comprising the steps of:

subjecting a multi-filament yarn to 4 to 9 twists every 10 cm in a single direction thereby forming a warp yarn;

passing weft yarns crosswise over and under a plurality of the warp yarns with the plural warp yarns parallel-arranged thereby forming a cord fabric; and

subjecting the cord fabric to adhesion treatment with an adhesive and to heat treatment to heat shrink the warp yarns and then cutting the cord fabric thereby obtaining short fibers.

5,624,516

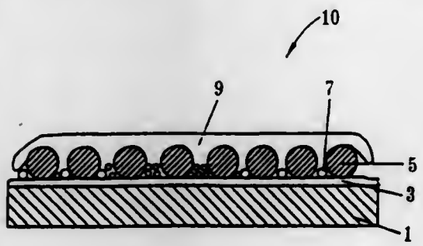
METHODS OF MAKING PREFORMS FOR COMPOSITE MATERIAL MANUFACTURE

William M. Hanusiak; Lisa B. Hanusiak, both of Candia, N.H.; Jeffrey M. Parneli, Chelmsford, Mass.; Steven R. Spear, and Charles R. Rowe, both of Derry, N.H., assignors to Atlantic Research Corporation, Vienna, Va.

Filed Dec. 20, 1994, Ser. No. 359,388

Int. Cl.[6] B29C *65/48;* **B32B** *31/12;* **B65H** *81/00*

U.S. Cl. 156—173 **12 Claims**



1. A method of making a preform for composite material manufacture comprising the steps of:

a) providing a substrate

b) applying a tacky adhesive to said substrate;

c) applying a plurality of fibers to said tacky adhesive in a spaced apart relationship such that portions of the tacky adhesive are exposed; and

d) subsequently applying a powder filler material on the exposed tacky adhesive such that said powder filler material adheres to the tacky adhesive and remains positioned between spaced apart fibers; and

e) applying a polymeric barrier layer over said plurality of fibers and the filler material wherein said polymeric barrier layer is mutually insoluble with said tacky adhesive.

5,624,517

METHOD OF MAKING A SANITARY BASIN

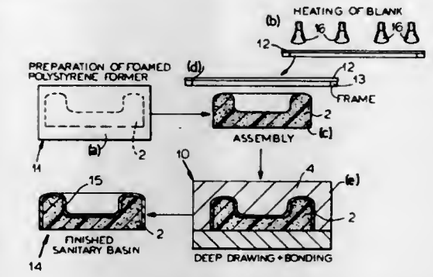
Willibald Giesen; Michael Schröder, both of Dautphetal, and Franz Kind, Biedenkopf, all of Germany, assignors to Roth Werke GmbH, Dautphetal, Germany

Filed Sep. 13, 1994, Ser. No. 305,489

Claims priority, application Germany, Sep. 24, 1993, 43 32 467.3

Int. Cl.[6] B29B *13/02;* **B32B** *31/20*

U.S. Cl. 156—212 **13 Claims**



1. A method of originally making a sanitary basin, comprising the steps of:

(a) forming a basin body having an upwardly open cavity from a foam synthetic resin;

(b) heating a deep-drawable thermally softenable plate-shaped blank of a thermoplastic synthetic resin sanitary-basin surfacing material to a deep drawing temperature;

(c) providing said basin body as a shaping die with a bottom and side walls in a deep drawing press;

(d) juxtaposing the heated deep-drawable thermally softenable plate-shaped blank on a tensioning frame juxtaposed with the die and pressing the blank against said bottom and side walls with a deep drawing ram to deep draw the blank complementary with said die and line said body with said surfacing material; and

(e) holding said ram against the deep drawn blank and said blank against said body with a pressure and for a duration sufficient to bond said deep drawn blank to said body directly in an intermelting of said body and said deep drawn blank, the temperature to which said blank is heated in step (b) being at least equal to a temperature required for the bonding of said deep drawn blank to said body in step (e).

5,624,518

METHOD OF MAKING A HOUSING LINER

Reinhard Stief, Weinheim; Roger Schork, Mörlenbach; Gerhard Müller-Broll, Rimbach; Thomas Jost, Weinheim; Manfred Mattutat, Ladenburg, and Klaus-Dieter Schmitt, Gorxheimertal, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Division of Ser. No. 164,182, Dec. 9, 1993. This application Jun. 1, 1995, Ser. No. 457,727

Claims priority, application Germany, Dec. 10, 1992, 42 41 515.2

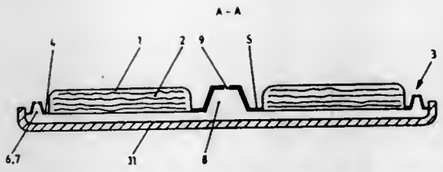
Int. Cl.[6] B29C *59/00;* **D04H** *1/62*

U.S. Cl. 156—224 **3 Claims**

1. A method for making a housing lining comprising a sound-absorbent layer of fibers, the method comprising the steps of:

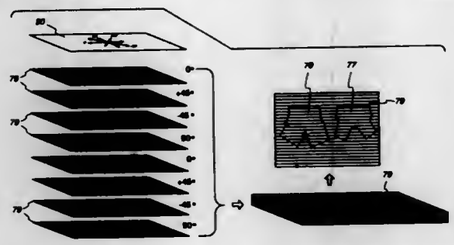
(a) compressing a portion of the layer of fibers at least in the vicinity of an edge of the layer of fibers;

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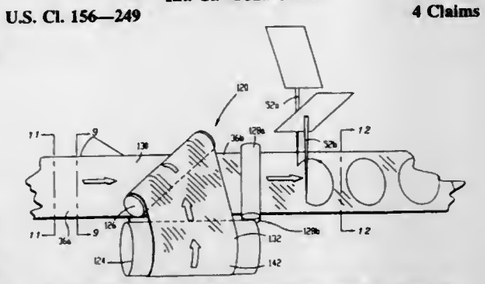
(b) shaping a part of the compressed fibers into at least one cup-shaped convexity forming a Helmholtz resonator with an opening for air to pass through; and
(c) gluing the compressed fibers to
form an essentially pore-free supporting frame.

5,624,519
METHOD MAKING A COMPOSITE BICYCLE FRAME USING COMPOSITE LUGS
Ronald H. Nelson; Dimitrije Milovich, both of Salt Lake City, Utah; Weston M. Wilcox, Sun Prairie, and Robert F. Read, Edgerton, both of Wis., assignors to Trek Bicycle, Corp., Waterloo, Wis.
Continuation-in-part of Ser. No. 890,933, May 29, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,255
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—245 **3 Claims**



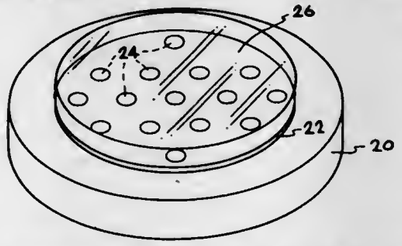
3. A method of manufacturing an all composite bicycle frame, which supports a rider and withstands pedalling loads, said frame having separate hollow, thin walled lugs and tubes, said lugs having different shapes and non-developable surfaces; wherein said method comprises:
providing a corresponding mold for each lug shape, each corresponding mold having a first half and a second half which together define a cavity corresponding with a separate lug shape;
for each separate lug, overlaying layers of composite material to form a generally flat stack of composite material, said individual layers of composite material comprising a multiplicity of unidirectional, small diameter fibers of high modulus and high tensile strength fiber in an uncured resin matrix, wherein the fibers in any layer in the stack are aligned in crossing relation to the fibers in adjacent layers;
for each separate lug, cutting a stack to form a first preform and a second preform, said preforms being shaped to fit a specific corresponding mold cavity and being sized such that each preform will provide one-half of said separate lug;
for each separate lug, arranging first and second preforms around a conforming, inflatable bladder such that edges of the preforms overlap and placing the preforms and bladder in a corresponding mold cavity, said bladder having a shape corresponding to shape of the preforms and the corresponding mold cavity; inflating the bladder to press the preforms against the first and second mold halves and then curing the resin matrix to form a shaped, substantially void-free lug; removing the lug from the mold cavity and the bladder from the lug;
bonding the separate lugs with cured, fiber reinforced resin tubes to form said bicycle frame.

5,624,520
SYSTEM FOR PRODUCING LABELS FROM A WEB
Greydon W. Nedblake, Kansas City, and John Garber, Fenton, both of Mo., assignors to Greydon W. Nedblake, Jr., Kansas City, Mo.
Continuation-in-part of Ser. No. 996,089, Dec. 23, 1992, Pat. No. 5,421,933. This application Dec. 15, 1994, Ser. No. 170,706
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—249 **4 Claims**



1. A method of labelling a package comprising the steps of:
dispensing a web of label material from a supply thereof;
cutting through said web using a laser beam along a continuous, predetermined path in order to produce a label body therefrom; and
applying said label body to a package,
said web including
a base sheet presenting a top face and an opposed, bottom face, and
a laminate sheet presenting an upper surface and an opposed, lower, adhesive surface having a coating of adhesive thereon with said lower adhesive surface releasably adhered to said bottom face of said base sheet,
said dispensing step including the steps of
removing a portion of said laminate sheet from said base sheet to present a laminate sheet portion and a separate, base sheet portion, and
placing said adhesive surface of said laminate sheet portion in contact with said top face of said base sheet portion to form a laminated web as said web for said cutting step.

5,624,521
METHOD OF HOLDING OPTICAL ELEMENTS WITHOUT DEFORMATION DURING THEIR FABRICATION
P. Paul Hed, 80 Milaw Ct., San Ramon, Calif. 94583
Filed Sep. 21, 1993, Ser. No. 226,765
Int. Cl.[6] B32B *31/28;31/06;31/18;31/22*
U.S. Cl. 156—275.7 **23 Claims**



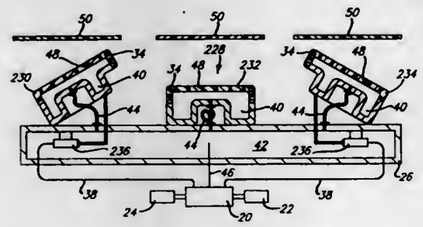
1. An improved method of securing and removing a surface of an optical element to and from a surface of a blocking tool comprising the steps of:
placing a lens tissue on said surface of said blocking tool,
applying a plurality of dots of an optical adhesive to said lens tissue such that said plurality of dots do not contact each other,

placing the surface of said optical element on said lens tissue such that said lens tissue is disposed between said surface of said blocking tool and said surface of said optical element,
applying pressure to said surface of said optical element such that said surface of said optical element is pressed towards said surface of said blocking tool, and such that said plurality of dots of said optical adhesive applied to said lens tissue spread out between said blocking tool and said optical element, said plurality of dots still not contacting each other,
curing said plurality of dots of said optical adhesive such that said optical element is secured to said blocking tool during subsequent machining of said optical element,
placing said blocking tool, said lens tissue, and said optical element in a debonding solution after said subsequent machining so that said cured plurality of dots of said optical adhesive are softened,
removing said optical element from said blocking tool and said lens tissue.

5,624,522
METHOD FOR APPLYING GRANULES TO STRIP ASPHALTIC ROOFING MATERIAL TO FORM VARIEGATED SHINGLES
James S. Belt, Utica, and Roger W. Smith, Grove City, both of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Jun. 7, 1995, Ser. No. 473,643
Int. Cl.[6] B05D *1/12*
U.S. Cl. 156—279 **17 Claims**

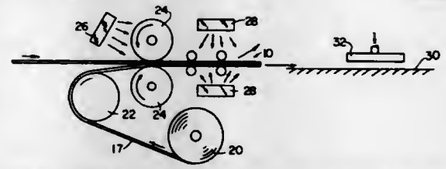
1. A method for forming a variegated granule-covered roofing material comprising
periodically discharging granules of a first color onto a tacky surface of a continuously moving sheet of asphaltic material to form spaced granule covered first areas separated by tacky second areas, said first areas having leading and trailing edges in the direction of the sheet movement;
applying an adhesive to at least a portion of one of said leading or trailing edges of the first areas to form a predetermined edge configuration for said tacky second areas; and
discharging granules of a second color onto said tacky second areas of said moving sheet.

5,624,523
METHOD AND APPARATUS FOR MANUFACTURING MULTIPLE COLORED PLIABLE SOFT TRIM COMPONENTS
Larry B. Stiller, 8456 Smiley Ave., Shelby Township, Macomb County, Mich. 48316
Division of Ser. No. 62,616, May 11, 1993, Pat. No. 5,401,355. This application Mar. 28, 1995, Ser. No. 411,971
Int. Cl.[6] B29C *65/18*
U.S. Cl. 156—285 **10 Claims**



1. A vacuum forming process for manufacturing a single piece panel, said process comprising the steps of:
providing a plurality of plastic sheets of vacuum formable plastic;
positioning said plurality of plastic sheets within a vacuum forming mold having a plurality of dies; each plastic sheet being positioned over a respective die;
heating said plurality of plastic sheets at least to a temperature which said plurality of sheets are in a formable state;
depositing each of said plurality of plastic sheets on said respective die;
applying negative pressure through each of said dies, said negative pressure being of sufficient degree and applied in a manner whereby an attractive force is transmitted through each of said dies and attracts each of said plastic sheets onto said respective die;
moving at least one of said plurality of dies in both an angular and linear direction such that a seam bond is produced between adjacent sheets of said plurality of plastic sheets;
permitting said plurality of plastic sheets to cool to form said single piece panel with said seam bond maintaining a desired shape of said panel.

5,624,524
PLASTIC LAMINATE CONSTRUCTION AND METHOD OF MAKING THEREOF
Carl C. Gordon, 300 E. 46th St., New York, N.Y. 10017
Division of Ser. No. 292,682, Aug. 18, 1994. This application Jul. 31, 1995, Ser. No. 509,566
Int. Cl.[6] B32B *31/20;* **C09J** *5/02;5/06*
U.S. Cl. 156—311 **7 Claims**

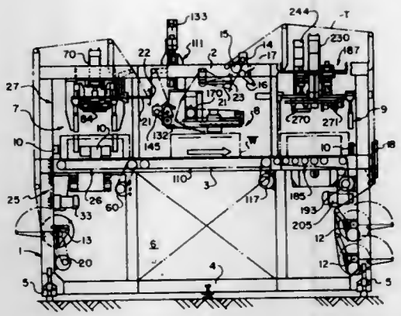


1. A method for forming a plastic laminate comprising the steps of:
applying a paint layer to an acrylic sheet;
drying said paint layer on said acrylic sheet;
applying a layer of hot melt adhesive to a polyester sheet;
heating said polyester sheet and hot melt adhesive;
pressing said layer of hot melt adhesive to said paint layer while cooling and maintaining said paint layer below a predetermined temperature to form said plastic laminate and to maintain the stability of said paint layer; and
bringing said plastic laminate to room temperature while under pressure.

5,624,525
SHEET STICKING APPARATUS
Tadamasa Ehara, Sayama; Tetsuro Kimura, Saitama, and Kazuaki Mimura, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, and Lintec Corporation, both of Tokyo, Japan
Filed Jul. 29, 1994, Ser. No. 282,704
Claims priority, application Japan, Aug. 2, 1993, 5-191401; Jun. 1, 1994, 6-120449; Jun. 1, 1994, 6-120450; Jun. 1, 1994, 6-120451
Int. Cl.[6] B32B *31/00;* **G05G** *15/00*
U.S. Cl. 156—360 **19 Claims**

1. A sheet sticking apparatus for sticking a sheet held on a continuous separator and which is continuously fed to the surface of a work which is sequentially carried on a conveyor, said sheet sticking apparatus comprising:
a sorting section adapted to position a work fed to said sorting section and adapted to lower a detection plate so as to sort at least the height of the work;
a sheet sticking section arranged downstream of said sorting section and adapted to lower the sheet-holding continuous

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separator to just above the work in accordance with the height of the work sorted in said sorting section and to simultaneously sharply fold back the continuous separator to thereby cause a forward edge of the sheet to peel therefrom, and wherein the sheet is gradually stuck to the surface of the work while the continuous separator is moved in synchronism with the movement of the work to thereby gradually peel the sheet from the continuous separator; and

a press section adapted to lower a press member to a position at which said press member contacts the surface of the work, so that said press member presses the sheet over substantially its entire surface against the work, and to deliver the work with the sheet stuck thereto from said sheet sticking apparatus.

5,624,526

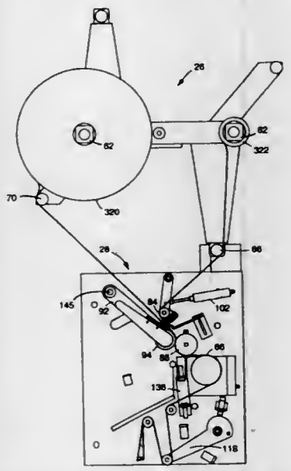
CONTINUOUS TAPE SUPPLY SYSTEM INCLUDING A TAPE SPLICING MECHANISM FOR USE WITH BOX TAPING MACHINES

Jack L. Perecman, Golden Valley; Lloyd S. Vasilakes, Stillwater; Daniel D. Baker, St. Paul, and Van E. Jensen, Jr., Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Oct. 17, 1994, Ser. No. 323,917

Int. Cl.[6] B65H *21/00*

U.S. Cl. 156—361 **31 Claims**



1. A continuous tape supply apparatus for supplying adhesive tape to a tape applicator machine, said continuous tape supply apparatus comprising:

a) a support;

b) a first tape source station provided on said support for receiving a first tape supply source and from which adhesive tape of the first tape supply source can be dispensed;

c) a second tape source station provided on said support for receiving a second tape supply source and from which adhesive tape of the second tape supply source can be dispensed;

d) a splicing means provided on said support for splicing tape from said second tape source station to tape from said first tape source station using a lap splice without requiring any separate splicing tape and while continuing to supply adhesive tape to the tape applicator machine without stopping the supply of adhesive tape, so as to change the supply of tape from the first tape supply source to the second tape supply source, said splicing means comprising guide means for defining a tape guide path through said splicing means to be supplied from the continuous tape supply apparatus to the tape applicator machine, a staging means comprising an applicator element which is movably disposed on said support between a staring position with said applicator element spaced from said tape guide path and a splice position with said applicator element moved within said tape guide path to change said tape guide path, and control means for causing the applicator element to move from its staging position to its splice position upon the occurrence of a determined event and for moving the applicator element from its splice position back to its staging position, wherein said guide means for providing a tape guide path comprises a backup roller and said applicator element comprises an applying roller, and said control means moves said applying roller to its splice position so that tape when provided within said staging means will contact tape when provided along said tape guide path between said applying roller and said backup roller, wherein said control means moves said applying roller back to its staging position after a predetermined length of tape is demanded from said continuous tape supply apparatus, and wherein said control means includes a means for counting revolutions of said backup roller after a splice has been initiated for determining that a predetermined length of tape has been demanded and moving said applying roller back to its staging position.

5,624,527

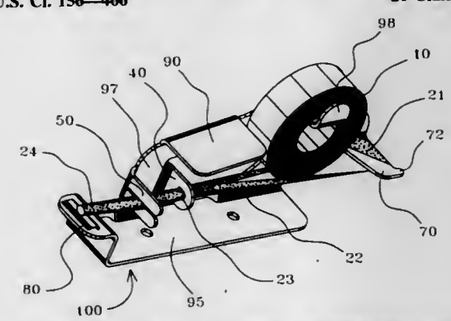
ADHESIVE TAPE TUBE FORMER

Joseph D. Maresh, P.O. Box 645, West Linn, Oreg. 97068-0645

Continuation-in-part of Ser. No. 125,252, Sep. 23, 1993, abandoned, which is a division of Ser. No. 14,725, Feb. 8, 1993, Pat. No. 5,376,202. This application Oct. 14, 1994, Ser. No. 324,169

Int. Cl.[6] B29D *23/00*

U.S. Cl. 156—466 **20 Claims**



1. An apparatus for forming one-sided pressure sensitive adhesive tape into a tube with the adhesive oriented outwardly, which comprises:

(a) a support,

(b) means to rotatably secure a roll of pressure sensitive adhesive tape to said support,

(c) a roll of pressure sensitive adhesive tape secured on said means,

(d) a profile configurator connected to said support in order to transversely form the tape into a spiral shape with the pressure sensitive adhesive oriented outwardly and with opposite tape edges overlapping to form the tube.

5,624,528

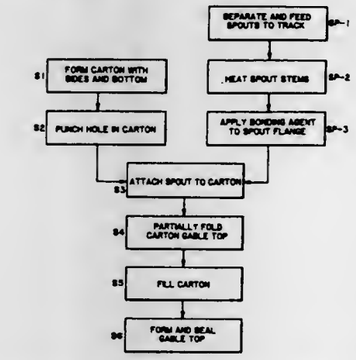
APPARATUS FOR ATTACHING A SPOUT TO A CARTON

Robert S. Abrams, Albany, N.Y., and Joseph H. Miller, Farmington, Conn., assignors to Tetra Rex Packaging Systems, Inc., Buffalo Grove, Ill.

Division of Ser. No. 953,698, Sep. 30, 1992, Pat. No. 5,338,385. This application May 9, 1994, Ser. No. 239,687

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—556 **5 Claims**



1. An apparatus for attaching a spout to a planar portion of an article, the spout including a flange and a stem, comprising:

a spout conveyor for conveying spouts to a spout stem heater;

the spout stem heater comprising a source of heat positioned in heat transfer proximity with the spout conveyor;

a bonding agent application site in proximity to the spout stem heater for applying bonding agent to the spout flange after the spout stem has been heated, including a first spout positioning means for positioning the spout at the bonding agent application site;

a spout conveyor for conveying spouts to which bonding agent has been applied to a spout applicator, including a second spout positioning means for positioning the bonding agent applied spout relative to the spout applicator; and

an article positioning means having an article positioning surface thereon for positioning the planar portion of the article, the article positioning means being located at a predetermined position relative to the spout applicator, whereby spouts which have been heated and to which bonding agent has been applied are attached to the planar portion of the article,

wherein the planar portion has an edge and a hole formed in the planar portion a predetermined distance from the edge and wherein the article positioning surface is substantially horizontal for positioning the edge of the planar portion of the article, and wherein the article positioning means further includes two substantially vertical, spaced restraining surfaces for restraining the planar portion about the hole in the article near the edge portion, at least one of the vertical surfaces being angled from the vertical to guide the edge between the restraining surfaces.

5,624,529

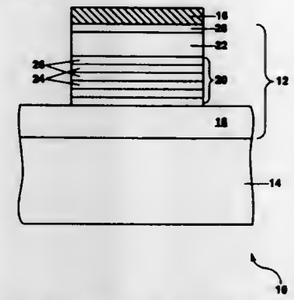
DRY ETCHING METHOD FOR COMPOUND SEMICONDUCTORS

Randy J. Shul, Albuquerque, N.M., and Christopher Constantine, Saftey Harbor, Fla., assignors to Sandia Corporation, Albuquerque, N.M.

Filed May 10, 1995, Ser. No. 437,532

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—718 **17 Claims**



1. A method for etching a III–V compound semiconductor material comprising:

(a) placing a semiconductor substrate on which the compound semiconductor material has been deposited on a platform electrode within a plasma reactor; and

(b) exposing a part of the compound semiconductor material to be etched to a gaseous plasma comprising an etchant gas including at least in part boron trichloride, methane, and hydrogen.

5,624,530

SPRAY DRYING SYSTEM

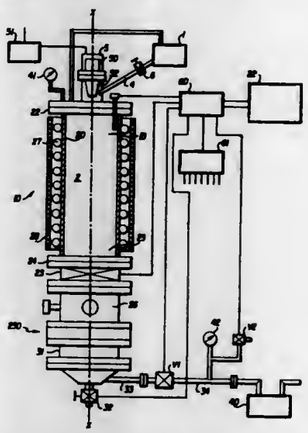
Akper Sadykhov, and Raphael Semiat, both of Haifa, Israel, assignors to Ultrasonic Dryer, Ltd., Haifa, Israel

Filed Apr. 21, 1994, Ser. No. 230,696

Claims priority, application Israel, May 11, 1993, 105658

Int. Cl.[6] B01D *1/16;3/42*

U.S. Cl. 159—3 **9 Claims**



1. A system for drying wet material constituting a solid phase distributed in a fluid medium by means of evaporation of said medium, said system comprising:

a feeding means for supplying said material in liquid state into the system, the liquid state selected from the group of states consisting of a solution, suspension, dispersion, paste, slurry, and a sludge,

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a means for atomizing by spraying the supplied liquid material so as to convert its initial state into a mist consisting of a plurality of droplets,

a heating chamber provided with heating means for indirect heating of the interior thereof so as to evaporate the fluid medium from said mist of droplets generated by said means for atomizing,

a product recovery and collecting means for collecting the solid particles of the final dried product, produced from said wet material, and for recovering said fluid medium from its evaporated state,

a display and control means provided with sensors and instrumentation for controlling process variables, and

an evacuation means, communicating with the interior of said heating chamber, for maintaining reduced pressure in the interior of said heating chamber so as to evaporate said fluid medium at temperatures lower than needed for its evaporation at normal pressure and to evacuate, away from the heating chamber, the moisture vapor generated during evaporation of said fluid medium, wherein said heating chamber is defined by side walls which extend along the longitudinal axis of the chamber and top and bottom extremities of the chamber, said atomizing means is mounted adjacent to the top extremity of said chamber, said product recovery and collecting means mounted adjacent to the bottom extremity of said chamber, and said evacuation means communicates with the interior of said heating chamber via said product recovery and collecting means;

wherein said product recovery and collecting means comprises a recovery device selected from the group of devices consisting of a wet scrubber and a condenser, and a collection device formed as a member selected from the group of members consisting of a collecting bag and a cyclone system, and said evacuation means is formed as a vacuum pump;

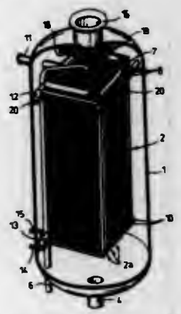
and a vapor sweeping means formed as a hollow tubular element mounted inside said heating chamber, extending along the longitudinal axis of said chamber, said hollow tubular element being provided with a plurality of openings so as to ensure communication of the interior of said element with the interior of said chamber, said vapor sweeping means being connected with said evacuation means.

5,624,531

EVAPORATOR OPERATING ON FALLING FILM PRINCIPLE

Matti Knuutila, Pori; Kalevi Nurminen, Tampere; Jukka Vaistomaa, Pori, and Anssi Mäkelä , Urjala, all of Finland, assignors to Tampella Power Oy, Tampere, Finland

Filed Mar. 23, 1994, Ser. No. 216,722
Claims priority, application Finland, Apr. 1, 1993, 931496
Int. Cl.[6] B01D *1/22*
U.S. Cl. 159—13.3 **5 Claims**



1. A falling film evaporator comprising a shell and a system mounted within the shell and formed of a plurality of parallel evaporating elements, each of which evaporating elements comprises a plurality of vertical evaporating tubes interconnected so as to form a unitary structure separate from the other evaporating elements within the same shell, the evaporator further comprising means for feeding an agent to be evaporated on the evaporating tubes in such a way that the agent flows down the evaporating tubes and forms a film on the outer surfaces of the evaporating tubes, and heating vapor inlet and outlet channels connected to the inner portions of the evaporating tubes, wherein each evaporating element comprises a plurality of said evaporating tubes parallel to each other and spaced at a distance from each other, the evaporating tubes of each evaporating element are interconnected at their upper and lower ends, respectively, by collecting chambers communicating with the evaporating tubes of each evaporating element, the heating vapor inlet and outlet channels are connected to the collecting chambers, a connecting chamber is provided at each end of an evaporating tube system, the collecting chamber of each evaporating element is connected to the connecting chamber at the same end, and the inlet and outlet channels for heating vapor are connected to the collecting chambers via the connecting chambers.

5,624,532

METHOD FOR ENHANCING THE BULK SOFTNESS OF TISSUE PAPER AND PRODUCT THEREFROM

Paul D. Trokhan, Hamilton, and Dean V. Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 15, 1995, Ser. No. 388,970
Int. Cl.[6] D21H *21/22*
U.S. Cl. 162—111 **22 Claims**

1. Tissue paper consisting essentially of:

a) wet-laid cellulosic fibers; and

b) from about 0.01% to about 5% of a water soluble polyhydroxy compound, based on the dry fiber weight of said tissue paper, wherein said polyhydroxy compound is selected from the group consisting of, polyglycerols having a weight average molecular weight from about 150 to about 800, polyoxyethylene and polyoxypropylene or polyoxyethylene/polyoxypropylene copolymers having a weight average molecular weight from about 200 to about 1000, and mixtures thereof and mixture of glycerol with polyglycerols having a weight average molecular weight from about 150 to about 800 and mixture of glycerol with polyoxyethylene having weight average molecular weight from about 200 to about 1000;

wherein said tissue paper has a basis weight of from about 10 to about 65 g/m^2 and a density of less than about 0.60 g/cc, said polyhydroxy compound having being applied to at least one surface of a wet tissue paper web.

5,624,533

Patent Not Issued For This Number

5,624,534

VOLATILES SEPARATOR AND CONCENTRATOR

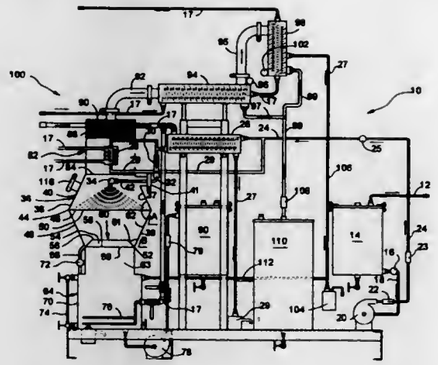
Armand R. Boucher, 605 Hatherleigh La., Louisville, Ky. 40222, and Philip N. Hambrick, 1927 Lowell Ave., Louisville, Ky. 40205

Continuation of Ser. No. 191,873, Feb. 4, 1994, Pat. No. 5,458,739. This application Jun. 7, 1995, Ser. No. 477,650
Int. Cl.[6] B01D *3/10;3/32*
U.S. Cl. 202—153 **27 Claims**

1. A volatiles separator and concentrator unit, comprising:

at least one expansion chamber having sidewalls and being formed having an upper frustoconical portion connected to an inverted lower frustoconical portion having a maximum diameter in a central region thereof;

at least one atomizing spray nozzle disposed within said expansion chamber in flow communication with a feed substrate for



spraying said feed substrate within said expansion chamber producing a spray of droplets striking the sidewalls of said expansion chamber producing vapors and a nonvolatilized liquid concentrate product;

means for directing said spray against said sidewalls;

a vacuum chamber connecting with and in flow communication with said upper frustoconical portion of said expansion chamber;

an annular baffle attached to an interior bottom of the sidewalls of said expansion chamber and extending inwardly at an upward angle;

means for collecting said nonvolatilized liquid concentrate product;

means for regulating the flow rate of the feed substrate through said spray nozzle;

means for condensing said vapors produced in said expansion chamber, said means for condensing being in flow communication with said vacuum chamber for condensing vapors collected in said vacuum chamber producing a condensate product; and

means for removing said condensate product from said means for condensing.

5,624,535

PRODUCTION SYSTEM OF ELECTROLYZED WATER

Koji Tsuchikawa, Nagoya; Naomoto Amano, Okazaki; Yshinori Kamitani, Nagoya, and Takeaki Funabashi, Toyoake, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 20, 1995, Ser. No. 546,217
Claims priority, application Japan, Oct. 20, 1994, 6-255761; Oct. 20, 1994, 6-255786
Int. Cl.[6] C02F *1/461*
U.S. Cl. 204—228 **3 Claims**

1. A production system of electrolyzed water, comprising:

an electrolyzer;

a brine tank arranged to store diluted brine to be supplied into said electrolyzer;

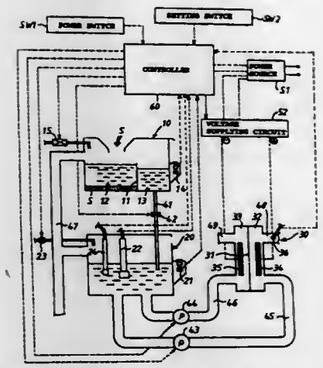
first detection means for detecting the level of diluted brine in said brine tank and for producing an electric signal indicative of the detected level of diluted brine;

water supply means for supplying fresh water into said brine tank from an external source of water;

first control means for controlling said water supply means in response to the electric signal from said first detection means in such a manner that the level of diluted brine is maintained in a selected level;

second detection means for detecting concentration of diluted brine in said brine tank;

saturated brine supply means for supplying saturated brine into said brine tank;



comparison means for comparing concentration of the diluted brine detected by said second detection means with a reference concentration; and

second control means for controlling said saturated brine supply means in such a manner that the saturated brine is supplied into said brine tank when the concentration of the diluted brine is lower than the reference concentration;

wherein the production system further comprises:

temperature detection means for detecting a temperature of the diluted brine or electrolyzed water produced in said electrolyzer and for producing an electric signal indicative of the detected temperature; and

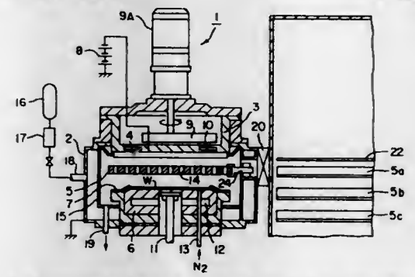
correction means responsive to the electric signal from said temperature detection means for correcting the reference concentration or the concentration of the diluted brine detected by said second detection means so that electrolyzed water with a desired chemical property is constantly produced in said electrolyzer.

5,624,536

PROCESSING APPARATUS WITH COLLIMATOR EXCHANGE DEVICE

Yuichi Wada; Jiro Katsuki, and Hiroshi Kobayashi, all of Kofu, Japan, assignors to Tel Varian Limited, Yamanashi-ken, Japan

Filed Jun. 6, 1995, Ser. No. 468,471
Claims priority, application Japan, Jun. 8, 1994, 6-151510
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.11 **6 Claims**



1. A processing apparatus in which an object to be processed and a target are opposed to each other in a processing chamber, and sputtering directions of sputtering particles from the target are restricted by a collimator, the processing apparatus comprising:

a spare collimator storage chamber disposed adjacent to the processing chamber for storing at least one spare collimator; and

collimator exchanging means, including collimator holding means which can bold two or more collimators, the collima-

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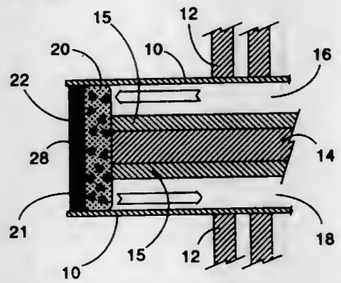
tors holding means being movable between at least two positions at the spare collimator storage chamber and the processing chamber, wherein the collimators held by the collimator holding means are located at each of the positions, whereby a collimator in the processing chamber is replaced by a spare collimator in the spare collimator storage chamber by the collimator exchanging means through a gate valve provided between the processing chamber and the spare collimator storage chamber when a collimator exchange is required.

5,624,537

BIOSENSOR AND INTERFACE MEMBRANE

Robin F. B. Turner; Douglas G. Kilburn, both of Vancouver, and Michael R. Phelps, Kingston, all of Canada, assignors to The University of British Columbia - University-Industry Liaison Office, Vancouver, Canada

Filed Sep. 20, 1994, Ser. No. 309,338
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—403 **12 Claims**



1. A biosensing system including a selectively permeable interface membrane which is separate and distinct from an electrode and protein receiving matrix, and which is used to separate biochemical, optical or other processes from an analyte matrix, said membrane comprising a supporting mesh and a perfluorosulfonic acid polymer impregnated substrate.

5,624,538

MEASURING DEVICE FOR DETERMINING THE CONCENTRATION OF ALCOHOLS

Guenter Luft, Lauf, and Gerhard Starbeck, Nuernberg, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed May 22, 1995, Ser. No. 446,272
Claims priority, application Germany, May 24, 1994, 44 18 035.7
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—418 **18 Claims**

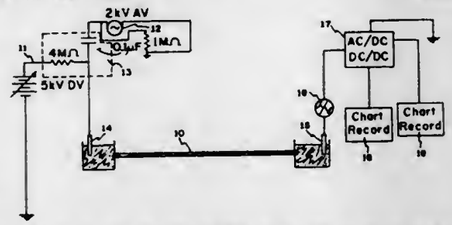
1. A measuring device for determining the concentration of low-molecular alcohols in water or acids, consisting of:
a porous anode for electrochemical oxidation of alcohol
a cathode for electrochemical reduction of oxygen
an ion-conducting membrane arranged between the anode and cathode, and
a diffusion-limiting membrane arranged on a side of the anode facing away from the ion-conducting membrane,
wherein an aqueous electrolyte is not present between the anode and the cathode.

5,624,539

REAL TIME MONITORING OF ELECTROOSMOTIC FLOW IN CAPILLARY ELECTROPHORESIS

Andrew G. Ewing, State College, Pa., and Mark A. Hayes, Riverside, Calif., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Jun. 19, 1995, Ser. No. 491,649
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—451 **2 Claims**



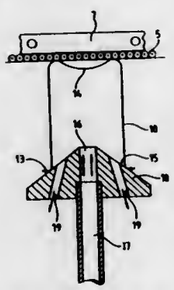
2. A process for real-time monitoring of rate of electroosmotic flow of a solution from one reservoir to another connected by a capillary tube comprising the steps of:
(a) filling said reservoirs and said capillary tube with a liquid solvent;
(b) dissolving a solute in one of said reservoirs;
(c) applying a direct voltage separation potential between said reservoirs to establish a direct current and an electrophoretic flow of solute through said capillary tube;
(d) applying an alternating voltage to said first reservoir to produce an alternating current through said capillary tube and establish an alternating voltage, and
(e) measuring the difference between the impedance to the direct and alternating currents produced across the capillary tube by the direct and alternating voltages, as a direct measure of the electroosmotic flow.

5,624,540

DEVICE FOR THE ELECTROPHORETIC COATING OF THE INTERNAL SURFACE OF HOLLOW BODIES

Klaus Jörgens, Wuppertal, Germany, assignor to Enal AG, Switzerland

PCT No. PCT/EP94/02443, § 371 Date Jan. 30, 1996, § 102(e) Date Jan. 30, 1996, PCT Pub. No. WO95/04170, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 23, 1994, Ser. No. 586,737
Claims priority, application Germany, Jul. 30, 1993, 43 25 631.7
Int. Cl.[6] C25D *13/14;13/12*
U.S. Cl. 204—625 **13 Claims**



1. A device for the electrophoretic coating of the internal surface of electrically conductive hollow bodies, each body having an opening into the body, the device comprising:
at least one mount for supporting at least one of the hollow bodies with the opening of the body pointing downward and the mount connectable to define one of an anode or cathode;

at least one nozzle; means supporting the nozzle for movement toward and away from the opening of the hollow body, the nozzle being for delivering therethrough a water soluble surface coating, and the nozzle being positioned and the coating being of such material that the coating serves as a liquid electrolyte which is connectable to define the other of the anode and cathode;
an electrically insulating seal movable into contact with the opening in the hollow body for sealing the hollow body, the nozzle passing through the seal to open into the hollow body;
a return flow passage extending through the seal, being separate from the nozzle and being in the part of the seal which is inside the opening of the hollow body for enabling return flow of the water soluble surface coating out of the hollow and through the seal.

5,624,541

SPRAY MIST INHIBITORS FOR BASIC ELECTROLYSIS BATHS

Klaus Pohmer; Hans-Bernd Alteweier, and Karl-Heinz Stachulla, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 20, 1995, Ser. No. 530,997
Claims priority, application Germany, Oct. 7, 1994, 44 35 840.7
Int. Cl.[6] C25D *21/11*
U.S. Cl. 205—94 **7 Claims**

1. A basic electrolyte bath comprising a basic electrolyte and 50 to 250 mg per liter of electrolyte of a methyl-substituted perfluoroalkylsulfonamide of the formula (I)

$$R_FSO_2NHCH_3 \quad (I)$$

where
R_F is a perfluoroalkyl group containing 4–10 carbon atoms.

5,624,542

ENHANCEMENT OF MECHANICAL PROPERTIES OF CERAMIC MEMBRANES AND SOLID ELECTROLYTES

Yousheng Shen; Ashok V. Joshi; Dale M. Taylor, all of Salt Lake City; Michael J. Boettcher, West Jordan, all of Utah; Kevin Krist, Palatine, Ill., and Anil V. Virkar, Salt Lake City, Utah, assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 146,880, Nov. 1, 1993, Pat. No. 5,478,444, which is a continuation-in-part of Ser. No. 882,175, May 11, 1992, Pat. No. 5,273,628, and a continuation-in-part of Ser. No. 231,616, Apr. 22, 1994, Pat. No. 5,616,223, which is a continuation-in-part of Ser. No. 146,880, Nov. 1, 1993, Pat. No. 5,478,444, which is a continuation-in-part of Ser. No. 882,175, May 11, 1992, Pat. No. 5,273,628. This application Jun. 12, 1995, Ser. No. 489,382
Int. Cl.[6] C25B *15/00*
U.S. Cl. 204—283 **27 Claims**

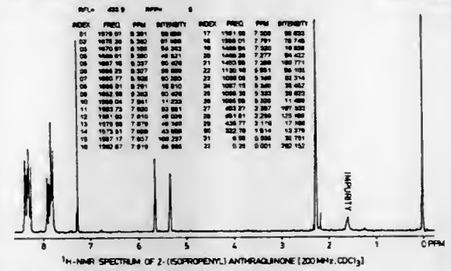
1. A process for enhancement of mechanical properties of mixed ionic and electronic conducting composite ceramic gas impervious membranes comprising, forming a mixture of about 50 to about 90 volume percent ceramic powder and about 10 to about 50 volume percent metal powder of a high-temperature oxidation resistant metal, each of said powders having average powder sizes of less than about 50 micrometers, forming a green body of said mixture, and sintering said green body in an oxidation atmosphere at a temperature and for a time to obtain a high density of greater than about 95 percent of the theoretical value forming a composite membrane about 1 to about 50 microns thick of said ceramic and metal having a non-homogeneous microstructure of a predominantly ionic conducting continuous phase and a predominantly electronic conducting continuous phase providing ionic conduction across said membrane by pressure differential and exhibiting enhanced mechanical properties compared to said ceramic alone.

5,624,543

AQUEOUS PHASE PRODUCTION OF HYDROGEN PEROXIDE AND CATALYSTS FOR USE THEREIN

James E. Guillet, Don Mills; Kevin C. Kohler, Sherwood Park, both of Canada, and Gad Friedman, Rehovot, Israel, assignors to Peroxco Incorporated, Bruderheim, Canada

Filed Aug. 1, 1995, Ser. No. 510,119
Int. Cl.[6] C01B *15/00*
U.S. Cl. 205—688 **22 Claims**



^{1}H-NMR SPECTRUM OF 2-(ISOPROPENYL) ANTHRAQUINONE [200 MHz, $CDCl_3$]

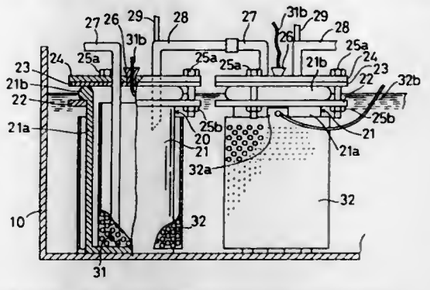
1. A process for producing hydrogen peroxide in an aqueous medium by oxidation of polymer-linked anthrahydroquinone moieties to form polymer-linked anthraquinone moieties, said polymer exhibiting differential solubility, the process comprising conducting said oxidation in aqueous reaction media conditions under which the polymer is substantially dissolved or suspended in the aqueous medium so as to generate hydrogen peroxide dissolved therein, and subsequently changing the aqueous reaction medium conditions to effect precipitation of the polymer from the aqueous medium with the hydrogen peroxide so formed remaining dissolved therein.

5,624,544

METHOD AND APPARATUS FOR MANUFACTURING IONIZED WATER

Katsuhiko Deguchi, Osaka, and Kazunori Osamura, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Alone World, Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,523
Claims priority, application Japan, Jul. 19, 1994, 6-166584
Int. Cl.[6] C02F *1/461*
U.S. Cl. 205—742 **9 Claims**



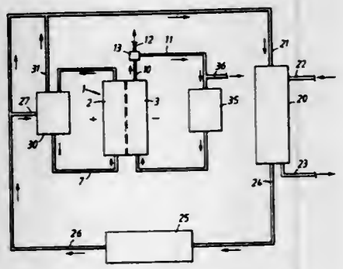
1. A method for manufacturing ionized water comprising:
a first step of dissolving crystalline clay minerals selected from the group consisting of montmorillonite and halloysite in water for electrolysis treatment, and
a second step of further dissolving crystal clay minerals in alkaline ionized water and acidic ionized water obtained at the first step, and supplying respectively to the cathode side and anode side, and performing electrolysis treatment so as to produce strong alkaline and strong acidic ionized water maintaining a stable pH, respectively at the cathode side and anode side.

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5,624,545
PRODUCTION OF POLYSULPHIDE BY ELECTROLYSIS OF WHITE LIQUOR CONTAINING SULPHIDE

Johan Landfors; Bo Håkansson, both of Sundsvall, and Maria Norell, Hovås, all of Sweden, assignors to Eka Nobel Inc., Marietta, Ga.

PCT No. PCT/SE94/00526, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/00701, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 1, 1994, Ser. No. 564,183
Claims priority, application Sweden, Jun. 28, 1993, 9302213
Int. Cl.[6] C02F *1/461*
U.S. Cl. 205—746 **13 Claims**



1. A method for treating sulphide-containing white liquor, wherein the white liquor is treated in a continuously operating electrolytic cell having separate anode and cathode compartments separated by a partially permeable barrier, by introducing white liquor into the anode compartment of the cell and an aqueous solution of alkali metal hydroxide into the cathode compartment of the cell, oxidizing sulphide in the anode compartment, while at the same time alkali metal cations are transported through the barrier into the cathode compartment in which water reacts to form hydroxide ions, wherein the temperature in the anode compartment is maintained in a range of from about 60° C. to the boiling point of the white liquor.

5,624,546
METHOD AND APPARATUS FOR THE DETECTION OF TOXIC GASES

Gary A. Milco, Fremont, Calif., assignor to Mil-Ram Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 296,452, Aug. 26, 1994, abandoned. This application Sep. 27, 1995, Ser. No. 534,597
Int. Cl.[6] G01N *27/26*
U.S. Cl. 205—779.5 **24 Claims**

23. A method of detecting chlorine, fluorine and bromine gas in ambient air with an electrochemical cell comprising the steps of:
providing a platinum counter electrode;
providing a plurality of glassy carbon working electrodes having surfaces finished to a high polish;
operatively contacting said counter electrode and said plurality of exposed surfaces of said working electrodes with an electrolyte comprising 30% through 50% by weight potassium bromide;
enclosing said counter electrode, said plurality of working electrodes, and said electrolyte within said cell hy a gas permeable hydrophobic membrane; and
applying a fixed potential of approximately −150 through −250 millivolts between said counter electrode and said plurality of working electrodes sufficient to initiate electrochemical reactions only with the chlorine, fluorine and bromine gas to be detected.

5,624,547
PROCESS FOR PRETREATMENT OF HYDROCARBON OIL PRIOR TO HYDROCRACKING AND FLUID CATALYTIC CRACKING

Chakka Sudhakar, Fishkill; Paul O. Fritz, Newburgh, both of N.Y.; Carl J. Kjellson, Bakersfield, Calif.; Hua-Min Huang, Stormville, and Gerald G. Sandford, Glenham, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 498,861, Jul. 6, 1995, Pat. No. 5,556,824, and Ser. No. 441,897, May 16, 1995, Pat. No. 5,529,968, which is a division of Ser. No. 287,979, Aug. 9, 1994, Pat. No. 5,462,651, said Ser. No. 498,861Division of Ser. No. 122,986, Sep. 20, 1993, Pat. No. 5,449,452, and Ser. No. 425,547, Apr. 20, 1995, abandoned, is a division of Ser. No. 189,992, Jan. 31, 1994, Pat. No. 5,435,907. This application Nov. 13, 1995, Ser. No. 556,473
Int. Cl.[6] C10G *45/00*
U.S. Cl. 208—89 **76 Claims**

1. An improvement in a process for hydrocracking a hydrocarbon oil feedstock containing sulfur and nitrogen compounds and aromatics into lighter lower boiling products comprising:
a) charging said hydrocarbon oil feedstock and hydrogen to one or more fixed bed hydrocracking zones in one or more hydrocracking reactors containing a hydrocracking catalyst at hydrocracking conditions to produce a lighter hydrocracked product stream;
the improvement comprising:
b) passing said feedstock prior to the hydrocracking, along with hydrogen, through one or more pretreatment zones for pretreatment; and
c) contacting said feedstock in said pretreatment zones at a temperature of about 200° C. to 450° C. and a pressure of about 200– 300 psig for pretreatment with a sulfided catalyst comprising one or more metals of non-noble Group VIII and one or more metals of Group VIB and optionally one or more elements selected from Group IIIA and Group VA of the Periodic Table, on a carbon support selected from the group consisting essentially or activated carbon find carbon support treated with phosphorous, said support having a BET (Brunauer-Emmett-Teller) surface area greater than 100 m^2/g, an average Pore Diameter greater than 12Å and a Total Pore Volume greater than 0.3 cc/g.

5,624,548
HEAVY NAPHTHA HYDROCONVERSION PROCESS

Donn R. Friedman, Round Rock; Hsu-Hui Hsing, Nederland; Richard G. Nelson, Beaumont, and Ooriapadical C. Abraham, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

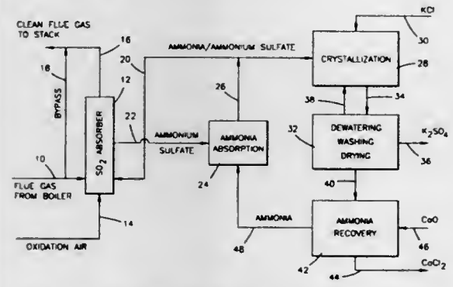
Filed Jul. 21, 1994, Ser. No. 278,979
Int. Cl.[6] C10G *7/02*
U.S. Cl. 208—94 **9 Claims**

1. A process for hydrocracking a heavy naphtha fraction derived from crude petroleum to yield a cracked naphtha and an isoparaffin fraction comprising:
a. fractionating crude petroleum to produce a straight run naphtha fraction having a boiling range of about 90° F. to 430° F.;
b. fractionating the straight run naphtha fraction to produce at least two fraction comprising:
i. an intermediate naphtha fractions, and
ii. a heavy naphtha fraction having an initial boiling point of about 250° F. or higher;
c. contacting the heavy naphtha fraction with a hydrocracking catalyst at a hydrocracking reaction temperature of about 550° F. to 800° F., pressure of 300 psig to 3000 psig and liquid hourly space velocity of about 0.1 to 10 vol/hr/vol to yield a liquid fuel and lighter fraction;
d. fractionating the liquid fuel and lighter fraction to yield an isoparaffin fraction and cracked naphtha characterized in having 90 vol % boiling at a temperature of 310° F. or lower.

5,624,549
APPARATUS FOR PARTIAL DEWATERING OF RAW SLUDGE COMPRISING RECIPROCATING PLUNGER PRESSES

Dirk Herzog, Lemgo, and Wolfgang Müller, Schieder-Schwalenberg, both of Germany, assignors to Müller Umwelttechnik GmbH & Co. KG, Schieder-Schwalenberg, Germany

Filed Jun. 12, 1995, Ser. No. 489,326
Int. Cl.[6] B01D *29/52;29/60*
U.S. Cl. 210—98 **27 Claims**



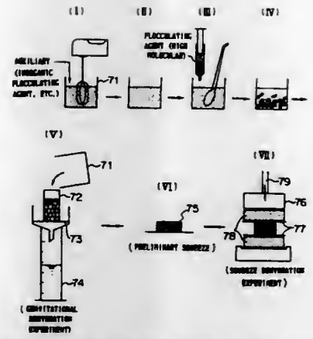
1. Apparatus for partial dewatering of raw sludge, comprising:
a filtering assembly including at least two filter chambers receiving raw sludge under pressure, each filter chamber having an inside wall and incorporating a double-acting plunger extending across an entire cross section thereof for dividing the filter chamber into first and second working chambers, said plunger reciprocating in said filter chamber and being guided along the inside wall thereof for movement between a first end position and a second end position, each of said first and second working chambers having an inlet for receiving raw sludge and an outlet for discharge of partially dewatered raw sludge, with said filter chambers each having a wall surface area formed as a filter for discharge of filtrate from raw sludge;
transport means, including an eccentric screw pump, for supplying raw sludge via the inlets into said working chambers for movement of said plunger into respective end positions;
valve means for controlling a flow of raw sludge from said eccentric screw pump to the inlets of said working chambers; and
a control unit operatively connected to and actuating said valve means in such a manner that, for each filter chamber, raw sludge entering one working chamber forces said plunger to move from the first end position to the second end position and raw sludge entering the other working chamber forces said plunger to move from the second end position to the first end position.

5,624,550
PROCESS FOR TREATING SLUDGE AND SYSTEM FOR THE SAME

Masahiro Iji, Chiba-ken; Masami Yoda, Kanagawa-ken; Shin Suzuki, Tokyo; Kaoru Ishizuka, Tokyo; Sotoo Kubo, Tokyo; Isao Yamaki, Tokyo, and Toshikuni Hashimoto, Saitama-ken, all of Japan, assignors to Chemical Grouting Co., Ltd.; Front Engineering Co., Ltd.; Kurita Water Industries Ltd., and Shoeisangyo Corporation, all of Tokyo, Japan

Division of Ser. No. 104,850, Aug. 12, 1993, Pat. No. 5,462,672. This application Aug. 10, 1995, Ser. No. 513,736
Claims priority, application Japan, Aug. 13, 1992, 4-215907
Int. Cl.[6] C02F *11/14*
U.S. Cl. 210—104 **2 Claims**

1. A system for treating sludge comprising:
means for generating sludge from a ground improvement working site;

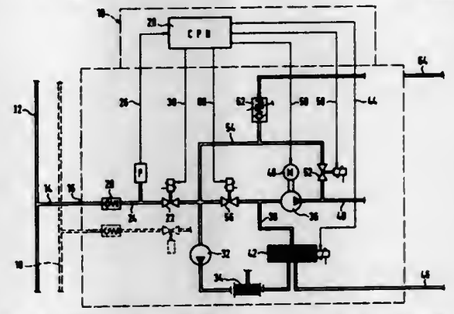


means supplying said untreated sludge to an untreated sludge container for containing sludge generated from said ground improvement working site;
means for measuring specific weight of untreated sludge in said untreated sludge container;
sludge diluting means comprising a container in which mixing of diluting water and untreated sludge supplied from said untreated sludge tank occurs;
means for supplying water for diluting the sludge;
means for admitting the sludge from said untreated sludge container and the diluting water from diluting water supplying means to dilute the sludge in said sludge diluting means and to supply said diluted sludge to dehydrating means according to the capacity thereof;
means for adding a flocculating agent to the diluted sludge supplied to said dehydrating means;
said means for mechanically dehydrating diluted sludge which has been added with the flocculating agent;
means for controlling the amount of the sludge and the diluting water to be supplied to said sludge diluting means so that the diluted sludge has a specific weight of 1.15 to 1.35; and
means for controlling the amount of the flocculating agent to be added to the diluted sludge.

5,624,551
HYDRAULIC SAFETY CIRCUIT FOR A HEMODIALYSIS APPARATUS

Manfred Baumann, Schweinfurt, and Helmuth Ender, Zeil, both of Germany, assignors to Fresenius AG, Bad Homburg, Germany

Filed Apr. 26, 1994, Ser. No. 233,294
Claims priority, application Germany, Apr. 28, 1993, 43 13 863.2; Jun. 24, 1993, 43 21 008.2
Int. Cl.[6] B01D *36/00;* **G01M** *3/26;3/28*
U.S. Cl. 210—134 **22 Claims**



21. A hydraulic safety circuit for a hemodialysis apparatus that is to be connected to a source of dialysis fluid and to a source of flushing fluid, said safety circuit comprising a first connector

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adapted to be connected to the source of dialysis fluid, a second connector adapted to be connected to the source of flushing fluid, a first shut-off device arranged between said first connector and the hemodialysis apparatus and having an apparatus-side port arranged toward the hemodialysis apparatus and a buffer-side port arranged toward said first connector, a second shut-off device connected between said first connector and said buffer-side port of said first shut-off device, a sealable buffer volume formed between said first and second shut-off devices, means for pressurizing said buffer volume to a defined pressure, a pressure sensor connected to said buffer volume, an evaluating unit connected to a signal output of said pressure sensor to evaluate any deviation from said defined pressure in said buffer volume, and a fourth magnetic valve arranged between said apparatus-side port of said first shut-off device and an inlet of said means for pressurizing.

5,624,552

IN-GROUND WATER TREATMENT SYSTEM

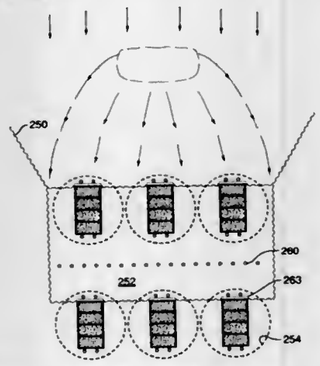
Enoch S. Vales; John A. Cherry, both of Waterloo, Canada, and David J. Lang, Beverly, Mass., assignors to University of Waterloo, Waterloo, Canada

Filed Feb. 22, 1994, Ser. No. 199,588

Claims priority, application United Kingdom, Feb. 22, 1993, 9303537

Int. Cl.[6] E02B *11/00*; E02D *31/02*

U.S. Cl. 210—170 **13 Claims**



1. Apparatus for in-ground treatment of contaminated groundwater, wherein:

the apparatus includes a basket, which is suitable for receiving and containing a body of treatment material;

the basket is provided with a means by which the basket, with the body of treatment material contained therein, may be lowered into the ground, and may be hoisted out of the ground;

the basket is formed with a front wall and a rear wall, and left and right side walls, and the front wall and the rear wall comprise respective screens;

the nature of the basket is such that the treatment material, when present in the basket, rests against the left and right side walls;

the arrangement of the basket is such that water can enter the front screen, flow through the treatment material in the basket, the treatment material being permeable enough to permit the flow of water there-through, and pass out from the rear screen;

the arrangement of the basket is such that water cannot flow through the basket except by flowing through the material present in the basket;

the apparatus includes a receptacle, which is adapted to be installed in the ground, and to remain in the ground when the basket is lowered into, and hoisted out of, the ground;

the receptacle includes a front wall and a rear wall and left and right side walls, and the front wall and the rear wall comprise respective screens;

the receptacle is so constructed and arranged as to define a hollow chamber for receiving the basket;

the arrangement of the apparatus is such that water from in front of the front screen of the receptacle can enter there-through, can pass through the front section of the basket, thence through the body of treatment material, thence through the rear screen of the basket, thence through the rear screen of the receptacle, and out behind the receptacle;

the apparatus includes means for sealing the side walls of the basket to the side walls of the receptacle.

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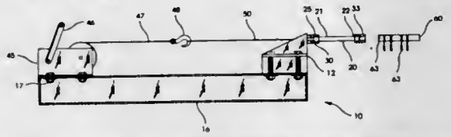
DEVICE FOR PACKING CHROMATOGRAPHIC STATIONARY PHASES

Michael Ladisch; Kent Hamaker; Richard Hendrickson, and Mark Brewer, all of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Division of Ser. No. 260,021, Jun. 15, 1994. This application Oct. 23, 1995, Ser. No. 553,749

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **9 Claims**



1. A device for packing a liquid chromatography column with a rolled fabric stationary phase, comprising:

a brace member having an engagement surface, the brace member defining a thru-hole at a location so that a passageway defined through the column is aligned with the thru-hole of the brace member when a first end of the column is engaged with the engagement surface of the brace member;

a funnel member engageable with an end of the column opposite the first end, the funnel member having converging walls configured to radially compress the rolled fabric stationary phase for entry into the passageway of the column when the rolled fabric stationary phase is pulled through the funnel member;

a mechanism for pulling the stationary phase through the funnel member;

a cord member attached to the mechanism, the cord member being threadable through the thru-hole, the passageway and the funnel member and attachable to the rolled fabric stationary phase; and

the mechanism and the cord member operable to pull the rolled fabric stationary phase through the funnel member wherein the stationary phase is radially compressed, and into the passageway of the column.

5,624,554

COLLECTION AND TRANSFER DEVICE

Michael Faulkner, and John E. Fay, both of Leominster, Mass., assignors to Biomedical Polymers, Inc., Leominster, Mass.

Continuation-in-part of Ser. No. 156,286, Nov. 22, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 363,630

Int. Cl.[6] B01D *35/02*; G01N *1/08*;*33/483*; C12M *1/12*

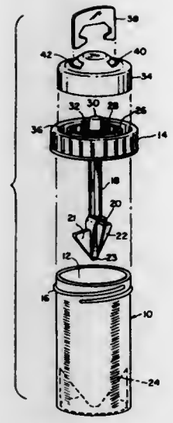
U.S. Cl. 210—232 **4 Claims**

1. A collection and transfer device comprising:

a collection vessel having an opening on one end;

a closure apparatus engageable with said opening; said closure apparatus including a shank portion connected to said closure apparatus and receivable within said collection vessel, said closure apparatus further including a passage through said closure apparatus for transferring a sample from within said collection vessel to the exterior of said collection vessel;

a frangible sealing member for sealing said passage; and



a cap sealingly engageable with said closure apparatus.

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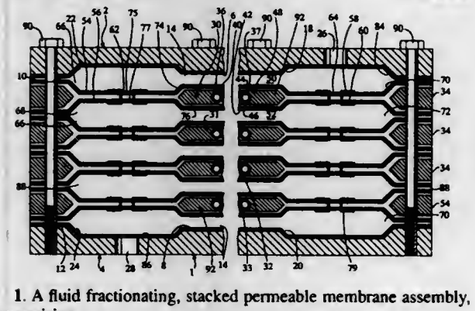
FLUID FRACTIONATING, STACKED PERMEABLE MEMBRANE ASSEMBLY

Oleh Kutowy, North Gower, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Oct. 4, 1993, Ser. No. 130,983

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.75 **13 Claims**



1. A fluid fractionating, stacked permeable membrane assembly, comprising

a) two clamping plates in spaced, face to face relationship, the facing surfaces of each plate having sealing rims bounding pressurized feed fluid recesses, inlet plenum recesses at facing first ends and outlet plenum recesses at the facing second ends, a feed fluid inlet port to the inlet plenum recess of one plate, and a feed fluid outlet port from the outlet plenum recess of the other plate,

b) a stack of spaced permeable membrane assemblies between the plates, each membrane assembly comprising:

i) a frame shaped to extend between the sealing rims and having permeable outlet means extending through the frame from the interior thereof,

ii) a pair of limited flexibility membrane support plates sealed to the frame, the pair of support plates being shaped to provide within that frame, intermediate, spaced, fluid permeable plate portions forming an inner permeable cavity between them communicating with the permeate outlet means, and outer feed fluid recesses in fluid communication with those in the plates, and at each end, adjacent plate portions having fluid passages therethrough and forming plenum recesses aligned with those in the plates, the feed fluid passages being aligned and in communication with the ports in the clamping plates,

iii) for each support plate, a pair of fluid permeable membranes covering the outer surfaces of that support plate and having fluid passages aligned with the fluid passages in that support plate, said pair of membranes being sealed to each other at the marginal edge of the fluid passages in a fluidtight engagement with the support plate covered thereby, and a protective cap placed over the sealed edges of the membranes, and

c) means for clamping the clamping plates, and the stack of membrane assemblies between them in a fluidtight manner.

5,624,556

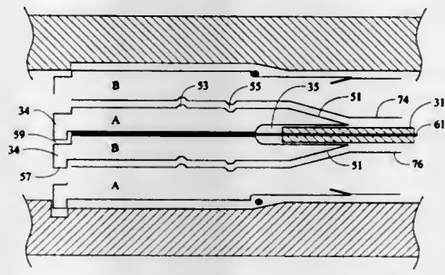
FLUID FRACTIONATING STACKED PERMEABLE MEMBRANE ASSEMBLY

Oleh Kutowy, North Gower; David L. Kelly, Saskatoon; Morley E. Kocken, Sherwood Park, and Bohdan Y. Sawka, Ottawa, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Continuation-in-part of Ser. No. 130,983, Oct. 4, 1993, abandoned. This application Oct. 4, 1994, Ser. No. 322,724

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.75 **16 Claims**



1. A fluid fractionating, stacked permeable membrane assembly comprising:

a) two clamping plates in spaced, face to face relationship, with respective facing surfaces of each plate having sealing rims bounding pressurized feed fluid inlet plenum recesses at facing first ends and outlet plenum recesses at the facing second ends, a feed fluid inlet port to the inlet plenum recess of one plate, and a feed fluid outlet port from the outlet plenum recess of the other plate,

b) a stack of spaced permeable membrane assemblies between the plates, each membrane assembly comprising:

i) a frame extending between the sealing rims and having permeate outlet means extending through the frame from the interior thereof,

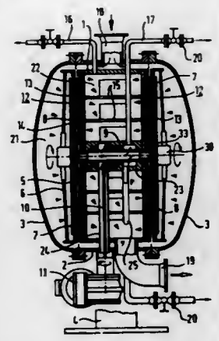
ii) fluid permeable membrane support means in the form of a rigid screen attached to the frame, said support means including feed fluid passages at each end thereof, wherein adjacent membrane assemblies said feed fluid passages are aligned with each other and the feed fluid inlet and outlet ports, respectively,

iii) a pair of fluid permeable membranes respectively covering the membrane support means and the frame, and having feed fluid passages aligned with the feed fluid passages in the membrane support means, wherein the pair of membranes is sealed to each other at the marginal edge of each of said feed fluid passages in a fluid tight manner, and

c) means for clamping the plates and the stack of membrane assemblies between them, in a fluid tight manner, wherein the frame includes inner tapered edges defining a groove therebetween for receiving the screen, and wherein the frame comprises two identical pieces of symmetrical extrusion with a rigid stayplate attached therebetween, the screen being attached to the stayplate as an overlay.

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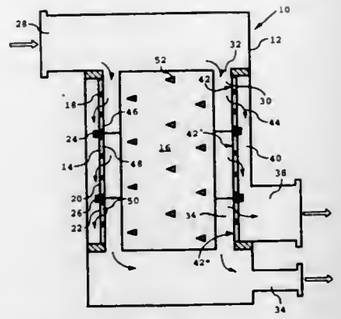
5,624,557
PRESSURE FILTER
Uwe Maurer, Schweim, Germany, assignor to Mike Maurer, Schwelm, Germany
PCT No. PCT/DE94/00709, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO95/00228, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 21, 1994, Ser. No. 392,769
Claims priority, application Germany, Jun. 24, 1993, 43 20 954.81
Int. Cl.[6] B01D *29/68;29/43*
U.S. Cl. 210—411 10 Claims



1. A pressure filter comprising:
a hub;
an annular support coaxially surrounding said hub;
two filter surfaces spanning between said hub and said support at opposite ends of said hub and defining between them an annular filtrate compartment between said hub and said support, said filter surfaces having outer sides delimiting a fluid compartment from which fluid passes through said filter surfaces into said filtrate compartment;
a hollow shaft rotatable in said hub;
respective backwashing heads connected to opposite ends of said hollow shaft and rotatable therewith, each of said backwashing heads having a backwashing compartment having a suction chamber with a slot-like opening turned toward the respective outer side of a respective filter surface, said backwashing beads sweeping over the respective filter surface upon rotation of said shaft and sealing a part of the respective filter surface relative to said fluid compartment;
drive means external of said fluid compartment connected to said hollow shaft at a cylindrical portion thereof for rotating said hollow shaft; and
a reject drain communicating with said hollow shaft and with said backwashing compartments through said hollow shaft and extending out of said filtrate compartment, said hub having a hollow space surrounding said hollow shaft and connected to said reject drain, said hollow shaft having an interior communicating with said hollow space through at least one aperture formed in a wall of said hollow shaft.

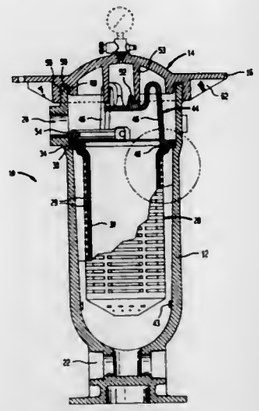
5,624,558
METHOD AND APPARATUS FOR SCREENING A FIBER SUSPENSION
Frank Aaltonen, Lisse, Netherlands, and Frey Frejborg, Queensbury, N.Y., assignors to CAE ScreenPlates Inc., Pruyn's Island, N.Y.
Filed Aug. 4, 1994, Ser. No. 286,440
Int. Cl.[6] B07B *1/20;1/46;* B01D *29/64*
U.S. Cl. 210—415 26 Claims

1. A screen cylinder for screening fiber suspensions, comprising:
an axis of elongation;
a cylindrical feed side surface having a plurality of first screening openings provided therein;



a cylindrical outlet side surface having a plurality of second screening openings therein communicating with said first screening openings;
a first end of said surfaces along said axis of elongation, and a second end of said surfaces along said axis of elongation;
a first surface configuration of said feed side surface having a first suspension-turbulence-inducing capability in the vicinity of said feed side surface adjacent said first end and comprising a substantially smooth feed side surface; and
a second surface configuration of said feed side surface having a second suspension-turbulence-inducing capability in the vicinity of said feed side surface adjacent said second end, said second capability inducing at least about 10% greater turbulence than said first capability and comprising a contoured feed side surface.

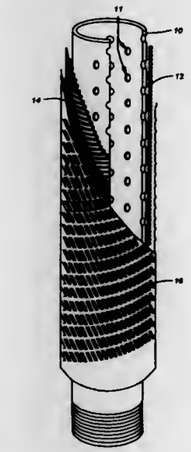
5,624,559
BAG FILTER AND RETAINER THEREFOR
Alan R. Levin, Somerville, and Walter R. Booth, East Hanover, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.
Filed Oct. 27, 1995, Ser. No. 548,978
Int. Cl.[6] B01D *29/13*
U.S. Cl. 210—447 34 Claims



1. A filter for filtering fluids, comprising:
a) a hollow having an open end, a fluid inlet and a fluid outlet;
b) a cap removably received on said housing for sealing said open end thereof;
c) a removable filter element contained within said housing between said fluid inlet and said fluid outlet; and

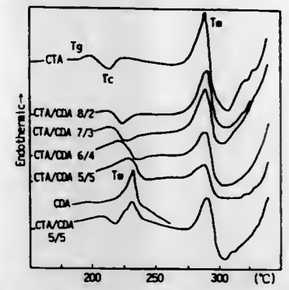
d) a resilient retainer compressed between said cap and said filter element for retaining said filter element in position within said filter, said retainer including a hub positioned above said filter element such that said hub is movable toward said filter element in response to the application of said cap to said housing, a ring positioned in abutment with said filter element, and a plurality of resilient legs extending between said hub and ring, each of said legs being deformable in response to the movement of said hub toward said ring, whereby said legs inhibit said retainer from applying excess compressive forces against said filter element as said cap is applied to said housing.

5,624,560
WIRE MESH FILTER INCLUDING A PROTECTIVE JACKET
Benn A. Voll, Houston, Bennett M. Richard, Kingwood, and Allen D. Gabrysch, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Apr. 7, 1995, Ser. No. 418,954
Int. Cl.[6] B01D *39/12;29/07*
U.S. Cl. 210—486 2 Claims



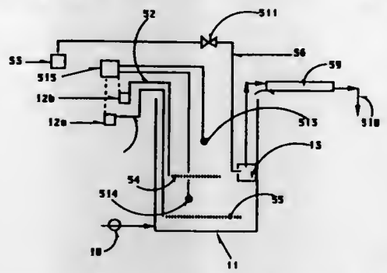
1. A filter apparatus comprising
a supporting body;
a woven wire mesh layer mounted on said supporting body, said woven wire mesh layer further comprising an outer surface and an inner surface such that fluid can flow from said outer surface to said inner surface in a path which is not substantially perpendicular to said outer surface or said inner surface;
a protective jacket mounted on said woven wire mesh layer, said protective jacket further comprising a basketweave jacket, wherein said basketweave jacket comprises a plurality of slots;
wherein said protective jacket comprises an inner surface and an outer surface and forms an annulus between said inner surface of said protective jacket and said outer surface of said woven wire mesh layer, and wherein said slots provide at least one fluid pathway between said outer surface of said protective jacket and said annulus such that fluid flowing through said fluid pathway makes at least one change of flow direction as it passes therethrough.

5,624,561
CELLULOSE ACETATE HEMODIALYSIS MEMBRANE
Tohru Uenishi; Isamu Yamamoto; Kazutake Okamoto; Hideo Sato; Yasuhiro Shiota; Hidehiko Sakurai; Seiji Watanuki, and Mitsuru Suzuki, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan
Filed Jul. 26, 1994, Ser. No. 272,397
Claims priority, application Japan, Jul. 28, 1993, 5-186336; Aug. 12, 1993, 5-200851; Aug. 20, 1993, 5-206013
Int. Cl.[6] B01D *39/00*
U.S. Cl. 210—500.32 18 Claims



1. A cellulose acetate membrane comprising a mixture of a cellulose triacetate and a cellulose diacetate, wherein both the cellulose diacetate and the cellulose triacetate have an average combined acetic acid content of at least 52%, said membrane has an improved heat stability, and when said membrane is subjected to a differential thermal analysis, said membrane does not substantially exhibit a melting peak of cellulose diacetate, but substantially exhibits a melting peak of the cellulose triacetate;
said membrane satisfying at least one of the following requirements:
(1) ratio of the water permeability of the membrane after a high pressure steam treatment of said membrane to that before the treatment is of not less than 0.9,
(2) a ratio of the myoglobin sieving coefficient of the membrane after a high pressure steam treatment of said membrane to that before the treatment is of not less than 0.9, and
(3) a ratio of the urea permeation coefficient of the membrane after treatment a high pressure steam treatment of said membrane to that before the treatment is of not less than 0.65.

5,624,562
APPARATUS AND TREATMENT FOR WASTEWATER
Dan Scroggins, Crescent Springs, Ky., assignor to EV Environmental, Inc., Westport, Conn.
Filed Mar. 20, 1995, Ser. No. 407,115
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—605 19 Claims



1. A continuous process for the biological treatment of wastewater which comprises
treating wastewater to adjust its pH to a range of from about 7.0 to about 8.5;

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discharging said treated wastewater into a biological reactor vessel at a predetermined rate of flow consistent with its generation, said vessel having a fixed height and containing therein at least one dissolved oxygen probe and a two-tier diffused aeration means separated along the height of the reactor wherein a first tier is located at approximately mid-reactor height and provides the majority of the air required for said oxic cycle, and a second tier is located below the dissolved oxygen probe and provides a mixing of fluid within the reactor thereby integrating a lower anoxic strata of said fluid into an upper oxic strata of said fluid at the initiation of that cycle, said means and probe being part of an aeration control loop in which the output from said probe controls an aeration control means that controls an external aerator to provide a flow of air to said means;

biologically reducing within said vessel any organic materials contained in said wastewater by cycling the fluid within said reactor through oxic and anoxic cycles; and

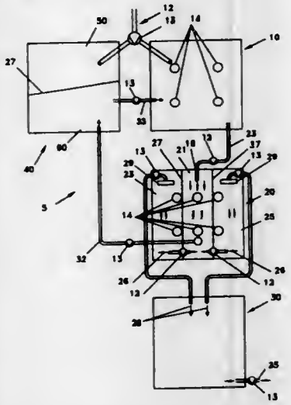
removing the biologically reduced wastewater from said reactor at a flow rate generally equal to said predetermined rate of flow.

5,624,563

PROCESS AND APPARATUS FOR AN ACTIVATED SLUDGE TREATMENT OF WASTEWATER

John C. Hawkins, P.O. Box 566, Murrells Inlet, S.C. 29576

Filed Aug. 25, 1995, Ser. No. 519,423
Int. Cl.[6] C02F *3/12*
U.S. Cl. 210—607 **18 Claims**



14. A process for wastewater purification treating biological oxygen demand, reducing suspended solids, and for nitrification utilizing an activated single sludge and at least three treatment zones comprising:

a. introducing wastewater into a first aerated treatment zone whereby a mixed liquor is produced in a first aerated treatment zone,

b. transferring mixed liquor from the first aerated treatment zone to a subsequent second treatment zone for three units of time during which the second treatment zone is in a settled state, said transfer of mixed liquor from the first aerated treatment zone to the second treatment zone takes place in a plug/flow mode while a like volume of clarified liquor is decanted from the second treatment zone to a point of discharge,

c. stopping said transfer of mixed liquor from the first aerated treatment zone to the second treatment zone for three units of time,

d. aerating and settling said second treatment zone for three units of time during said stoppage of transfer of mixed liquor from the first treatment zone into the second treatment zone for three units of time,

e. aerating and setting a third treatment zone for three units of time during said transfer of mixed liquor from the first treatment zone to the second treatment zone for three units of time,

f. transferring mixed liquor from the first aerated treatment zone to a said third treatment zone for three units of time during which the third treatment zone is in a settled state, said transfer from the first aerated treatment zone to the subsequent third treatment zone taking place during said stoppage of said transfer of mixed liquor from the first aerated treatment zone to the second treatment zone, said transfer of mixed liquor from the first aerated treatment zone to the third treatment zone taking place in a plug/flow mode while a like volume of clarified liquor is decanted from the third treatment zone to a point of discharge,

g. repeating steps a through f.

5,624,564

PROCESS FOR DEHYDRATION AND CONCENTRATION OF SEWAGE SLUDGE

Holger Blum, Parkallee 75, DE-20144 Hamburg, Germany

Filed Mar. 21, 1995, Ser. No. 408,556
Claims priority, application Germany, Mar. 22, 1994, 44 09 870.7
Int. Cl.[6] C02F *11/14*
U.S. Cl. 210—609 **20 Claims**

1. An improved process for concentration and dehydration of sewage sludge containing activated sludge, with the aid of organic flocculators, inorganic flocculators, or combinations thereof wherein the activated sludge portion is produced in an aerated biological purification stage, which process comprises:

A. contacting the activated sludge in said purification stage with an effective amount of a composition comprising:

a) folic acid, dihydrofolic acid, at least one ammonium salt, alkali metal, alkaline earth metal salt, or alkanolammonium salt of folic acid or of dihydrofolic acid or combinations thereof, and

b) a water-soluble molybdenum compound to precipitate said activated sludge, and

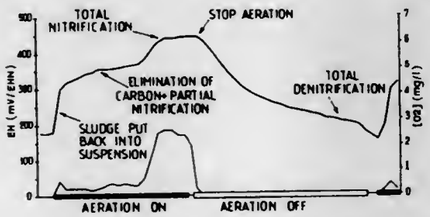
B. concentrating and dehydrating said activated sludge.

5,624,565

METHOD OF REGULATING AERATION IN A BASIN FOR BILOGICAL TREATMENT OF WASTEWATER

Fanny Lefevre, Poissy, and Jean-Marc Audic, Conflans Sainte Honorine, both of France, assignors to Lyonnaise Des Eaux, Nanterre, France

Filed Sep. 13, 1995, Ser. No. 526,959
Claims priority, application France, Sep. 20, 1994, 94 11180
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—614 **1 Claim**



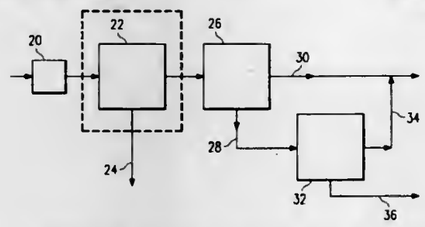
1. A method of regulating aeration in biological treatment of wastewater by implementing a step of eliminating carbon in aerobiosis, a step of nitrification in aerobiosis, and a step of denitrification in anoxia, in which method the oxidation-reduction potential is continuously measured in a treatment system, a curve is established of variation in oxidation-reduction potential as a function of time, and the derivative thereof is calculated, wherein, when the derivative tends towards zero, the derivative and the value of the oxidation-reduction potential are correlated to determine whether aeration should be started, continued, or stopped, and wherein the duration of aeration is determined by taking preceding steps of eliminating carbon, of nitrification, or of denitrification into account, the duration of aeration including sufficient time to bring the oxidation-reduction potential to a desired value, plus the additional time required for performing further steps of eliminating carbon, of nitrification, or of denitrification.

5,624,566

METHOD AND APPARATUS FOR RECOVERING CARBOXYLIC ACIDS FROM DILUTE SOLUTIONS

Randa W. Wytcherley, Belgrade, Mont.; Joseph C. Gentry, Houston, and Ronald G. Gualy, Dallas, both of Tex., assignors to Glitsch, Inc., Dallas, Tex.

Continuation of Ser. No. 224,601, Apr. 7, 1994, Pat. No. 5,492,625. This application Jun. 7, 1995, Ser. No. 475,628
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—634 **6 Claims**



1. A method for recovering carboxylic acids from a dilute aqueous solution thereof, said dilute acid solution having an acid concentration below about ten percent (10%) by weight, said carboxylic acids being from the class consisting of acids having from one (1) to seven (7) carbon atoms and mixtures thereof, said method comprising the steps of:

passing said dilute acid solution through a reverse osmosis membrane separator to thereby produce an aqueous permeate substantially free of acid and an aqueous retentate having an acid concentration more concentrated than the initial concentration of said dilute acid solution and above about ten percent (10%) by weight;

treating said retentate in an acid separation step comprising the steps of contacting said retentate with a liquid extractant for acids to thereby produce an acid-rich extractate and a substantially acid-free raffinate; and

recovering acid from said acid-rich extractate.

5,624,567

PROCESS FOR REMOVING IODINE/IODIDE FROM AQUEOUS SOLUTIONS

Gerald V. Colombo, Myrtle Creek, Oreg., assignor to Umpqua Research Company, Myrtle Creek, Oreg.

Filed Feb. 12, 1996, Ser. No. 599,798
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—662 **18 Claims**

1. A process for removing elemental iodine and iodide ions from an aqueous solution containing iodine and iodide ions, which comprises

providing a strong-base anion exchange resin, said resin comprising trialkyl amine groups each having from 3 to 4 carbon atoms;

passing said aqueous solution containing elemental iodine and iodide ions through said resin and thereby treating said aqueous solution by removing elemental iodine and iodide ions therefrom,

the volume of the aqueous solution passing through said resin until reaching the Breakthrough Point being at least about 15 liters per cubic centimeter.

5,624,568

STABILIZATION OF MAGNESIUM HYDROXIDE SLURRIES

Gregory J. Pomrink, Wyncote, and Bruce K. Fillipo, Dublin, both of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jan. 17, 1996, Ser. No. 587,442
Int. Cl.[6] C01F *5/02*; C02F *1/00*
U.S. Cl. 210—698 **10 Claims**

1. A method for reducing viscosity and inhibiting settling of an aqueous 30% or higher by weight magnesium hydroxide slurry which comprises adding to said slurry an amount, effective for the purpose of a combination of an dicarboxyethyl-n-octadecyl sulfosuccinate surfactant, a xanthan gum and a clay.

5,624,569

CLARIFICATION OF DEINKING PROCESS WATER

Daniel K. Chung, Burlington, Canada; Manian Ramesh, Lisle, and Karen R. Tubergen, Mt. Prospect, both of Ill., assignors to NALCO Chemical Company, Naperville, Ill.

Filed Jan. 23, 1996, Ser. No. 589,095
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—727 **12 Claims**

1. A method for clarifying ink-containing effluent water from recycled paper production which comprises the steps of A.) of adding an effective deinking amount of a water-soluble, surface active, silicon-containing polyelectrolyte polymer coagulant made by free radical polymerization to the ink-containing effluent water from recycled paper production wherein the polymer comprises:

from 0.01 to 10 mole percent of a vinyl alkoxysilane monomer; and

from 90 to 99.99 mole percent of a second monomer selected from the group consisting of acrylamide, acrylic acid and its alkali metal salts, dimethylaminoethyl (propyl) acrylate methyl chloride quaternary, diallyldimethylammoniumchloride, maleimide, vinyl formamide, vinyl acetate, itaconic acid, maleic anhydride, fumaric acid, aconic acid, acrylamido methyl propane sulfonic acid and its alkali metal salts, C_6–C_{20} alkyl esters of acrylic acid, phenethyl ester of acrylic acid, nonyl-α-benzyl ester of acrylic acid, dimethyl acrylamide, diethyl acrylamide, tributyl acrylamide, dimethylaminoethylacrylate benzyl chloride quaternary, 3-methylacrylamide propyl trimethyl ammonium chloride, acrylamidomethyl butanoic acid and combinations thereof;

B. allowing coagulation of the ink; and

C. separating the coagulated ink to obtain clarified effluent water.

5,624,570

METHOD FOR REDUCING TURBIDITY IN LAUNDRY WASTE WATER

Denis E. Hassick, Monroeville, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1996, Ser. No. 609,707
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—728 **12 Claims**

1. A method for reducing turbidity in laundry waste water comprising treating said water with an effective amount of:

a) a first polymer; and

b) a second cationic, nonionic or anionic acrylamide polymer, wherein component a) comprises i) about 90 to about 99.9%, by weight, of dimethyl diallyl ammonium chloride (DMDAAC) and ii) about 0.1 to about 10%, by weight, of one or more members selected from the group consisting of

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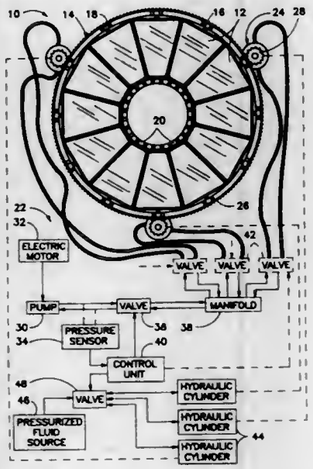
dialkyl diallyl ammonium monomers (DADAAX) other than DMDAAC, and wherein the molecular weight of component a) ranges from about 5,000 to about 3,000,000 and the molecular weight of component b) ranges from about 1,000,000 to about 15,000,000 as determined by Gel Permeation Chromatography or intrinsic viscosity methods.

5,624,571

DRIVE MECHANISM AND ASSOCIATED METHOD FOR TILTING PAN FILTER ASSEMBLY

James M. Bennett, Norton, Mass., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Dec. 19, 1994, Ser. No. 358,827
Int. Cl.[6] B01D *33/327;24/48*
U.S. Cl. 210—741 **26 Claims**



20. A method for operating a filter assembly, comprising:
energizing an electric motor;
driving a pump by said electric motor upon energization thereof;
pressurizing a working fluid via said pump upon a driving thereof by said electric motor;
operating a plurality of hydraulic motors by feeding the pressurized working fluid thereto, said hydraulic motors being in operative engagement with a filter element carrier; and
moving said carrier along a predetermined path by virtue of operation of said hydraulic motors.

21. The method defined in claim **20** wherein the moving of said carrier along said path is implemented by rotating pinions of said hydraulic motors, said pinions meshing with a ring gear on said carrier.

22. The method defined in claim **21**, further comprising applying to said pinions a force which increases as torque increases to hold said pinions in engagement with said ring gear.

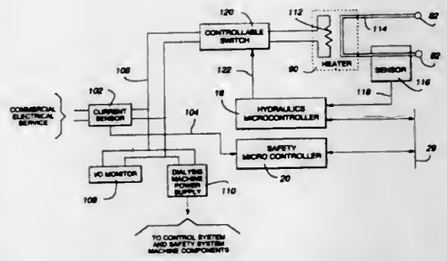
5,624,572

POWER MANAGEMENT SYSTEM AND METHOD FOR MAXIMIZING HEAT DELIVERED TO DIALYSATE IN A DIALYSIS MACHINE

Byron Larson, Arvada, and Frank Ogawa, Lakewood, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 7, 1995, Ser. No. 485,114
Int. Cl.[6] B01D *61/32*
U.S. Cl. 210—746 **16 Claims**

10. A method of regulating electrical power delivered to a dialysate heater to heat dialysate in a dialysis machine without



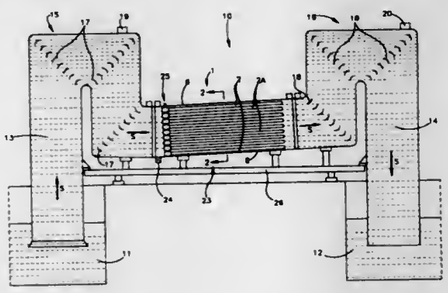
substantially exceeding a predetermined maximum allowed power consumption of the dialysis machine, comprising the steps of:
measuring instantaneous power consumed by the machine;
comparing the instantaneous power consumed by the machine to the maximum allowed power consumption;
determining from the comparing step any excess of power beyond the instantaneous power consumed up to the maximum allowed power consumption;
making the excess power available for use by the heater.

5,624,573

APPARATUS FOR THE DISINFECTION OF A FLOWING LIQUID MEDIUM AND A PLANT FOR THE TREATMENT OF CLARIFIED SEWAGE

Rudolf Wiesmann, Bogenackerstrasse 26, CH-8632 Tann, Switzerland

Filed May 17, 1995, Ser. No. 443,067
Claims priority, application Germany, May 17, 1994, 44 17 139.0
Int. Cl.[6] C02F *1/32;* **A61L** *9/20;* **F04F** *10/02*
U.S. Cl. 210—748 **22 Claims**



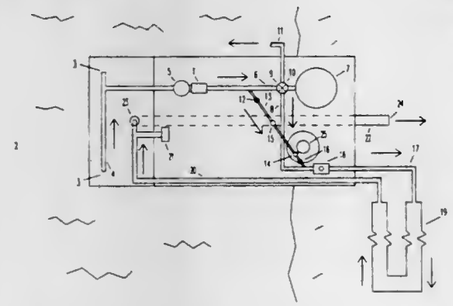
1. An apparatus for the disinfection of a liquid medium flowing in a predetermined direction and having a transmission of <75%/cm, said apparatus comprising:
a plurality of individual UV radiator means, each of said UV radiator means being enclosed by a protective envelope essentially permeable to UV radiation;
said plurality of UV radiator means being integrated in a modular UV irradiation battery means through which flows the liquid medium to be disinfected;
each UV radiator means of said plurality of UV radiator means being oriented in a parallel relationship to said predetermined flow direction of said liquid medium to be disinfected, such that the liquid medium to be disinfected flows parallel to the longitudinal extension of each of said UV radiator means;
said plurality of UV radiator means being arranged, as viewed in a cross sectional plane running perpendicular to said predetermined direction of flow of said liquid medium to be disinfected, in a plurality of uniformly spaced lateral rows, each of said plurality of rows comprising a plurality of uniformly spaced UV radiator means, said plurality of UV radiator means comprising a first group of said UV radiator means radially enclosing a second group of said UV radiator means, said first group of UV radiator means comprising at least one of said plurality of UV radiator means from each of said plurality of rows;
said modular UV irradiation battery means and said plurality of said UV radiator means being radially enclosed by an essentially tube-shaped housing means, said housing means being defined by a wall means which is essentially uniformly spaced from each of said UV radiator means in said first group of UV radiator means a distance of about one-half of the distance between the center of two adjacent UV radiator means located in the same row.

5,624,574

CHLORINATOR-FILTER PROCESS FOR SEWAGE TREATMENT

Dean Caldwell, 18 Lake View, DeRidder, La. 70634

Division of Ser. No. 298,114, Aug. 31, 1994. This application Nov. 20, 1995, Ser. No. 560,654
Int. Cl.[6] C02F *9/00;1/76*
U.S. Cl. 210—754 **1 Claim**



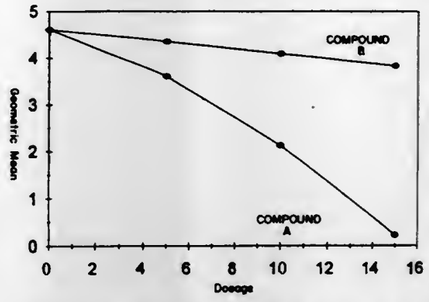
1. A method for use in the final stage of the purification of sewage water effluent after treatment in standard sewage holding ponds for removal of large and small suspended matter elimination of decompositing bacteria, and replenishment of oxygen, comprising the following steps;
(a) removing said larger suspended particles;
(b) putting said effluent under pressure, thus acquiring a pressurized effluent;
(c) forcing said pressurized effluent through a sand and gravel filter thus producing a pressurized filtered effluent;
(d) sampling said pressurized effluent prior to said sand and gravel filter;
(e) treating said sample with chlorine gas, thus producing a chlorinated sample;
(f) re-introducing said chlorinated sample to said pressurized filtered effluent, said pressurized filtered effluent having traversed said sand and gravel filter;
(g) measuring said effluent with a standard, pressure operated water meter for purposes of analysis;
(h) holding said effluent for a period of time in a detention chamber to dissipate the chlorine; and
(i) injecting air bubbles into said effluent as said effluent is discharged.

5,624,575

METHOD FOR PREVENTING MICROBIAL DEPOSITS IN THE PAPERMAKING PROCESS WITH ETHYLENE OXIDE/PROPYLENE OXIDE COPOLYMERS

Robert J. Meade, Naperville; Linda R. Robertson, St. Charles; Nicole R. Taylor, Berkeley, and Judy G. LaZonby, Crystal Lake, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 430,629, Apr. 28, 1995. This application Jul. 28, 1995, Ser. No. 508,659
Int. Cl.[6] C02F *1/50*
U.S. Cl. 210—759 **13 Claims**



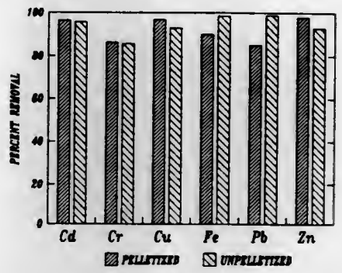
1. A method for controlling the growth of filamentous bacteria and other microorganisms in industrial process water containing filamentous bacteria and other microorganisms which consisting of the step of treating said water with an effective amount of peracetic acid and an effective amount of an ethylene oxide/propylene oxide copolymer simultaneously.

5,624,576

PELLETIZED COMPOSITION FOR TREATMENT OF STORM WATER RUNOFF

James H. Lenhart, Aloha; John H. Knutson, Hillsboro; William C. Stewart, Gladstone, and David C. Campbell, Molalla, all of Oreg., assignors to CSF Treatment Systems, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 452,504, May 30, 1995, abandoned. This application Feb. 7, 1996, Ser. No. 598,232
Int. Cl.[6] B01D *37/00*
U.S. Cl. 210—767 **21 Claims**



1. A method of treating storm water runoff to reduce the amount of pollutants in the storm water, the method comprising passing the storm water runoff through a bed of pellets, the bed of pellets sufficiently thick to significantly reduce a concentration of at least one contaminant present in the storm water, the pellets comprising mature deciduous leaf compost and gravel, the pellets able to withstand a crush force of at least about 7 lbs., before immersion in the storm water.

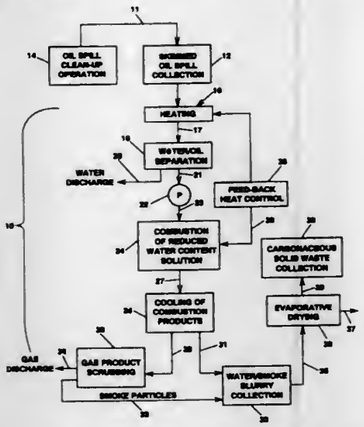
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5,624,577

DISPOSAL OF OIL SPILL CLEANUP COLLECTIONS

John P. Wehrie, Greenbelt; Eugene C. Fischer, Stevensville; John R. Ness, Reisterstown, and Barbara Howell, Arnold, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1995, Ser. No. 566,224
Int. Cl.[6] C02F *1/02*
U.S. Cl. 210—768 11 Claims



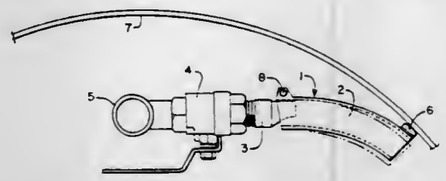
1. A method for disposal of a collection of oil and water, including the steps of: separating some of the water from said collection to form a solution of the oil having a reduced water content; burning said solution to form combustion products therefrom; cooling said combustion products to form smoke and a slurry of water condensate and solid particles; scrubbing the smoke to discharge a cleansed gas portion of the combustion products with remaining solid particles transferred to said slurry; and drying the slurry with the solid particles transferred thereto to form solid waste.

5,624,578

SEPARATION APPARATUS NOZZLE ASSEMBLY

George Burgess, Auckland, New Zealand, assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

PCT No. PCT/US95/05428, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO95/29746, PCT Pub. Date Nov. 9, 1995
PCT Filed May 2, 1995, Ser. No. 557,118
Claims priority, application New Zealand, May 2, 1994, 260432
Int. Cl.[6] B01D *33/11*
U.S. Cl. 210—781 16 Claims



16. A method of ejecting a liquid suspension onto or across the inner surface of a rotatable screening drum of a separation apparatus at a substantially constant pressure, comprising:

(1) passing said liquid suspension through a nozzle assembly directed towards or across said inner surface, said nozzle assembly having an outlet end;

(2) biasing at least the outlet end of said nozzle assembly towards said inner surface;

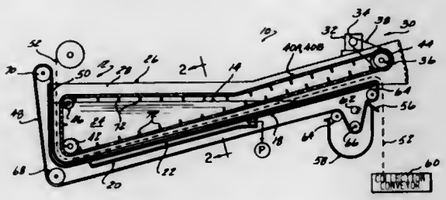
(3) maintaining a substantially constant distance between said outlet end and said inner surface of said drum with tracking means disposed between said outlet end and said inner surface.

5,624,579

METHOD OF SIMULTANEOUSLY INDEXING PERMANENT AND DISPOSABLE FILTER MEDIA IN A VACUUM FILTER APPARATUS

Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48322

Division of Ser. No. 813,161, Dec. 24, 1991, abandoned. This application Sep. 28, 1995, Ser. No. 535,546
Int. Cl.[6] B01D *37/00;33/00*
U.S. Cl. 210—783 1 Claim



1. In a vacuum tank filter of the type having a vacuum box in a tank covered with a perforate plate adapted to be overlain with a filter media belt to carry out filtration of a liquid in the tank, the method of simultaneously indexing sections of both a permanent media belt and a disposable media belt over said perforate plate comprising the steps of:

mounting a permanent filter media belt loop so as to extend along a path through said tank and across said vacuum box perforate cover, out one end of said tank, down around the bottom of said tank and back into the other end of said tank;

circulating said permanent filter media belt through said path solely by frictionally driving a segment of said permanent filter media belt with a powered flight conveyor loop unconnected to said permanent filter media and mounted above said tank by positioning a lower segment of said conveyor to frictionally engage a portion of said permanent filter media belt extending across said vacuum box perforate cover to drive said permanent filter media belt through said path solely by friction to advance successive segments onto said perforate cover;

inserting a section of disposable filter media belt into a convergent space defined between a portion of said conveyor and said permanent filter media belt and frictionally engaging said disposable filter media belt directly with said conveyor to periodically advance said disposable filter media section across said perforate cover and out said one end of said tank, while frictionally driving said permanent media belt indirectly by frictional engagement of said permanent media with said disposable media belt so as to periodically advance both said permanent and said disposable media belt together by said direct engagement of said conveyor with said disposable media belt and indirect engagement with said permanent media belt; and,

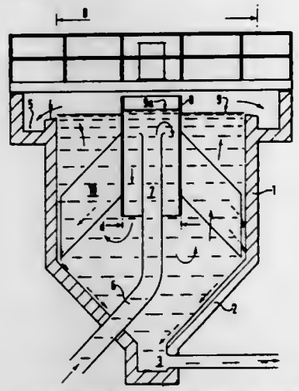
collecting sections of said disposable filter media belt after driving said section through said tank and exiting said one end of said tank, whereby enabling use of both permanent and disposable media in said tank filter.

5,624,580

SEPARATING LIQUID SUSPENSIONS

David De Hoxar, Talybont-on-Usk, Great Britain, assignor to Southern Water Services Ltd., United Kingdom

PCT No. PCT/GB94/01311, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO95/01215, PCT Pub. Date Jan. 12, 1995
PCT Filed Jun. 17, 1994, Ser. No. 392,929
Claims priority, application United Kingdom, Jul. 1, 1993, 9313589
Int. Cl.[6] B01D *21/00;* C02F *1/40*
U.S. Cl. 210—800 5 Claims



1. A method for separating a suspended phase from a body of liquid in a non-cyclonic gravity sedimentation separator, comprising introducing untreated liquid through an inlet into a flow channel in the sedimentation separator, coalescing the suspended phase to form a coalesced suspended phase and a treated liquid; removing said treated liquid from the flow channel through a first outlet, and removing the coalesced suspended phase through a second outlet, arranging the location of the first outlet and the second outlet at locations spaced in vertical direction, configuring and orienting the inlet and the first and second outlets so as to impart substantially no circumferential motion to flow of liquid in the flow channel, and controlling the flow from the inlet to the first outlet so that it is in a vertical direction in the channel and is at a predetermined speed and wherein the liquid is constrained to flow at a predetermined rate through a vertical flow channel of circular cross-section wherein is situated at least one conical helical plate with a diameter substantially equal to that of the flow channel, the conical helical plate or plates being arranged coaxially in the flow channel and defining at least one helical flow path coaxial with the flow channel between facing surfaces of the plate or plates.

5,624,581

PROCESS FOR FORMING A SIMPLIFIED SELF-LOADING HEAD SLIDER

Layne S. Ihrke, Burnsville, and Peter Crane, Richfield, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 380,837, Jan. 30, 1995, Pat. No. 5,515,219, which is a continuation-in-part of Ser. No. 118,004, Sep. 8, 1993, abandoned. This application May 11, 1995, Ser. No. 438,849
Int. Cl.[6] G11B *21/21*
U.S. Cl. 216—22 22 Claims

1. A method of forming a bearing surface on a self-loading slider, the method comprising:

providing a slider having a leading edge with a leading edge taper; and

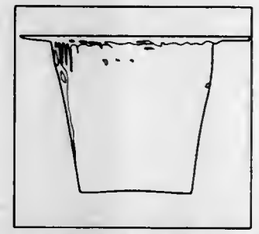
etching the bearing surface to from a subambient pressure cavity and first and second raised side rails having bearing surfaces which intersect the leading edge taper at a taper break line, and side walls at least partially defining the subambient pressure cavity, wherein the side walls converge together as the side walls extend across the taper break line toward the leading edge.

5,624,582

OPTIMIZATION OF DRY ETCHING THROUGH THE CONTROL OF HELIUM BACKSIDE PRESSURE

John L. Cain, Schertz, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 7,348, Jan. 21, 1993, Pat. No. 5,342,476, and Ser. No. 130,062, Sep. 30, 1993, abandoned. This application Mar. 28, 1994, Ser. No. 219,337
Int. Cl.[6] H01L *21/306*
U.S. Cl. 438—715 21 Claims



1. A method of increasing the rate and uniformity of silicon dioxide etching during the dry non-isotropic etching of a oxide layer on the surface of a silicon wafer which comprises:

(a) placing a patterned resist layer over the oxide layer found on the surface of said silicon wafer so as to define areas where the oxide layer is exposed and areas where the oxide layer is covered by the resist layer;

(b) placing the silicon wafer prepared in step (a) in the wafer holder of an etching reactor;

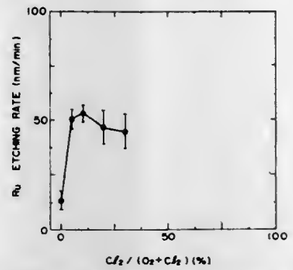
(c) removing the exposed oxide layer from the surface of the silicon wafer by dry non-isotropic etching employing wafer backside cooling by means of helium gas flow to the backside of the wafer holder, wherein the helium gas flow is adjusted to maintain a backside pressure greater than about 2 torr and less than about 10 torr to control the rate and uniformity of etching.

5,624,583

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Ken Tokashiki, and Kiyoyuki Sato, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,896
Claims priority, application Japan, Sep. 7, 1994, 6-213908
Int. Cl.[6] H01L *21/302*
U.S. Cl. 438—720 12 Claims



1. A method of manufacturing a semiconductor device containing a ruthenium oxide, comprising the step of dry-etching the

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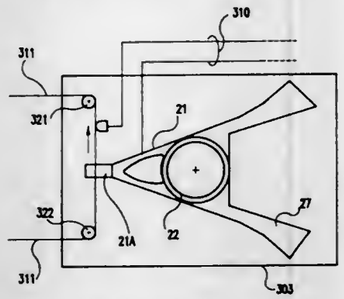
ruthenium oxide using a mixture of gases comprising oxygen gas and at least one gas selected from the group consisting of fluorine gas, chlorine gas, bromine gas, and iodine gas, a halogen bearing gas containing at least one of the fluorine, chlorine, bromine, and iodine atoms and which does not contain carbon atoms, and a hydrogen halide gas.

5,624,584

PROCESS FOR REDUCING DISK DEFORMATION OF HOLDER ARM OF DATA RECORDING DEVICE

Hiroshi Koriyama; Norio Tagawa; Kenji Itoh; Misa Iwamoto, and Takahiro Suzuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 381,306, Jan. 31, 1995. This application Dec. 12, 1995, Ser. No. 570,987
Claims priority, application Japan, Jan. 31, 1994, 6-027317
Int. Cl.[6] B23H *9/00;7/02*
U.S. Cl. 219—69.12 **7 Claims**



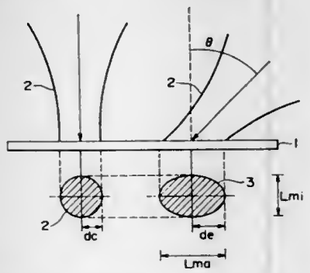
1. A process for reducing deformation of a holder arm of a data according device, said holder arm being for holding a head, said deformation occurring during a contouring of a tip of a holder arm, the process comprising steps of:
(a) cutting a metal body to form said holder arm; and
(b) contouring a tip of said holder arm by wire cutting.

5,624,585

METHOD AND APPARATUS FOR WELDING MATERIAL BY LASER BEAM

Koichi Haruta, and Yuichiro Terashi, both of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,793
Claims priority, application Japan, Oct. 23, 1992, 4-309718
Int. Cl.[6] B23K *26/00;26/06*
U.S. Cl. 219—121.63 **12 Claims**



1. A method for irradiating a laser beam on a material for welding the material, comprising the steps of:
generating a laser beam having a beam shape in the form of an ellipse; and
irradiating said laser beam onto an outer surface of said material at substantially a right angle to the irradiated surface of said material so as to have a beam shape in the form of an ellipse on the irradiated outer surface of said material, wherein the shape of the ellipse on the irradiated surface is equivalent to that obtained by a laser beam, having a circular cross-section, irradiated onto said irradiated surface at an oblique angle θ of $16°<\theta<90°$ with respect to a line vertical to the irradiated surface of said material, and wherein under a just focus condition, a ratio $e=L_{mi}/L_{ma}$ between a minor axis (L_{mi}) and major axis (L_{ma}) of said ellipse on the surface of said material meets the following condition:

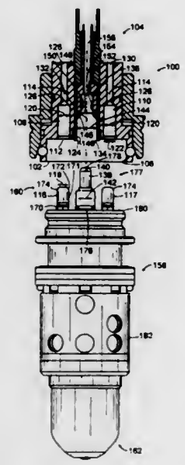
$0<e<0.96$.

5,624,586

ALIGNMENT DEVICE AND METHOD FOR A PLASMA ARC TORCH SYSTEM

John Sobr, Lebanon, N.H., and Nicholas A. Sanders, Norwich, Vt., assignors to Hypertherm, Inc., Hanover, N.H.

Filed Jan. 4, 1995, Ser. No. 368,329
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.48 **16 Claims**



1. A self-aligning plasma arc torch comprising:
a torch body including an electrode and a nozzle having a central orifice for a plasma arc;
a torch receptacle for capturing and releasing the torch body including at least two ports each dimensioned to receive an alignment pin;
at least two alignment pins each having a distal end with a rounded edge, the pins being coupled to an end of the torch body and insertable into the ports for aligning the torch relative to the receptacle, at least one pin including at least one aperture extending through the center of the alignment pin for carrying a fluid; and
a gross positioning guide for initially aligning the torch relative to the torch receptacle, the guide includes a beveled edge on the receptacle and a beveled mating edge on the torch.

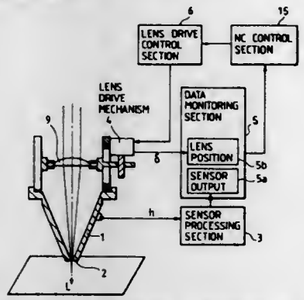
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5,624,587

LASER MACHINING APPARATUS AND METHOD OF SETTING FOCUS THEREOF

Tetsuya Otsuki, and Manabu Kubo, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 207,057
Claims priority, application Japan, Mar. 8, 1993, 5-046633
Int. Cl.[6] B23K *26/04*
U.S. Cl. 219—121.83 **14 Claims**



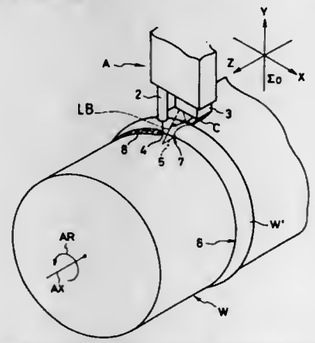
3. A laser machining apparatus comprising an oscillator, a machining lens which is movably mounted in a machining head and focuses on a workpiece a laser beam outputted from said oscillator, and focus detection means fixedly secured to said machining head for detecting a focus of the machining lens and for outputting corresponding focus information, wherein said machining lens is independently movable relative to said focus detection means, and wherein said apparatus comprises focus information storage means for storing the focus information outputted by said focus detection means.

5,624,588

METHOD OF CONTROLLING ROBOT FOR USE IN ARC WELDING

Fumikazu Terawaki, and Yoshitaka Ikeda, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Aug. 17, 1995, Ser. No. 515,989
Claims priority, application Japan, Aug. 22, 1994, 6-220999
Int. Cl.[6] B23K *9/127*
U.S. Cl. 219—124.34 **6 Claims**



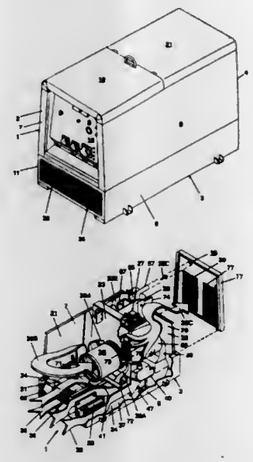
1. A method for controlling a welding robot system including an industrial robot, a robot controller which outputs control signals to control the robot, a welding torch supported by a distal end of the robot, cylindrical welding object rotating means driven in response to the control signals of said robot controller, and a laser sensor to detect a welding line on said welding object, said method comprising the steps of:
(a) rotating a first point on the welding line of said cylindrical welding object in response to control signals from said robot controller and at a predetermined angular velocity to form a reference circle having a center position, and determining a position of said welding torch with respect to the center position;
(b) detecting a second point on said welding line with said laser sensor during rotation of said welding object and calculating position data which corresponds to the second point;
(c) calculating a time when said second point will reach the position of said welding torch from the angular velocity of the welding object and the calculated position data of the second point;
(d) calculating a future position of said second point during rotation about the center position of said reference circle; and
(e) moving the welding torch to the calculated future position at the calculated time, thereby executing welding line tracking of said robot.

5,624,589

SEGREGATED COOLING AIR FLOW FOR ENGINE DRIVEN WELDER

Steven D. Latvis, Appleton, and Ross C. Borchardt, Hortonville, both of Wis., assignors to Illinois Tool Works INC., Glenview, Ill.

Filed Sep. 11, 1995, Ser. No. 526,495
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—133 **18 Claims**



1. An engine driven welding machine, comprising:
a base;
electrical devices disposed within a first electrical end of said welding machine;
an internal combustion engine disposed within a second engine end of said welding machine; and
means for cooling and quieting said welding machine comprising first air path means extending from first air inlet means defined within said first electrical end of said welding machine to first air outlet means defined within said second engine end of said welding machine for conducting cooling air to first selected components of said welding machine, and second air pat means, separate and independent from said first air path means, extending from second air inlet means, separate and independent from said first air inlet means, defined within said first electrical end of said welding machine to second air outlet means, separate and independent from said first air outlet means, defined within said second engine end of said welding machine for conducting cooling air to second selected components of said welding machine.

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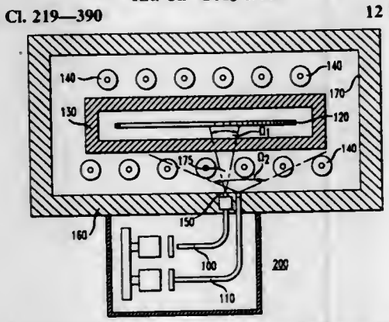
SEMICONDUCTOR PROCESSING TECHNIQUE, INCLUDING PYROMETRIC MEASUREMENT OF RADIANTLY HEATED BODIES AND AN APPARATUS FOR PRACTICING THIS TECHNIQUE

Anthony T. Fiory, Summit, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 227,844, Apr. 14, 1994, Pat. No. 5,442,727, which is a continuation-in-part of Ser. No. 42,028, Apr. 2, 1993, Pat. No. 5,305,416. This application Apr. 7, 1995, Ser. No. 418,337

Int. Cl.[6] G01J *5/00*

U.S. Cl. 219—390 **12 Claims**



1. A process for heating a body, comprising the steps of exposing the body to a controllable flux of electromagnetic radiation from at least one lamp energized by time-varying electric current, measuring the surface temperature of the body, and in response to the temperature measurement, controlling the flux of radiation, wherein the measuring step comprises:

a) collecting radiation emitted and reflected by the body in a first probe and detecting said radiation, leading to a first probe signal denoted V_1;

b) collecting radiation emitted and reflected by the body and at least one lamp in a second probe, and detecting said radiation, leading to a second probe signal denoted V_2;

c) determining the ac components of V_1 and V_2;

d) determining the dc components of V_1 and V_2;

e) determining R from the ac components of V_1 and V_2;

f) determining $\epsilon(R)$ from R such that the surface temperature of the body is calculated;

g) wherein in step (a), the first probe effectively samples radiation from an area of the body that subtends a solid angle Ω_1 at the first probe; and

h) wherein in step (b), the second probe effectively samples radiation from an area that subtends a solid angle Ω_2 that includes the area of the body that subtends a solid angle Ω_2 and at least one lamp.

5,624,591

HEATED GLAZING PANEL AND A CIRCUIT FOR CONTROLLING THE HEAT OUTPUT AS A FUNCTION OF THE RESISTANCE OF THE HEATER ELEMENT AND VOLTAGE OF THE POWER SOURCE

Agostino Di Trapani, Saint-Vaast, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Sep. 12, 1995, Ser. No. 526,777

Claims priority, application United Kingdom, Sep. 14, 1994, 9418477

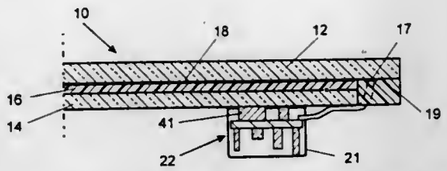
Int. Cl.[6] H05B *3/06;3/16;* **H01C** *1/012*

U.S. Cl. 219—522 **21 Claims**

1. A glazing panel, comprising:

at least one sheet of vitreous material;

a conductive transparent coating which is provided on at least one face of at least one sheet of the at least one sheet of vitreous material and which constitutes a heating element for the glazing panel when connected to an electrical power source; and



a control circuit for controlling heating power output of the glazing panel, the control circuit comprising adjustable means for controlling the heating power output to a preselected level as a function of voltage of the electrical power source and electrical resistance of the heating element.

5,624,592

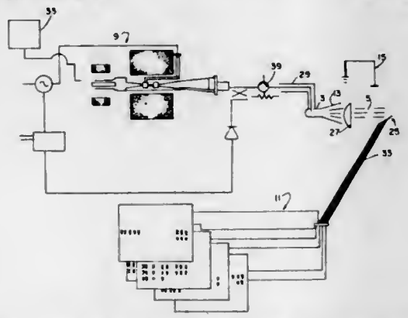
MICROWAVE FACILITATED ATMOSPHERIC ENERGY PROJECTION SYSTEM

Philip J. Paustian, Panama City, Fla., assignor to Cerberus Institute for Research and Development, Inc., Warner Robins, Ga.

Filed Oct. 19, 1994, Ser. No. 325,616

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—679 **28 Claims**



1. A system for projecting energy using microwave radiation comprising a transmitter for generating microwave radiation, a waveguide connected to the transmitter by a first cable, for receiving and directing the microwave radiation from the transmitter, a power supply connected to the transmitter, an antenna connected to the waveguide for conducting and projecting microwave energy for exciting and heating gas molecules in a channel extending from the antenna, an electrode placed in the channel for releasing a charge into the channel, and an electric charge source, connected to the electrode by a second cable, for delivering a charge to the electrode.

5,624,593

YARN ADVANCING HEATED GODET HAVING TEMPERATURE CONTROLLING SENSORS

Gerhard Martens, Remscheid, Germany, assignor to Barmag AG, Remscheid, Germany

PCT No. PCT/EP93/02629, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/08080, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 28, 1993, Ser. No. 406,977

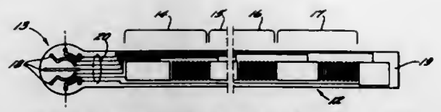
Claims priority, application Germany, Oct. 1, 1992, 42 32 967.1; Mar. 23, 1993, 42 09 281.0

Int. Cl.[6] H05B *6/14*

U.S. Cl. 219—619 **6 Claims**

1. A godet for guiding and advancing a yarn and comprising

a godet casing (3) mounted to a support frame for rotation about a central axis, with said godet casing having a hollow interior



which includes a cylindrical inside wall which coaxially surrounds and faces said central axis,

a plurality of stationary and axially spaced apart heating elements (**7–10**) mounted to said support frame so as to be positioned within the hollow interior of said godet casing and immediately adjacent the inside wall thereof, and

a plurality of axially spaced apart temperature sensors (**14–17**) mounted to the inside wall of the godet casing so as to be adjacent respective ones of said heating elements, the temperature sensors each being in the form of a flat temperature measuring unit which is mounted to the inside wall of the godet casing, and with the temperature sensors being supported in a unitary elongate strip, such that the sensors are axially aligned, and

wherein the unitary strip includes a coating (**19**) of an insulating material, and further including exposed tapping contacts (**18**) connected to respective sensors via conduction lines (**20**).

5,624,594

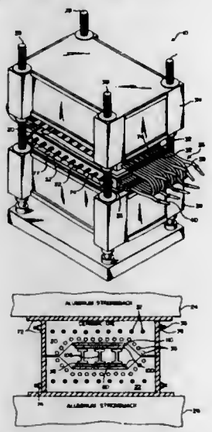
FIXED COIL INDUCTION HEATER FOR THERMOPLASTIC WELDING

Marc R. Matsen, Seattle; John A. Mittleider, Kent; Karl A. Hansen, deceased, late of Seattle, and by John J. deJong, executor, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 341,779, Nov. 18, 1994, which is a continuation-in-part of Ser. No. 151,433, Nov. 12, 1993, Pat. No. 5,420,400, Ser. No. 169,655, Dec. 16, 1993, Pat. No. 5,530,227, and Ser. No. 92,050, Jul. 15, 1993, Pat. No. 5,410,133, which is a division of Ser. No. 681,004, Apr. 5, 1991, Pat. No. 5,229,562, said Ser. No. 169,655is a continuation-in-part of Ser. No. 777,739, Oct. 15, 1991, Pat. No. 5,410,132. This application Jun. 6, 1995, Ser. No. 469,134

Int. Cl.[6] H05B *6/40*

U.S. Cl. 219—633 **15 Claims**



1. An induction heating apparatus, comprising:

(a) a pair of ceramic dies, each die having a die face for seating with the other die in a closed position, the closed die faces defining a cavity having peripheral walls for containing a workpiece, the dies containing a plurality of substantially straight induction coil segments adjacent all the walls of the cavity to surround the cavity along all sides;

(b) means for connecting the coil segments into a solenoid coil having a centerline;

(c) a pair of strongbacks for holding the dies and for moving the dies between an open position permitting loading of a workpiece into the cavity and the closed position wherein the workpiece is substantially along the centerline of the coil.

5,624,595

REFRIGERANT COMPOSITION

Eiichi Sato, 802-8, Nagamine-machi, Kumamoto-shi, Kumamoto, Japan, and Oho Suk Jae, Seoul, Rep. of Korea, assignors to Eiichi Sato, Kumamoto, Japan

Filed Jan. 24, 1996, Ser. No. 590,597

Claims priority, application Japan, Jan. 25, 1995, 7-027679

Int. Cl.[6] C09K *5/04*

U.S. Cl. 252—68 **7 Claims**

1. A non-azeotropic refrigerant composition for use in a refrigerator comprising a compressor, a condenser, a receiver, an expansion valve and an evaporator, said refrigerant composition consisting essentially of:

at least one C_1–C_4 gaseous paraffinic hydrocarbon,

a polysiloxane flame-retardant for the gaseous hydrocarbon, and

at least one ether of the formula R—O—R' wherein R and R' are hydrocarbyl groups.

5,624,596

COMPOSITION WITH PENTAFLUOROETHANE, DIFUOROMETHANE, AND A C4-C9 HYDROCARBON

Brooks S. Lunger, Newark, and Glenn S. Shealy, Hockessin, both of Del., assignors to E. I. Dupont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,622, Jan. 3, 1994, Pat. No. 5,458,798, which is a continuation-in-part of Ser. No. 14,293, Feb. 5, 1993, abandoned. This application May 8, 1995, Ser. No. 435,078

Int. Cl.[6] C09K *5/04*

U.S. Cl. 252—68 **6 Claims**

1. A non-flammable composition consisting essentially of difluoromethane, pentafluoroethane and at least one C4 to C9 hydrocarbon present in an amount of greater than 0 wt % to less than about 6 wt %.

5,624,597

REAGENT COMPOSITIONS FOR ANALYTICAL TESTING

Steven N. Buhl, Cupertino; Terri Bogart, Mountain View; Tammy Burd; Bhaskar Bhayani, both of Fremont; Christian Skieller, Menlo Park; Chi-Sou Yu, Saratoga; Thuy N. Tang, San Jose; Vladimir E. Ostoich, Los Altos; Branko Huč, Mountain View, and Carol T. Schembri, San Mateo, all of Calif., assignors to Abaxis, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 747,179, Aug. 19, 1991, Pat. No. 5,413,732. This application May 8, 1995, Ser. No. 436,670

Int. Cl.[6] C09K *3/00;* **G01N** *31/00*

U.S. Cl. 252—182.11 **51 Claims**

1. A method for forming reagent spheres comprising reagents for analyzing a biological sample, the method comprising the steps of:

forming an aqueous solution of the reagents;

dispensing uniform, precisely measured drops of the aqueous solution into a cryogenic liquid, whereby the drops are frozen;

lyophilizing the frozen drops, thereby forming the reagent spheres.

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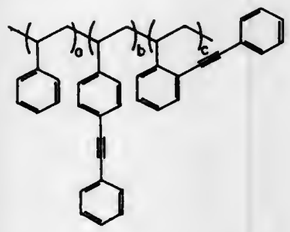
MATERIALS FOR THE SCAVANGING OF HYDROGEN AT HIGH TEMPERATURES

Timothy J. Shepodd, 330 Thrasher Ave., Livermore, Alameda County, Calif. 94550, and Bradley L. Phillip, 20976 Fairmount Blvd., Shaker Heights, Cuyahoga County, Ohio 44120

Filed Apr. 18, 1995, Ser. No. 424,775

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—182.12 **11 Claims**



1. A hydrogen getter composition, comprising:

a) an organic compound, said organic compound having the formula R=R', wherein R and R' are taken from the group consisting of benzene, styrene, naphthalene, anthracene, biphenyl, fluorene, phenanthrene, pyrene, alkyl substituted derivatives, alkenyl substituted derivatives, alkynyl substituted derivatives and polymers thereof; and

b) a hydrogenation catalyst for catalyzing the reaction between said organic compound and hydrogen and its isotopes.

5,624,599

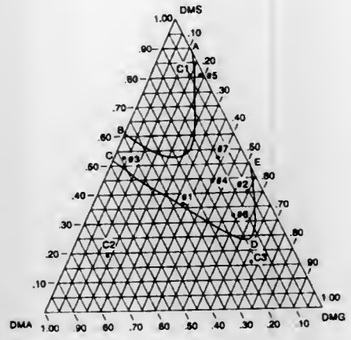
LIQUID HARDENERS FOR SOIL GROUTING FORMULATIONS

Joel J. Gummeson, Belchertown, and Alexandra Torres, West Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1995, Ser. No. 541,994

Int. Cl.[6] B01J *13/00;* **C09K** *17/46;* **E02D** *3/12*

U.S. Cl. 252—182.28 **4 Claims**



1. Liquid hardeners for soil grouting formulations having an acid content no more than 0.1 mg KOH per gm and comprising dimethyl ester mixtures of dimethyl succinate, dimethyl glutarate and dimethyl adipate at weight % concentrations lying within the area bounded by ABCDEA in the drawing in this specification.

5,624,600

OPTICALLY ACTIVE COMPOUND, LIQUID CRYSTAL COMPOSITION CONTAINING THE COMPOUND, LIQUID CRYSTAL DEVICE USING THE COMPOSITION, LIQUID CRYSTAL APPARATUS AND DISPLAY METHOD

Takao Takiguchi, Tokyo; Takashi Iwaki, Machida; Takeshi Togano, Yokohama; Yoko Kosaka, Atsugi, and Shinichi Nakamura, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

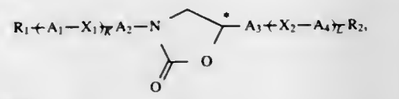
Filed May 16, 1995, Ser. No. 442,338

Claims priority, application Japan, May 16, 1994, 6-124670; Apr. 14, 1995, 7-112700

Int. Cl.[6] C09K *19/34;* **G02F** *1/13;* **C07D** *263/20*

U.S. Cl. 252—299.61 **18 Claims**

1. An optically active compound represented by the following formula (I):



(I)

in which

R_1 and R_2 independently denote halogen, H, CN, or a linear, branched or cyclized alkyl group having 2–30 carbon atoms, said alkyl group being capable of including one or two or more non-adjacent methylene groups which are optionally replaced by —O—, —S—, —CO—, —CO—O—, —O—CO—, —CH=CH— or —C≡C— and capable of including at least one H which is optionally replaced by F;

A_2 denotes 1,4-phenylene; 1,4-phenylene having one or two substituents selected from F, Cl, Br, CH_3, CF_3 and CN; pyrimidine-2,5-diyl; pyridine-2,5-diyl; thiophene-2,5-diyl; 2,6-naphthylene; thiazole-2,5-diyl; thiadiazole-2,5-diyl; pyrazine-2,5-diyl; pyridazine-3,6-diyl; benzothiazole-2,6-diyl; benzoxazole-2,5-diyl; indan-2,5-diyl; 2-alkylindan-2,5-diyl having a linear or branched alkyl group having 1–18 carbon atoms; coumaran-2,5-diyl; 2-alkylcoumaran- 2,5-diyl having a linear or branched alkyl group having 1–18 carbon atoms; quinoxaline-2,6-diyl; or quinoline-2,6-diyl;

A_1, A_3 and A_4 independently denote A_2; 1,4-cyclohexylene; 1,3-dioxane-2,5-diyl; or 1,3-dithiane-2,5-diyl;

K and L are independently 0 or 1;

X_1 and X_2 independently denote a single bond, —COO—, —OCO—, $—CH_2O—$, $—OCH_2—$, $—CH_2CH_2—$ or —C≡C—;

* denotes the location of an optically active center; and

with the proviso that R_1 and R_2 cannot be H at the same time.

5,624,601

SILACYCLOHEXANE COMPOUNDS, A LIQUID CRYSTAL COMPOSITION COMPRISING THE SAME AND A LIQUID CRYSTAL DEVICE COMPRISING THE COMPOSITION

Takaaki Shimizu; Takeshi Kinsho; Tsutomu Ogihara; Tatsushi Kaneko; Mutsuo Nakashima, all of Niigata-ken, and Hideshi Kurihara, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

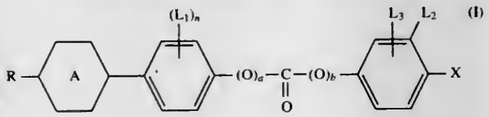
Filed Oct. 20, 1995, Ser. No. 546,254

Claims priority, application Japan, Oct. 20, 1994, 6-282739; Nov. 10, 1994, 6-301328

Int. Cl.[6] C09K *19/34;19/30;* **C07F** *7/08*

U.S. Cl. 252—299.61 **11 Claims**

1. A silacyclohexane compound of the following formula (I)



(I)

wherein R represents a linear alkyl group having from 1 to 10 carbon atoms, a branched alkyl group having from 3 to 8 carbon atoms, an alkoxyalkyl group having from 2 to 7 carbon atoms, a mono or difluoroalkyl group having from 1 to 10 carbon atoms or an alkenyl group having from 2 to 8 carbon atoms;



represents a trans-1-sila-1,4-cyclohexylene group or trans-4-sila-1,4-cyclohexylene group in which the silicon atom at the 1 or 4 position has a substituent of H, F, Cl or CH_3; L_1 represents F, L_2 and L_3 independently represent H, F, Cl or CH_3; X represents a linear alkyl group having from 1 to 10 carbon atoms, a linear alkoxy group having from 1 to 10 carbon atoms, an alkoxyalkyl group having from 2 to 7 carbon atoms, CN, F, Cl, CF_3, CF_2Cl, CHFCl, OCF_3, OCF_3 Cl, OCHFCl, $OCHF_2$, $(O)_lCY{=}CX_1X_2$ wherein l is 0 or 1, Y and X1 independently represent H, F or Cl, X_2 represents F or Cl, or $O(CH_2)_r(CF_2)_sX_3$ wherein r and s are, respectively, 0, 1 or 2 provided that r+s=2, 3 or 4, X_3 represents H, F or Cl and n is a n integer of 0, 1, or 2 and a and b are, respectively, 0 or 1 provided that it a+b=1.

5,624,602

METHOD OF IMPROVING THE MAINTENANCE OF A FLUORESCENT LAMP CONTAINING TERBIUM-ACTIVATED CERIUM MAGNESIUM ALUMINATE PHOSPHOR

Joseph J. Lenox, Towanda, and Richard I. Manahan, Dushore, both of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Continuation of Ser. No. 158,806, Nov. 24, 1994, abandoned, which is a continuation of Ser. No. 608,422, Nov. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 412,039, Sep. 25, 1989, abandoned. This application Dec. 30, 1994, Ser. No. 367,671

Int. Cl.[6] C09K *11/59;* **H01J** *63/06*

U.S. Cl. 252—301.4 F **2 Claims**



1. A process for improving the maintenance of a fluorescent lamp containing terbium-activated cerium magnesium aluminate phosphor having the general formulation $CeMgAl_{11}I_{19}$:Tb, comprising the steps of:

a) combining a terbium-activated cerium magnesium aluminate phosphor with small particle size aluminum oxide having a particle size of 0.02 micrometers in an amount of about 0.1% to about 0.4% by weight of said phosphor to form a uniform mixture;

b) wet-milling said mixture in water in an amount of about 0.35 gallon of water per pound of said phosphor for about 15 minutes;

c) wet-screening said mixture to remove particles greater than 25 micrometers in diameter;

d) removing said water from the wet-screened mixture by filtering and drying said wet-screened mixture to form a dry milled phosphor;

e) deagglomerating said dry milled phosphor to obtain a stir-in terbium-activated cerium magnesium aluminate phosphor; and

f) coating the interior of a fluorescent lamp envelope with said stir-in terbium-activated cerium magnesium aluminate phosphor.

5,624,603

BARIUMFLUOROHALIDE PHOSPHOR COMPRISING CALCIUM IONS AT THE SURFACE

Paul Leblans, and Lodewijk Neyens, both of Kontich, Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 26, 1996, Ser. No. 622,604

Claims priority, application European Pat. Off., Apr. 3, 1995, 95200833

Int. Cl.[6] C09K *11/61;* **G03C** *1/675*

U.S. Cl. 252—301.4 H **11 Claims**

1. A stimulable phosphor panel comprising a bariumfluorohalide phosphor characterised in that in said phosphor at least 1 mole % of the Ba-ions are replaced by Ca-ions and at least 10% of the total amount of Ca-ions are located closely to the surface of said phosphor particles.

5,624,604

METHOD FOR STABILIZING CERAMIC SUSPENSIONS

Mehrdad Yasrebi, 9750 SE. Talbert, Clackamas, Oreg. 97015; William W. Kemp, 4216 SE. Adams, Milwaukie, Oreg. 97222; David H. Sturgis, 17575 SE. Braden Ct., Gladstone, Oreg. 97027; Ilhan A. Aksay, 16 Kimberly Ct., Princeton, N.J. 08540, and Hamazo Nakagawa, #402 Nishi-onda Apartment, 7-52, Kamihara-cho 2-chome, Ube City, Yamaguchi 755, Japan

Filed May 9, 1994, Ser. No. 239,706

Int. Cl.[6] B01J *13/00;* **C04B** *35/04;35/505;* **C09C** *3/08*

U.S. Cl. 252—313.1 **50 Claims**

1. A method for dispersing aqueous suspensions of reactive, water-soluble ceramics and reducing the rate of ceramic dissolution and hydration to maintain a dispersed suspension for a period of greater than about a day, comprising forming an aqueous ceramic suspension from ingredients comprising from about 0.1 weight percent to about 5.0 weight percent, based on the dry weight of the ceramic, of an organic compound that adsorbs on the surface of the ceramic, the organic compound being selected from the group consisting of hydroxylated benzoic acids.

5,624,605

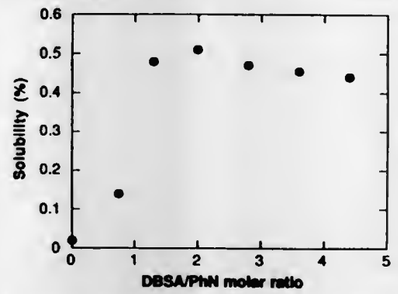
PROCESSIBLE FORMS OF ELECTRICALLY CONDUCTIVE POLYANILINE

Yong Cao, Goleta; Paul Smith, and Alan J. Heeger, both of Santa Barbara, all of Calif., assignors to Uniax Corporation, Santa Barbara, Calif.

Continuation of Ser. No. 259,138, Jun. 13, 1994, which is a continuation of Ser. No. 800,559, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 714,165, Jun. 12, 1991, Pat. No. 5,232,630. This application Jun. 7, 1995, Ser. No. 487,019

Int. Cl.[6] H01B *1/00;1/20;1/24*

U.S. Cl. 252—500 **32 Claims**



1. A conductive liquid, essentially solvent-free polymer composition comprising a nonconductive or semiconductive substrate selected from the group consisting of molten and liquid bulk

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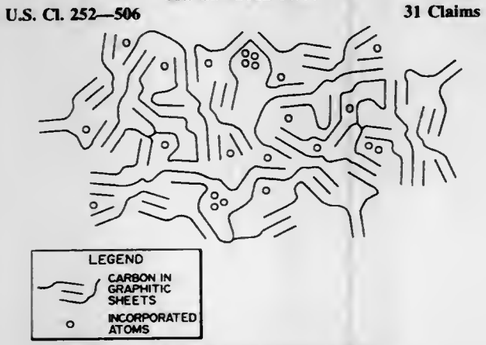
polymers and liquid prepolymers and monomers having a dielectric constant below 22 having intimately mixed therewith polyaniline of film-forming molecular weight in admixture with an effective protonating amount of a protonic acid, the counter-ion of said protonic acid being functionalized so as to be compatible with the substrate and forming a complex with the polyaniline having a conductivity greater than about 10^{-3} S-cm^{-1} and imparting conductivity to the polymeric composition.

5,624,606

CARBONACEOUS HOST COMPOUNDS AND USE AS ANODES IN RECHARGEABLE BATTERIES

Alfred M. Wilson, Burnaby, and Jeffery R. Dahn, Surrey, both of Canada, assignors to Moli Energy (1990) Limited, Canada

Filed Apr. 25, 1995, Ser. No. 428,656
Claims priority, application Canada, May 3, 1994, 2122770
Int. Cl.[6] C01B *31/00*
U.S. Cl. 252—506 **31 Claims**



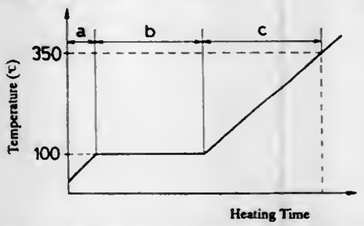
1. A carbonaceous insertion compound comprising:
a pre-graphitic carbonaceous host C having organized and disorganized structural regions; and
atoms of an element B selected from the group consisting of Sn, Al, Si, Cd, Pb, Bi and Sb, incorporated into, and compatible with, the host C wherein the structure of the organized regions of the host C is substantially unaffected by said incorporation.

5,624,607

FIRE-RESISTANT COMPOSTION, PANEL AND EXTERNAL WALL FOR VARIOUS BUILDINGS

Masami Kanai, and Tadashi Sakai, both of Osakashi, Japan, assignors to Stylite Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 26, 1995, Ser. No. 506,917
Claims priority, application Japan, Aug. 2, 1994, 6-181549; Aug. 2, 1994, 6-181553
Int. Cl.[6] C09K *21/02*
U.S. Cl. 252—606 **1 Claim**



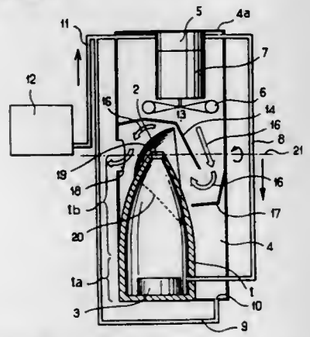
1. A fire resistant composition for forming a fire resisting lining, consisting essentially of ettringite, inorganic particulate compounds and titanium oxide, wherein said composition contains 5–500 parts by weight of inorganic particulate compounds and 0.01–50 parts by weight of titanium oxide powder, both said compounds and powder blended with 100 parts by weight of ettringite; with the proviso that said inorganic particulate compounds release noncombustible gases at 100°–1000° C., and are at least one of the group consisting of calcium carbonate, bentonite, sepiolite, sodium bicarbonate and magnesium hydroxide.

5,624,608

DEVICE FOR SPRAYING, IN PARTICULAR WATER IN THE FORM OF MICRODROPLETS, CAPABLE OF FUNCTIONING IN A NONSTATIONARY ENVIRONMENT

Gil Ching, Cagnes sur Mer; Anne Giovanini, Valbonne; Daniel Guyomar, Nice; Jean-Denis Sauzade, Grasse; Georges Fonzes, Antibes; Michel Gschwind, Grasse, and Jean Lauretti, Le Cannet, all of France, assignors to IMRA Europe SA, Valbonne, France

Filed Jun. 30, 1995, Ser. No. 497,476
Claims priority, application France, Jul. 4, 1994, 94 08204
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—30 **4 Claims**



1. A spraying device comprising:
a tank that has an opening at an upper part thereof, the tank being configured to contain a liquid to be sprayed while being filled up to the opening and wherein the cross-section of the tank has a progressive constriction toward the opening;
a piezoelectric element configured to emit waves into the liquid, the waves being focused adjacent the opening of the tank;
a fan configured to circulate air in the vicinity of the surface of the liquid;
a collection container in which the tank is located;
a pump connected to the collection container and to the tank and configured to circulate liquid continuously between the tank from which the liquid overspills and the collection container where the liquid is collected; and
a liquid reservoir connected to the pump for keeping a quantity of liquid circulating in the spraying device substantially constant.

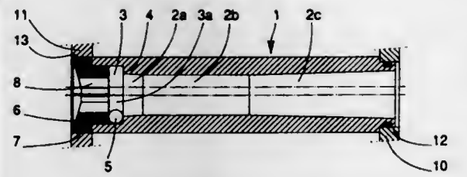
5,624,609

ENHANCEMENTS TO THE AIR INJECTION DEVICES IN A PAPER PULP FLOW FOR DE-INKING THEREOF

Alain Serres, Relms; Alain Meuret, and Philippe Colin, both of Vitry Le Francois, all of France, assignors to E & M Lamort, Vitry Le Francois, France

Filed Nov. 15, 1995, Ser. No. 558,316
Claims priority, application France, Nov. 28, 1994, 94 14212
Int. Cl.[6] B01F *3/04*; B03D *1/24*
U.S. Cl. 261—36.1 **6 Claims**

1. An air injector for the foaming of a mass of paper pulp to be de-inked, comprising a hollow cylindrical tube (1) whose interior bore comprises: a first part (2) having a convergent tapered bore (2*a*) and a divergent tapered bore (2*c*) connected to one another by a cylindrical bore (2*b*), and a second part (3) including a cylindrical bore substantially coaxially with said first part (2) and of a diameter greater than a diameter of the convergent tapered bore (2*a*) with which it communicates, this cylindrical bore (3) being fitted, immediately before its junction with said convergent tapered bore, with a tangential hole (5) for the admission of air and being occluded by a stopper (6) fitted with an opening (8) for the introduction of the pulp, the thickness of the stopper (6) being less than the length of the bore (3) so as to provide a cylindrical air inlet chamber (3*a*).

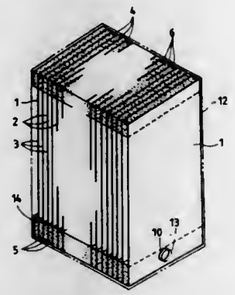


5,624,610

HUMIDIFIER

Hisao Yokoya, and Kenzo Takahashi, both of Gifu, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 472,048, Jun. 6, 1995, abandoned.
This application Jul. 9, 1996, Ser. No. 680,554
Claims priority, application Japan, Feb. 17, 1995, 7-029594; Mar. 1, 1995, 7-041998
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—104 **18 Claims**



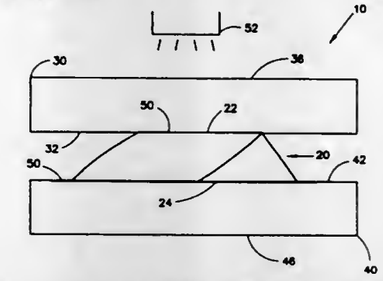
1. A humidifier, comprising:
a plurality of water guide components, each water guide component including,
a water guide member made of porous material permeable to water, and
an envelope-shaped film member enclosing the water guide member, the film member being formed of a porous moisture permeable film which prohibits liquid water to permeate therethrough and permits water vapor to permeate therethrough;
first and second plate-like spacers attached to a surface of the water guide component, said first and second plate-like spacers being disposed distant from each other, the first spacer having a water supply hole communicating with the inside of the water guide component to supply water thereto, said water guide component in combination with the first and second spacers constituting a moistening function member, and
wherein a plurality of the moistening function members are laid one over another so that the water supply holes communicate with each other and that air supply layers defined by the first and second spacers and the water guide components are arranged one over another.

5,624,611

REPLICATION OF OPTICALLY FLAT SURFACES

Thomas M. Lippert, Princeton, N.J., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 996,251, Dec. 23, 1992, abandoned.
This application Jul. 26, 1995, Ser. No. 444,272
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.36 **9 Claims**



1. A method of replicating optically flat surfaces, comprising the steps of:
providing a plastic optical element having a machined flat surface and an additional machined flat surface parallel to and facing opposite said machined flat surface, each of said machined flat surface and said additional machined flat surface including a plurality of ridges thereon;
applying a coating material to a substantially optically perfect flat;
rolling said plastic optical element onto and positioning said plastic optical element on said coating material such that grooves between said plurality of ridges on said machined flat surface fill with said coating material;
applying additional coating material to said additional machined flat surface of said plastic optical element;
rolling an additional substantially optically perfect flat onto and positioning said additional substantially optically perfect flat on said additional machined flat surface such that grooves between said plurality of ridges on said additional machined flat surface fill with said additional coating material;
curing said coating material sandwiched between said plastic optical element and said substantially optically perfect flat and said additional coating material sandwiched between said plastic optical element and said additional substantially optically perfect flat resulting in a cured assembly; and
removing said optically perfect flat and said additional optically perfect flat from said cured coating material and cured additional coating material, respectively.

5,624,612

NONAGGREGATING HYDROCOLLOID MICROPARTICULATES, INTERMEDIATES THEREFOR, AND PROCESSES FOR THEIR PREPARATION

Christopher J. Sewall, Princeton, N.J.; Donald W. Renn, Glen Cove; Peter J. Riley, Camden, both of Me.; William R. Thomas, Newtown, Pa.; Lisa E. Dumont, Rockport, Me., and Guy A. Crosby, Princeton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 111,800, Aug. 25, 1993. This application Jun. 7, 1995, Ser. No. 476,989
Int. Cl.[6] B01J *13/02; 13/04*
U.S. Cl. 264—4.1 **12 Claims**

1. A process for the preparation of substantially dry, rehydratable, water-dispersible, gel-forming, porous hydrocolloid microparticulates which comprise:
(a) a gel-forming hydrocolloid which comprises a matrix of the porous microparticulates; and
(b) at least one water-soluble, non-gelling, hydration-enhancing hydrocolloid; wherein the component (a) matrix contains component (b) internally within its porous structure, and

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wherein component (b) may be on at least a portion of the outer surfaces of the microparticulates comprising the steps of
(a) forming hydrocolloid gel microparticulates from the gel-forming hydrocolloid,
(b) contacting the hydrocolloid microparticulates with at least one water-soluble, non-gelling, hydration enhancing hydrocolloid in an aqueous medium, and
(c) drying the resulting hydrocolloid microparticulates.

5,624,613

RIGIDIZED REFRACTORY FIBROUS CERAMIC INSULATION

Michael E. Rorabaugh, Seattle; Darryl F. Garrigus, Issaquah, and Juris Verzemnieks, Browns Pt., all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 40,217, Apr. 1, 1993, abandoned. This application May 12, 1995, Ser. No. 439,705
Int. Cl.[6] B29C *67/20;41/16*
U.S. Cl. 264—44 **14 Claims**



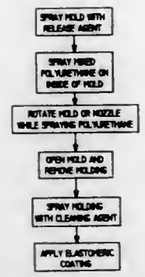
10. A process for forming a ceramic insulation comprising the steps of:
(a) forming a slurry of components selected from the group consisting of ceramic fibers, microparticles, and mixtures thereof;
(b) molding the slurry to form a wet mat;
(c) impregnating the wet mat with a sol binder;
(d) exposing the mat to a catalyst for the sol by flowing catalyst into an atmosphere contacting the mat;
(e) after completing the flowing of catalyst operation, subjecting the mat to a catalyst soak time of at least about 0.5 hour per centimeter of the mat's thickness to complete diffusion of catalyst through the mat and cause the sol to gel; and
(f) drying the mat to produce ceramic insulation after the catalyst soak time is complete.

5,624,614

METHODS OF FORMING CARVABLE SHELL ARTICLES

Jeffrey A. Chapman, 426 N. 44th St., #100, Phoenix, Ariz. 85008

Division of Ser. No. 369,704, Jan. 6, 1995, Pat. No. 5,491,007, which is a division of Ser. No. 29,466, Mar. 11, 1993, Pat. No. 5,397,609. This application Jun. 7, 1995, Ser. No. 485,920
Int. Cl.[6] B29C *44/06*
U.S. Cl. 264—45.7 **29 Claims**



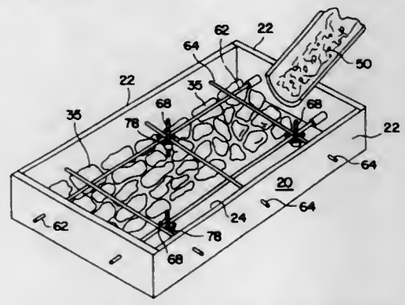
1. A process of applying polyurethane foam material comprising:
(a) placing a generally spherical, hollow mold and a spray nozzle so as to position the nozzle along a central axis of the mold;
(b) spraying polyurethane composites through the nozzle and directing said composites radially at the inside surface of the mold, causing the composites to form a foam material against portions of the inside surface at which the composites are sprayed;
(c) moving the mold and the nozzle relative to each other so as to cause the mold to revolve axially with respect to the nozzle, so that the composite material is sprayed at enough portions of the inside surface to form a hollow, generally spherical polyurethane foam shell;
(d) separating the mold and the formed polyurethane foam shell;
(e) coating the polyurethane foam shell; and
(f) using a pocketknife to carve holes extending through the material of the shell, which holes are shaped and positioned to visually represent a face.

5,624,615

METHOD OF MANUFACTURING MODULAR STONE PANELS

Daniel R. Sandorff, 145 Raritan River Rd., Califon, N.J. 07830

Filed Aug. 29, 1995, Ser. No. 521,038
Int. Cl.[6] B28B *1/08;1/16*
U.S. Cl. 264—71 **12 Claims**



1. A method for making modular stone panels simulating assembled masonry, comprising the steps of:
providing a mold frame having a bottom and perimeter walls;
setting a first stone substantially directly on the bottom of the mold frame and placing sand adjacent to the stone;
sliding the stone laterally across the bottom of the mold frame and through the sand to one of the perimeter walls, thereby packing the sand between the stone and the perimeter wall while substantially keeping the stone supported stably on the bottom of the mold frame;
setting additional stones on the bottom of the mold frame and sliding the stones laterally across the bottom and through the sand to the perimeter walls or to at least one other of the stones, in each case packing sand against the stones and between the perimeter walls and the stones while keeping the stones supported substantially directly against the bottom of the mold frame, and continuing until an array of stones resides in at least part of the mold frame with sand packed between the stones set adjacent to the bottom of the mold frame;
pouring concrete over the stones in the mold frame, the concrete bonding part way into the sand toward the bottom of the mold frame, and allowing the concrete to cure forming a modular stone panel simulating assembled masonry; and,
removing the panel from the mold frame, and removing remaining sand not bonded with the concrete.

5,624,616

METHOD FOR CO-REFINING DRY URBAN WOOD CHIPS AND BLENDS OF DRY URBAN WOOD CHIPS AND THERMOPLASTIC RESINS FOR THE PRODUCTION OF HIGH QUALITY FIBERBOARD PRODUCTS

S. Hunter W. Brooks, 364 Thalia Ave., Rochester, Mich. 48307

Filed Apr. 20, 1995, Ser. No. 425,840
Int. Cl.[6] B29C *67/00*
U.S. Cl. 264—83 **18 Claims**

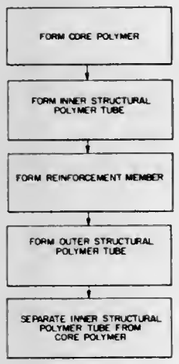
1. A method for forming lignocellulose fibers which are suitable for consolidating into a fiberboard product, said method comprising the steps of:
providing a plurality of lignocellulose chips derived from one or more materials chosen from the group consisting of urban wood waste, demolition wood waste, pallets and adhesive-coated papers, said plurality of lignocellulose chips being characterized by a nominal moisture content of about 20% by weight or less;
heating said plurality of lignocellulose chips in a saturated steam atmosphere characterized by a temperature of at least about 170° C. and a pressure of at least about 100 psig, said heating in said saturated steam atmosphere being for a duration sufficient to soften the lignin within said plurality of lignocellulose chips;
comminuting said plurality of heated lignocellulose chips in said saturated steam atmosphere so as to sufficiently abrade said plurality of lignocellulose chips, thereby resulting in the formation of uniformly sized lignocellulose fibers of sufficient diameter for consolidation into a predetermined shape and density; and
drying said lignocellulose fibers;
wherein said heating step entails supplying steam at a ratio of about 0.5 to about 0.75 pounds of steam per dry pound of said lignocellulose fibers produced by said comminuting and drying steps.

5,624,617

METHOD OF MANUFACTURE FOR CATHETER LUMEN LUBRICITY

Robert W. Sorabella, Boston, and Daniel O. Lausten, Danvers, both of Mass., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 30, 1994, Ser. No. 366,942
Int. Cl.[6] B29C *47/06*
U.S. Cl. 264—103 **18 Claims**



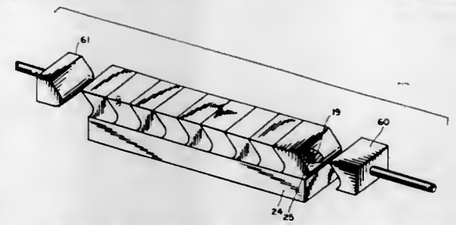
1. A method of manufacture for a lubricious, structurally integral liner for an intravascular catheter comprising the steps of:
(a) forming a core polymer into a solid shape, the core polymer including a melt blend of a base polymer and a lubricating polymer, the base polymer being blended at a concentration of less than 99.5% with the lubricating polymer;
(b) softening the core polymer under heat and pressure to the point of a partial phase change of the core polymer;
(c) liberating the lubricating polymer to the outer surface of the core polymer;
(d) providing a homogeneous melt of an inner structural polymer;
(e) forming a layer of the inner structural polymer into a tube over at least a portion of the core polymer;
(f) leaching the lubricating polymer primarily to the inner surface of the inner structural polymer tube;
(g) integrating the inner structural polymer tube to form the intravascular catheter, and;
(h) separating the inner structural polymer tube from the core polymer.

5,624,618

PROCESS OF MAKING BRAIDED COMPOSITE PART

Thomas P. Forman, Greenwich; Rance B. Fox, Milford; George E. Sabak, Monroe, all of Conn.; Timothy A. Sands, Muncy Valley, Pa., and Paul A. Vallier, Kensington, Conn., assignors to Dow-United Technologies Composite Products, Inc., Wallingford, Conn.

Division of Ser. No. 291,284, Aug. 16, 1994, which is a division of Ser. No. 152,508, Nov. 15, 1993, Pat. No. 5,399,395, which is a continuation of Ser. No. 704,999, May 24, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,321
Int. Cl.[6] B29C *70/30;* **B32B** *5/12;31/00*
U.S. Cl. 264—103 **10 Claims**



1. A method for producing a braided composite part having a complex geometry cavity comprising:
providing a plurality of net shaped removable mandrels each having a shape to match the cavity,
stacking the plurality of net shaped removable mandrels in an end to end configuration, to form an assembly,
braiding fibers over the assembly, at a braid angle sufficient to assure conformance of the fibers to the mandrel surfaces,
placing the braided mandrels into a mold, and
injecting resin into the mold to produce the braided composite part.

5,624,619

MOULDED ARTICLES WITH LEATHER-LIKE SURFACE PROPERTIES FOR USE IN THE AUTOMOBILE INDUSTRY

Helmut Pelzer, Witten-Annen, Germany, assignor to HP - Chemie Pelzer Research & Development, Ltd., Waterford, Ireland

PCT No. PCT/EP93/01812, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/02300, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 10, 1993, Ser. No. 373,217
Claims priority, application Germany, Jul. 18, 1992, 42 23 703.3
Int. Cl.[6] B29C *70/06*
U.S. Cl. 264—109 **5 Claims**

1. Process for producing moulded articles for use in the automobile industry, said articles comprising a thermoplastic material or elastic duroplast, and ground leather waste having a fiber length of

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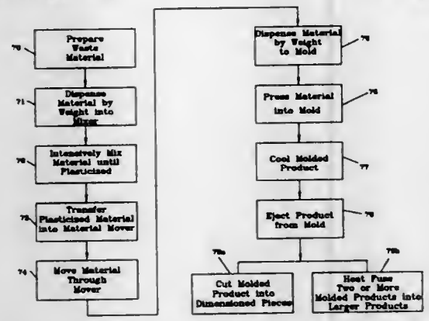
from 0.1 to 5 mm in an amount of from 60 to 95% per weight in relation to the moulded article, said process comprising polymerization or polycondensation of thermoplastic material or elastic duroplast, said thermoplastic material or elastic duroplast containing ground leather waste having a fiber length of from 0.1 to 5 mm added to the thermoplastic material or elastic duroplast in an amount from 60 to 95% per weight in relation to the moulder article during the polymerization or polycondensation.

5,624,620

PROCESS FOR MAKING NON-EXTRUDED MOLDED BOARDS AND SHEET PRODUCTS

James E. Turner, 4339 Walnut Hill La., Dallas, Tex. 75229

Filed May 3, 1995, Ser. No. 434,644
Int. Cl.[6] B29C *43/34*
U.S. Cl. 264—115 24 Claims



15. A non-extruding material mover for receiving a plasticized mixture of recycled waste materials, comprising:

a receiving hopper having a first compartment with sloped sides extending to a semicircular bottom for receiving the plasticized mixture, and a dispensing outlet for dispensing the plastcized material in a single mass;

a conveyor for moving the materials to the outlet end; and

a heater adjacent the dispensing outlet for maintaining the materials in a molten state during dispensing.

18. A non-extrusion method for producing molded produces from plasticized recycled waste materials in batch process; comprising the steps of:

preparing the recycled waste materials for plasticizing:

plasticizing, in the form of a single mass, a predetermined amount of recycled waste materials in an intensive mixer;

removing the single mass of plasticized recycled waste materials from the intensive mixer to a material mover;

moving the plasticized recycled waste materials through the material mover and dispensing a predetermined amount of the plasticized recycled waste materials into a mold.

5,624,621

PROCESS OF MAKING POLYPROPHYLENE FIBERS

Tadashi Asanuma, Takaishi; Tetsunosuke Shiomura, Tokyo; Shigeru Kimura; Nobutaka Uchikawa, both of Takaishi; Yoichi Kawai, Yokohama; Keigo Suehiro, Yokohama, and Satoshi Fukushima, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 15,056, Feb. 3, 1993, Pat. No. 5,478,646, which is a continuation of Ser. No. 562,841, Aug. 6, 1990, abandoned. This application Aug. 24, 1995, Ser. No. 518,816
Claims priority, application Japan, Aug. 25, 1989, 1-217403; Aug. 25, 1989, 1-217404
Int. Cl.[6] D01D *5/12*; D01F *6/06*
U.S. Cl. 264—176.1 6 Claims

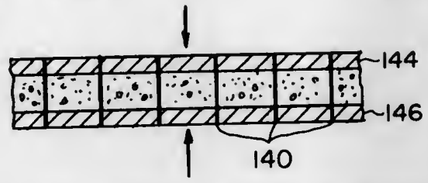
1. A process for preparing a fiber comprising extruding a raw material composed mainly of a polypropylene having a syndiotactic pentad fraction of 0.7 or more, wherein said raw material is extruded into a fibrous form.

5,624,622

METHOD OF FORMING A TRUSS REINFORCED FOAM CORE SANDWICH STRUCTURE

Joseph S. Boyce, Hanover; Glenn A. Freitas, Foxboro, and Thomas G. Campbell, Concord, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Division of Ser. No. 434,034, May 3, 1995, which is a continuation of Ser. No. 58,283, May 4, 1993, abandoned. This application Feb. 7, 1996, Ser. No. 598,194
Int. Cl.[6] B29C *43/18;43/20*
U.S. Cl. 264—258 9 Claims



1. A method of fabricating a reinforced foam core sandwich structure comprising:

disposing a plurality of discrete supporting tow members within a foam core, at least a number of said tow members each extending between the outer surfaces of said foam core;

assembling face sheets on the opposing faces of said foam core; and

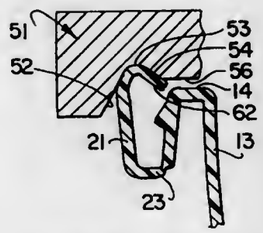
compressing said foam core to drive said tow members into said face sheets.

5,624,623

METHOD OF MAKING AN INWARDLY DIRECTED PROJECTION ON A PLASTIC CONTAINER

Daniel Luch, Morgan Hill, and Rawson Chenault, Newark, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation of Ser. No. 315,085, Sep. 29, 1994, abandoned, which is a division of Ser. No. 35,408, Mar. 23, 1993, Pat. No. 5,398,836. This application Jan. 16, 1996, Ser. No. 585,649
Int. Cl.[6] B29C *53/04;53/84*
U.S. Cl. 264—296 12 Claims



1. A method of forming an inwardly directed projection on a plastic container comprising the steps of

providing a container comprising a body having an open end and a lip surrounding said open end, a thin flat plastic band surrounding and spaced outward of said lip, means attaching said band to said body, said band having an upper end extending above said lip,

providing a tool having a bottom surface formed with a concavity which in cross-section has an inward-upward slanted first wall and a radius at the upper end of said first wall,

heating said tool to a temperature below the melting point of said plastic band and above a temperature to make said band flexible,

contacting said upper end of said band with said first wall a sufficient time to make said plastic band flexible,

moving said tool toward said container to curve said band inward-upward along said first wall, then around said radius until said upper end is bent into an inwardly directed annular projection,

retaining said tool in contact with said upper end to allow said projection to set,

removing said tool and permitting said band to cool,

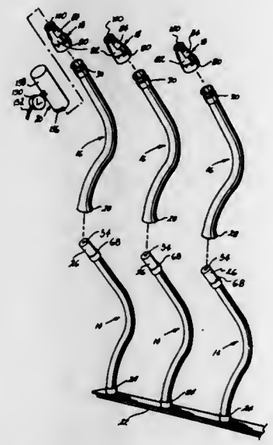
whereby said upper end is formed into inwardly-directed projection, said projection being above the level of said lip.

5,624,624

PROCESS FOR FORMING A THERMOSETTING ELASTOMERIC HOSE HAVING AN INTERNAL SOCKET FORMED THEREIN

H. Steven Roby, McBain, Mich., assignor to Cadillac Rubber & Plastics, Inc., Cadillac, Mich.

Division of Ser. No. 134,047, Oct. 12, 1993, Pat. No. 5,445,360. This application Apr. 6, 1995, Ser. No. 418,259
Int. Cl.[6] B29C *43/04*; B28B *11/00*
U.S. Cl. 264—318 6 Claims



1. A process for forming a contoured interior surface on a length of an elastomeric hose comprising the steps of:

providing a mandrel having at least one recess formed on an exterior surface of the mandrel;

mounting a length of uncured, thermosetting elastomeric hose on the mandrel so that the at least one recess is surrounded by at least a portion of the hose;

providing a forming cap assembly comprising a cap member and a plurality of sleeve members, the plurality of sleeve members being adapted for movement between an open position and a closed position wherein, in the closed position the sleeve members define a mold cavity therewithin, and wherein the sleeve members are adapted to radially expand from the closed position to the open position, a cross-sectional area defined within the plurality of sleeve members in the closed position being less than a cross-sectional area defined within the plurality of sleeve members in the open position;

mounting the forming cap assembly on the hose and mandrel with the sleeve members in the open position so that the sleeve members surround the at least one recess and said portion of the hose;

actuating the sleeve members to the closed position so that the sleeve members compress said portion of the elastomeric hose surrounding the recess and force part of the elastomeric hose into the at least one recess;

curing the elastomeric hose to form a cured elastomeric hose;

removing the forming cap assembly from the cured elastomeric hose and the mandrel; and

removing the cured elastomeric hose from the mandrel;

wherein the cured elastomeric hose has a contoured interior surface having a shape complementary to the at least one recess and exterior surface of the mandrel.

5,624,625

PROCESS FOR THE PREPARATION OF CERAMIC MATERIALS FREE FROM AUTO-ADHESION UNDER AND DURING AGING

Claude Le Gressus, Fontenay le Fleury; Claude Faure, Lesigny; Pierre Bach, Maison-Alfort; Guy Blaise, Clichy, and Daniel Treheux, Villeurbanne, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 119,139, Oct. 25, 1993, Pat. No. 5,435,946. This application Jun. 7, 1995, Ser. No. 486,893
Claims priority, application France, Mar. 21, 1991, 91 03454
Int. Cl.[6] B29C *71/04*
U.S. Cl. 264—406 5 Claims

1. Process for the preparation of ceramic parts including friction surfaces having reduced auto-adhesion under stress and during aging, said process including the steps of:

(a) pressing ceramic material to form parts having said friction surfaces;

(b) sintering the ceramic material from step (a);

(c) polishing said friction surfaces of the sintered material from step (b) with the formation of solid gangue;

(d) cleaning said friction surfaces to remove said solid gangue resulting from the polishing in step (c);

(e) roasting the cleaned friction surfaces from step (d) in the presence of oxygen; and

(f) doping the roasted surfaces of from step (e) with at least one metal oxide to provide said ceramic materials with increased dielectric susceptibility and homogeneity adjacent said friction surfaces.

4. Process for checking the manufacture of ceramic materials according to claim 1 wherein said ceramic material from step (f) has a permittivity ϵ defect distribution and dissipatable level of electrostatic power without deterioration thereof, and including the steps of determining the permittivity, defect distribution and dissipatable electrostatic power by measuring the electrostatic potential of the ceramic material using a scanning electron microscope.

5,624,626

METHOD OF TREATING A CERAMIC BODY TO FORM A WETTABLE SURFACE

Thomas J. Walz, 416 Columbia Ave., Fircrest, Wash. 98466, and Issak S. Rossovsky, 12509 35th Ave. NE. #108, Seattle, Wash. 98125

Filed Jun. 7, 1995, Ser. No. 475,358
Int. Cl.[6] B06B *1/02*
U.S. Cl. 264—430 19 Claims

1. A method for treating a ceramic body to provide a wettable surface on the ceramic body, comprising:

immersing the ceramic body in an alkaline hydroxide solution bath;

connecting the ceramic body to form an anode of an electrolytic cell;

connecting a stainless steel object to form a cathode of the electrolytic cell;

imposing a difference in electrical potential across the electrolytic cell sufficient to remove portions of the ceramic body to provide a pitted surface on the ceramic body which is wettable; and

removing the ceramic body from the alkaline hydroxide solution bath.

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5,624,627

PROCESS FOR PREPARING SURFACE-MODIFIED BIAXIALLY ORIENTED FILM OF HIGH MOLECULAR WEIGHT POLYETHYLENE

Kazuo Yagi; Hitoshi Mantoku; Akinao Hashimoto; Isaburo Higashi, and Yoshinori Akana, all of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 108,617, Aug. 26, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,949

Claims priority, application Japan, Dec. 27, 1991, 3-346523; Jun. 17, 1992, 3-158335

Int. Cl.[6] B29C *35/10;71/04*

U.S. Cl. 264—447 8 Claims



1. A process for preparing a surface-modified biaxially oriented film of high molecular weight polyethylene, which comprises:

(1) melt kneading together 20–75 parts by weight of a high molecular weight polyethylene (A) having an intrinsic viscosity (η) of at least 5.0 dl/g or more and 80–25 parts by weight of a hydrocarbon plasticizer (B) which is a solid at ordinary temperature and capable of making a uniform mixture with the high molecular weight polyethylene (A), followed by forming a raw fabric sheet from the resulting molten mixture,

(2) removing by extraction the hydrocarbon plasticizer (B) from the raw fabric sheet with a solvent (C) capable of dissolving said hydrocarbon plasticizer (B) to obtain an unstretched sheet containing substantially no residual hydrocarbon plasticizer (B),

(3) stretching at a temperature of less than 135° C. the unstretched sheet so that the stretch ratio in the lengthwise direction becomes 3 times or more and that in the crosswise direction becomes 3 times or more, thereby obtaining a stretched film having a specific surface area of 70 m^2/g or more and a fibril structure,

(4) heating the stretched film under the standard length constraint at a temperature of 132°–145° C. for 1 second to 10 minutes, thereby reducing said stretched film in specific surface area by 20 m^2/g or more to obtain a biaxially oriented film of high molecular weight polyethylene, and

(5) modifying the surface of the biaxially oriented film of high molecular weight polyethylene by subjecting the film surface to a surface treatment selected from the group consisting of corona discharge treatment, plasma discharge treatment, electron radiation treatment, and chemical modification, the chemical modification comprising providing a vinyl monomer having a hydrophilic group on the film surface and irradiating with electron rays the film surface to polymerize the applied vinyl monomer, whereby the resulting film has a contact angle of the film surface to a water drop at a level of 90° or less.

5,624,628

METHOD OF INTRODUCING A CASTING COMPOUND INTO A HOLLOW SPACE

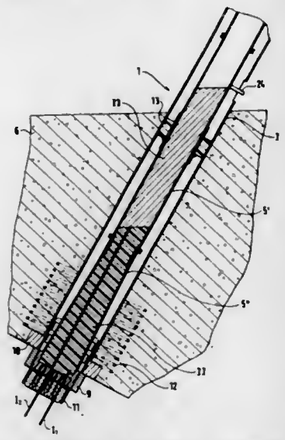
Werner Hansch, Utting; Christoph Nieberle, Fürstenfeldbruck, and Oswald Nützel, Munich, all of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Sep. 20, 1995, Ser. No. 531,130

Claims priority, application Germany, Sep. 22, 1994, 44 33 847.3

Int. Cl.[6] B29C *65/48*

U.S. Cl. 264—513 17 Claims



1. A method of introducing a casting compound composed of aggregates and a matrix with a hardening binder into a hollow space within a tubular sheathing of a tension member composed of one or more individual elements extending over an anchoring range of the tension member relative to a structural component, the method comprising first introducing into the hollow space a flow of compressed air and finely granular material through at least one tubular lance introduced in a longitudinal direction of the tension member through the anchoring range of the tension member, the finely granular material introduced into the hollow space forming a grain structure, and subsequently introducing the matrix in a liquid state into the grain structure.

5,624,629

INSTALLATION OF LATERAL LININGS WITH SEALING COLLAR FROM THE MAIN PIPELINE OUT

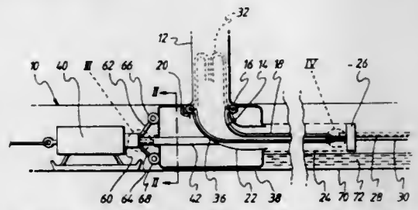
Eric Wood, Castletown, Isle of Man, assignor to Insituform (Netherlands) B.V., Netherlands

Continuation of Ser. No. 934,678, Sep. 10, 1992, Pat. No. 5,393,481. This application Feb. 27, 1995, Ser. No. 394,622

Claims priority, application United Kingdom, Apr. 23, 1990, 9009073

Int. Cl.[6] B29C *63/36*

U.S. Cl. 264—516 9 Claims



1. A method of lining a lateral pipe leading into a main pipe from the main pipe out, comprising

providing a resin impregnated lateral lining tube of finite length and open ended having at one end a collar of resin impregnated material with a central opening, the end of the lateral lining bonded to the collar about the opening, the collar adapted to extend into the main pipe and contact the interior surface of the main pipe at the location where the lateral meets the main pipe with the opposite end of the lateral lining extending into the lateral,

positioning the collar in the main pipe at the entrance to the lateral with the opening in the collar aligned with the lateral;

inserting the lateral lining into the lateral pipe using a fluid medium under pressure to evert the liner through the opening in the collar,

applying pressure to the lateral lining tube, and

applying fluid pressure to the collar on the surface of the main pipe to cure the collar against the main pipe and form a seal at the location where the lateral meets the main pipe as curing of the resin takes place.

5,624,630

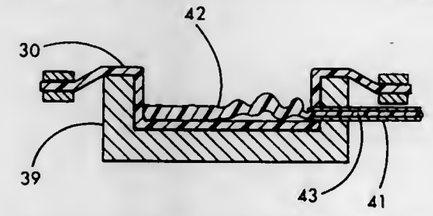
TWIN-SHEET THERMO-FORMING PROCESS WITH INJECTED REINFORCEMENT

Harlon W. Breezer, and William F. Price, both of Portage, Wis., assignors to TriEnda Corporation, Portage, Wis.

Division of Ser. No. 272,128, Jul. 8, 1994, which is a continuation of Ser. No. 518,011, May 2, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,800

Int. Cl.[6] B29C *51/12*

U.S. Cl. 264—553 2 Claims



1. A process of producing a twin-sheet thermoformed thermoplastic article having a reinforced section, the process comprising the steps of:

(a) heating first and second sheets of thermoplastic material;

(b) forming the heated first and second sheets in first and second molds respectively;

(c) injecting a quantity of heated thermoplastic material onto a selected location on the first sheet through the first mold and the first sheet; and

(d) pressing the heated second sheet in the second mold into contact with the heated first sheet in the first mold and the heated quantity of thermoplastic material at the selected location on the first sheet to fuse the two sheets and form the quantity of thermoplastic material between the sheets so that a fusion of the thermoplastic sheets and the quantity of thermoplastic material takes place at the selected location to produce an article having a continuous integral reinforced section of a desired shape and thickness.

5,624,631

IRON-BASED POWDER COMPOSITIONS CONTAINING GREEN STRENGTH ENHANCING LUBRICANTS

Sydney Luk, Lafayette Hill, Pa., assignor to Hoeganaes Corporation, Riverton, N.J.

Division of Ser. No. 306,209, Sep. 14, 1994, Pat. No. 5,498,276. This application Jun. 6, 1995, Ser. No. 468,439

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—23 15 Claims

9. A method for the manufacture of a compacted metal part, comprising:

(a) providing a metallurgic powder compositions comprising:

(i) a major amount of a metal powder consisting of iron-based or nickel-based powders, said metal powder having a weight average particle size in the range of about 25–350 microns; and

(ii) a minor amount of a solid compaction lubricant comprising at least about 10 percent by weight of a solid, particulate polyether having a formula:

$$H—[O(CH_2)_q]_n—OH$$

where q is from about 1 to about 7, and n is selected such that the polyether has a weight average molecular weight between about 10,000 and about 4,000,000, wherein said polyether has a weight average particle size between about 25 and 150 microns;

(b) compressing said powder composition in a die at elevated pressures to form a compacted part; and

(c) sintering said compacted part.

5,624,632

ALUMINUM MAGNESIUM ALLOY PRODUCT CONTAINING DISPERSOIDS

Stephen F. Baumann; Edward L. Colvin, both of Pittsburgh; Robert W. Hyland, Jr., Oakmont, and Jocelyn I. Petit, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 31, 1995, Ser. No. 381,032

Int. Cl.[6] C22C *21/04*

U.S. Cl. 420—544 101 Claims

1. An aluminum alloy product comprising an alloy composition which is substantially zinc-free and lithium-free, and includes about 3–7 wt % magnesium, about 0.05–0.2 wt % zirconium, about 0.2–1.2 wt % manganese, up to 0.15 wt % silicon and about 0.05–0.5 wt % of a dispersoid-forming element selected from the group consisting of: scandium, erbium, yttrium, gadolinium, holmium and hafnium, the balance being aluminum and incidental elements and impurities.

5,624,633

Patent Not Issued For This Number

5,624,634

PERACID COMPOSITIONS FOR MEDICAL DISINFECTION

Paul Brougham, Rainhill, and Robert A. Simms, Warrington, both of United Kingdom, assignors to Solvay Interox Limited, Cheshire, United Kingdom

Division of Ser. No. 211,659, Jun. 21, 1994, Pat. No. 5,545,343. This application Jun. 2, 1995, Ser. No. 458,902

Claims priority, application United Kingdom, Oct. 17, 1991, 9122048

Int. Cl.[6] A01N *59/00*

U.S. Cl. 422—28 48 Claims

1. A method for the preparation of an aqueous disinfectant composition comprising mixing a first aqueous solution comprising a lower aliphatic peracid with a second aqueous solution comprising a phosphate corrosion inhibitor and at least one peroxide stabilizer selected from the group consisting of hydrogen peroxide stabilizers and peracid stabilizers.

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5,624,635

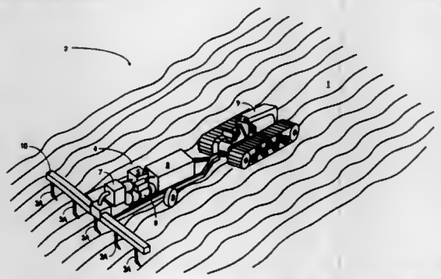
METHOD AND APPARATUS FOR OZONE TREATMENT OF SOIL

Alan E. Pryor, 655 S. Fair Oaks Ave., Apt. I-304, Sunnyvale, Calif. 94086

Continuation of Ser. No. 184,333, Jan. 18, 1994, abandoned. This application Aug. 9, 1995, Ser. No. 512,777

Int. Cl.[6] A61L 2/20

U.S. Cl. 422—32 **17 Claims**



1. A process for killing living organisms in soil in a field, said process comprising:

generating a gas, said gas comprising ozone (O_3);

injecting said gas into said soil, said soil being suitable for plant growth purposes prior to said injecting, said soil including a plurality of living organisms, each of said living organisms comprising a cell, said cell comprising a cell wall, said injecting killing a number of living organisms in said plurality by oxidizing at least a portion of a cell wall of each living organism in said number.

5,624,636

HYPOCHLORITE BASED DISINFECTANT FOR DENTAL IMPRESSIONS

Richard S. Schwartz, San Antonio, Tex., assignor to Univ. of Texas Board of Regents, Austin, Tex.

Filed Nov. 7, 1994, Ser. No. 335,439

Int. Cl.[6] A61L 2/00

U.S. Cl. 422—37 **12 Claims**

1. A method of disinfecting a dental impression comprising providing a dental impression, and contacting the impression with an aqueous hypochlorite solution having a pH between about 9 and about 11 for a period sufficient to cause at least a 4 log reduction in microorganisms said period being from about 1 minute to about 5 minutes.

5,624,637

APPARATUS AND METHODS FOR CARRYING OUT ELECTROCHEMILUMINESCENCE TEST MEASUREMENTS

Ali Ghaed, Bethesda; Jonathan K. Leland, Silver Spring, both of Md.; Glenn D. Zoski, Vienna; Jack E. Goodman, Arlington, both of Va., and John T. Grosser, Derry, N.H., assignors to Igen, Inc., Gaithersburg, Md.

Division of Ser. No. 61,676, May 14, 1993, Pat. No. 5,466,416. This application Jun. 5, 1995, Ser. No. 461,647

Int. Cl.[6] G01N 21/76

U.S. Cl. 422—52 **3 Claims**

1. An apparatus for use in conducting electrochemiluminescence test measurements, comprising:

a fluid container having a fluid flow path therethrough, the fluid container having a fluid inlet for introducing a fluid sample to the fluid flow path and a fluid outlet for emitting the fluid sample from the fluid flow path for conducting fluids through the fluid container along a flow direction through the fluid flow path from the fluid inlet to the fluid outlet;

a first counter electrode positioned within the fluid container directly secured to a transparent mounting block and having an electrode surface exposed to fluids within the fluid flow path;

a working electrode positioned within the fluid container and having an electrode surface exposed to fluids within the fluid flow path; and

the electrode surface of the working electrode being displaced from the electrode surface of the first counter electrode laterally with respect to the flow direction of fluid within the fluid flow path and being positioned directly opposite to said transparent mounting block to which the first counter electrode is secured such that conductive fluid material entering within the fluid flow path from the electrode surface of one of the first counter electrode and the working electrode does not form a conductive bridge with the other of the first counter electrode and the working electrode.

5,624,638

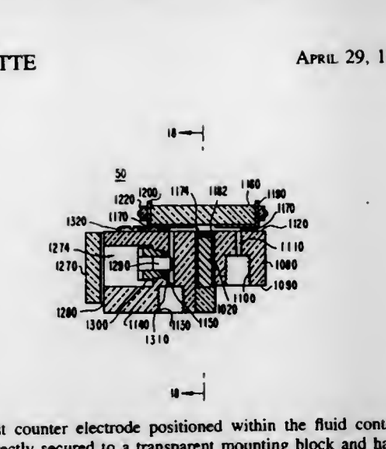
MODULAR LABORATORY EQUIPMENT AND COUPLING SYSTEM

David F. Negrotti, Uxbridge, Mass., assignor to Davcotech, Inc., Linwood, Mass.

Continuation of Ser. No. 57,732, May 5, 1993, abandoned. This application May 5, 1994, Ser. No. 316,959

Int. Cl.[6] B01L 3/00

U.S. Cl. 422—61 **13 Claims**



1. A modular laboratory system comprising: equipment modules and associated coupling means wherein said coupling means are employed, without employing tubular nuts, to provide a compression fitting or barb fittings adapted to slide into soft tubing or threaded fittings, such as pipe fittings for sealably connecting said modules to provide an enclosed laboratory for conducting a plurality of experiments and procedures, wherein the equipment modules comprise enclosed component body means, enclosed reactor means, and interconnector means;

a) said enclosed component body means for transferring volumes of fluids wherein said transferring is accomplished without employing beakers or flasks, said component body means having at least one access means;

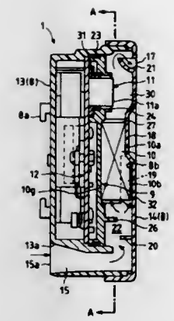
b) said enclosed reactor means for receiving and containing fluids, wherein said receiving in said enclosed reactor means is accomplished without employing beakers or flasks or graduated cylinders, said enclosed reactor means consisting of tube means having a first end and a second end constructed of transparent, or chemically nonreactive tubular material for providing an inlet or outlet, each end being provided with a removable reactor cap means, said reactor cap means for enclosing the inlet and the outlet of the reactor tube means to provide a reactor cell for conducting fluid experiments and procedures in an enclosed vessel, said reactor cap means comprising:

i) a first reactor cap having an insertion shaft member for extending into the first end of said tube means for sealing and for anchoring the reactor cap in firm engagement with the tube means including at least two grooved rings longitudinally spaced with respect to the tube ends with each grooved ring adapted to accommodate an o-ring for compressively engaging an inner wall of the tube means, said reactor cap having a central access passage extending longitudinally through the reactor cap from a pop in/pop out female socket positioned on the reactor cap;

ii) a second reactor cap having an insertion shaft member for extending into the second end of said tube means for sealing and for anchoring said second reactor cap in firm engagement with the tube means including at least two grooved rings longitudinally spaced with respect to the tube ends with each grooved ring adapted to accommodate an o-ring for compressively engaging an inner wall of the tube means, said second reactor cap having a central access passage extending longitudinally through the reactor cap from a pop in/pop out female socket positioned on the the reactor cap; said associated coupling means comprising:

c) nipple-socket joint means for linking and un-linking equipment modules of the modular laboratory system, said nipple-socket joint means having a first nipple element provided on a first module, wherein said first nipple element is adapted to fit snugly into a socket of a second module for compressive engagement and an o-ring seal positioned in the socket adapted to fit snugly around a groove in the nipple to provide seal means without employing threaded fittings or compression rings; and

d) a dispensing means for dispensing volumes of fluid solvent, wherein said fluid volumes are transferred within the equipment modules in an enclosed environment with minimal contact with a user, reduced adverse environmental impact and with smaller amounts of chemical waste produced.



and a side surface extending along said air passage and connecting said first and second end surfaces; and

a gas sensor for detecting a gas concentration in the air introduced into said air passage through said air inlet and having passed through said filter;

wherein a given gap is provided at least between a portion of said side surface located at a side of said first end surface and an inner wall surface of said casing defining said air passage, and wherein the air flows into said filter through said first end surface and said portion of the side surface and flows out of said filter through said second end surface.

5,624,640

SENSOR FOR DETECTING NITROGEN OXIDE

Heidrun Potthast, Korntal-Muenchingen, and Bernd Schumann, Rutesheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

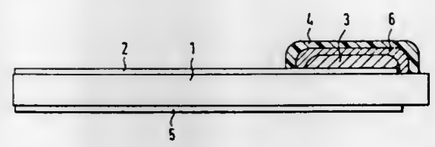
PCT No. PCT/DE94/01051, § 371 Date Apr. 12, 1996, § 102(e) Date Apr. 12, 1996, PCT Pub. No. WO95/10774, PCT Pub. Date Apr. 20, 1995

PCT Filed Sep. 14, 1994, Ser. No. 628,664

Claims priority, application Germany, Oct. 12, 1993, 43 34 672.3

Int. Cl.[6] G01N 27/12

U.S. Cl. 422—90 **13 Claims**



1. A sensor for detecting nitrogen oxides (NO, NO_2, N_2O_4) in a test gas, the sensor having with a semiconducting metal oxide layer, which is deposited on a substrate and whose electrical resistance varies in relation to the concentration of nitrogen oxides (NO, NO_2, N_2O_4) in the test gas, the sensor having a converter layer which is deposited on the metal oxide layer and is made of a material which causes the oxidation of combustible components of the test gas and converts the nitrogen monoxide (NO) contained in the test gas into nitrogen dioxide (NO_2) or dinitrogen tetroxide (N_2O_4), which then reaches the metal oxide layer, said converter layer having a first layer and an intermediate second layer each of said first and second layers having a ceramic base material and to each of which first and second layers there is added a catalytically effective percentage of noble metal(s) of the platinum group in concentrations which differ from each other, the sensor further having a heating device which heats the metal oxide layer and the converter layer.

5,624,639

GAS DETECTING DEVICE FOR VEHICLE

Katsuhiko Ariga, Oobu; Hiroaki Nishimura, Okazaki, and Hideo Hattori, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 16, 1995, Ser. No. 559,097

Claims priority, application Japan, Nov. 17, 1994, 6-283166; Aug. 24, 1995, 7-215632

Int. Cl.[6] G01N 27/00;27/12

U.S. Cl. 422—83 **7 Claims**

1. A gas detecting device for a vehicle comprising:

a casing having therein an air passage, said air passage having an air inlet where air flows in and an air outlet where the air flows out;

a filter arranged in said air passage between said air inlet and said air outlet, said filter having a first end surface at a side of said air inlet, a second end surface at a side of said air outlet,

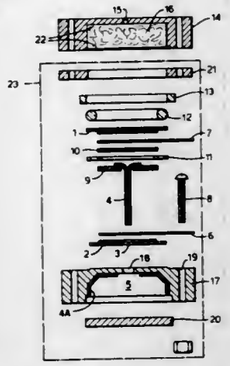
VOL 1197 ISS 5 AP 29 1997 UMI

5,624,641

GAS SENSING ASSEMBLY

Constantine D. Capetanopolous, Dobbs Ferry; Patrick J. Iannotta, Bellmore, both of N.Y.; Bryan S. Hobbs, Chertsey, and John R. Finbow, Southampton, both of United Kingdom, assignors to SEM Corporation, Westbury, N.Y.

Filed May 16, 1994, Ser. No. 243,452
Int. Cl.[6] G01N *27/00*
U.S. Cl. 422—98 **12 Claims**



1. A kit for the assembly of a plurality of gas sensing devices for determining the concentration of active gases in gas mixtures, the kit comprising a number of self-contained sensing units each including a sensing element at which a respective active gas reacts and is consumed, an output signal being produced proportional to the rate of reaction of the respective active gas; and a number of different control members, each defining a gas diffusion barrier and being adapted for use only with sensing units for sensing a corresponding one of the active gases, the control members having substantially the same shape, corresponding control members and sensing units having unique, cooperating locating arrangements so that a control member can only be fitted to a corresponding sensing unit to form a respective one of said gas sensing devices, and wherein each control member is separately securable to the corresponding sensing unit and detachable therefrom while leaving the sensing unit intact.

5,624,642

HYDROCARBON PROCESSING APPARATUS

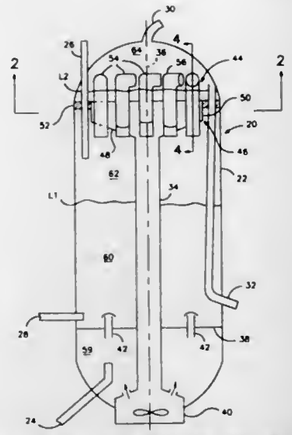
Narasimhan Devanathan, Aurora, Ill.; Craig A. McKnight, Sherwood Park, Canada; William B. VanderHeyden, Los Alamos, N.M.; Larry P. Hackman, St. Albert, Canada; Peter J. Klomans, Lockport, Ill., and Robert W. Skwarok, Edmonton, Canada, assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 14, 1994, Ser. No. 323,389
Int. Cl.[6] B01J *8/22;* **F27B** *15/02;15/12*
U.S. Cl. 422—140 **9 Claims**

1. A reactor system for reacting a liquid petrochemical feedstock and a process gas to produce a polyphasic mixture of reacted feedstock and process gas, which comprises:

an elongated, vertically oriented reactor vessel having upper and lower ends and a reactor wall, the reactor vessel defining and substantially surrounding a liquid reactor region adjacent the lower end suitable for reacting a liquid petrochemical feedstock and a process gas to produce a polyphasic mixture of reacted feedstock and process gas, and the reactor vessel also defining and substantially surrounding a reactor vapor space adjacent the upper end;

a gas-liquid separator extending generally horizontally from the wall within the reactor vessel and comprising (a) recycle pan means located above the liquid reactor region and below the reactor vapor space, said pan means having a periphery circumferentially joined to the reactor vessel, and (b) non-linear riser means for directing the mixture from the liquid region



through the recycle pan means and into the reactor vapor space to promote separation of the phases of the mixture, wherein the riser means consist of a plurality of non-linear risers which are located symmetrically around a reactor axis of radial symmetry, and wherein each of the non-linear risers includes a linear portion having a common intake elevation shared by the others of the non-linear risers and a curved portion, the linear portion being integral with the curved portion.

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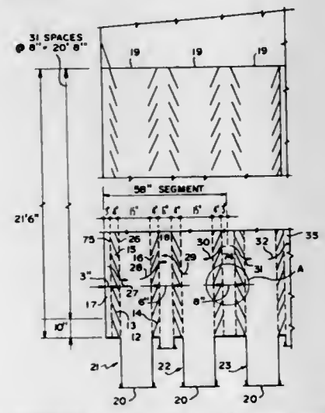
Patent Not Issued For This Number

5,624,644

APPARATUS FOR ACID GAS EMISSION CONTROL

John D. McKenna, Rocky Mount; Kenneth W. Appell; John C. Mycock, both of Roanoke, and Joseph F. Szalay, Braxburg, all of Va., assignors to ETS International, Inc., Roanoke, Va.

Filed Nov. 2, 1994, Ser. No. 333,343
Int. Cl.[6] B01D *53/34*
U.S. Cl. 422—177 **14 Claims**



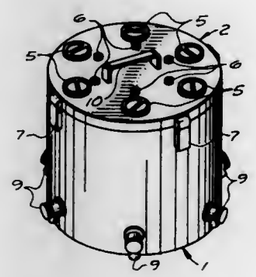
1. In an apparatus for removing acid gas from combustion flue gas which comprises at least one louvered gravity moving bed reactor having a top and a bottom for containing a moving bed of scrubbing particles which move downward in the bed from the top to the bottom due to the force of gravity and which are capable of reacting with flue gas to produce a solid reaction product; said reactor having a louvered inlet side and a louvered outlet side; said louvered inlet side and said louvered outlet side being spaced apart from each other thereby defining a volume for containing said scrubbing particles between said louvered inlet side and said louvered outlet side; said louvered inlet side having overlapping inlet louvers with spaces between the inlet louvers for the passage of flue gas therethrough into said reactor; said louvered outlet side having overlapping outlet louvers with spaces between the outlet louvers for the passage of said gas therethrough out of said reactor; means for wetting said scrubbing particles so that they are wet while they are in said reactor; means for flowing flue gas through said reactor whereby said flue gas enters the reactor through the louvered inlet side and exits said reactor on the louvered outlet side; wherein the improvement comprises: said means for flowing flue gas through the reactor being means for flowing said gas through the reactor at a velocity to eject a portion of the scrubbing particles from the louvered outlet side of the reactor and said apparatus further including a chamber for the passage of flue gas therethrough; said chamber being located alongside the louvered outlet side of said reactor for receiving said flue gas which exits said reactor and for receiving scrubbing particles which are ejected from said louvered outlet side of the reactor; said chamber being sized so that the velocity of said gas which enters said chamber is insufficient to entrain at least a portion of the ejected scrubbing particles within the gas flowing through said chamber; said chamber having a bottom portion for collecting said ejected scrubbing particles.

5,624,645

SELF-PRESSURIZING CARBONATION APPARATUS

Gregory T. Malley, 1809 E. Brookwood Ct., Phoenix, Ariz. 85048

Filed Apr. 17, 1995, Ser. No. 422,857
Int. Cl.[6] B01D *11/02*
U.S. Cl. 422—266 **10 Claims**



I. A method for supersaturating a solution with CO_2 comprising the steps of:

providing a container means wherein said container means has separate, multiple compartments having no liquid communication therebetween, and having a lid;

introducing a designated quantity of solution into each of said compartments such that a specified spatial area is defined between an upper solution surface and the lid;

introducing a designated quantity of solid chemical means into each of said compartments;

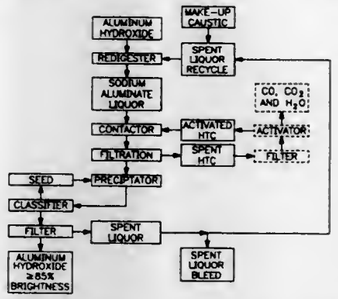
reacting said chemical means and said solution to produce CO_2 such that a quantity of CO_2 evolves into the specified spatial area and redissolves into the solution whereby the CO_2. in solution exceeds the solution's saturation levels, with each separate compartment maintaining the level of carbonation regardless of the evacuation of any other compartment.

5,624,646

METHOD FOR IMPROVING THE BRIGHTNESS OF ALUMINUM HYDROXIDE

Richard B. Phillips, Little Rock, Ark.; Nancy M. Fitzgerald, Wilkins Township, and Bennett L. McCormick, Cheswick, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,956, Oct. 14, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 382,936
Int. Cl.[6] C01F *1/00;* **C22B** *21/00*
U.S. Cl. 423—130 **28 Claims**



1. A method for removing contaminants from a caustic aluminate solution to produce an aluminum hydroxide of improved brightness, said method comprising the steps of:

(a) filtering the solution by passing it through a primary separation apparatus selected from the group consisting of a pressure filter, a vacuum filter, a gravity settler and a centrifuge, to remove at least some solid contaminants therefrom; and

(b) contacting the solution with less than about 1.0 g/l of an adsorbent comprising a calcined compound having the formula $A_wB_x(OH)_yC_z.nH_2O$ wherein A represents a divalent metal cation selected from the group consisting of: Mg^{2+}, Ni^{2+}, Fe^{2+}, Ca^{2+}, and Zn^{2+}; B represents a trivalent metal cation selected from the group consisting of: Al^{3+}, Fe^{3+} and Cu^{3+}; C represents a mono- to tetravalent anion selected from the group consisting of: OH^-, Cl^-, Br^-, NO_3^{31} CH_3COO^-, $C_2O_4^{2-}$, CO_3^{2-}, SO_4^{2-}, PO_4^{3-}, $Fe(CN)_6^{3-}$ and $Fe(CN)_6^{4-}$; and w, x, y, z and n satisfy the following: $0<z\leqq x\leqq 4\leqq w\leqq ½$ y and $12\geqq n\geqq ½$ (w–x); and

(c) adsorbing more of the solid contaminants from the solution onto the calcined compound; and

(d) precipitating from the solution an aluminum hydroxide of improved brightness.

5,624,647

METHOD FOR RECOVERY OF ALKALI VALUES FROM TRONA USING TWO-STAGE LEACHING

Vladimir M. Zolotoochin, The Woodlands, Tex.; David R. Delling, Taos, N.M.; Robert N. Skogley, Green River, Wyo., and Francis M. Coustry, Houston, Tex., assignors to Solvay Minerals, Inc., Houston, Tex.

Filed May 10, 1995, Ser. No. 438,344
Int. Cl.[6] C01D *1/00;7/26;* **C22B** *26/10*
U.S. Cl. 423—206.2 **45 Claims**

1. A method of recovering alkali values from alkali-containing ore which comprises:

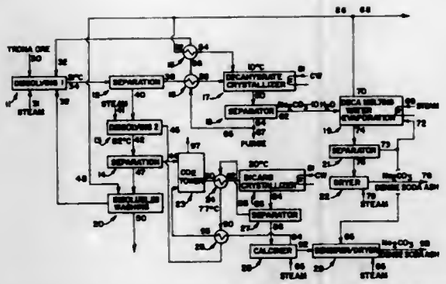
(a) dissolving some of an alkali-containing ore in a first dissolving solution to form a first dissolved alkali feed liquor having suspended therein insoluble particles and undissolved ore;

(b) removing the suspended insoluble particles and undissolved ore from the first feed liquor;

(c) cooling the first feed liquor and precipitating sodium carbonate decahydrate crystals thereby forming a first mother liquor;

(d) separating sodium carbonate decahydrate crystals from the first mother liquor;

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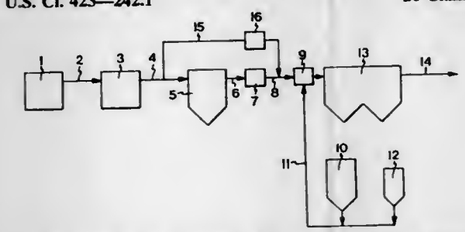
(e) dissolving at least some of the undissolved ore in a second dissolving solution to form a second dissolved alkali feed liquor having suspended therein insoluble particles;
(f) removing the suspended insoluble particles from the second feed liquor;
(g) cooling the second feed liquor and precipitating sodium bicarbonate crystals thereby forming a second mother liquor;
(h) separating sodium bicarbonate crystals from the second mother liquor; and
(i) recovering the alkali values from the sodium carbonate decahydrate crystals and the sodium bicarbonate crystals.

5,624,648

METHOD AND APPARATUS FOR CLEANING FLUE GAS

Kurt Carlsson, Växjö, Sweden, assignor to ABB Flakt AB, Stockholm, Sweden

PCT No. PCT/SE94/00183, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/20199, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 4, 1994, Ser. No. 513,966
Claims priority, application Sweden, Mar. 12, 1993, 9300818
Int. Cl.[6] B01D *53/48;53/68*
U.S. Cl. 423—242.1 **20 Claims**



1. In a method for cleaning a flue-gas stream which contains hydrogen chloride and sulphur dioxide and is treated in a wet cleaner (5), thereafter injected with lime (9) and filtered through a filter (13), wherein the improvement comprises bypassing a portion of the flue gas around the wet cleaner (5) so as to be forwarded to the lime injection station (9) so that the hydrogen chloride within the flue gas reacts with the injected source of lime to result in the formation of calcium dichloride.

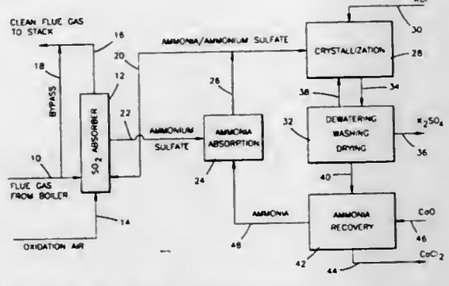
5,624,649

PROCESS FOR REDUCTION OF SULFUR DIOXIDE EMISSION FROM COMBUSTION GASES COMBINED WITH PRODUCTION OF POTASSIUM SULFATE

Eli Gal, Lititz, Pa., assignor to General Electric Co., Schenectady, N.Y.

Filed Apr. 26, 1995, Ser. No. 430,940
Int. Cl.[6] C01D *5/02*
U.S. Cl. 423—243.11 **19 Claims**

1. A method for removing sulfur dioxide from flue gases, the method comprising the steps of:



delivering flue gases containing sulfur dioxide to a first absorber;
introducing a scrubbing solution containing ammonia into the first absorber, the ammonia reacting with the sulfur dioxide to yield a sulfite that is oxidized in situ to produce an ammonium sulfate solution;
diverting at least a portion of the ammonium sulfate solution from the first absorber and absorbing gaseous ammonia therein; and
diverting at least a portion of the ammonium sulfate solution containing the absorbed gaseous ammonia to a vessel where the ammonium sulfate solution is reacted with potassium chloride to produce potassium sulfate and an ammonium chloride solution, the gaseous ammonia absorbed in the ammonium sulfate solution serving to promote precipitation of the potassium sulfate.

5,624,650

NITRIC ACID PROCESS FOR FERRIC SULFATE PRODUCTION

Thomas D. McEwan, and William E. Pfaffenberger, both of Victoria, Canada, assignors to Environchip Technologies, Inc., Victoria, Canada

Filed Feb. 22, 1996, Ser. No. 605,629
Int. Cl.[6] C01G *49/00;49/14*
U.S. Cl. 423—558 **38 Claims**

1. A method for producing ferric sulfate, comprising contacting (i) an iron complex comprising ions of iron, ammonium and sulfate, with (ii) nitric acid, to thereby form ferric sulfate.

5,624,651

STABLE HIGH SOLIDS, HIGH RATIO ALKALI METAL SILICATE SOLUTIONS

Jonathan L. Bass, Audubon, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Filed Feb. 20, 1996, Ser. No. 603,667
Int. Cl.[6] C01B *33/32*
U.S. Cl. 423—332 **10 Claims**

1. A method of preparing an aqueous alkali metal oxide silicate solution having a silica to alkali metal oxide molar ratio of from about 3.5 to about 6.0 and a total solids content of from about 20 to about 40% w/w, said method comprising the steps of:
contacting a strong hydrogen exchanged cation exchange resin cross-linked of from about 10 to about 16% said resin having the property which at 10% cross-linking is effective to exclude molecules of 800 molecular weight with an aqueous alkali metal oxide silicate solution;
allowing the separation of smaller anionic molecules by exchange with hydrogen at hydrogen ion sites on said cation exchange resin from larger, more siliceous anionic molecules; and
collecting when the silica to alkali metal oxide ratio is from about 3.5 to about 6.0 said larger, more siliceous anionic molecules from said alkali metal oxide silicate solution.

5,624,652

SILICAS

Derek Aldcroft, South Wirral, and Peter W. Stanier, Cheshire, both of United Kingdom, assignors to Crosfield Limited, Warrington, United Kingdom

PCT No. PCT/EP93/03006, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/10087, PCT Pub. Date May 11, 1994
PCT Filed Oct. 26, 1993, Ser. No. 424,453
Claims priority, application European Pat. Off., Oct. 28, 1992, 92309858
Int. Cl.[6] C01B *33/12;* **C09C** *1/68*
U.S. Cl. 423—335 **3 Claims**

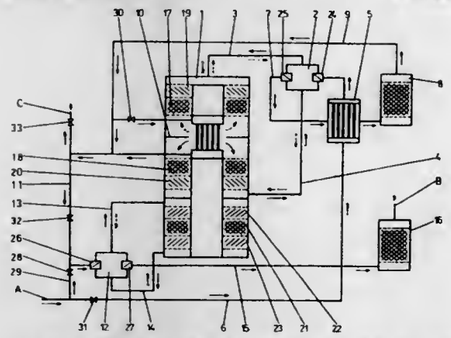
1. An amorphous silica having
(i) a B.E.T. surface area in the range from about 10 to about 90 m^2g^{-1},
(ii) a weight mean particle size in the range from about 5 to about 15 microns, with less than 15% of the weight particle size distribution greater than 20 microns and less than 5% greater than 25 microns,
(iii) a plastics abrasion value in the range from about 16 to about 26,
(iv) a transmission of at least about 70% in the refractive index range of 1.430 to 1.443,
(v) an oil absorption in the range from about 70 to about 150.

5,624,653

METHOD FOR PRODUCING SULPHUR TRIOXIDE

Georgy Grozev; Christo Sapundjiev; Dimitry Elenkov, all of Sofia; Dimitry Dimitrov, Plovdiv; Nikola Dobrev, Plovdiv, and Ivan Enchev, Plovdiv, all of Bulgaria, assignors to Institute of Chemical Engineering at Bulgarian Academy of Sciences, Sofia, and Works for Non-Ferrous Metals-AD (KCM-S.A.), Plovdiv, both of Bulgaria

Filed Aug. 28, 1995, Ser. No. 519,928
Claims priority, application Bulgaria, Aug. 29, 1994, 99008
Int. Cl.[6] C01B *17/74;* **C01F** *1/00*
U.S. Cl. 423—533 **8 Claims**



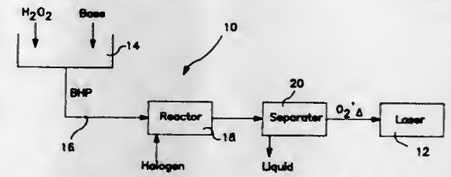
1. A method for producing SO_3 by a two-stage catalytic oxidation of SO_2, contained in a gas flow fed to a two-stage three-layer contacting apparatus, said gas flow having an SO_2 content of 1 to 10%, which SO_2 content varies in a non stable manner and with intermediate absorption of SO_3, the process comprising the following oxidation stages;
Stage 1:
A) providing a first catalyst stage containing a first and a second stationary separate layers of catalyst, and
B) alternatively feeding said incoming SO_2 gas flow to the first or the second layer of the stationary catalyst, by means of a three-way SO_2 valve, partially cooling the gas flow in an inner heat-exchanger-mixer that is located between the two stationary catalyst layers of the first stage of the contact apparatus, and then through the other stage, said feeding alternating in response to the temperature change in the catalyst,
directing the gas flow obtained alternatively from the second or the first catalyst layer of the first stage to an intermediate absorber by means of a three-way SO_3 valve, and
transferring a part of the reaction heat of SO_2 oxidation from the first stage of oxidation to the second stage of oxidation by heating in said inner heat exchanger-mixer the gas flow, from the intermediate absorber; and
Stage 2:
feeding the gas flow containing unoxidized SO_2 from the intermediate absorber via the heat exchanger-mixer or directly to the top/bottom to a third catalyst layer that is located in the second stage of the contact apparatus by means of a three-way SO_2 valve, and
transferring SO_3 obtained in the third catalyst layer alternatively from the bottom/top of the third catalyst layer to a final (end) absorber by means of three-way SO_3 valve.

5,624,654

GAS GENERATING SYSTEM FOR CHEMICAL LASERS

Charles W. Clendening, Jr., Torrance; William D. English, Orange; Martin H. Mach, Venice, all of Calif., and Trecil D. Dreiling, Auburn, Wash., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 13, 1996, Ser. No. 647,610
Int. Cl.[6] C01B *13/00*
U.S. Cl. 423—579 **5 Claims**



1. A method for preparing excited molecular oxygen in the excited singlet-delta electronic state for use as an energizing reactant for a chemical laser, the method comprising the steps of:
a) combining H_2O_2 and at least one base to form a reaction mixture containing basic hydrogen peroxide, the base being selected from the group consisting of alkali metal bases, alkaline earth metal bases, and nitrogen containing bases, the total amount of base being no more than one mole per mole of H_2O_2; and
b) introducing the basic hydrogen peroxide into a gas containing at least two halogen species, X_1 and X_2, selected from the group consisting of chlorine, bromine, and bromine chloride to produce the excited molecular oxygen, the molar ratio of X_1 to X_2 being from about 3:1 to about 1:1.

5,624,655

PROCESS FOR PURIFYING HYDROGEN PEROXIDE AQUEOUS SOLUTION

Yukio Inaba; Yohsuke Ueno; Takayuki Tsujino, and Tohru Murakami, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed Sep. 18, 1992, Ser. No. 946,595
Claims priority, application Japan, Sep. 19, 1991, 3-311289; Nov. 26, 1991, 3-355392
Int. Cl.[6] C01B *15/01*
U.S. Cl. 423—584 **12 Claims**

1. A process for purifying a hydrogen peroxide aqueous solution, which comprises bringing a hydrogen peroxide aqueous solution containing 50 to 10,000 ppm of a phosphoric acid component obtained by extracting with water a reaction mixture containing hydrogen peroxide formed by an oxidation-reduction process of anthraquinones, into contact with active alumina particles containing 90% or more of an alumina component in terms of Al_2O_3 and having a specific surface area of 100 to 600 m^2/g at a temperature

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of 0° to 50° C. for 6 to 500 minutes to remove the phosphoric acid component from the hydrogen peroxide aqueous solution.

5,624,656

ZEOLITE L PREPARATION

Johannes P. Verduijn, Spijkenisse, and Pieter E. Gellings, Oostvoorne, both of Netherlands, assignors to Exxon Chemical Patents Inc. (ECPI)

Division of Ser. No. 320,972, Oct. 12, 1994, Pat. No. 5,486,348, which is a continuation of Ser. No. 121,972, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 492,249, Mar. 9, 1990, abandoned, which is a continuation of Ser. No. 160,366, Feb. 25, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 475,958

Claims priority, application United Kingdom, Feb. 25, 1987, 8704365

Int. Cl.[6] C01B *39/32*

U.S. Cl. 423—700 **10 Claims**



1. Zeolite L particles bound together with a zeolite binder which contains less than 10 percent by weight non-zeolitic binder, said particles comprising a plurality of cylindrical zeolite L crystallites with a mean diameter of at least 0.05 micron.

5,624,657

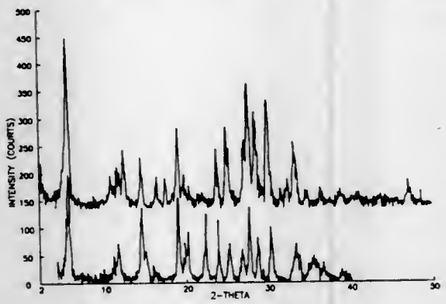
CRYSTALLINE ZEOLITE COMPOSITION ECR-31 AND PROCESS FOR ITS PREPARATION

David E. W. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 332,987, Nov. 1, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,344

Int. Cl.[6] C01B *39/46*

U.S. Cl. 423—700 **9 Claims**



1. A synthetic crystalline zeolite composition having the formula in terms of mole ratios

$$M_{2/n}O: Al_2O_3: xSiO_2{}^{*}(y(H_2O, NH_3)$$

where n is the valence of metal M, x is between 3 and 10, and y is between 0 and 14 and characterized having a representative x-ray diffraction pattern (cu K_α radiation) with major lines shown in Table 1.

5,624,658

PROCESS FOR PRODUCTION OF ZEOLITES

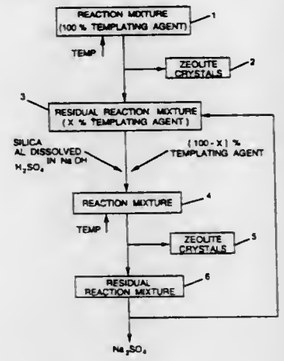
Mayer Fitoussi, Haifa, and Amir Korngold, Beer-Sheva, both of Israel, assignors to Super Industry Ltd., Beer-Sheva, Israel

Filed Dec. 28, 1994, Ser. No. 365,613

Claims priority, application Israel, Jan. 5, 1994, 108272

Int. Cl.[6] C01B *39/40*

U.S. Cl. 423—702 **10 Claims**



1. A batch process for the production of ZSM-5 zeolites having a SiO_2 to Al_2O_3 of more than 10 comprising the steps of:

(a) forming a reaction mixture comprising a silica source, an aluminum source, an inorganic base and templating agent and adjusting the pH to 10.7–11.7 with an acid;

(b) heating the reaction mixture, while maintaining the pH at 10.7–11.7, whereby zeolite crystals are formed;

(c) separating the crystallized zeolite from the reaction mixture leaving behind a residual mixture and calcinating the zeolite to decompose the organic component;

(d) adding to the residual mixture templating agent at an amount so as to form a reaction mixture wherein the level of the templating agent is as in the reaction mixture of step (a); and

(e) repeating steps (a)–(d), with the reaction mixture obtained in step (d) serving as the source for the templating agent of step (a) and every one or more cycles, when the salt concentration rises to a concentration which hinders further synthesis of the zeolites, treating the residual mixture of step (c) to remove salts therefrom.

5,624,659

METHOD OF TREATING BRAIN TUMORS EXPRESSING TENASCIN

Darell D. Bigner, and Michael R. Zalutsky, both of Chapel Hill, N.C., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 33,827, Mar. 19, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 392,419

Int. Cl.[6] A61K *51/10;39/395;* **C07K** *16/28;16/30*

U.S. Cl. 424—1.49 **21 Claims**

1. A method of treating a cystic brain tumor which expresses tenascin, comprising:

administering to a human subject afflicted with a cystic brain tumor expressing tenascin an antibody that binds to tenascin in a therapeutically effective amount,

wherein said administering step is carried out by depositing said antibody in the cyst cavity of said cystic brain tumor,

wherein said antibody is coupled to a radioisotope, and

wherein said antibody is selected from the group consisting of monoclonal antibody 81C6 and antibodies that bind to the epitope bound by monoclonal antibody 81C6.

5,624,660

STRESS RESPONSE IMAGING BY DETECTION OF DECREASED PROTEIN SYNTHESIS

Frank R. Sharp, San Mateo, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jun. 6, 1995, Ser. No. 472,707

Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.65 **12 Claims**

1. A method for determining whether a subject has undergone a transitory occurrence of one or more conditions selected from ischemia, hypoglycemia, and status epilepticus, without infarction, said method comprising:

(a) administering to said subject an amino acid labeled with a detectable label in an amount sufficient to be detectable by an imaging technique; and

(b) imaging said subject or a portion of said subject at least about thirty minutes after (a) to detect any localized decrease in concentration of said detectable label as an indication of a decrease in protein synthesis and therefore an indication of said occurrence and the location of such occurrence.

5,624,661

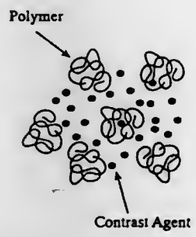
HYPOOSMOTIC COMPOSITIONS COMPRISING A POLYMER AND A COMPLEXED CONTRAST AGENT FOR MRI

Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749

Division of Ser. No. 251,484, May 31, 1994, which is a division of Ser. No. 960,591, Oct. 13, 1992, Pat. No. 5,368,840, which is a continuation-in-part of Ser. No. 507,125, Apr. 10, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 465,431

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.35 **157 Claims**



1. A contrast medium for use in magnetic resonance imaging of a patient comprising an aqueous solution or suspension of a biocompatible polymer in admixture with a contrast agent bound to a complexing agent, wherein the contrast medium is hypoosmotic to bodily fluids of the patient.

5,624,662

LIPOSOLUBLE HETEROCYCLIC COMPOUNDS USEFUL AS MAGNETIC RESONANCE IMAGING AGENTS

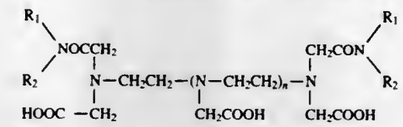
Evan C. Unger, and DeKang Shen, both of Tucson, Ariz., assignors to ImaRx Pharmaceutical Corporation, Tucson, Ariz.

Division of Ser. No. 173,649, Dec. 27, 1993, Pat. No. 5,466,438, which is a division of Ser. No. 887,290, May 22, 1992, Pat. No. 5,312,617, which is a continuation-in-part of Ser. No. 704,542, May 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,287

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.361 **116 Claims**

1. A contrast agent for magnetic resonance imaging comprising a paramagnetic ion in combination with a compound of the formula



wherein:

each R_1 is, independently, a substituted or unsubstituted C_7–C_{30} straight chain or cyclic compound;

each R_2 is, independently, a substituted or unsubstituted C_1–C_{30} straight chain or cyclic compound which may be internally interrupted by O, NH, NR_3, or S, where R_3 is a C_1–C_3 alkyl; and

n is 0 to 1;

provided that at least one of said R_2 groups is a cyclic compound which is internally interrupted by O, NH, NR_3 or S.

5,624,663

PHOTOSTABLE COSMETIC FILTER COMPOSITION COTAINING A UV-A FILTER AND A SUBSTITUTED DIALKYLBENZALMALONATE, THE USE OF SUBSTITUTED DIALKYLBENZALMALONATES IN COSMETICS AS BROAD-BAND SOLAR FILTERS AND NOVEL SUBSTITUTED DIALKYL MALONATES

Andre Deflandre, Orry la Ville; Serge Forestier, Claye-Souilly; Gerard Lang, Saint-Gratien; Herve Richard, and Madeleine Leduc, both of Paris, all of France, assignors to L'Oreal, Paris, France

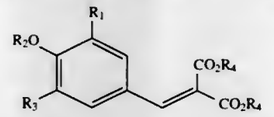
Continuation of Ser. No. 677,376, Mar. 27, 1991, which is a continuation of Ser. No. 236,645, Aug. 25, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,095

Claims priority, application France, Aug. 28, 1987, 87 12047

Int. Cl.[6] A61K *7/42;7/40;31/12*

U.S. Cl. 424—59 **11 Claims**

1. A photostable cosmetic sunscreen composition for the protection of human skin against ultraviolet radiation at wavelengths between 280 and 380 nm consisting essentially of a cosmetically acceptable medium containing at least one oily phase; 1 to 3% by weight of a dibenzoylmethane derivative selected from the group consisting of 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane and 4-isopropyldibenzoylmethane; and an effective amount for photostabilizing said dibenzoylmethane derivative of at least 1% by weight of a substituted dialkylbenzalmalonate having formula I:



wherein:

R_1 and R_3 may be identical or different and represent a hydrogen atom or a C_1–C_8 straight- or branched-chain alkoxy radical;

R_2 represents a C_1–C_8 straight- or branched-chain alkyl radical; and

R_4 represents a C_1–C_8 straight- or branched-chain alkyl radical,

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the molar ratio of said substituted dialkylbenzalmalonate having formula (I) to said dibenzoylmethane derivative being greater than or equal to 0.6.

5,624,664

SKIN CONDITIONING COMPOSITION AND SOFTGEL FILLED THEREWITH

John Lambrechts, 20730 Dearborn St., Chatsworth, Calif. 91313-2157

Filed Jan. 30, 1995, Ser. No. 380,747
Int. Cl.[6] A61K *7/44*
U.S. Cl. 424—60 **18 Claims**

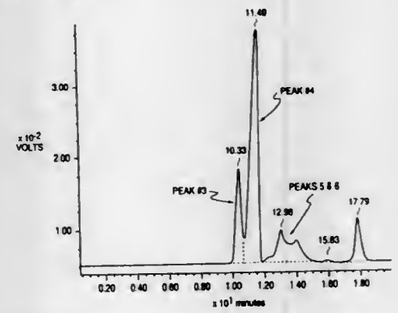
1. A skin conditioning product comprising a skin conditioning composition stably encapsulated in a gelatin shell, and skin conditioning composition comprising an acid or combination of acids selected from the group consisting of hydroxy acids and keto acids, wherein said composition is capable of being stably encapsulated within a gelatin shell and has an equilibrium relative humidity of less than about 65%.

5,624,665

BASIC ALUMINUM ANTIPERSPIRANT ACTIVE MATERIALS HAVING ENHANCED ACTIVITY, ANTIPERSPIRANT ACTIVE COMPOSITIONS CONTAINING SUCH MATERIALS, AND METHODS FOR PREPARATION OF SUCH MATERIALS AND COMPOSITIONS

Morton L. Barr, Rockaway; Paul J. Vincenti, Jefferson, and Elaine L. Vanderhoof, Long Valley, all of N.J., assignors to The Mennen Company, Morristown, N.J.

Division of Ser. No. 97,620, Jul. 27, 1993, which is a continuation of Ser. No. 550,683, Jul. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,516, May 2, 1990, Pat. No. 5,202,115, which is a continuation-in-part of Ser. No. 233,008, Aug. 17, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 456,482
Int. Cl.[6] A61K *7/38;7/32;* **C01F** *7/00*
U.S. Cl. 424—68 **31 Claims**



1. Antiperspirant compositions having the formula:

$$[Al_2(OH)_{6-a}X_a]_w\ [DO_p(OH)_mQ_n]_y\ [\text{neutral amino acid}]_z$$

where $0.5 \leqq a \leqq 5.0$, X is a univalent complex oxoanion of nitrogen or a halogen, which forms salts with Al^{3+} in aqueous dissociated, which is readily soluble in water with metallic ions in the solution, and which forms conjugate acids that are strong acids, w: y ranges from about 0.3:1 to about 6.0:1, z:y ranges from 0 to 1.3:1, p is either 0 or 1, where when p is O m is O and n is 4, and when p is 1 then m+n is 2, D is a metal cation selected from the group consisting of Zr, Hf, Ti and Sn, and Q is a halide or X, $Al_2(OH)_{6-a}X_a$ further being characterized by:

(a) size exclusion high performance liquid chromatography peaks corresponding to peak 3 and peak 4 of the size exclusion chromatogram produced from a high performance liquid chromatography technique;

(b) a peak 4 relative area of at least 25%, and a peak 3 relative area of less than 60%, the sum of the relative peak 3 and peak 4 areas being at least 50%;

(c) less than 10% chromatographic peaks eluting at shorter retention times that peak 3, corresponding to peaks 1 and 2;

(d) less than 25% of the aluminum being in the form of Al^b polyhydroxyaquoaluminum;

(e) an ^{27}Al NMR spectrum wherein 5%–30% of the total area under the spectrum from 140 ppm to −80 ppm is contained in a resonance line at 71.5–73.5 ppm; and

(f) an ^{27}Al NMR spectrum in which the area of the 71.5– 73.5 ppm resonance line includes more than 50% of the combined areas of the 62.5–63.5 ppm and 71.5–73.5 ppm resonance lines.

5,624,666

ANTI-DANDRUFF SHAMPOOS WITH PARTICULATE ACTIVE AGENT AND CATIONIC POLYMER

Timothy W. Coffindaffer; Philip E. Cothran, both of Loveland, and Thomas F. Ganthier, Milford, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 20, 1995, Ser. No. 375,457
Int. Cl.[6] A61K *7/06*
U.S. Cl. 424—70.21 **17 Claims**

1. An anti-dandruff shampoo composition comprising:

(a) from about 8% to about 40%, by weight, of anionic detersive surfactant;

(b) from about 0.1% to about 5%, by weight, of particulate anti-dandruff agent having a volume average particle size of from about 0.35 microns to about 5 microns;

(c) from about 0.01% to about 1%, by weight, of a stabilizing agent for said anti-dandruff agent, said stabilizing agent being a shampoo soluble cationic polymer; and

(d) from about 50% to about 91.89%, by weight, water; wherein said shampoo composition contains not greater than about 0.1%, by weight, of suspending agents selected from the group consisting of crystalline suspending agents, and anionic, amphoteric, and nonionic polymeric suspending agents.

5,624,667

TITANIUM OXIDE PARTICLES AND METHOD OF PRODUCING SAME

Masatsuyo Maruo; Hitoshi Ando; Mitsuru Watanabe, and Chitoshi Mukai, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

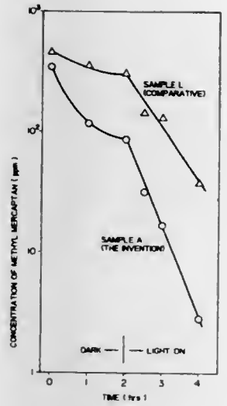
Continuation-in-part of Ser. No. 69,416, Jun. 1, 1993, Pat. No. 5,480,636. This application Mar. 16, 1995, Ser. No. 405,134
Claims priority, application Japan, Jun. 3, 1992, 4-168380; Nov. 12, 1992, 4-327342
Int. Cl.[6] A61L *9/20*
U.S. Cl. 424—76.21 **2 Claims**

2. A method of decomposing malodorous gases which comprises,

applying to the malodorous gases an amount of a deodorant effective to decompose the malodorous gases, and

decomposing the malodorous gases by a photocatalytic reaction, said deodorant comprising:

particulate titanium oxide substrate having a zinc oxy compound supported thereon in a molar ratio of the total Ti amount included in the substrate to the Zn amount of the zinc oxy compound, i.e., Ti:Zn=9.9:0.1 to 5:5, said zinc oxy compound being produced by neutralizinq a zinc compound with a water soluble compound of alkali metal or alkaline earth metal, said particulate titanium oxide substrate having a specific surface area of 100 m^2/g or more,



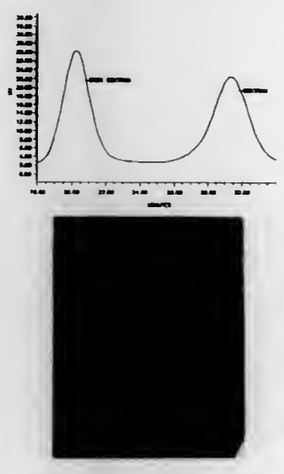
wherein said deodorant decomposes malodorous gases by a photocatalytic reaction.

5,624,668

IRON DEXTRAN FORMULATIONS

Richard P. Lawrence, Baiting Hollow; Ralf A. Lange, Amagansett; Chin Wu, Shirley, and Mary J. Helenek, Syosset, all of N.Y., assignors to Luitpold Pharmaceuticals, Inc., Shirley, N.Y.

Filed Sep. 29, 1995, Ser. No. 536,984
Int. Cl.[6] A01N *59/16;* **A61K** *33/26*
U.S. Cl. 424—78.17 **28 Claims**



1. An iron-dextran composition for treating iron deficiency comprising an aqueous colloidal suspension or solution of a ferric oxyhydroxide-dextran complex in a physiologically acceptable carrier, said complex having a beta-FeO(OH) core and an average molecular weight range of about 100,000 to 600,000 daltons and a substantially uniform size distribution, said complex further having been treated under alkaline conditions with an oxidized low molecular weight carbohydrate stabilizing agent and having an increased plasma residence time as compared with iron-dextran compositions that have not been so treated.

5,624,669

METHOD OF HEMOSTATIC SEALING OF BLOOD VESSELS AND INTERNAL ORGANS

Jeffrey C. Leung, and Jeffrey G. Clark, both of Raleigh, N.C., assignors to Tri-Point Medical Corporation, Raleigh, N.C.

Continuation-in-part of Ser. No. 215,584, Mar. 22, 1994, Pat. No. 5,514,371, which is a division of Ser. No. 40,618, Mar. 31, 1993, Pat. No. 5,328,687. This application Jun. 7, 1995, Ser. No. 483,969
Int. Cl.[6] A61K *31/74;9/14;9/48;* **A61F** *2/02*
U.S. Cl. 424—78.35 **20 Claims**

1. A method of hemostatic sealing of puncture or incision surfaces in an internal organ or blood vessel, which comprises,

(a) applying to at least a portion of said puncture or incision surfaces an adhesive composition comprising:

(i) at least one monomer of the formula:

$$CHR{=}CXY \qquad (I)$$

wherein X and Y are each strong electron withdrawing groups, and R is H or, provided that X and Y are both cyano groups, a C_1–C_4 alkyl group; and

(ii) an effective amount of at least one biocompatible agent effective to reduce active formaldehyde concentration levels; and

(b) polymerizing said adhesive composition in situ.

5,624,670

USE OF INTERLEUKIN-8 FOR INDUCING CERVICAL RIPENING

Rodney W. Kelly, Edinburgh, Great Britain; Kristof Chwalisz, Berlin, Germany; Radostaw Bukowski, Berlin, Germany, and Peter Scholz, Berlin, Germany, assignors to Medical Research Council, United Kingdom

PCT No. PCT/EP92/02690, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO93/09796, PCT Pub. Date May 27, 1993
PCT Filed Nov. 23, 1992, Ser. No. 244,274
Claims priority, application United Kingdom, Nov. 21, 1991, 9124775
Int. Cl.[6] A61K *38/20*
U.S. Cl. 424—85.2 **22 Claims**

1. A method of inducing cervical ripening in a female mammal in need of such inducing, which method comprises the step of administering to the said mammal a safe and effective amount of an interleukin-8 or a functional derivative thereof.

5,624,671

METHOD FOR INCREASING EGG PRODUCTION RATE, EGG WEIGHT OR EGGSHELL STRENGTH BY ADMINISTERING A COMPOSITION CONTAINING THE PLANTS ROSA ROXBURGHII, ARTEMISIAE ARGYI FOLIUM AND BRASSICA OLERACEA VAR. CAPITATA L.

Seiichi Araki; Mamoru Suzuki; Masatoshi Fujimoto, all of Ibaraki, and Tadashi Ueki, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 390,243, Feb. 17, 1995, which is a division of Ser. No. 333,079, Nov. 1, 1994, Pat. No. 5,556,624, which is a division of Ser. No. 285,980, Aug. 4, 1994, abandoned, which is a division of Ser. No. 133,708, Oct. 7, 1993, abandoned. This application May 10, 1995, Ser. No. 438,494
Claims priority, application Japan, Oct. 7, 1992, 4-291995; Oct. 7, 1992, 4-291996; May 25, 1993, 5-144345; Jul. 30, 1993, 5-206808
Int. Cl.[6] A61K *35/78;* **A23L** *1/00;* **A01K** *39/00*
U.S. Cl. 424—195.1 **6 Claims**

1. A method for increasing the egg production rate, egg weight or eggshell strength of a bird, which comprises administering a pharmacologically effective amount of a composition comprising a mixture of the plants *Rosa roxburghii, Artemisiae argyi folium* and *Brassica oleracea var. capitata L.* to said bird.

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5,624,672

COMPOSITIONS WHICH INHIBIT APOPTOSIS, METHODS OF PURIFYING THE COMPOSITIONS AND USES THEREOF

Ian C. Bathurst, Kensington, Calif.; John D. Bradley, Brookline, Mass.; L. David Tomei, Richmond, and Philip J. Barr, Berkeley, both of Calif., assignors to LXR Biotechnology Inc., Richmond, Calif.

PCT No. PCT/US94/13649, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/15173, PCT Pub. Date Jun. 8, 1995

Continuation-in-part of Ser. No. 320,155, Oct. 7, 1994, which is a continuation-in-part of Ser. No. 158,980, Nov. 30, 1993, abandoned. This PCT application Nov. 30, 1994, Ser. No. 446,685

Int. Cl.[6] A61K *35/78;* C12N *5/00*

U.S. Cl. 424—195.1 **54 Claims**

1. A method of obtaining a composition comprising a factor with anti-apoptotic activity wherein the method comprises the steps of

a) delipidating a plant powder with a delipidating agent;

b) separating the powder from the delipidating agent;

c) extracting the delipidated powder with an aqueous solution; and

d) separating the aqueous solution from the delipidated powder to obtain an aqueous retentate wherein the anti-apoptotic activity is soluble in a mixture of water, methanol and chloroform in a ratio of 3:8.4.

5,624,673

COSMETIC OR PHARMACEUTICAL COMPOSITION CONTAINING A PRUNELLA EXTRACT

Frédéric Bonte; Alain Meybeck, both of Courbevoie, and Marc Dumas, Colombes, all of France, assignors to LYMH Recherche, Colombes Cedex, France

PCT No. PCT/FR92/00494, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/21322, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 4, 1992, Ser. No. 150,183

Int. Cl.[6] A61K *35/78;47/00*

U.S. Cl. 424—195.1 **18 Claims**

1. A method for the treatment of the epidermis of patients suffering from the signs of aging, or otherwise suffering from dry skin, inflammation, solar erythema, skin allergies; or for the prevention of maladies associated with free radical formation, comprising topically administering an effective amount of at least one prunella component selected from among the group consisting of:

a) a prunella extract prepared by a solvent extraction of the prunella plant wherein said solvent is selected from among the group consisting of water, alcohols containing from 1 to 4 carbon atoms, chlorinated organic solvents containing 1 to 2 carbon atoms, organic esters containing from 3 to 6 carbon atoms, and mixtures thereof;

b) a prunella saponin obtained from said extract; and

c) a mixture thereof.

5,624,674

POROUS PRODUCT MOLD FORM

William J. Seare, Jr., 3190 Chula Vista Clr., Salt Lake City, Utah 84121

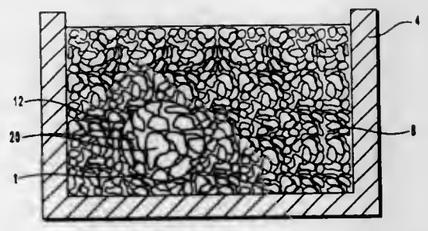
Division of Ser. No. 156,675, Nov. 22, 1993, which is a continuation of Ser. No. 779,387, Oct. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,964

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 **21 Claims**

1. A method of forming a selectively removable open-cell porous mold form comprising the steps of:

(a) obtaining particles having sizes in the range of about 25–600 microns, said particles comprising a material capable of self-adhering when exposed to a first selected condition, solidifying when exposed to a second selected condition, and desolidifying when exposed to a third selected condition;



(b) exposing said particles to a first selected condition such that the particles adhere into a mass of continuously interconnected particles defining continuously interconnected pores, said pores being each connected to at least one adjacent pore by pore interconnections and said pores and pore interconnections having a substantially smoothly flowing configuration;

(c) forming said mass of continuously interconnected particles into a predetermined shape; and

(d) exposing said formed and shaped mass to a second selected condition to solidify said mass into a selectively removable mold form for use in preparing devices having a porous portion corresponding to said continuously interconnected and substantially smoothly flowing pores and pore interconnections.

5,624,675

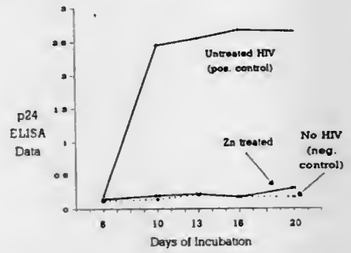
GENITAL LUBRICANTS CONTAINING ZINC SALTS TO REDUCE RISK OF HIV INFECTION

Patrick D. Kelly, 33 Berry Oaks, St. Louis, Mo. 63122

Continuation-in-part of Ser. No. 816,278, Jan. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 737,169, Jul. 29, 1991, Pat. No. 5,208,031, which is a continuation-in-part of Ser. No. 528,495, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 362,058, Jun. 6, 1989, abandoned. This application Nov. 12, 1993, Ser. No. 150,870

Int. Cl.[6] A01M *25/04*

U.S. Cl. 424—405 **3 Claims**



1. A method of reducing the risk of sexual transmission of human immunodeficiency virus, comprising spreading a topical genital lubricant across genital surfaces that come into intimate contact with a sexual partner during intercourse, wherein the topical genital lubricant contains at least one water-soluble organic zinc salt that releases zinc ions in solution, and wherein the topical genital lubricant does not irritate the genital surfaces or cause other adverse effects, and wherein the zinc salt is present in the topical genital lubricant at a concentration that can reduce infectivity of mature HIV particles when mixed with such viral particles in aqueous solution and incubated for two hours at 37° C., and wherein the genital lubricant is characterized by the absence of any deleterious compound at a concentration that would generate a significant adverse effect if applied to genital surfaces and used repeatedly during numerous acts of sexual intercourse.

5,624,676

LOTIONED TISSUE PAPER CONTAINING AN EMOLLIENT AND A POLYOL POLYESTER IMMOBILIZING AGENT

Larry N. Mackey, Fairfield, and Donald C. Roe, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 3, 1995, Ser. No. 510,929

Int. Cl.[6] A01N *25/34*

U.S. Cl. 424—414 **16 Claims**

1. A lotioned tissue paper having applied to at least one surface thereof, in an amount of from about 0.1 to about 20% by weight of the dried tissue paper, a lotion composition which is semi-solid or solid at 20° C. and which comprises:

(A) from about 5 to about 95% of a substantially water free emollient having a plastic or fluid consistency at 20° C. and comprises a member selected from the group consisting of petroleum-based emollients, fatty acid ester emollients, alkyl ethoxylate emollients, fatty acid ester ethoxylate emollients, fatty alcohol emollients, polysiloxane emollients, silicone wax emollients, and mixtures thereof;

(B) from about 5 to about 95% of an agent capable of immobilizing the emollient on the surface of tissue paper treated with the lotion composition, said immobilizing agent having a melting point of at least 35° C. and comprising a solid polyol polyester comprising a polyhydric alcohol containing at least 4 hydroxyl groups esterified with fatty acid or other organic acid radicals having at least 2 carbon atoms and up to 30 carbon atoms; and

(C) optionally from about 1 to about 50% of a hydrophilic surfactant having an HLB value of at least about 4.

5,624,677

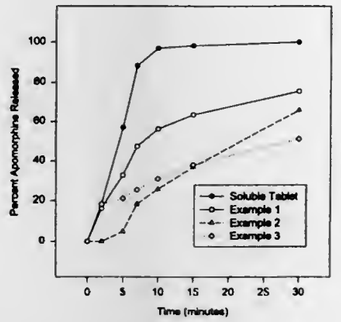
CONTROLLED RELEASE OF DRUGS DELIVERED BY SUBLINGUAL OR BUCCAL ADMINISTRATION

Ragab El-Rashidy, Deerfield; Bruce Ronsen, River Forest, both of Ill., and Emad E. Hassan, Sidi Gaber, Egypt, assignors to Pentech Pharmaceuticals, Inc., Wheeling, Ill.

Filed Jun. 13, 1995, Ser. No. 489,966

Int. Cl.[6] A61K *9/22;9/26*

U.S. Cl. 424—435 **20 Claims**



1. A composition providing a relatively slow release of water-soluble drugs by sublingual route and consisting essentially of:

about 2 to about 10 milligrams of a water-soluble drug which is a member of the group consisting of apomorphine hydrochloride, albuterol sulfate, timolol maleate, verapamil hydrochloride, and naloxone hydrochloride, and;

an osmotic agent;

a swellable hydrophilic carrier;

and a water dispersible polymer;

the composition having a T_{90} value in the range of more than about 25 to about 300.

5,624,678

METHOD AND COMPOSITION FOR TREATMENT AND/OR PROPHYLAXIS OF COCCIDIOSIS

Michael R. Bedford; Andrew J. Morgan, both of Marlborough; Michael A. Taylor, and Janet Catchpole, both of Addlestone, all of United Kingdom, assignors to Finnfeeds International Limited, Wiltshire, Great Britain, and Minister of Agriculture, Fisheries and Food, London, Great Britain

Filed May 10, 1995, Ser. No. 435,946

Claims priority, application United Kingdom, May 10, 1994, 9409336

Int. Cl.[6] A23K *1/165*

U.S. Cl. 424—442 **31 Claims**

1. A method for the treatment and/or prophylaxis of coccidiosis in an animal comprising the step of:

administering to the animal an agent comprising

a therapeutically effective amount of a carbohydrase, as a therapeutically active agent for treatment and/or prophylaxis of coccidiosis.

5,624,679

METHODS AND COMPOSITIONS FOR POLY-β-1-4-N-ACETYLGLUCOSAMINE BIOLOGICAL BARRIERS

John N. Vournakis, Hanover, N.H.; Sergio Finkielsztein, Chestnut Hill; Ernest R. Pariser, Belmont, both of Mass., and Mike Helton, Memphis, Tenn., assignors to Marine Polymer Technologies, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 347,911, Dec. 1, 1994, which is a continuation-in-part of Ser. No. 160,569, Dec. 1, 1993.

This application Jun. 6, 1995, Ser. No. 470,083

Int. Cl.[6] C08L *5/08;* A61K *31/73;* C08B *37/08*

U.S. Cl. 424—444 **14 Claims**

1. A biodegradable barrier-forming material comprising poly-β-1→4-N-acetylglucosamine comprising about 4,000 to about 150,000 N-acetylglucosamine monosaccharides covalently attached in a β-1→4 conformation, free of protein, substantially free of other organic contaminants, substantially free of inorganic contaminants, and having a molecular weight of about 800,000 daltons to about 30 million daltons.

5,624,680

HYDROXYSILYL-TERMINATED POLYOXYETHYLENE COMPOUND, QUATERNARY-SALT-TERMINATED BLOCK COPOLYMER, AND PERCUTANEOUS ABSORPTION-PROMOTING AGENT

Yu Nagase, Sagamihara; Takao Aoyagi, Nagareyama, and Tomoko Akimoto, Zama, all of Japan, assignors to Sagami Chemical Research Center, Sagamihara, Japan

PCT No. PCT/JP94/01109, § 371 Date Jan. 23, 1996, § 102(e) Date Jan. 23, 1996, PCT Pub. No. WO95/03352, PCT Pub. Date Feb. 2, 1995

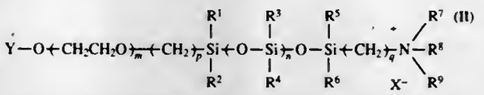
PCT Filed Jul. 7, 1994, Ser. No. 537,867

Claims priority, application Japan, Jul. 23, 1993, 5-201966

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 **6 Claims**

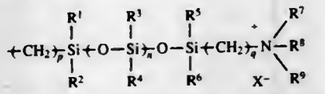
1. A quaternary-salt-terminated polyoxyethylene/polyorganosiloxane block copolymer, of the following formula (II):



wherein, each of R^1 to R^6 which may be the same or different, is a C_{1-6} alkyl group or a phenyl group; each of R^7 to R^9 which may be the same or different, is an alkyl group, a substituted alkyl group or a phenyl group, or two or three of R^7 to R^9 and the nitrogen atom connected thereto together form a hetero-ring containing a nitrogen; X^- is a counter anion in the quaternary salt; Y is an alkyl

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group or a quaternary-salt-terminated polyorganosiloxane chain represented by the following formula (III):



(III)

where p is an integer of from 2 to 6; q is an integer of from 1 to 6; an average value of degree of polymerization, m or n, is a real number of from 3 to 100; each of R^3 and R^4 may be the same or different in each of the repeating unit.

5,624,681

TAMPER EVIDENT PHARMACEUTICAL DOSAGE FORM

Keith Tanner, Safety Harbor, and Kelly Orange, St. Petersburg, both of Fla., assignors to R. P. Scherer Corporation, Troy, Mich.

Filed Apr. 26, 1995, Ser. No. 427,895
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—454 **15 Claims**

1. A tamper evident dosage form suitable for introduction into a mammalian body, consisting of a transparent color-neutralized nontoxic soft elastic gelatin capsule containing a colorless, clear liquid carrier and an active ingredient selected from the group consisting of a pharmaceutical, a nutritional supplement and a food product.

5,624,682

PHARMACEUTICAL FORMULATIONS BASED ON A KETOPROFEN SOLUTION IN SOFT CAPSULES, AND PROCESSES FOR THEIR PREPARATION

Gilberto Dondi, Cusano Milanino, and Paolo Scurati, Paderno Dugnano, both of Italy, assignors to Bayer S.p.A., Milan, Italy

Filed Apr. 13, 1995, Ser. No. 421,712
Claims priority, application Italy, Apr. 26, 1994, MI94A0801
Int. Cl.[6] A61K *9/48;9/66;31/54;31/44*
U.S. Cl. 424—455 **6 Claims**

1. A pharmaceutical formulation for oral administration having an increased stability and bioavailability of an analgesic or antiflammatory agent, comprising a soft gelatin capsule which essentially contains a therapeutically active amount of ketoprofen dissolved in polyethylene glycol containing a neutralizing organic amine in amount to bring the pH of the solution to between 5 and 7.

5,624,683

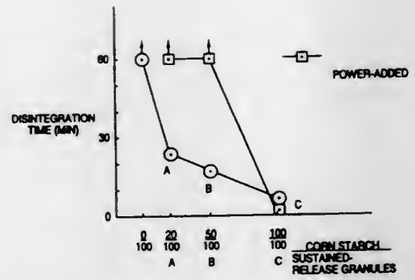
SUSTAINED-RELEASE MULTI-GRANULE TABLET

Hidenobu Andoh, Gifu; Sumio Watanabe, and Yasuo Miyake, both of Aichi, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 895,464, Jun. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,987, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 595,732, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 240,343, Aug. 25, 1988, abandoned, which is a continuation of Ser. No. 80,012, Jul. 31, 1987, abandoned. This application Feb. 7, 1994, Ser. No. 192,603
Claims priority, application Japan, Aug. 6, 1986, 61-183414
Int. Cl.[6] A61K *9/22;9/26*
U.S. Cl. 424—470 **24 Claims**

1. A process for the production of a sustained-release pharmaceutical tablet, which comprises the steps of:

mixing a drug with a sustained-release substance to prepare a plurality of sustained-release granules,



wherein the active substance is bunazosin hydrochloride and wherein the sustained-release substance is at least one member selected from the group consisting of sucrose-fatty acid ester, ethyl cellulose, methyl cellulose, polyvinyl pyrrolidone, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, a gum arabic, gelatin and shellac;

laminating each of the resulting granules with a water-dispersible excipient to prepare laminated sustained-release granules; and

mixing the resulting laminated granules with a lubricant; and

compressing the laminated granules and lubricant to obtain the sustained-release pharmaceutical tablet.

5,624,684

ENZYME SYSTEMS

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

PCT No. PCT/US92/04048, § 371 Date Nov. 17, 1993, § 102(e) Date Nov. 17, 1993, PCT Pub. No. WO92/20329, PCT Pub. Date Nov. 26, 1992
Continuation-in-part of Ser. No. 702,068, May 17, 1991, abandoned. This PCT application May 13, 1992, Ser. No. 150,045
Int. Cl.[6] A61K *9/14;35/70;35/72;35/74;38/43;* A21D *8/04;* A23C *9/12;* C11D *3/386*
U.S. Cl. 424—484 **34 Claims**

1. An enzyme product comprising a non-fibrous enzyme-bearing matrix formed by subjecting a feedstock comprising said enzyme and a solid carrier material capable of being flash flow processed to form said enzyme-bearing matrix to flash flow processing conditions which alter the physical and/or chemical structure of said carrier to form said enzyme-bearing matrix for delivery of said enzyme by said product.

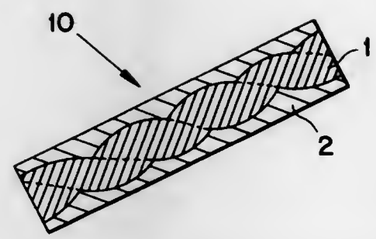
5,624,685

HIGH POLYMER GEL AND VASCULAR LESION EMBOLIZING MATERIAL COMPRISING THE SAME

Toru Takahashi, Shizuoka-ken; Hideki Nakamura, Kanagawa-ken, and Katsuya Goto, Fukuoka-ken, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 961,519, Oct. 15, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 416,530
Claims priority, application Japan, Oct. 16, 1991, 3-267540
Int. Cl.[6] A61K *47/36;47/32;* A61M *25/04*
U.S. Cl. 424—488 **10 Claims**

1. A method for treating a vascular lesion using a vascular lesion-embolizing material, said method comprising the steps of:



applying the vascular lesion-embolizing material in the interior of the vascular lesion to bring said embolizing material into contact with blood flowing through the vascular lesion, said vascular lesion-embolizing material comprising a dried water-absorbent polymer gel capable of absorbing water in an amount of at least 10 ml/g when measured by dipping the dry polymer gel in a physiological saline; and

allowing said embolizing material to swell thereby completing the embolization of the vascular lesion;

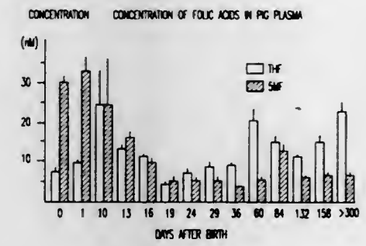
said polymer gel being produced by precipitating a solution containing a water-soluble polymer of an alkali metal salt of alginic acid in a solution containing a polyvalent cation, immersing the resulting precipitate in a salt solution, and then drying the precipitate.

5,624,686

FEED ADDITIVES FOR FATTENING PIGS, FEED FOR FATTENING PIGS, AND METHOD OF FATTENING PIGS

Minoru Shimoda, Tokyo, and El-ichi Kokue, Kokubunji, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,803
Claims priority, application Japan, Sep. 9, 1994, 6-215857
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **7 Claims**



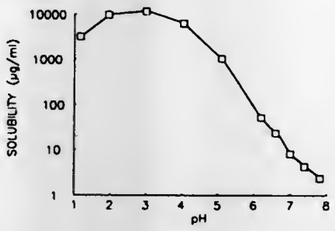
1. A method for feeding a fattening pig, comprising orally administering a feed additive which comprises a reduced form of folic acid selected from the group consisting of 7,8-dihydrofolic acid, 5,6,7,8-tetrahydrofolic acid, the poly-gamma-glutamic acid derivative of 5,6,7,8-tetrahydrofolic acid, 5-formyl-H_4-folic acid, the poly-gamma-glutamic acid derivative of 5-formyl-H_4-folic acid, 5,10-methylene-H_4-folic acid, the poly-gamma-glutamic acid derivative of 5,10-methylene-H_4-folic acid, 5-methyl-H_4-folic acid, the poly-gamma-glutamic acid derivative of 5-methyl-H_4-folic acid, 10-formyl-H_4-folic acid, the poly-gamma-glutamic acid derivative of 10-formyl-H_4-folic acid, 5-forimino-H_4-folic acid, and the poly-gamma-glutamic acid derivative of 5-formino-H_4-folic acid to a fattening pig either directly or via a breast milk.

5,624,687

QUICK-DISSOLUTION SOLID PREPARATION

Katsuhiko Yano, Fujieda; Yasuhiro Nishizono, Urawa; Shigeru Yamazaki, Fujieda; Tadayoshi Ohmura, Fujieda, and Sbunji Hasumi, Fujieda, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00469, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993, PCT Pub. No. WO92/18109, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 14, 1992, Ser. No. 137,054
Claims priority, application Japan, Apr. 15, 1991, 3-109896
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—490 **4 Claims**



1. A pH-independent quick-dissolution solid preparation comprising granules each comprising a fine particulate core and a drug layer coated on said fine particulate core, said drug layer comprising

(1) an enteric base and

(2) N-(1-benzyl-2-methylpyrrolidin-3-yl)-5-chloro- 2-methoxy-4-methylaminobenzamide, or a salt thereof, being a pH-dependent hardly soluble drug which is depressed in solubility with pH elevation

and said drug occurring as a solid solution in said enteric base, wherein the amount of said pH-dependent hardly soluble drug solution is 0.5% to 10% (w/w) based on the total amount of the preparation, and the amount of said enteric base is not more than 5 times the amount of said pH-dependent hardly soluble drug and is 2 to 20% (w/w) based on the total amount of the preparation.

5,624,688

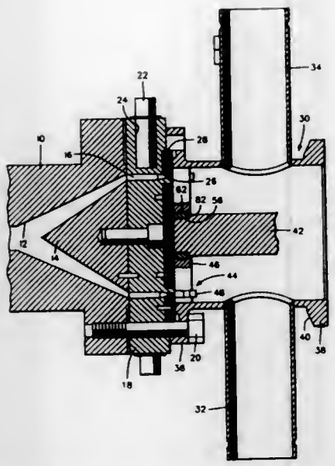
SELF-ALIGNING CUTTER HUB

Donald E. Adams, Bassett, and Donald W. Smith, Fincastle, both of Va., assignors to Gala Industries, Inc., Eagle Rock, Va.

Filed Oct. 12, 1995, Ser. No. 542,292
Int. Cl.[6] B29B *9/00;* B29C *47/08*
U.S. Cl. 425—67 **15 Claims**

1. A self-aligning cutter hub for use in an underwater pelletizer connected to a drive shaft and enabling cutter blades on the cutter hub to be aligned with and move in parallel relation to a die face on an extrusion die plate, said cutter hub including a centrally located axial bore defined by an inner surface, said inner surface of the bore being partially spherical, an adapter in the form of an annular member received in said bore, said adapter including a partially spherical outer surface with the partially spherical surfaces being closely related and matching each other, each of the partially spherical surfaces including at least one recess receiving a torque transmitting element partially received in the recesses in the matching surfaces to drivingly connect the hub to the adapter and enable pivotal movement of the hub in relation to the adapter by relative angular movement of the hub in relation to the adapter,

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said adapter secured to a drive shaft for transmitting torque to the cutter hub.

5,624,689

FOIL BLOWING APPARATUS FOR THERMOPLASTIC SYNTHETIC RESINS

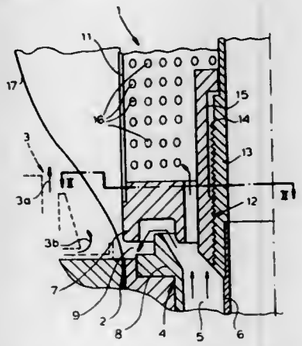
Stefan Schmitz; Joachim Lange, both of Hennef, and Robert Wirtz, Troisdorf, all of Germany, assignors to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Germany

Filed Jun. 8, 1995, Ser. No. 488,662

Claims priority, application Germany, Jun. 9, 1994, 44 20 023.4

Int. Cl.[6] B29C *47/22*

U.S. Cl. 425—72.1 **3 Claims**



1. A foil-blowing apparatus for blowing of a tubular foil of a thermoplastic synthetic resin, comprising:

a blowing head provided with an annular orifice through which a synthetic resin tube is extruded;

external cooling means disposed outwardly of said orifice for contacting said tube with external cooling air; and

an internal cooling and blowing device within said tube and comprising:

an internal cooling air supply, a centrally disposed discharge tube opening into said tube for discharging internal cooling air therefrom,

a primary air guide positioned along said internal cooling air supply for directing a primary air flow outwardly toward said tube, said primary air guide defining an outwardly directed primary air passage with an annular portion of said head inwardly of said orifice,

a plurality of secondary air passages of fixed flow cross section formed in said primary air guide, equispaced about said discharge tube and conducting some of said internal cooling air to a secondary location axially downstream of said primary air passage along said tube, and

adjusting means for displacing said primary air guide axially relative to said annular portion of said head and along said discharge tube for regulating a rate of flow of said primary air through said primary air passage, said secondary air passages being formed in said primary air guide parallel to the axis of said discharge tube, said adjusting means including a servodrive having a servomotor operatively connected to said primary air guide for axially shifting same.

5,624,690

CONTROLLED RELEASE OF METERED QUANTITIES OF FINELY DIVIDED SOLIDS WITH A VENTURI NOZZLE AND REGULATED CONTROL

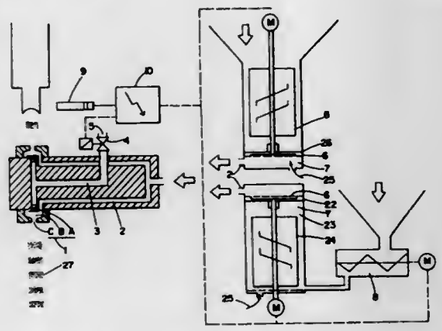
Josef Boldis, Biberach; Volker I. Glasel, Biberach; Ekkehard Flaischlen, Ingoldingen, and Gunther M. Voss, Diessen, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

Continuation of Ser. No. 290,270, Aug. 15, 1994, abandoned, which is a division of Ser. No. 65,974, May 21, 1993, Pat. No. 5,356,577, which is a continuation of Ser. No. 792,821, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 331,927, Mar. 31, 1989, abandoned. This application Jun. 1, 1995, Ser. No. 457,339

Claims priority, application Germany, Apr. 2, 1988, 38 11 260.4

Int. Cl.[6] B29C *43/00*

U.S. Cl. 425—100 **7 Claims**



1. Apparatus for the controlled release of powdered material in fixed cycles and in metered individual amounts onto objects which are traveling past for the purpose of applying lubricant or separating compounds to the stressed surfaces of pressing tools in tablet making machines or for applying finely divided solids to solid carrier materials in the pharmaceutical, food or catalyst fields which comprises a means for metering quantifies of powdered material with selectable throughput, an homogenization chamber for homogenizing said metered quantities of powdered material, at least one venturi nozzle positioned downstream of said homogenization chamber, a means for supplying pulses of a gaseous transporting medium to said venturi nozzle, an electronically, mechanically or pneumatically actuated valve means for controlling the pulsed supply of said gaseous transporting medium to said venturi nozzle in synchronism with the timing of the objects traveling past whereby said homogenized powdered material is drawn into said gaseous transporting medium to produce pulses of powdered material, and a directing means for directing said pulses of powdered material toward the objects traveling past.

5,624,691

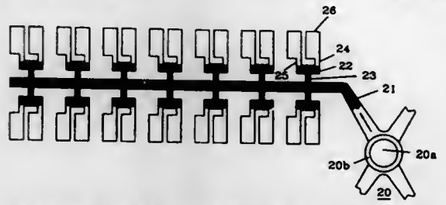
TRANSFER MOLD DESIGN

George A. Bednarz, and Teong Y. Lim, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1994, Ser. No. 262,814

Int. Cl.[6] B29C *45/27;45/02*

U.S. Cl. 425—116 **6 Claims**



1. A transfer mold for semiconductor devices, comprising:

a runner for receiving mold compound, the runner tapered from a first cross-section at a first end where mold compound enters the runner to a second cross-section at a second end, the first cross-section being larger than the second cross-section;

a plurality of reservoir gates, each of the reservoir gates having a first end connected to the runner and a second end, each of the reservoir gates having a cross-section, the cross-sections of the reservoir gates increasing from the first end of the runner to the second end of the runner;

a plurality of reservoirs, each reservoir connected to a second end of a reservoir gate, each reservoir having a cross-section that is larger than the cross-section of the reservoir gate to which it is connected, the cross-sections of the reservoirs decreasing from the first end of the runner to the second end of the runner;

a plurality of cavity gates, each cavity gate having a first end connected to a reservoir and a second end, each cavity gate having a cross-section that is smaller than the cross-section of the reservoir to which it is connected;

a plurality of cavities, each cavity connected to a second end of a cavity gate.

5,624,692

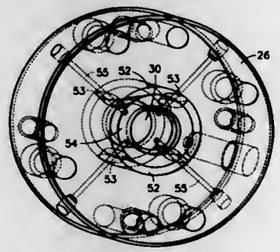
APPARATUS FOR MEASURING THE TEMPERATURE OF A POLYMER MELT

Paul M. Hendess, Wakefield, R.I., assignor to Crompton & Knowles Corporation, Stamford, Conn.

Filed Jan. 30, 1996, Ser. No. 594,312

Int. Cl.[6] B29C *47/92*

U.S. Cl. 425—144 **12 Claims**



6. An in-line extrusion die comprising, in combination:

an elongated cylindrical mandrel;

a die bushing surrounding said mandrel and forming therebetween a passageway leading to an extrusion orifice;

a spider plate having a main body portion and an inner segment joined to said main body portion by a plurality of spaced apart, tapered legs, said legs defining therebetween a plurality of spaced apart, arcuately shaped openings communicating with said passageway formed between said die bushing and said mandrel;

means for joining said mandrel to said inner segment on one side of said spider plate;

a die body containing a melt chamber, said body having an opening communicating with said melt chamber;

means for feeding a polymer melt to said melt chamber;

a tailcone having an apex end positioned within said opening in said die body and forming together with said die body a generally conical passageway for the flow of melt from said chamber, said conical passageway communicating with said plurality of arcuately shaped openings in said spider plate allowing said melt to flow through said plate to said passageway defined between said die bushing and said mandrel;

means for joining said tailcone to said inner segment on the opposite side of said spider plate; and

a thermocouple mounted at said apex end of said tailcone, said thermocouple contacting said melt as said melt flows from said chamber around said tailcone and through said passageway.

5,624,693

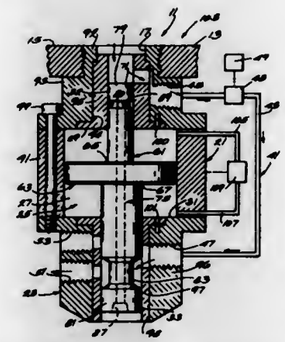
MOLDING APPARATUS WITH COMBINED VENTING AND FLUSHING VALVE

Timothy J. Horling, Sullivan, and Timothy J. VanAckeren, New Berlin, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 16, 1996, Ser. No. 587,336

Int. Cl.[6] B29C *45/77*

U.S. Cl. 425—146 **21 Claims**



1. Molding apparatus comprising a mold member at least partially defining a mold cavity adapted to at least partially define an article to be molded and including a vent, a venting and flushing valve comprising a valve housing including a bore communicating with said vent, a vent discharge port adapted to communicate with the atmosphere, and a flushing discharge port, a venting and cleansing conduit including an inlet port, and an outlet port, a flushing medium conduit adapted to communicate with a source of flushing medium and including an outlet port, and a valve member located in said bore and being operably moveable between a venting position wherein said vent communicates with said venting and cleansing conduit inlet port, wherein said venting and cleansing conduit outlet port communicates with said vent discharge port, wherein communication between said flushing medium outlet port and said venting and cleaning conduit inlet port is blocked, and wherein communication between said venting and cleansing conduit outlet port and said flushing discharge port is blocked, and a flushing position wherein said flushing medium outlet port communicates with said venting and cleansing conduit inlet port, wherein said venting and cleansing conduit outlet port communicates with said flushing discharge port, wherein communication between said vent and said venting and cleansing conduit inlet port is blocked, and wherein communication between said venting and cleansing conduit outlet port and said vent discharge port is blocked, and means for displacing said valve member between said venting position and said flushing position.

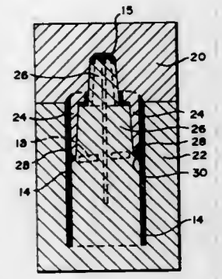
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5,624,694

MOLD FOR MAKING AN INTERNALLY THREADED HOUSING

Aaron D. Delaby, Carlsbad, and Paul M. Havlovitz, Escondido, both of Calif., assignors to Republic Tool & Mfg. Corp., Carlsbad, Calif.

Filed Mar. 18, 1996, Ser. No. 617,089
Int. Cl.[6] B29C 45/44
U.S. Cl. 425—577 3 Claims



1. A mold for forming a relatively thin-walled hollow housing from injected plastic material, said housing having a single internal thread means on the inner wall thereof, said mold comprising

a first mold member having a solid core means defining a first annular space with respect to a wall surface in said first mold member for forming said thin-walled housing,

said solid core means having an annular ledge means thereon, and

a second mold member having a cavity means surrounding said solid core means of said first mold member and having an outer wall spaced from said wall surface in said first mold member to thereby extend said first annular space in said first mold member, and

said cavity means terminating at a location near said annular ledge means on said solid core means of said first mold member and defining with respect thereto a second annular space coaxial and contiguous with said first annular space for forming said single internal thread means.

5,624,695

SECURING ASSEMBLY FOR INJECTION MOLDING MACHINES

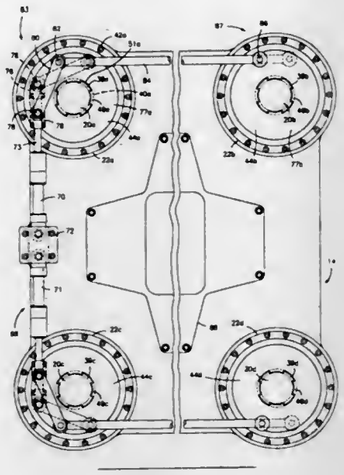
Pierre Glaesener, Bissen, Luxembourg, and Martin R. Kestle, Everett, Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Filed Jun. 7, 1995, Ser. No. 482,869
Int. Cl.[6] B29C 45/64
U.S. Cl. 425—589 17 Claims

1. A securing assembly for use with a first platen of an injection molding machine, comprising:

means for connecting said first platen to another platen; and

means for securing said first platen to said means for connecting and adapted to be attached to said first platen, wherein said means for securing includes engagement means for placing said means for securing into and out of locking engagement with said means for connecting upon rotation of said means for securing, such that when said engagement means is out of locking engagement with said means for connecting, said means for securing and said means for connecting are relatively movable.

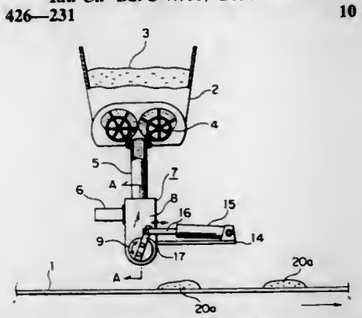


5,624,696

APPARATUS FOR INTERMITTENTLY EXTRUDING A PREDETERMINED QUANTITY OF FOOD MATERIAL

Yukio Watanabe, and Michio Morikawa, both of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co. Ltd., Utsunomiya, Japan

Filed Oct. 10, 1995, Ser. No. 541,753
Claims priority, application Japan, Oct. 13, 1994, 6-275817
Int. Cl.[6] B29C 47/00; G05D 16/00
U.S. Cl. 426—231 10 Claims



9. A method for intermittently extruding a predetermined quantity of viscous food material, comprising the steps of:

pumping the food material into an extrusion valve;

operating the extrusion valve intermittently to extrude the food material therefrom;

sensing a pressure of the pumped material; and

varying a speed of the pumping to maintain a constant sensed pressure.

5,624,697

INTERMEDIATE STABILIZED COMESTIBLE AND METHOD OF MAKING SAME

Wei-Daw A. Lin, Chesterfield, Mo.; Shiowshuh Sheen, Roscoe, Ill.; Vito Vita, Holtsville, and John H. Moyer, Garden City, both of N.Y., assignors to Kerry Ingredients, Inc., Beloit, Wis.

Continuation-in-part of Ser. No. 317,247, Oct. 3, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,215
Int. Cl.[6] A21D 6/00; H05B 6/00
U.S. Cl. 426—241 27 Claims

1. A method for making an intermediate, leavened, farinaceous, comestible, stabilized dough having a predetermined shape, which after handling and storage is suitable for subsequent cooking to a ready-to-eat cooked finished product having a predetermined moisture content and shape, comprising:

(1) forming dough into a leavened predetermined finished dough shape; and

(2) heating for a predetermined time the dough shape with a combination of convection and microwave heating sufficient to:

(a) stabilize the dough shape such that the subsequent cooking to the finished product does not substantially change the stabilized dough shape;

(b) decrease the microbial activity of the dough such that any yeast present in the dough is deactivated and the stabilized dough has a room temperature shelf-life greater than that of a corresponding but unstabilized dough; and

(c) form a substantially continuous exterior surface skin over substantially the entire surface of the stabilized dough shape, said surface skin having gelatinized starch and denatured protein to provide a moisture barrier and a structural integrity sufficient to retain moisture and the dough shape during the heating, handling and storage of the stabilized dough shape that the subsequently cooked finished product has a moisture content and shape substantially equal to the predetermined moisture content and shape.

5,624,698

STABLE BEVERAGE FOUNTAIN SYRUPS CONTAINING OIL PHASE AND METHOD OF STABILIZING FOUNTAIN SYRUP OIL PHASE

Timothy W. Dake, Cincinnati, and Phillip F. Pflaumer, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 268,096, Jun. 28, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 587,597
Int. Cl.[6] A23L 2/62
U.S. Cl. 426—330.3 9 Claims

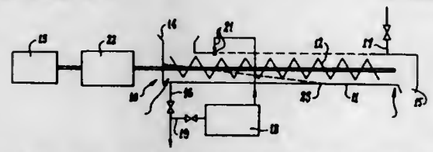
1. A method for stabilizing beverage fountain syrup compositions having from about 0.2% to about 3% of a dispersed oil phase and a Brix value of from about 30° to about 70° consisting essentially of incorporating into said syrup compositions from about 0.02% to about 0.3% of a stabilizer which is xanthan gum and from about 0.2%–0.10% of an emulsifier which is a modified food starch, wherein the ratio of modified food starch to oil is from about 0.1 to about 0.4.

5,624,699

EXTRACTION METHOD

Timothy R. Lang, Pymble, Australia, assignor to Processing Technologies International Ltd., Hamilton, Bermuda

Continuation-in-part of Ser. No. 185,794, Jan. 24, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 469,010
Claims priority, application Australia, Jul. 22, 1991, PK7363
Int. Cl.[6] A23F 5/24
U.S. Cl. 426—425 25 Claims



1. A process for extraction of a soluble component from a food material which process includes;

providing:

a food material having a soluble component to be extracted;

an extracting liquid; and

an enriching solution of the soluble component to be extracted, said enriching solution having a higher concentration of said soluble component than said food material to be extracted;

contacting the food material with the enriching solution to obtain an enriched food material; and

contacting the enriched food material with the extracting liquid in counter current flow,

wherein the contacting steps are conducted in a counter current extractor including a rotary screw conveyor mounted within an inclined or vertical elongate housing having an upper end and a lower end such that the food material is fed into a lower end of the housing to contact the enriching solution which forms a pool at the lower end of the housing such that the food material contacts the enriching solution upon being fed into the lower end of the housing, the food material then being carried upward by the rotating screw to contact the extracting liquid which is fed into an upper end of the housing and flows downward under gravity, and wherein in the pool the concentration of solubles in the food material and the concentration of solubles in the extraction liquid are not equilibrated thereby providing a driving force for mass transfer above the pool where the food material and extracting liquid are flowing counter current.

5,624,700

PROCESS TO PRODUCE CARBONATED SEMI-SOLID OR SOLID FOOD AND THE PRODUCT THEREOF

Lynn V. Ogden, Provo, Utah, assignor to Brigham Younf University, Provo, Utah

Filed Dec. 12, 1994, Ser. No. 354,475
Int. Cl.[6] A23G 9/06; A23C 9/13
U.S. Cl. 426—564 26 Claims

1. A carbonated semi-solid or solid spoonable food formed by contacting said food with carbon dioxide during low shear agitation having the following properties:

(a) a viscosity of between about 2000 and 200,000 centipoise at between about 1.5° and 25° C., and

(b) a carbonation level of between about 0.5 and 4.0 volumes of carbon dioxide per volume of food.

5,624,701

SOLID SALTS OF HOP ACIDS

John P. Maye, 3057 S. Wentworth Ave., Milwaukee, Wis. 53207, and Scot W. Weis, 3287 N. 47th St., Milwaukee, Wis. 53216

Division of Ser. No. 336,961, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 474,848
Int. Cl.[6] C12C 3/00
U.S. Cl. 426—600 17 Claims

1. A process for the production of the solid potassium salt of a hop acid provided said hop acid is not an alpha acid or a hulupone comprising

(a) heating an aqueous alkaline solution of a hop acid;

(b) adding an aqueous solution of a potassium salt or a solid potassium salt to obtain an organic layer;

(c) separating the organic layer; and

(d) drying the organic layer to obtain the solid potassium salt.

17. A beer flavored by the addition of a solid salt of a hop acid, or if said solid salt is only the calcium or magnesium salt of a beta acid, a blend of solid salts of hop acids.

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5,624,702

LOW FAT SPREAD

Ronald A. Schotel, Vlaardingen, Netherlands, assignor to Van den Bergh Foods, Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 79,659, Jun. 18, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,574

Claims priority, application European Pat. Off., Mar. 17, 1993, 9320772

Int. Cl.[6] A23D 7/015

U.S. Cl. 426—603 7 Claims

1. A water-continuous spread comprising:

(A) a structuring amount of oligofructose;

(B) from 0.1 to 15 wt. % of mono- and/or disaccharide; and

(C) from 0.1 to 7 wt. % of fat, wherein the fat is present in the form of small globules or crystals having a volume weighted mean diameter of less than 20 μm.

5,624,703

MODIFIED FAT BLENDS

Daniel Perlman, Arlington; Kenneth C. Hayes, Wellesley, both of Mass., and Cecil Massie, Bloomington, Minn., assignors to Brandeis University, Watham, Mass.

Continuation-in-part of Ser. No. 58,747, May 7, 1993, Pat. No. 5,514,407, which is a continuation-in-part of Ser. No. 883,642, May 15, 1992, Pat. No. 5,382,442. This application Jun. 7, 1995, Ser. No. 474,074

Int. Cl.[6] A23D 7/00

U.S. Cl. 426—607 8 Claims

1. An oxidation-resistant fat-oil blend comprising a cholesterol-reduced animal fat having myristic acid, wherein the cholesterol-reduced animal fat comprises less than 40 mg cholesterol per 100 grams animal fat and a vegetable oil having linoleic acid; wherein said fat-oil blend provides oxidation-resistance and has a weight ratio of myristic acid:linoleic acid greater than that of the cholesterol-reduced animal fat alone.

5,624,704

ANTIMICROBIAL IMPREGNATED CATHETERS AND OTHER MEDICAL IMPLANTS AND METHOD FOR IMPREGNATING CATHETERS AND OTHER MEDICAL IMPLANTS WITH AN ANTIMICROBIAL AGENT

Rabih O. Darouiche, and Issam Raad, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, and University of Texas System, Austin, both of Tex.

Filed Apr. 24, 1995, Ser. No. 427,379

Int. Cl.[6] B05D 3/12;10/34;7/02

U.S. Cl. 427—2.24 33 Claims

1. A method for impregnating a non-metallic medical implant with an antimicrobial agent comprising the steps of:

forming an antimicrobial composition of an effective concentration to inhibit the growth of bacterial and fungal organisms relative to uncoated implants by dissolving the antimicrobial agent in an organic solvent;

adding a separate penetrating agent to the composition;

adding an alkalinizing agent to the composition; and

applying the antimicrobial composition to at least a portion of the medical implant under conditions where the antimicrobial composition permeates the material of the medical implant.

5,624,705

METHOD OF PRODUCING A DEVICE COMPRISING A LUMINESCENT MATERIAL

Martin Stutzmann, Stuttgart; Martin S. Brandt, Leonberg; Alf Breitschwerdt, Stuttgart; Heinz D. Fuchs, Boeblingen, and Joerg Weber, Gerlingen, all of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.v., Goettingen, Germany

Division of Ser. No. 985,181, Dec. 2, 1992, Pat. No. 5,578,379. This application May 11, 1995, Ser. No. 439,129

Claims priority, application Germany, Dec. 3, 1991, 41 39 852.1

Int. Cl.[6] B05D 5/12

U.S. Cl. 427—64 9 Claims

1. A method for producing a device including a silicon substrate and a layer of a luminescent material arranged thereon, comprising (a) depositing a calcium layer on the silicon substrate, (b) superficially alloying the calcium into the silicon substrate by hearing to produce an alloyed silicon substrate and converting an alloy layer of the alloyed silicon substrate to the luminescent material, the converting being carried out by contacting the alloyed silicon substrate with a hydrogen chloride-containing solution and then carrying out a washing, the luminescent material being selected from the group consisting of (i) unsubstituted siloxene, (ii) substituted siloxene in which hydrogen atoms are substituted by another monovalent group and (iii) allotropic modifications of said unsubstituted and substituted siloxene.

5,624,706

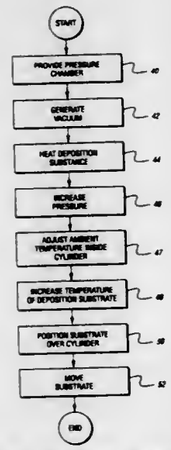
METHOD FOR FABRICATING ELECTRON MULTIPLIERS

Samuel Goukassian, Livonia, Mich., assignor to Electron R+D International, Inc., Farmington, Mich.

Continuation-in-part of Ser. No. 321,042, Oct. 5, 1994, abandoned, which is a continuation of Ser. No. 92,083, Jul. 15, 1993, abandoned. This application May 15, 1995, Ser. No. 440,754

Int. Cl.[6] B05D 5/12

U.S. Cl. 427—77 19 Claims



1. A process for the preparation of a micro random channel plate, comprising:

a) providing a substrate;

b) providing a deposition substance or precursor thereof, said deposition substance having a coefficient of secondary electron emission greater than 1;

c) depositing said deposition substance onto said substrate forming a performing substance layer comprising a plurality of chaotically situated dynodes interspersed with open space constituting random microchannels;

wherein said performing substance layer generates secondary electron emission in the presence of an electric field in response to an incident electron.

5,624,707

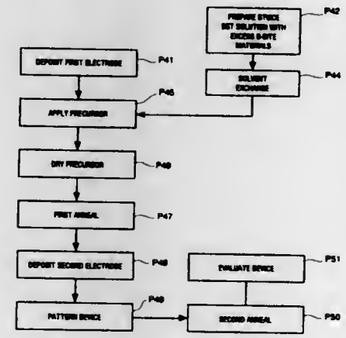
METHOD OF FORMING ABO_3 FILMS WITH EXCESS B-SITE MODIFIERS

Masamichi Azuma; Carlos A. Paz De Araujo, and Michael C. Scott, all of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo., and Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 165,082, Dec. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 132,744, Oct. 6, 1993, Pat. No. 5,514,822, which is a continuation-in-part of Ser. No. 993,380, Dec. 18, 1992, Pat. No. 5,456,945, Ser. No. 981,133, Nov. 24, 1992, Pat. No. 5,423,285, and Ser. No. 965,190, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 807,439, Dec. 13, 1991, abandoned, said Ser. No. 981,133is a continuation-in-part of Ser. No. 807,439. This application Jul. 5, 1994, Ser. No. 270,819

Int. Cl.[6] B05D 3/02;5/12

U.S. Cl. 427—96 17 Claims



1. A method for fabricating an integrated circuit containing a barium strontium titanate layer with excess B-site material in addition to a stoichiometric amount of B-site material required to satisfy a formula ABO_3 wherein A is an A-site material, B is a B-site material, and O is oxygen, said method comprising the steps of:

providing a liquid precursor comprising barium, strontium, and titanium;

blending a stoichiometric excess amount of $AB0_3$ B-site material into said liquid precursor to form a solution, said stoichiometric excess amount of ABO_3 material ranging from 0.01 mole percent to 100 mole percent of the total amount of B-site material required to satisfy the formula ABO_3,

said liquid precursor and said excess amount of ABO_3 B-site material including a metal-organic complex;

applying said solution to an integrated circuit substrate;

treating said solution to form said barium strontium titanate layer including said excess amount of B-site material on said substrate; and

forming an integrated circuit that includes said barium strontium titanate layer on said substrate.

5,624,708

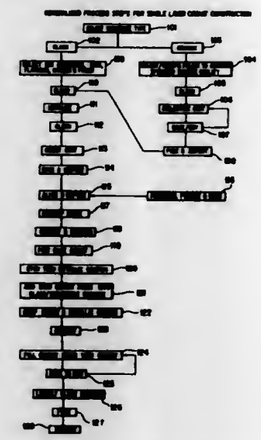
HIGH-DENSITY CIRCUIT AND METHOD OF ITS MANUFACTURE

Donald C. Sedberry, Gwynedd, Pa., assignor to Max Levy Autograph, Inc., Philadelphia, Pa.

Division of Ser. No. 195,030, Feb. 14, 1994, Pat. No. 5,416,502, which is a division of Ser. No. 928,352, Aug. 12, 1992, Pat. No. 5,317,342, which is a division of Ser. No. 408,529, Sep. 18, 1989, Pat. No. 5,162,191, which is a division of Ser. No. 141,113, Jan. 5, 1988, Pat. No. 4,897,676. This application Oct. 31, 1994, Ser. No. 331,854

Int. Cl.[6] B05D 5/12

U.S. Cl. 427—126.2 12 Claims



1. A method of making a substrate for an electronic circuit, the method comprising the steps of:

a) selecting a ceramic material for use as a base material for the substrate,

b) grinding and polishing the ceramic material,

c) cleaning the ceramic material,

d) selecting a dielectric material which has a melting temperature greater than about 850° C., the dielectric material including organic impurities, and coating the ceramic material with a layer of the dielectric material,

e) heating the ceramic and dielectric materials to a first temperature sufficient, and for a time sufficient, to drive off the organic impurities in the dielectric material,

f) heating the ceramic and dielectric materials to a second temperature sufficient to allow the dielectric material to flow, the second temperature being greater than the first temperature, and

g) cooling the ceramic and dielectric materials to form a product which has a smooth surface having a deviation of not more than about 5 microns per inch, which is capable of accepting a thin film layer, and which is capable of being etched with a line density of at least about 200 lines per inch.

5,624,709

HIGH RESOLUTION DIFFERENTIAL SPECTROMETRY SYSTEM

John E. Stannard; Cathy M. Peterson, both of Santa Barbara; Roger A. West, Ventura, and Geoffrey A. Walter, Santa Ynez, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Jun. 7, 1995, Ser. No. 480,223

Int. Cl.[6] B05D 5/06

U.S. Cl. 427—162 7 Claims

1. A method for fabricating a set of optical filters for use in a differential spectrometry system, comprising the steps of:

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depositing a first bandpass optical coating on a first optically transmissive substrate, said coating passing light that falls between a first set of wavelength boundaries λ_1 and λ_2, and

depositing a second bandpass optical coating on a second optically transmissive substrate, said coating passing light that falls between a second set of wavelength boundaries $(\lambda_1+\Delta\lambda)$ and λ_2.

5,624,710

METHOD FOR PREPARING HIGH-DRUG-CONTENT MIXTURES SUITABLE FOR UNIFORM DISTRIBUTION IN FEEDS

Ernst B. Grabitz, Casatenovo, Italy, assignor to Dox-AL Italia S.p.A., Correzzana, Italy

Filed Dec. 19, 1994, Ser. No. 359,114
Claims priority, application Italy, Dec. 17, 1993, MI93A2654
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—212 **23 Claims**

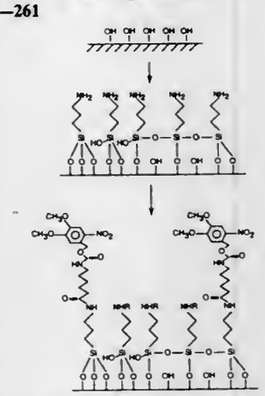
1. A process for preparing a granular premix suitable for distributing one or more active ingredients in an animal feed, comprising affixing the active ingredient(s) in an essentially uniform manner to the surface of core particles of feed-grade material having a diameter comparable in size to that of the particles of the animal feed.

5,624,711

DERIVATIZATION OF SOLID SUPPORTS AND METHODS FOR OLIGOMER SYNTHESIS

Steven A. Sundberg, San Francisco, and David Fujimoto, Mountain View, both of Calif., assignors to Affymax Technologies, N.V., Curacao, Netherlands

Filed Apr. 27, 1995, Ser. No. 431,196
Int. Cl.[6] B05D *1/36*
U.S. Cl. 427—261 **8 Claims**



1. A method for affixing functional sites to the surface of a solid substrate, comprising:

(a) contacting said solid substrate with a derivatizaton reagent, said reagent having a substrate attaching group and a reactive site, to covalently bind said substrate attaching group to said substrate and thereby form a derivatized substrate having reactive sites; and

(b) contacting said derivatized substrate with a mixture comprising linking molecules and diluent molecules, each of said linking molecules and diluent molecules having reactive groups capable of covalently binding to said reactive sites and said linking molecules alone further having a functional site for synthesis initiation, wherein said linking molecules and said diluent molecules are different and have different reactive properties and the ratio of said linking molecules to said diluent molecules in said mixture is selected to control the functional site density on said surface, to thereby bind said linking molecules and said diluent molecules to said substrate in accordance with said ratio.

5,624,712

LIQUID FATTY ACID PROTECTION OF ANODIZED ALUMINUM

Garson P. Shulman, Torrance, Calif., assignor to Alumitec Products Corp., Sierra Madre, Calif.

Division of Ser. No. 367,555, Feb. 21, 1995, which is a continuation of Ser. No. 146,533, Nov. 2, 1993, abandoned. This application Jun. 8, 1995, Ser. No. 488,805
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—327 **22 Claims**

1. Method of increasing the resistance of a freshly anodized aluminum surface comprising coating said surface, without the use of organic solvents before or during coating, with a fatty acid which is liquid at coating application temperatures, said temperatures ranging from about 15° to 35° C.

5,624,713

METHOD OF INCREASING LUBRICITY OF SNOW SKI BASES

Paul Ramer, Golden, Colo., assignor to Zardoz LLC, Boulder, Colo.

Filed Jan. 25, 1996, Ser. No. 590,385
Int. Cl.[6] B05D *5/08*
U.S. Cl. 427—371 **17 Claims**

1. A method of increasing the lubricity of a snow ski having a sintered base, comprising the step of applying a non-functional perfluoropolyether to the base of the ski in an amount effective to increase the lubricity during subsequent use of the sintered base in comparison to the lubricity of a sintered base of another snow ski not so treated, wherein the non-functional perfluoropolyether is liquid at a temperature of 5° F.

5,624,714

METHOD FOR WATERPROOFING RIGID STRUCTURAL MATERIALS

John H. Gaveske, Shakopee, Minn., assignor to Poly-Wall International, Inc., Minneapolis, Minn.

Division of Ser. No. 258,558, Jun. 6, 1994, abandoned, which is a division of Ser. No. 982,851, Nov. 30, 1992, abandoned. This application Apr. 16, 1996, Ser. No. 632,855
Int. Cl.[6] B05D *3/02;5/00*
U.S. Cl. 427—393.6 **4 Claims**

1. A method of waterproofing a rigid structural unit comprising the steps of:

(a) applying to at least one surface of a rigid structural unit a liquid composition in an organic solvent vehicle comprising a binder resin consisting essentially of a mixture of a styrene homopolymer and a styrene copolymer; and

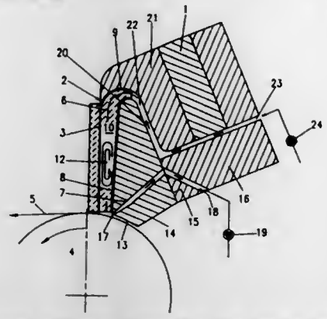
(b) solidifying the liquid composition to form a continuous film; wherein the continuous film adheres to and is more flexible than said surface of the rigid structural unit.

5,624,715

METHOD AND APPARATUS FOR CURTAIN COATING A MOVING SUPPORT

Markus Gueggi, Marly; Maurice Pasquier, La Tour-de-Trême, and Peter Schweizer, Wünnewil, all of Switzerland, assignors to Ilford AG, Freiburg, Switzerland

Filed Sep. 27, 1995, Ser. No. 534,842
Claims priority, application European Pat. Off., Sep. 27, 1994, 94810560
Int. Cl.[6] B05D *1/30;* **B05C** *5/00*
U.S. Cl. 427—420 **25 Claims**



1. A method for curtain coating a moving support with a liquid coating material, comprising the steps of:

moving a support to be coated with the liquid coating material along a pouring roll, said support having a layer of air carried therealong;

pouring said liquid coating material from a pourer onto said support along a dynamic wetting line formed on said support;

evacuating said flow of air and at least a portion of said layer of air that is carried along with said support with an evacuation device; and

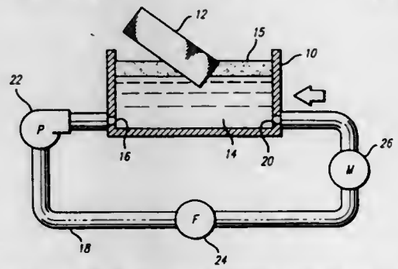
controllably supplying a substantially constant flow of air in a space upstream of said curtain, said flow of air being supplied through an opening defined by respective opposing surfaces of said evacuation device and said pourer.

5,624,716

METHOD OF SEALING ANODIZED ALUMINUM

Garson P. Shulman, Torrance, Calif., assignor to Alumitec Products Corp., Sierra Madre, Calif.

Continuation-in-part of Ser. No. 367,555, Feb. 21, 1995, which is a continuation of Ser. No. 146,533, Nov. 2, 1993, abandoned. This application Apr. 7, 1995, Ser. No. 418,311
Int. Cl.[6] B05D *1/18*
U.S. Cl. 427—430.1 **16 Claims**



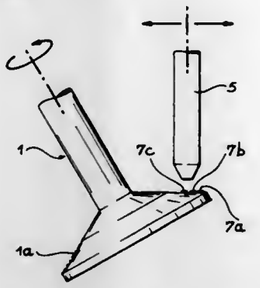
1. Method of sealing anodized aluminum surfaces of a structure against corrosion including dipping said structure into a tank of liquid, said liquid being ineffective to seal said structure surfaces, and maintaining a coating effective layer of fatty acid atop said tank of liquid in contacting relation with said structure surfaces during dipping of said structure into said tank, whereby said structure surfaces are coated with fatty acid.

5,624,717

PROCESS FOR COATING OR HARDFACING A PART BY MEANS OF A PLASMA TRANSFERRED ARC

Alain Proner, Lirac; Maurice Ducos, Mornas, and J. Phillipe Dacquet, Bollene, all of France, assignors to SNMI-Societe Nouvelle de Metallisation Industrie, Avignon Cedex, France

Continuation of Ser. No. 154,555, Nov. 19, 1993, abandoned. This application Jul. 12, 1995, Ser. No. 501,974
Claims priority, application France, Nov. 27, 1992, 92 14310
Int. Cl.[6] B05D *1/32;* **C23C** *4/08;* **B23K** *9/00;* **H05H** *1/48*
U.S. Cl. 427—448 **5 Claims**



1. Process for hardfacing a metal part by depositing a material on the metal part, comprising:

depositing on the part to be hardfaced at least one weld bead of said material solely by means of a plasma transferred arc utilizing a plasma torch, by displacing the plasma with respect to the part at a speed of 1.5 to 50 m/min and using a plasma power such that a surface of the part is melted over a thickness at most equal to 0.5 mm and enlargement of grains in a melted area does not exceed 10% as a result of the process for hardfacing, without cooling the part during hardfacing, whereby a thermally influenced zone is limited during hardfacing and enlargement of grains in the influenced zone is also limited, and energy of the heating action is dissipated without requiring cooling of the metal part during hardfacing; and

wherein the displacement speed v of the plasma relative to the metal part during hardfacing is chosen to satisfy the formula:

$$v = \frac{d}{5p^2} \cdot \frac{\lambda}{\rho C_p}$$

in which:

d is a plasma spot diameter on the metal part;

p is the melted surface thickness of the metal part;

ρ is a density of a material of the metal part;

λ is thermal conductivity of said material of the metal part; and

C_p is a specific heat of said material of the metal part.

5,624,718

DIAMOND-LIKE CARBON BASED ELECTROCATALYTIC COATING FOR FUEL CELL ELECTRODES

Geoffrey Dearnaley, San Antonio, Tex., assignor to Southwest Research Institue, San Antonio, Tex.

Filed Mar. 3, 1995, Ser. No. 398,281
Int. Cl.[6] C23C *14/48;* **B05D** *3/06*
U.S. Cl. 427—530 **20 Claims**

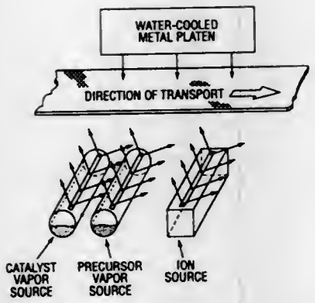
1. A method for forming an electrocatalytic coating for a fuel cell electrode comprising:

placing a substrate in a vacuum chamber; vaporizing a diamond-like carbon precursor and

a catalytic agent to form a flux comprising a vaporized mixture of said precursor and said catalytic agent;

condensing said flux onto said substrate in a vacuum for a time sufficient to form a film of said flux on said substrate and at a temperature low enough to avoid damaging said substrate;

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substantially simultaneously bombarding said substrate with an energetic beam of ions at an energy, a density, and for a time sufficient to form an electrocatalytic coating on said substrate.

5,624,719

PROCESS FOR SYNTHESIZING DIAMOND IN A VAPOR PHASE

Keiichiro Tanabe; Takahiro Imai, and Naoji Fujimori, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 931,494, Aug. 21, 1992, Pat. No. 5,380,516, which is a continuation of Ser. No. 459,836, Jan. 24, 1990, abandoned. This application Jul. 22, 1994, Ser. No. 279,088

Claims priority, application Japan, May 28, 1988, 63-130905; Jun. 10, 1988, 63-144185

Int. Cl.[6] B01J *3/06*

U.S. Cl. 427—577 **12 Claims**

1. A method for synthesizing diamond by vapor phase deposition consists essentially of introducing a gas mixture consisting essentially of oxygen gas and a gaseous compound containing carbon into a reaction vessel, said gas mixture not containing hydrogen gas,

keeping the pressure in said reaction vessel at 5 to 760 Torr, and

generating a plasma in said vessel by means of a direct current or alternating current electromagnetic field, thereby producing diamond on a substrate held in said vessel.

5,624,720

PROCESS FOR FORMING A DEPOSITED FILM BY REACTING BETWEEN A GASEOUS STARTING MATERIAL AND AN OXIDIZING AGENT

Yoshiyuki Osada, Atsugi, and Jun-Ichi Hanna, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 94,358, Jul. 21, 1993, abandoned, which is a continuation of Ser. No. 837,685, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 501,500, Mar. 30, 1990, abandoned. This application Sep. 21, 1994, Ser. No. 308,544

Claims priority, application Japan, Mar. 31, 1989, 1-081105

Int. Cl.[6] C23C *16/48;8/00;16/00*

U.S. Cl. 427—583 **18 Claims**

1. A process for forming a crystalline deposited film on a substrate in a reaction space which comprises: (i) separately introducing at measurable flow rates a first flow of a gaseous starting material for forming the deposited film, said gaseous starting material being a gas of a single tetrahedral-based compound, or a gas mixture of more than one of said tetrahedral-based compound, or each of said gas of said single tetrahedral-based compound or said gas mixture of more than one of said tetrahedral-based compound additionally containing a doping element, and a second flow of a gaseous oxidizing agent, capable of having an oxidation action on the gaseous starting material, into said reaction space, wherein said gaseous oxidizing agent is a halogen compound, (ii) chemically contacting said gaseous starting material and said oxidizing agent, thereby generating a plurality of precursors including a precursor in an excited state, and (iii) utilizing at least one of the generated precursors as a supply source of film-constitution member, (iv) supplying to said substrate a level of energy sufficient to create a 10° C. to 80° C. increase in a temperature of the substrate surface by varying the level of the energy supplied to said substrate to increase said substrate temperature such that said substrate temperature is synchronized with a flow ratio of the gaseous oxidizing agent to the gaseous starting material wherein said synchronization is achieved by adjusting the substrate temperature and the flow ratio so that when the temperature of the substrate surface increases, the flow ratio of the gaseous oxidizing agent to the gaseous starting material is decreased, and when the temperature of the substrate surface decreases, said flow ratio increases, thereby controlling deposition action during the forming of a deposited film on said substrate, and to impart a non-uniform temperature distribution on said substrate surface, where deposition takes place,

thereby forming the crystalline deposited film on said substrate in said reaction space.

5,624,721

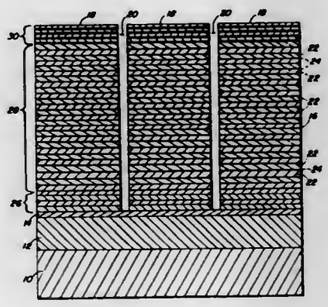
METHOD OF PRODUCING A SUPERALLOY ARTICLE

Thomas E. Strangman, Phoenix, Ariz., assignor to AlliedSignal Inc., Morris Township, N.J.

Division of Ser. No. 436,846, May 8, 1995, Pat. No. 5,512,382. This application Dec. 15, 1995, Ser. No. 573,334

Int. Cl.[6] B05D *7/24*

U.S. Cl. 427—585 **5 Claims**



1. A method for producing a superalloy article having a ceramic thermal barrier coating thereon, comprising the steps of:

(a) providing a superalloy substrate;

(b) applying a bond coat to at least a portion of said superalloy substrate;

(c) applying by electron beam physical vapor deposition a ceramic coat to said bond coat; and

(d) introducing a small concentration of metallic vapor into the electron beam physical vapor deposition.

5,624,722

APPARATUS AND METHOD FOR DEPOSITING FILMS ON SUBSTRATE VIA ON-AXIS LASER ABLATION

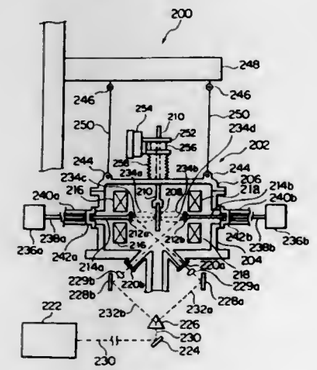
Tatsuoki Nagaishi, and Hideo Itozaki, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 1, 1996, Ser. No. 609,248

Claims priority, application Japan, Mar. 7, 1995, 7-074424; Mar. 7, 1995, 7-074445; Mar. 7, 1995, 7-074608

Int. Cl.[6] C23C *8/00*

U.S. Cl. 427—586 **23 Claims**



1. An apparatus for depositing thin films on a substrate having a first surface and a second surface, said apparatus comprising:

(1) a vacuum cheer, which is thermally resistant at a temperature of about 200° C., said vacuum chamber including:

(a) a first target of a first deposition material supported by a first target holder;

(b) a second target of a second deposition material supported by a second target holder so as to face said first target;

(c) a substrate holder for holding said substrate such that said first and second surfaces of said substrate face said first and second targets, respectively;

(d) a heating means for heating said first and second surfaces of said substrate;

(e) a first entrance window through which a first laser beam passes to impinge onto said first target with a predetermined angle; and

(f) a second entrance window through which a second laser beam passes to impinge onto said second target with a predetermined angle, and

(2) a laser beam optical system comprising at least one laser beam source and an optical path system from said laser beam source to said targets, said optical path system including mirrors for reflecting the laser beams toward said targets through said entrance windows of said chamber.

5,624,723

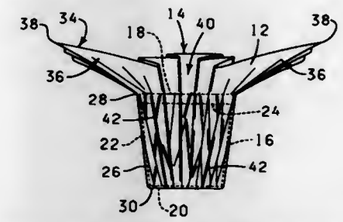
ARTICLE FORMING SYSTEM

Donald E. Weder; Erin H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,776

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—341 **51 Claims**



1. A planter tray for growing plants made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the planter tray comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed planter tray is flexible and may be substantially flattened and unflattened to assume the original shape of the formed planter tray without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed planter tray, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the planter tray and for cooperating to retain the planter tray in the formed shape.

5,624,724

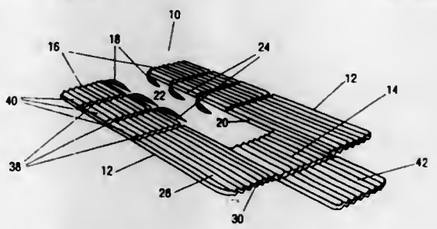
SELF RETAINABLE SHIM

Robert H. Reliy, Richmond, Ind., assignor to Shimmer, Inc., Waynesville, Ohio

Filed Apr. 8, 1996, Ser. No. 629,214

Int. Cl.[6] B32B *3/02;3/06;3/30*

U.S. Cl. 428—43 **16 Claims**



1. A self-retainable generally U-shaped shim, which includes:

a pair of parallel legs;

a base interconnecting said legs; and

a first retainer finger extending from a first of said legs generally toward a second of said legs in a manner to define a self-retaining surface area between said finger, said legs and said base.

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5,624,725
PROTECTIVE OVERCOATINGS FOR MAGNETIC-RECORDING DISKS

Carl W. Nelson, Hayward, and Richard D. Weir, Agoura Hills, both of Calif., assignors to Tulip Memory Systems, Inc., Fremont, Calif.

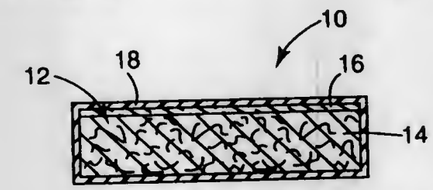
Division of Ser. No. 111,832, Aug. 25, 1993, Pat. No. 5,453,168. This application Aug. 11, 1995, Ser. No. 514,448
Int. Cl.[6] G11B *5/72*
U.S. Cl. 428—65.5 **5 Claims**

1. A magnetic recording disk medium overcoating, comprising:
an interfacial layer comprising titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, or tungsten, wherein the interfacial layer is deposited on the magnetic-recording medium, and wherein the interfacial layer is an energetic-atom-deposited dense fibrous Zone T structure on a Movchan-Demchishin-Thornton zone-structure diagram; and
a protective layer comprising a nitride, carbide, or boride of the element used in the interfacial layer, wherein the protective layer is deposited on the interfacial layer, and wherein the interfacial layer is an energetic-atom-deposited dense fibrous Zone T structure on a Movchan-Demchishin-Thornton zone-structure diagram.

5,624,726
INSULATION BLANKET

Stephen M. Sanocki, Stillwater; Michael D. Swan, Woodbury; John L. Erickson, White Bear Township, Ramsey County, and James A. Rustad, Fairmont, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 9, 1995, Ser. No. 370,515
Int. Cl.[6] B32B *17/02;5/16*
U.S. Cl. 428—74 **21 Claims**



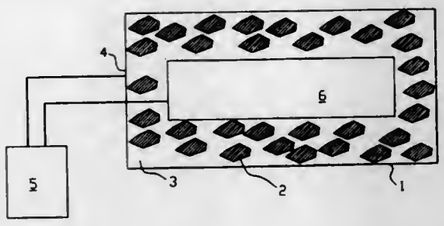
1. An insulation blanket comprising fibrous insulation, foam insulation, or a combination thereof encased within a heat-sealable polymer comprising a rubber-toughened thermoplastic polyolefin.

5,624,727
STRUCTURAL DEVICES WITH CHANGING MECHANICAL PROPERTIES RESPONSIVE TO EXTERNAL FORCES

Vladimir A. Stoy, Borough of Princeton, N.J., assignor to S.K.Y. Polymers, Inc., Rocky Hill, N.J.

Filed Dec. 14, 1994, Ser. No. 355,657
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—76 **41 Claims**

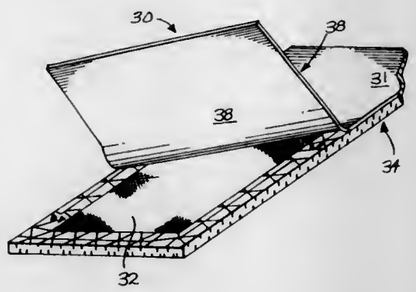
1. A device having a first state and a second state, said first state being at least semi-flexible and formable, and said second state being less flexible and less formable than said first state, said device being transformable from said first state to said second state, which comprises:
(a) a hollow body having at least partial flexibility and containing a plurality of particulate material therein;
(b) a plurality of particulate material permanently located within said hollow body;
(c) a fluid medium, having a first state wherein it is located in said hollow body and intermixed with said particulate material, and having a second state wherein it is located at least partly away from said particulate material, said first state and said second state corresponding to said first state and said second state of said device;
(d) fluid transfer means connected to said hollow body for removing said fluid medium from said particulate material of said hollow body to a fluid medium receptor and for returning said fluid medium thereto, thereby transforming said device from said first state to said second state and vice versa; and,
(e) a fluid medium receptor located within said hollow body and connected to said fluid transfer means;
said fluid medium receptor being located within said hollow body and being surrounded by said particulate material.



5,624,728
COMPOSITE PANEL

Neil L. Hoopingarner, Everett, and Barry D. Matin, Maple Valley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 235,594, Apr. 29, 1994, Pat. No. 5,589,016. This application Jun. 6, 1995, Ser. No. 466,506
Int. Cl.[6] B32B *3/30*
U.S. Cl. 428—76 **5 Claims**



1. A planar composite panel having two opposed planar faces, comprising:
two resin-impregnated fiber face sheets covering and bonded to two opposed sides of a core element; and
a border element made of foam board surrounding said core element, said border element including a plurality of foam strips each of said foam strips having a pattern of indentations within at least one side of said foam board, said pattern of indentations having three series of indentations within said foam board, each series being angularly offset from each other two series by 60°;
said resin being of the type that generates relatively large volumes of volatile vapors during curing in the course of said bonding, said volatile vapors having been vented from said core element between said face sheets though said series of indentations within said foam board.

5,624,729
INCREASED PILE DENSITY COMPOSITE ELASTIC MATERIAL

Bernard Cohen, Duluth; Robert J. Roeder, Roswell; Jay S. Sbultz, Roswell, and Raju Venkatapathy, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

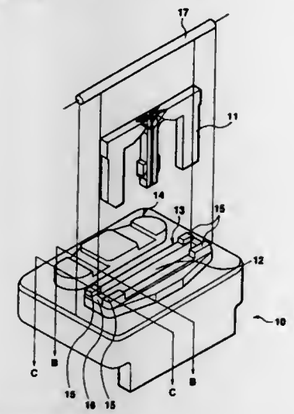
Continuation of Ser. No. 852,447, Mar. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 414,482, Sep. 29, 1989, abandoned. This application Feb. 6, 1995, Ser. No. 384,064
Int. Cl.[6] B05D *1/14*
U.S. Cl. 428—90 **29 Claims**

1. A lanate composite elastic material comprising:
at least one pressure sensitive elastomer adhesive sheet; and
nonelastic fibrous materials inserted into said pressure sensitive elastomer adhesive sheet by mechanical needling while the pressure sensitive elastomer adhesive sheet is subject to a stretching force so that, upon recovery of the pressure sensitive elastomer adhesive sheet, the fibrous materials are positioned closer together than before recovery of said sheet, thereby providing a lanate appearance.

5,624,730
MAGNETIC HEAD

Makoto Wakasugi, Tokorozawa, and Chiaki Hara, Saku, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 221,389, Mar. 31, 1994, Pat. No. 5,457,871. This application May 17, 1995, Ser. No. 414,716
Claims priority, application Japan, Apr. 2, 1993, 5-98404; May 20, 1993, 5-139892
Int. Cl.[6] G11B *5/10*
U.S. Cl. 428—136 **10 Claims**



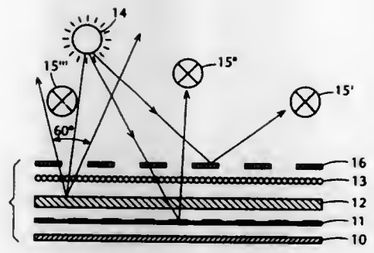
1. A slider blank comprising:
a main sliding-contact portion including an elongated hole defined by two elongated edges each having an upper surface and a plurality of protrusions discontinuously arranged on at least one of the two elongated edges.

5,624,731
MULTI-COLOR, MULTI-IMAGE RETROFLECTIVE GONIOCHROMATIC DISPLAY

Alexander Desjardins, 251 Washington Ave., Apt. 5R, Brooklyn, N.Y. 11205

Filed Mar. 10, 1995, Ser. No. 402,029
Int. Cl.[6] G02B *5/122;5/128*
U.S. Cl. 428—143 **11 Claims**

1. A planar display which when illuminated by a light source is adapted to present selectively to an observer colors that depend both on the angular position of the source and that of the observer relative to the display, said display comprising:

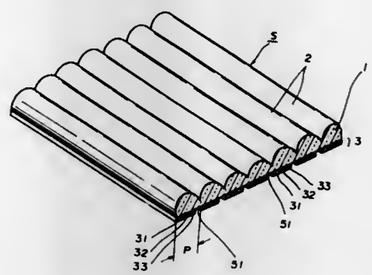


A. an opaque substrate coated with a base layer, presenting a distinctive color having an image applied thereto;
B. an intermediate layer overlying the substrate constituted by a transparent matrix having dispersed therein particles of interference pigment to render the intermediate layer goniochromatic whereby when light rays from the source are incident to the intermediate layer, the reflected rays then have a color which depends on the angle at which light rays strike the interference pigment; and
C. a retroreflective layer overlying said intermediate layer, whereby when light rays form the source incident to the retroreflective layer are reflected thereby, these rays then return along parallel paths, and depending on said angular position of said source and that of the observer relative to the display, the light rays will either pass both through the intermediate and retroreflective layers and the observer will see the image on the substrate, or the light rays will only pass through the retroreflective layer and the observer will then see a color emanating from the goniochromatic intermediate layer.

5,624,732
BRIGHT PRINTED SHEET

Masahiro Oshima, and Katumi Shimizu, both of Osaka, Japan, assignors to Meiwa Gravure Co., Ltd., Osaka, Japan

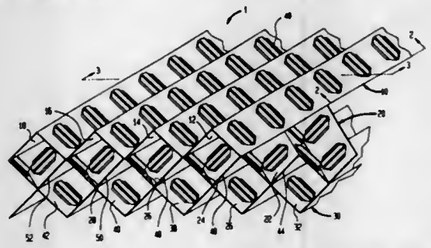
Filed Nov. 22, 1994, Ser. No. 345,749
Claims priority, application Japan, Sep. 28, 1994, 6-012000 U
Int. Cl.[6] B32B *3/28; A47G 35/00*
U.S. Cl. 428—167 **19 Claims**



1. A bright printed drapeable sheet in which a transparent drapeable plastic sheet is provided with a plurality of linearly extending convex lenses formed repeatedly, continuously and integrally therewith, on an outer surface thereof, and a transparent printed layer formed on a back side thereof.

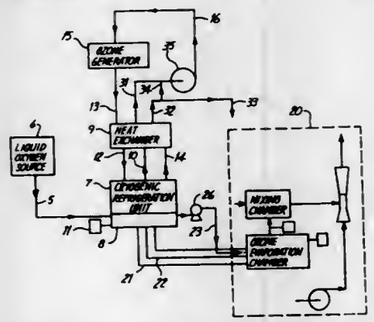
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5,624,733
STRUCTURED PACKING
Kevin McKelgue, New York, N.Y., and Venkat Natarajan, Scotch Plains, N.J., assignors to The BOC Group, Inc., New Providence, N.J.
Filed Jun. 27, 1995, Ser. No. 495,159
Int. Cl.[6] B01F *3/04*; B32B *3/28*
U.S. Cl. 428—182 **10 Claims**



1. A structured packing for producing intimate contact between vapor and liquid phases, said structured packing comprising:
a plurality of juxtaposed sheets through which said liquid phase descends as a film;
said sheets having corrugations to form flow channels through said sheet for said vapor phase to ascend through the structured packing and contact said liquid phase;
said sheets having a plurality of elongated projections, situated on at least one side of said flow channels and at least on one side of each of said sheets, configured and oriented to produce turbulent mixing in said vapor phase as its ascends and thereby inhibit concentration gradients from arising within the vapor phase in directions normal to surfaces of said corrugations defining said flow channels; and
said elongated projections spaced apart from one another so that said turbulence in said vapor phase subsides between said elongated projections.

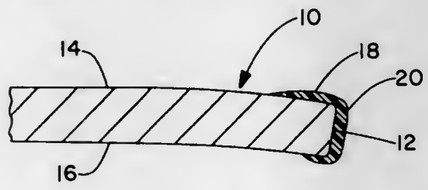
5,624,734
CONTINUOUS PROCESS AND APPARATUS FOR GENERATION OF OZONE FOR INDUSTRIAL APPLICATION WITH CRYOGENIC REFRIGERATION
Darci L. Rees, and Michael George, both of 4431 Jay St., Duluth, Minn. 55802
Filed Feb. 21, 1996, Ser. No. 604,620
Int. Cl.[6] B01J *19/08*
U.S. Cl. 422—186.11 **11 Claims**



1. A continuous process for generation of ozone for use in treating a process fluid steam; the method comprising:
(a) converting an oxygen source to ozone in an ozone generator to yield an ozone-containing gas;
(b) cooling the ozone-containing gas to produce liquid ozone and a recyclable process gas; the cooling step comprising:
(i) passing the ozone-containing gas through a heat exchanger to produce cooled ozone-containing gas; and
(ii) converting the cooled ozone-containing gas to liquid ozone and a recyclable process gas in a first portion of a cryogenic refrigeration unit;
(c) separating the recyclable process gas from the liquid ozone;
(d) directing a first portion of the recyclable process gas to the heat exchanger to cool incoming ozone-containing gas;
(e) directing a second portion of the recyclable process gas to the ozone generator wherein contaminants in the recyclable process gas are vented prior to entering the ozone generator;
(f) collecting the liquid ozone in a second portion of the cryogenic refrigeration unit; and
(g) transporting the liquid ozone from the second portion of the cryogenic refrigeration unit to an injection apparatus for treatment of a process fluid stream.

8. An ozone generation and process fluid stream treatment apparatus comprising:
(a) an ozone generator to generate ozone-containing gas;
(b) a heat exchanger through which the ozone-containing gas is cooled to become cooled ozone-containing gas;
(c) a cryogenic refrigeration unit in which the cooled ozone-containing gas is converted to a recyclable process gas and liquid ozone; and
(d) an injection system for use in treatment of a process fluid stream; the injection system comprising:
(i) a cryogenic refrigerant circulation pump to extract cryogenic refrigerant bath from a cryogenic refrigeration unit;
(ii) a transport assembly comprising a first inner pipe to transport refrigerant bath into an injection apparatus; a second inner pipe to transport the liquid ozone into an injection apparatus; and an outer pipe to transport the cryogenic refrigerant bath back to the cryogenic refrigeration unit; and
(iii) an injection apparatus comprising:
(A) means for evaporating liquid ozone into a carrier gas; and
(B) means for injecting the mixture of ozone and carrier gas into an untreated process fluid stream.

5,624,735
POWDER COATING EDGE PRIMER
Adam M. Anderson, Shelbyville; Joseph V. Castillo, Marion; Pasquale V. DePalma, and Daniel A. Thompson, both of Indianapolis, all of Ind., assignors to Cambridge Industries, Inc., Madison Heights, Mich.
Division of Ser. No. 203,119, Feb. 28, 1994, Pat. No. 5,516,551. This application Jun. 5, 1995, Ser. No. 465,033
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—192 **8 Claims**

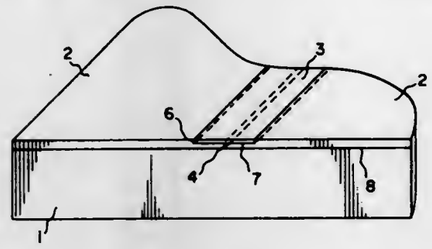


1. In a sheet molded compound (SMC) article having an exterior surface and at least a machined edge having a bordering margin; the improvement comprising only a machined edge or only said machined edge and said bordering margin being primed with a cured, coalesced powder coating so that the remainder of said SMC exterior surface is primerless with respect to containing a powder coating thereon, any cured, coalesced powder coating primer on said bordering margin having a gradual decrease in thickness from said primed edge to said primerless exterior surface.

5,624,736
PATTERNED CONDUCTIVE TEXTILES
Alfred R. DeAngelis; Andrew D. Child, both of Spartanburg, S.C., and Dennis E. Green, Elkhart, Ind., assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed May 12, 1995, Ser. No. 440,273
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—196 **20 Claims**

1. A material comprising of fabric having an area of high conductivity, where the conductivity has been enhanced by a conductive polymer film having been deposited thereon, the conductive polymer film in the area of high conductivity is coated with a second film which is resistant to a chemical etching agent capable of degrading the conductive polymer, the fabric further having an area of low conductivity, which has not been coated with the second film, and where the conductivity is less than the area of high conductivity.

5,624,737
METHOD FOR ADHERING MATERIALS HAVING DIFFERING EXPANSION PROPERTIES AND ARTICLES PRODUCED THEREFROM
Robert Fairbanks; Merrill Glos, both of Cincinatti, Ohio; Jeremy P. Miller, Lanesboro; Charles Mulcahy, Clarksburg, both of Mass.; Kurt A. Weiss, Stephentown, N.Y., and William F. Whetstone, Cincinatti, Ohio, assignors to General Electric Company, Pittsfield, Mass.
Continuation-in-part of Ser. No. 18,992, Feb. 18, 1993, abandoned. This application Dec. 3, 1993, Ser. No. 161,835
Int. Cl.[6] B32B *27/10;27/14;27/36*
U.S. Cl. 428—198 **13 Claims**

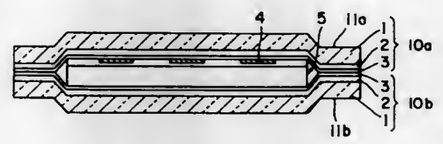


1. A composite article of manufacture, comprising:
(A) a cellulose based substrate material having a groove therein;
(B) a thermoplastic coating material comprising a polyester resin selected from the group consisting of polyethylene terephthalate, polypropylene terephthalate, polybutylene terephthalate, and polycyclohexyldimethylene
terephthalate, said coating material having expansion properties significantly different that said substrate material, wherein the difference in expansion properties between said substrate and said coating is at least 500%, said coating material having joint forming a seam;
(C) a composite adhesive comprising a rigid adhesive and a laminating adhesive which bonds said coating to said substrate material; (D) a spline being bound in said groove by said laminating adhesive, said spline being bound to said coating material along said seam by said rigid adhesive; wherein said spline material has expansion properties similar to the coating material.

5,624,738
NONSLIPPING LAMINATE MULTIFILAMENT OUTER SHELL FOR FIREFIGHTER GARMENT
Claude Barbeau, Saint-Lambert, and Ross Cochran, Ville Mont-Royal, both of Canada, assignors to Marcanada Inc., Montreal, Canada
Filed Dec. 18, 1995, Ser. No. 573,994
Int. Cl.[6] B32B *27/14*
U.S. Cl. 428—198 **7 Claims**

1. In a firefighter garment including a fire-resistant outer shell, moisture barrier and thermal liner, the improvement wherein said outer shell comprises a laminate formed of a first sheet of plain weave fabric derived from inherently fire-resistant multifilamentary aramid, polyimide, polyamide, polybenzimidazole yarns; a second sheet of woven, non-woven or knitted fire-resistant textile material, and adhesive means enabling said first sheet and said second sheet to be laminated in such a manner that said first sheet and said second sheet are non-slipping relative to one another and such that fraying of either sheet is inhibited while enabling said laminate to be air permeable, with a minimum of ten (10) cubic feet per minute (CFM), when tested in accordance with ASTM D737.

5,624,739
LAMINATE SHEET AND CARD
Junichi Hiroi, Tokyo, Japan, assignor to DAI Nippon Printing Co., Ltd., Japan
Division of Ser. No. 357,984, Dec. 19, 1994, Pat. No. 5,480,701, which is a continuation of Ser. No. 111,275, Aug. 24, 1993, abandoned, which is a division of Ser. No. 769,371, Oct. 1, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 458,286
Claims priority, application Japan, Oct. 4, 1990, 2-265109
Int. Cl.[6] B41M *5/26*; B32B *27/14*
U.S. Cl. 428—201 **1 Claim**



1. A laminated structure comprising:
a sheet material in which a thermally transferred image is formed on at least one of first and second opposed surfaces thereof; and
first and second laminate sheets each comprising (i) a base film having a first major surface and an opposed, second major surface; (ii) a first bonding layer laminated on said first major surface of said base film; and (iii) a second bonding layer laminated on said first bonding layer;
wherein (a) each of said first and second laminate sheets is bonded to opposing surfaces of said sheet material through direct contact with said second bonding layer of each laminate sheet, (b) each said second bonding layer comprises at least one material selected from the group consisting of a solid slipping agent in a quantity of 0.01 to 20 parts by weight per 100 parts by weight of the remaining components of said second bonding layer, and a filler in a quantity of 0.01 to 20 parts by weight per 100 parts by weight of the remaining components of said second bonding layer, and (c) said first and second laminate sheets extend outward from both ends of said sheet material and second bonding layers of said first and second laminate sheets are bonded together at the extended ends thereof.

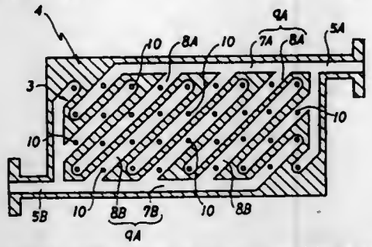
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5,624,740

DOORMATS MANUFACTURING APPARATUS

Akira Nakata, Komaki, Japan, assignor to Yugengaisya Towa, Aichi-ken, Japan

Continuation of Ser. No. 318,939, Oct. 6, 1994, abandoned, which is a division of Ser. No. 263,671, Jun. 22, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 616,236
Claims priority, application Japan, Jul. 27, 1993, 5-205743
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—204 **4 Claims**



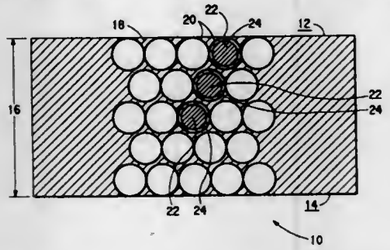
1. A doormat manufacturing apparatus, comprising a spinning pack for spinning a large number of monofilaments, the spinning pack having a rectangular shape and defining a plane, a plurality of extruders disposed at opposite ends of the spinning pack for supplying a plurality of molten synthetic resins to the spinning pack, and a collecting mechanism for collecting monofilaments discharged from the spinning pack, the spinning pack comprising a resin flowpath changeover unit and a multihole nozzle plate, the resin flowpath changeover unit in contact with the multihole nozzle plate and having a longitudinal axis, the resin flowpath changeover unit having a respective communicating pipeline for each extruder, each communicating pipeline being connected to and longitudinally aligned with each respective extruder, the resin flowpath changeover unit having a plurality of longitudinally extending main flowpaths, each of which being longitudinally aligned with and communicating with a respective communicating pipeline, each longitudinally extending main flowpath having a plurality of branch flowpaths, each branch flowpath being angled with respect to said longitudinal axis, the pluralities of branch flowpaths substantially covering the surface of the resin flowpath changeover unit, and the multihole nozzle plate having at least one nozzle hole in communication with each branch flowpath of said plurality of branch flowpaths, the communicating pipelines, the longitudinally extending main flowpaths and the plurality of branch flowpaths lying in a plane of said resin flowpath changeover unit.

5,624,741

INTERCONNECT STRUCTURE HAVING ELECTRICAL CONDUCTION PATHS FORMABLE THEREIN

David M. Scott, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 531,328, May 31, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 797,489
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—210 **19 Claims**



1. An interconnect structure having a matrix formed of a continuous, substantially oxygen impermeable, anhygroscopic, inorganic dielectric material, the inorganic dielectric material having therein a dispersion of metal particles, at least substantially all of the metal particles being coated by an insulating coating, the dispersion containing a sufficient quantity of coated particles such that substantially all of the coated particles are in abutting contact with at least one other particle, the application of an electrical potential between spaced first and second points on the surface of the interconnect structure sufficient to cause electrical breakdown of the coatings on the particles in the region between the points of application irreversibly forming an electrical conduction path through the interconnect structure between the first and the second points.

5,624,742

BLENDED LOOSE-FILL INSULATION HAVING IRREGULARLY-SHAPED FIBERS

William M. Babbitt, New Albany; Steven G. Schmitt, Newark; Michael E. Evans; John R. Mumaw, both of Granville; Roberta L. Alkire, Millersport; W. Scott Miller; Ronald A. Houpt, both of Newark; Russell M. Potter, Hebron; Tod D. Green, Somerset; David P. Aschenbeck, Newark, and Clarke Berdan, II, Granville, all of Ohio, assignors to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 602,478, Feb. 20, 1996, which is a continuation of Ser. No. 309,698, Sep. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 148,098, Nov. 5, 1993, Pat. No. 5,431,992. This application Mar. 20, 1996, Ser. No. 619,028
Int. Cl.[6] B32B *5/08*; C03B *37/075;37/14*; D04H *1/06*
U.S. Cl. 428—212 **29 Claims**

1. A loose-fill insulation product comprising a blend of a first insulating material comprised of a first series of three-dimensional groups of fibers having a first size and density and a second series of three-dimensional groups of fibers having a second size and density, said second size being smaller than said first size; wherein the fibers of at least one of said first or second insulating materials are irregularly-shaped glass fibers wherein each fiber is comprised of two distinct glass compositions with different coefficients of thermal expansion.

16. A method of making a blended loose-fill insulation product comprising the steps of:

providing a first insulating material comprised of a first series of three-dimensional groups of fibers having a first size and density;

providing a second insulating material comprised of a second series of three-dimensional groups of fibers having a second size and density, said second size being smaller than said first size of said fibers; wherein the fibers of at least one of said first or second insulating materials are irregularly-shaped glass fibers wherein each fiber is comprised of two distinct glass compositions with different coefficients of thermal expansion; and

blending said first and second insulating materials together.

5,624,743

INK JET TRANSPARENCIES

Shadi L. Malhotra, Crescent, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1996, Ser. No. 606,699
Int. Cl.[6] B41J *2/01*
U.S. Cl. 428—216 **29 Claims**

1. A transparency consisting essentially of a supporting substrate, thereover and thereunder a first coating layer comprised of a binder having a glass transition temperature in the range of from about 10° to about 54° C., a cellulosic viscosity modifier, a lightfastness inducing agent and a biocide, and wherein said binder is present in an amount of from about 20 percent by weight to about 50 percent by weight, the viscosity modifier is present in an amount of from about 78 percent by weight to about 37 percent by weight, the lightfastness inducing agent is present in an amount of from about 1.9 percent by weight to about 10 percent by weight, and the biocide is present in an amount of from about 0.1 percent by weight to about 3 percent by weight; and a second ink-receiving coating layer thereover and thereunder comprised of a hydrophilic binder, an oxyalkylene compound, a dye mordant, filler, and biocide, and wherein the binder is present in an amount of from about 20 percent by weight to about 68.9 percent by weight, the oxyalkylene compound is present in an amount of from about 42 percent by weight to about 20 percent by weight, the dye mordant is present in an amount of from about 30 percent by weight to about 10 percent by weight, the filler is present in an amount of from about 5 to about 1 percent by weight, and the biocide is present in an amount of from about 3 to about 0.1 percent by weight; and wherein the first coating is in contact with the substrate and is situated between the substrate and the second ink coating, and which transparency possesses a haze value of from about 1 to about 10 and a lightfastness value of from about 70 to about 95.

5,624,744

HIGH STRENGTH ACID STABLE COMPOSITE MATERIALS

Richard A. Driggett, Sr., Elgin, Ill., assignor to Tox-Wastech, Inc., Wheaton, Ill.

Continuation-in-part of Ser. No. 57,234, May 3, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 509,249
Int. Cl.[6] B32B *5/16*
U.S. Cl. 442—129 **10 Claims**

1. An acid resistant, structurally reinforced composite comprising:

a) a thermosetting matrix resin capable of providing heat stability to the composite of at least 200° C. in a volume of 30 to 70 percent wherein the resin is selected from the group consisting of Bisphenol-A-Epichlorohydrin epoxy resin and mixtures of Bisphenol-A-Epichlorohydrin epoxy resin and epoxy phenolic Novalac resins, wherein said mixtures comprise from about 0.01 to about 50.0 weight percent epoxy phenolic Novalac resin based on the total mixture weight, and wherein said resin contains a curing agent in a weight ratio of from about 5:1 to 5:6 total resin to curing agent, and further wherein said curing agent is a dimer fatty acid polyamide;

b) at least one of carbon fibers and carbon fabrics in a volume of 20–65 percent; and

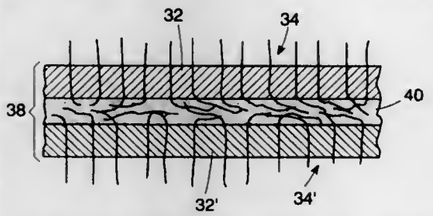
c) borosilicate glass particulates in a volume of 5 to 50 percent.

5,624,745

DENTAL ADHESIVE DEVICE AND METHOD FOR PRODUCING SAME

Herbert Lapidus, Ridgefield, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Filed Jun. 7, 1995, Ser. No. 476,280
Int. Cl.[6] B32B *5/26*
U.S. Cl. 428—308.8 **16 Claims**



1. A method of producing a dental adhesive product comprising:

(a) applying a film comprising a thermoplastic ethylene oxide polymer composition to a surface of a first fibrous web;

(b) contacting the first web with a second fibrous web in superimposed relation; and

(c) applying heat and pressure to deform the ethylene oxide polymer composition and thereby thermoplastically bond the webs into a unitary structure.

11. A dental adhesive product comprising a pair of superimposed fiber-faced webs, each web having a carrier portion with fibers held therein and protruding therefrom to present a fiber facing on each side of each of said webs and a film comprising an ethylene oxide polymer composition sandwiched between said webs, wherein said film having been deformed by application of heat and pressure thereby thermoplastically bonds the webs into a unitary structure.

5,624,746

Patent Not Issued For This Number

5,624,747

WATER BASED TONER RECEPTIVE CORE/SHELL LATEX COMPOSITIONS

Manisha Sarkar, Austin, Tex., and Ying-Yuh Lu, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 342,158, Nov. 18, 1994, Pat. No. 5,500,457. This application Oct. 10, 1995, Ser. No. 541,800
Int. Cl.[6] B32B *5/16;9/04;27/06;27/36*
U.S. Cl. 428—327 **2 Claims**

1. A transparent image-receptive sheet comprising a transparent polymeric substrate having coated on at least one major surface, a water-based toner-receptive composition comprising:

a) a core/shell latex polymer comprising:

1) a core formed from:

i) from about 60 to 100 parts of at least one α,β-ethylenically unsaturated monomer having from about 1 to about 12 carbon atoms; and

ii) 0 to about 40 parts of at least one monomer selected from the group consisting of bicyclic alkyl(meth)acrylates and aromatic (meth)acrylates; and

2) a shell formed from:

i) 0 to about 65 parts of at least one monomer selected from the group consisting of bicyclic alkyl (meth)acrylates and aromatic (meth)acrylates; and

ii) about 35 to 100 parts of at least one α,β-ethylenically unsaturated monomer having from about 1 to about 8 carbon atoms; and

b) from about 1 to about 15 parts polymeric particles having an average particle size of from about 0.25 μm to about 15 μm, comprising:

1) at least about 20 parts by weight polymerized diol di(meth)acrylate having a formula

$$H_2C{=}CR^2COOC_nH_{2n}OOCR^2{=}CH$$

wherein R^2 is hydrogen or a methyl group, and n is an integer from about 4 to about 18,

2) from 0 to about 80 parts of at least one copolymerized vinyl monomer having the formula

$$CH_2{=}CR^2COOC_mH_{2m+1}$$

wherein R^2 is hydrogen or a methyl group and m is an integer of from about 12 to about 40, and

3) from 0 to about 30 parts of at least one copolymerized ethylenically unsaturated monomer selected from the group consisting of vinyl esters, acrylic esters, methacrylic esters, styrene, derivatives thereof, and mixtures thereof, a, b and c having a total of 100 parts, and

c) from 0 to about 20 parts of an antistatic agent selected from the group consisting of cationic agents, anionic agents, fluorinated agents, and nonionic agents.

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5,624,748

PACKAGING MATERIALS HAVING BARRIER PROPERTIES AGAINST OXYGEN

Erich Penzel; Hermann Seyffer, both of Heidelberg; Eberhard Beckmann, Neustadt, and Norbert Sendhoff, Grünstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 5, 1995, Ser. No. 523,798

Claims priority, application Germany, Sep. 9, 1994, 44 32 080.9

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—336 9 Claims

1. A process for the preparation of packaging materials, which comprises coating substrates suitable for packaging with an aqueous solution or emulsion which contains a copolymer A) composed of

a) at least 10% by weight of an ethylenically unsaturated C_3–C_5-carboxylic acid or C_3–C_5-dicarboxylic acid or anhydrides or half-esters of the dicarboxylic acids,

b) from an effective copolymerizing amount to 50% by weight of an ethylenically unsaturated compound having at least one sulfo or sulfonate group and

c) from 0 to 70% by weight of further monomers, and a polyester B).

5,624,749

ELECTROMAGNETIC STEEL SHEET HAVING AN ELECTRICALLY INSULATING COATING WITH SUPERIOR WELDABILITY

Hideo Kobayashi, Okayama; Norio Kosuge, Chiba; Yasuo Yokoyama, Tokyo; Yuka Komori, Okayama, and Taizo Mohri, Ohsaka, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Aug. 2, 1994, Ser. No. 285,028

Int. Cl.[6] B32B *15/08;27/38;27/00*

U.S. Cl. 428—341 11 Claims

1. An electromagnetic steel sheet having an electrically insulating coating, wherein said electrically insulating coating comprises a treatment solution coated on an electromagnetic steel sheet;

said sheet treatment solution comprising:

(a) a synthetic resin particle emulsion having resistance to reaction with chromic acid and/or bichromic acid and exhibiting a peak temperature not lower than about 400° C., said peak temperature being the temperature at which the weight change of a sample of said resin particle emulsion is maximized when said sample is being heated at a constant rate in differential thermal gravimetry,

(b) a chromate and/or bichromate aqueous solution containing at least one divalent metal, CrO_3 and at least one ion selected from the group consisting of CrO_4^- and $Cr_2O_7^{2-}$[$Cr_2O_7^{2-}$], and

(c) an organic reducer in an amount of about 10 to 60 weight parts per 100 weight parts of CrO_3 in said chromate and/or bichromate base aqueous solution,

said electrically insulating coating being deposited on said electromagnetic steel sheet in an amount of about 0.2 g/m^2 to 4 g/m^2 on a dry weight basis.

5,624,750

ADHESIVE HEATER AND METHOD FOR SECURING AN OBJECT TO A SURFACE

Jose A. Martinez, Garden Grove, and Louis E. Gates, Jr., Westlake Village, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

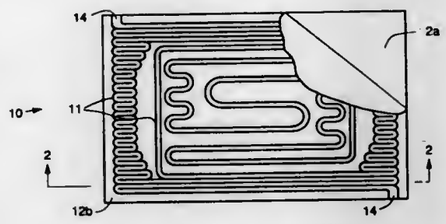
Filed May 25, 1995, Ser. No. 450,455

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—344 13 Claims

1. A heater assembly comprising:

a heater element comprising a film having a continuous serpentine pattern and a higher density of said pattern at the edges of



said heater element than at the center thereof and having heater electrodes connected to said heater element; and

first and second layers of adhesive that encapsulate the heater element and leave said heater electrodes exposed.

5,624,751

REPULPABLE CARTON SEALING TAPE

Manfred Spies, Biedenkopf; Peter Gleichenhagen, Hamburg; Herbert Knolle, Reinbek; Robert Meyer, and Andreas Westphal, both of Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Sep. 1, 1994, Ser. No. 299,779

Claims priority, application Germany, Sep. 8, 1993, 43 30 362.5

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—355 AC 9 Claims

1. In the cycle comprising making a paper based carton sealing tape, re-cycling tape, and re-pulping, the improvement wherein such tape is finished on one side with a repulpable self-adhesive composition and on the other side with a N-stearylmaleamide/styrene repulpable silicone-free release based on a copolymer together with a film-forming agent.

5,624,752

SPUN YARN OF POLYBENZAZOLE FIBER

Toshiaki Hokudoh, Otsu, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 1, 1996, Ser. No. 674,009

Claims priority, application Japan, Jul. 4, 1995, 7-168605

Int. Cl.[6] D02C *3/00*

U.S. Cl. 428—357 7 Claims

1. A spun yarn comprising a polybenzazole fiber having a single fiber fineness of 1 to 3 deniers and an average fiber length of 30 to 200 mm, said spun yarn having a tenacity of 15 g/d or higher and satisfying the following relationship:

$$10.0 \leq K \cdot (L)^{1/2} \leq 15.0 \qquad (1)$$

wherein K is the twist constant expressed by $T/(Ne)^{1/2}$ and L is the average fiber length in millimeter, and where T is the number of twist per inch and Ne is the British cotton count of the spun yarn.

5,624,753

Patent Not Issued For This Number

5,624,754

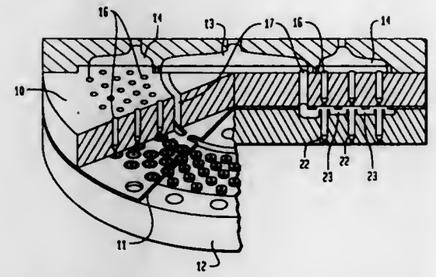
RUBBER-POLYESTER COMPOSITES INCLUDING A SIDECHAIN CONTAINING COPOLYESTER

Eui W. Choe, Randolph; Charles E. Forbes, Bridgewater, both of N.J.; Jennifer A. Filbey, Charlotte, and Stephan F. Sherriff, Salisbury, both of N.C., assignors to Hoechst Celanese Corp., Somerville, N.J.

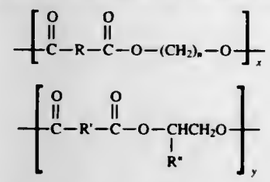
Filed Oct. 26, 1995, Ser. No. 548,396

Int. Cl.[6] D02G *3/00;* B32B *27/34*

U.S. Cl. 428—373 14 Claims



1. A heterofilament comprising a core polyester formed of an aromatic diacid and an alkylene glycol and disposed thereabout a sheath of a thermoplastic elastomer melt blended with a sidechain containing copolyester comprising the repeating units:



wherein R and R' are aryl groups which may be the same or different, R* is a pendant side chain of at least 3 and up to about 30 carbon atoms, n is an integer of 2–10 and x and y are integers with the proviso that the ratio of x:y is from 99:1 to 50:50.

5,624,755

Patent Not Issued For This Number

5,624,756

DIAMOND-BASED ULTRA-HIGH-PRESSURE-SINTERED MATERIAL HAVING EXCELLENT CHIPPING RESISTANCE, CUTTING TOOL MADE THEREFROM, AND METHOD OF MANUFACTURING THE CUTTING TOOL

Fumihiro Ueda, and Tadakazu Oohashi, both of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

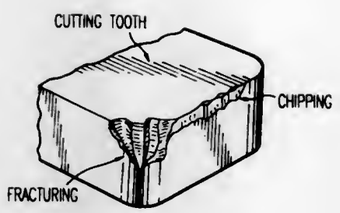
Filed Dec. 22, 1994, Ser. No. 361,386

Claims priority, application Japan, Dec. 24, 1993, 5-348131

Int. Cl.[6] B23P *15/28;* C04B *35/52*

U.S. Cl. 51—309 8 Claims

1. A cutting tool made of a diamond-based ultra-high-pressure-sintered material having excellent chipping resistance, said material comprising from 0.05 to 13 wt % of at least one of barium oxide and magnesium oxide, and diamond which forms a matrix, said material having a theoretical density percentage of 96 to 99.5% and a structure wherein pores and said at least one of barium oxide and magnesium oxide are distributed throughout the diamond matrix.



5,624,757

PHOTOCHROMIC AND NON-PHOTOCHROMIC ARTICLES HAVING A PROTECTIVE COATING

Robert A. Smith, Murrysville, Pa., assignor to Transitions Optical, Inc., Pinellas Park, Fla.

Division of Ser. No. 166,053, Dec. 13, 1993, abandoned. This application May 24, 1995, Ser. No. 448,846

Int. Cl.[6] B32B *13/12;27/30;27/32;27/36*

U.S. Cl. 428—412 19 Claims

1. An article comprising in combination, an organic polymeric host material and on at least one surface thereof a coating prepared by curing a coating composition consisting essentially of:

(a) about 5 to 35 weight percent of a silane monomer mixture of (i) C_1–C_{12} alkyl tri(C_1–C_6)alkoxysilane and (ii) tetra(C_1–C_6)alkoxysilane, the weight ratio of (i) to (ii) being from 3:1 to 1:3;

(b) about 1 to 9 weight percent of polyvinyl alcohol that is at least 72 percent hydrolyzed;

(c) a solvating amount of lower aliphatic alcohol;

(d) a catalytic amount of water-soluble acid;

(e) a leveling amount of nonionic surfactant; and

(f) water in an amount sufficient to form hydrolysates of said silane monomers and, to solubilize said polyvinyl alcohol and acid.

5,624,758

WATER-BASED ADHESIVE FORMULATION HAVING ENHANCED CHARACTERISTICS

Mike Maksymkiw, White Bear Lake; Gary Haider, Maplewood; Michael Dochniak, St. Paul; Leonard Jannusch, White Bear Lake, and Paul Wade, Stillwater, all of Minn., assignors to H.B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Division of Ser. No. 484,347, Jun. 7, 1995, Pat. No. 5,523,344. This application Mar. 18, 1996, Ser. No. 617,099

Int. Cl.[6] B32B *27/00;27/40;* A43B *9/12;13/32*

U.S. Cl. 428—423.1 3 Claims

1. A bonded assembly comprising a pair of substrates adhesively bonded wherein as is adhesive is a dried or coagulated disperson of an adhesive dispersion, said adhesive dispersion comprising a:

a) at least one hydrophobic plasticizer, and

b) a blended mixture of dispersed polymers, the mixture comprising:

1) at least one hard sulfonated polyester urethane;

2) at least one soft non-sulfonated polyester urethane; and

3) at least one polar non-polyurethane water-based polymer or copolymer.

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5,624,759

URETHANE ADHESIVE COMPOSITIONS

Douglas A. Usifer, Belle Mead, and Ifeanyi C. Broderick, Old Bridge, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Division of Ser. No. 187,426, Jan. 26, 1994, Pat. No. 5,426,166. This application Jan. 31, 1995, Ser. No. 381,790

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—424.2 **18 Claims**

1. A method for bonding a plurality of substrates together comprising:

applying to at least a portion of a surface of a first substrate an adhesive comprising (A) a polyester urethane acrylate or (meth)acrylate or an isocyanate-terminated urethane prepolymer capped with an acrylate or (meth)acrylate compound and (B) at least one reactive diluent of an N-vinyl amide or carboxylic acid ester to form an adhesive coating thereon;

contacting the adhesive coated surface portion of the first substrate with at least a portion of a surface of a second substrate; and

subjecting the adhesive to energy sufficient to cure the adhesive and bond the first and second substrates together.

5,624,760

FIRE RESISTANT GLASS

Brian J. Collins, Northampton; Graham B. Hinett, Reading; Michael W. Hayden, and Martin E. Clarges, both of Northampton, all of Great Britain, assignors to Caradon Doors & Windows Limited - CET, Gloucestershire, Great Britain

PCT No. PCT/GB92/01858, § 371 Date Apr. 8, 1994, § 102(e) Date Apr. 8, 1994, PCT Pub. No. WO93/07099, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 12, 1992, Ser. No. 211,428

Claims priority, application United Kingdom, Oct. 11, 1991, 9121581

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—426 **13 Claims**



1. A fire resistant coated sheet of glass, which has been toughened by tempering, comprising a glass sheet which has applied directly on at least one major surface of said sheet a coating of a compound which is stable and adherent to the surface at temperatures up to 900° C., such that the coated sheet will not shatter under a build-up of heat of 900° C., the edges of the glass sheet having been ground and polished to remove imperfections before tempering.

5,624,761

FIRE-PROTECTION AND SAFETY COMPOSITE GLASS PANEL

Akihiko Sakamoto; Tadashi Takahashi, both of Shiga-ken, and Masayuki Ninomiya, Osaka-fu, all of Japan, assignors to Nippon Electric Glass Co., Ltd., Osaka-fu, Japan

Filed Nov. 9, 1995, Ser. No. 555,764

Claims priority, application Japan, Nov. 9, 1994, 6-301363

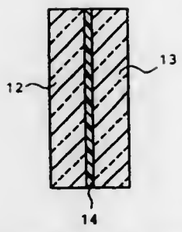
Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—426 **9 Claims**

1. A fire-protection and safety composite glass panel comprising:

a fireproof glass plate having opposite side surfaces; and

a film of fluorocarbon resin of a chain molecular structure type, said film bonded on one of said opposite side surfaces,



wherein said fluorocarbon resin is a copolymer of at least three kinds of monomers.

5,624,762

RADIATION CURABLE COMPOSITIONS CONTAINING VINYL ETHER FUNCTIONAL POLYORGANOSILOXANES

Shedric O. Glover; Valeris J. Bujanowski; Maris J. Ziemelis; Michael W. Skinner; Gary R. Homan, all of Midland; Susan V. Perz, Essexville, and John P. Cannady, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 291,660, Aug. 17, 1994, Pat. No. 5,594,042. This application May 18, 1995, Ser. No. 443,520

Int. Cl.[6] C08L *83/02;83/07;* **C08G** *77/20;77/08*

U.S. Cl. 428—447 **28 Claims**

1. An article of manufacture prepared by a method comprising the steps of:

(I) applying a composition comprising

(A) a siloxane compound having the general formula:

$$(R_{3-a}SiO_{1/2})_w(R_{2-b}SiO)_x(RSiO_{3/2})_y(SiO_2)_z$$

wherein R is a monovalent hydrocarbon radical or halohydrocarbon radical having from 1 to 20 carbon atoms, R^1 is selected from the group consisting of monovalent hydrocarbon or halohydrocarbon radicals having from 1 to 8 carbon atoms and a group having its formula selected from the group consisting of (i) $—R^2OCH=CH_2$ and (ii) $—R^2Si(OR^2OCH=CH_2)_{3-c}R_c$ wherein R^2 is a divalent hydrocarbon or halohydrocarbon radical having from 1 to 20 carbon atoms, c has a value of 0 to 2, R is as defined above, w is a mole percent of from greater than 0 to 100, x is a mole percent of from 0 to less than 100, y is a mole percent of from 0 to less than 100, z is a mole percent of from 0 to less than 100, a is an integer of from 0 to 3, b is an integer of from 0 to 2, the sum of w+x+y+z being equal to 100 mole percent, with the proviso that at least one $≡SiOR^2OCH=CH_2$ group or $≡SiOR^2Si(OR^2\ OCH=CH_2)_{3-c}R_c$ group exists in each compound; and

(B) a photoinitiator having its general formula selected from:

$$R'_aArI^+ArR''_bX^- \text{ or } R'''_aAr—I^+—Ar—R^{iv}{}_b—O_3S—Ar—R'''_aY^-$$

wherein R^i is selected from monovalent hydrocarbon or halohydrocarbon radicals free of aliphatic unsaturation having from 1 to 40 carbon atoms, halogen atoms, a radical selected from NO_2, CN, COOH, SO_3H, or alkoxy radicals, hydrocarbon groups substituted with nitro groups, nitrile groups, carboxylic acid groups, sulfonic acid groups, or alkoxy groups, R^{ii} is selected from monovalent hydrocarbon radicals free of aliphatic unsaturation and having from 1 to 40 carbon atoms, hydrocarbon groups substituted with alkoxy groups, arylalkoxy radicals, aryloxy radicals, or halogen atoms, each R^{iii} is independently selected from monovalent hydrocarbon or halohydrocarbon radicals free of aliphatic unsaturation and having from 1 to 20 carbon atoms, halogen atoms, a radical selected from NO_2, CN, COOH, SO_3H, or alkoxy radicals, hydrocarbon groups substituted with nitro groups, nitrile groups, carboxylic acid groups, sulfonic acid groups, or alkoxy groups, R^{iv} is selected from alkoxy radicals or aryloxy radicals, Ar denotes arene radicals having from 6 to 40 carbon atoms, a has a value of from 0

to 10, b has value of from 0 to 10, X^- is an anion selected from the group consisting of perfluoroalkylsulfonic acid anions, tetrahaloboronic acid anions, tetrakis(perfluoroaryl)boronic acid anions, and tetrakisperfluoroalkylsulfonatoboronic acid anions, and Y^- is an aryl sulfonate anion to a solid substrate to form a coating, and (II) exposing the coating to an energy source selected from the group consisting of (i) actinic radiation and (ii) actinic radiation in combination with heat in an amount sufficient to cure the coating.

5,624,763

SILICONE/ACRYLATE VIBRATION DAMPERS

Kurt C. Melancon, St. Paul, and William A. Driscoll, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 121,031, Sep. 13, 1993, Pat. No. 5,464,659, which is a continuation of Ser. No. 887,298, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 704,380, May 23, 1991, Pat. No. 5,308,887. This application Jun. 5, 1995, Ser. No. 461,044

Int. Cl.[6] B32B *15/08;7/12*

U.S. Cl. 428—461 **14 Claims**

1. A constrained layer vibration damper comprising a layer of vibration damping material bonded to a stiff constraining layer, wherein the vibration damping material is the polymerization product of a radiation curable material that consists essentially of (a) from about 5 parts to about 95 parts by weight polymerizable acrylic monomer, and (b) correspondingly, from about 95 parts to about 5 parts by weight of a preformed silicone adhesive that is the reaction product of one or more polydiorganosiloxanes and one or more copolymeric silicone resins, wherein the sum of (a) plus (b) equals 100 parts by weight.

5,624,764

COMPOSITE MATERIAL OF METAL AND RUBBER FOR USE IN INDUSTRIAL RUBBER ARTICLES

Kiyoshige Muraoka; Mamoru Uchida, and Takafumi Taguchi, all of Hyogo, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 43,607, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 845,844, Mar. 6, 1992, abandoned, which is a continuation of Ser. No. 550,557, Jul. 10, 1990, abandoned, which is a division of Ser. No. 266,580, Nov. 3, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 462,542

Claims priority, application Japan, Nov. 7, 1987, 62-281777; Dec. 4, 1987, 62-308093

Int. Cl.[6] C08C *19/20;* **B32B** *15/06*

U.S. Cl. 428—462 **2 Claims**

1. A composite material comprising a rubber composition and a metal material, wherein said rubber composition consists essentially of per 100 parts by weight of rubber, a cobalt salt of a carboxylic acid wherein said cobalt salt of said carboxylic acid contains 8 to 10 wt % of cobalt in said salt, and N-oxydiethylene-2-benzothiazolylsulfenamide or N-tert-butyl-2-benzothiazolylsulfenamide as a vulcanization accelerator, and said metal material is provided with a plating of a tertiary alloy consisting of 60 to 75% wt % copper, 4–10 wt % nickel, and the balance zinc; and

wherein the cobalt salt of the carboxylic acid must be present in an amount of up to 0.5 parts by weight.

5,624,765

ADHESIVE COMPOSITIONS FOR ADHERING RUBBER AND FIBER, RUBBER-REINFORCING SYNTHETIC FIBERS, AND FIBER-REINFORCED RUBBER STRUCTURES

Hiromitu Toukairin; Takayuki Sasaki, and Yasumi Kanda, all of Aichi, Japan, assignors to Toray Industries, Inc., Japan

Filed Jul. 31, 1995, Ser. No. 509,169

Claims priority, application Japan, Aug. 1, 1994, 6-179853; Aug. 1, 1994, 6-179854; Aug. 1, 1994, 6-179855; Apr. 25, 1995, 7-101322

Int. Cl.[6] B32B *25/02;* **C08K** *3/34*

U.S. Cl. 428—492 **22 Claims**

1. An adhesive composition for adhering rubber and synthetic fiber, said adhesive composition comprising an adhesive matrix and a silicate compound, wherein said silicate compound comprises silicon and magnesium at a ratio by weight of silicon/magnesium of from about 1/0.1 to 1/1.0, and wherein a 1% aqueous dispersion of said silicate compound has a transmittance of at least about 50% and/or a 2% aqueous dispersion of said silicate compound has a thixotropy index of about 2.0 to 10.0.

7. An aggregation of rubber-reinforcing synthetic fibers, said fibers being formed into an aggregation selected from the group consisting of yarn and cord, said fiber aggregation having fiber surfaces coated with an adhesive composition, said adhesive composition comprising a silicate compound and an adhesive matrix, said silicate compound comprising silicon and magnesium present at a ratio by weight of silicon/magnesium of from about 1/0.1 to 1/1.0, and wherein a 1% aqueous dispersion of said silicate compound has a transmittance of at least about 50% and/or a 2% aqueous dispersion of said silicate compound has a thixotropy index of about 2.0 to 10.0.

5,624,766

CEMENTED CARBIDE AND COATED CEMENTED CARBIDE FOR CUTTING TOOL

Hideki Moriguchi; Nobuyuki Kitagawa; Toshio Nomura; Mitsunori Kobayashi; Katsuya Uchino, and Kazuo Yamagata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

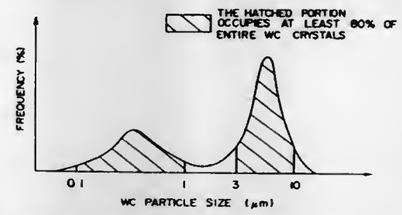
PCT No. PCT/JP94/00596, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO95/05497, PCT Pub. Date Feb. 23, 1995

PCT Filed Apr. 8, 1994, Ser. No. 397,289

Claims priority, application Japan, Aug. 16, 1993, 5-222817

Int. Cl.[6] B22F *7/06*

U.S. Cl. 428—547 **13 Claims**



1. A coated cemented carbide, comprising:

a substrate comprising a WC-based cemented carbide containing 4 to 10 wt. % of Co as a binder phase; based on a ratio in a mirror-polished texture of a cross section of the cemented carbide, 70% or more of WC crystals as a hard phase being classified into either of a group of fine particles A having a particle size of from 0.1 to 1 μm and a group of coarse particles B having a particle size of from 3 to 10 μm, the area ratio (S_A/S_B) of the fine particles A to the coarse particles B being in a range of from 0.22 to 0.45; the WC-based cemented carbide having a particle size distribution having two peaks; and

a coating layer disposed on a surface of the cemented carbide and having a total thickness in a range of from 5 to 100 μm;

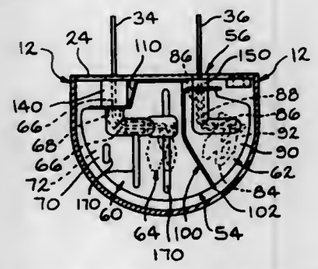
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said coating layer comprising at least one layer comprising at least one selected from the group consisting of: carbides, nitrides, carbonitrides, oxycarbides, and boronitrides of Ti, Zr, and/or Hf; and at least one layer comprising at least one selected from the group consisting of: Al_2O_3 and oxides of Ti, Zr, or Hf.

5,624,767
ALKALI METAL CELL HAVING MAIN AND ALTERNATE ELECTRODES

Barry C. Muffoletto, Alden; Neal N. Nesselbeck, Lockport, and Rodney E. Stringham, Corfu, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Jun. 7, 1995, Ser. No. 472,811
Int. Cl.[6] H01M *14/00;12/00*
U.S. Cl. 429—7 **25 Claims**

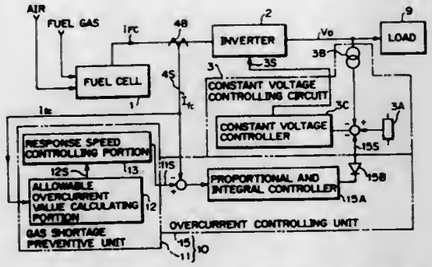


1. In an electrochemical cell for use with an implantable medical device and including an alkali metal anode and a cathode within an elongated conductive casing having spaced-apart substantially parallel side walls, one of said anode and cathode being operatively connected to said casing for making electrical connection from a load to the cell, the other of said anode and cathode having main and alternate portions, main terminal means electrically insulated from said casing and operatively connected to said main portion for making electrical connection from a load to the cell, alternate terminal means electrically insulated from said casing and operatively connected to said alternate portion for making electrical connection from a load to the cell, so that the main portion first is discharged with the alternate portion held in reserve whereupon when the main portion reaches end of life the alternate portion is discharged, said main and alternate portions together comprising an elongated body located generally centrally of said casing sidewalls, means for insulating said main and alternate portions from each other, and each of said main and alternate portions having a current collector therein disposed in a plane substantially parallel to said side walls and connected to a corresponding one of said main and alternate terminal means.

5,624,768
GAS SHORTAGE PREVENTIVE CIRCUIT FOR A FUEL CELL POWER GENERATION SYSTEM

Kazuo Tanokura, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1994, Ser. No. 338,745
Claims priority, application Japan, Nov. 12, 1993, 5-282849
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—23 **13 Claims**



1. In an electric power generation system for use with a load, comprising:

a fuel cell having an output side;

an inverting system connected to said output side of said fuel cell, said inverting system generating an inverting system output voltage which is supplied to the load;

a constant voltage controlling circuit which generates a control signal that is supplied to said inverting system for controlling said inverting system output voltage, said constant voltage controlling circuit having a constant voltage setting unit which sets a target voltage, said constant voltage controlling circuit error-amplifying any deviation between said inverting system output voltage and said target voltage;

a gas shortage preventive unit which includes

an allowable overcurrent value calculating portion which calculates an allowable overcurrent value, said allowable overcurrent value being a function of a fuel utilization coefficient that is higher than a standard fuel utilization coefficient and an output current of said fuel cell, and

a response speed controlling portion which eliminates any transient variation from the allowable overcurrent value and outputs it as an allowable overcurrent target value; and

an overcurrent limiting unit which outputs a signal for reducing said target voltage of said constant voltage setting unit when the output current of said fuel cell exceeds the allowable overcurrent target value.

5,624,769
CORROSION RESISTANT PEM FUEL CELL

Yang Li, Troy; Wen-Jin Meng, Okemos; Swathy Swathirajan, West Bloomfield; Stephen J. Harris, Bloomfield, and Gary L. Doll, Orion Township, Oakland County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1995, Ser. No. 577,397
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—32 **8 Claims**

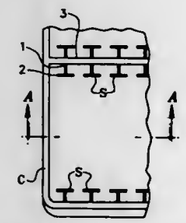


1. In a PEM fuel cell having at least one cell comprising a pair of opposite polarity electrodes, a membrane electrolyte interjacent said electrodes for conducting ions therebetween, and an electrically conductive contact element engaging at least one of said electrodes for conducting electrical current from the electrode it engages, the improvement comprising said contact element comprising a metal core selected from the group consisting of aluminum and titanium, a protective coating on said core, and a microdiscontinuous titanium nitride topcoat atop said protective coating, said titanium nitride topcoat having a plurality of defects therein exposing said protective coating to a corrosive operating environment within said fuel cell, said protective coating being susceptible to oxidative passivation by said corrosive operating environment so as to form a barrier to further corrosion on the portions of said coating exposed to said environment, whereby said core is protected from corroding by said protective coating underlying said defects.

5,624,770
BATTERY WITH SIDE WALL RIBS

Klaus Gummelt, and Christian Böhle, both of Garbsen, Germany, assignors to VB Autobatterie GmbH, Hanover, Germany

Filed Jul. 25, 1995, Ser. No. 506,837
Claims priority, application Germany, Jul. 28, 1994, 44 26 770.3
Int. Cl.[6] H01M *2/14*
U.S. Cl. 429—143 **15 Claims**



1. A plastic monobloc container for a storage battery having a bottom and container walls including end walls and partitions for defining container compartments for receiving plate groups of the battery, and comprising a plurality of ribs formed on the end walls and the partitions which extend into the container compartments for engaging an adjoining plate group, wherein the ribs include a cell connector member having a first edge which is formed on the container walls and a second edge opposing the first edge which includes support members projecting in opposing directions from the cell connector member and into the container, wherein the cell connector member is aligned substantially perpendicular to the container walls and the support members are aligned substantially parallel with the container walls, to define a substantially T-shaped cross-section, and wherein the cell connector member and the support members are fully joined to the bottom of the container.

5,624,771
NON-AQUEOUS ELECTROLYTE CELL

Akihiro Sano; Shuichi Nishino, both of Hirakata; Fumio Daio, Kitakatsuragi-gun; Shusuke Oguro, Ikoma, and Masatsugu Koodo, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

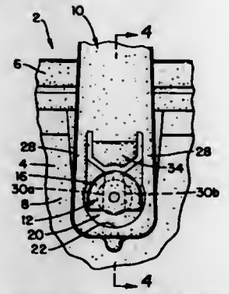
Filed Jul. 20, 1995, Ser. No. 504,324
Claims priority, application Japan, Jul. 21, 1994, 6-169281
Int. Cl.[6] H01M *2/08;6/14*
U.S. Cl. 429—173 **20 Claims**

1. A non-aqueous electrolyte cell sealed by curling the upper flange of either a metal container of positive polarity or a metal container of negative polarity and by applying a pressure on a gasket consisting essentially of polyphenylene sulfide resin provided with a sealant layer consisting essentially of blown asphalt on the surface of said gasket inserted between said metal container of positive polarity and said metal container of negative polarity, and the positive electrode and negative electrode of said cell are separated by a separator made of glass-fiber non-woven cloth having a fiber diameter of less than 2.0 μm, fiber weight per unit area in a range from 5.0–9.0 g/m^2, and an average pore size within a range from 3.0–7.5 μm.

5,624,772
BATTERY HANDLE

Harry D. Mc Vey, Pendleton; Roger L. Huxhold, Indianapolis, and John F. Burk, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1995, Ser. No. 560,067
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—187 **3 Claims**



1. In an electric storage battery having a container and carrying handle pivotally and detachably connected to said container, a knob attached to each endwall of said container for engaging said handle, said knob comprising a stem and a flange extending radially outboard said stem spaced from said endwall, said flange having an inner surface on the stem side of said flange confronting said endwall, a terminal on each end of said handle engaging a said knob, said terminal comprising a wall defining a pocket containing said flange and engaging said inner surface so as to prevent axial displacement of said terminal with respect to said knob, a rim on said wall defining a socket in said wall receiving said stem portion, said socket having a stem-retention zone and a gate portion, said gate portion having an opening whicb is narrower than said stem for interference-fit ingress and egress of said stem into and out of said stem-retention zone so as to retain said stem in said zone in normal use yet permit manual removal of said handle, the improvement wherein said flange extends radially outboard said stem by a first length, said gate comprises an elongated slot in said wall having a second length at least about equal to said first length, said stem comprises a longitudinally bilaterally truncated cylinder having a pair of opposing arcuate faces spaced apart by a first distance and a pair of opposing flat faces spaced apart by a second distance which is less than said first distance and greater than said opening for an interference fit with said slot, and said flange extends around said stem sufficiently to substantially completely overlie said slot throughout at least about 180° of rotation of said handle about said knob.

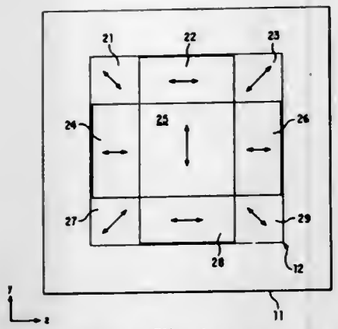
5,624,773
RESOLUTION-ENHANCING OPTICAL PHASE STRUCTURE FOR A PROJECTION ILLUMINATION SYSTEM

Rainer Pforr, Leuven Wilsele; Kurt G. M. Ronse, Damme; Rik M. E. Jonckheere, Muizen, and Luc M. M. L. Van Den Hove, Linden, all of Belgium, assignors to Interuniversitair Micro-Elektronica Centrum vzw, Louvain, Belgium

PCT No. PCT/BE93/00009, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/19723, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 23, 1993, Ser. No. 325,286
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **16 Claims**

1. An optical projection system for use in projection printing of masks to wafers, comprising an illumination system including a

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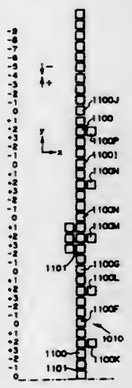
light source, an optical mask positioned in the optical path of the illumination system, said mask comprising a transparent substrate and a light absorber pattern having distributed opaque feature with apertures therebetween for allowing light to pass therethrough, and projection lens means for collecting and focusing the light passing through said apertures, and an optical phase structure positioned in the optical path between the light source and the light absorber pattern, said phase structure comprising a plurality of gratings with a grating frequency, each grating containing a plurality of grating lines having defined shape and orientation with a defined line width therebetween and having at least one refractive index, said plurality of gratings of said phase structure being locally related in position and orientation to the opaque features of the light absorber pattern thereunder.

5,624,774

METHOD FOR TRANSFERRING PATTERNS WITH CHARGED PARTICLE BEAM

Teruaki Okino, and Mamoru Nakasuji, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,579
Claims priority, application Japan, Jun. 16, 1994, 6-134122; Jun. 24, 1994, 6-143246
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **11 Claims**



1. A method of transfer with a charged particle beam for transferring a predetermined pattern onto a predetermined area on a substrate, wherein said pattern to be transferred to said predetermined area on said substrate is divided into a plurality of small regions spaced apart from each other on a mask, said method comprising the steps of:

repeatedly directing a charged particle beam to said small regions on said mask, with each small region being treated as a unit of projection with the beam; and

adjusting pattern transfer positions so that transfer areas corresponding to said small regions contact each other on said substrate,

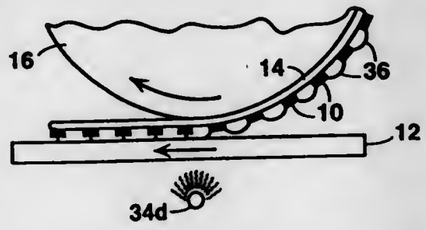
wherein said pattern to be transferred to said predetermined area on said substrate is divided into a plurality of small regions, the small regions having the same pattern portion after division are represented by a common small region and, upon transferring, the pattern of said common small region is transferred onto a plurality of positions on said substrate.

5,624,775

APPARATUS AND METHOD FOR PRINTING A COLOR FILTER

Alain R. E. Carre, Le Chatelet-eu-Brie; Bernard Eld, La Grande-Paroisse, both of France, and Ronald E. Johnson, Tioga, Pa., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 324,345, Oct. 17, 1994, Pat. No. 5,514,503, and a continuation-in-part of Ser. No. 197,141, Feb. 16, 1994, Pat. No. 5,544,582. This application Jul. 10, 1995, Ser. No. 499,982
The portion of the term of this patent subsequent to Oct. 17, 2014, has been disclaimed.
Int. Cl.[6] G03F *9/00*; B41M *1/20*; *1/34*
U.S. Cl. 430—7 **29 Claims**



1. A method for making a color filter comprising:

mechanically forming a raised pattern having cell recesses on a substrate; and depositing a plurality of colored inks into said recesses to form said color filter.

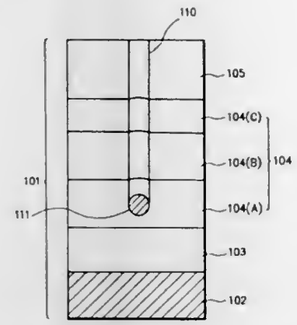
5,624,776

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER PROVIDED WITH A LIGHT RECEIVING LAYER COMPOSED OF A NON-SINGLE CRYSTAL SILICON MATERIAL CONTAINING COLUMNAR STRUCTURE REGIONS AND PROCESS FOR THE PRODUCTION THEREOF

Tetsuya Takei, Nagahama; Hirokazu Ohtoshi, Nara; Takehito Yoshino, Nara; Ryuji Okamura, Nara, and Yasuyoshi Takai, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/00824, § 371 Date Feb. 18, 1994, § 102(e) Date Feb. 18, 1994, PCT Pub. No. WO93/25940, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 18, 1993, Ser. No. 196,111
Claims priority, application Japan, Jun. 18, 1992, 4-182863
Int. Cl.[6] G03G *15/00*
U.S. Cl. 430—56 **13 Claims**

1. An electrophotographic photosensitive member comprising a substrate and a light receiving layer disposed on said substrate, said light receiving layer comprising a non-single crystal silicon material a matrix, wherein said light receiving layer contains a plurality of columnar structure regions, each of the columnar structure regions is of a diameter from 1 μm to 300 μm and each is grown from a nucleus comprising a crystal material positioned within said light receiving layer, said plurality of columnar structure regions extending in the direction of thickness and within said



light receiving layer, and comprising silicon crystals at a density of $5/cm^2$ to $500/cm^2$ formed in the matrix of said non-single crystal silicon material.

5,624,777

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato; Hiroshi Tashiro; Akio Oda, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP93/00023, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/14447, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 11, 1993, Ser. No. 256,558
Claims priority, application Japan, Jan. 10, 1992, 4-020694
Int. Cl.[6] G03G *5/05*
U.S. Cl. 430—96 **16 Claims**

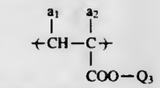
1. An electrophotographic lithographic printing plate precursor comprising a conductive support having thereon at least one photoconductive layer containing a photoconductive compound and a binder resin, wherein the binder resin of the photoconductive layer comprises at least one binder resin (A) and further comprises binder resin (B) both described below;

Binder Resin (A):

a copolymer comprising a polymer component (a) containing at least one functional group capable of conversion to a —COOH group and a polymer component (b) containing at least one functional group capable of conversion to a member selected from the group consisting of a $—SO_3H$ group, a $—SO_2H$ group and a $—PO_3H_2$ group, and having a crosslinking structure formed from a polymer component (c) containing at least one heat- and/or photo-curable group;

Binder Resin (B):

a resin having a weight average molecular weight of from 1×10^3 to 2×10^4 and containing not less than 30% by weight of a polymer component corresponding to a repeating unit represented by the general formula (I) described below and from 0.05 to 15% by weight of a polymer component having at least one polar group selected from the group consisting of $—PO_3H_2$, $—SO_3H$, —COOH, $—P(=O)(OH)Q^1$ (wherein Q^1 represents a hydrocarbon group or $—OQ^2$ (wherein Q^2 represents a hydrocarbon group)) and a cyclic acid anhydride group,



General Formula (I)

wherein a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; and Q_3 represents a hydrocarbon group.

5,624,778

CARRIER FOR ELECTROPHOTOGRAPHY, AND TWO-COMPONENT TYPE DEVELOPER HAVING THE CARRIER

Yukoh Sato, Kawasaki, and Shinya Mayama, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

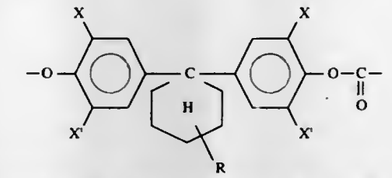
Filed Jun. 23, 1994, Ser. No. 264,346
Claims priority, application Japan, Jun. 24, 1993, 5-175862
Int. Cl.[6] G03G *9/107*; *9/113*
U.S. Cl. 430—106.6 **26 Claims**

12. A two-component developer for developing an electrostatic image, comprising: a toner and a carrier; said carrier comprising a magnetic material and a resin;

said resin comprising a polycarbonate resin having a crystallinity of 0.25 or less,

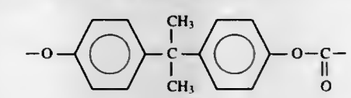
said polycarbonate resin being selected from the group consisting of a copolymer (A) and a copolymer (B),

wherein said copolymer (A) has the following two components units

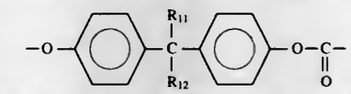


(IIa)

wherein X and X' each represent a hydrogen atom, a halogen atom or a methyl group; R represents a hydrogen atom, a halogen atom, a hydroxyl group, a carboxyl group, an acetyl group or an alkyl group having 1 to 4 carbon atoms, and

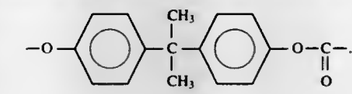


and said copolymer (B) has the following two component units



(IIIa)

wherein R_{11} and R_{12} are different from each other and each represents an alkyl group or an aromatic group, and



5,624,779

TONER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME

Koji Nakayama, Shizuoka, Japan, assignor to Tomoegawa Paper Co, Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,156
Claims priority, application Japan, Jul. 19, 1994, 6-187902
Int. Cl.[6] G03G *9/00*
U.S. Cl. 430—109 **19 Claims**

1. A toner for electrophotography comprising particles each having a center and a surface and being formulated from at least a cured composition, the composition in an uncured state comprising a binder resin having an unsaturated double bond, a reactive monomer, and a radical-polymerization catalyst, wherein the particles each have a crosslinking density that gradationally increases from the center towards the surface thereof.

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TONER IMAGE FIXING METHOD USING FLUORINE CONTAINING SILICONE OIL

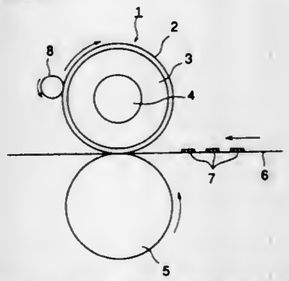
Yoshiki Nishimori; Tatsuya Nagase; Hiroshi Yamazaki; Meizo Shirose; Kazuhiko Uneme; Masashi Saito, and Kazuo Yasuda, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Mar. 28, 1996, Ser. No. 620,794

Claims priority, application Japan, Apr. 3, 1995, 7-077654; Jun. 2, 1995, 7-159883

Int. Cl.[6] G03G *13/20*

U.S. Cl. 430—124 **9 Claims**



1. A toner image forming method, comprising steps of:
(1) forming a latent image on an image carrying member,
(2) developing said latent image with toner particles including a resin and a colorant so as to form a toner image, said toner particles having a volume average particle size of 5 to 10 μm, and containing toner particles having particle sizes of not more than 5.04 μm in 5 number·% to 60 number·%,
(3) transferring said toner image onto an image receiving material, and
(4) fixing said transferred toner image on said image receiving material, said fixing steps comprising
(a) passing said image receiving material between a movable fixing member and a rotatable pressure applying member each having a surface facing each other,
(b) heating said toner image by a heater incorporated in said fixing member, and
(c) coating the surface of said fixing member facing said pressure applying member with a fluorine-containing silicone oil by a coating roller, said fluorine-containing silicone oil having a structure unit represented by Formula I: Formula I



wherein X represents an alkyl group having 1 to 4 carbon atoms or an aryl group, Rf represents a fluoroalkyl group having 2 to 10 carbon atoms and n represents an integer of 1 to 4.

5,624,781

POSITIVE TYPE ANIONIC ELECTRODEPOSITION PHOTO-RESIST COMPOSITION AND PROCESS FOR PATTERN FORMATION USING SAID COMPOSITION

Keisuke Naruse; Yukari Takeda; Naozumi Iwasawa, all of Hiratsuka, and Hideo Kogure, Atsugi, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken, Japan

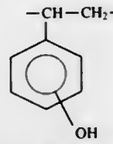
Filed May 27, 1994, Ser. No. 250,623

Claims priority, application Japan, May 28, 1993, 5-148415

Int. Cl.[6] G03F *7/023;7/38;7/40;* **C25D** *13/00*

U.S. Cl. 430—192 **23 Claims**

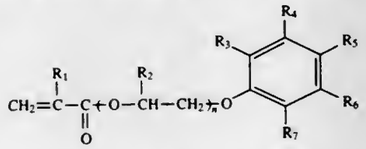
1. A positive anionic electrodeposition photoresist composition comprising, as a main component, a water-dispersible resin composition obtained by neutralizing, with a base, an admixture comprising:
(A) an acrylic resin containing carboxyl group(s) in an amount of 0.7–3.5 moles per kg of the resin and hydroxyl group(s) in an amount of 0.5–3.5 moles per kg of the resin and having a number-average molecular weight of 10,000–100,000,
(B) a vinylphenol resin containing a unit represented by formula (I)



(I)

in an amount of at least 25% by weight based on the resin and having a number-average molecular weight of 1,000–25,000, said vinylphenol resin being free from a photosensitive o-quinone diazide residue, and
(C) an ester between a polyhydroxybenzophenone and 1,2-naphthoquinone diazide sulfonic acid or benzoquinone diazide sulfonic acid, and dispersing the resulting neutralization product in water.

2. A positive anionic electrodeposition photoresist composition comprising, as a main component, a water-dispersible resin composition obtained by neutralizing, with a base, an admixture comprising:
(A) an acrylic resin containing carboxyl group(s) in an amount of 0.7–3.5 moles per kg of the resin and hydroxyl group(s) in an amount of 0.5–3.5 moles per kg of the resin and having a number-average molecular weight of 10,000–100,000,
(B) a vinylphenol resin selected from the group consisting of homopolymers of hydroxystyrene and copolymers of hydroxystyrene and other copolymerizable monomers selected from the group consisting of C_{1-18} alkyl or cycloalkyl esters of (meth)acrylic acid, vinyl aromatic compounds, polymerizable amides, polymerizable nitriles, vinyl esters, propenyl esters and monomers of the formula



wherein n is an integer of 1–9, R_1 and R_2 are each a hydrogen atom or a methyl group, R_3 to R_7 are each a hydrogen atom, an alkyl group of 1–10 carbon atoms, a benzyl group or a halogen atom, and
(C) an ester between a polyhydroxybenzophenone and 1,2-naphthoquinone diazide sulfonic acid or benzoquinone diazide sulfonic acid, and dispersing the resulting neutralization product in water.

5,624,782

METHOD OF MANUFACTURING THICK-FILM RESISTOR ELEMENTS

Kelichiro Hayakawa, Yokohama, Japan; Jerome D. Smith, Cary, N.C., and Hidehiro Yamada, Kanagawa, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 11, 1995, Ser. No. 439,323

Claims priority, application Japan, Apr. 14, 1994, 6-99190

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—198 **6 Claims**

1. A method of manufacturing thick-film resistor elements comprising the sequential steps:
(a) printing and calcinating a conductive material to form electrodes on a surface of a heat-resistant insulating substrate;
(b) forming a photopolymerizable layer over the electrodes and substrate which is devoid of electrodes;

(c) imagewise exposing the photopolymerizable layer to actinic radiation;
(d) developing the exposed layer and removing the photopolymerizable layer that was not exposed;
(e) applying a thick-film resistor material, which consists of a conductive component and an inorganic binder in an organic medium, on the surface of the substrate so that the material overlaps the electrodes to form a patterned thick film;
(f) drying and calcinating the thick-film to volatilize the organic medium of the thick film resistor material; and
(g) sintering to fuse glass contained in the resistor material.

5,624,783

IMAGING ELEMENT FOR MAKING A LITHOGRAPHIC PRINTING PLATE

Lode Deprez, Wachtebeke, and Eric Kiekens, Kessel-Lo, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 8, 1996, Ser. No. 629,135

Claims priority, application European Pat. Off., Apr. 7, 1995, 95200882

Int. Cl.[6] G03C *1/83;8/52;8/06;* **G03F** *7/07*

U.S. Cl. 430—204 **9 Claims**

1. An imaging element comprising on one side of a support a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei in water permeable relationship with said emulsion layer and on the other side of the support at least one backing layer comprising gelatin and a dye and/or a dye precursor characterized in that said dye or dye precursor is such that after treatment of said imaging element in an alkaline solution with a pH of 10.9 for 20 s at a temperature of 30° C. the backing layer has a reflection spectrum when treated for 20 s at 20° C. in a neutralizing solution with a pH of 7.5 that is visually different from the reflection spectrum when treated for 20 s at 20° C. in a neutralizing solution with a pH of 8.5.

5,624,784

KIT OF PARTS FOR MAKING AN ALKALINE PROCESSING LIQUID FOR PROCESSING A LITHOGRAPHIC PRINTING PLATE

Jos Vaes, Betekom; Renaat Ceulemans, Ranst, and Lode Deprez, Wachtebeke, all of Belgium, assignors to Afga-Gevaert N.V., Mortsel, Belgium

Filed Mar. 18, 1996, Ser. No. 617,384

Claims priority, application European Pat. Off., Mar. 21, 1995, 95200694

Int. Cl.[6] G03C *5/50*

U.S. Cl. 430—250 **12 Claims**

1. A kit of parts for preparing an alkaline processing liquid for use in preparing a lithographic printing plate according to the silver salt diffusion transfer process, and comprising all necessary active compounds for preparing said alkaline processing liquid, said active compounds being contained in parts physically separated from each other, at least one of said parts comprising an inorganic alkali in solid form and at least one of said other parts comprising a hydrophobizing agent and being substantially free from inorganic alkali.

5,624,785

IMAGING ELEMENT COMPRISING A PHOTOACID-SENSITIVE COMPOSITION AND A METHOD FOR PRODUCING LITHOGRAPHIC PLATES THEREWITH

Marc Van Damme, Heverlee, and Joan Vermeersch, Deinze, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 9, 1996, Ser. No. 628,899

Claims priority, application European Pat. Off., Apr. 21, 1995, 95201017

Int. Cl.[6] G03F *7/34;7/11*

U.S. Cl. 430—253 **11 Claims**

1. An imaging element comprising contiguous to a hydrophilic surface of a support a hydrophobic photosensitive composition comprising a photosensitive acid precursor, an acid-sensitive composition which is capable of undergoing polymerization or cross-linking and a hydrophobic binder characterized in that said imaging element comprises one or more protective layers, at least one of the protective layers being contiguous to the hydrophobic photosensitive composition and being a transfer layer which is capable of adhering to a receptor element.

11. A method for obtaining a lithographic printing plate comprising the steps of:
(a) image-wise or information-wise exposing an imaging element according to claim 1
(b) developing said exposed imaging element,
characterized in that said development comprises in the order given the steps of:
(i) laminating before or after said exposure an uppermost layer of said imaging element provided said layer is not a receptor layer to a receptor layer, said receptor layer being capable of adhering to said uppermost layer and
(ii) peeling away the receptor layer from the hydrophilic surface of the support thus transferring said hydrophobic photosensitive composition patternwise to the receptor layer.

5,624,786

PHOTOGRAPHIC IMAGE FORMING METHOD

Kazuhiko Hirabayashi, and Takeshi Sampei, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 12, 1995, Ser. No. 440,078

Claims priority, application Japan, May 18, 1994, 6-103981

Int. Cl.[6] G03C *1/06*

U.S. Cl. 430—264 **5 Claims**

1. An image forming method for a silver halide photographic material comprising the steps of:
contacting the photographic material with a transparent original,
exposing the photographic material through the transparent original to light having an emission peak at a wavelength of 360 to 450 nm,
developing the exposed photographic material with a developer having a pH of 10.5 or less and not containing a dihydroxybenzene and
fixing the developed photographic material with a fixer, wherein the photographic material comprises a support having thereon a silver halide emulsion layer;
the photographic material is capable of forming a halftone dot image having a dot area of 57% or less when exposed, through the transparent original comprising a halftone dot image having a dot area percentage of 50%, in two times an amount that forms a halftone dot having a dot area of 50%, and processed;
and the photographic material is capable of having a maximum density of 3.0 or more and a contrast of 8.0 or more when exposed through an optical wedge and processed; provided that the photographic material is processed under the conditions specified below;
Conditions of development and subsequent processing:

Step	Temperature	Time
Developing	28° C.	30 sec.

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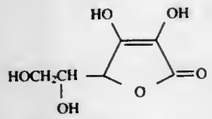
-continued

Fixing	28° C.	20 sec.
Washing	Ordinary temperature	15 sec.
Drying	40° C.	35 sec.

Developer

Composition A

Deionized water	150 ml
Sodium ethylenediaminetetraacetate	2 g
Diethylene glycol	50 g
Potassium sulfite (55% solution)	100 ml
Potassium carbonate	50 g



	35 g
5-Methylbenzotriazole	200 mg
1-Phenyl-5-mercaptotetrazole	30 mg
Potassium bromide	4.5 g

Composition B

Deionized water	3 ml
Diethylene glycol	50 mg
Sodium ethylenediaminetetraacetate	25 mg
Acetic acid (90% aq. solution)	0.3 ml
5-Nitroindazole	110 mg
1-Phenyl-3-pyrazolidone	500 mg

where compositions A and B are dissolved in 500 ml of water and water is further added thereto to make 1 liter, and the pH of the developer is adjusted to 10.4;

Fixer

Composition A

Ammonium thiosulfate (72.5 aq. solution)	230 ml
Sodium sulfite	5.6 g
Sodium acetate trihydrate	27.8 g
Boric acid	9.8 g
Sodium citrate dihydrate	2.0 g
Acetic acid (90% aq. solution)	6.4 ml

Composition B

Deionized water	28 ml
Sulfuric acid (50% solution)	6.7 g
Aluminum sulfate	25.31 g

where compositions A and B are dissolved in 500 ml of water and water is further added thereto to make 1 liter, and the pH of the fixer is adjusted to 4.4.

5,624,787

CHEMICALLY AMPLIFIED POSITIVE RESIST COMPOSITION

Satoshi Watanabe; Katsuyuki Oikawa; Toshinobu Ishihara, all of Nügata-ken; Akinobu Tanaka, Tokyo; Tadahito Matsuda, Tokyo, and Yoshio Kawai, Tokyo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

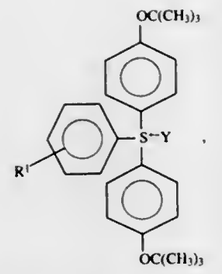
Filed Jun. 6, 1995, Ser. No. 466,690

Claims priority, application Japan, Jun. 10, 1994, 6-152655

Int. Cl.[6] G03F *7/039*

U.S. Cl. 430—270.1 **22 Claims**

1. In a chemically amplified, positive resist composition, the improvement wherein said composition contains at least one nitrogenous compound and at least one sulfonium salt of formula (1):



(1)

wherein

R^1 is hydrogen, alkyl, or alkoxy and

Y is trifluoromethanesulfonate or p-toluenesulfonate,

wherein said at least one nitrogenous compound minimizes the influence of deactivation of an acid generated from said at least one sulfonium salt at the resist surface by basic compounds within air; and

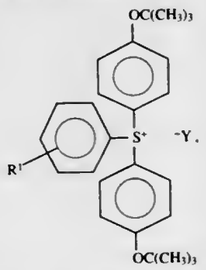
wherein said at least one nitrogenous compound is aniline, N-methylaniline, N,N-dimethylaniline, o-toluidine, m-toluidine, p-toluidine, 2,4-lutidine, quinoline, isoquinoline, formamide, N-methylformamide, N,N-dimethylformamide, acetamide, N-methylacetamide, N,N-dimethylacetamide, 2-pyrrolidone, N-methylpyrrolidone, imidazole, α-picoline, β-picoline, τ-picoline, o-aminobenzoic acid, m-aminobenzoic acid, p-aminobenzoic acid, 1,2-phenylenediamine, 1,3-phenylenediamine, 1,4-phenylenediamine, 2-quinolinecarboxylic acid, 2-amino-4-nitrophenol or 2-(p-chlorophenyl)-4,6-trichloromethyl-s-triazine.

8. A chemically amplified, positive resist composition comprising:

(A) an organic solvent,

(B) an alkali soluble resin,

(D) a sulfonium salt of formula (1)



(1)

wherein

R^1 is hydrogen, alkyl or alkoxy, and

Y is trifluoromethanesulfonate or p-toluenesulfonate; and

(F) a nitrogenous compound;

wherein said at least one nitrogenous compound minimizes the influence of deactivation of an acid generated from said at least one sulfonium salt at the resist surface by basic compounds within air; and

wherein said nitrogenous compound is aniline, N-methylaniline, N,N-dimethylaniline, o-toluidine, m-toluidine, p-toluidine, 2,4-lutidine, quinoline, isoquinoline, formamide, N-methylformamide, N,N-dimethylformamide, acetamide, N-methylacetamide, N,N-dimethylacetamide, 2-pyrrolidone, N-methylpyrrolidone, imidazole, α-picoline, β-picoline, τ-picoline, o-aminobenzoic acid, m-aminobenzoic acid, p-aminobenzoic acid, 1,2-phenylenediamine, 1,3-phenylenediamine, 1,4-phenylenediamine, 2-quinolinecarboxylic acid, 2-amino-4-nitrophenol or 2-(p-chlorophenyl)-4,6-trichloromethyl-s-triazine.

5,624,788

ORGANIC SILICON COMPOUND, RESIST THERMAL POLYMERIZATION COMPOSITION AND PHOTOPOLYMERIZATION COMPOSITION

Shinji Mural, Ichikawa; Yoshihiko Nakano; Ken Uchida, both of Tokyo, and Shuji Hayase, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

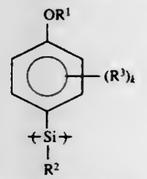
Filed Jun. 15, 1995, Ser. No. 490,614

Claims priority, application Japan, Jun. 16, 1994, 6-134095

Int. Cl.[6] G03F *7/004;7/023;7/027;* **G08G** *77/00*

U.S. Cl. 430—270.1 **13 Claims**

1. An organic silicon compound having a repeating unit represented by general formula (I) shown below:



(I)

wherein R^1 is a tetrahydropyranyl group, R^2 is an hydrogen atom, an alkyl group having 1 to 24 carbon atoms, an aryl group having 6 to 24 carbon atoms, or an aralkyl group having 7 to 24 carbon atoms, R^3 is an alkyl group having 1 to 24 carbon atoms, an aryl group having 6 to 24 carbon atoms, an aralkyl group having 7 to 24 carbon atoms or an alkoxyl group, and k represents an integer from 0 to 4.

5,624,789

METAL ION REDUCTION IN TOP ANTI-REFLECTIVE COATINGS FOR PHOTORESISIS

M. Dalil Rahman, Warwick, and Dana L. Durham, East Greenwich, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 258,898, Jun. 10, 1994, Pat. No. 5,516,886, which is a continuation of Ser. No. 984,655, Dec. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 911,604, Jul. 10, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,392

Int. Cl.[6] G03C *1/72;* **G03F** *7/00;* **C02F** *1/42*

U.S. Cl. 430—311 **10 Claims**

1. A method for producing semiconductor devices using a top anti-reflective coating having a very low level of metal ions comprising:

a) treating an acidic ion exchange resin with water, washing said ion excahnge resin with a mineral acid solution and thereby reducing the level of sodium and iron ions in the ion exchange resin to less than 500 ppb each;

b) providing a solution of 5 to 40 weight percent of a water soluble organic carboxylic acid polymer having a molecular weight of from about 500 to about 100,000 in a solvent for said carboxylic acid polymer;

(c) passing the water soluble organic carboxylic acid polymer solution through the ion exchange resin and thereby reducing the level of sodium and iron ions in the solution to less than 200 ppb each;

(d) formulating a top anti-reflective coating composition solution by providing an admixture of:

(1) the treated water soluble organic carboxylic acid polymer;

(2) a fluorine containing water sparingly soluble aliphatic carboxylic acid;

(3) an ammonium hydroxide; and

(4) a solvent for said admixtures;

(e) passing the solution of the fluorine containing sparingly water soluble organic aliphatic carboxylic acid through the ion exchange resin and thereby reducing the level of sodium and iron ions in the solution to less than 200 ppb each;

(f) coating the top anti-reflective coating of step (e) onto a substrate which has been coated with a photoresist composition;

(g) heating the substrate at a temperature from about 70° C. to about 110° C. for from about 30 seconds to about 180 seconds on a hot plate or for from about 15 to about 90 minutes in a convection oven;

(h) exposing the coated substrate to actinic radiation in any desired pattern to provide image-wise exposed areas;

(i) developing the exposed coated substrates and thereby removing the image-wise exposed areas.

5,624,790

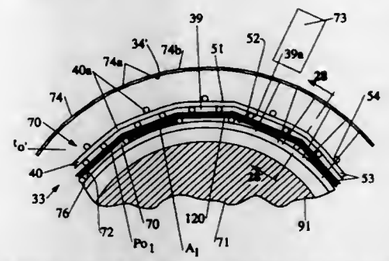
PAPERMAKING BELT AND METHOD OF MAKING THE SAME USING DIFFERENTIAL LIGHT TRANSMISSION TECHNIQUES

Paul D. Trokhan, Hamilton, and Glenn D. Boutilier, Blue Ash, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 152,639, Dec. 20, 1993, Pat. No. 5,514,523, which is a continuation of Ser. No. 872,470, Jun. 15, 1992, Pat. No. 5,334,289, which is a division of Ser. No. 546,633, Jun. 29, 1990, abandoned. This application Dec. 20, 1995, Ser. No. 575,946

Int. Cl.[6] G03C *5/56;* **D21F** *1/10*

U.S. Cl. 430—320 **10 Claims**



1. A method of making a papermaking belt having a textured backside, said papermaking belt comprising a reinforcing structure and a framework comprised of a photosensitive resinous material, said framework having a first surface, a second surface opposed thereto and conduits extending between said first surface and said second surface, said first surface having a paper side network formed therein defining said conduits, said second surface having a backside network with passageways distinct from said conduits, that provide surface texture irregularities in said backside network, the method comprising the steps of:

(a) providing a forming unit having a working surface;

(b) providing a reinforcing structure having a paper-facing side, a machine-facing side opposite said paper-facing side, interstices and a reinforcing component comprised of a plurality of structural components, a first portion of said reinforcing component having a first opacity and a second portion of said reinforcing component having a second opacity less than said first opacity, said first opacity being sufficient to substantially prevent curing of said photosensitive resinous material when said photosensitive resinous material is in its uncured state and said first portion is positioned between said photosensitive resinous material and an actinic light source, and said second opacity being sufficient to permit curing of said photosensitive resinous material, said first portion defining a first projected area;

(c) bringing at least a portion of said machine-facing side of said reinforcing structure into contact with said working surface of said forming unit;

(d) applying a coating of liquid photosensitive resin to at least one side of said reinforcing structure so that said coating forms a first surface and a second surface, said coating being distributed so that at least a portion of said second surface of said coating is positioned adjacent said working surface of said forming unit, portions of said second surface of said

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coating are positioned between said first portion of said reinforcing component and said working surface of said forming unit, and said paper-facing side of said reinforcing structure is positioned between said first and second surfaces of said coating, wherein the portion of said coating positioned between said first surface of said coating and said paper-facing side of said reinforcing structure comprises a resinous overburden;

(e) controlling the thickness of said overburden to a preselected value;

(f) providing a mask having opaque and transparent regions, said opaque regions together with said transparent regions defining a preselected pattern in said mask;

(g) positioning said mask between said coating of liquid photosensitive resin and an actinic light source so that said mask is in contacting relation with said first surface of said coating, said opaque regions of said mask and said first portion of said reinforcing component having said first opacity each shielding a portion of said coating from the light rays of said light source and said transparent regions leaving other portions of said coating unshielded;

(h) curing said unshielded portions of liquid photosensitive resin coating and those portions of said coating that said second portion of said reinforcing structure permits the curing of, and leaving said shielded portions and those portions of said coating positioned between said first portion of said reinforcing structure and the working surface of said forming unit uncured by exposing said coating of liquid photosensitive resin to light having an activating wavelength from said light source through said mask and through said reinforcing structure to form a partially-formed composite belt; and

(i) removing substantially all uncured liquid photosensitive resin from said partially-formed composite belt to leave a hardened resin framework which has a plurality of conduits in those regions which were shielded from said light rays by the opaque regions of the mask and passageways that provide surface texture irregularities in the backside network of said framework which correspond to those portions of the second surface of the coating which were prevented from curing by the first portion of the reinforcing structure.

5,624,791

PATTERN FORMING METHOD USING MASK

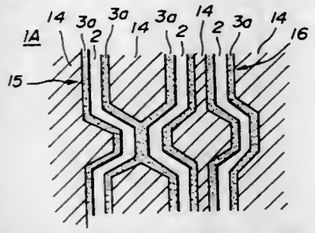
Toshiaki Kawabata, Kawasaki; Kenji Nakagawa, Isehara, both of Japan; Seiichiro Yamaguchi, Tempe, Ariz.; Masao Taguchi, Sagamihara, Japan; Kazuhiko Sumi, and Yuichiro Yanagishita, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Division of Ser. No. 54,608, Apr. 30, 1993, Pat. No. 5,489,509, which is a continuation of Ser. No. 516,347, Apr. 27, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,930

Claims priority, application Japan, Apr. 28, 1989, 1-111675; Aug. 11, 1989, 1-206837; Feb. 6, 1990, 2-26623

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—325 **27 Claims**



1. A pattern forming method comprising the steps of:

illuminating a mask with a light from a light source whereby a portion of the light is transmitted through the mask;

imaging the light transmitted through the mask onto a photoresist layer on a wafer using a lens system so as to expose a pattern on the photoresist layer; and

developing the exposed pattern,

said mask comprising a first layer which is transparent with respect to said light and a mask pattern layer on said first layer,

at least a portion of said mask pattern layer comprising a phase shift region which consists solely of a single layer phase shift material having a single thickness and adapted for transmitting light and shifting the phase of the transmitted light, whereby the pattern on the photoresist layer is exposed by an interference which occurs between light transmitted through said region and light transmitted through other portions of the mask pattern layer.

5,624,792

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Hiroshi Nishinoiri, and Masao Okushima, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Division of Ser. No. 399,885, Mar. 7, 1995, Pat. No. 5,536,624. This application Jan. 11, 1996, Ser. No. 584,279

Claims priority, application Japan, Jun. 2, 1994, 6-121062

Int. Cl.[6] G03C *1/12;5/08;5/26*

U.S. Cl. 430—356 **2 Claims**

1. A black and white photographic photosensitive material comprising a support and one silver halide emulsion layer provided on the support wherein the silver halide emulsion comprises two or more components differing in Spectral sensitivity in the sensitive wavelength regions of 400–500 nm, 500–600 nm and 600 nm or longer, respectively and the photosensitive material is designed so that different tones can be obtained by selecting exposure wavelength within the said wavelength regions.

5,624,793

METHOD OF MANUFACTURING SOLID PROCESSING COMPOSITION FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

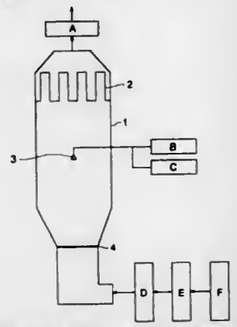
Hiroshi Yamashita; Hiroshi Yoshimoto, and Koji Takemura, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Nov. 1, 1995, Ser. No. 551,719

Claims priority, application Japan, Nov. 11, 1994, 6-277979; Nov. 11, 1994, 6-277980; Nov. 11, 1994, 6-277981

Int. Cl.[6] G03C *5/30*

U.S. Cl. 430—458 **12 Claims**



1. A method of manufacturing a solid granular processing composition for a silver halde photographic light sensitive material, the method comprising:

fluidizing powder particles in an air current, the particles comprising a compound selected from the group consisting of a thiosulfate, a sulfite, a bisulfite, an aminopolycarboxylic acid ferric complex, a carbonate, a p-phenylenediamine type developing agent and a hydroxylamine or its derivative; and

granulating the fluidized particles while spraying the particles with air and binder water using a two fluid nozzle for spraying the air and the binder water to obtain granules, a ratio of the air to the binder water in the two fluid nozzle being 100 to 10,000, the ratio being defined by the following expression:

(volume of air for spraying supplied per unit time)/(volume of a binder water supplied per unit time),

wherein said air current has an air flow rate of 0.1 to 5.0 m/sec. or said granulating is carried out at a theoretical relative humidity of 15 to 60% or at a temperature of 20° to 80° C.

5,624,794

METHOD FOR EXTENDING THE USEFUL SHELF-LIFE OF REFRIGERATED RED BLOOD CELLS BY FLUSHING WITH INERT GAS

Mark W. Bitensky, and Tatsuro Yoshida, both of Los Alamos, N.M., assignors to The Regents of the University of California, Los Alamos, N.M.

Filed Jun. 5, 1995, Ser. No. 473,675

Int. Cl.[6] A01N *1/02;* **A61M** *37/00*

U.S. Cl. 435—2 **13 Claims**

1. A method for storing red blood cells which comprises the steps of:

a. mixing a sample of whole blood containing the red blood cells to be stored with an anticoagulant solution, forming thereby a first suspension of red blood cells;

b. concentrating the red blood cells from the liquid portion of the first suspension, forming thereby a mass of packed red blood cells;

c. mixing the packed red blood cells so produced with an additive solution which comprises glucose, adenine, and salts, forming thereby a second suspension of red blood cells;

d. reducing the oxygen level of the red blood cells in the second suspension of red blood cells to approximately 8% or less of their saturation level by flushing the red blood cells with an inert gas; and

e. storing the red blood cells in the second suspension of red blood cells at 4° C.

5,624,795

ISOLATION AND CHARACTERIZATION OF A NOVEL CHIMPANZEE LENTIVIRUS, DESIGNATED SIMIAN IMMUNODEFICIENCY VIRUS ISOLATE CPZ-ANT

Peter Piot, Berchem; Guido Van Der Groen, Kontich; Eric DeLaporte, and Martine Peeters, both of Antwerp, all of Belgium, assignors to Innogenetics, N.V., Belgium

PCT No. PCT/EP91/01108, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO91/19785, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 14, 1991, Ser. No. 955,894

Claims priority, application European Pat. Off., Jun. 15, 1990, 90111364

Int. Cl.[6] G01N *33/53;* **C12N** *7/00;7/01;* **A61K** *39/21*

U.S. Cl. 435—5 **9 Claims**

1. An isolated and purified simian immunodeficiency virus designated $SIV_{cpz\text{-}ant}$ having the essential biochemic, morphologic, and immunologic properties of the $SIV_{cpz\text{-}ant}$ deposited at the European Collection of Animal Cell Cultures (ECACC) under biological deposit no. V 900 61 322, wherein said essential properties comprise the following:

a. the virus exhibits a tropism for T4 lymphocytes;

b. the virus is noncytopathic in tissue culture;

c. the virus does not induce syncytia formation in tissue culture;

d. the virus has a diameter of approximately 130 nm;

e. the virus possesses a Mg^{2+}-dependent reverse transcriptase activity;

f. the virus can be propagated in T4 immortalized cell lines;

g. viral lysates contain a viral protein, designated p27, with an apparent molecular weight of 27 kDa as determined by SDS-PAGE;

h. viral lysates contain a viral protein, designated p34, with an apparent molecular weight of 34 kDa as determined by SDS-PAGE;

i. viral lysates contain a viral glycoprotein, designated gp44-50, with an apparent molecular weight of 44–50 kDa as determined by SDS-PAGE; and,

j. viral lysates contain a viral glycoprotein, designated gp140, with an apparent molecular weight of 140 kDa as determined by SDS-PAGE.

5,624,796

Patent Not Issued For This Number

5,624,797

PEPTIDES FOR HIV-1 DETECTION

Dominique P. Bridon, Morton Grove; Isaac S.-Y. Sze, deceased, late of Gurnee; David J. Daghfal, Aurora, all of Ill.; Keeve D. Jaffe, Trevor, Wis., and Tracey L. Colpitts, Round Lake, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 7, 1995, Ser. No. 472,597

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **21 Claims**

13. An immunoassay to detect the presence of HIV antibodies in a test sample, comprising:

a) contacting said test sample with a solid phase to which has been attached an HIV-1 polypeptide having a point mutation between positions 593 and 611 to form a first mixture, and incubating said first mixture for a time and for conditions sufficient to form polypeptide/antibody complexes;

b) contacting said polypeptide/antibody complexes with an indicator reagent comprising a member of a specific binding pair attached to a signal generating compound capable of generating a measureable signal to form a second mixture, and incubating said second mixture for a time and for conditions sufficient to form polypeptide/antibody/indicator reagent complexes; and

c) determing the presence of HIV antibodies in said test sample by detecting the measureable signal.

5,624,798

DETECTION METHOD OF NUCLEIC ACID BY USE OF FLUORESCENT PYRYLIUM STAIN IN INTERCALATION INTO NUCLEIC ACIDS

Nobuko Yamamoto, Isehara; Tadashi Okamoto, Yokohama; Yoshinori Tomida, Atsugi; Takeshi Miyazaki, Ebina, and Masahiro Kawaguchi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,689

Claims priority, application Japan, Dec. 21, 1992, 4-340755; Mar. 10, 1993, 5-49530; Sep. 13, 1993, 5-227204; Oct. 26, 1993, 5-266866; Dec. 17, 1993, 5-318045

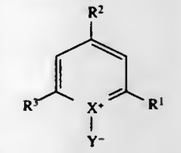
Int. Cl.[6] C12Q *1/68;* **D06P** *5/00;* **C07D** *335/00;309/00*

U.S. Cl. 435—6 **32 Claims**

1. A process for detecting a double-stranded nucleic acid, comprising the steps of:

providing a biological sample which may contain double-stranded nucleic acid;

providing a pyrylium compound represented by the following formula I:



(I)

wherein

X is O, S, Se or Te, two of R^1, R^2 and R^3 are independently substituted or unsubstituted aryl groups; the other is

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a hydrogen atom, halogen atom, sulfonate group, amino group, styryl group, nitro group, hydroxyl group, carboxyl group, cyano group, substituted or unsubstituted lower alkyl group, or substituted or unsubstituted cycloalkyl group,

-A or -L-A,

L is $-L^1-$, $-L^2-L^3-$ or $-L^6-L^5-L^6-$, and each of L^1 to L^6 is independently ~~$-(CH=CH-)_r$~~, a divalent group derived from the substituted or unsubstituted aryl group, a substituted or unsubstituted lower alkylene group, or $—CH=R^6—$, wherein R^6 is a ring structure having an oxo group,

A is a substituted or unsubstituted aryl group or $—CH=R^5—$, wherein R^5 is a substituted or unsubstituted heterocyclic ring, a substituted or unsubstituted cycloalkyl group, or a substituted or unsubstituted aromatic ring, or substituted or unsubstituted lower aralkyl group, and

Y^- is an anion;

mixing the pyrylium compound with the biological sample to intercalate the pyrylium compound into the double-stranded nucleic acid;

irradiating the double-stranded nucleic acid in which the pyrylium compound is trapped as an intercalator with light including a frequency at which the trapped pyrylium compound exhibits significant absorptivity of sufficient magnitude to excite the trapped pyrylium compound; and

measuring fluorescent light emitted from the trapped pyrylium compound which is excited to detect the presence of the double-stranded nucleic acid.

5,624,799

CANCER-ASSOCIATED MAR BINDING PROTEIN

Terumi Kohwi-Shigematsu, and Yoshinori Kohwi, both of San Diego, Calif., assignors to The Burnham Institute, La Jolla, Calif.

Filed Feb. 13, 1995, Ser. No. 388,023

Int. Cl.[6] C12Q *1/68*; G01N *33/574;33/566;33/48*

U.S. Cl. 435—6 **20 Claims**

1. A substantially purified protein, p114-MBP, having the following characteristics:

a. an apparent molecular mass of about 114 kDa as determined by SDS-PAGE on a 7.5% gel; and which

b. specifically associates with a matrix attachment region DNA sequence context (MAR) with a dissociation constant greater than about 5×10^{-8}M,

wherein said p114-MBP is obtainable from a malignant tumor tissue and wherein said p114-MBP is not specifically bound by an antibody that specifically binds a protein selected from the group consisting of SATB1, nucleolin and SAF-A/hnRNP-U.

5,624,800

METHOD OF DNA SEQUENCING EMPLOYING A MIXED DNA-POLYMER CHAIN PROBE

Paul D. Grossman, Burlingame; Steven Fung, Palo Alto; Steven M. Menchen, Fremont; Sam L. Woo, Redwood City, and Emily S. Winn-Deen, Foster City, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Continuation of Ser. No. 296,880, Aug. 26, 1994, which is a continuation of Ser. No. 973,118, Nov. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 866,018, Apr. 7, 1992, Pat. No. 5,470,705, and Ser. No. 862,642, Apr. 3, 1992, abandoned. This application May 19, 1995, Ser. No. 447,174

Int. Cl.[6] C12Q *1/68*; C12P *19/34*

U.S. Cl. 435—6 **7 Claims**

1. In a method of determining the nucleotide sequence of a target nucleic acid, the method of the type wherein a nested set of DNA fragments produced by extension of an oligonucleotide primer are separated by size, an improvement comprising:

providing a nested set of DNA fragments, each DNA fragment of the set being conjugated to a polymer chain such that DNA fragments of different sizes have different ratios of charge to translational frictional drag in a non-sieving medium; and electrophoretically separating the DNA fragments in a non-sieving liquid medium.

5,624,801

METHODS OF IDENTIFYING HUMAN OSTEOCLAST-SPECIFIC AND RELATED GENES

Philip Stashenko, Norfolk; Yi-Ping Li, Boston, and Anne L. Wucherpfennig, Brookline, all of Mass., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Division of Ser. No. 392,678, Feb. 23, 1995, which is a continuation of Ser. No. 45,270, Apr. 6, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,304

Int. Cl.[6] C07H *21/02;21/04*; C12Q *1/68*

U.S. Cl. 435—6 **3 Claims**

1. A method of identifying DNA encoding an osteoclast-specific or -related gene product, comprising the steps of:

a) contacting a sample containing DNA with a stromal cell+, osteoclast+probe under conditions appropriate for hybridization of the probe to the DNA;

b) contacting said sample with a stromal cell+, osteoclast−probe under conditions appropriate for hybridization of the stromal cell+, osteoclast− probe to the DNA; and

c) identifying DNA which hybridizes to the stromal cell+, osteoclast+probe, but does not hybridize to the stromal cell+, osteoclast−probe,

thereby identifying DNA encoding an osteoclast-specific or -related gene product.

5,624,802

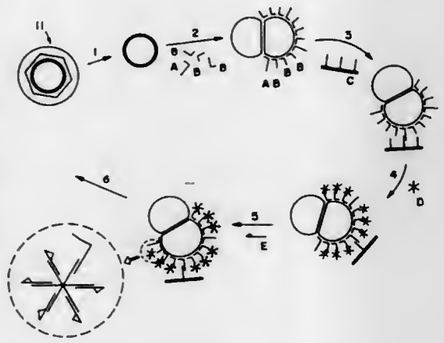
NUCLEIC ACID MULTIMERS AND AMPLIFIED NUCLEIC ACID HYBRIDIZATION ASSAYS USING SAME

Michael S. Urdea, Alamo; Brian Warner, Martinez, and Thomas Horn, Berkeley, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 163,916, Dec. 8, 1993, abandoned, which is a continuation of Ser. No. 823,890, Jan. 22, 1992, abandoned, which is a division of Ser. No. 340,031, Apr. 18, 1989, Pat. No. 5,124,246, which is a continuation-in-part of Ser. No. 252,638, Sep. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 185,201, Apr. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 109,282, Oct. 15, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 479,493

Int. Cl.[6] C12Q *1/68*; C07H *21/04*

U.S. Cl. 435—6 **39 Claims**



1. A synthetic branched nucleic acid multimer having a minimum of three termini independently selected from 5' and 3' termini said multimer comprising:

(a) at least one first single-stranded oligonucleotide unit that is capable of hybridizing specifically to a first single-stranded nucleic acid sequence of interest; and

(b) a multiplicity of second single-stranded oligonucleotide units each of which is capable of hybridizing specifically to a second single-stranded nucleic acid sequence of interest, wherein the first single-stranded oligonucleotide unit is bonded directly or indirectly to the multiplicity of second single-stranded oligonucleotide units only via covalent bonds.

5,624,803

IN VIVO OLIGONUCLEOTIDE GENERATOR, AND METHODS OF TESTING THE BINDING AFFINITY OF TRIPLEX FORMING OLIGONUCLEOTIDES DERIVED THEREFROM

Sarah B. Noonberg, Berkeley, and C. Anthony Hunt, San Francisco, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 138,666, Oct. 14, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 324,001

Int. Cl.[6] C12Q *1/68*; C12N *15/63;15/11*

U.S. Cl. 435—6 **28 Claims**

1. A construct for generating a specific oligonucleotide within a cell, which construct comprises a nucleotide sequence from which the transcript is the specific oligonucleotide, said nucleotide sequence being flanked in the 5' direction by a stabilizing region and in the 3' direction by a termination sequence, and a promoter, which initiates transcription by RNA polymerase III, and which promoter is in the 5' direction from the stabilizing region.

5,624,804

IMMUNOCHEMICAL DETECTION OF IN VIVO ADVANCED GLYCOSYLATION END PRODUCTS

Richard J. Bucala, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 811,579, Dec. 20, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 956,849

Int. Cl.[6] G01N *33/53*; A61K *39/395;51/10*; C07K *16/00*

U.S. Cl. 435—7.1 **34 Claims**

1. A method for detecting the presence of advanced glycosylation endproducts (AGEs) in a biological sample comprising the steps of:

(a) contacting in vitro said biological sample with an antibody, wherein said antibody is an anti-AGE antibody which reacts with an immunological epitope common to AGEs, but which does not react with the following model AGEs:

2-(2-furoyl)-4(5)-(2-furanyl)-1H-imidazole (FFI), 1-alkyl-2-formyl-3,4-diglycosyl pyrrole (AFGP), 5-hydroxymethyl-1-alkylpyrrole-2-carbaldehyde (pyrraline), carboxymethyllysine and pentosidine, wherein reactivity is detected in a competitive solid phase assay format, wherein bovine serum albumin (BSA)-AGE obtained by incubation of BSA with glucose is adsorbed to said solid phase, and said model AGE is tested as the inhibitor of binding of said antibody to said BSA-AGE;

(b) allowing the formation of reaction complexes which comprise said antibody and said AGEs; and

(c) detecting the formation of said reaction complexes in said biological sample;

wherein detection of said reaction complexes indicates the presence of AGEs in said biological sample.

5,624,805

USES FOR ANTIBODIES WHICH BIND TO HUMAN SOMATOMEDIN CARRIER PROTEIN SUBUNITS

Emerald M. Spencer, San Francisco, and Carol Talkington-Verser, San Rafael, both of Calif., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Division of Ser. No. 320,123, Oct. 7, 1994, which is a continuation of Ser. No. 43,039, Apr. 5, 1993, abandoned, which is a division of Ser. No. 763,481, Sep. 20, 1991, Pat. No. 5,200,509, which is a continuation of Ser. No. 290,250, Dec. 22, 1988, abandoned, and a continuation-in-part of Ser. No. 34,885, Apr. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 170,022, Mar. 31, 1988, abandoned. This application May 12, 1995, Ser. No. 440,228

Int. Cl.[6] G01N *33/53;33/566*; C07K *1/00*

U.S. Cl. 435—7.1 **2 Claims**

1. A method for measuring the level of unbound somatomedins in human fluids comprising:

contacting an antibody with said human fluids which binds specifically to a carrier protein subunit which:

(a) has the N-terminal amino acid sequence, Gly-Ala-Ser-Ser-Ala-Gly-Leu-Gly-Pro-Val-Val-Arg-R-Glu-Pro-R-Asp-Ala-Arg-Ala-Leu-Ala, wherein R is a cysteine or half-cysteine;

(b) binds insulin-like growth factor 1 (IGF-I); and

(c) has a molecular weight of about 15,000 to 30,000 daltons as determined by sodium dodecyl sulfate gel electrophoresis under reducing conditions to separate somatomedins complexed with carrier protein subunits having the N-terminal amino acid sequence Gly-Ala-Ser-Ser-Ala-Gly-Leu-Gly-Pro-Val-Val-Arg-R-Glu-Pro-R-Asp-Ala-Arg-Ala-Leu-Ala- from the somatomedins not bound to said carrier protein subunits, and

measuring said somatomedins not bound to said carrier protein subunits.

5,624,806

ANTIBODIES TO CARDIAC HYPERTROPHY FACTOR AND USES THEREOF

Joffre Baker, El Granada; Kenneth Chien, La Jolla; Kathleen King, Pacifica; Diane Pennica, Burlingame, and William Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, and The Regents of the University of California, Oakland, both of Calif.

Division of Ser. No. 286,304, Aug. 5, 1994, which is a continuation of Ser. No. 233,609, Apr. 25, 1994, Pat. No. 5,534,615. This application May 17, 1995, Ser. No. 442,745

Int. Cl.[6] G01N *33/53*; C12N *5/12*; C07K *16/22*

U.S. Cl. 435—7.1 **8 Claims**

1. A method for detecting cardiotrophin-1 comprising contacting the antibody or the antigen-binding fragment that specifically binds mature mouse cardiotrophin-1 having the amino acid sequence (SEQ ID NO.: 3) shown in FIG. 1, or mature human caxdiotrophin-1 having the amino acid sequence (SEQ ID No.: 8) shown in FIG. 5. with a sample or cell suspected of containing cardiotrophin-1 and detecting if binding has occurred.

5,624,807

METHODS FOR DETECTING ALZHEIMER'S DISEASE BY MEASURING RATIOS OF CALCIUM-ACTIVATED NEUTRAL PROTEASE ISOFORMS

Ralph A. Nixon, Arlington, Mass., and Ken-Ichi Saito, Yokohama, Japan, assignors to The McLean Hospital Corporation, Belmont, Mass.

Continuation of Ser. No. 95,319, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 925,594, Jul. 22, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 184,603

Int. Cl.[6] G01N *33/573;33/53;33/48*

U.S. Cl. 435—7.4 **34 Claims**

1. A method which aids in the diagnosis of Alzheimer's disease in an individual, comprising

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(a) obtaining a tissue sample from said individual; and
(b) determining the relative ratio of the active 76-kDa isoform of μCANP to the 80-kDa isoform in said tissue sample;
wherein an increased ratio of 76-kDa/80-kDa compared to that of a control group of individuals not having Alzheimer's disease indicates that said individual has Alzheimer's disease.

5,624,808

METHOD FOR IDENTIFYING CELLS COMMITTED TO APOPTOSIS BY DETERMINING CELLULAR PHOSPHOTYROSINE CONTENT

Peter Thompson, Danville, and Fridjtof Lund-Johannsen, Fremont, both of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 28, 1995, Ser. No. 412,256
Int. Cl.[6] G01N *33/53;33/536;33/574*
U.S. Cl. 435—7.24 **6 Claims**

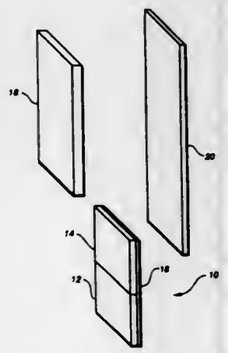
1. A method for identifying which cells in a population of cells are committed to apoptosis by determining phosphotyrosine content of sample cells from said population wherein cells with concentrations of phosphotyrosine below normal physiological levels are classed as cells committed to apoptosis, while cells having phosphotyrosine concentrations at or near normal physiological are classed as cells not committed to undergo apoptosis.

5,624,809

DEVICE FOR IMMUNOCHROMATOGRAPHIC ANALYSIS

Carl N. Skold, Mountain View; Armen B. Shanafelt, Redwood City; Vartan Ghazarossian, Menlo Park, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Division of Ser. No. 241,307, May 10, 1994, Pat. No. 5,451,507, which is a continuation of Ser. No. 940,137, Sep. 3, 1992, Pat. No. 5,334,513, which is a division of Ser. No. 376,723, Jul. 7, 1989, Pat. No. 5,164,294, which is a continuation-in-part of Ser. No. 194,708, May 17, 1988, Pat. No. 5,039,607. This application May 5, 1995, Ser. No. 436,053
Int. Cl.[6] G01N *33/543;33/548*
U.S. Cl. 435—7.92 **4 Claims**



1. A device for conducting an assay, which device comprises:
a first bibulous member strip,
an absorbent member strip,
a second bibulous member strip,
a portion of said first bibulous member strip being in alternating liquid receiving relationship, by direct contact, with a portion of said absorbent member strip and with a portion of said second bibulous member strip.

5,624,810

METHOD FOR DETECTION OF SURFACES CONTAMINANTS

C. David Miller, Greenbelt, and Lawrence Loomis, Columbia, both of Md., assignors to New Horizons Diagnostics Corp., Columbia, Md.

Filed Jan. 9, 1995, Ser. No. 370,093
Int. Cl.[6] C12Q *1/66*
U.S. Cl. 435—8 **30 Claims**

1. A method for determining the presence and quantity of an analyte on a surface comprising the steps of:
a) collecting said analyte by wiping said surface with a disposable collection apparatus means, and
b) adding collection fluid to said collection apparatus means,
c) placing said collection fluid in a disposable test device with permeable filter means at its bottom end, an open top end, and transparent side walls;
d) applying pressure to said disposable test device to force said fluid to pass through said permeable filter means and retaining said analyte on said permeable filter means,
e) adding a reagent into said disposable test device thereby establishing a luminescent reaction in said test device;
f) measuring the light emission resulting from said luminescent reaction with a photometer comprising a photodetector means and a light tight chamber for said disposable test device and a means to measure light passing through said transparent side wall of said test device;
g) causing the said photometer means to output a signal indicative to the presence and amount of analyte.

5,624,811

BILIRUBIN OXIDASE FROM ALFALFA AND USE OF THE ENZYME

Gunter Lang, Tutzing; Ingo Bohn, Birkenau, and Hans-Willi Krell, Penzberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Mar. 18, 1994, Ser. No. 210,371
Claims priority, application Germany, Mar. 24, 1993, 43 09 111.3
Int. Cl.[6] C12Q *1/26; C07K 1/00*
U.S. Cl. 435—25 **8 Claims**

1. A process for the isolation of an enzyme specific for bilirubin from at least one plant of the alfalfa species, comprising: obtaining a crude extract from the alfalfa; subjecting the crude extract to a fractional precipitation to obtain a precipitate; heating the precipitate; and subjecting the precipitate to at least one chromatographic separation.

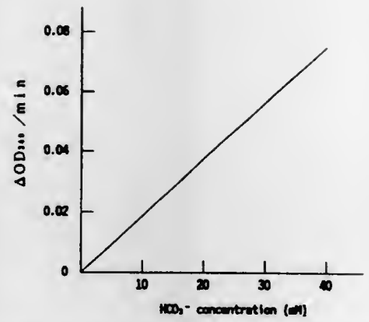
5,624,812

METHOD FOR MEASURING CARBON DIOXIDE AND REAGENT THEREFOR

Shizuo Hattori; Takahide Kishimoto; Yukihiro Sogabe, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 210,559, Mar. 18, 1994, Pat. No. 5,547,851. This application Jun. 6, 1995, Ser. No. 467,768
Claims priority, application Japan, Mar. 22, 1993, 5-61987
Int. Cl.[6] C12Q *1/25; G01N 33/50*
U.S. Cl. 435—26 **15 Claims**

1. A method for measuring carbon dioxide in a liquid sample, comprising the steps of:
(1) reacting bicarbonate ion in said sample with phosphoenolpyruvate carboxylase and phosphoenolpyruvate;
(2) reacting the resultant oxalacetic acid with malate dehydrogenase and NADH; and
(3) measuring the decreased NADH, wherein said phosphoenolpyruvate carboxylase is derived from a species of acetic acid bacteria selected from the group consisting of *Acetobacter pasteurianus, Acetobacter xylinum* and *Gluconobacter*



oxydans, and said reacting steps (1) and (2) are carried out in a solution containing 50–100 mM magnesium ions and having a pH of 7.5–9.0.

5,624,813

NAD(P)[+]/NAD(P)H BASED CHEMILUMINESCENT DIAGNOSTICS

Vijay K. Mahant, 5669 Amaya Dr., #367, La Mesa, Calif. 91942

Filed Apr. 21, 1994, Ser. No. 230,848
Int. Cl.[6] C12Q *1/28*
U.S. Cl. 435—28 **15 Claims**

1. An assay for quantifying an analytic in a sample, said assay comprising:
providing an oxidoreductase, NAD(P)[+]/NAD(P)H, a peroxidase and a chemiluminescence generating reagent;
in a first reaction, reducing the NAD(P)[+] to NAD(P)H, the first reaction catalyzed by the oxidoreductase;
in a second reaction, transferring electrons from the NAD(P)H produced in the first reaction to an O_2 molecule to produce at least one of superoxide anion (O_2^-) and hydrogen peroxide (H_2O_2), the second reaction catalyzed by the peroxidase, and the second reaction not dependent upon a metal ion or other electron mediator;
in a third reaction, producing a measurable chemiluminescence from the chemiluminescence generating reagent and the at leaanion and hydrogen peroxide produced in the second reaction, the third reaction catalyzed by the peroxidase;
measuring the chemiluminescence produced in the third reaction; and
correlating the chemiluminescence measured with the quantity of analyte present in the sample.

5,624,814

CULTURE MEDIUM AND METHOD FOR CULTURING BODY FLUIDS CONTINUING ANTIBIOTICS

John R. Waters, Towson, and Rodney Broman, Fallston, both of Md., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 905,999, Jun. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 560,485, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 132,676, Dec. 14, 1987, abandoned, which is a continuation of Ser. No. 861,798, Jul. 7, 1986, abandoned, which is a division of Ser. No. 688,276, Jan. 3, 1985, Pat. No. 4,632,902, which is a continuation of Ser. No. 527,144, Aug. 29, 1983, abandoned, which is a continuation of Ser. No. 294,857, Aug. 20, 1981, abandoned. This application Oct. 19, 1994, Ser. No. 326,155
Int. Cl.[6] C12Q *1/02;1/04*
U.S. Cl. 435—29 **12 Claims**

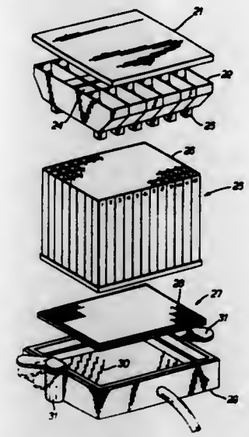
1. A culture medium for the growth and detection in a body fluid sample of an infecting microorganism which is susceptible to antibiotics comprising:
a hypertonic growth medium capable of providing osmotic protection to the infecting microorganism which has been damaged by exposure to antibiotics and at least one resin capable of isolating the antibiotics without hindering biological activity during culturing of the body fluid sample, wherein at least one resin is not removed from the culture medium during culturing of the body fluid sample.

5,624,815

METHOD AND APPARATUS FOR THE ANALYSIS OF BIOLOGICAL MATERIAL

Peter L. Grant, Cambridgeshire; Nicholas P. M. Foote; Michael Noble, both of Cambridge, and Christopher T. Evans, Hertfordshire, all of Great Britain, assignors to Celsis International plc, Cambridge, United Kingdom

PCT No. PCT/GB93/00577, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/19199, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 22, 1993, Ser. No. 302,985
Claims priority, application United Kingdom, Mar. 28, 1992, 9206124; Mar. 28, 1992, 9206143; Mar. 28, 1992, 9206147; Jun. 24, 1992, 9213444
Int. Cl.[6] C12Q *1/24;1/08;* C12M *1/34;1/12*
U.S. Cl. 435—30 **17 Claims**



1. A method for analyzing solid material in a liquid sample, which comprises the steps of:
substantially uniformly distributing the sample by passage through a plurality of discrete wells provided in an integral member and whose bases are defined by filter material that retains the solid material and allows the passage of liquid, the concentration of solid material being such that it is absent in at least one well; and
analyzing the wells for the presence of retained solid material.

17. A device adapted for use in a method for analyzing solid material in a single liquid sample, which comprises the combination of:
a unit comprising a plurality of discrete wells whose bases are defined by filter material that retains the solid material and allows the passage of liquid under the application of reduced pressure below said unit;
a container for the liquid sample, comprising a plurality of chambers each corresponding to a well;
means for drawing liquid from the container and through the wells under reduced pressure applied below said unit;
means for holding the container relative to the unit, while maintaining a peripheral liquid seal, in either a first fixed position where liquid sample can pass between the chambers above the unit or a second fixed position wbere each corresponding chamber and well define a discrete volume; and

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manifold type means providing substantially uniform distribution of the single liquid sample passing from the container into the wells.

5,624,816

TRANSMEMBRANE GLYCOPROTEIN ASGP-2: NUCLEOTIDE SEQUENCES AND RECOMBINANT PRODUCTION OF PROTEINS

Kermit L. Carraway; Coralie A. Carothers Carraway, and Nevis L. Fregien, all of Miami, Fla., assignors to University of Miami, Miami, Fla.

Continuation of Ser. No. 922,521, Jul. 30, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 179,481

Int. Cl.[6] C12N *15/12*

U.S. Cl. 435—69.1 **6 Claims**

1. An isolated DNA segment encoding a transmembrane glycoprotein ASGP-2 component of a cell surface sialomucin complex, consisting of the nucleotide sequence SEQ ID NO:1.

5,624,817

MUTATIONS IN THE GENE ENCODING THE ALPHA CHAIN OF PLATELET GLYCOPROTEIN IB

Jonathan L. Miller; David Cunningham; Vicki A. Lyle, all of Syracuse; Clara N. Finch, Webster, and Matthew R. Pincus, Syracuse, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation of Ser. No. 770,968, Oct. 7, 1991, Pat. No. 5,317,097. This application Apr. 28, 1994, Ser. No. 234,265

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[6] C12N *15/12;15/11;15/63;5/10*

U.S. Cl. 435—69.1 **61 Claims**

1. An isolated DNA molecule encoding naturally-occurring wild-type platelet glycoprotein Ib alpha having a mutation other than at amino acid 233 and within the region 228–238 which renders a polypeptide encoded by said DNA more reactive with von Willebrand factor than naturally occurring wild-type platelet glycoprotein Ib alpha, as measured by a ristocetin assay, wherein said mutation alters the three dimensional structure of a polypeptide encoded by said DNA, such that the lowest energy conformation of the polypeptide changes from a beta bend conformation to an amphipathic alpha helix conformation within the region 232–233 of said polypeptide.

5,624,818

NUCLEIC ACIDS ENCODING REGULATORY PROTEINS THAT DIMERIZE WITH MAD OR MAX

Robert N. Eisenman, and Donald E. Ayer, both of Mercer Island, Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation-in-part of Ser. No. 222,638, Apr. 1, 1994, which is a division of Ser. No. 903,710, Jun. 23, 1992, Pat. No. 5,302,519, which is a continuation-in-part of Ser. No. 756,195, Sep. 19, 1991, abandoned. This application Jun. 1, 1994, Ser. No. 252,966

Int. Cl.[6] C12N *15/12;* **C07K** *14/47*

U.S. Cl. 435—69.1 **18 Claims**

1. An isolated nucleic acid molecule whose complement is capable of hybridizing under stringent conditions to the mSinA nucleic acid molecule having the nucleotide sequence shown in FIG. 22 (SEQ ID NO:11), the isolated nucleic acid molecule encoding a recombinant polypeptide that associates with a Mad polypetide but not with a Myc polypetide or a Max polypeptide.

5,624,819

GERMLINE MUTATIONS IN THE MTS GENE

Mark H. Skolnick; Lisa A. Cannon-Albright, and Alexander Kamb, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, and Myriad Genetics, Inc., both of Salt Lake City, Utah

Continuation-in-part of Ser. No. 251,938, Jun. 1, 1994, abandoned, Ser. No. 215,087, Mar. 18, 1994, abandoned, and Ser. No. 215,086, Mar. 18, 1994, abandoned, said Ser. No. 251,938is a continuation-in-part of Ser. No. 227,369, Apr. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 214,582, Mar. 18, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 474,177

Int. Cl.[6] C12P *21/02;* **C12N** *1/21;15/63;* **C07H** *21/04*

U.S. Cl. 435—69.1 **9 Claims**

1. An isolated DNA consisting of SEQ ID NO:1 having A at nucleotide 377.

5,624,820

EPISOMAL EXPRESSION VECTOR FOR HUMAN GENE THERAPY

Mark J. Cooper, Solon, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Division of Ser. No. 151,387, Nov. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,204

Int. Cl.[6] C12P *21/06;* **C12N** *15/37;15/85*

U.S. Cl. 435—69.1 **20 Claims**

1. A method of expressing a foreign gene in a mammalian cell comprising: transfecting the mammalian cell with a replication-competent, transformation-negative vector comprising at least one papovavirus origin of replication, a first DNA sequence encoding a mutant form of papovavirus large T antigen which contains a replication-competent binding site for said origin of replication and which is negative for binding to and to retinoblastoma tumor suppressor gene product due to a mutation in a codon in the p53 binding domain of said large T antigen and a mutation in a codon in the RB binding domain of said large T antigen, said DNA sequence being operatively linked to a first promoter which is functional in said mammalian cell, and a second DNA sequence encoding the foreign gene operatively linked to a second promoter which is functional in the mammalian cell, whereby the transfected cell subsequently expresses the foreign gene.

5,624,821

ANTIBODIES WITH ALTERED EFFECTOR FUNCTIONS

Gregory P. Winter, Cambridge; Alexander R. Duncan, Wimbledon, and Dennis R. Burton, Sheffield, all of Great Britain, assignors to Scotgen Biopharmaceuticals Incorporated, Menlo Park, Calif.

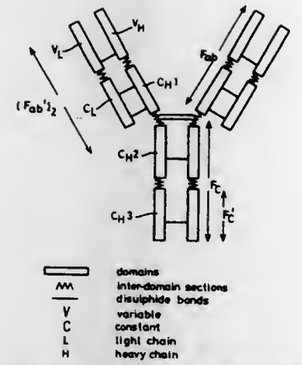
Continuation of Ser. No. 208,084, Mar. 9, 1994, which is a continuation of Ser. No. 814,035, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 303,668, Jan. 18, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 479,752

Claims priority, application United Kingdom, Mar. 18, 1987, 8706425; Aug. 10, 1987, 8718897; Dec. 1, 1987, 8728042; WIPO, Mar. 18, 1988, PCT/GB88/00211

Int. Cl.[6] C12N *15/00;1/20;* **A61K** *39/395*

U.S. Cl. 435—69.6 **25 Claims**

14. A process for modifying an antibody of class IgG, comprising substituting at least one amino acid from the heavy chain constant region selected from the group consisting of amino acid residues 234, 235, 236, 297, 318, 320 and 322 with an amino acid which is different from that present in an unmodified antibody, thereby altering an affinity for a effector molecule while retaining



binding to antigen as compared with the affinity of the unmodified antibody.

5,624,822

HIRUDIN FUSION PROTEINS AND PREPARATION OF HIRUDIN

Wolfgang Koerwer, Gruenstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 861,820, Jun. 18, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,384

Claims priority, application Germany, Dec. 22, 1989, 39 42 580.0

Int. Cl.[6] C12P *21/06;* **C12N** *5/00;* **C07K** *14/815*

U.S. Cl. 435—69.7 **4 Claims**

1. A fusion protein of the formula I

X—Z-hirudin peptide I.

where X is an amino acid sequence comprising an active fragment of protein A, Z is Met or an oligopeptide sequence which can be cleaved at the point of attachment to the hirudin peptide between X and the hirudin peptide, said fusion protein being expressed from a pRIT 2TA expression vector.

5,624,823

DNA ENCODING PROCINE INTERLEUKIN-10

David H. Sachs; Christian A. Leguern, both of Newton; Megan Sykes, Charlestown, and Gilles JF. Blancho, Cambridge, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 797,555, Nov. 22, 1991, abandoned, and a continuation-in-part of Ser. No. 838,595, Feb. 19, 1992, abandoned, and a continuation-in-part of Ser. No. 63,171, May 17, 1993, abandoned, and a continuation-in-part of Ser. No. 62,946, May 17, 1993, abandoned, said Ser. No. 838,595is a continuation-in-part of Ser. No. 817,761, Jan. 8, 1992, abandoned, said Ser. No. 63,171is a continuation-in-part of Ser. No. 838,595, and Ser. No. 797,555, said Ser. No. 62,946is a continuation-in-part of Ser. No. 838,595. This application Aug. 30, 1993, Ser. No. 114,072

Int. Cl.[6] C12N *5/10;15/24*

U.S. Cl. 435—69.52 **27 Claims**

1. Purified DNA comprising a sequence which encodes a peptide having at least 90% sequence similarity with the peptide from SEQ ID NO:1 and said peptide having a porcine IL-10 activity, said activity being chosen from the group of: inhibiting the ability of T cells to release or produce IL-2 when administered to T cells; inhibiting the ability of T cells to release or produce gamma interferon when administered to T cells; and competitively inhibiting the binding of IL-10 to cells.

5,624,824

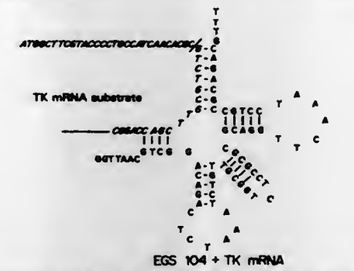
TARGETED CLEAVAGE OF RNA USING EUKARYOTIC RIBONUCLEASE P AND EXTERNAL GUIDE SEQUENCE

Yan Yuan; Cecilia Guerrier-Takada, both of New Haven; Sidney Altman, Hamden, and Fenyong Liu, New Haven, all of Conn., assignors to Yale University, New Haven, Conn.

Continuation-in-part of Ser. No. 54,892, Apr. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,937, Aug. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 875,099, Apr. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 568,834, Aug. 17, 1990, Pat. No. 5,168,053, which is a continuation-in-part of Ser. No. 328,368, Mar. 24, 1989, abandoned. This application Mar. 7, 1994, Ser. No. 207,547

Int. Cl.[6] C12P *19/34;* **C07H** *21/04;* **A61K** *48/00*

U.S. Cl. 435—91.2 **17 Claims**



1. A composition for targeting an RNA substrate for cleavage by eukaryotic RNAase P comprising

a recombinant external guide sequence molecule including a cleavage targeting sequence, and

a nucleotide sequence complementary to the substrate,

wherein the external guide sequence and complementary nucleotide sequence base pairs to the substrate to form a hybrid structure having secondary structure resembling a precursor tRNA under conditions promoting cleavage by the RNAase P of the substrate at the nucleotide at the 5' end of the base-paired region, wherein the hybrid structure comprises a dihydrouridine stem, T stem and loop, aminoacyl acceptor stem, and either an anticodon stem and loop or variable loop.

5,624,825

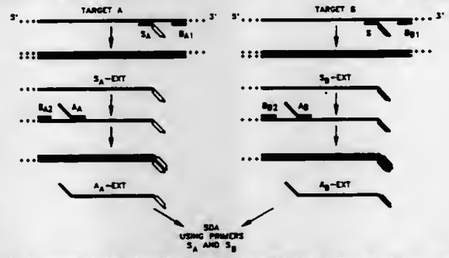
SIMULTANEOUS AMPLIFICATION OF MULTIPLE TARGETS

George T. Walker; James G. Nadeau, both of Chapel Hill, and Michael C. Little, Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 73,197, Jun. 4, 1993, Pat. No. 5,422,252. This application May 26, 1995, Ser. No. 451,313

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—91.2 **9 Claims**



1. A method for simultaneously amplifying a first and a second target nucleic acid sequence by Strand Displacement Amplification (SDA) comprising:

a) hybridizing a first adapter primer to the 3' end of the first target sequence, the 3' end of the adapter primer comprising a target binding sequence which hybridizes to the target

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sequence and the 5' end of the adapter primer comprising a first adapter sequence which is substantially identical to a 3' target binding sequence of a first amplification primer which hybridizes to a first strand of the second target sequence;

b) extending the first adapter primer with polymerase to produce a first extension product which is complementary to the first target sequence and displacing the first extension product;

c) hybridizing a second adapter primer to the first extension product at the 3' end of the complement of the first target sequence, the 3' end of the second adapter primer comprising a target binding sequence which hybridizes to the first extension product and the 5' end of the second adapter primer comprising a second adapter sequence which is substantially identical to a 3' target binding sequence of a second amplification primer which hybridizes to a second strand of the second target sequence;

d) extending the second adapter primer with polymerase to produce a second extension product, displacing the second extension product, and;

e) simultaneously amplifying the second extension product and the second target sequence in an SDA reaction using the first and second amplification primers, the first and second amplification primers each further comprising a recognition site for a restriction enzyme which nicks one strand of a hemimodified double stranded restriction enzyme recognition site, thereby amplifying the first and second target nucleic acid sequence.

5,624,826

CLONING VECTOR PLASMID VECTOR-PRIMER DERIVED THEREFROM AND PREPARATION METHOD OF THE SAME

Seishi Kato, Sagamihara; Takashi Aoki, Tanashi, and Yuri Umezawa, Chigasaki, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 255,799, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 115,796, Sep. 3, 1993, abandoned, which is a continuation of Ser. No. 606,826, Oct. 31, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 466,111

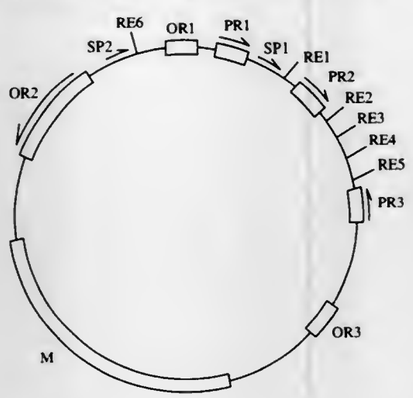
Claims priority, application Japan, Oct. 31, 1989, 1-283674; Sep. 7, 1990, 2-238332

Int. Cl.[6] C12N *15/64;15/10;15/85;15/70*

U.S. Cl. 435—91.4 **4 Claims**

1. A method for preparing a cDNA library in which the sequence of inserted cDNAs can be determined and wherein the inserted cDNAs can be expressed in mammalian cells, comprising:

preparing a cDNA library in a multi-functional cloning vector represented by the formula:



wherein

PR1 represents a promoter acting in mammalian cells;

PR2 and PR3 represent promoters for RNA polymerase, which have sequences different from each other and which are positioned in opposite orientation to one another so as to permit the generation of RNA transcripts from either strand of the cDNA insert;

SP1 and SP2 represent sequencing primer regions which are different from each other;

OR1 represents an origin for replication in mammalian cells;

OR2 represents an origin for replication of a single-stranded phage;

OR3 represents an origin for replication in *E. coli;*

M represents a selectable marker;

RE1 and RE5 represent unique restriction sites rarely existing in eukaryotic DNA;

RE2 represents a unique restriction site generating a 3'-protruding dN homooligomer end of about 4 bases after restriction enzyme digestion and wherein RE2 is a recognition site of a restriction enzyme;

RE4 represents a unique restriction site generating a 3'-protruding end after restriction enzyme digestion;

RE6 represents more than one restriction site generating a 3'-protruding end after restriction enzyme digestion;

the position of OR2, OR3 and M being arbitrary with the proviso that the functions of said vector plasmid are not hindered at the restriction site RE4;

and wherein the inserted cDNA is inserted between RE2 and RE4, with the 5' of the inserted DNA linked at RE2.

5,624,827

DNA SEQUENCES ENCODING THE PLANT TOXIN GELONIN

Michael G. Rosenblum, Houston, and Kenneth L. Beattie, The Woodlands, both of Tex., assignors to Research Development Foundation, Carson City, Nev.

Continuation of Ser. No. 755,949, Sep. 6, 1991, abandoned. This application Oct. 21, 1994, Ser. No. 327,440

Int. Cl.[6] C12P *19/34;21/02;* **C12N** *15/63;* **C07H** *21/04*

U.S. Cl. 435—91.5 **33 Claims**

33. A process for producing, cloning and expressing a synthetic gene encoding gelonin, comprising the steps of:

a. selecting the sequence of a double-stranded DNA fragment containing a sequence of three base codons corresponding to the primary amino acid sequence determined from purified gelonin protein so that said DNA sequence has features that facilitate synthesis, cloning, expression or biochemical manipulation of the gene;

b. designing, synthesizing, purifying and 5'-phosphorylating a set of synthetic oligonucleotides which when linked together to make the synthetic gene;

c. annealing and ligating the oligonucleotides together to assemble the synthetic gene;

d. ligating the synthetic gene together with a suitable cloning vector;

e. determining the nucleotide sequence of the cloned gene to verify the sequence of the gene;

f. conducting site-directed mutagenesis to correct any undesired mutations in the cloned gene;

g. subcloning the gene into an expression vector;

h. introducing the expression vector bearing the synthetic encoding gelonin into an expression host cell, and

i. growing the host cell bearing the expression vector of step (h) under conditions suitable for production of the gelonin product.

5,624,828

PROCESS FOR PRODUCING L-TRYPTOPHAN IN SERINE AUXOTROPHIC MICROORGANISMS BELONGING TO THE GENUS CORYNEBACTERIUM OR BREVABACTERIUM

Ryoichi Katsumata, Machida; Masato Ikeda, Sagamihara; Keiko Nakanishi, Machida, and Yuko Sasao, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co. Ltd., Japan

Continuation of Ser. No. 795,917, Nov. 20, 1991, abandoned. This application Dec. 12, 1994, Ser. No. 354,314

Claims priority, application Japan, Nov. 22, 1990, 2-320440

Int. Cl.[6] C12P *13/22;* **C12N** *15/09;1/20*

U.S. Cl. 435—108 **4 Claims**

1. A process for producing L-tryptophan, which comprises transforming a serine auxotrophic host microorganism belonging to the genus Corynebacterium or Brevibacterium by introducing into said host a recombinant plasmid containing a gene which complements the serine auxotrophy of the host, said gene encoding an enzyme in the serine biosynthetic pathway selected from the group consisting of 3-phosphoglycerate dehydrogenase, phosphoserine aminotransferase and phosphoserine phosphatase, and a second gene which encodes an enzyme in the biosynthetic pathway of L-tryptophan; said recombinant plasmid being stably maintained in the host without adding an antibiotic; culturing the obtained transformant in the culture medium without an added antibiotic; allowing the L-tryptophan produced by the transformant to accumulate in the culture; and recovering the L-tryptophan from the culture.

5,624,829

TRANSFORMED INDUSTRIAL BACILLUS STRAINS AND METHODS FOR MAKING AND USING THEM

Johan P. M. Sanders, Delft; Johannes A. van den Berg, Reeuwijk, both of Netherlands; Peter M. Andreoli, Bellegem Kortrijk, Belgium; Yvonne J. Vos, Capelle a/d Yssel Fe, Netherlands; Jan H. van Ee, Huizen, Netherlands, and Leo J. S. M. Mulleners, Rijen, Netherlands, assignors to Gist-Brocades, B.V., Delft, Netherlands

Continuation of Ser. No. 658,173, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 15,110, Feb. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 627,589, Jul. 3, 1984, abandoned. This application Dec. 21, 1992, Ser. No. 993,785

The portion of the term of this patent subsequent to Aug. 24, 2009, has been disclaimed.

Int. Cl.[6] C12N *15/03;1/21;15/75;15/63*

U.S. Cl. 435—172.3 **57 Claims**

1. A method for efficiently producing transformed industrial Bacillus strain host cells, said method comprising:

combining under fusing conditions, protoplasts of an industrial Bacillus strain host, wherein said Bacillus strain host is (1) prototrophic, (2) resistant to genetic exchange and phage infection or transformation, (3) a DNase secretor, and (4) capable of producing at least about 0.5% w/v of secreted protein under industrial fermentation conditions, with DNA which is stably maintained by integration, whereby said DNA is introduced into said industrial Bacillus strain host protoplasts and integrated into the chromosome to produce transformed industrial Bacillus strain host protoplasts;

regenerating transformed strain host cells from said transformed protoplasts in an appropriate nutrient medium; and

selecting said transformed strain host cells by means of a marker gene.

5,624,830

CYTOSINE DEAMINASE NEGATIVE SELECTION SYSTEM FOR GENE TRANSFER TECHNIQUES AND THERAPIES

Craig A. Mullen, Bethesda, and R. Michael Blaese, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 725,076, Jul. 3, 1991, Pat. No. 5,358,866. This application Jul. 7, 1994, Ser. No. 271,874

Int. Cl.[6] C12N *5/10;9/78;* **C12P** *21/02*

U.S. Cl. 435—172.3 **6 Claims**

1. A method for selectivity killing mammalian host cells in vitro, comprising the steps of:

(a) inserting an *E. coli* cytosine deaminase gene into a mammalian expression vector, said cytosine deaminase gene modified at the GTG translation initiation codon to ATG to facilitate initiation of translation in mammalian cells,

(b) inserting an exogenous DNA of interest into said mammalian expression vector,

(c) introducing the mammalian expression vector comprising the cytosine deaminase gene and the exogenous DNA of interest into mammalian host cells in vitro, such that the mammalian expression vector integrates into the genome of the mammalian host cells, and

(d) treating the mammalian host cells of (c) with 5-fluorocytosine, wherein those mammalian host cells expressing the *E. coli* cytosine deaminase gene will be selectively killed.

5,624,831

IMMOBILIZED ACETYLCHOLINESTERASE STABILIZED BY A FILM OF GELATIN OR ALBUMIN CONTAINING TREHALOSE

Nguyen Vu Khue, 23 Rue du Paradis, Wittersheim, F-67670 Mommenheim; Phillippe Poindron, 14 Rue Andre Malraux, F-67400 Illkirch, and Roland Maes, Bildhauerhof, 34, F-67190 Mutzig, all of France

Filed Mar. 16, 1995, Ser. No. 405,816

Claims priority, application Belgium, Mar. 28, 1994, 09400331

Int. Cl.[6] C12N *11/02;11/14;11/08;* **C12Q** *1/46*

U.S. Cl. 435—177 **4 Claims**

1. A stabilized immobilized acetylcholinesterase having biological activity comprising a solid support having a biologically effective amount of acetylcholinesterase immobilized thereon, and said support with said acetylcholinesterase immobilized thereon having a covering of a protective film comprised of gelatin or albumin containing dispersed therein trehalose, whereby said acetylcholinesterase immboilized on said support exhibits substantially improved resistance to degradation.

5,624,832

β1 6 N-ACETYLGLUCOSAMINYLTRANSFERASE, ITS ACCEPTOR MOLECULE, LEUKOSIALIN, AND A METHOD FOR CLONING PROTEINS HAVING ENZYMATIC ACTIVITY

Minoru Fukuda, and Marti F. A. Bierhuizen, both of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

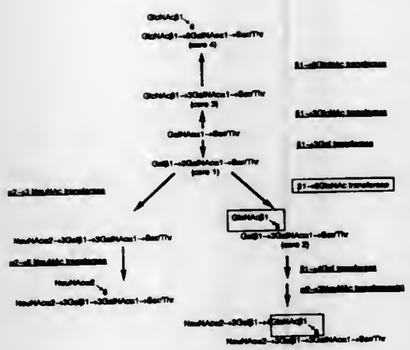
Division of Ser. No. 955,041, Oct. 1, 1992, Pat. No. 5,360,733. This application Apr. 14, 1994, Ser. No. 227,455

Int. Cl.[6] C12N *5/10;9/10;15/54;15/63*

U.S. Cl. 435—193 **9 Claims**

1. An isolated nucleic acid molecule encoding a human protein

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having β1→6-N-acetylglucosaminyltransferase activity only for a core 1-containing acceptor molecule.

5,624,833

PURIFIED THERMOSTABLE NUCLEIC ACID POLYMERASE ENZYME FROM *THERMOTOGA MARITIMA*

David H. Gelfand; Frances C. Lawyer, both of Oakland, and Susanne Stoffel, El Cerrito, all of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 971,819, Feb. 3, 1993, Pat. No. 5,420,029, which is a continuation-in-part of Ser. No. 567,244, Aug. 13, 1990, Pat. No. 5,374,553, which is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 63,509, Jun. 17, 1987, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 475,231

Int. Cl.[6] C12N *9/12*

U.S. Cl. 435—194 12 Claims

1. A purified thermostable DNA polymerase I enzyme that catalyzes combination of nucleoside triphosphates to form a nucleic acid strand complementary to a nucleic acid template strand, said enzyme derived from the eubacterium *Thermotoga maritima.*

5,624,834

CLONING AND EXPRESSION OF THE EXO-POLYGALACTURONASE GENE FROM ASPERGILLUS

Margo A. Kusters-Van Someren, Bunnik; Yvonne Müller, Arnhem; Hermanus C. M. Kester, Druten; Jacob Visser, Wageningen; Albert J. J. Van Ooyen, Voorburg, all of Netherlands, and Claus Rolin, Køge, Denmark, assignors to Gist-brocades, B.V., Netherlands

PCT No. PCT/EP93/03704, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/14966, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 24, 1993, Ser. No. 290,978

Claims priority, application European Pat. Off., Dec. 24, 1992, 92204093

Int. Cl.[6] C12N 9/26;15/56

U.S. Cl. 435—201 9 Claims

1. A purified and isolated polynucleotide molecule which encodes a polypeptide having the activity of the *Aspergillus tubigensis* exopolygalacturonase (PGX) enzyme, which comprises a nucleotide sequence selected from the group consisting of

a. a nucleotide sequence that encodes a PGX enzyme having the amino acid sequence depicted in SEQ ID NO:4, and

b. a nucleotide sequence which encodes a PGX enzyme wherein said nucleotide sequence hybridizes to the sequences of a) in 6×SSC at 65° C., or equivalent condition thereof.

5,624,835

ENDO-β-1,4-GLUCANASE AND A DNA SEQUENCE

Kurt Dörreich, Grenzach-Wyhlen, Germany; Flemming M. Christensen, Rungsted Kyst, Denmark; Yvette Schnell, Roschenz; Marcel Mischler, Himmelried, both of Switzerland; Henrik Dalbøge, and Hans P. Heldt-Hansen, both of Virum, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

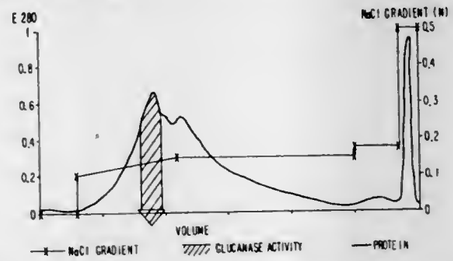
PCT No. PCT/DK93/00108, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/20193, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 26, 1993, Ser. No. 313,073

Claims priority, application Denmark, Mar. 27, 1992, 0419/92

Int. Cl.[6] C12N *9/42;15/56;15/74:15/80*

U.S. Cl. 435—204 12 Claims



1. A substantially pure Endo-β-1,4-glucanase, which is immunologically reactive with an antibody raised against a purified endo-β-1,4-glucanase endogenous to *Aspergillus aculeatus,* strain CBS 101.43, wherein said substantially pure endo-β-1,4-glucanase comprises a partial amino acid sequence having the amino acid sequence of Seq. ID. NO 1.

5,624,836

DNA ENCODING BOVINE PANCREATIC CHOLESTEROL ESTERASE

Louis G. Lange, III, 38 Kingsbury Pl., St. Louis, Mo. 63112, and Curtis A. Spilburg, 2230 Willow Ridge La., Chesterfield, Mo. 63017

Division of Ser. No. 350,501, Dec. 6, 1994, which is a continuation of Ser. No. 856,910, May 12, 1992, abandoned, which is a continuation of Ser. No. 434,899, Nov. 13, 1989, Pat. No. 5,173,408. This application Jun. 5, 1995, Ser. No. 462,884

Int. Cl.[6] C12N *9/20;15/55*

U.S. Cl. 435—325 6 Claims

1. A DNA sequence comprising a nucleotide sequence encoding a bovine pancreatic cholesterol esterase.

5,624,837

NUCLEIC ACID ENCODING CHIMERIC COMPLEMENT INHIBITOR PROTEINS

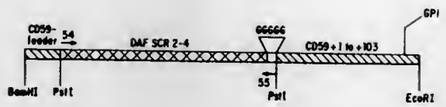
William L. Fodor, New Haven; Scott Rollins, Monroe, and Stephen P. Squinto, Bethany, all of Conn., assignors to Alexion Pharmaceuticals, Inc., New Haven, Conn.

Division of Ser. No. 205,508, Mar. 3, 1994. This application Jun. 1, 1995, Ser. No. 458,084

Int. Cl.[6] C12N *5/16;15/63;15/62;* C07H *21/04*

U.S. Cl. 435—325 8 Claims

1. A nucleic acid molecule comprising:



(a) a sequence encoding a chimeric complement inhibitor protein comprising:

(i) a first functional domain having C3 inhibitory activity; and

(ii) a second functional domain having C5*b*-9 inhibitory activity;

said first functional domain being amino terminal to said second functional domain; or

(b) a sequence complementary to (a); or

(c) both (a) and (b)

said molecule being substantially free of nucleic acid molecules not containing (a), (b), or (c).

5,624,838

KIT CONTAINING COLORED PLANT CULTURE MEDIUM

Assaf Z. Guri, Cherry Hill, N.J., assignor to Plant Cell Technology, Inc., Washington, D.C.

Division of Ser. No. 329,598, Oct. 26, 1994, Pat. No. 5,543,321. This application May 22, 1995, Ser. No. 446,513

Int. Cl.[6] G01N *33/53;* C12N *5/02*

U.S. Cl. 435—410 10 Claims

1. A kit for germinating a plant seed, comprising:

(a) a sterilized culture container;

(b) a sterilized culture medium comprising a dye in a concentration which imparts a visible color to the culture medium and which permits seed germination, wherein the dye is selected from the group consisting of FD&C Yellow No. 5, FD&C Blue No. 1, FD&C Red No. 3, and mixtures thereof and wherein the concentration of the dye is about 5 μl to about 10 μl of a 2.5% (w/v) dye stock solution per 1 liter of medium; and

(c) one or more surface-sterilized plant seeds.

5,624,839

PROCESS FOR CULTURING HEPATOCYTES FOR FORMATION OF SPHEROIDS

Toshikazu Yada, Nagoya; Norio Kolde, Okayama, and Koji Kimata, Nagoya, all of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

Division of Ser. No. 312,676, Sep. 28, 1994, abandoned, which is a continuation of Ser. No. 937,290, Aug. 31, 1992, abandoned. This application May 30, 1995, Ser. No. 453,932

Claims priority, application Japan, Aug. 30, 1991, 3-244152

Int. Cl.[6] C12N *5/00;* A61K *31/715;* C07H *1/00*

U.S. Cl. 435—378 3 Claims

1. A process for forming spheroids of hepatocytes which comprises culturing hepatocytes with a lipid-bound glycosaminoglycan as a culture substrate, wherein said lipid-bound glycosaminoglycan is phosphatidyl ethanolamine diacyl bound chondroitin sulfate.

5,624,840

THREE-DIMENSIONAL LIVER CELL AND TISSUE CULTURE SYSTEM

Brian A. Naughton, and Gail K. Naughton, both of El Cajon, Calif., assignors to Advanced Tissue Sciences Inc., La Jolla, Calif.

Division of Ser. No. 241,259, May 11, 1994, Pat. No. 5,483,988, which is a continuation-in-part of Ser. No. 131,361, Oct. 4, 1993, Pat. No. 5,443,950, which is a division of Ser. No. 575,518, Aug. 30, 1990, Pat. No. 5,266,480, which is a division of Ser. No. 402,104, Sep. 1, 1989, Pat. No. 5,032,508, which is a continuation-in-part of Ser. No. 242,096, Sep. 8, 1988, Pat. No. 4,963,489, which is a continuation-in-part of Ser. No. 38,110, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,154, Apr. 3, 1987, Pat. No. 4,721,096, which is a continuation of Ser. No. 853,569, Apr. 18, 1986, abandoned. This application May 31, 1995, Ser. No. 455,441

Int. Cl.[6] C12N *5/00;* C12M *3/00;* A61K *2/00*

U.S. Cl. 435—395 10 Claims

1. A method for transplantation or implantation of liver cells which comprises implanting in vivo the liver cells cultured on a living stromal tissue prepared in vitro, comprising stromal cells and connective tissue proteins naturally secreted by the stromal cells attached to and substantially enveloping a framework composed of a biocompatible, non-living material formed into a three-dimensional structure having interstitial spaces bridged by the stromal cells so that a tissue equivalent is formed.

5,624,841

PROCESS FOR THE PRODUCTION OF THERMOPHILIC MICROORGANISMS IN HIGH YIELD

Neil D. H. Raven; John D. Cossar; Narendra M. Ladwa, and Richard J. Sharp, all of Salisbury, England, assignors to Microbiological Research Authority, of Centre for Applied Microbiology & Research, Wiltshire, United Kingdom

Continuation of Ser. No. 193,107, Feb. 22, 1994, abandoned. This application May 30, 1995, Ser. No. 453,083

Claims priority, application United Kingdom, Aug. 9, 1991, 9117209

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252 14 Claims

1. A process for continuously growing an anaerobic thermophilic heterotrophic bacterium selected from the group consisting of *Pyrobaculum islandicum* and *Pyrococcus furiosus,* which comprises the steps of:

continuously growing said bacterium in a nutrient medium containing assimilable sources of carbon and nitrogen, wherein the bacterium is grown under steady state conditions, the medium is free of elemental sulfur and an inert gas is continuously introduced into the medium at a rate of between 0.1 and 1 volume/volume/min^{-1} so as to remove any hydrogen and hydrogen sulfide evolved by the bacterium and wherein a cell density greater than or equal to 1×10^9 cells per ml is reached under steady state conditions, said process being carried out at a dilution rate of 0.1 to 0.8 h^{-1}; and

recovering said bacterium from the medium.

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5,624,842

STRAIN OF STREPTOMYCES FOR THE PRODUCTION OF TRICYCLO COMPOUNDS

Masakuni Okuhara; Hirokazu Tanaka; Toshio Goto, all of Niihari-gun; Tohru Kino, Tsuchiura, and Hiroshi Hatanaka, Niihari-gun, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 824,384, Jan. 23, 1992, abandoned, which is a division of Ser. No. 491,205, Mar. 9, 1990, Pat. No. 5,110,811, which is a continuation of Ser. No. 868,749, May 30, 1986, Pat. No. 4,929,611, which is a continuation-in-part of Ser. No. 799,855, Nov. 20, 1985, Pat. No. 4,894,366. This application May 25, 1995, Ser. No. 450,412

Claims priority, application United Kingdom, Dec. 3, 1984, 8430455; Feb. 5, 1985, 8502869; Apr. 1, 1985, 8508420

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—253.5 1 Claim

1. A biologically pure culture of *Streptomyces tsukubaensis* No. 9993 FERM BP-927.

5,624,843

NUTRIENT ADDITIVES FOR BIOREMEDIATION OF HYDROCARBON CONTAMINATED WATERS

Ramesh Varadaraj, Flemington; Jan Bock, Warren, and Max L. Robbins, South Orange, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 190,391, Feb. 2, 1994, Pat. No. 5,436,160. This application Feb. 27, 1995, Ser. No. 395,217

Int. Cl.[6] C10G *32/00;* C02F *3/00;3/36*

U.S. Cl. 435—264 10 Claims

1. A method for improving the bioremediation of hydrocarbon contaminated water with indigenous microorganisms comprising adding to the hydrocarbon contaminated water a hydrocarbon solution of an additive selected from the group consisting of (a) a mixture of a sorbitan ester of a C_7 to a C_{22} monocarboxylic acid and a polyaxyalkylene adduct of a sorbitan monoester of a C_7 to C_{22} monocarboxylic acid, the adduct having from 6 to 50 polyoxyalkylene units, (b) an alkylglycoside wherein the alkyl group has from about 8 to 18 carbon atoms and the glycoside is a mono or a diglycoside, and (c) a mixture of (a) and (b), the solution being added in amounts sufficient to promote the growth of indigenous micro organisms.

5,624,844

PROCESS FOR DEMETALIZING A FOSSIL FUEL

Guo-Wei Xu; Kenneth W. Mitchell, and Daniel J. Monticello, all of The Woodlands, Tex., assignors to Energy BioSystems Corporation, The Woodlands, Tex.

Filed Jun. 2, 1995, Ser. No. 460,116

Int. Cl.[6] C10G *27/12;32/00*

U.S. Cl. 435—264 14 Claims

1. A method of removing metals from a fossil fuel comprising:

(a) contacting the fossil fuel with an oxygenase which degrades porphyrin molecules under conditions suitable for the removal of metals from the fossil fuel; and

(b) separating the metals from the fossil fuel.

5,624,845

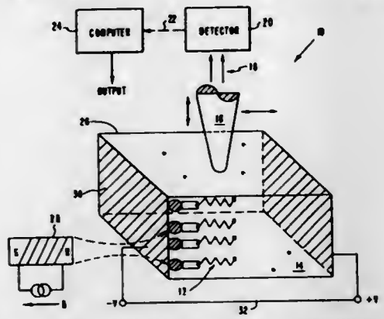
ASSEMBLY AND A METHOD SUITABLE FOR IDENTIFYING A CODE

Hemantha K. Wickramasinghe, Chappaqua, and Frederic Zenhausern, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,476

Int. Cl.[6] G02B *6/26;* C12M *3/00*

U.S. Cl. 435—287.2 9 Claims



1. An assembly suitable for identifying a code sequence of at least a portion of a biomolecule, the assembly comprising:

1) means comprising a near-field probe for generating a super-resolution chemical analysis of a portion of a biomolecule; and

2) means for correlating the super-resolution chemical analysis of the portion of the biomolecule with a broad spectral content of a referent biomolecule, for generating a code sequencing of the portion of the biomolecule.

5,624,846

CONTINUOUS FLOW ANALYZING METHOD AND APPARATUS

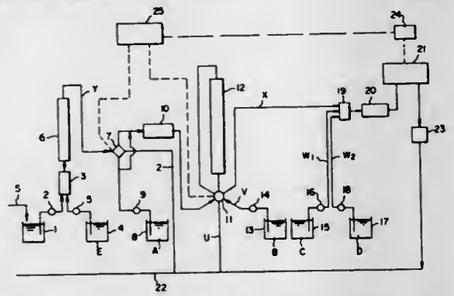
Yutaka Hayashibe, and Yasumasa Sayama, both of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,735

Claims priority, application Japan, Apr. 28, 1994, 6-113468; Jun. 10, 1994, 6-129263

Int. Cl.[6] G01N *35/08*

U.S. Cl. 436—50 9 Claims



1. A continuous flow analyzing method wherein a sample is injected in a continuously flowing carrier and the sample is introduced into a detector by the carrier to thereby perform a quantitative analysis of the sample, comprising the steps of:

a) filling a sample introduction switchover means with the sample to be analyzed;

b) introducing a partial amount of the sample from the sample introduction switchover means into the carrier;

c) analyzing said amount of the sample from b) in the detector to determine a detection peak;

d) comparing the detection peak obtained in the detector with a predetermined optimum analysis range;

e) continuously analyzing the sample by repeating steps b), c) and d) until the detection peak reaches the optimum analysis range and, in the case where the detection peak obtained in the detector is under the optimum analysis range, increasing the amount of the sample introduced into the carrier, and in the case where the detection peak obtained in the detector is over the optimum analysis range, decreasing the amount of the sample introduced into the carrier.

5,624,847

METHOD FOR OPTICALLY MEASURING CHEMICAL ANALYTES

Joseph R. Lakowicz, 10837 Fox Den Rd., Ellicott City, Md. 21042, and Henryk Szmacinski, Baltimore, Md., assignors to Joseph R. Lakowicz, Ellicott City, Md.

Continuation-in-part of Ser. No. 694,282, May 3, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 102,806

Int. Cl.[6] G01N *21/80*

U.S. Cl. 436—68 18 Claims

1. A method of optically measuring analytes, said method comprising the steps of:

adding a photoluminescent ligand probe to a sample to be analyzed, said sample containing an analyte which is an ionic solute, wherein said probe is non-covalently bound to said ionic solute to form an analyte-bound probe species, and wherein bound and unbound species of said probe exist in said sample, said probe having intrinsic analyte-induced lifetime changes;

exciting the sample with radiation;

detecting the resulting emission beam from said bound and unbound species; and

performing a calculation consisting essentially of calculating the apparent luminescence lifetime of the emission to determine the analyte concentration of the sample.

5,624,848

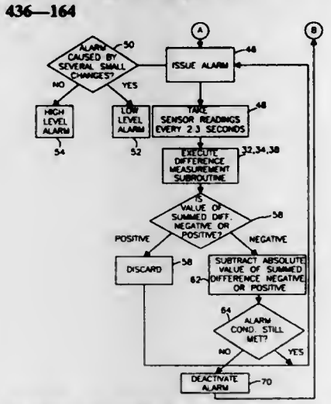
APPARATUS FOR ENHANCING THE RESPONSE OF A BIOMETRIC SENSOR

Glenn Marnie, Oceanside; Earl M. Dolnick, Encinitas, and Ivan J. Nelson, San Diego, all of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Division of Ser. No. 303,357, Sep. 9, 1994, Pat. No. 5,573,953. This application May 1, 1996, Ser. No. 640,501

Int. Cl.[6] G01N *21/77*

U.S. Cl. 436—164 11 Claims



1. An apparatus for enhancing the response of a biomimetic sensor for sensing the presence of airborne toxins, the apparatus comprising:

a light source;

a photodetector optically coupled with the sensor and the light source for measuring optical characteristics of the sensor; and

a microprocessor coupled to the photodetector for determining the rate of change of the optical characteristics of the sensor by differentiating a plurality of measured optical characteristics with respect to time, and providing one or more alarm modes in response to the rate of change.

5,624,849

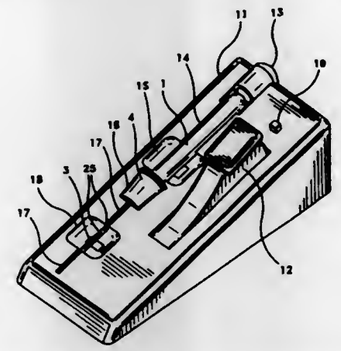
METHOD AND APPARATUS FOR FILLING GLASS CAPILLARY TUBES

Bradley S. Thomas, Timonium, and Mark L. Sussman, Baltimore, both of Md., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 30, 1995, Ser. No. 520,998

Int. Cl.[6] G01N *1/10;* B01L *3/02*

U.S. Cl. 436—180 8 Claims



1. A method for transferring fluid from a blood collection tube to a glass capillary tube comprising:

providing an apparatus consisting of a transfer device and a dispenser, said transfer device having a distal end with a channel capable of receiving a glass capillary tube, a proximal end with a chamber capable of receiving a blood collection tube with an elastomeric closure, and a cannula mounted at the proximal end of the transfer device, and said dispenser having a means for holding the transfer device, an area for receiving the blood collection tube, an area for receiving the glass capillary tube, a pusher mechanism capable of pushing the blood collection tube into the transfer device, and a handle capable of activating the pusher mechanism;

placing the transfer device with the cannula over the top of the blood collection tube having an elastomeric closure;

piercing the closure with cannula;

placing the transfer device and blood collection tube into the dispenser;

inserting a glass capillary tube into the transfer device and allowing the glass capillary tube to rest in the area for receiving said capillary tube;

displacing the handle on the dispenser in order to activate the pusher mechanism and dispense an appropriate volume of fluid into the glass capillary tube; and

removing the capillary tube from the transfer device.

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5,624,850

IMMUNOASSAYS IN CAPILLARIES

Amit Kumar, Sacramento; Shanta Kharadia, Santa Clara; Marcos Piani, Redwood City; Sudhir Deshpande, Santa Clara, and Richard Rocco, Sunnyvale, all of Calif., assignors to Idetek, Inc., Sunnyvale, Calif.

Filed Jun. 6, 1994, Ser. No. 254,302

Int. Cl.[6] G01N *33/02;33/552;21/00;15/06*

U.S. Cl. 436—527 **14 Claims**

1. An immunoassay method for detecting an analyte in a liquid sample, said method comprising steps of:

providing a first specific binding pair member conjugated to a fluorescent label;

providing a translucent capillary having an inner diameter of from about 0.1 μm to 1.0 mm comprising in a detection region a second specific binding pair member, wherein said first specific binding pair member is capable of: (a) competing with said analyte for binding to said second specific binding pair member or (b) concomitantly binding with said second specific binding pair member to said analyte;

combining said sample with said first member and said second member, whereby said first member binds to said second member in relation to the amount of said analyte in said sample in said detection region, wherein said sample contacts less than 30% of the length of the outer surface of said capillary;

washing away any first member in said capillary not specifically bound to said second member;

irradiating said detection region from a location external to the diameter of the capillary; and

detecting the amount of fluorescence passing through a wall of the capillary from said detection region as indicative of the presence of said analyte in said sample.

5,624,851

PROCESS OF FABRICATING A SEMICONDUCTOR DEVICE IN WHICH ONE PORTION OF AN AMORPHOUS SILICON FILM IS THERMALLY CRYSTALLIZED AND ANOTHER PORTION IS LASER CRYSTALLIZED

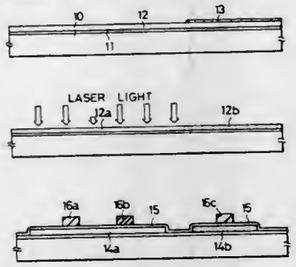
Toru Takayama; Hongyong Zhang, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1994, Ser. No. 207,173

Claims priority, application Japan, Mar. 12, 1993, 5-079001

Int. Cl.[6] H01L *21/322;21/324;21/336*

U.S. Cl. 438—166 **21 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming an amorphous silicon film on a substrate having a first region and a second region;

selectively disposing a material containing a metal or metal silicide thereof, wherein said metal is selected from the group consisting of nickel, iron, cobalt and platinum, in contact with a portion of said amorphous silicon film located on said first region of the substrate;

applying a first energy generated by a first source to said substrate to crystallize only a first portion of said amorphous silicon film located on said first region of the substrate and provided with said material;

applying a second energy generated by a second source, said second source being different from said first source, to only a second portion of the amorphous silicon film located on said second region of the substrate to crystallize said second portion to a different degree of crystallization than said first portion; and

forming at least one electronic device utilizing said portion of said silicon film located on said first region of the substrate and at least one electronic device utilizing said silicon film located on said second region of the substrate.

5,624,852

MANUFACTURING PROCESS FOR OBTAINING INTEGRATED STRUCTURE BIPOLAR TRANSISTORS WITH CONTROLLED STORAGE TIME

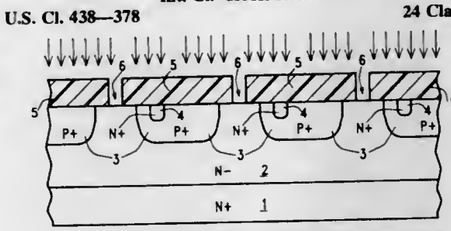
Ferruccio Frisina, S. Agata Li Battiati, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Mar. 21, 1995, Ser. No. 407,714

Claims priority, application European Pat. Off., Mar. 30, 1994, 94830150

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—378 **24 Claims**



1. A process for manufacturing bipolar transistors with a controlled storage time comprising the steps of:

a) forming a bipolar transistor occupying a first area on a first surface of a silicon material;

b) covering the first surface of the silicon material with an insulating material layer;

c) selectively removing the insulating material layer to open a window having a second area that is smaller than the first area, the window being adjacent but not directly over the first area occupied by the bipolar transistor;

d) implanting into the silicon material a dose of platinum ions through said window; and

e) diffusing into the silicon material the implanted platinum ions, so that the implanted platinum ions diffuse into the silicon material in the first area occupied by the bipolar transistor.

5,624,853

METHOD FOR FORMING HETEROJUNCTION BIPOLAR TRANSISTORS

Shinichi Shikata, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 280,805, Jul. 26, 1994, Pat. No. 5,536,952, which is a continuation of Ser. No. 36,257, Mar. 24, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 417,781

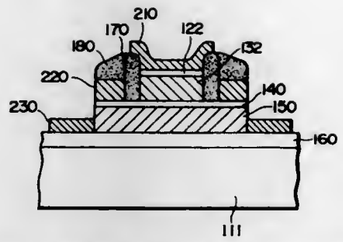
Claims priority, application Japan, Mar. 24, 1992, 4-066107; Mar. 24, 1992, 4-066108; Apr. 8, 1992, 4-087260; Apr. 8, 1992, 4-087268

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—105 **8 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first semiconductor layer on a diamond substrate, said first semiconductor layer being fabricated from a first material containing carbon as a main component and having a predetermined first majority carrier, first semiconductor layer and said diamond substrate having a first crystal structure;



forming a second semiconductor layer on said first semiconductor layer, said second semiconductor layer being fabricated from a second material containing silicon carbide as a main component and having a second majority carrier, said second semiconductor layer having a polarity opposite to that of said first semiconductor layer;

forming a third semiconductor layer on said second semiconductor layer, said third semiconductor being fabricated from a third material containing silicon carbide as a main component and having a third majority carrier, said third semiconductor layer having the same polarity as that of said first semiconductor layer; and

forming an emitter electrode connected to said first semiconductor layer, a base electrode connected to said second semiconductor layer, and a collector electrode connected to said third semiconductor layer.

5,624,854

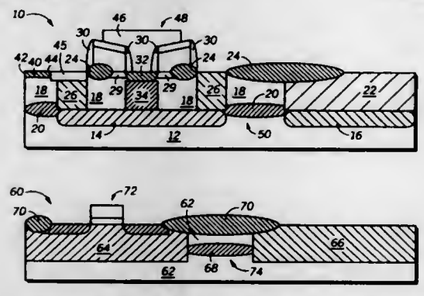
METHOD OF FORMATION OF BIPOLAR TRANSISTOR HAVING REDUCED PARASITIC CAPACITANCE

Robert C. Taft, and James D. Hayden, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 939,342, Sep. 2, 1992, Pat. No. 5,504,363. This application May 22, 1995, Ser. No. 446,397

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—331 **27 Claims**



1. A method for forming a semiconductor device comprising the steps of:

providing a substrate of a first conductivity type;

forming a first buried layer of a second conductivity type within a portion of the substrate;

forming a doped epitaxial silicon region of the first conductivity type overlying the first buried layer;

forming a base region lying within a first portion of the doped epitaxial silicon region;

forming a collector region of the second conductivity type lying within a second portion of the doped epitaxial silicon region, the collector region having a top surface and a bottom surface wherein the top surface abuts the base region and the bottom surface abuts the first buried layer;

forming an emitter region overlying the base region;

forming a collector contact region of the second conductivity type extending through a third portion of the doped epitaxial silicon region and abutting the first buried layer; and

forming a resistor of the second conductivity type within a fourth portion of the doped epitaxial silicon region and abutting a portion of the collector contact region.

5,624,855

PROCESS OF PRODUCING INSULATED-GATE BIPOLAR TRANSISTOR

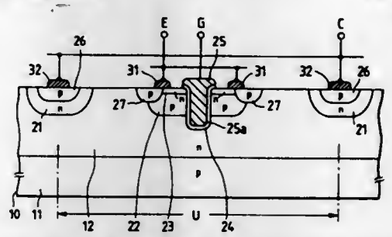
Hitoshi Sumida, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 238,694, May 5, 1994, abandoned, which is a division of Ser. No. 145,848, Nov. 5, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 491,686

Claims priority, application Japan, Nov. 9, 1992, 4-297500; Jun. 15, 1993, 5-142413

Int. Cl.[6] H01L *21/331*

U.S. Cl. 438—135 **2 Claims**



1. A process of producing an insulated-gate bipolar transistor, comprising the steps of:

diffusing a base layer of a second conductive type in a surface of a semiconductive region of a first conductive type;

diffusing a source layer of the first conductive type in a surface of said base layer;

digging a recess from a surface of said source layer through said base layer to said semiconductor region;

burying an insulated gate in said recess;

diffusing a collector layer of the second conductive type in a surface of said semiconductor region at a side of said base layer and said source layer;

diffusing a base contact layer of the second conductive type in the surface of the source layer and in said base layer so that said contact layer overlaps a peripheral edge of said base layer and contacts said source layer;

connecting an emitter electrode to said base contact layer physically and electrically; and

connecting said emitter electrode to said source layer electrically.

5,624,856

METHOD FOR FORMING A LATERAL BIPOLAR TRANSISTOR

Xiao-Ming Li, Ottawa, and Sorin P. Voinigescu, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 546,642, Oct. 23, 1995. This application Jun. 13, 1996, Ser. No. 662,964

Int. Cl.[6] H01L *21/265*

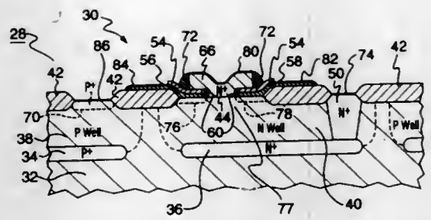
U.S. Cl. 438—339 **2 Claims**

1. A method of forming a lateral bipolar transistor comprising:

providing an integrated circuit substrate having a first and second heavily doped buried layers of a first and second conductivity type defined therein, and well regions of a corresponding conductivity type formed thereon;

defining field isolation regions thereon having openings defining device well regions;

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forming thereon a first layer of heavily doped polysilicon of a second conductivity type;

providing a dielectric isolation layer on the first polysilicon layer;

patterning the first layer of polysilicon and overlying dielectric layer to define a base contact opening therein, and first and second portions of the polysilicon layer forming a collector contact electrode and an emitter contact electrode adjacent the base contact opening;

providing dielectric sidewall spacers on sidewalls of the polysilicon layer within the base contact opening;

providing a second heavily doped layer of polysilicon within the base contact opening thereby forming a first base contact electrode to the base region of the substrate;

forming a second base contact to the buried layer underlying the emitter and collector regions

annealing the structure to diffuse dopant from the emitter and collector electrodes thereby forming heavily emitter and collector regions in the substrate surface, the well region of the opposite conductivity extending therebetween forming the base region of a lateral bipolar transistor, with first and second base contact electrodes formed by the second polysilicon layer and the underlying part of the heavily doped buried layer respectively.

5,624,857

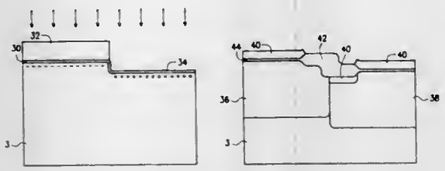
PROCESS FOR FABRICATING DOUBLE WELL REGIONS IN SEMICONDUCTOR DEVICES

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Apr. 14, 1995, Ser. No. 422,298

Int. Cl.[6] H01L *21/8238;21/761*

U.S. Cl. 438—420 **8 Claims**



1. A process for fabricating double well regions for a semiconductor device having a first well region of a first type and a second well region of a second type on the substrate of said semiconductor device, said process comprising the steps of:

implanting impurities of the first type into said substrate;

forming a shielding layer covering the location designated for said first well region of the first type;

implanting impurities of the second type into said substrate at locations not covered by said shielding layer and designated for the formation of said second well region of the second type; and

driving said impurities of the first type and said impurities of the second type into a designated depth of said substrate to form said first well region of the first type and said second well region of the second type.

5,624,858

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH INCREASED BREAKDOWN VOLTAGE

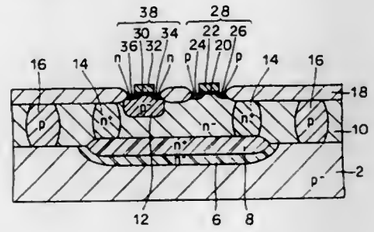
Tomohide Terashima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,659, Oct. 26, 1993, Pat. No. 5,495,124. This application Dec. 21, 1995, Ser. No. 576,384

Claims priority, application Japan, Jul. 7, 1993, 5-168089; Oct. 8, 1993, 5-253407

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—419 **6 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

introducing impurities of a second conductivity type to a prescribed region of a main surface of a low concentration impurity layer of a first conductivity type by using a first mask having a prescribed pattern to form a low concentration impurity region of a second conductivity type;

introducing impurities of the second conductivity type to a prescribed region of the main surface of said low concentration impurity layer of the first conductivity type by using a second mask having prescribed pattern so as to form a high concentration impurity region of a second conductivity type with its lower portion covered by said low concentration impurity region of the second conductivity type; and

forming a low concentration impurity layer of the second conductivity type by epitaxial growth on the main surface of said low concentration impurity layer of the first conductivity type, wherein

said first mask is positioned displaced from the interface of said low concentration impurity layer of the first conductivity type by a distance which is equal to the depth of impurity diffusion of said low concentration impurity region of the second conductivity type from said main surface of the low concentration impurity layer of the first conductivity type, in accordance with a log scale.

5,624,859

METHOD FOR PROVIDING DEVICE ISOLATION AND OFF-STATE LEAKAGE CURRENT FOR A SEMICONDUCTOR DEVICE

David K. Y. Liu, Cupertino, and Mark T. Ramsbey, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 476,388

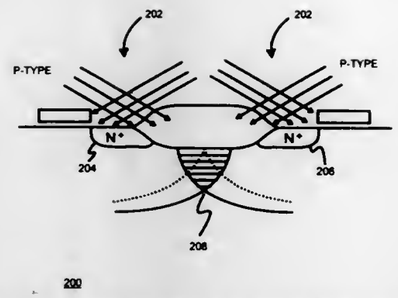
Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—298 **9 Claims**

1. A method for providing a semiconductor device with device isolation and off-state leakage current control comprising the steps of:

a) processing a semiconductor substrate to form a semiconductor circuit having a gate and source and drain regions; and

b) providing at least one high energy implant into the semiconductor circuit, the at least one high energy implant being at an angle between 30°–45° to the source and drain regions of the semiconductor circuit so as to form a buried doped region from the at least one high energy implant below the gate and



field oxide region and spaced away from the source and drain regions.

5,624,860

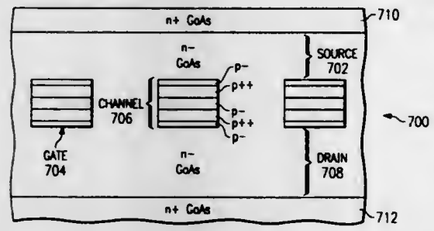
VERTICAL FIELD EFFECT TRANSISTOR AND METHOD

Donald L. Plumton, and Han-Tzong Yuan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 56,681, Apr. 30, 1993. This application Jun. 7, 1995, Ser. No. 485,539

Int. Cl.[6] H01L *21/265;21/24;21/40*

U.S. Cl. 438—193 **4 Claims**



1. A method of fabrication of a vertical field effect transistor, comprising the steps of:

(a) providing a semiconductor drain layer having a first doping type;

(b) forming a first gate layer on said drain layer, said first gate layer having a doping type opposite said first doping type;

(c) forming a second gate layer on said first gate layer, said second gate layer having said doping type opposite said first doping type and a doping level different from the doping level of said first gate layer;

(d) removing portions of said first and second gate layers to define gate fingers; and

(e) forming channel regions between said gate fingers and forming a source region over said gate regions and channel regions.

5,624,861

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Tsukasa Shibuya, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1996, Ser. No. 681,512

Claims priority, application Japan, Aug. 28, 1995, 7-219023

Int. Cl.[6] H01L *21/86;21/786*

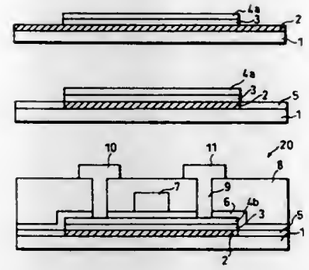
U.S. Cl. 438—164 **20 Claims**

1. A method of manufacturing a semiconductor device provided with a thin film transistor including a light-shielding film composed of a metallic film formed on an insulating substrate and a semiconductor film formed on the light-shielding film via an insulating film, and a pixel electrode connected to said thin film transistor, comprising the steps of:

depositing said metallic film, said insulating film and said semiconductor film in this order on said insulating substrate;

patterning said insulating film and said semiconductor film thus deposited into a predetermined shape; and

forming a metallic oxide film by oxidizing an exposed region of said metallic film using the patterned insulating film and the semiconductor film as a mask.



5,624,862

METHOD OF MAKING A MASK ROM WITH A GROOVE

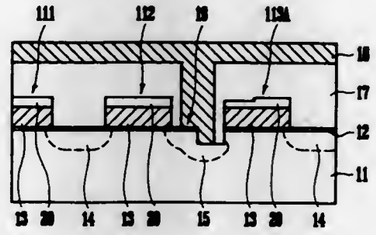
Jae C. An, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Rep. of Korea

Filed Mar. 7, 1996, Ser. No. 614,802

Claims priority, application Rep. of Korea, Mar. 7, 1995, 95-4593

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 438—276 **4 Claims**



1. A method of making a mask ROM, comprising the steps of:

implanting ion for controlling a threshold voltage into a semiconductor substrate in which a field oxide film is formed and then forming a gate oxide;

forming on said gate oxide film a plurality of gate electrodes which have an etch-prevention film on the upper portion thereon, thereby forming a cell array in which all the cells will be driven as on-cells;

forming a groove by etching some portions of said semiconductor substrate which are extended from said gate electrode of the specific on-cell among said on-cells, thereby forming a cell array in which the specific on-cell will be driven as an off-cell; and

forming an insulation film on the entire structure in which a source line and a drain region are formed by way of the source and drain ion implantation process and then forming a bit line which is connected to said drain region through the contact process.

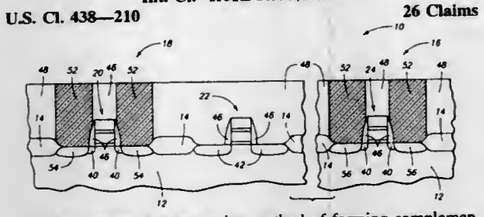
VOL 1197 ISS 5 AP 29 1997 UMI

5,624,863

SEMICONDUCTOR PROCESSING METHOD OF FORMING COMPLEMENTARY N-TYPE DOPED AND P-TYPE DOPED ACTIVE REGIONS WITHIN A SEMICONDUCTOR SUBSTRATE

Mark Helm, and Charles Dennison, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 17, 1995, Ser. No. 503,199
Int. Cl.[6] H01L 21/70;27/00
U.S. Cl. 438—210 26 Claims



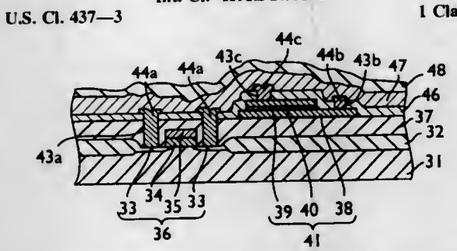
1. A semiconductor processing method of forming complementary n-type doped and p-type doped active regions within a semiconductor substrate, the method comprising the following steps:
providing a semiconductor substrate;
masking a desired n-type region of the substrate while conducting p-type conductivity doping into a desired p-type active region of the substrate;
providing an insulating layer over the substrate over the desired n-type region and the p-type doped region;
patterning the insulating layer to provide a void therethrough to the desired n-type region;
filling the void with an n-type conductively doped polysilicon plug, the plug having an n-type dopant impurity concentration of at least 1×10^{20} ions/cm^3, the desired n-type region having an n-type dopant concentration prior to the filling step which is in the range of from 0 ions/cm^3 to 1×10^{19} ions/cm^3; and
annealing the substrate for a period of time effective to outdiffuse n-type dopant impurity from the n-type conductively doped polysilicon plug into the substrate to form the desired n-type active region having an n-type dopant impurity concentration of at least 1×10^{20} ions/cm^3 in the substrate.

5,624,864

SEMICONDUCTOR DEVICE HAVING CAPACITOR AND MANUFACTURING METHOD THEREOF

Koji Arita, Osaka; Eiji Fujii, Ibaraki; Yasuhiro Shimada, Mishima-gun; Yasuhiro Uemoto, Otsu; Toru Nasu, Kyoto; Akihiro Matsuda; Yoshihisa Nagano, both of Suita; Atsuo Inoue, Otokuni-gun; Taketosbi Matsuura, and Tatsuo Otsuki, both of Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 284,984
Claims priority, application Japan, Aug. 5, 1993, 5-194617; Aug. 5, 1993, 5-194618; Feb. 24, 1994, 6-026514; Mar. 25, 1994, 6-055552
Int. Cl.[6] H01L 21/8242
U.S. Cl. 437—3 1 Claim



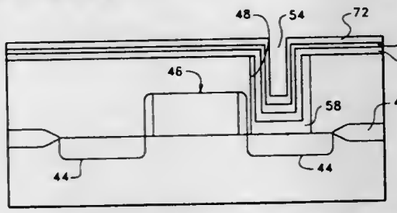
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a capacitor comprising a bottom electrode composed of a conductive layer, a capacitor dielectric layer composed of one of a ferroelectric layer and a high dielectric layer formed on the bottom electrode, and a top electrode composed of a conductive layer formed on the capacitor dielectric layer, on an insulating layer of a semiconductor substrate in which an integrated circuit is fabricated;
forming an interlayer insulating layer by covering the capacitor;
forming contact holes reaching the integrated circuit, and top electrode and bottom electrode of the capacitor, through the insulating layer and interlayer insulating layer;
forming interconnections to be electrically connected with the integrated circuit and capacitor through the contact holes;
forming a passivation layer having a silicon nitride layer with a hydrogen atom content of 10^{21} atoms/cm^3 or less, but greater than zero, by covering the interconnections, wherein the silicon nitride layer is formed by ion beam sputtering deposition; and
forming a silicon nitride layer on said passivation layer by a plasma chemical vapor deposition method.

5,624,865

HIGH PRESSURE REOXIDATION ANNEAL OF SILICON NITRIDE FOR REDUCED THERMAL BUDGET SILICON PROCESSING

Klaus F. Schuegraf; Randhir P. S. Thakur, and Pierre C. Fazan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Oct. 13, 1995, Ser. No. 542,979
Int. Cl.[6] H01L 21/70;27/00
U.S. Cl. 438—396 26 Claims



1. A semiconductor integrated circuit fabrication method for forming a capacitor on a semiconductor integrated circuit substrate, comprising the steps of:
(a) disposing a first capacitor electrode over said semiconductor integrated circuit substrate;
(b) disposing a capacitor dielectric over said first capacitor electrode;
(c) reoxidizing said capacitor dielectric at a pressure greater than one atmosphere to form an oxide layer upon said capacitor dielectric; and
(d) disposing a second capacitor electrode over said oxide layer to form an integrated circuit capacitor.

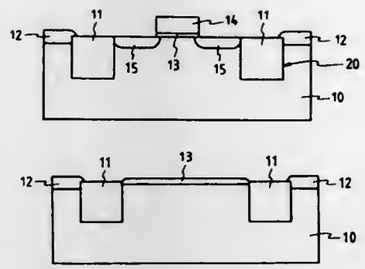
5,624,866

SEMICONDUCTOR DEVICE PROVIDED WITH TRENCH ELEMENT ISOLATION FILM AND METHOD FOR FABRICATING THE SAME

Jae K. Kim, Kyoung ki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jan. 19, 1995, Ser. No. 374,807
Claims priority, application Rep. of Korea, Jan. 19, 1994, 94-972
Int. Cl.[6] H01L 21/76;21/762
U.S. Cl. 438—426 5 Claims

1. A method of fabricating a semiconductor device, comprising the steps of:
forming a trench having a predetermined width and a predetermined depth in a portion of a semiconductor substrate corresponding to a boundary between a field region and an active region, and then burying an insulating film in the trench such that the insulating film has a planarized surface, thereby forming a trench element isolation film;
implanting an impurity only in a portion of the semiconductor substrate corresponding to the field region, thereby forming an impurity-implanted layer;
forming a gate oxide film on a portion of the semiconductor substrate corresponding to the active region and a thick oxide film on the impurity-implanted layer at the field region by use of an oxidation process; and
forming a gate electrode overlapping with the gate oxide film and the thick oxide film.

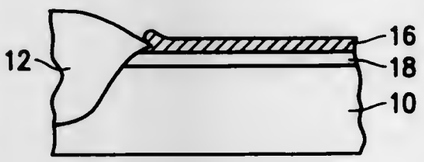


5,624,867

LOW TEMPERATURE FORMATION OF PALLADIUM SILICIDED SHALLOW JUNCTIONS USING IMPLANT THROUGH METAL/SILICIDE TECHNOLOGY

Huang-Chung Cheng, Hsinchu; Cheng-Tung Lin, Taichung, and Pei-Fen Chou, Chiayih, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 24, 1995, Ser. No. 448,670
Int. Cl.[6] H01L 21/225;21/283
U.S. Cl. 438—560 20 Claims



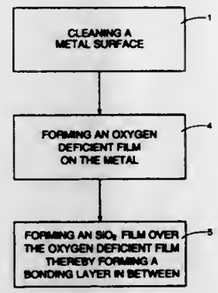
1. A method for forming a shallow junction in a region of a silicon substrate of a first conductivity type, comprising the steps of:
forming a palladium layer directly on said region of said silicon substrate;
forming a silicon layer over said palladium layer;
implanting impurities of a second conductivity type into said silicon and palladium layers;
pre-annealing said silicon substrate and said palladium layer so as to react all of said palladium layer over said region of said substrate to form a silicide layer,
performing a selective etch step after said pre-annealing step; and
post-annealing said silicon substrate and silicide layer to drive said impurities into said silicon substrate thereby forming said shallow junction.

5,624,868

TECHNIQUES FOR IMPROVING ADHESION OF SILICON DIOXIDE TO TITANIUM

Ravi Iyer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 15, 1994, Ser. No. 228,054
Int. Cl.[6] H01L 21/443;21/316
U.S. Cl. 438—762 32 Claims



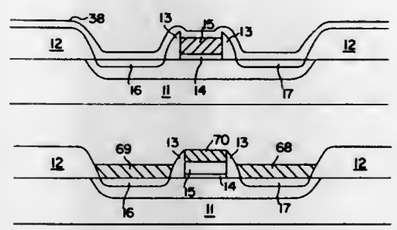
1. A semiconductor fabrication process for adhering silicon dioxide to metal comprising the steps of:
forming an oxygen deficient film onto said metal surface, said oxygen deficient film comprising SiO_x formed by the plasma dissociation of TEOS, where x ranges from 1 to less than 2; and
forming a silicon dioxide layer onto said oxygen deficient film, thereby causing a chemical reaction between said oxygen deficient film and said metal to form an interfacial metal oxide bonding layer therebetween.

5,624,869

METHOD OF FORMING A FILM FOR A MULTILAYER SEMICONDUCTOR DEVICE FOR IMPROVING THERMAL STABILITY OF COBALT SILICIDE USING PLATINUM OR NITROGEN

Paul D. Agnello, Wappingers Falls; Cyril Cabral, Jr., Ossining; Lawrence A. Clevenger, LaGrangeville; Matthew W. Copel, Yorktown Heights; Francois M. d'Heurle, Ossining, all of N.Y., and Qi-Zhong Hong, Dallas, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1994, Ser. No. 226,923
Int. Cl.[6] H01L 21/28
U.S. Cl. 438—602 40 Claims



1. A method for forming a film on a semiconductor substrate, comprising the steps of:
a) forming a mixture on said substrate comprising cobalt and platinum; and
b) reacting said mixture with said substrate to form said film.

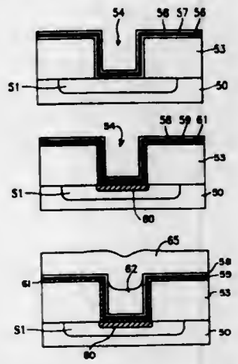
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5,624,870

METHOD OF CONTACT PLANARIZATION

Sun-Chieh Chien, and Yu-Ju Liu, both of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Mar. 16, 1995, Ser. No. 405,489
Int. Cl.[6] H01L 21/28
U.S. Cl. 438—653 22 Claims



1. A method of planarizing an electrical contact region in a semiconductor device comprising the steps of:
providing a substrate having a surface and a doped region on said surface;
forming an insulating layer over said surface of said substrate, said insulating layer covering substantially the entire doped region;
forming a hole through said insulating layer to expose at least a portion of said doped region;
filling a substantial portion of said hole with a material selected from the group consisting of spin-on-glass and polysilicon; and
forming a conducting layer over said insulating layer and said material in said hole;
before the filling step, forming a polysilicon layer over said insulating layer, a portion of said polysilicon layer extending onto said exposed portion of said doped region;
forming a metal layer over said polysilicon layer;
forming a barrier layer over said metal layer; and
thermally annealing said polysilicon layer and said metal layer to form a first metal silicide layer on said insulating layer and a second metal silicide layer on a surface of said doped region.

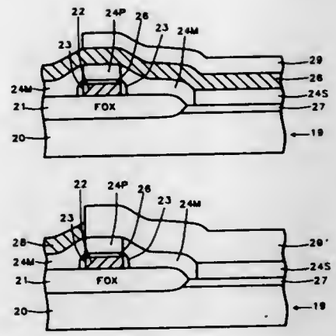
5,624,871

METHOD FOR MAKING ELECTRICAL LOCAL INTERCONNECTS

Yeow M. Teo; Kah S. Seah; Lap Chan, and Che-Chia Wei, all of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Pte LTD, Singapore, Singapore

Continuation of Ser. No. 299,457, Sep. 1, 1994. This application Aug. 19, 1996, Ser. No. 699,222
Int. Cl.[6] H01L 21/28
U.S. Cl. 438—453 19 Claims

1. A method of producing an interconnect on a semiconductor substrate composed of doped silicon having a surface, said surface of said silicon substrate having a first portion and a second portion, with a field oxide region formed over said first portion of said surface, comprising the steps of:
forming a polysilicon conductor over said field oxide region along with silicon dioxide spacers formed over said field oxide region,
forming a blanket first refractory metal layer covering said polysilicon conductor, said spacers, said field oxide region and said second portion of said surface of said silicon substrate,



performing an annealing step to form a first refractory metal silicide layer having a resistivity of about 15Ω-cm over said polysilicon conductor and over said second portion of said surface of said silicon substrate and to form a refractory metal oxysilicide/nitride layer over said spacers and to form said refractory metal oxysilicide over said field oxide region, said refractory metal oxysilicide having a resistivity of about 70Ω-cm,
said first refractory metal silicide being formed by combining said first refractory metal layer with said polysilicon conductor and by combining said first refractory metal layer with said silicon surface and
said refractory metal oxysilicide/nitride being formed by combining said refractory metal with said spacers and by combining said refractory metal with said field oxide,
forming a blanket second refractory metal layer over said first refractory metal silicide and over said refractory metal oxysilicide/nitride,
forming a blanket α-Si layer over said second refractory metal layer,
forming a patterned mask over said blanket α-Si layer to pattern an interconnect between separate regions including said polysilicon conductor structure and said semiconductor substrate, then etching away the unwanted portions of said α-Si layer, with the remaining portion of said α-Si layer comprising a patterned portion of said α-Si layer and with said second refractory metal layer serving as an etch stop,
performing an annealing process on the device forming said interconnect from said second refractory metal layer and said α-Si layer, said interconnect composed of a second refractory metal silicide having a resistivity of about 15Ω-cm between said patterned portion of said α-Si layer and said second refractory metal layer, and
then etching away the unwanted portions of said refractory metal layers that are not covered by said second refractory metal silicide,
whereby said interconnect is provided between said polysilicon conductor and said semiconductor substrate.

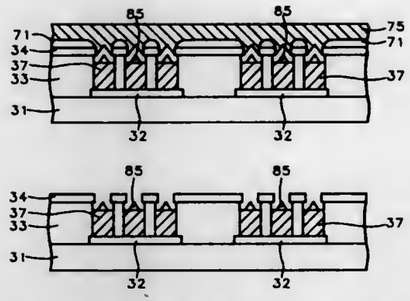
5,624,872

METHOD OF MAKING LOW CAPACITANCE FIELD EMISSION DEVICE

Nan-Chou D. Liu, Chutung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 8, 1996, Ser. No. 628,069
Int. Cl.[6] H01L 21/465
U.S. Cl. 216—11 20 Claims

1. A method for manufacturing a low capacitance field emission device comprising:
(a) providing an insulating substrate having an upper surface and forming cathode columns on said upper surface;
(b) depositing an insulating layer on said upper surface and on said cathode columns;
(c) depositing a first conductive layer on said insulating layer and then patterning and etching said first conductive layer to form gate lines orthogonal to said cathode columns;



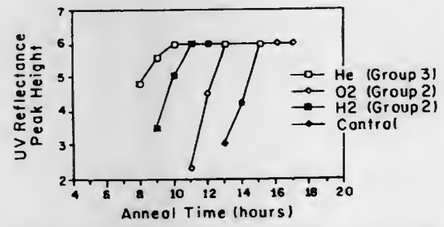
(d) forming openings in the gate lines, said openings being located above said cathode columns and extending down to the level of said insulating layer;
(e) etching said insulating layer, through said gate line openings, down to the level of the cathode columns, thereby forming wells in said insulating layer;
(f) depositing a second conductive layer, having an upper surface, on said gate lines to a thickness that is sufficient to fill said wells;
(g) planarizing the upper surface of the second conductive layer without exposing the gate lines;
(h) selectively etching the planarized second conductive layer until said gate lines have been fully exposed and said second conductive layer has been partially removed from inside the wells;
(i) rotating said substrate, including the partially filled wells, about an axis normal to said substrate surface and, under vacuum, depositing an evaporant beam of a release material to said substrate at a grazing angle, thereby partially closing said openings in the gate lines;
(j) then, while continuing the grazing angle application of said release material, depositing, at normal incidence, an evaporant beam of an emitter material to said substrate until said openings in the gate lines have been fully covered over, thereby forming microcones inside the wells; and
(k) selectively etching away the deposited release material thereby causing lift-off of said emitter material everywhere except inside the wells.

5,624,873

ENHANCED CRYSTALLIZATION OF AMORPHOUS FILMS

Stephen J. Fonash, and Alguo Yin, both of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Continuation of Ser. No. 221,729, Apr. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 151,083, Nov. 12, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,606
Int. Cl.[6] H01L 21/26;21/324
U.S. Cl. 438—487 21 Claims



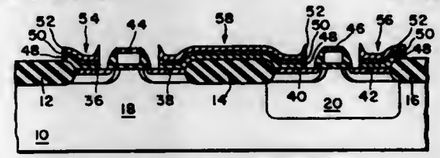
1. A method exhibiting a reduced thermal budget for producing a polycrystalline film of a semiconducting material film on a substrate, comprising the steps of:
(a) depositing an amorphous film of said semiconducting material on said substrate, said amorphous film having a thickness enabling fabrication of a semiconductor structure therein:
(b) exposing said amorphous film to a particle flux to promote subsequent solid phase crystallization growth therein while maintaining said amorphous film below any melting point thereof, said particle flux bearing a constituent selected so as to not adversely react with or etch said amorphous film;
(c) annealing said amorphous film for not more than about 10 hours to enable solid phase crystal growth therein; and
(d) subsequently passivating said amorphous film.

5,624,874

BARRIER LAYER ENHANCEMENT IN METALLIZATION SCHEME FOR SEMICONDUCTOR DEVICE FABRICATION

Sheldon C. P. Lim, Sunnyvale, and Stanley C. Chu, Cupertino, both of Calif., assignors to North America Philips Corporation, New York, N.Y.

Continuation of Ser. No. 400,777, Mar. 6, 1995, abandoned, which is a continuation of Ser. No. 117,963, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 865,733, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 693,167, Apr. 29, 1991, abandoned. This application Oct. 18, 1995, Ser. No. 544,739
Int. Cl.[6] H01L 21/28;21/288
U.S. Cl. 438—653 10 Claims



1. A method of fabricating a semiconductor device in a portion of a semiconductor substrate, the method comprising the step of forming an oxide layer on top of a barrier material layer of titanium-tungsten prior to depositing a further material layer over the oxide layer, wherein the oxide layer is formed by oxidizing a surface of the barrier material layer with a liquid oxidizing agent at a temperature between room temperature and 100° C. for a time sufficient to produce an oxide layer of titanium and tungsten oxides having a thickness on the order of 10–20 angstroms.

9. In a method of fabricating a semiconductor device in a portion of a semiconductor substrate, wherein the method includes the step of forming a barrier layer prior to depositing a further material layer over the barrier layer, the barrier layer comprising a material layer of titanium-tungsten and an oxide layer on the material layer of titanium-tungsten, the improvement comprising forming the oxide layer by oxidizing a surface of the titanium-tungsten material layer by immersion thereof into an oxidizing liquid for a time sufficient thereby to produce on the material layer of titanium-tungsten an oxide layer of titanium and tungsten oxides having a thickness on the order of 10–20 angstroms.

5,624,875

INORGANIC POROUS MATERIAL AND PROCESS FOR MAKING SAME

Kazuki Nakanishi, Otsu, and Nachiro Soga, Kobe, both of Japan, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP94/02331, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/03256, PCT Pub. Date Feb. 5, 1995
PCT Filed Jul. 15, 1994, Ser. No. 586,632
Claims priority, application Japan, Jul. 19, 1993, 5-200392; Jul. 30, 1993, 5-208642
Int. Cl.[6] C03C 11/00
U.S. Cl. 501—39 16 Claims

1. An inorganic porous material comprising a glass or glass-ceramic having interconnected continuous macropores with a

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median diameter larger than 0.1 μm and having mesopores with a median diameter of 2 to 100 nm on the walls of said macropores.

5,624,876

Patent Not Issued For This Number

5,624,877

PROCESS FOR PRODUCING POLYOLEFINS

Joseph J. Bergmeister, Bartlesville, Okla.; Scott E. Kufeld, Webster, Tex., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 202,302, Feb. 25, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,229

Int. Cl.[6] C08F *4/24*

U.S. Cl. 502—120 **14 Claims**

1. A mixed catalyst composition comprising:

a) a chromocene catalyst system comprising chromocene supported on an aluminophosphate support; and

b) a chromium oxide catalyst system comprising chromium oxide supported on an inorganic oxide support.

5,624,878

TITANIUM (II) OR ZIRCONIUM (II) COMPLEXES AND ADDITION POLYMERIZATION CATALYSTS THEREFROM

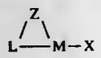
David D. Devore; Francis J. Timmers, both of Midland, Mich.; James C. Stevens, Richmond, Tex.; Robert D. Mussell, and Lenore H. Crawford, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 241,523, May 12, 1994, Pat. No. 5,470,993, which is a continuation-in-part of Ser. No. 230,051, Apr. 19, 1994, which is a continuation-in-part of Ser. No. 82,197, Jun. 24, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,186

Int. Cl.[6] B01J *31/00;* **C07F** *7/28;17/00*

U.S. Cl. 502—152 **15 Claims**

1. A catalyst composition comprising a metal complex which is catalytically activated by combination with an activating cocatalyst or by use of an activating technique, said complex containing one and only one cyclic delocalized, anionic, Π-bonded group, and corresponding to the formula:



wherein:

M is titanium or zirconium in the +2 formal oxidation state;

L is a group containing a cyclic, delocalized, anionic, Π-system through which the group is bound to M, and which group is also bound to Z;

Z is a moiety bound to M via a σ-bond, comprising an element selected from the group consisting of boron and the members of Group 14 of the Periodic Table of the Elements, and also comprising an element selected from the group consisting of nitrogen, phosphorus, sulfur and oxygen, said moiety having up to 60 non-hydrogen atoms; and

X is a neutral, conjugated or nonconjugated diene, optionally substituted with one or more groups selected from hydrocarbyl or trimethylsilyl groups, said X having up to 40 carbon atoms and forming a Π-complex with M.

5,624,879

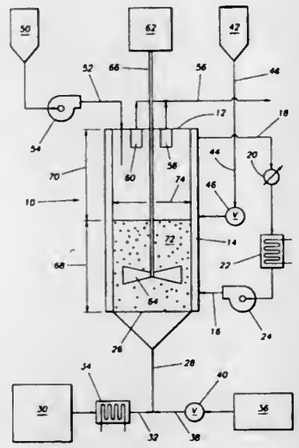
METHOD OF PREPARING ISOMERIZATION CATALYST

Robert S. Smith, 1018 Buoy, Houston, Tex. 77062, and Steven L. McMahon, 848 Amy Lea, Sevierville, Tenn. 37862

Continuation of Ser. No. 150,950, Nov. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,193

Int. Cl.[6] B01J *23/04;* **C07C** *5/27*

U.S. Cl. 502—344 **19 Claims**



1. A method of preparing an isomerization catalyst comprising introducing an amount of alkali metal into a fluidized bed of support particles wherein said fluidized bed of support particles is maintained at a temperature above the melting point of the alkali metal and in a fluidized bed state for a time sufficient to evenly disperse the alkali metal on the support particles without substantial breakdown of the support particles, wherein said fluidized bed of support particles is maintained in a fluidized state utilizing a fluidizing gas flowing at a superficial velocity of from 2 to 20 linear feet per minute, and wherein the diameter of the support particles is in the range from 10 to 500 microns.

5,624,880

HIGH DENSITY HIGH SURFACE AREA ADSORBENTS

Lawrence W. Steffler, Cherry Hill, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 98,976, Jul. 28, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 405,427

Int. Cl.[6] B01J *20/26;20/30;* **B01D** *15/00*

U.S. Cl. 502—402 **18 Claims**

1. A particulate adsorbent, comprising a crosslinked polymerization product comprising monomeric units derived from:

about 20 weight percent to about 80 weight percent of a brominated vinyl aromatic monomer, said brominated vinyl aromatic monomer containing three or more bromine atoms,

about 20 weight percent to about 80 weight percent of a crosslinking monomer, said crosslinking monomer including two or more ethylenically unsaturated sites per molecule, and

up to about 30 weight percent of a non-brominated monoethylenically unsaturated monomer;

wherein said adsorbent exhibits a surface area from about 100 square meters per gram to about 700 square meters per gram, exhibits a density from about 1.10 grams per cubic centimeter to about 1.55 grams per cubic centimeter and is formed by suspension polymerization; and wherein weight percent is expressed as percent of the crosslinked polymerization product.

5,624,881

CHEMICALLY ACTIVE CERAMIC COMPOSITIONS WITH A PYROGALLOL MOIETY

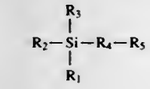
Lawrence L. Tavlarides, Fayetteville, and Nandu Deorkar, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Sep. 27, 1994, Ser. No. 312,875

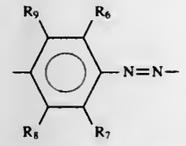
Int. Cl.[6] B01J *20/10;* **C02F** *1/42*

U.S. Cl. 502—407 **20 Claims**

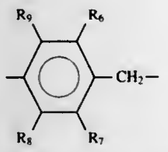
1. A composite material suitable for removing heavy metal ions from solutions, said material having the formula:



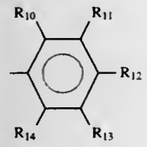
wherein at least one of R_1, R_2 and R_3 is SUPPORT-O- and other of R_1, R_2 and R_3 are the same or different and are unsubstituted or halosubstituted hydrocarbon chains having 1–5 carbon atoms and R_4 is:



wherein R_6–R_9 are the same or different and are —H or $—(CH_2)_aCH_3$ wherein a is 0–20; or $—[(CH_2)_b—NH—(CH_2)_c]_d—$ wherein b is 1–5, and c and d are the same or different and are 1–20; or

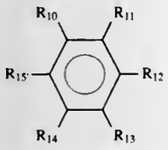


wherein R_6–R_9 are as defined above; and R_5 is



wherein up to three of R_{10}–R_{13} are —OH and other of R_{10}–R_{13} and R_{14} are —H.

9. A method of making a composite material suitable for removing heavy metal ions from waste streams comprising the step of covalently bonding a ligand to an inorganic ceramic support, said ligand having the formula:



wherein up to three of R_{10} to R_{13} are —OH and other of R_{10} to R_{13} and R_{14} and R_{15} are —H.

5,624,882

COLOR DEVELOPER COMPOSITIONS FOR CARBONLESS PAPER COPYING SYSTEMS

Patrick A. C. Gane, Callington, United Kingdom, assignor to ECC International Limited, United Kingdom

Filed May 27, 1994, Ser. No. 250,178

Claims priority, application United Kingdom, May 28, 1993, 9311088

Int. Cl.[6] B41M *5/155;* **C09D** *11/00*

U.S. Cl. 503—207 **25 Claims**

1. A coating composition for the preparation of a CF sheet of a carbonless paper copying system comprising a CF sheet and a CB sheet, said coating composition comprising a color developer and an extender, said extender comprising a particulate inorganic material which has been modified by treatment with a treating agent which has (i) a non-polar hydrophobic portion comprising at least one hydrocarbon group having a chain length of 8 to 30 carbon atoms and (ii) a polar portion which is capable of binding with sites on the surface of the pigment particles, wherein said particulate inorganic material is selected from the group consisting of natural or synthetic aluminum or calcium silicate, natural or precipitated calcium carbonate, satin white, natural or synthetic calcium sulfate and talc.

12. A CF sheet for said carbonless paper copying system which has been coated with a coating composition according to claim 1.

5,624,883

METHYLATED HERBICIDAL ADJUVANT

Hemendra N. Basu, Bartlett, Ill.; Joe V. Gednalske, Riverfalls, Wis., and Robert W. Herzfeld, Stillwater, Minn., assignors to Cenex/Land O'Lakes Agronomy Company, Minneapolis, Minn.

Division of Ser. No. 297,636, Aug. 29, 1994, Pat. No. 5,495,033. This application Jan. 3, 1996, Ser. No. 582,408

Int. Cl.[6] A01N *25/02*

U.S. Cl. 504—116 **14 Claims**

1. A process for methylating an acidulated soybean soapstock having free fatty acids and neutral oil, comprising:

providing an acidulated soybean soapstock;

refluxing the acidulated soybean soapstock with methanol wherein the ratio of free fatty acids in the acidulated soybean soapstock to methanol is not more than about 1:2.5 w/w, to form a methylated acidulated soybean soapstock mixture having methylated free fatty acids and unreacted neutral oil.

5,624,884

AQUEOUS SUSPENSION CONCENTRATE COMPOSITIONS OF PENDIMETHALIN

Leonard J. Morgan, and Mark Bell, both of Fareham, England, assignors to American Cyanamid Company, Madison, N.J.

Continuation-in-part of Ser. No. 173,809, Dec. 27, 1993, which is a continuation-in-part of Ser. No. 395,925, Aug. 18, 1989, Pat. No. 5,283,231, which is a division of Ser. No. 45,458, May 7, 1987, Pat. No. 4,875,929, which is a continuation-in-part of Ser. No. 867,107, May 23, 1986, abandoned, said Ser. No. 173,809is a continuation-in-part of Ser. No. 385,028, Jul. 25, 1989, abandoned, which is a division of Ser. No. 45,457, May 7, 1987, Pat. No. 4,871,392, which is a continuation-in-part of Ser. No. 867,106, May 23, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 481,565

Int. Cl.[6] A01N *33/00;33/06;33/16;33/18*

U.S. Cl. 504—148 **21 Claims**

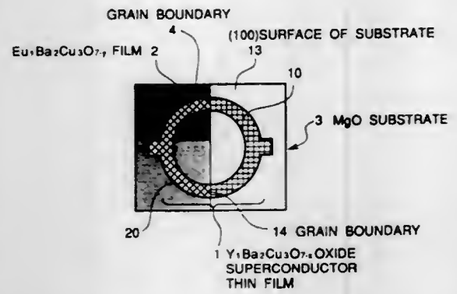
1. A method for preparing a stable aqueous suspension concentrate composition of pendimethalin, the method comprising: adding a surfactant and an antifoaming agent to bot water having a temperature of about 50° C. to 80° C.; emulsifying molten pendimethalin in said hot water; and cooling the hot emulsion to a temperature of less than about 35° C.

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5,624,885
JOSEPHSON JUNCTION DEVICE OF OXIDE SUPERCONDUCTOR AND PROCESS FOR PREPARING THE SAME

Saburo Tanaka; Takashi Matsuura, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 386,217, Feb. 9, 1995, abandoned, which is a continuation of Ser. No. 913,711, Jul. 16, 1992, abandoned. This application Sep. 11, 1995, Ser. No. 526,306
Claims priority, application Japan, Jul. 16, 1991, 3-201220; Jul. 16, 1991, 3-201221; Jul. 8, 1992, 4-204372
Int. Cl.[6] H01L *39/22*
U.S. Cl. 505—234 **10 Claims**



1. A process of manufacturing a Josephson junction device, comprising the steps of forming on a portion of a principal surface of a substrate a seed layer of an oxide thin film selected from the group consisting of $Eu_1Ba_2Cu_4O_{7-y}$, $Gd_1Ba_2Cu_3O_{7-z}$ and $Sm_1Ba_2Cu_3O_{7-x}$, which is composed of a single crystal, the lattices of which shift at an angle of 45° to lattice of the surface of the substrate, and epitaxially growing an oxide superconductor thin film on the seed layer and on a remaining exposed principal surface of the substrate, wherein the lattices of the oxide superconductor thin film conform to those of the seed layer and substrate, and wherein the lattices of the portion of the oxide superconductor thin film which is deposited on the seed layer shift at an angle of 45° relative to the lattices of the portion of the oxide superconductor thin film which is deposited on the exposed principal surface of the substrate, so that there is a grain boundary between the two portions of the oxide superconductor thin film on a step portion formed by the oxide thin film, which constitutes the weak link of the Josephson junction.

5,624,886
CONTROLLED DEGRADATION OF POLYSACCHARIDES

Jeffrey C. Dawson, Spring; Hoang Van Le, Houston, and William R. Wood, Spring, all of Tex., assignors to BJ Services Company, Houston, Tex.

Filed Jul. 29, 1992, Ser. No. 922,129
Int. Cl.[6] E21B *43/27*
U.S. Cl. 507—217 **18 Claims**

1. A method for fracturing a subterranean formation, comprising the steps of:
- forming a gellable fracturing fluid by blending together an aqueous fluid, a hydratable polymer and a suitable crosslinking agent for crosslinking the hydratable polymer to form a polymer gel;
- incorporating within the gellable fracturing fluid a breaker material which has been formed into a pellet, the pellet comprising a substantially insoluble oxidant and a binder for the oxidant, wherein said substantially insoluble oxidant is selected from the group consisting of alkaline earth and zinc salts of peroxide, perphosphate, perborate, and percarbonate.

5,624,887
MULTILAYERED SLIDING MEMBER

Takashi Nakamaru, Kanagawa-ken; Tadashi Watai, Ayase; Akihiko Okimura, Yokohama, and Sumihide Yanase, Ebina, all of Japan, assignors to Oiles Corporation, Japan

Division of Ser. No. 125,160, Sep. 23, 1993, Pat. No. 5,433,870.
This application Jan. 30, 1995, Ser. No. 380,590
Claims priority, application Japan, Sep. 25, 1992, 4-279166
Int. Cl.[6] C10M *107/38;103/06*
U.S. Cl. 508—108 **17 Claims**

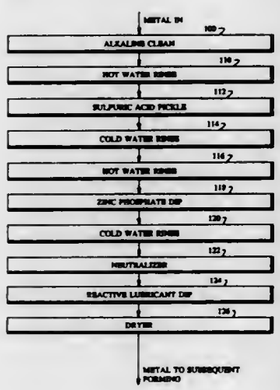
1. A multilayered sliding member comprising a lubricating composition comprising polytetrafluoroethylene and 1 to 40 wt % of zinc oxide whiskers used as a filler, and a porous sintered metal layer formed on a steel backing,

the lubricating composition being impregnated in and coated on the porous sintered metal layer formed on a steel backing.

5,624,888
PROCESS AND PRODUCT FOR LUBRICATING METAL PRIOR TO COLD FORMING

Gerald W. Przybylski, Naperville, Ill.; Patrick J. Connor, Brighton, and David W. Peters, Rochester, both of Mich., assignors to Century Chemical Corporation, Naperville, Ill.

Division of Ser. No. 245,244, May 17, 1994, Pat. No. 5,484,541. This application Sep. 6, 1995, Ser. No. 523,819
Int. Cl.[6] C10M *125/24*
U.S. Cl. 508—161 **14 Claims**



1. A process for lubricating a metal workpiece outer surface prior to cold forming, the process comprising the steps of:
- applying an iron phosphate/oxide conversion coating to the surface, the outer surface having been acid pickled and cold water rinsed, wherein the coating composition consists essentially of:
  - an inorganic acidic salt for laying down the coating;
  - an organic accelerator for increasing the amount of coating laid down; and
  - buffering material present in an amount sufficient to render a predetermined pH;
  - wherein the iron phosphate/oxide conversion coating provides a barrier for the subsequent lubrication; and
- disposing a non-reactive lubricating composition on the workpiece outer surface.

5,624,889
LUBRICATING GREASE COMPOSITION

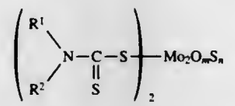
Takahiro Ozaki; Tomoo Munakata; Yasushi Kawamura; Kazunori Takase, and Tetsuo Tsuchiya, all of Tokyo, Japan, assignors to Showa Shell Sekiyu K.K., Tokyo, Japan

Filed Nov. 30, 1995, Ser. No. 565,017
Claims priority, application Japan, Dec. 2, 1994, 6-329435
Int. Cl.[6] C10M *141/06*
U.S. Cl. 508—162 **4 Claims**

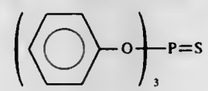
1. A lubricating grease composition which comprises a grease comprising a base oil and a thickening agent consisting of a mixture of tricalcium phosphate represented by the formula

$$Ca_3(PO_4)_2$$

and a urea compound and, incorporated as additives in said grease, (A) a sulfurized molybdenum dialkyldithiocarbamate represented by the formula



wherein R^1 and R^2 each independently represents a group selected from the group consisting of alkyl groups having from 1 to 24 carbon atoms; m is 0 or an integer of from 1 to 3; and n is an integer of from 1 to 4; provided that m+n=4
and (B) triphenyl phosphorothionate represented by the formula



wherein said thickening agent, component (A), and component (B) are present in an amount of from 2 to 35% by weight, from 0.5 to 10% by weight, and from 0.1 to 10% by weight, respectively, based on the total weight of the composition.

5,624,890
LUBRICATING OIL COMPOSITION FOR USE IN TWO-STROKE CYCLE CYLINDER INJECTION ENGINE

Mineo Kagaya, Yokohama, and Kazuo Miyazawa, Iwata, both of Japan, assignors to Nippon Oil Company, Ltd, Tokyo-to, and Yamaha Hatsudoki Kabushiki Kaisha, Iwata, both of Japan

Filed Nov. 27, 1995, Ser. No. 563,047
Claims priority, application Japan, Nov. 28, 1994, 6-293228
Int. Cl.[6] C10M *107/08*
U.S. Cl. 508—561 **4 Claims**

1. A lubricating oil composition consisting essentially of the following ingredients:
- (A): a base oil containing (1) 10–30% by mass on the basis of a total amount of base oil of polybutene having number-average molecular weight of 250–350, (2) 30–60% by mass on the basis of the total amount of base oil of polybutene having a number-average molecular weight of 450–550, and (3) 15–40% by mass on the basis of the total amount of base oil of mineral oil and/or a synthetic oil other than polybutene, said component (3) having a kinematic viscosity of 2–35 mm^2/s at 100° C.; and
- (B): 2–15 parts by mass based on 100 parts by mass of the base oil of an alkylaminophenol having an alkyl group with 8–400 carbon atoms.

5,624,891
DRAIN OPENING COMPOSITIONS THICKENED WITH N-ALKYL-N-ACYL AMINO ACIDS AND MYRISTYL/CETYL DIMETHYL AMINE OXIDES

Dennis T. Smialowicz, Waldwick; Ernest J. Sachs, Carlstadt, and Edward M. Cooney, III, West Orange, all of N.J., assignors to Reckitt & Colman Inc., Montvale, N.J.

Continuation of Ser. No. 255,137, Jun. 7, 1994, abandoned.
This application Jan. 29, 1996, Ser. No. 590,704
Int. Cl.[6] C11D *1/10;1/75;3/395;3/08*
U.S. Cl. 510—195 **9 Claims**

1. A composition for opening and cleaning clogged drains comprising (a) from about 0.1 to about 25 weight percent of an active cleaning component comprising (i) a hypochlorite-producing species and (ii) a strong base comprising an alkali metal hydroxide and an alkali metal silicate, and (b) a thickening system consisting of (i) from about 0.1 to about 3.0 weight percent, based on the composition, of an alkali metal salt of an N-alkyl-N-acyl aminoacetic acid, (ii) from about 0.0045 to about 1.0 percent, based on the composition, of a disulfonate, and (iii) from about 0.05 to about 5.0 weight percent, based on the composition, of a dimethyl amine oxide component selected from the group consisting of cetyl dimethylamine oxide or a mixture of myristyl and cetyl dimethylamine oxides in which the cetyl component is present in an amount of at least 25%.

5,624,892
PROCESS FOR INCORPORATING ALUMINUM SALTS INTO AN AUTOMATIC DISHWASHING COMPOSITION

Petrus A. Angevaare, Ho-Ho-Kus, and Richard G. Gary, West New York, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed May 19, 1995, Ser. No. 444,503
Int. Cl.[6] C11D *1/94;7/14;7/42*
U.S. Cl. 510—223 **7 Claims**

1. A process for preparing an automatic dishwashing detergent composition which substantially inhibits lead corrosion of fine tableware comprising:
- a) selecting an effective amount of a sequestrant;
- b) dissolving the sequestrant in water to form a sequestrant solution having a pH not less than one pH unit greater than the pKa of at least one of the ionizable groups on the sequestrant;
- c) selecting an effective amount of an aluminum salt;
- d) adding the aluminum salt to the sequestrant solution to form an aluminum and sequestrant solution;
- e) adjusting the pH of the solution of step (d) to the same pH as the sequestrant solution to form an aluminum-sequestrant complex premix;
- f) adding the premix to an aqueous solution comprising 1 to 20 wt. % of a bleaching agent, 1 to 75 wt. % of a builder, 0–5 wt. % of a silicate and 0 to 40 wt. % of a surfactant to form a detergent composition wherein a 1% aqueous solution of the composition has a pH of 7 to 9.0.

5,624,893
PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT OF THE CORNEA FOLLOWING LASER IRRADIATION

John M. Yanni, Burleson, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 137,232, Oct. 14, 1993, abandoned.
This application Dec. 13, 1994, Ser. No. 355,461
Int. Cl.[6] A61K *38/00;31/56;31/19*
U.S. Cl. 514—21 **15 Claims**

1. A method for treating the cornea for haze or pain following laser irradiation and resulting photoablation of corneal tissue comprising, applying to the affected eye, a therapeutically effective amount of a composition comprising a wound healing modulator

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and a pain mediator wherein the wound healing modulator is selected from the group consisting of: steroids, growth factors, basement membrane components, anti-oxidants, regulators of collagen structure, aldose reductase inhibitors, nonsteroidal antiinflammatories, immunomodulators, antiallergics, fatty acid derivatives of arachidonic acid and antimicrobials and the pain mediator is a neurokinin-1 antagonist.

5,624,894

BRAIN-ENHANCED DELIVERY OF NEUROACTIVE PEPTIDES BY SEQUENTIAL METABOLISM

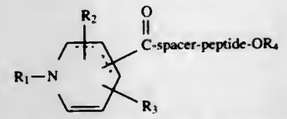
Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Continuation of Ser. No. 946,062, Sep. 17, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 428,488

Int. Cl.[6] A61K *38/03*

U.S. Cl. 514—2 **67 Claims**

1. A compound of the formula



(I)

or a non-toxic pharmaceutically acceptable salt thereof, wherein:

R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{12} aralkyl;

R_2 and R_3, which are the same or different, are each selected from the group consisting of hydrogen, halo, cyano, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_2–C_8 alkoxycarbonyl, C_2–C_8 alkanoyloxy, C_1–C_7 haloalkyl, C_1–C_7 alkylthio, C_1–C_7 alkylsulfinyl, C_1–C_7 alkylsulfonyl, —CH=NOR'" wherein R'" is hydrogen or C_1–C_7 alkyl, and —CONR'R" wherein R' and R", which are the same or different, are each hydrogen or C_1–C_7 alkyl;

or one of R_2 and R_3 together with the adjacent ring carbon atom forms a phenyl ring fused to the six-membered heterocyclic ring, which phenyl ring is unsubstituted or is substituted with one or two substituents, which are the same or different, selected from the group consisting of hydroxy, protected hydroxy, halo, cyano, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_2–C_8 alkoxycarbonyl, C_2–C_8 alkanoyloxy, C_1–C_7 haloalkyl, C_1–C_7 alkylthio, C_1–C_7 alkylsulfinyl, C_1–C_7 alkylsulfonyl, —CH=NOR'" wherein R'" is hydrogen or C_1–C_7 alkyl, and —CONR'R" wherein R' and R", which are the same or different, are each hydrogen or C_1–C_7 alkyl;

the dotted lines represent a double bond in one of the two indicated positions, the depicted being a 1,4- or 1,6-dihydropyridine, a 1,4- or 1,2-dihydroquinoline, or a 1,2-dihydroisoquinoline;

"spacer" is an L-amino acid unit or a di- or tripeptide consisting of 2 or 3 L-amino acid units, the N-terminal amino acid of said spacer being bonded to the depicted carbonyl carbon via an amide bond;

and "peptide" is a pharmacologically active peptide having 2 to 20 amino acid units, the N-terminal amino acid of said peptide being bonded to the C-terminal amino acid of said spacer via a peptide bond, the C-terminal amino acid of said peptide having an esterified carboxyl function —$COOR_4$ wherein R_4 is C_6–C_{30} polycycloalkyl-C_pH_{2p}— wherein p is 0, 1, 2 or 3, or C_6–C_{30} polycycloalkenyl-C_pH_{2p}— wherein p is defined as above.

5,624,895

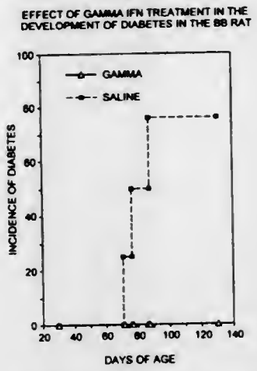
TREATMENT AND/OR PREVENTION OF TYPE I DIABETES MELLITUS WITH GAMMA INTERFERON ADMINISTRATION

Douglas Sobel, Washington, D.C., assignor to Georgetown University Medical Center, Washington, D.C.

Filed Feb. 18, 1994, Ser. No. 198,049

Int. Cl.[6] A61K *38/10;38/19;38/20;38/21*

U.S. Cl. 514—8 **21 Claims**



1. A method for preventing or treating initial onset or recurrent Type 1 diabetes mellitus in a human at risk of developing Type I diabetes mellitus in a human which already exhibits Type I diabetes mellitus comprising administering to the human an effective amount of at least one of the following: (i) gamma interferon, (ii) an analog thereof, or (iii) a gamma interferon inducer.

5,624,896

CLEARING AGENTS USEFUL IN PRETARGETING METHODS

Donald B. Axworthy, and John M. Reno, both of Brier, Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 163,184, Dec. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,381, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,588, Jun. 9, 1992, Pat. No. 5,283,342. This application Jun. 5, 1995, Ser. No. 462,765

Int. Cl.[6] A61K *38/38;* **C07D** *235/02*

U.S. Cl. 514—8 **18 Claims**

1. A clearing agent for increasing blood clearance or decreasing in vivo non-target binding capability of a circulating targeting moiety-anti-ligand conjugate in a mammalian recipient, wherein the clearing agent comprises:

a binding moiety comprising a lower affinity ligand complementary to the anti-ligand pair member of the circulating conjugate and capable of associating with the circulating conjugate; and

a clearance-directing moiety bound to, complexed with or otherwise associated with the binding moiety, and wherein, upon becoming associated with the circulating conjugate, the clearing agent enhances the clearance of the circulating conjugate from the blood or diminishes in vivo binding of the circulating conjugate to a subsequently administered active agent conjugate, wherein the lower affinity ligand is a lower affinity biotin having an affinity for avidin or streptavidin of less than 10^{-15} M^{-1} and retains specificity for avidin or streptavidin and the anti-ligand is avidin or streptavidin.

5,624,897

CYCLIC DEPSIPEPTIDES HAVING 18 RING ATOMS, AND THEIR USE FOR COMBATING ENDOPARASITES

Peter Jeschke, Leverkusen; Jürgen Scherkenbeck, Wermelskirchen; Gerhard Bonse, Köln; Erwin Bischoff, Wuppertal; Norbert Mencke, Leverkusen; Achim Harder, Köln; Michael Londershausen, Erkrath, and Hartwig Müller, Velbert, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

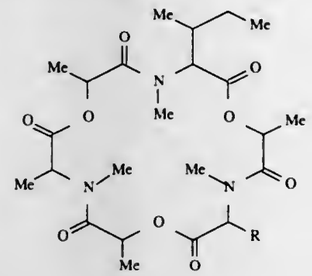
Filed Dec. 9, 1994, Ser. No. 353,409

Claims priority, application Germany, Dec. 16, 1993, 43 42 907.6

Int. Cl.[6] A61K *38/15;* **C07K** *11/02*

U.S. Cl. 514—11 **5 Claims**

1. A cyclic depsipeptide having 18 ring atoms of the formula



(I)

in which

R represents hydrogen, straight-chain or branched or cyclic alkyl having up to 8 carbon atoms

or its optical isomer or racemate thereof.

5,624,898

METHOD FOR ADMINISTERING NEUROLOGIC AGENTS TO THE BRAIN

William H. Frey, II, North Oaks, Minn., assignor to Ramsey Foundation, St. Paul, Minn.

Continuation of Ser. No. 161,337, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 879,556, May 4, 1992, abandoned, which is a continuation of Ser. No. 446,308, Dec. 5, 1989, abandoned. This application Dec. 22, 1994, Ser. No. 361,877

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;1/00*

U.S. Cl. 514—12 **10 Claims**

1. A method for delivering a neurologic therapeutic agent to the brain of a mammal, comprising:

applying an effective amount of the neurologic therapeutic agent directly to the olfactory epithelium of the nasal cavity of the mammal, wherein the neurologic agent is basic fibroblast growth factor and combined with a pharmaceutically-acceptable carrier, an effective amount of lipophilic micelles, or a combination thereof; the neurologic agent being unable to be delivered to the brain from the circulatory system of the mammal by crossing the blood-brain barrier of the mammal;

wherein the neurologic agent is absorbed through the olfactory epithelium of the nasal mucosa into olfactory neurons and an effective amount of the agent is transported into the brain of the mammal by means of the olfactory neural pathway to provide a protective effect on brain cells against stroke.

5,624,899

METHOD FOR USING HTK LIGAND

Brian D. Bennett, Pacifica, and William Matthews, Woodside, both of Calif., assignors to Genentech Inc., So. San Francisco, Calif.

Division of Ser. No. 277,722, Jul. 20, 1994. This application May 5, 1995, Ser. No. 436,044

Int. Cl.[6] A61K *38/17*

U.S. Cl. 514—12 **2 Claims**

1. A method for activating a tyrosine kinase domain of a hepatoma transmembrane kinase receptor (Htk receptor) comprising the step of binding an isolated hepatoma transmembrane kinase receptor ligand to an extracellular domain of the Htk receptor, wherein said receptor ligand comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence for mature murine Htk ligand of SEQ ID NO: 2;

(b) the amino acid sequence for mature human Htk ligand of SEQ ID NO: 4;

(c) the naturally occurring amino acid sequence for mature Htk ligand from an animal species other than those sequences of (a) or (b);

(d) allelic variants of the sequences of (a), (b), or (c); and

(e) the sequences of (a), (b), (c) or (d) having a single preferred conservative amino acid substitution as defined in Table 1.

5,624,900

PEPTIDE OR ITS SALTS

Tatsuo Suda, Tachikawa; Etsuko Abe, Tokyo; Masao Tanihara, and Chie Fujiwara, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 752,426, Sep. 3, 1991, abandoned. This application May 9, 1994, Ser. No. 239,854

Claims priority, application Japan, Sep. 3, 1990, 2-233571; Nov. 24, 1990, 2-320000; Nov. 26, 1990, 2-324956

Int. Cl.[6] A61K *38/00;* **C07K** *7/08;7/06*

U.S. Cl. 514—13 **9 Claims**

1. A peptide having high binding activity for human interleukin-1 and having the formula:

H-X^1-Cys-A-B-A-B-A-Ser-X^2-Y

wherein A represents an amino acid residue selected from the group consisting of Val, Leu, Ile and Nle, independent of any other selections for A; each B represents an amino acid residue selected from the group consisting of Arg, Lys, Gln, His and Ser, independent of any other selections for B; X^1 and X^2 is each a single bond; and Y represents a hydroxyl or amino group; or a salt thereof.

5,624,901

3-HYDROXY-2(1H)-PYRIDINONE CHELATING AGENTS

Kenneth N. Raymond, and Jide Xu, both of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 227,969, Apr. 15, 1994, abandoned. This application Aug. 2, 1994, Ser. No. 285,640

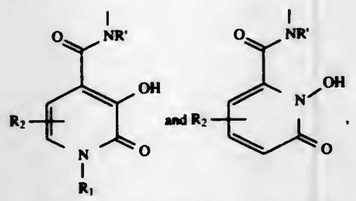
Int. Cl.[6] A61K *38/06;38/08;31/44;* **C07D** *401/12*

U.S. Cl. 514—17 **43 Claims**

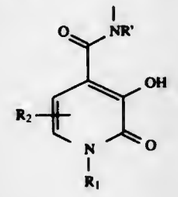
1. A chelating agent comprised of a plurality of chelating functional units joined by one or more linking members, said chelating

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functional units independently selected from the group consisting of



in which at least one of said plurality of chelating functional units on said chelating agent is



wherein

R_1 and R_2 are independently selected from the group consisting of hydrogen, C_1-aliphatic hydrocarbon groups, and C_{1-4} aliphatic hydrocarbon groups substituted by a single halide, hydroxy, carboxy, acrylamido group or an aryl group, and

R' is a member selected from the group consisting of a bond to a linking member, a hydrogen atom, C_{1-8} aliphatic hydrocarbon groups, aryl groups, and C_{1-8} aliphatic hydrocarbon groups substituted by amino, carboxy, or hydroxy groups.

5,624,903

PHOSPHOINOSITOL-GLYCAN-PEPTIDE WITH INSULIN-LIKE ACTION

Günter Müller, Sulzbach; Dominique Tripier, Eppstein/Taunus, and Stefan Müllner, Hochheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 931,322, Aug. 18, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 364,398

Claims priority, application Germany, Aug. 20, 1991, 41 27 495.4

Int. Cl.[6] A61K *38/06*

U.S. Cl. 514—18 **7 Claims**

1. A compound consisting of an amino acid or tripeptide residue to which is covalently bonded a phosphoinositol glycan moiety, wherein said compound is obtained by protease and phospholipase digestion of a cAMP binding protein, and wherein said compound displays one or more oi the bioiogical activities exhibited by insulin; or a pharmaceuLically acceptable salt thereof.

5,624,904

METHOD FOR TREATING GRAM POSITIVE SEPTICEMIA

Monty Krieger, Needham, Mass., and Keith A. Joiner, New Haven, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass., and Yale University, New Haven, Conn.

Filed Nov. 17, 1993, Ser. No. 154,365

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—21 **8 Claims**

1. A method for treating a patient having Gram positive bacterial septicemia comprising administering to the patient an effective amount of a macrophage scavenger receptor protein (MSRP) in a pharmaceutically acceptable carrier to inhibit activation of complement, cytokine release or nitric oxide production induced by lipoteichoic acid released by the Gram positive bacteria.

5,624,902

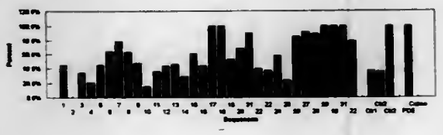
PEPTIDE INHIBITORS OF CALMODULIN

Sylvie E. Blondelle, San Diego; Richard A. Houghten, Del Mar, and Enrique Perez-Paya, San Diego, all of Calif., assignors to Torrey Pines Institute for Molecular Studies, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 485,396

Int. Cl.[6] A61K *38/08;* **C07K** *7/06*

U.S. Cl. 514—17 **8 Claims**



7. A method of inhibiting calmodulin activity, comprising contacting calmodulin with a peptide having the structure:

Ac-(D)Leu-A1-B2-C3-D4-E5-NH_2,

wherein A1 is (D)Gln or (D)Trp;

wherein B2 is (D)Arg or (D)Ile;

wherein C3 is (D)Ile or (D)His;

wherein D4 is (D)Leu or (D)His; and

wherein E5 is (D)Trp or (D)Arg.

5,624,905

MEROSIN FRAGMENTS AND USES THEREOF

Eva Engvall, Rancho Santa Fe, Calif., and Ilmo Leivo, Helsinki, Finland, assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 103,032, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 734,201, Jul. 22, 1991, abandoned, which is a division of Ser. No. 472,319, Jan. 30, 1990, abandoned. This application Feb. 23, 1995, Ser. No. 393,250

Int. Cl.[6] A61K *38/00;38/39;* **G01N** *33/567;* **C07K** *14/78*

U.S. Cl. 514—21 **1 Claim**

1. A method of promoting neurite growth comprising,

a) contacting a neuron with a purified protein, designated merosin, composed of four polypeptides having apparent molecular weights of 300 kDa, 200 kDa, 200 kDa and 80 as determined by SDS-PAGE under reducing conditions, the 300 kDa polypeptide being joined to the 200 kDa polypeptides by disulfide bonds, and wherein the 80 and 300 kDa polypeptides comprising at least portions of the amino acid sequence shown in FIG. 1, and

b) allowing the neuron to remain in contact with merosin for sufficient time to promote neurite growth.

5,624,906

ORAL HYGIENE COMPOSITIONS COMPRISING HETEROATOM CONTAINING ALKYL ALDONAMIDE COMPOUNDS

Robert Vermeer, Nutley, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

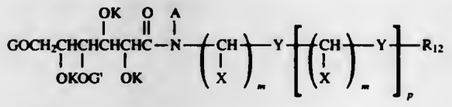
Filed Dec. 8, 1994, Ser. No. 351,930

Int. Cl.[6] A61K *7/16;31/70;* **C07H** *15/02*

U.S. Cl. 514—23 **24 Claims**

1. An oral hygiene composition comprising:

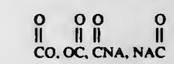
(a) from about 0.01% to about 15% by wt. of the composition of a heteroatom containing alkyl aldonamide compound having the following structure:



wherein m=1 to 5

X=H, a C_1 to C_4 alkyl group or mixtures thereof;

Y=NA, O, S, SO, SO_2,



or mixtures thereof;

p=0 to 25;

G=H, a mono- or disaccharide group, a $(CH_2CH_2O)_q$—H, $(CH_2CH_2CH_3O)_r$—H, group or mixtures thereof;

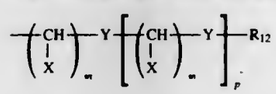
G'=glucose;

K=H, $(CH_2CH_2O)_q$—H, $(CH_2CHCH_3O)_r$—H or mixtures thereof;

q=1 to 50;

r=1 to 50;

A=H, a hydroxy C_1–C_{18} alkyl group, a C_1–C_{18} straight or branched chain, saturated or unsaturated hydrocarbon which may be unsubstituted or substituted with an aromatic, cycloaliphatic, mixed aromatic aliphatic radical or a



group or mixtures thereof; wherein X, m, Y and p are defined as above; R_{12} is a straight or branched chain, saturated or unsaturated hydrocarbon which may be unsubstituted or substituted with an aromatic, cycloaliphatic, or mixed aromatic aliphatic radical comprising from about 1 to about 28 carbon atoms;

(b) a humectant comprising about 7.0% to 80% by weight of the composition;

(c) from about 1.0% to about 30% by wt. of a cosurfactant selected from the group consisting of soap, anionic surfactant, nonionic surfactant, amphoteric surfactant, zwitterionic surfactant and cationic surfactant; and

(d) about 0.7% to about 81.73% water.

5,624,907

BEVERAGE FOR PREOPERATIVE INTAKE

Olle Ljungqvist, Stockholm, Sweden, assignor to Olle Ljungqvist Medical AB, Bromma, Sweden

Continuation of Ser. No. 81,334, Jun. 21, 1993, Pat. No. 5,438,043. This application Jun. 1, 1995, Ser. No. 456,951

Claims priority, application Sweden, Dec. 21, 1990, 9004131

Int. Cl.[6] A61K *31/70;31/715*

U.S. Cl. 514—23 **29 Claims**

1. A beverage for administration within about four hours prior to surgical operation, comprising a hypotonic aqueous solution of between 8 and 20 grams of a carbohydrate mixture per 100 ml, said carbohydrate mixture including a monosaccharide, a disaccharide and a polysaccharide and said aqueous solution having an osmolality of between 250 and 295 mosm/kg, the relative proportions of said carbohydrates selected to elicit a change in endogenous insulin blood levels of the order of magnitude seen when metabolism changes from the overnight fasted states to the fed state.

5,624,908

ANTINEOPLASTIC COMPOSITIONS

Haim I. Bicher, Tarzana, Calif., assignor to Valley Cancer Institute, Los Angeles, Calif.

Division of Ser. No. 76,013, Jun. 11, 1993, Pat. No. 5,449,663. This application Jun. 7, 1995, Ser. No. 487,293

Int. Cl.[6] A61K *31/70;* **C07H** *03/02;* **A61N** *01/30*

U.S. Cl. 514—23 **13 Claims**

1. A process for potentiating a radiotherapeutic treatment comprising:

administering L-glucose in conjunction with a radiotherapeutic treatment of a mammalian host afflicted with a population of neoplastic cells,

said L-glucose being administered to said mammalian host in a dosage effective to potentiate said radiotherapeutic: treatment and to thereby reduce said population of neoplastic cells to a greater extent than said radiotherapeutic treatment alone.

5,624,909

DERIVATIVES OF TRITERPENOID ACIDS AS INHIBITORS OF CELL-ADHESION MOLECULES ELAM-1 (E-SELECTIN) AND LECAM-1 (L-SELECTIN)

Narasinga Rao, Alameda; Mark B. Anderson, Orinda, both of Calif.; John J. Naleway, Eugene, Oreg., and John H. Musser, San Carlos, Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Division of Ser. No. 943,356, Sep. 10, 1992, Pat. No. 5,519,008. This application Jun. 6, 1995, Ser. No. 468,888

Int. Cl.[6] A01N *37/00;39/00;* **A61K** *31/00;31/56*

U.S. Cl. 514—26 **5 Claims**

1. A method of assaying for the presence of a selectin in a sample, comprising the steps of:

adhering a triterpenoid acid derivative to the surface of a substrate;

contacting the sample with the substrate surface; and

determining the presence of conjugates formed due to binding of the derivative to a selectin in the sample.

3. A method of assaying for the presence of a selectin as in claim 1, wherein the triterpenoid acid derivative is 3-0-fucoside-18-β-glycyrrhetinic acid.

5,624,910

METHOD FOR THE INHIBITION OF ALDH-I USEFUL IN THE TREATMENT OF ALCOHOL DEPENDENCE OR ALCOHOL ABUSE

Bert L. Vallee, Brookline, and Wing-Ming Keung, Wayland, both of Mass., assignors to The Endowment for Research in Human Biology, Inc., Boston, Mass.

PCT No. PCT/US92/05598, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO93/00896, PCT Pub. Date Jan. 21, 1993

Continuation-in-part of Ser. No. 723,404, Jul. 1, 1991, Pat. No. 5,204,369. This PCT application Jun. 30, 1992, Ser. No. 170,272

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—27 **6 Claims**

1. A method for therapeutically treating alcohol consumption in a human comprising administering a pharmaceutical composition comprising daidzin in an effective amount to reduce alcohol consumption and a pharmaceutical carrier.

VOL 1197 ISS 5 APR 29 1997 UMI

5,624,911

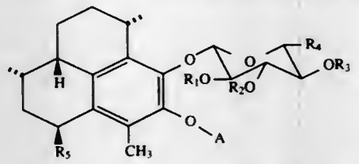
ETHER DERIVATIVES OF PSEUDOPTEROSIN

William H. Fenical, Del Mar, and Robert S. Jacobs, Santa Barbara, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 7, 1995, Ser. No. 487,859
Int. Cl.[6] A61K *31/70;* **C07H** *15/00*
U.S. Cl. 514—33 **35 Claims**

35. A method for treating mammals suffering from inflammation or pain to reduce said inflammation or pain, said method comprising:

administering to said mammal a pain reducing effective amount of an ether derivative of pseudopterosin having the structure:



wherein A is an alkyl, aryl, hydroxyalkyl, cycloalkyl, cycloalkenyl, carboxylic acid, alkylamino or amide group having from 2 to 20 carbon atoms, R_1, R_2 and R_3 are hydrogen or acyl residue having from 1 to 6 carbon atoms, R_5 is a hydrogen or CH_2OH and R_5 is an organo group having from 1 to 10 carbon atoms.

5,624,912

METHOD OF TREATING HIV INFECTION AND RELATED SECONDARY INFECTIONS WITH DEFIBROTIDE

Arsinur Barcoglu, 213 Sweetgum Rd., Pittsburg, Pa. 15238, and Marc Wagner, 4201 Greensburg Pike, Pittsburg, Pa. 15221

Continuation-in-part of Ser. No. 748,277, Aug. 21, 1991, abandoned, and Ser. No. 2,395, Jan. 13, 1993, abandoned. This application Jan. 24, 1994, Ser. No. 185,416
Int. Cl.[6] A61K *48/00*
U.S. Cl. 514—44 **17 Claims**

1. A method of treating a patient infected with HIV comprising administering intravenously defibrotide to the patient in an amount effective to cause disease markers associated with the HIV infection to return toward their status in an uninfected individual, wherein the dosage of defibrotide is between 40 mg/kg patient body weight to 400 mg/kg patient body weight per day.

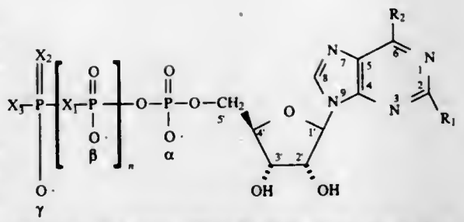
5,624,913

METHOD REDUCING TNF-ALPHA IN MAMMALS WITH CEREBRAL MALARIA

Richard A. Proctor, Madison, and Paul J. Bertics, Fitchburg, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 137,326, Oct. 15, 1993, Pat. No. 5,492,898, and Ser. No. 137,685, Oct. 15, 1993, Pat. No. 5,516,762, each which is a continuation-in-part of Ser. No. 976,659, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 681,036, Apr. 5, 1991, abandoned. This application Aug. 30, 1994, Ser. No. 298,254
Int. Cl.[6] A61K *31/70;* **C07H** *19/167;19/20*
U.S. Cl. 514—47 **5 Claims**

1. A method of reducing TNF-alpha in a mammal with cerebral malaria comprising administering to said mammal a safe and therapeutically effective amount of a compound of Formula I:



1

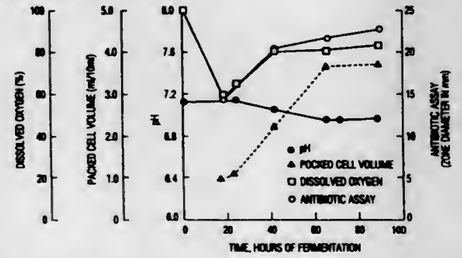
in which X_1 is a hydroxylation preventing group selected from the group consisting of —O—, —NH— and —CH_2—; X_2 is =O; X_3 is —OH; R_1 is an electron withdrawing group selected from the group consisting of a alkylthio of 1 to 4 carbon atoms, chloro, fluoro and trichloromethyl; R_2 is —NH_2, —$NH(CH_3)$, or —$N(CH_3)_2$; and n is 0 or 1.

5,624,914

LIPOPHILIC OLIGOSACCHARIDE ANTIBIOTIC SALT COMPOSITIONS

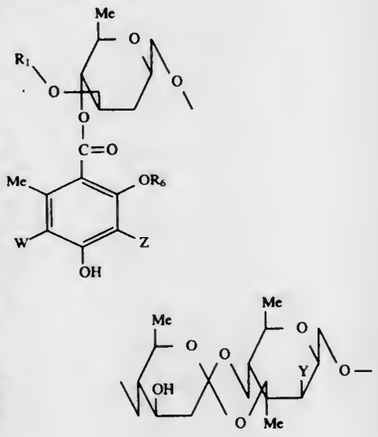
Mahesh Patel, Verona; Vincent P. Gullo, Liberty Corner; Roberta Hare, Gilette, all of N.J.; David Loebenberg, Monsey, N.Y.; James B. Morton, Belleville, N.J.; George H. Miller, Montville, N.J., and Heewon Y. Kwon, Edison, N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US92/08565, § 371 Date Apr. 12, 1994, § 102(e) Date Apr. 12, 1994
PCT Filed Oct. 14, 1992, Ser. No. 211,700
Int. Cl.[6] A61K *31/715;* **C07G** *11/00;* **C08B** *37/16*
U.S. Cl. 514—54 **22 Claims**



1. A composition comprising:

(a) a lipophilic oligosaccharide antibiotic represented by Formula I;



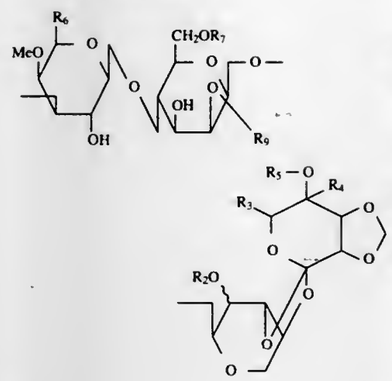
1

(b) at least about a stoichiometric amount of a base capable of forming a pharmaceutically acceptable salt with a lipophilic oligosaccharide antibiotic of Formula I;

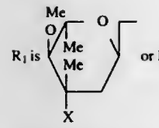
(c) a hydroxypropyl-α-β- or -γ-cyclodextrin wherein the average number of hydroxypropyl substituents on said -α, β- and γ-cyclodextrin is in the range of about 2 to about 15, and said amount is sufficient to achieve efficacious delivery of said lipophilic oligosaccharide antibiotic to the serum of an animal while simultaneously avoiding occurrence of adverse reaction syndrome; and

(d) 0 to 6.0 by weight (basis an antibiotic of Formula I) of a pharmaceutically acceptable non-ionic surfactant.

-continued



wherein

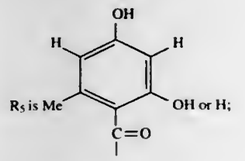


X is one of NO_2, NO, NH_2, $NHCOCH_3$, NHOH, $NH(C_2H_5)$, $N(C_2H_5)_2$, OH or H;

R_2 is one of CH_3, $COCH(CH_3)_2$, $COCH_3$, $CO(CH_2)_3CH_3$, $COCH_2CH_3$ or H;

R_3 is CH_3 or H;

R_4 is one of $COCH_3$, $CH(OCH_3)(CH_3)$; $CH(OH)CH_3$, CHO, or H;



R_6 is CH_3 or H;

R_7 is CH_3 or H;

R_8 is CH_3, CH_2OH or H;

R_9 is CH_3 or H;

Y is OH, H or CH_3

W is Cl or H; and

Z is Cl or H;

5,624,915

HYALURONIC ACID-UREA PHARMACEUTICAL COMPOSITIONS AND USES

Damian J. Gallina, Erie, Pa., assignor to Patent Biopharmaceutics, Inc., Erie, Pa.

Division of Ser. No. 101,826, Aug. 4, 1993. This application Jun. 2, 1995, Ser. No. 471,327
Int. Cl.[6] A61K *31/715*
U.S. Cl. 514—54 **8 Claims**

1. A method of treating eczema which comprises applying to cutis tissues in need of such treatment a therapeutically effective amount of a composition comprising a pharmaceutically acceptable carrier, urea in an amount of 0.1–40% by weight, and hyaluronic acid or a pharmaceutically acceptable salt thereof in an amount of 0.05–25% by weight.

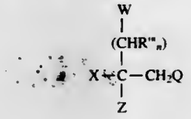
5,624,916

FUNGICIDAL 1,2,4-TRIAZOLES

Steven H. Shaber, Horsham, Pa., and Luong T. Nguyen, Pinewood Garden, Singapore, assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 269,874, Jun. 30, 1994, Pat. No. 5,462,931, which is a division of Ser. No. 904,230, Jun. 25, 1992, Pat. No. 5,358,939. This application Jun. 12, 1995, Ser. No. 489,416
Int. Cl.[6] C07D *249/08;239/02;241/02;249/14;* **A01N** *43/64*
U.S. Cl. 514—63 **12 Claims**

1. A compound of the formula:



wherein

X is (C6–C10) aryl or (C6–C10)aryl substituted with one, two or three substituents selected from the group consisting of hydroxy, halo, acetoxy, trihalomethyl, (C1–C4)alkyl, (C1–C4)alkoxy, (C1–C4)alkylthio, (C1–C4)alkylsulfinyl, (C1–C4) alkylsulfonyl, (C1–C4)alkoxy(C1–C4)alkoxy, (C1–C4)alkylcarbonyl, (C2–C8)alkenyl, (C2–C4)alkenyloxy, (C2–C8) alkenyl, (C2–C4)alkenyloxy, (C2–C8)alkynyl, (C2–C8)alkenyloxy, phenyl, phenyl monosubstituted with halo, (C1–C4)alkyl or (C1–C4)alkoxy

Q is unsubstituted or substituted 1-(1,2,4-triazolyl) or 4-(1,2,4-triazolyl);

Z is (C1–C12)alkyl, halo(C1–C12)alkyl, (C2–C8)alkenyl. halo(C2–C8)alkenyl, (C2–C8)alkynyl, (C3–C8)cycloalkyl, (C5–C8)cycloalkenyl. cycloalkylalkyl, aryl, aralkyl;

W is—OR, —OCOY, —OCOR'Y, —OR'OR, —NHCOR,-NHCOR'Y, —NHCOY. —OCONHY, wherein A is (C1–C6)alkyl;

R is Y-alkyl, which is substituted or unsubstituted with 1,2 or 3 or hydrogen, provided that when Z is methyl, R is not haloalkyl;

R' is (—CH(CH3)—)p(—CH3—)m or (—CH2—)sCH=CH(—CH2—)t;

m is an integer from 0 to 6;

p is 0 or 1, provided m and p are not both 0;

s and t are each independently integers of from 0 to 3:

R"' is phenyl, (C1–C6)alkyl, (C2–C4)alkenyl or (C1–C2)-trialkylsilyl, (C1– C4)alkyl, all Unsubstituted or substituted with 1,2 or 3 halogens,

hydrogen or (C1–C6)alkyl;

n is an integer from 1 to 6; and

Y is piperidinyl, triazolyl, pyrazinyl, pyrimidinyl, phthalimido, morpholinyl, pyridyl, all substituted or unsubstituted; or the agronomically acceptable enantiomorphs, acid addition salts or metal salt complexes thereof.

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5,624,917

METHOD OF INHIBITING SQUALENE SYNTHETASE

Kazuaki Kitano, Sakai; Takashi Sohda, Takatsuki; Ryuichi Tozawa, Ibaraki; Hitoshi Ikeda, Higashiosaka, and Tsuneo Oda, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

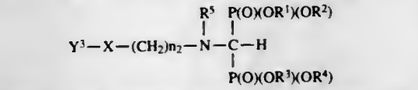
Continuation of Ser. No. 971,611, Nov. 5, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 585,754

Claims priority, application Japan, Nov. 6, 1991, 3-289593; Oct. 5, 1992, 4-265895

Int. Cl.[6] A61K *31/675;31/685;31/66*

U.S. Cl. 514—76 **24 Claims**

1. A method for inhibiting squalene synthetase in a mammal which comprises administering to a mammal in need of such treatment an effective amount of a compound of the formula (VI)



(VI)

wherein Y^3 is an optionally substituted cyclic group, X is oxygen or optionally oxidized sulfur, n_2 is an integer of 2 to 15, R^1, R^2, R^3 and R^4 are hydrogen or lower alkyl, and R^5 is hydrogen or lower alkanoyl.

5,624,918

PHOSPHONIC DIESTER DERIVATIVES

Yasuhisa Kurogi; Kazuyoshi Miyata; Shizuo Nakamura; Mitsuyoshi Kondo, all of Naruto; Takeshi Iwamoto, Komatsushima; Chieko Naba, Naruto; Yoshihiko Tsuda, Naruto; Yasuhide Inoue, Naruto; Jun Kanaya, and Keigo Sato, both of Tokushima-ken, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

PCT No. PCT/JP94/00883, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO95/00524, PCT Pub. Date Jan. 5, 1995

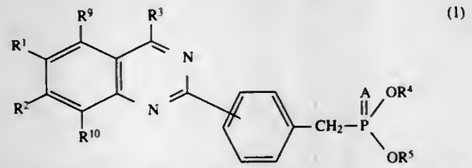
PCT Filed May 31, 1994, Ser. No. 387,907

Claims priority, application Japan, Jun. 17, 1993, 5-146528

Int. Cl.[6] A61K *31/675;* **C07F** *9/6512*

U.S. Cl. 514—80 **8 Claims**

1. A phosphonic diester compound of the formula:



(1)

wherein A represents an oxygen atom or a sulfur atom; R^1, R^2, R^9 and R^{10} are the same or different and they each represent a hydrogen atom, an alkoxy group having 1 to 6 carbon atoms, a nitro group, an alkyl group having 1 to 6 carbon atoms, a halogen-substituted alkyl group having 1 to 6 carbon atoms or a halogen atom; R^3 represents a phenyl group or —B—R^6 (wherein B represents an oxygen atom or a sulfur atom and R^6 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a cycloalkyl group, having 3 to 8 carbon atoms a phenyl group, or a phenyl alkyl group optionally having a halogen atom as a substituent on the phenyl ring, a phenoxy-alkyl group, an alkoxycarbonyl alkyl group, a carboxy alkyl group or alkenyl group) wherein each alkyl moiety has 1 to 6 carbon atoms or —N^7R^8 (wherein R^7 and R^8 are the same or different and they each represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an amino group or a cycloalkyl group or combinedly represent an alkylene group having 1 to 6 carbon atoms); and R^4 and R^5 are the same or different and they each represent a hydrogen atom or an alkyl group having 1 to 6 carbon atoms.

5,624,919

TRANS PLATINUM (IV) COMPLEXES

Nicholas Farrell, Richmond, Va., assignor to The University of Vermont and State Agricultural College, Burlington, Vt.

Continuation-in-part of Ser. No. 120,433, Sep. 14, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 304,837

Int. Cl.[6] C07F *15/00;* **A61K** *31/555*

U.S. Cl. 514—184 **17 Claims**

1. A trans platinum(IV) complex of the formula



(I)

wherein the A and B ligands are trans with respect to the platinum atom, and wherein A is a ligand selected from the group consisting of quinoline, isoquinoline, isothiazole, thiazole, benzisotriazole, indole, pyrazole, 1, 2, 3-triazole, pyrazine, isoindole, indoline, cinnoline, quinazoline, 1,8-naphthyridine, and acridine, and B is a ligand selected from the group consisting of quinoline, isoquinoline, isothiazole, thiazole, benzisotriazole, indole, pyrazole, 1,2,3-triazole, pyrazine, isoindole, indoline, cinnoline, quinazoline, 1,8-naphthyridine, acridine, and ammonia, or is a primary amine, selected from the group consisting of alkyl amines of the formula NH_2—R_1 where R_1 is a linear or branched C_1–C_8 alkyl or a C_3–C_6 cycloalkyl or a secondary amine of the formula $NH(R_1)_2$ where R_1 is H or a linear or branched C_1–C_8 alkyl, X and Y, which are the same or different, are an anionic ligand comprising halide, sulfate, nitrate, hydroxy, carboxylate, or pseudohalogen; Z is halide, hydroxyl, or —OCO—R, —OC(O)—OR, or —OSO_2—R, wherein R is H, linear or branched C_1–C_8 alkyl, C_3–C_6 cycloalkyl, phenyl, substituted phenyl, or C_7–C_{10} aralkyl; or is a sulphoxide group of formula R'R"SO, wherein R' is linear or branched C_1–C_8 alkyl and R" is selected from the group consisting of linear and branched C_1–C_8 alkyl; pbenyl unsubstituted or substituted by one or two halogens, mono and dimethoxy substituted phenyl; and C_7–C_{10} aralkyl.

5,624,920

SULFUR-SUBSTITUTED AZETIDINONE COMPOUNDS USEFUL AS HYPOCHOLESTEROLEMIC AGENTS

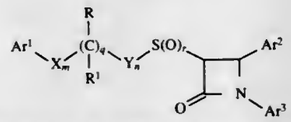
Brian A. McKittrick, Bloomfield; Sundeep Dugar, Bridgewater, and Duane A. Burnett, Fanwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 18, 1994, Ser. No. 342,197

Int. Cl.[6] C07D *205/08;* **A61K** *31/395*

U.S. Cl. 514—210 **15 Claims**

1. A compound represented by the formula



or a pharmaceutically acceptable salt thereof, wherein:

Ar^1 is aryl or R^{10}-substituted aryl;

Ar^2 is aryl or R^4-substituted aryl;

Ar^3 is aryl or R^5-substituted aryl;

X and Y are independently selected from the group consisting of —CH_2—, —CH(lower alkyl)— and —C(dilower alkyl)—;

R is —OR^6, —$O(CO)R^6$, —$O(CO)OR^9$ or —$O(CO)NR^6R^7$; R^1 is hydrogen, lower alkyl or aryl; or R and R^1 together are =O;

q is 0 or 1;

r is 0, 1 or 2;

m and n are independently 0, 1, 2, 3 or 4; provided that the sum of m, n and q is 2, 3 or 4;

R^4 is 1–5 substituents independently selected from the group consisting of lower alkyl, —OR^6, —$O(CO)R^6$, —$O(CO)OR^9$, —$O(CH_2)_{1-5}OR^6$, —$O(CO)NR^6R^7$, —NR^6R^7, —$NR^6(CO)R^7$, —$NR^6(CO)OR^9$, —$NR^6(CO)NR^7R^8$, —$NR^6SO_2R^9$, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, $S(O)_{0-2}R^9$, —$O(CH_2)_{1-10}$—$COOR^6$, —$O(CH_2)_{1-10}CONR^6R^7$, —(lower alkylene)$COOR^6$ and —CH=CH—$COOR^6$;

R^5 is 1–5 substituents independently selected from the group consisting of —OR^6, —$O(CO)R^6$, —$O(CO)OR^9$, —$O(CH_2)_{1-5}OR^6$, —$O(CO)NR^6R^7$, —NR^6R^7, —$NR^6(CO)R^7$, —$NR^6(CO)OR^9$, —$NR^6(CO)NR^7R^8$, —$NR^6SO_2R^9$, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, $S(O)_{0-2}R^9$, —$O(CH_2)_{1-10}$—$COOR^6$, —$O(CH_2)_{1-10}CONR^6R^7$, —CF_3, —CN, —NO_2, halogen, —(lower alkylene)$COOR^6$ and —CH=CH—$COOR^6$;

R^6, R^7 and R^8 are independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl-substituted lower alkyl;

R^9 is lower alkyl, aryl or aryl-substituted lower alkyl; and

R^{10} is 1–5 substituents independently selected from the group consisting of lower alkyl, —OR^6, —$O(CO)R^6$, —$O(CO)OR^9$, —$O(CH_2)_{1-5}OR^6$, —$O(CO)NR^6R^7$, —NR^6R^7, —$NR^6(CO)R^7$, —$NR^6(CO)OR^9$, —$NR^6(CO)NR^7R^8$, —$NR^6SO_2R^9$, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, —$NR^6(CO)NR^7R^8$, —$NR^6SO_2R^9$, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, $S(O)_{0-2}R^9$, —$O(CH_2)_{1-10}$—$COOR^6$, —$O(CH_2)_{1-10}CONR^6R^7$, —CF_3, —CN, —NO_2 and halogen.

5,624,921

HYPOTRIGLYCERIDEMIC AMINOACETYLMERCAPTO DERIVATIVES

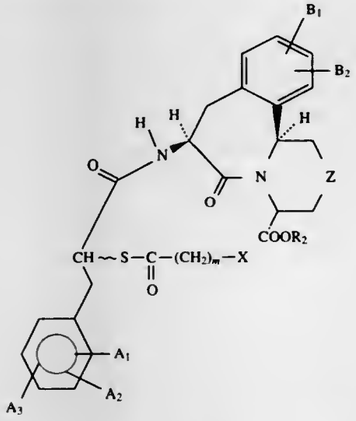
Gary A. Flynn; John F. French, and Richard C. Dage, all of Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 217,350, Mar. 24, 1994, abandoned. This application Aug. 9, 1995, Ser. No. 513,101

Int. Cl.[6] A61K *31/55;31/535*

U.S. Cl. 514—214 **6 Claims**

1. A method of lowering plasma triglycerides in a patient in need thereof comprising administering to said patient a therapeutically effective hypotriglyceridemic amount of a compound of the formula



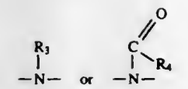
wherein

B_1 and B_2 are each independently hydrogen; hydroxy; —OR_1 wherein R_1 is a C_1–C_4 alkyl or an Ar—Y— group wherein Ar is aryl and Y is a C_0–C_4 alkyl; or, where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

A_1, A_2 and A_3 are each independently hydrogen; hydroxy; nitro; amino; fluoro, chloro, —OR_1 or an Ar—Y group; or, where A_1 and A_2 are attached to adjacent carbon atoms, A_1 and A_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

R_2 is hydrogen, a C_1–C_4 alkyl, an Ar—Y— group or —CH_2O—$C(O)C(CH_3)_3$;

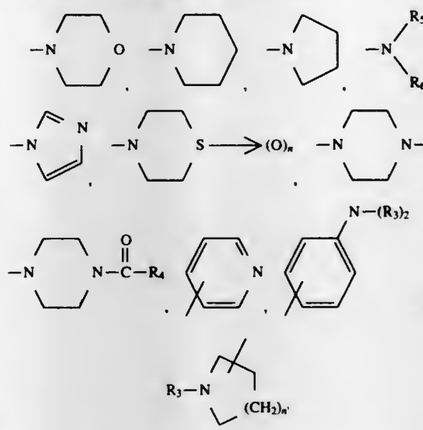
Z is —CH_2—, —O—, —S—,



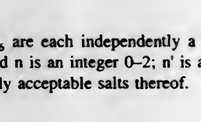
or a bond wherein R_3 is hydrogen, a C_1–C_4 alkyl or an Ar—Y— group and R_4 is —CF_3, a C_1–C_{10} alkyl or an Ar—Y— group;

m is an integer 0 to 5;

X is selected from the group consisting of



and



wherein R_5 and R_6 are each independently a C_1–C_4 alkyl or an Ar—Y— group and n is an integer 0–2; n' is an integer 1–2; and the pharmaceutically acceptable salts thereof.

5,624,922

ARYL-FUSED AND HETARYL-FUSED-2,4-DIAZEPINE AND 2,4-DIAZOCINE ANTIARRHYTHMIC AGENTS

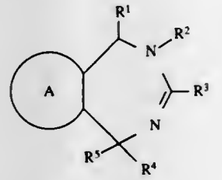
Robert E. Johnson, East Greenbush; Donald C. Schlegel, Schodack, and Alan M. Ezrin, Colonie, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 308,893, Sep. 19, 1994, which is a division of Ser. No. 250,995, May 31, 1994, Pat. No. 5,380,721, which is a continuation of Ser. No. 21,926, Feb. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 974,396, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,853, Jun. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,065, Sep. 10, 1990, abandoned. This application May 24, 1995, Ser. No. 449,457

Int. Cl.[6] A61K *31/55;* **C07D** *243/04*

U.S. Cl. 514—220 **3 Claims**

1. A compound of formula:



wherein

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A is a ring chosen from the group consisting of naphthyl, pyridinyl and cyclohexyl;

R^1 hydrogen, lower-alkyl, benzyl, naphthyl, thienyl, pyridinyl, phenyl, or phenyl having one or two substituents chosen from the group consisting of lower-alkyl and lower-alkoxy;

R^2 is hydrogen; lower-alkyl; benzyl; phenyl; phenyl substituted with halogen, lower-alkyl or lower-alkoxy; or

R^2 is $—CH_2CH_2R^7$ where R^7 is lower-alkoxy; benzyl; di(lower-alkyl)amino, pyrrolidino; piperidino; morpholino; pyridinyl; phenyl; or phenyl substituted with amino, nitro or lower-alkyl sulfonamido;

R^3 is $Y_p—(CH_2)_m—X_n—R^8$ wherein

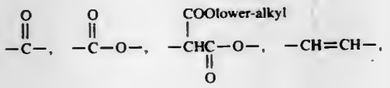
Y is —NH—, —O—, —S—, or

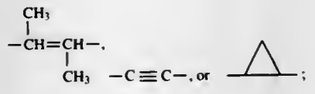


p is zero or one;

m is an integer from zero to seven;

X is —S—, —O—, $—SO_2—$,  ,  ,





n is zero or one; and

R^8 is hydrogen; lower-alkyl; phenyl; furanyl; thienyl, pyridinyl, phenyl having one or two substituents chosen independently from the group consisting of halogen, lower-alkyl, nitro, hydroxy, lower-alkoxy, lower-alkylamido, lower-alkylsulfonamido, di-lower-alkylaminosulfonyl, and amino; or when n is zero and m is other than zero, R^8 is additionally halogen; benzyl(lower-alkyl)amino; di-(lower-alkyl)amino; or a 5- or 6-membered heterocycle containing one or two nitrogens, said heterocycle being unsubstituted or substituted with one lower-alkyl group; or X and R^8 taken together are cyclohexylidine;

R^4 hydrogen; lower-alkyl; allyl; lower-alkoxy-lower-alkyl; acetyl; lower-alkylaceto; lower-alkyl carboxyl; or a-hydroxy-lower-alkyl; and

R^5 is hydrogen; lower-alkyl; naphthyl; thienyl; pyridinyl; benzyl; phenyl; or phenyl having one or two substituents chosen independently from the group consisting of lower-alkyl,lower-alkoxy, halogen, hydroxyl, amino, di(lower-alkyl)amino, lower-alkylsulfonamido and lower-acylamino;

or an acid-addition salt thereof with the proviso that the total number of carbon atoms in R^1 plus R^2 plus R^4 plus R^5 must be five or greater.

5,624,923

TRICYCLIC DIAZEPINE VASOPRESSIN ANTAGONISTS AND OXYTOCIN ANTAGONISTS

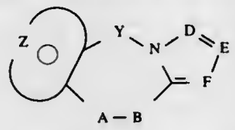
Jay D. Albright, Nanuet; Marvin F. Reich, Suffern; Fuk-Wah Sum, Pomona, and Efren G. Delos Santos, Nanuet, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 254,822, Jun. 13, 1994, Pat. No. 5,516,774, which is a continuation-in-part of Ser. No. 100,004, Jul. 29, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,737

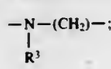
Int. Cl.[6] C07D *487/04*; **A61K** *31/55*

U.S. Cl. 514—220 **38 Claims**

1. A compound selected from those of the formula:



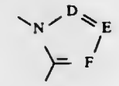
wherein Y is a moiety —(CH_2)—; A—B is a moiety:



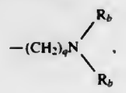
the moiety



represents: (1) fused phenyl or fused substituted phenyl optionally substituted by one or two substituents selected from (C_1–C_3)lower alkyl, halogen, amino, (C_1–C_3)lower alkoxy and (C_1–C_3)lower alkylamino; the moiety:



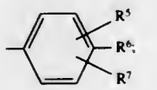
is a five membered aromatic(unsaturated) fused nitrogen containing heterocyclic ring wherein D, E and F are carbon and wherein the carbon atoms may be optionally substituted by a substituent selected from halogen, (C_1–C_3)lower alkyl,



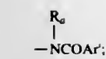
and amino; q is one or two; R_b is independently selected from hydrogen, $—CH_3$ or $—C_2H_5$; R^3 is a moiety of the formula,



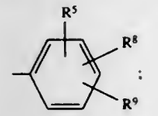
wherein Ar is a moiety:



R^5 is selected from hydrogen, (C_1–C_3)lower alkyl, (C_1–C_3)lower alkoxy and halogen; R^6 is a moiety of the formula:



R_a is hydrogen; wherein Ar' is a moiety of the formula:



R^7 is selected from hydrogen, lower alkyl(C_1–C_3), halogen, O-lower alkyl(C_1–C_3) and CF_3; R^8 and R^9 are independently selected from hydrogen, lower alkyl(C_1–C_3), —S-lower alkyl(C_1–C_3), halogen, —NH-lower alkyl(C_1–C_3),—OCF_3, —OH, —CN, —S—CF_3, —NO_2, —NH_2, O-loweralkyl(C_1–C_3), CF_3 and



and the pharmaceutically acceptable salts, esters and pro-drug forms thereof.

37. A method for treating disease in a mammal characterized by excess renal reabsorption of water, the method comprising administering to a mammal in need thereof an effective amount of a compound of claim 1, or a pharmaceutically acceptable salt, ester or prodrug form thereof, and a suitable pharmaceutical carrier.

5,624,924

QUINOBENZOTHIAZINE ANTINEOPLASTIC AGENTS

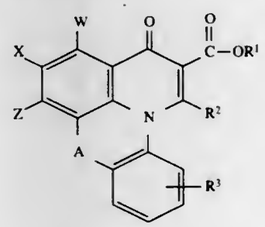
Daniel T. Chu, Vernon Hills; Jacob J. Plattner, Libertyville, both of Ill., and Robert Hallas, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 842,910, Feb. 27, 1992, Pat. No. 5,318,965, which is a continuation-in-part of Ser. No. 573,102, Aug. 24, 1990, abandoned. This application Jun. 6, 1994, Ser. No. 254,801

Int. Cl.[6] C07D *279/36*; **A61K** *31/54*

U.S. Cl. 514—224.5 **10 Claims**

1. A method of inhibiting the growth of neoplastic cells comprising exposing the cells to an effective amount of a compound of the formula



or a pharmaceutically acceptable salt, ester, or amide thereof, in which

A is a sulfur atom;

R^1 is hydrogen;

R^2 is selected from the group consisting of (a) hydrogen, (b) alkyl of from 1 to 6 carbon atoms, (c) alkoxy of from 1 to 6 carbon atoms, and (d) sulfhydroalkyl of from 1 to 6 carbon atoms;

R^3 is one or more groups independently selected from the group consisting of (a) hydrogen, (b) halogen, (c) nitro, (d) alkyl of from 1 to 6 carbon atoms, (e) carboxyl, (f) methylenedioxy, (g) cyano, (h) halo-substituted alkyl of from 1 to 6 carbon atoms, (i) hydroxy-substituted alkyl of from 1 to 6 carbon atoms, (j) a group of the formula —YR^4 in which Y is O or S, and R^4 is hydrogen or alkyl of from 1 to 6 carbon atoms, and (k) an amine of the formula —NR^5R^6 where R^5 and R^6 are independently selected from hydrogen and alkyl of from 1 to 6 carbon atoms,

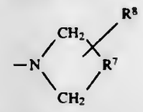
W is selected from the group consisting of (a) hydrogen, (b) alkyl of from 1 to 6 carbon atoms, (c) amino, (d) halogen, (e) alkoxy, (f) hydroxyl, (g) alkylamino, and (h) halo-substituted alkyl;

X is selected from the group consisting of (a) hydrogen, (b) halogen, (c) alkyl of from 1 to 6 carbon atoms and, (d) halo-substituted alkyl of from 1 to 6 carbon atoms; and

Z is selected from the group consisting of

(a) halogen,

(b) a nitrogen-containing heterocycle of the formula



where (i) R^7 is selected from —CH_2—, —CH_2CH_2—, —$CH_2CH_2CH_2$—, —$CH_2CH_2NHCH_2$—, and a group of the formula —$CH_2R^9CH_2$— where R^9 is selected from S, O, and NH, and (ii) R^8 is 1 or 2 groups independently selected from the group consisting of hydrogen, alkyl of from 1 to 6 carbon atoms, halo-substituted alkyl of from 1 to 6 carbon atoms, amino-substituted alkyl of from 1 to 6 carbon atoms, hydroxy-substituted alkyl of from 1 to 6 carbon atoms, alkylaminoalkyl wherein each alkyl portion contains from 1 to 6 carbon atoms, hydroxy, alkanoyl of from 1 to 6 carbon atoms, spirocycloalkyl group of from 5 to 10 carbon atoms, and an amine of the formula —$NR^{10}R^{11}$ where R^{10} and R^{11} are independently selected from hydrogen, acetyl, alkyl of from 1 to 6 carbon atoms, an α-amino acid and a dipeptide group joined to the nitrogen with an amide linkage, or one of R^{10} and R^{11} is hydrogen and the other is selected from an alkanoyl group of from 1 to 6 carbon atoms, an α-amino acid and a dipeptide group joined to the nitrogen atom with an amide linkage; and

(c) an amino group of the formula —$NR^{12}R^{13}$ where R^{12} is selected from hydrogen and alkyl of from 1 to 10 carbon atoms, and where R^{13} is selected from alkyl of from 1 to 10 carbon atoms, hydroxy-substituted alkyl of from 1 to 10 carbon atoms, an amino group, alkylamino of 1 to 6 carbon atoms, and dialkylamino of 1 to 6 carbon atoms;

or, taken together with the atoms to which they are attached, X and Z form —OCH_2O— or —OCH_2CH_2O—.

5,624,925

1,2,4-BENZOTRIAZINE OXIDES AS RADIOSENSITIZERS AND SELECTIVE CYTOTOXIC AGENTS

William W. Lee, Palo Alto; J. Martin Brown, Stanford; Edward W. Grange, Palo Alto; Abelardo P. Martinez, San Jose; Michael Tracy, Palo Alto, and Daniel J. Pollart, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Division of Ser. No. 939,787, Oct. 27, 1992, abandoned, which is a division of Ser. No. 409,480, Sep. 18, 1989, Pat. No. 5,175,287, which is a continuation-in-part of Ser. No. 356,602, May 24, 1989, abandoned, which is a continuation of Ser. No. 169,873, Mar. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 911,906, Sep. 25, 1986, abandoned. This application Jan. 26, 1995, Ser. No. 378,419

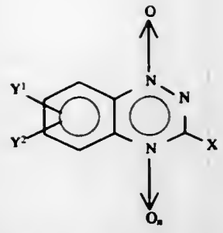
Int. Cl.[6] A61K *31/53*;*31/535*

U.S. Cl. 514—243 **9 Claims**

1. A method of radiosensitizing tumor cells of solid tumors having hypoxic cells, and susceptible to such treatment in a warm-blooded mammal, comprising:

(a) administering to said mammal a pharmaceutical composition in an amount sufficient to produce radiosensitivity in said tumor cells, said pharmaceutical composition comprising a 1,2,4-benzotriazine oxide having the structure

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wherein X is H; hydrocarbyl (1–4C); hydrocarbyl (1–4C) substituted with OH, NH_2, NHR or NRR; halogen; OH; alkoxy (1–4C); wherein the R groups are independently selected from alkyl (1–4C) and acyl (1–4C), optionally substituted with OH, NH_2, alkyl (1–4C) secondary and dialkyl (1–4C) tertiary amino groups, alkoxy (1–4C) or halogen, and in the case of NRR, the two R's can be linked together directly or through a bridge oxygen into a morpholino ring, pyrrolidino ring or piperidino ring;

n is 0 or 1; and

Y^1 and Y^2 are independently either H; nitro, halogen; hydrocarbyl (1–14C) including cyclic and unsaturated hydrocarbyl, optionally substituted with 1 or 2 substituents selected from the group consisting of halogen, hydroxy, epoxy, alkoxy (1–4C), alkylthio (1–4C), primary amino (NH_2), lower alkyl (1–4C) secondary amino, dialkyl (1–4C) tertiary amino, dialkyl (1–4C) tertiary amino where the two alkyls are linked together to produce a morpholino, pyrrolidino or piperidino, acyloxy (1–4C), acylamido (1–4C) and thio analogs thereof, acetylaminoalkyl (1–4C), carboxy, alkoxycarbonyl (1–4C), carbamyl, alkylcarbamyl (1–4C), alkylsulfonyl (1–4C) or alkylphosphonyl (1–4C), wherein the hydrocarbyl can optionally be interrupted by a single ether (-O-) linkage; or wherein Y^1 and Y^2 are independent either morpholino, pyrrolidino, piperidino, NH_2, NHR', NR'R' O(CO)R', NH(CO)R', O(SO)R', or O(POR')R' in which R' is a hydrocarbyl (1–4C) which may be substituted with OH, NH_2, alkyl (1–4C) secondary amino, dialkyl (1–4C) tertiary amino, morpholino, pyrrolidino, piperidino, alkoxy (1–4C), or halogen substituents;

(b) subjecting said tumor cells to distinct radiation doses; and

(c) repeating steps (a) and (b) such that the mammal receives a plurality of doses of said pharmaceutical composition and radiation over an extended period of time, wherein each of said radiation doses is 1 to 5 Gy.

5,624,926

PIPERIDINYL-DIOXOQUINAZOLINES AS ADENOSINE REUPTAKE INHIBITORS

Shigeki Fujiwara; Daisuke Machii; Haruki Takai; Hiromi Nonaka, all of Shizuoka; Hiroshi Kase, Koganei; Kozo Yao, Shizuoka; Michiyo Kawakage, Inazawa, all of Japan; Hideaki Kusaka, Pittsburgh, Pa., and Akira Karasawa, Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00229, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/19342, PCT Pub. Date Sep. 1, 1994

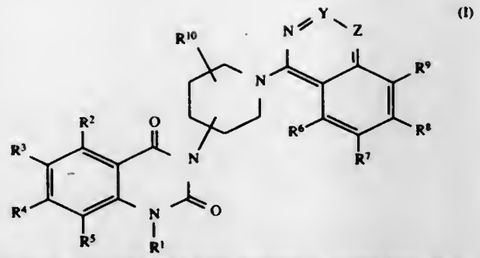
PCT Filed Feb. 16, 1994, Ser. No. 318,876

Claims priority, application Japan, Feb. 18, 1993, 5-028830

Int. Cl.[6] C07D *401/14;* **A61K** *31/505;31/50*

U.S. Cl. 514—248 **8 Claims**

1. A method of preventing or treating inflammatory edema, which comprises administering an effective amount of a 1,2,3,4-tetrahydro-2,4-dioxoquinazoline derivative represented by formula (I):



(I)

wherein R^1 represents hydrogen, substituted or unsubstituted lower alkyl, alkenyl or substituted or unsubstituted aralkyl; R^2, R^3, R^4 and R^5 independently represent hydrogen, halogen, amino, mono- or di (lower alkyl)amino, lower alkanoylamino, nitro, cyano, substituted or unsubstituted lower alkyl, hydroxy, lower alkoxy, lower alkylthio, carboxy, lower alkoxycarbonyl, lower alkanoyl, aralkyloxy, or lower alkanoyloxy; R^6, R^7, R^8 and R^9 independently represent hydrogen, hydroxy, substituted or unsubstituted lower alkoxy, or aralkyloxy; R^{10} represents hydrogen or lower alkyl; and Z is N and Y is C—R^{11} (wherein R^{11} represents hydrogen, substituted or unsubstituted lower alkyl or halogen), or a pharmaceutically acceptable salt thereof.

5,624,927

N-[4-(HETEROARYL)-1-PIPERAZINYL)ALKYL]-1,2,3,4-TETRAHYDROISOQUINOLINES AND N-[4(HETEROARYL)-1-PIPERAZINYL)ALKYL]-1,2,3,4-TETRAHYDROISOQUINOLINES, RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

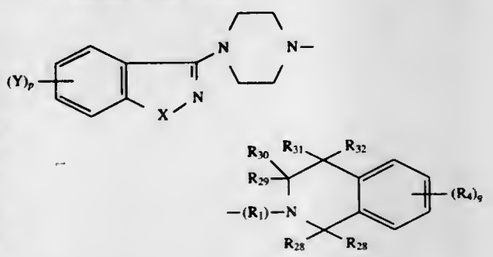
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,773

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/00;403/00;417/00;419/00;221/04;275/04;239/02*

U.S. Cl. 514—254 **20 Claims**

1. A compound of the formula:



wherein

X is —O—, —S—, —NH—, or —N(R_2);

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10})cycloalkyl, aroyl, (C_2–C_{18})alkanoyl, (C_1–C_{18}) and alkoxycarbonyl phenylsulfonyl groups;

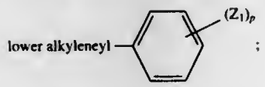
aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

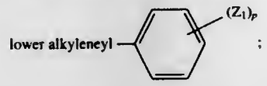
R_1 is —$CR_{24}R_{27}$—($CR_{23}R_{27}$)$_n$— where n is 0, 1, 2 or 3; or —CHR_{24}CH=CH—CHR_{24}—, —CHR_{24}—C≡C—CHR_{24}—, —CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—, —CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—, CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or —CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—, the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy (C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyoxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy (C_1–C_6)alkyl or



where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(=O)-(C_1–C_{18})straight or branched chain)-alkyl or —C(=O)-aryl;

R_{28} is hydrogen, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl or substituted phenyl;

R_{29} and R_{30} are hydrogen, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl or substituted phenyl;

R_{31} and R_{32} are hydrogen, hydroxy, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl, substituted phenyl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is (C_1–C_{18})alkanoyl; or

either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached from a C=O or C=S group;

in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

q is 1, 2, 3, or 4; and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof; or a pharmaceutically acceptable acid addition salt thereof.

174–422 O.G.–97–14: QL3

5,624,928

METHOD OF SYNTHESIZING AN ENDONUCLEASE INHIBITOR AND ANALOGS THEREOF

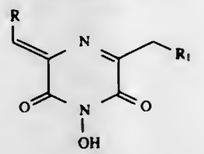
Sheo B. Singh, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 18, 1994, Ser. No. 324,557

Int. Cl.[6] A61K *31/495;* **C07D** *241/18*

U.S. Cl. 514—255 **6 Claims**

1. A compound of the formula (II)



(II)

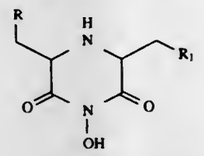
wherein:

R is C_1–C_6 alkyl, phenyl, naphthyl, substituted phenyl, wherein the substituents are selected from halogen, C_1–C_6 alkoxy or aryloxy; the term "aryl" in aryloxy meaning phenyl, naphthyl, substituted phenyl,

R_1 is C_1–C_6 alkyl, phenyl, naphthyl, substituted phenyl, wherein the substituents are selected from halogen, C_1–C_6 alkoxy or aryloxy; the term "aryl" in aryloxy meaning phenyl, naphthyl, substituted phenyl.

or a pharmaceutically acceptable salt thereof.

3. A compound of the formula (III)



(III)

wherein:

R is C_1–C_6 alkyl, phenyl, naphthyl, substituted phenyl, wherein the substituents are selected from halogen, C_1–C_6 alkoxy or aryloxy; the term "aryl" in aryloxy meaning phenyl, naphthyl, substituted phenyl,

R_1 is C_1–C_6 alkyl, phenyl, naphthyl, substituted phenyl, wherein the substituents are selected from halogen, C_1–C_6 alkoxy or aryloxy; the term "aryl" in aryloxy meaning phenyl, naphthyl, substituted phenyl,

or a pharmaceutically acceptable salt thereof.

5,624,929

PYRROLOQUINOLINE AND PYRROLOPHENOTHIAZINE CARBOXAMIDES AND RELATED COMPOUNDS

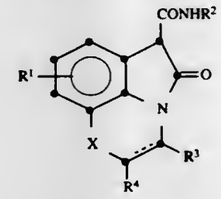
Banavara L. Mylari, Waterford; Joseph G. Lombardino, Niantic, and James M. McManus, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 357,615, Dec. 14, 1994, abandoned, which is a division of Ser. No. 438,469, Nov. 13, 1989, Pat. No. 5,403,839. This application May 22, 1995, Ser. No. 445,629

Int. Cl.[6] A61K *31/435;* **C07D** *401/12*

U.S. Cl. 514—256 **10 Claims**

1. A compound of the formula



1

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wherein the broken line represents an optional double bond; X is CH_2; R^1 is selected from the group consisting of hydrogen, halogen, C_1–C_6 alkoxy, C_1–C_6 alkanoyl, C_1–C_6 alkyl, and trifluoromethyl; R^2 is selected from the group consisting of phenyl, substituted phenyl, heterocyclic selected from the group consisting of pyridyl, thiazolyl, oxazolyl, isoxazolyl, pyrazolyl, isothiazolyl, pyrimidinyl, thiadizolyl, and benzothiazolyl, and substituted heterocyclic groups, said substituted phenyl and substituted heterocyclic groups being substituted with 1 or 2 substituents independently selected from the group consisting of C_1–C_6 alkyl, trifluoromethyl, and halogen; R^3 and R^4 are independently selected from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, and trifluoromethyl, or R^3 and R^4 taken together with the carbon atoms to which they are attached form a six-membered carbocyclic aromatic ring, said aromatic ring being optionally substituted with one or two substituents selected from the group consisting of halogen, C_1–C_6 alkyl, and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

5,624,930

CARBOCYCLIC NUCLEOSIDE ANALOGS USEFUL AS IMMUNOSUPPRESSANTS

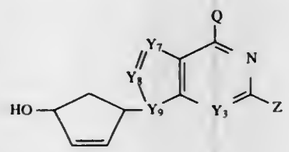
David R. Borcherding, Overland Park; Carl K. Edwards, III, Olathe, both of Kans.; Ronald E. Esser, Kansas City, Mo., and Douglas L. Cole, Carlsbad, Calif., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 336,706, Nov. 8, 1994, Pat. No. 5,470,857, which is a continuation of Ser. No. 212,338, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 123,557, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 824,413, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,173, Aug. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 582,265, Sep. 14, 1990, abandoned. This application Mar. 22, 1995, Ser. No. 408,366

Int. Cl.[6] A61K *31/435;31/52*

U.S. Cl. 514—258 **18 Claims**

1. A method of effecting immunosuppression in a patient with rheumatoid arthritis comprising administering to said patient an effective immunosuppressive amount of a compound of the formula



wherein

the hydroxy substituent on the cyclopentenyl ring is in the CIS configuration relative to the bicyclic substituent,

Y_3, Y_7, Y_8 and Y_9 are each independently nitrogen or a CH group,

Q is NH_2, halogen or hydrogen, and

Z is hydrogen, halogen, or NH_2;

or a pharmaceutically-acceptable salt thereof.

5,624,931

PYRAZOLE DERIVATIVES

Teruo Oku, Tsukuba; Yoshio Kawai, Ushiku; Hiroshi Marusawa, Yokohama; Hitoshi Yamazaki, and Yoshito Abe, both of Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

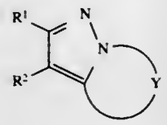
Division of Ser. No. 269,520, Jul. 1, 1994, Pat. No. 5,478,827, which is a division of Ser. No. 931,093, Aug. 17, 1992, Pat. No. 5,356,897. This application Jun. 6, 1995, Ser. No. 471,175

Claims priority, application United Kingdom, Sep. 9, 1991, 9119267; Mar. 2, 1992, 9204464

Int. Cl.[6] A61K *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **6 Claims**

1. A compound of the formula:

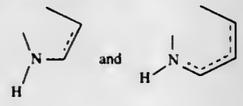


wherein

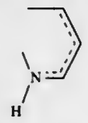
R^1 is aryl, optionally substituted, or 5 to 6-membered heteromonocyclic group, optionally substituted,

R^2 is aryl, optionally substituted, or 5 to 6-membered heteromonocyclic group, optionally substituted, and

Y is a bivalent radical selected from



in which ---- means single bond or double bond, optionally substituted, with the proviso that when Y is a bivalent radical



in which ----- means single bond or double bond, optionally substituted, then R^2 is aryl, optionally substituted, and pharmaceutically acceptable salts thereof.

5,624,932

METHOD FOR IDENTIFICATION OF LOW/NON-ADDICTIVE OPIOID ANALGESICS AND THE USE OF SAID ANALGESICS FOR TREATMENT OF OPIOID ADDICTION

Bo-yi Qin, Beijing, China; Ke-fei Shen, Flushing, N.Y.; Xiong-qi Gong, Beijing, China; Stanley M. Crain, Leonia, N.J.; Mao Huang, Beijing, China, and Chang Yi Wang, Cold Spring Harbor, N.Y., assignors to United Biomedical, Inc., Hauppauge, N.Y.

Division of Ser. No. 387,679, Feb. 13, 1995, which is a continuation of Ser. No. 88,503, Jul. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 977,332, Nov. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 947,690, Sep. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 482,713

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—282 **8 Claims**

1. A method of treating opioid addiction consisting of administering sublingually, intramuscularly or intravenously an effective amount of a non-addictive opioid analgesic selected from the group consisting of etorphine and dihydroetorphine, to a patient for a first period of time sufficient for immediate relief or suppression of withdrawal symptoms due to said opioid addiction; and subsequently administering decreasing amounts of said non-addictive opioid analgesic for a second period of time sufficient to wean said patient from said analgesic.

5,624,933

PROCESS FOR THE PREPARATION OF A 6-FLUORO-2-HALO-QUINOLINE

Herve Garcia, Communay; Roland Jacquot, Sainte Foy les Lyon, and Patrick Leon, Tassin la Demi Lune, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/US94/11832, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/24113, PCT Pub. Date Oct. 27, 1994

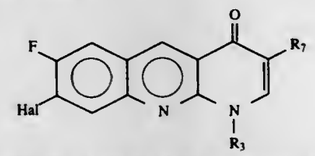
PCT Filed Oct. 20, 1994, Ser. No. 448,404

Claims priority, application France, Apr. 8, 1993, 93 04163

Int. Cl.[6] H01N *43/42;* **C07D** *215/20;413/00*

U.S. Cl. 514—292 **8 Claims**

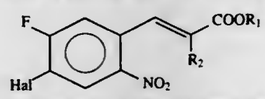
6. A method for the preparation of a benzonaphthyridine derivative of formula (XI):



(XI)

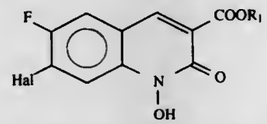
in which Hal is a halogen atom, R_3 represents a hydrogen atom or an alkyl, fluoroalkyl, carboxyalkyl, cycloalkyl containing 3 to 6 carbon atoms, fluorophenyl, difluorophenyl, alkyloxy or alkylamino radical and R_7 is an alkyloxycarbonyl, cyano, carbamoyl, alkylcarbamoyl, benzylcarbamoyl, hydroxyethylcarbamoyl, dialkylaminoethylcarbamoyl or dialkylcarbamoyl radical in which the alkyl parts may optionally form, with the nitrogen atom to which they are attached, a 5-or 6-membered heterocycle optionally containing another betero atom selected from oxygen, sulphur, and nitrogen and optionally substituted on the nitrogen with an alkyl radical, the alkyl radical being straight or branched and containing 1 to 4 carbon atoms comprising the steps of:

cyclizing a nitro derivative of formula (III)



(III)

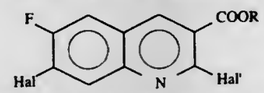
in which Hal is as defined above, R_1 is an alkyl radical, and R_2 is an alkyl radical, a carbamoyl radical, or a cyano radical, by catalytic hydrogenation in acidic medium to form a 1-hydroxyquinoline of the formula (II):.



(II)

in which Hal is a halogen atom and R_1 is an alkyl radical,

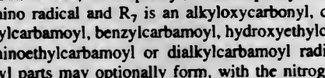
converting said 1-hydroxyquinoline under conditions sufficient to form a 6-fluoro- 2-haloquinoline of the formula (I)



(I)

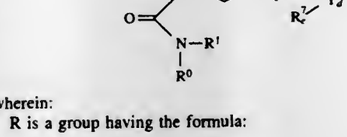
in which R is a hydrogen atom, Hal and Hal' are identical or different halogen atoms; and

converting said 6-fluoro-2-haloquinoline of the formula (I) with an amine of the formula (VIII)



(VIII)

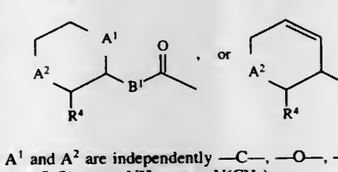
in which R_3 and R_7 are defined as above under conditions sufficient to obtain a fluoroester of formula (IX):



(IX)

in which Hal, R_3, and R_7 are as defined above and R is an alkyl group;

cyclizing said fluoroester of formula (IX) under conditions sufficient to prepare a 1,2,3,4,-tetrahydro-1,8-benzo[b]naphthyridine of formula (X)



(X)

in which Hal, R_3 and R_7 are as defined above; and

converting said 1,2,3,4,-tetrahydro-1,8-benzonaphthyridine of formula (X) under conditions sufficient to form said benzo[b]naphthyridine derivative of formula (XI).

5,624,934

PROTEASE INHIBITORS

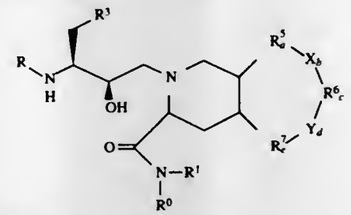
William J. Hornback; John E. Munroe, and Timothy A. Shepherd, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 299,186, Aug. 31, 1994, Pat. No. 5,480,887, which is a continuation-in-part of Ser. No. 190,810, Feb. 2, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,875

Int. Cl.[6] A61K *31/435;* **C07D** *495/04*

U.S. Cl. 514—301 **36 Claims**

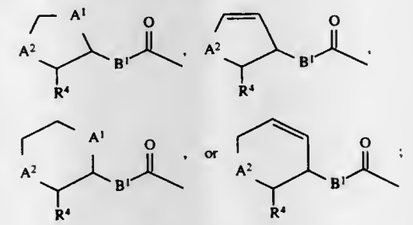
1. A compound of formula (I)



(I)

wherein:

R is a group having the formula:



A^1 and A^2 are independently —C—, —O—, —S—, —S(O)—, —$S(O)_2$—, —NH— or —$N(CH_3)$—;

B^1 is —O—, —S—, —CH_2—, —CH_2—CH_2—, —NH—, or —$N(CH_3)$—;

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R^4 is C_1–C_6 alkyl;
R^3 is $—(CH_2)_i—R^{3a}$;
i is 0, 1, 2, 3, or 4;
R^{3a} is aryl, —O-aryl, or —S-aryl;
R^0 and R^1 are independently hydrogen, C_1–C_6 alkyl, or hydroxy(C_1–C_6)alkyl;
a, c and e are each independently 0, 1 or 2;
b and d are each independently 0 or 1;
each R^5 is independently $—CH_2—$, $—CHR^{5x}—$, or $—CR^{5x}R^{5x}—$;
each R^6 is independently $—CH_2—$, $—CHR^{6x}—$, or $—CR^{6x}R^{6x}—$;
each R^7 is independently $—CH_2—$, $—CHR^{7x}—$, or $—CR^{7x}R^{7x}—$;
each of R^{5x}, R^{6x}, and R^{7x} is independently selected from the group consisting of halo, hydroxy, C_1–C_6 alkyl, halo(C_1–C_6)alkyl, hydroxy(C_1–C_6)alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylthio(C_1–C_6)alkyl, amino, or cyano;
X and Y are independently —S—, —S(O)—, $—S(O)_2—$, —O—, —NH—, or $—N(R^9)—$; and
R^9 is C_1–C_6 alkyl, aryl(C_1–C_6)alkyl, aryl, arylcarbonyl, formyl, or C_2–C_6 alkanoyl;
with the provisos that:
b and d cannot both be 0;
the sum of a, b, c, d and e must be 2, 3, 4 or 5;
if R^5 is $—CR^{5x}R^{5x}—$, then R^6 must be $—CH_2—$ or $—CHR^{6x}—$; and R^7 must be $—CH_2—$ or $—CHR^{7x}—$;
if R^6 is $—CR^{6x}R^{6x}—$, then R^5 must be $—CH_2—$ or $—CHR^{5x}—$; and R^7 must be $—CH_2—$ or $—CHR^{7x}—$;
if R^7 is $—CR^{7x}R^{7x}—$, then R^5 must be $—CH_2—$ or $—CHR^{5x}—$; and R^6 must be $—CH_2—$ or $—CHR^{6x}—$;
or a pharmaceutically acceptable salt thereof.

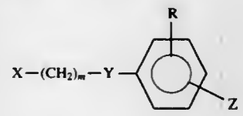
5,624,935

HETEROCYCLIC COMPOUNDS HAVING ANTI-DIABETIC ACTIVITY AND THEIR USE

Takashi Fujita; Takao Yoshioka; Toshihiko Fujiwara; Minoru Oguchi; Hiroaki Yanagisawa; Hiroyoshi Horikoshi; Kunio Wada, and Koichi Fujimoto, all of Tokyo, Japan, assignors to Sankyo Company, Limited

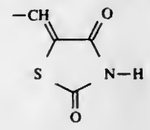
Filed Apr. 11, 1995, Ser. No. 419,919
Claims priority, application Japan, Apr. 11, 1994, 6-072083
Int. Cl.[6] A61K *31/435;* **C07D** *471/04*
U.S. Cl. 514—303 **39 Claims**

1. A compound of formula (I):



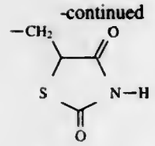
(I)

wherein:
X represents an azaindolyl, azaindolinyl, imidazopyridyl or imidazopyrimidinyl group which is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents a, defined below;
Y represents an oxygen atom or a sulfur atom;
Z represents a group of formula (i), (ii), or (iii):

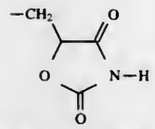


(i)

-continued



(ii)



(iii)

R represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom, a hydroxy group, a nitro group, an aralkyl group in which an alkyl group having from 1 to 5 carbon atoms is substituted by an aryl group having from 6 to 10 ring carbon atoms, or a group of formula $—NR^aR^b$,
wherein R^a and R^b are the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, an aralkyl group in which an alkyl group having from 1 to 5 carbon atoms is substituted by an aryl group having from 6 to 10 ring carbon atoms, an aryl group having from 6 to 10 ring carbon atoms, an aliphatic carboxylic acyl group having from 1 to 11 carbon atoms, an aliphatic carboxylic acyl group which has from 2 to 6 carbon atoms and which is substituted by an aryl group having from 6 to 10 ring carbon atoms, or an aromatic carboxylic acyl group in which the aryl part has from 6 to 10 ring carbon atoms,
m is an integer of from 1 to 5;
each of said substituents α represents an alkyl group having from 1 to 4 carbon atoms, an aryl group having from 6 to 10 carbon atoms, a trifluoromethyl group, an alkylthio group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a benzyloxy group, a halogen atom, a hydroxy group, an acetoxy group, a phenylthio group, a nitro group, an aralkyl group, or a group of formula $—NR^aR^b$, wherein R^a and R^b are as defined above;
said aryl groups and the aryl parts of said aralkyl groups included in substituents are carbocyclic aromatic groups having from 6 to 10 ring carbon atoms and are unsubstituted or are substituted at least one substituent selected from the group consisting of substituents β, defined below;
each of said substituents represents an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom, a hydroxy group, a nitro group, a phenyl group, a trifluoromethyl group, or a group of formula $—NR^aR^b$, wherein R^a and R^b are as defined above;
and salts thereof.

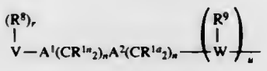
5,624,936

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

S. Jane deSolms, Norristown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

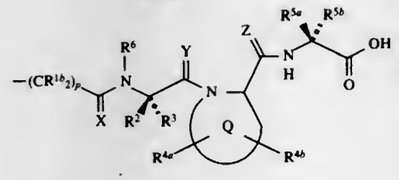
Continuation-in-part of Ser. No. 412,626, Mar. 29, 1995, abandoned. This application Feb. 13, 1996, Ser. No. 600,792
Int. Cl.[6] C07D *401/06;* **A61K** *31/47*
U.S. Cl. 514—307 **25 Claims**

1. A compound which inhibits Ras farnesyl-transferase having the Formula I:

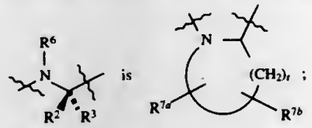


(I)

-continued



wherein:
R^{1a} and R^{1b} are independently selected from:
a) hydrogen,
b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, NO_2, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)—NR^{10}—$,
c) C_1–C_6 alkyl unsubstituted or substituted by aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)—NR^{10}—$;
R^2 and R^3 are independently selected from:
a) a side chain of a naturally occurring amino acid,
b) an oxidized form of a side chain of a naturally occurring amino acid which is:
i) methionine sulfoxide, or
ii) methionine sulfone, and
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group,
wherein the substituent is selected from F, Cl, Br, $N(R^{10})_2$, NO_2, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, $R^{11}OC(O)NR^{10}—$ and C_1–C_{20} alkyl, and
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocycle and C_3–C_{10} cycloalkyl; or
R^2 and R^3 are combined to form $—(CH_2)_s—$; or
R^2 or R^3 are combined with R^6 to form a ring such that



R^{4a}, R^{4b}, R^{7a} and R^{7b} are independently selected from:
a) hydrogen,
b) C_1–C_6 alkyl unsubstituted or substituted by alkenyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, N_3, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,
c)caryl, heterocycle, cycloalkyl, alkenyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, NO_2, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$, and
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocyclic and C_3–C_{10} cycloalkyl;
R^{5a} and R^{5b} are independently selected from:
a) a side chain of a naturally occurring amino acid,
b) an oxidized form of a side chain of a naturally occurring amino acid which is:
i) methionine sulfoxide, or
ii) methionine sulfone,
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocycle group,
wherein the substituent is selected from F, Cl, Br, $(R^{10})_2NC(O)—$, NO_2, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, $R^{11}OC(O)NR^{10}—$ and C_1–C_{20} alkyl,
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocycle and C_3–C_{10} cycloalkyl; or
R^{5a} and R^{5b} are combined to form $—(CH_2)_s—$ wherein one of the carbon atoms is optionally replaced by a moiety selected from: O, $S(O)_m$, —NC(O)—, and $—N(COR^{10})—$;
R^6 is independently selected from hydrogen or C_1–C_6 alkyl;
R^8 is independently selected from:
a) hydrogen,
b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, NO_2, $R^{10}{}_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$, and
c) C_1–C_6 alkyl unsubstituted or substituted by aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NH—$, CN, $H_2N—C(NH)—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{10}OC(O)NH—$;
R^9 is selected from:
a) hydrogen,
b) alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, NO_2, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$, and
c) C_1–C_6 alkyl unsubstituted or substituted by perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, CN, $(R^{10})_2N—C(NR^{10})—$, $R^{10}C(O)—$, $R^{10}OC(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$;
R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, benzyl and aryl;
R^{11} is independently selected from C_1–C_6 alkyl and aryl;
A^1 and A^2 are independently selected from: a bond, $—CH=CH—$, $—C\equiv C—$, —C(O)—, —C(O)$NR^{10}—$, $—NR^{10}C(O)—$, O, $—N(R^{10})—$, $—S(O)_2N(R^{10})—$, $—N(R^{10})S(O)_2—$, or $S(O)_m$;
Q is a substituted or unsubstituted nitrogen-containing C_6–C_9 bicyclic ring system, wherein the non-nitrogen containing ring is selected from an aromatic ring and a heterocycle;
V is selected from:
a) hydrogen,
b) heterocycle,
c) aryl,
d) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a a heteroatom selected from O, S, and N, and
e) C_2–C_{20} alkenyl,
provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;
W is a heterocycle;
X, Y and Z are independently H_2 or O;
m is 0, 1 or 2;
n is 0, 1, 2, 3 or 4;
p is 0, 1, 2, 3 or 4;
r is 0 to 5, provided that r is 0 when V is hydrogen;
s is 4 or 5;
t is 3, 4 or 5; and
u is 0 or 1;
or a pharmaceutically acceptable salt thereof.

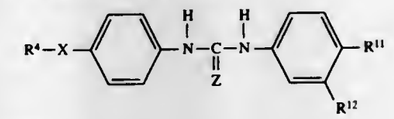
5,624,937

CHEMICAL COMPOUNDS AS INHIBITORS OF AMYLOID BETA PROTEIN PRODUCTION

Jon K. Reel, Carmel; Richard L. Simon, and Celia A. Whitesitt, both of Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 2, 1995, Ser. No. 397,466
Int. Cl.[6] A61K *31/47;31/44;* **C07D** *215/227;215/36*
U.S. Cl. 514—312 **12 Claims**

1. A compound of the formula



I

in which
Z is O or S;

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R^{11} is a halogen atom;
R^{12} is a halogen atom or a trifluoromethyl group;
X is S, SO, SO_2, O or NH; and
R^4 is naphthyl, quinolinyl, benzimidazolyl, pyridyl, pyridazinyl, benzoxazolyl or benzothiazolyl, unsubstituted or substituted by one or two substituents selected from a halogen atom, (1–4C)alkyl, (1–4C)alkoxy, nitro, (1–4C)alkoxycarbonyl, halo(1–4C)alkyl, and phenyl;
with the proviso that when R^4 is pyridyl or pyridazinyl X must be S, SO, SO_2 or NH;
or a pharmaceutically acceptable salt thereof.

5,624,938

USE OF CHLOROQUINE TO TREAT MULTIPLE SCLEROSIS

Benvenuto G. Pernis, Bronxville, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 18, 1994, Ser. No. 276,259
Int. Cl.[6] A01N *43/42*; A61K *31/47*
U.S. Cl. 514—313 **28 Claims**

1. A pharmaceutical composition which comprises an amount of chloroquine effective to block MHC Class I recycling and an amount of a CD8+ T cell stimulatory agent effective to stimulate proliferation of CD8+ T cells to a concentration such that the resulting CD8+ T cells kill CD4+ T cells, and a pharmaceutically acceptable carrier.

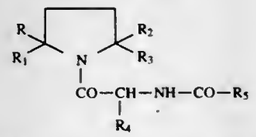
5,624,939

N-ACYL PYRROLIDINES AND DRUGS FOR THE TREATMENT OR PREVENTION OF CHOLECYSTOKININ AND GASTRIN-RELATED DISORDERS

Marc Capet, Thiais, and Marie-Christine Dubroeucq, Enghein les Bains, both of France, assignors to Rhone-Poulenc Rorer, S.A., Antony, France

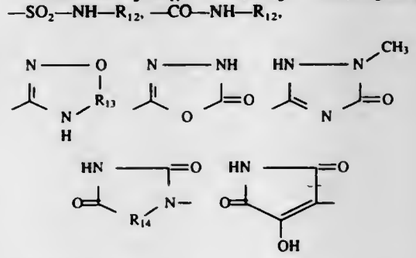
PCT No. PCT/FR94/00008, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO94/15914, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 3, 1994, Ser. No. 448,406
Claims priority, application France, Jan. 7, 1993, 93 00077
Int. Cl.[6] A61K *31/40*; C07D *207/16*
U.S. Cl. 514—314 **14 Claims**

1. A compound of formula (I):



(I)

in which:
R represents a hydrogen atom or an alkyl, cycloalkyl or phenylalkyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl or alkoxy radical,
R_1 represents an alkyl radical containing 1 to 12 carbon atoms in a straight or branched chain and optionally mono- or polyunsaturated, a cycloalkyl radical containing 3 to 12 carbon atoms and optionally mono- or polyunsaturated, a polycycloalkyl radical containing 6 to 12 carbon atoms and optionally mono- or polyunsaturated, a phenylalkyl radical in which the phenyl ring is optionally substituted by at least one substituent, said substituent being an alkyl radical, an alkoxy radical, a halogen atom, a diphenylalkyl radical, a cinnamyl radical, a pyridyl radical optionally substituted by one or more alkyl radicals, a furyl radical optionally substituted by one or more alkyl radicals, a thienyl radical optionally substituted by one or more alkyl radicals, a quinolyl radical optionally substituted by one or more alkyl radicals, a naphthyl radical optionally substituted by one or more alkyl radicals, an indolyl radical optionally substituted by one or more alkyl radicals or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy, hydroxyl, nitro, amino, monoalkylamino, dialkylamino, alkoxycarbonyl, —CO—NR_7R_8, —NH—CO—CH_3, trifluoromethyl or trifluoromethoxy radical,
R_2 represents a —$(CH_2)_n$—CO—R_6, —$(CH_2)_m$—O—CO—R^*_6 or —$(CH_2)_m$—NR_9R_{10} chain, an oxazolinyl radical optionally substituted by one or more alkyl radicals, or a 3-alkyloxadiazolyl radical,
R_3 represents a hydrogen atom or an alkyl or cycloalkyl radical or a phenylalkyl radical optionally substituted with at least one substituent, said substituent being a halogen atom or an alkyl or alkoxy radical,
R_4 represents a hydrogen atom or an alkyl radical,
R_5 represents a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom, or an alkyl, alkoxy or alkylthio radical, a naphthyl radical, an indolyl radical, a quinolyl radical or a phenylamino radical in which the phenyl ring is optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy, alkylthio, trifluoromethyl, carboxyl, alkoxycarbonyl, hydroxyl, nitro, amino, acyl, cyano, sulphamoyl, carbamoyl, hydroxyiminoalkyl, alkoxyiminoalkyl, hydroxyaminocarbonyl, alkoxyaminocarbonyl, 5-tetrazolyl, 5-tetrazolylalkyl, trifluoromethylsulphonamido, alkylsulphinyl, mono- or polyhydroxyalkyl, sulpho, —alk—O—CO—alk, —alk—COOX, —alk—O—alk, —alk'-COOX, —O—alk—COOX, —CH=CH—COOX, —CO—COOX, —alk—SO_3H in salt form, —CH=CH—alk', —C(=NOH)-COOX, —S—alk—COOX, —SO—alk—COOX, —SO_2—alk—COOX, —O—CH_2—alk'-COOX, —CX=N-O—alk—COOX, —alk—N(OH)—CO—alk, —alk—SO_2H, —SO_2—NH—CO—R_{11}, —SO_2—NH—SO_2—R_{11}, —CO—NH—CO—R_{11}, —CO—NH—SO_2—R_{11}, —$B(OH)_2$, —$C(NH_2)$=NOH, —SO_2—NH—R_{12}, —CO—NH—R_{12},



or 2,2-dimethyl-4,6-dioxo-1,3-dioxan-5-yl radical,
R_6 represents a hydroxyl, alkoxy, cycloalkyloxy, cycloalkylalkyloxy, phenyl or —NR_9R_{10} radical,
R^*_6 represents an alkoxy, cycloalkyloxy, cycloalkylalkyloxy, phenyl or —NR_9R_{10} radical,
R_7 represents a hydrogen atom or an alkyl radical, a phenylalkyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy or alkylthio radical,
R_8 represents an alkyl radical, a phenylalkyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy or alkylthio radical,
or else R_7 and R_8 form, with the nitrogen atom to which they are attached, a saturated or unsaturated, mono- or polycyclic heterocycle containing 4 to 9 carbon atoms and at least one hetero atom, said hetero atom being O or N and optionally substituted by one or more alkyl radicals,
R_9 represents a hydrogen atom or an alkyl radical, a cycloalkylalkyl radical, a cycloalkyl radical, a phenylalkyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy or alkylthio radical,

R_{10} represents an alkyl radical, a cycloalkylalkyl radical, a cycloalkyl radical, a phenylalkyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy or alkylthio radical,
or R_9 and R_{10} form, together with the nitrogen atom to which they are attached, a saturated or unsaturated, mono- or polycyclic heterocycle containing 4 to 9 carbon atoms and at least one hetero atom, said hetero atom being O, N, or S and optionally substituted by one or more alkyl radicals,
R_{11} represents an alkyl radical, a cycloalkyl radical, a trifluoromethyl radical or a phenyl radical optionally substituted by at least one substituent, said substituent being a cyano, alkoxy, nitro or amino radical or a halogen atom,
R_{12} represents a 5-tetrazolyl radical,
R_{13} represents C=O or S=O,
R_{14} represents O or C=O,
n is equal to 0, 1 or 2,
m is equal to 1 or 2,
X represents a hydrogen atom or an alkyl or phenylalkyl radical,
alk represents an alkyl or alkylene radical,
alk' represents a hydroxyalkyl, hydroxyalkylene, alkoxyalkyl or alkoxyalkylene radical,
wherein n is other than 0 when R and R_3 each represent a hydrogen atom and R_1 represents a pyridyl radical optionally substituted by one or more alkyl radicals, a furyl radical optionally substituted by one or more alkyl radicals, a thienyl radical optionally substituted by one or more alkyl radicals, a quinolyl radical optionally substituted by one or more alkyl radicals, a naphthyl radical optionally substituted by one or more alkyl radicals, an indolyl radical optionally substituted by one or more alkyl radicals or a phenyl radical optionally substituted by at least one substituent, said substituent being a halogen atom or an alkyl, alkoxy, hydroxyl, nitro, amino, monoalkylamino, dialkylamino, alkoxycarbonyl, —CO—NR_7R_8, —NH—CO—CH_3, trifluoromethyl or trifluoromethoxy radical, and wherein, except when otherwise mentioned, said alkyl, alkylene and alkoxy radicals and said alkyl, alkylene and alkoxy portions of radicals contain 1 to 4 carbon atoms in a straight or branched chain, said acyl radicals and portions of radicals contain 2 to 4 carbon atoms and said cycloalkyl radicals and portions of radicals contain 3 to 6 carbon atoms; a salt thereof or an isomer thereof when said salt or said isomer contains at least one asymmetric center.

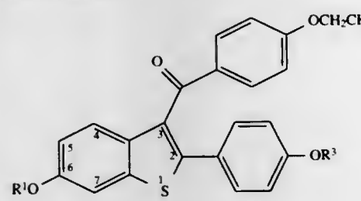
5,624,940

AQUEOUS SOLUTION INCLUSION COMPLEXES OF BENZOTHIOPHENE COMPOUNDS WITH WATER SOLUBLE CYCLODEXTRINS, AND PHARMACEUTICAL FORMULATIONS AND METHODS THEREOF

Henry U. Bryant, Indianapolis; George J. Cullinan, Trafalgar; Paul C. Francis; David E. Magee, both of Indianapolis; Stephanie A. Sweetana, Bloomington, and Arvind L. Thakkar, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 166,788, Dec. 14, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 497,327
Int. Cl.[6] A61K *31/40*; *31/445*; *47/40*
U.S. Cl. 514—324 **16 Claims**

1. An aqueous solution inclusion complex comprising a compound of formula I



I

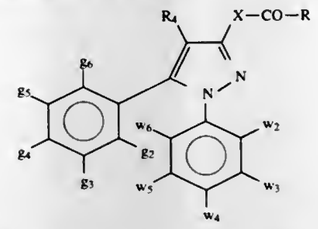
5,624,941

PYRAZOLE DERIVATIVES, METHOD OF PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Francis Barth; Pierre Casellas, both of Montpellier; Christian Cougy, Saint Gely du Fesc; Serge Martinez, Montpellier; Murielle Rinaldi, Saint Georges d'Orques, and Gilles Anne-Archard, Toulouse, all of France, assignors to Sanofi, Paris, France

Continuation-in-part of Ser. No. 168,237, Dec. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 79,870, Jun. 23, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 348,881
Claims priority, application France, Jun. 23, 1992, 92 07645; Dec. 2, 1993, 93 14444; Jul. 20, 1994, 94 08974
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—326 **30 Claims**

1. A compound of the formula



(I)

in which
g_2, g_3, g_4, g_5 and g_6 and w_2, w_3, w_4, w_5 and w_6 are identical or different and are independently hydrogen, a chlorine or bromine atom, a (C_1–C_3)-alkyl, a (C_1–C_3)-alkoxy, a trifluoromethyl or a nitro group and g_4 is optionally a phenyl group;
R_4 is hydrogen or a (C_1–C_3)-alkyl;
X is either a direct bond or a group —$(CH_2)_x$—$N(R_3)$—, in which R_3 is hydrogen or a (C_1–C_3)-alkyl and x is zero or one; and,
R is
a group —NR_1R_2 in which R_1 and R_2 are independently a (C_1–C_6)-alkyl; an optionally-substituted non-aromatic (C_3–C_{15}) carbocyclic radical; an amino (C_1–C_4) alkyl group in which the amino is optionally disubstituted by a (C_1–C_3)-alkyl; a cycloalkyl-(C_1–C_3) alkyl in which the cycloalkyl is C_3–C_{12}; a phenyl which is unsubstituted or monosubstituted or polysubstituted by a halogen, by a (C_1–C_5)-alkyl or by a (C_1–C_5)-alkoxy; a phenyl (C_1–C_3)-alkyl; a diphenyl-(C_1–C_3)-alkyl; a naphthyl; an anthracenyl; a saturated 5- to 8-membered heterocyclic radical which is unsubstituted or substituted by a (C_1–C_3)- alkyl, by a hydroxyl or by a benzyl group; a 1-adamantylmethyl; an aromatic heterocycle unsubstituted, mono- or polysubstituted by a halogen, a (C_1–C_5)-alkyl, a (C_1–C_5)-alkoxy; a (C_1–C_3)-alkyl substituted by an aromatic heterocycle unsubstituted or mono- or polysubstituted by a halogen, a (C_1–C_5) alkyl, a (C_1–C_5)-alkoxy, or else R_1 is hydrogen and R_2 is as defined above, or else R_1 and R_2, together with the nitrogen atom to which they are bonded,form a saturated 5- to 8-membered heterocyclic radical, said heterocyclic radical being other than morpholine when w_2, w_3, w_4, w_5 and w_6 and g_2, g_3, g_4, g_5 and g_6 are all hydrogen;
a group R_2 as defined above when X is —$(CH_2)_x$N(R_3)—; or

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a group R_5 when X is a direct bond, R_5 being a (C_1–C_3)-alkyl; a (C_3–C_{12})-cycloalkyl which is unsubstituted or substituted by a (C_1–C_5)-alkyl; a phenyl-(C_1–C_3)-alkyl which is unsubstituted or substituted by a halogen or by a (C_1–C_5)-alkyl; a cycloalkyl-(C_1–C_3)-alkyl in which the cycloalkyl is C_3–C_{12} and is unsubstituted or substituted by a (C_1–C_5)-alkyl; or a 2-norbornylmethyl;

or one of its salts.

5,624,942

2-PHENOXY-6-THIENYLMETHYLOXYPYRIDINE DERIVATIVE AND HERBICIDAL COMPOSITION CONTAINING SAME

Hisashi Kanno; Youichi Kanda; Susumu Shimizu; Yoshikazu Kubota; Tsutomu Sato, and Masato Arahira, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

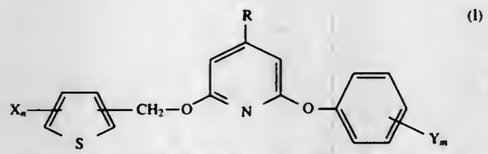
Filed Jul. 18, 1995, Ser. No. 503,903

Claims priority, application Japan, Jul. 18, 1994, 6-188730; Feb. 4, 1995, 7-039082

Int. Cl.[6] C07D *405/12;* **A61K** *31/44*

U.S. Cl. 514—336 **4 Claims**

1. A 2-phenoxy-6-thienylmethyloxypyridine derivative represented by the formula (I) :



(I)

wherein R represents hydrogen, a halogen, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 haloalkyl, C_1–C_4 alkylamino, or di (C_1–C_4) amino;

each X, which may be identical or different if n is greater than 1, represents a halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, or C_1–C_4 haloalkyl;

each Y, which may be identical or different if m is greater than 1, represents a halogen, C_1–C_4alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, or C_1–C_4 haloalkylthio;

m represents an integer of 0 to 5; and

n represents an integer of 0 to 3.

5,624,943

PYRIDINE COMPOUNDS WHICH ARE USEFUL AS LEUKOTRIENE-B_4-ANTAGONISTS

Josef Heindl; Werner Skuballa; Bernd Buchmann; Wolfgang Fröhlich; Roland Ekerdt, and Claudia Giesen, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/DE93/00593, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/02464, PCT Pub. Date Feb. 3, 1994

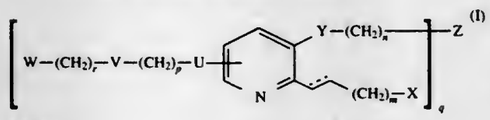
PCT Filed Jul. 1, 1993, Ser. No. 374,608

Claims priority, application Germany, Jul. 21, 1992, 42 24 402.1

Int. Cl.[6] C07D *213/65;* **A61K** *31/44*

U.S. Cl. 514—345 **20 Claims**

1. A pyridine compound of general formula I



(I)

wherein

. . . . . is a single bond or a double bond,

m, n, p and r is a number from 0 to 5,

q is 1 or 2,

U is the grouping —CH_2—CH_2—, —CH=CH—, or —C≡C—,

V is a phenyl radical or a pyridyl radical,

W is a hydrogen atom, a halogen atom, an alkyl group with up to 4 carbon atoms, a trifluoromethyl group, an alkylsulfonylamino group, a trifluoromethylsulfonylamino group, an arylsulfonylaminocarbonyl group, a free, esterified or amidated carboxyl group, or a hydroxy group,

X is a free, esterified or amidated carboxyl group,

Y is an oxygen atom or a methylene group, and if q is 2, then Z is a single bond; otherwise

Z is an alkyl group or alkylene group with at most 8 carbon atoms or a phenyl radical, phenoxy radical or styryl radical optionally substituted by alkyl groups with at most 4 carbon atoms, alkoxy groups with at most 4 carbon atoms, 1-oxoalkyl groups with at most 4 carbon atoms, halogen atoms and/or trifluoromethyl groups, and their salts with physiologically compatible bases.

5,624,944

6-HETEROCYCLIC-4-AMINO-1,3,4,5-TETRAHYDROBENZ[CD]INDOLES

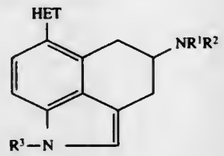
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Charles J. Paget, Jr., Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 299,175, Aug. 31, 1994, which is a division of Ser. No. 954,105, Sep. 30, 1992, Pat. No. 5,364,856, which is a continuation-in-part of Ser. No. 677,016, Mar. 28, 1991, Pat. No. 5,244,912. This application May 31, 1995, Ser. No. 456,974

Int. Cl.[6] A61K *31/475;* **C07D** *401/02*

U.S. Cl. 514—359 **9 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —$C(O)R^4$, or —$(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

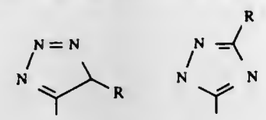
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



R where is independently hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,624,945

USE OF RILUZOLE FOR THE TREATMENT OF NEURO-AIDS

Anne Bousseau; Adam Doble, both of Paris, and Erik Louvel, Manosque, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Continuation of Ser. No. 109,559, Aug. 20, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,106

Claims priority, application France, Mar. 5, 1993, 93 02568

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—367 **10 Claims**

1. Method for the treatment of neuro-AIDs which comprises administering to a patient in recognized need of such treatment an effective amount of Riluzole or a pharmaceutically acceptable salt thereof.

5,624,946

USE OF LEFLUNOMIDE TO CONTROL AND REVERSE CHRONIC ALLOGRAFT REJECTION

James Williams, 655 Superior, Oak Park, Ill. 60302

Filed Jul. 5, 1994, Ser. No. 270,908

Int. Cl.[6] A61K *31/42;31/275;31/535*

U.S. Cl. 514—378 **11 Claims**

1. A method for controlling or reversing the development of obliterative fibrosis of allograft arteries characteristic of chronic rejection in a transplantation patient, said method comprising administering to a patient suffering from chronic rejection of an allograft a therapeutically effective amount of leflunomide product.

5,624,947

PHENYL DERIVATIVES USEFUL AS TACHYKININ ANTAGONISTS

Linda E. Keown, Cambridge, Great Britain; Tamara Ladduwahetty, London, and Monique B. Van Niel, Welwyn Garden City, both of England, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB93/02559, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/14767, PCT Pub. Date Jul. 7, 1994

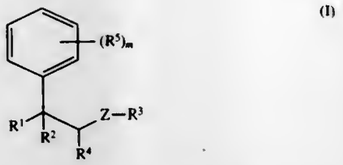
PCT Filed Dec. 15, 1993, Ser. No. 481,503

Claims priority, application United Kingdom, Dec. 21, 1992, 9226581

Int. Cl.[6] A61K *31/415;* **C07D** *233/88;233/91*

U.S. Cl. 514—392 **8 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt or prodrug thereof:



(I)

wherein

R^1 is imidazoyl nitro, NR^aR^b and NR^aCOR^b, where R^a and R^b each independently represent H, C_{1-6}alkyl or phenyl optionally substituted by C_{1-6}alkyl, halo or trifluoromethyl;

R^2 represents H, C_{1-6}alkyl or C_{2-6}alkenyl;

R^3 represents C_{1-3}alkyl substituted by a phenyl group which may itself optionally be substituted by one or more of C_{1-6}alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl and trimethylsilyl;

R^4 represents H, C_{1-6}alkyl or C_{2-6}alkenyl;

each R^5 independently represents C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

Z represents O or S; and

m represents 0, 1, 2 or 3.

5,624,948

1-(2-BENZIMIDAZOLYL)-1,5-DIAZACYCLOOCTANE COMPOUNDS

Hidetoshi Isawa; Nobuko Yanagi; Yasuo Takehana, all of Nagano; Den-ichi Momose; Masaaki Satoh, both of Matsumoto, and Yoshinori Nonaka, Nagano, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP94/00787, § 371 Date Nov. 14, 1995, § 102(e) Date Nov. 14, 1995, PCT Pub. No. WO94/27973, PCT Pub. Date Dec. 8, 1994

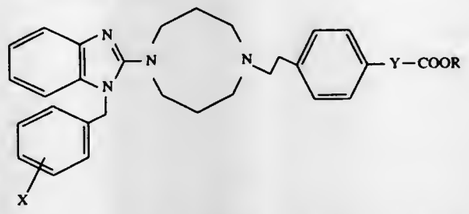
PCT Filed May 16, 1994, Ser. No. 537,747

Claims priority, application Japan, May 20, 1993, 5-155995

Int. Cl.[6] A61K *31/415;* **C07D** *403/04*

U.S. Cl. 514—395 **9 Claims**

1. A 1-(2-benzimidazolyl)-1,5-diazacyclooctane compound represented by the formula:



wherein X represents a hydrogen atom or a halogen atom; Y represents a covalent bond, a straight- or branched-chain alkylene group having 1 to 6 carbon atoms, or a straight- or branched-chain alkenylene group having 2 to 6 carbon atoms; R represents a hydrogen atom, or a straight- or branched-chain alkyl group having 1 to 6 carbon atoms; or pharmaceutically acceptable salts thereof.

8. A method for the treatment of bronchial asthma, which comprises inhaling to the bronchia a therapeutically effective amount of a 1-(2-benzimidazolyl)-1,5-diazacyclooctane compound or a pharmaceutically acceptable salt thereof of claim 1.

VOL 1197 ISS 5 AP 29 1997 UMI

5,624,949

PROTEIN KINASE C INHIBITORS

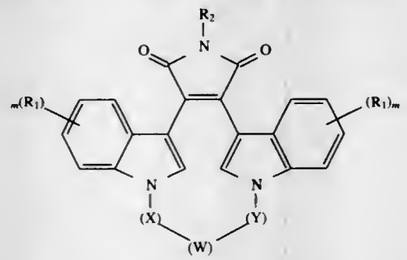
William F. Heath, Jr., Fishers; Michael R. Jirousek, Indianapolis; John H. McDonald, III, Carmel, and Christopher J. Rito, Mooresville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 316,973, Oct. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 163,060, Dec. 7, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 413,735

Int. Cl.[6] A61K *31/55;31/395*

U.S. Cl. 514—410 **19 Claims**

1. A method of inhibiting protein kinase C, which comprises administering to a mammal in need of such treatment a pharmaceutically effective amount of a compound of the formula:



wherein:

W is —O—, —S—, —SO—, $—SO_2—$, —CO—, C_2–C_6 alkylene, substituted alkylene, C_2–C_6 alkenylene, -aryl-, -aryl$(CH_2)_m$O- -heterocycle-, -heterocycle-$(CH_2)_m$O-, -fused bicyclic-, -fused bicyclic-$(CH_2)_m$O-, $—NR_3—$, $—NOR_3—$, —CONH—, or —NHCO—;

X and Y are independently C_1–C_4 alkylene, substituted alkylene, or together X, Y, and W combine to form $—(CH_2)_n$-AA-;

R_1 is independently hydrogen, halo, C_1–C_4 alkyl, hydroxy, C_1–C_4-alkoxy, haloalkyl, nitro, NR_4R_5, or —NHCO(C_1–C_4 alkyl);

R_2 is hydrogen, $CH_3CO—$, NH_2, or hydroxy;

R_3 is hydrogen, $(CH_2)_m$aryl, C_1–C_4 alkyl, —COO(C_1–C_4 alkyl), $—CONR_4R_5$, $—(C{=}NH)NH_2$, $—SO(C_1$–C_4 alkyl), $—SO_2(NR_4R_5)$, or $—SO_2(C_1$–C_4 alkyl);

R_4 and R_5 are independently hydrogen, C_1–C_4 alkyl, phenyl, benzyl, or combine to the nitrogen to which they are bonded to form a saturated or unsaturated 5 or 6 member ring;

AA is an amino acid residue;

m is independently 0, 1, 2, or 3; and

n is independently 2, 3, 4, or 5; or

a pharmaceutically acceptable salt or solvate thereof.

5,624,950

PERHYDROISOINDOLE DERIVATIVES AS SUBSTANCE P ANTAGONISTS

Daniel Achard, Thiais; Serge Grisoni, Choisy-le-Roi; Evelyne James-Surcouf, Lésigny; Jean-Luc Malleron, Marcoussis; Anne Morgat, Gentilly; Jean-François Peyronel, Palaiseau; Jean-François Sabuco, Thiais, and Michel Tabart, Paris, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR94/00952, § 371 Date Jan. 29, 1996, § 102(e) Date Jan. 29, 1996, PCT Pub. No. WO95/04040, PCT Pub. Date Feb. 9, 1995

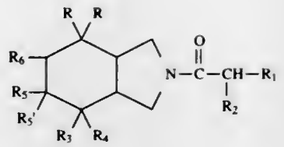
PCT Filed Jul. 28, 1994, Ser. No. 586,708

Claims priority, application France, Jul. 30, 1993, 93 09400; Oct. 7, 1993, 93 11846

Int. Cl.[6] C07D *209/44;* **A61K** *31/40*

U.S. Cl. 514—414 **17 Claims**

1. A perhydroisoindole derivative of the following formula or a salt thereof:



in which:

R_1 represents:

a phenyl radical that is unsubstituted or substituted with at least one substituent selected from:

a halogen atom or a hydroxyl radical,

an alkyl radical that is unsubstituted or substituted with a halogen atom, an amino radical, an alkylamino radical, or a dialkylamino radical,

an alkyloxy or alkylthio radical that is unsubstituted or substituted with a hydroxyl, an amino radical, an alkylamino radical or a dialkylamino radical, wherein said amino, alkylamino, and dialkylamino radicals are unsubstituted or substituted with a phenyl radical, a hydroxyl, an amino radical, or a dialkylamino radical wherein the alkyl parts thereof form, together with the nitrogen atom to which they are attached, a 5- or 6-membered heterocycle that may contain an additional hereto atom selected from oxygen, sulphur or nitrogen, wherein said 5- to 6-membered heterocycle is unsubstituted or substituted with an alkyl radical, a hydroxyl, an hydroxyalkyl radical, or

an amino radical, an alkylamino radical or a dialkylamino radical wherein the alkyl parts form, together with the nitrogen atom to which they are attached, a 5- or 6-membered heterocycle as defined above, or

a cyclohexadienyl radical, a naphthyl radical, an indenyl radical, or a saturated or unsaturated mono- or polycyclic heterocyclic radical containing from 5 or 9 carbon atoms and at least one hetero atom selected from oxygen, nitrogen or sulphur, wherein said saturated mono- or polycyclic radical is unsubstituted or substituted with a halogen atom, an alkyl radical or an alkyloxy radical;

R_2 represents a hydrogen or halogen atom or a hydroxyl, alkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkyloxy, alkylthio, acyloxy, carboxyl, alkyloxycarbonyl, dialkylaminoalkyloxycarbonyl, benzyloxycarbonyl, amino or acylamino radical;

R_3 represents a phenyl radical that is:

unsubstituted or substituted in the 2-position with an alkyl radical or an alkyloxy radical, wherein said alkyl radical and said alkyloxy radicals contain 1 or 2 carbon atoms,

substituted in the 2-position with a fluorine atom, or

disubstituted with trifluoromethyl radicals;

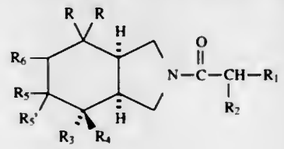
R_5 and R'_5 are identical or different and are defined as follows: one of R_5 or R'_5 represents a hydrogen atom, a hydroxyl, or an alkyl radical and the other represents a hydrogen atom or an alkyl radical while R_4 represents a hydroxyl, or R_4 represents a fluorine atom if R_5 and R'_5 represent a hydrogen atom or an alkyl radical, or R_4 forms a bond with R_5;

R_6 represents a hydrogen atom, an alkyl radical, a hydroxyl, or a hydroxyalkyl radical; and

one of said R substituents represents a hydrogen atom, an alkyl radical, a hydroxyl, or a hydroxyalkyl radical, and the other R substituent represents a hydrogen atom, an alkyl radical, a phenyl radical, or a hydroxyalkyl radical;

wherein said alkyl and acyl radicals contain, unless otherwise specified, from 1 to 4 carbon atoms in a straight or branched chain;

or a stereoisomeric form or racemate of the structure:



wherein $—CHR_1R_2$ chain is optically in the (R) or (S) forms, or a mixture of any of these forms.

5,624,951

4-HYDROXY COUMARIN DERIVATIVES WITH ANTIBACTERIAL ACTIVITY

Bingwei Yang, Waterford; Joyce Sutcliffe, Clinton, both of Conn., and Chris J. Dutton, Sandwich, England, assignors to Pfizer Inc., New York, N.Y.

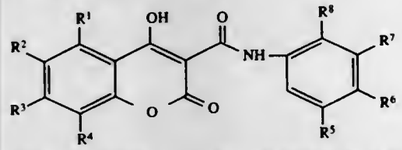
PCT No. PCT/US93/06308, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/05649, PCT Pub. Date Mar. 17, 1994

PCT Filed Jul. 7, 1993, Ser. No. 403,818

Int. Cl.[6] A61K *31/40;* **C07D** *405/02;405/10*

U.S. Cl. 514—422 **7 Claims**

1. A compound of the formula



V

wherein R^1 is hydrogen, (C_1–C_6)alkyl or halogen; R^2 is hydrogen, halogen, nitro, amino, (C_1–C_6)alkoxy or (C_1–C_6)alkylthio; R^3 is hydrogen, halogen, hydroxy, nitro, amino or (C_1–C_6)alkoxy; R^4 is hydrogen, halogen, (C_1–C_6)alkyl, (C_1–C_6) alkoxy, amino or nitro; R^5, R^7, and R^8 are each independently selected from the group consisting of hydrogen, halogen, (C_1–C_6)alkenyl, (C_1–C_6)alkyl, (C_1–C_6)baloalkyl, (C_1–C_3)alkoxy, phenyl (C_1–C_6)alkoxy, (C_2–C_8)acyl, (C_1–C_6)thioalkoxy, pyrrolyl, 2,5-dimethylpyrrolyl, imidazolyl, pyridinyl, pyrimidinyl or pyrazinyl; and R^6 is pyrrolyl, 2,5-dimethylpyrrolyl, imidazolyl, pyridinyl, pyrimidinyl or pyrazinyl; with the proviso that when R^6 is other than pyrrolyl or 2,5-dimethylpyrrolyl, or R^8 is trifluoromethyl, at least one of R^1, R^2, R^3 and R^4 is not hydrogen.

5,624,952

[(BENZODIOXAN, BENZOFURAN OR BENZOPYRAN) ALKYLAMINO] ALKYL SUBSTITUTED GUANIDINES

Guy R. E. Van Lommen, Beriaar; Marcel F. L. De Bruyn, Hoogstraten, and Walter J. J. Janssens, Beerse, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

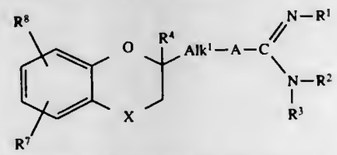
Division of Ser. No. 256,995, Jul. 29, 1994, Pat. No. 5,541,180. This application Apr. 15, 1996, Ser. No. 632,226

Claims priority, application WIPO, Feb. 19, 1993, PCT/EP93/00435

Int. Cl.[6] A61K *31/40;* **C07D** *405/06*

U.S. Cl. 514—422 **15 Claims**

1. A compound having the formula:



I

a pharmaceutically acceptable acid addition salt thereof, or a stereochemically isomeric form thereof, wherein:

X is O, CH_2 or a direct bond;

R^1 is hydrogen or C_{1-6}alkyl;

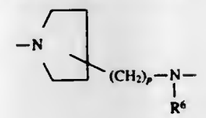
R^2 is hydrogen, C_{1-6}alkyl, C_{3-6}alkenyl or C_{3-6}alkynyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen of C_{1-6}alkyl

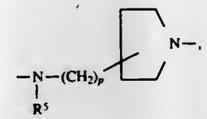
Alk^1 is a bivalent C_{1-3}alkanediyl radical;

A is a bivalent radical of the formula:



(d)

or



(e)

wherein:

R^5 and R^6 individually are hydrogen or C_{1-4}alkyl and p is 0, 1 or 2; and

R^7 and R^8 each independently are hydrogen, halo, C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-6}alkynyl, hydroxy, C_{1-6}alkyloxy, cyano, aminoC_{1-6}alkyl, carboxyl, C_{1-6}alkyloxycarbonyl, nitro, amino, aminocarbonyl, C_{1-6}alkylcarbonylamino, or mono- or di(C_{1-6}alkyl)amino.

5,624,953

PHARMACEUTICAL COMPOUNDS

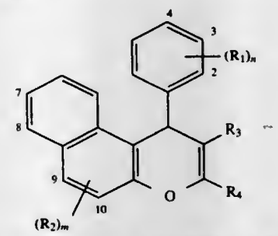
Samantha J. Ambler, Surrey, England; William F. Heath, Jr., Indianapolis; Jai Pal Singh, Carmel, both of Ind.; Colin W. Smith, Berkshire, England, and Lawrence E. Stramm, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 342,993, Nov. 21, 1994, Pat. No. 5,541,706, which is a continuation of Ser. No. 45,396, Apr. 9, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 594,613

Int. Cl.[6] A61K *31/35;31/40;* **C07D** *311/78*

U.S. Cl. 514—454 **5 Claims**

5. A pharmaceutical formulation comprising a compound of the Formula I:



(I)

wherein n and m are independently 0, 1 or 2;

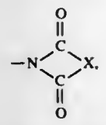
R_1 is halo, trifluoromethyl, C_1–C_4 alkoxy, hydroxy, nitro, C_1–C_4 alkyl, C_1–C_4 alkylthio, hydroxy-C_1–C_4 alkyl, hydroxy-C_1–C_4 alkoxy, trifluoromethoxy, carboxy, $—COOR_5$ where R_5 is a C_1–C_4 alkyl, $—COR_6$, $—CONR_6R_7$ or $—NR_6R_7$ where R_6 and R_7 are each hydrogen or C_1–C_4 alkyl;

R_2 is halo, trifluoromethyl, C_1–C_4 alkoxy, hydroxy, nitro, C_1–C_4 alkyl, C_1–C_4 alkylthio, hydroxy-C_1–C_4 alkyl, hydroxy-C_1–C_4 alkoxy, trifluoromethoxy, carboxy, $—COOR_8$ where R_8 is a C_1–C_4 alkyl, $—COR_9$, $—CONR_9R_{10}$ or $—NR_9R_{10}$ where R_9 and R_{10} are each hydrogen or C_1—C_4 alkyl;

R_3 is nitrile, carboxy or $—COOR_{11}$ where R_{11} is a C_1–C_4 alkyl; and

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R_4 is $—NR_{12}R_{13}$, $—NR_{12}COR_{13}$, $—N{=}CHOCH_2R_{12}$.



or 1-pyrrolyl optionally substituted by one or two moieties selected from the group consisting of C_1–C_4 alkyl, carboxy, hydroxy-C_1–C_4 alkyl or —CHO; wherein R_{12} and R_{13} are each hydrogen or C_1–C_4 alkyl; X is C_2–C_4 alkylene; provided that

i) when m is 0, R_3 is nitrile and $R_4$is $—NH_2$, n is not 0 and $—(R_1)_n$ is not 2-fluoro, 2-chloro, 2-methoxy, 3-fluoro, 3-nitro, 4-methyl, 4-methoxy, 4-chloro, 4-hydroxy, 4-fluoro , 4-bromo, 4-nitro, 3,4-dimethoxy, 2,5-dimethoxy, or hydrogen;

ii) when m is 0, R_3 is $—COOC_2H_5$ and R_4 is $—NH_2$, n is not 0 and $—(R_1)_n$ is not 2-fluoro, 2-chloro, 4-hydroxy, 4-chloro, 4-methyl, 4-methoxy or hydrogen;

iii) when m is 1, R_2 is 10-hydroxy, R_3 is nitrile, and R_4 is $—NH_2$, then $(R_1)_n$ is not 4-chloro, 4-bromo, hydrogen, or 4-methoxy; and

iv) when m is 1, R_2 is 10-hydroxy, R_3 is $—COOC_2H_5$, and R_4 is $—NH_2$, then $(R_1)_n$ is not hydrogen, or 4-methoxy; or a pharmaceutically-acceptable salt thereof; and one or more pharmaceutically-acceptable carriers, diluents, or excipients therefor.

5,624,954

BENZO- AND PYRIDOPYRAN DERIVATIVES HAVING ANXIOLYTIC AND ANTI-CONVULSANT ACTIVITY

John M. Evans; Mervyn Thompson, and Neil Upton, all of Essex, England, assignors to SmithKline Beecham p.l.c., England

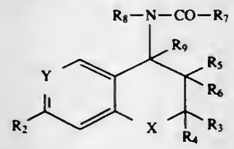
Continuation of Ser. No. 162,134, Dec. 13, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 425,329

Claims priority, application United Kingdom, Jun. 13, 1991, 9112721

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—456 **8 Claims**

1. The method of treatment of anxiety, mania, depression or the effects associated with withdrawal from substances of abuse, or disorders treatable or preventable with anti-convulsive agents, comprising administering to the sufferer in need thereof an effective amount of a compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

Y is C—R_1

where:

R_1 is cyano, methoxy, trifluoromethoxy, chloro, trifluoromethyl, ethylcarbonyl, acetyl, hydrogen, methyl, ethyl, isopropyl, tertiary-butyl, nitro, C_2F_5, methoxycarbonyl, phenylsulphonyl, phenyl, fluoro, iodo, cyclopentyl, aminocarbonylmethyl or 1-hydroxyethyl;

R_2 is hydrogen;

R_3 and R_4 are independently methyl;

R_5 is hydroxy and R_6 is hydrogen or C_{1-2} alkyl and R_9 is hydrogen;

R_7 is fluorophenyl;

R_8 is hydrogen or C_{1-6} alkyl;

the R_8—N—CO—R_7 group being trans to the R_5 group; and X is oxygen.

5,624,955

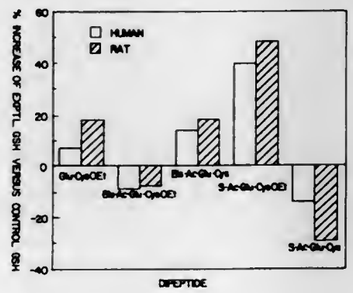
COMPOUNDS THAT ENHANCE THE CONCENTRATION OF GLUTATHIONE IN TISSUES

Herbert T. Nagasawa, Richfield; William B. Rathbun, Bloomington, and Jonathan F. Cohen, Prior Lake, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

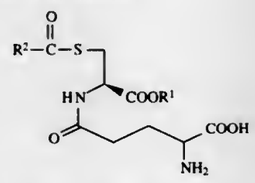
Filed May 3, 1995, Ser. No. 433,809

Int. Cl.[6] A61K *31/21*

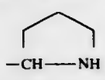
U.S. Cl. 514—513 **15 Claims**



1. A compound of the formula:



wherein R^1 is a (C_1-C_{20})alkyl group, a (C_6-C_2)aryl group, or a (C_3-C_{18})cycloalkyl group and R^2 is H or a (C_1-C_{19})alkyl group, a (C_6-C_{12})aryl group, a (C_7-C_{13})arylalkoxy group, a (C_1-C_6)alkoxy group, a (C_3-C_{18})cycloalkyl group, a



group,

or a $—CH(R^3)NH_2$ group wherein R^3 is a side chain of a natural amino acid.

5,624,956

UREA DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

Foe S. Tjoeng, Manchester; Mihaly V. Toth, St. Louis; Dudley E. McMackins, St. Charles, all of Mo., and Steven P. Adams, Andover, Mass., assignors to The Monsanto Company, St. Louis, Mo.

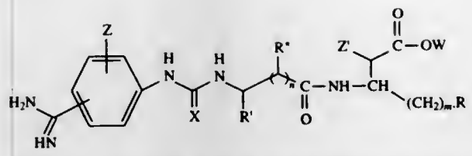
Division of Ser. No. 202,148, Feb. 23, 1994, Pat. No. 5,475,025, which is a division of Ser. No. 9,526, Jan. 27, 1993, Pat. No. 5,314,902. This application May 24, 1995, Ser. No. 449,446

Int. Cl.[6] A61K *31/19;31/215;* **C07C** *229/34;275/12*

U.S. Cl. 514—535 **9 Claims**

1. A compound or a pharmaceutically acceptable salt, thereof having the formula:

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals, and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl which are optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

W is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkyl, lower alkoxy, halogen, nitro, amino, acyloxy, phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

Z, Z' are independently selected from the group consisting of hydrogen, lower alkyl radicals, halogen, alkoxy, cyano, sulfonyl, and hydroxy radicals;

X is selected from the group consisting of oxygen, sulfur or nitrogen radicals, wherein nitrogen radicals may be substituted with hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkyl, lower alkoxy, halogen, nitro, amino, acyloxy, phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

R', R" are independently selected from the group consisting of hydrogen, lower alkyl radicals, and monocyclic or bicyclic aromatic hydrocarbon radicals wherein all of said radicals are optionally substituted with hydroxyl, lower alkyl, lower alkoxy, halogen, nitro, or amino,;

m is an integer from 0 to about 6; and

n is an integer 0 to about 3.

5,624,957

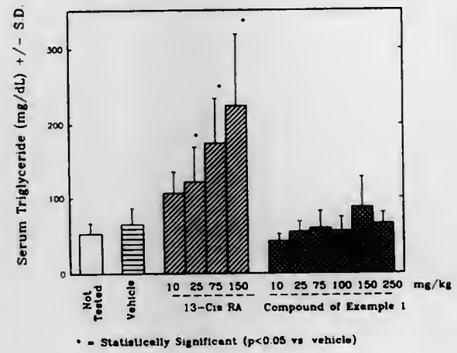
RARY-SPECIFIC RETINOBENZOIC ACID DERIVATIVES

R. Thomas Swann; Daniel Smith, both of Hamden, Conn.; Keaneth M. Tramposch, E. Amherst, N.Y., and Fred C. Zusi, Hamden, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jnn. 6, 1995, Ser. No. 467,429

Int. Cl.[6] C07C *271/06;229/28;* **A61K** *31/24;31/19*

U.S. Cl. 514—535 **16 Claims**



1. A process for disinfecting a contact lens, which comprises; applying to the lens an effective antimicrobial amount of a compound selected from the group consisting of C_6–C_{14} fatty acids, salts and monoglycerides thereof, C_6–C_{14} fatty alcohols, C_{16}–C_{20} mono-or polyunsaturated fatty acids, salts and monoglycerides thereof, C_{16}–C_{20} mono- or polyunsaturated fatty alcohols, and ether and lysophosphatidylcholine derivatives of C_4–C_{22} fatty acids.

5,624,958

DISINFECTING CONTACT LENSES

Charles E. Isaacs, 30 Devon Dr. North, Manalapan, N.J. 07726; Kwang S. Kim, 178 Dahlia St., Staten Island, N.Y. 10312; Halldor Thormar, Langagerdi 15, Reykjavik, Iceland; William C. Heird, 2001 Holcombe Blvd. Apt. 2701, Houston, Tex. 77030, and Henryk M. Wisniewski, 141 Nixon Ave., Staten Island, N.Y. 10304

Continuation-in-part of Ser. No. 58,056, May 3, 1993, Pat. No. 5,434,182, which is a continuation of Ser. No. 896,120, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 543,111, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 365,291, Jun. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,078, Dec. 31, 1987, Pat. No. 4,997,851. This application Mar. 22, 1995, Ser. No. 408,079

Int. Cl.[6] A61K *31/22;31/225;31/20*

U.S. Cl. 514—546 **12 Claims**

5,624,959

NAPHTHYLOXYACETIC ACID

Yuuki Nagao; Takayuki Maruyama, and Nobuyuki Hamanaka, all of Mishima-gun, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

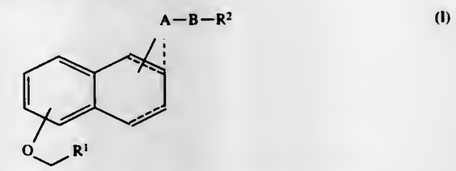
Filed Dec. 8, 1994, Ser. No. 355,187

Claims priority, application Japan, Dec. 9, 1993, 5-340854

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—562 **6 Claims**

1. A compound of the formula (I):



(I)

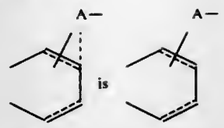
wherein R^1 is

(i) —$COOR^4$ in which R^4 is hydrogen or C1–4 alkyl,

(ii) —$CONR^5R^6$ in which R^5 and R^6 each, independently, is hydrogen, C1–4 alkyl or C1–4 alkyl substituted by 1 of hydroxy,

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(iii) —CH_2OH,



in which A is a bond or a C1–4 alkylene,

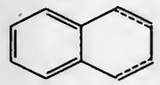
B is NR^3SO_2 or So_2NR^3— in which R^3 is hydrogen, C1–4 alkyl or —CH_2COOR^7 in which R^7 is hydrogen or R^{4a}, in which R^{4a} is C1–4 alkyl;

R^2 is

(i) C1–6 alkyl, C2–6 alkenyl or C2–6 alkynyl,

(ii) C1–6 alkyl, C2–6 alkenyl or C2–6 alkynyl substituted by 1, 2, 3 of phenyl, C4–7 cycloalkyl or phenyl substituted by 1, 2, 3 of C1–4 alkyl, C1–4 alkoxy or halogen;

in the formula



— is a bond or a double bond;

and a non-toxic acid thereof.

5,624,960

ORALLY ADMINISTRABLE DRUGS FOR THE TREATMENT OF CENTRAL DOPAMINE DEFICIENCY CONDITIONS

Udo Wenzel, Halle; Günther Weber, Zwickau; Jürgen Metzner, Halle; Alfred Därr, Leipzig; Sabine Freitag, Zwickau, all of Germany; Frank-Ulrich Flöther, Schaffhausen-Herblingen, Switzerland; Frank-Michael Albert, Zwickau, Germany; Margit Haase, Gottingen, Germany, and Edith Leistner, Leipzig, Germany, assignors to ISIS Pharma GmbH, Zwickau, Germany

Continuation-in-part of Ser. No. 90,163, Feb. 14, 1994, Pat. No. 5,532,274. This application Jun. 7, 1995, Ser. No. 472,391

Claims priority, application Germany, Jan. 23, 1991, 41 01 873.7

Int. Cl.[6] A61K *31/195;31/045;31/24*

U.S. Cl. 514—565 **5 Claims**

1. A drug formulation administrable by mouth for the treatment of central dopamine deficiency conditions, said formulation comprising:

100 to 250 parts by weight levodopa,

10 to 25 parts by weight carbidopa,

10% to 200% based on levodopa and carbidopa, of

(a) a polymer mixture consisting of polyvinyl alcohols of various degrees of saponification, or

(b) a completely saponified polyvinyl alcohol with a residual acetyl content different from the zero valence, or

(c) a partially saponified polyvinyl alcohol, and an appropriate amount of customary galenic adjuvants, said formulation having controlled liberation of levodopa and carbidopa during a short release phase.

5,624,961

BENZYLAMINOETHOXYBENZENE DERIVATIVES, PRODUCTION THEREOF AND USE THEREOF

Masakazu Ban; Kiyotaka Shinoda; Mitsuru Takahashi; Shuhei Deguchi; Hiroaki Taguchi, and Takeo Katsushima, all of Ohtsu, Japan, assignors to Japan Tobacco Inc., Japan

PCT No. PCT/JP95/00187, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO95/21811, PCT Pub. Date Aug. 17, 1995

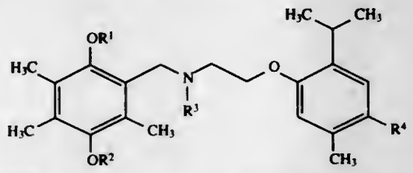
PCT Filed Feb. 10, 1995, Ser. No. 535,877

Claims priority, application Japan, Oct. 2, 1994, 6-016694

Int. Cl.[6] C07C *217/18;217/58;213/02;* **A61K** *31/135*

U.S. Cl. 514—651 **8 Claims**

1. A novel benzylaminoethoxybenzene derivative of the formula (I)



(I)

wherein

R^1 is a hydrogen atom, a lower alkyl, a lower hydroxyalkyl, a lower alkoxyalkyl, an allyl or a benzyl;

R^2 is a hydrogen atom, a lower alkyl, a lower acyl, an allyl or a benzyl;

R^3 is a hydrogen atom, a lower alkyl, a lower alkoxyalkyl, a lower dialkylaminoalkyl or a lower acyl; and

R^4 is a hydrogen atom, a halogen atom, a lower alkoxy, an amino, a lower acylamino, a hydroxy, a lower acyloxy, a lower acyl, a carboxy or a lower alkoxycarbonyl,

a salt thereof or a solvate thereof.

5,624,962

AQUEOUS DRUG COMPOSITION HAVING PROPERTY OF REVERSIBLE THERMOSETTING GELATION

Masanobu Takeuchi; Hiroe Suzuki; Toshie Takahashi; Hiroki Maruyama; Miyako Fukushima; Keiko Naitou; Touru Oguma, and Masayoshi Goto, all of Tokyo, Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

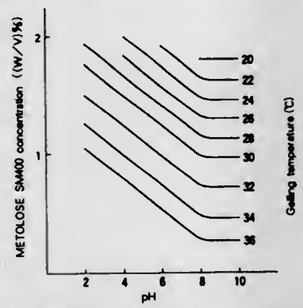
PCT No. PCT/JP93/01636, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/23750, PCT Pub. Date Oct. 27, 1994

PCT Filed Nov. 10, 1993, Ser. No. 397,064

Claims priority, application Japan, Apr. 16, 1993, 5-112345

Int. Cl.[6] A61K *9/08;47/36*

U.S. Cl. 514—772.2 **13 Claims**



1. An aqueous drug composition having a property of reversible thermosetting gelation, comprising an effective amount of one or more drugs used in pharmaceutical therapy or diagnosis, wherein the composition comprises 0.2 to 2.1 (W/V) % of methylcellulose having a content of methoxyl group within the range of 26 to 33%; 1.2 to 2.3 (W/V) % of citric acid, 0.5 to 13 (W/V) % of polyethylene glycol and a pharmaceutically acceptable pH adjusting agent in an amount sufficient to adjust the pH of the composition within a range of 3 to 10; and

wherein said polyethylene glycol has a weight-average molecular weight of 300 to 50,000.

5,624,963

PROCESS FOR REMOVING BILE SALTS FROM A PATIENT AND COMPOSITIONS THEREFOR

W. Harry Mandeville, III, Lynnfield, and Stephen R. Holmes-Farley, Arlington, both of Mass., assignors to GelTex Pharmaceuticals, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 71,564, Jun. 2, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,477

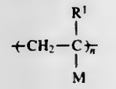
Int. Cl.[6] B01D *15/00;* **B01J** *39/00*

U.S. Cl. 514—789 **74 Claims**

1. A method for removing bile salts from a patient by ion exchange comprising administering to said patient a therapeutically effective amount of one or more crosslinked polymers comprising

(1) a monoreactive hydrophobic co-monomer and

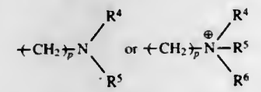
(2) a repeat unit having tbe formula



where n is an integer; R^1 is H or a C_1–C_8 alkyl group; M is



or —Z—R^2; Z is O, NR^3 S or $(CH_2)_m$; m=0–10; R^3 is H or a C_1–C_8 alkyl group; and R^2 is



where p=0–10, and each R^4, R^5, and R^6, independently, is H, a C_1–C_8 alkyl group, or an aryl group, said polymers being non-toxic and stable once ingested.

5,624,964

INTEGRATION OF STEAM REFORMING UNIT AND COGENERATION POWER PLANT

Ronald J. Cimini, Sewell; David O. Marler, Deptford, both of N.J.; Reuel Shinnar, Great Neck, N.Y., and Gerald J. Teitman, Vienna, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

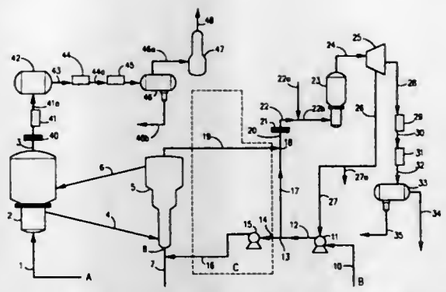
Filed Jun. 6, 1995, Ser. No. 471,976

Int. Cl.[6] C07C *27/06*

U.S. Cl. 518—704 **7 Claims**

1. A process for integration of a steam reforming unit and a cogeneration power plant in which

said steam reforming unit comprises two communicating fluid beds; a first fluid bed comprising a reformer containing catalyst and which is used to react steam and light hydrocarbons at conditions sufficient to produce a mixture comprising synthesis gas hydrogen, carbon monoxide, and carbon dioxide, a second fluid bed comprising a combustor-regenerator which receives spent catalyst from the first fluid bed and which provides heat to heat the catalyst and balance the reaction endotherm by combusting fuel gas in direct contact with the catalyst, also producing hot flue gas;



said cogeneration power plant comprises a gas turbine equipped with an air compressor and a combustor;

said integration which comprises drawing off a portion of compressed air from a compressed air stream from the air compressor of the power plant gas turbine air compressor; introducing the drawn off compressed air to the combustor-regenerator; mixing the hot flue gas from the combustor-regenerator with the remainder of the power plant compressed air stream to produce a recombined gas stream and feeding this recombined gas stream to the combustor of the cogeneration gas turbine power plant.

5,624,965

ARYLENEDIALKYLIDENE POLYMERS FOR HIGH PERFORMANCE ION EXCHANGE MEMBRANES

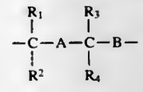
Jian-ping Huang, Morris Plains, and Frederick P. Chlanda, Rockaway, both of N.J., assignors to The Graver Company, Union, N.J.

Filed Apr. 26, 1994, Ser. No. 243,649

Int. Cl.[6] B01D *71/68;71/76*

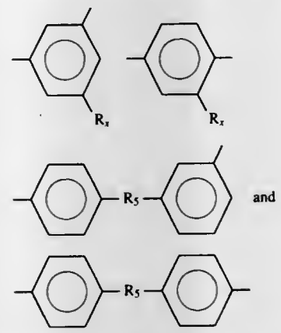
U.S. Cl. 521—27 **12 Claims**

1. A permselective membrane comprising at least one layer having a final thickness of about 3–10 mils formed from an arylenedialkylidene polymer at least a portion of which is sulfonated, said arylenedialkylidene polymer comprising recurring monomeric units as shown by the formula:



wherein R_1, R_2, R_3 and R_4 are alkyl having one to four carbon atoms; wherein A and B are different;

A is selected from the group consisting of

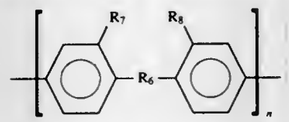


and

wherein R_x is hydrogen or an alkyl having 1 to 4 carbon atoms, R_5 is alkylidene of 1–4 carbon atoms or oxyalkylene of 1–4 carbon atoms;

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B is derived from the group consisting of benzene, naphthalene, thiophene, and aromatic compounds of the formula



wherein R_6 is selected from the group consisting of alkylidene of 1–4 carbon atoms, oxyalkylene of 1–4 carbon atoms, —O—, —S—; R_7 and R_8 may be the same or different and may be H or methyl; n is a number sufficient to provide copolymer having a molecular weight sufficient to form a film, and to impart an inherent viscosity of at least about 0.5 to about 1.2 dL/g in o-dichlorobenzene at 30° C.; and wherein said membrane is a cation selective membrane having an ion exchange capacity of between about 1.0 meq/g and about 2.0 meq/g.

5,624,966

PROCESS OF MAKING AN INTEGRAL SKIN POLYURETHANE ARTICLE

Thirumurti Narayan, Grosse Ile, and Valeri L. Voloppi, Riverview, both of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Oct. 30, 1995, Ser. No. 549,904

Int. Cl.[6] C08J *9/34*

U.S. Cl. 521—51 **17 Claims**

1. A process for making integral skin polyurethane articles, the process comprising:

providing an isocyanate component (a), comprising the reaction product of

(a1) a polyoxypropylated propylene glycol having an OH number from 200 to 300;

(a2) a diol selected from the group consisting of dipropylene glycol and tripropylene glycol;

(a3) a polyoxypropylated/ethoxylated glycerin having an OH number from 20 to 50;

(a4) a polyoxypropylated/ethoxylated glycol having an OH number from 15 to 45; and

(a5) diphenylmethane diisocyanate;

providing a resin side (I) comprising:

an isocyanate reactive component (b);

a blowing agent (c) comprising water;

a polyether (d) selected from the group consisting of polytetrahydrofuran and polyethylene glycol having a number average molecular weight of from 200 to 2000; and

optionally, one or more additives (e) selected from the group consisting of catalysts, chain extenders, and mixtures thereof;

introducing the isocyanate component (a) and resin side (I) into a mold; and

reacting component (a) and resin side (I) together for a time sufficient to produce an integral skin polyurethane article;

wherein the integral skin polyurethane article is characterized by one or more of the following performance properties:

(i) tensile strength of greater than or equal to 450;

(ii) a Taber abrasion (mg loss) of less than 200.

5,624,967

WATER-ABSORBING RESIN AND PROCESS FOR PRODUCING SAME

Kazuhisa Hitomi; Takumi Hatsuda, both of Hyogo, and Tadao Shimomura, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 473,517

Int. Cl.[6] C08J *9/28*

U.S. Cl. 521—64 **19 Claims**

1. A water-absorbing resin having a degree of reduction in absorption magnification of from 1 to 16, and an absorption magnification under pressure of from 20 to 40.

5,624,968

FLEXIBLE WATER-BLOWN POLYURETHANE FOAMS

James D. Gabbard, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 96,806, Jul. 26, 1993, Pat. No. 5,457,139. This application May 31, 1995, Ser. No. 454,790

Int. Cl.[6] C08J *9/12*; C08G *18/34*

U.S. Cl. 521—107 **11 Claims**

1. A flexible plasticized polyurethane foam comprising a foamable polyurethane compound produced by the reaction of a polyol and toluene diisocyanate, an amount of a non-halogen containing foaming agent sufficient to produce a foam from said polyurethane compound and a non-halogen containing plasticizer selected from the group consisting of phthalate plasticizers and phosphate ester plasticizers, said foam having a higher sag factor and lower normalized CFD than an equivalent polyurethane foam without plasticizer.

5,624,969

PRODUCTION OF RIGID FOAMS BASED ON ISOCYANATE

Holger Seifert, Freital; Renate Hempel; Gottfried Knorr, both of Schwarzheide, and Udo Rotermund, Ortrand, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 10, 1996, Ser. No. 677,744

Claims priority, application Germany, Jul. 25, 1995, 195 26 979.9

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—117 **18 Claims**

1. A process for producing rigid foams based on isocyanate comprising reacting

a) organic polyisocyanates, modified organic polyisocyanates or mixtures of organic and modified organic polyisocyanates with

b) at least one compound containing at least two reactive hydrogen atoms and

c) optionally chain extenders, crosslinkers, or mixtures of chain extenders and cross linkers,

in the presence of

d) blowing agents, and

e) catalysts

wherein the blowing agent (d) comprises a mixture of at least one low boiling hydrocarbon having from 3 to 7 carbon atoms and a low molecular weight monohydric alcohol containing a primary or secondary hydroxyl group and having from 1 to 4 carbon atoms.

5,624,970

C_3 TO C_5 POLYFLUORCALKANES PROPELLANTS

Claus-Dieter Sommerfeld, Overath; Wilhelm Lamberts, Cologne; Dietmar Bielefeldt, Ratingen; Albrecht Marhold, Leverkusen, and Michael Negele, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 469,622, Jan. 24, 1990, Pat. No. 5,496,866. This application Jan. 26, 1996, Ser. No. 591,881

Claims priority, application Germany, Feb. 4, 1989, 39 03 336.8

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—131 **2 Claims**

1. A method of forming plastic foam compositions comprising foaming a plastic based on isocyanate in the presence of a propellant the improvement wherein the propellant comprises a polyfluoroalkane of the formula:

$CF_3—CHF—CFH_2$.

5,624,971

FOAMED POLYMER AND PROCESS FOR PRODUCTION THEREOF

Robert N. Wilson, Hixson, Tenn., assignor to Woodbridge Foam Corporation, Mississauga, Canada

Filed Jul. 1, 1996, Ser. No. 674,242

Int. Cl.[6] C08J *9/24;9/35*

U.S. Cl. 521—137 **17 Claims**

1. A process for producing the foamed isocyanate-based polymer comprising the steps of:

contacting an isocyanate, an active hydrogen-containing compound, an aqueous blowing agent, a catalyst and a non-surface cross-linked superabsorbent polymer, the superabsorbent polymer being capable of absorbing at least about 10 times its weight of a 0.9 wt./wt. % aqueous NaCl solution maintained at a temperature in the range of from about 20° to about 25° C.; and

expanding the reaction mixture to produce the foamed isocyanate-based polymer;

wherein the active hydrogen-containing compound comprises from about 10% to 100% by weight of a hydrophilic active hydrogen-containing compound and from 0 to about 90% by weight a non-hydrophilic active hydrogen-containing compound.

5,624,972

MANUFACTURE OF POLYMERIC FOAMS

Louis Muller, Ottenburg; Tu Pham, Grez-Doiceau, and Gabriel Verbeist, Herent, all of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 87,359, Jul. 8, 1993, Pat. No. 5,430,072, which is a continuation of Ser. No. 648,620, Feb. 1, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 415,456

Claims priority, application European Pat. Off., Feb. 1, 1990, 9002240; Oct. 12, 1990, 9022196

Int. Cl.[6] C08G *18/10*

U.S. Cl. 521—159 **12 Claims**

1. A method for the preparation of a flexible polymeric foam characterized in that 100 parts by weight of polyisocyanate component are reacted with from 1–20 parts by weight of an isocyanate-reactive component comprising at least 40% by weight of water, by

a) continuously or semi-continuously feeding at least two polyisocyanate components, at least one of which is an isocyanate containing prepolymer having an NCO content of from 2 to 15% by weight and at least another one having an NCO content of at least 20% by weight comprising a mixture of tolyuene diisocyanate and diphenylmethane diisocyanate (MDI) and/or polymeric MDI, from different storage tanks using appropriate liquid metering pumps as separate streams into a mixing zone,

b) continuously or semi-continuously forming a homogeneous mixture of these polyisocyanate components, then

c) continuously or semi-continuously mixing said polyisocyanate blend with said isocyanate-reactive component to form a creaming mixture, and

d) continuously or semi-continuously placing said creaming mixture on a foaming surface.

5,624,973

POLYMERS HAVING SUBSTANTIALLY NONPOROUS BICONTINUOUS STRUCTURES PREPARED BY THE PHOTOPOLYMERIZATION OF MICROEMULSIONS

Ying-Yuh Lu, Woodbury, and Chung I. Young, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 189,060, Jan. 28, 1994, abandoned. This application May 30, 1995, Ser. No. 453,960

Int. Cl.[6] C08J *3/28*; C08K *5/04*

U.S. Cl. 522—40 **29 Claims**



1. A microemulsion comprising:

(a) an aqueous phase comprising:

(i) water;

(ii) at least one free-radically polymerizable ethylenically-unsaturated polar oligomer;

(iii) optional water-soluble free-radical photopolymerization initiator;

(iv) optional water-soluble free-radical thermal polymerization initiator;

(v) optional water soluble additives;

(vi) optional nonreactive polar oligomers; and

(vii) optional cosolvents;

(b) an organic phase comprising:

(i) hydrophobic free-radically polymerizable ethylenically-unsaturated monomers,

(ii) polar (co)polymerizable species,

(iii) lipophilic free-radical photopolymerization initiator,

(iv) optional lipophilic thermal free-radical polymerization initiator,

(v) optional crosslinking agents,

(vi) optional chain transfer agents,

(vii) optional nonreactive polar oligomers, and

(viii) optional oil-soluble additives; and

(c) a surfactant.

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5,624,974
PHOTOPOLYMERIZABLE RESIN MATERIAL COMPOSITION COMPRISING FLUORINATED (METH)ACRYLATES

Noriaki Onishi, Nara; Nobuaki Yamada, Higashiosaka; Shuichi Kohzaki, Nara; Daisaku Matsunaga, Minato-ku; Takao Aizawa, Kumagaya, and Toru Ozaki, Kitakatsushika-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Nippon Kayaku Co., Ltd., Tokyo, both of Japan

Filed Dec. 27, 1995, Ser. No. 578,972

Claims priority, application Japan, Dec. 28, 1994, 6-328586; Dec. 12, 1995, 7-323390

Int. Cl.[6] C08F *2/50;220/22*

U.S. Cl. 522—96 **4 Claims**

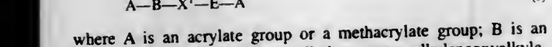
1. A photopolymerizable resin material composition for forming a polymer used for a liquid crystal display apparatus, comprising at least one acrylate compound selected from the group consisting of a bifunctional acrylate compound represented by the following general Formula I having a fluorine substitution ratio α in the range of $0.1<\alpha<0.8$, a bifunctional acrylate compound represented by the following general Formula II having a fluorine substitution ratio α in the range of $0\leqq\alpha<0.8$, a bifunctional acrylate compound represented by the following general Formula III having a fluorine substitution ratio α in the range of $0.1<\alpha<0.8$, a bifunctional acrylate compound represented by the following general Formula IV having a fluorine substitution ratio α in the range of $0.1<\alpha<0.8$ and a bifunctional acrylate compound represented by the following general Formula V having a fluorine substitution ratio α in the range of $0.1<\alpha<0.8$ and a bifunctional acrylate compound represented by the following general Formula VI having a fluorine substitution ratio α in the range of $0.1<\alpha<0.8$, and a photopolymerization delaying resin material represented by the following general Formula VII:

(I)

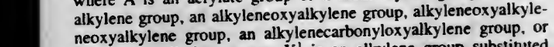
where A is an acrylate group or a methacrylate group; B is an alkylene group, an alkyleneoxyalkylene group, alkyleneoxyalkyleneoxyalkylene group, an alkylenecarbonyloxyalkylene group, or carbonyloxyalkylene group; X^1 is an alkylene group substituted with fluorine; and E is an alkylene group, an alkyleneoxyalkylene group, an alkylenecarbonyloxyalkylene group, or a carbonyloxyalkylene group,

(II)

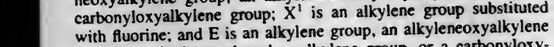
where A is an acrylate group or a methacrylate group; and Y^1 is an alkyl group substituted with fluorine, an alkyl group, an aryloxy group, an alkyloxy group containing 8 to 13 carbon atoms, a phenoxy group, an alkyl phenoxy group, or a $Z^1O(C_2H_4O)_p$ group (where Z^1 is a phenyl group or a dodecyl group and p is an integer of 5 to 15),



(III)

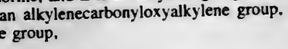


(IV)



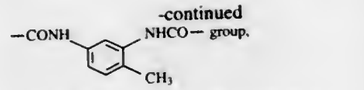
(V)

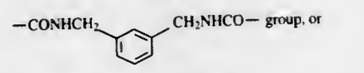
where A is an acrylate group or a methacrylate group, Y^2 is an alkyl group substituted with fluorine; and D is a $-CONH(CH_2)_6NHCO-$ group, a mixture of $-CONHCH_2C(CH_3)_2-CH_2CH(CH_3)CH_2CH_2NHCO-$ group and $-CONHCH_2CH(CH_3)-CH_2CH(CH_3)_2CH_2CH_2NHCO-$ group,

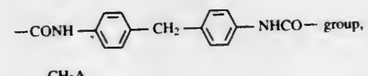


(VI)

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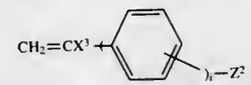






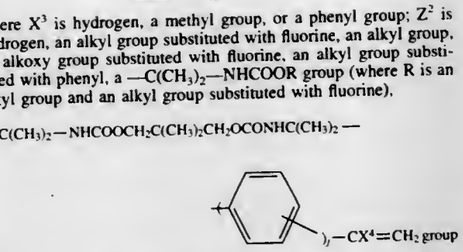


where A is an acrylate group or a methacrylate group; X^2 is an alkyl group or an alkylcarbonyloxyalkylene group; and Y^3 is an alkyl group substituted with fluorine,



(VII)

where X^3 is hydrogen, a methyl group, or a phenyl group; Z^2 is hydrogen, an alkyl group substituted with fluorine, an alkyl group, an alkoxy group substituted with fluorine, an alkyl group substituted with phenyl, a $-C(CH_3)_2-NHCOOR$ group (where R is an alkyl group and an alkyl group substituted with fluorine),



or $-C(CH_3)_2NHCOOC_2H_4OCOCX^4=CH_2$ group (where X^4 is hydrogen or a methyl group, and j is an integer of 1 or 2), and i is an integer of 1 or 2.

5,624,975
PLASTICS

Gregorio P. Valencia, Barcelona, Spain, assignor to Biocompatibles Limited, London, England

Continuation of Ser. No. 789,892, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 582,124, Sep. 13, 1990, abandoned, which is a continuation of Ser. No. 205,497, Jun. 7, 1988, abandoned, which is a continuation of Ser. No. 926,729, Nov. 4, 1986, abandoned. This application Feb. 7, 1994, Ser. No. 193,638

Claims priority, application United Kingdom, Nov. 4, 1985, 8527071

Int. Cl.[6] C08L *15/00;* **C08K** *5/52*

U.S. Cl. 523—111 **7 Claims**

1. A process for preparing a hemocompatible and thrombo-resistant plastic material consisting only of a polymer and a lipid selected from the group consisting of egg lecithin and α-phosphatidylcholine, comprising the steps of:

(1) admixing by melt blending said lipid with a preformed polymer to produce an admixture wherein said lipid is a simple external plasticizer, the preformed polymer being a thermoplastic material selected from the group consisting of acetals, acrylics, acrylonitrile-butadiene-styrene, cellulose esters, nylon, polycarbonate, polychlorotrifluoroethylene, polyethylene, polypropylene, polystyrene, polyterephthalate and vinyl acetals; and

(2) shaping the resulting admixture and forming said plastic material, whereby the hemocompatibility and thrombo-resistance of said plastic material is greater than the hemocompatibility and thrombo-resistance of said polymer, and said plastic material contains said lipid in an amount of at least 0.1% by weight based upon the weight of said polymer.

5,624,976
DENTAL FILLING COMPOSITION AND METHOD

Joachim E. Klee, Radolfzell, Germany, assignor to Dentsply GmbH, Dreieich, Germany

Filed Mar. 25, 1994, Ser. No. 217,998

Int. Cl.[6] A61K *6/087;* **C08K** *3/22;* **C08L** *63/02*

U.S. Cl. 523—116 **15 Claims**

1. A root canal sealing dental filling composition, comprising: filler and liquid polymerizable organic monomers polymerized in a dental tooth root canal to form a thermoplastic linear polymer, said filler comprising 40 to 85 percent by weight of said composition and providing a radiopacity of at least 3 mm/mm aluminum, said monomers polymerize to seal said tooth root canal, and said polymerizable organic monomers being diepoxides and disecondary diamines, and said thermoplastic linear polymer is readily soluble in organic solvents, said polymerizable diepoxide monomer being diglycidyl ether of bisphenol-A, diglycidyl ether of bisphenol-F, butanediol diglycidyl ether or Δ^3-tetrahydrophthalic acid diglycidyl ester.

5,624,977
THERMOPLASTIC FLUOROSILICONE RESIN AND METHOD OF MAKING

Mitsuhiro Takarada; Yoshiteru Kobayashi, and Takashi Kondou, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

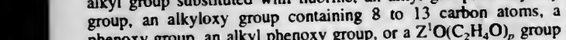
Filed Nov. 30, 1994, Ser. No. 352,073

Claims priority, application Japan, Dec. 7, 1993, 5-340046

Int. Cl.[6] C08K *9/10;* **C08L** *83/00*

U.S. Cl. 523—211 **6 Claims**

1. A thermoplastic fluorosilicone resin having the following average compositional formula (1):



(1)

wherein Rf is a perfluoroalkyl group having 1 to 10 carbon atoms, and letters x, y, and z are positive numbers in the range: $0.2\leqq x\leqq 0.95$, $0<y\leqq 0.8$, $0\leqq z\leqq 0.05$, and $x+y+z=1$, said resin having a softening point in the range of 50° to 200° C.

5,624,978
CONDUCTIVE, INTERNALLY LUBRICATED BARRIER COATING FOR METAL

Jeffrey N. Soltwedel; Karl P. Anderson; Lori E. Witherup; Wendy M. Holtmann, all of Columbus, and John R. Sekerak, Dublin, all of Ohio, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 237,953, May 3, 1994, abandoned, which is a continuation of Ser. No. 753,250, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,777, Oct. 29, 1990, Pat. No. 5,082,698, which is a division of Ser. No. 165,529, Mar. 8, 1988, Pat. No. 5,001,173, which is a continuation-in-part of Ser. No. 48,281, May 11, 1987, abandoned. This application Oct. 28, 1994, Ser. No. 330,474

Int. Cl.[6] C08K *3/24*

U.S. Cl. 523—402 **18 Claims**

1. An aqueous composition comprising:

(A) an organic resin component consisting essentially of at least one water-dispersible or emulsifiable epoxy resin,

(B) a non-ionic emulsifier,

(C) chromium trioxide,

(D) a conductive pigment selected from the group consisting of antimony doped tin oxide and potassium titanate fiber; and

(E) water.

5,624,979
STABILIZED PHOSPHORUS-MODIFIED EPOXY RESINS AND THEIR USE

Hans-Jerg Kleiner, Kronberg, and Dieter Regnat, Eppstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 22, 1995, Ser. No. 577,232

Claims priority, application Germany, Dec. 30, 1994, 44 47 277.3

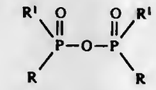
Int. Cl.[6] C08G *59/14;* **C08L** *63/00*

U.S. Cl. 523—453 **18 Claims**

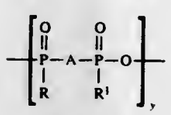
1. A phosphorus-modified epoxy resin having an epoxide value of 0.02 to 1 mol/100 g obtained by reacting components (A) and (B) at a temperature from −20 ° to 130° C.

(A) polyepoxide compounds having 2 to 6 epoxide groups per molecule and having an average molecular weight M_n of 150 to 4,000 and

(B) phosphinic and/or phosphonic acid anhydrides of the formula (I), (II) and/or III



(I)



(II)



(III)

in which

R, R^1 and R^3 independently of one another are a hydrocarbon radical having 1 to 20 carbon atoms,

A is a divalent hydrocarbon radical having 1 to 10 carbon atoms

y is an integer of at least 1

z is a least 3, and

wherein at least one phenolic antioxidant is admixed therewith.

5,624,980
THERMOPLASTIC CEMENT COMPOSITION AND PROCESS FOR THE PREPARATION OF MOLDED ARTICLE THEREOF

Shigeji Kobori, Saitama, Japan, assignor to Tobuchemicals, Inc., Saitama, and Mitsui & Co., Ltd., Tokyo, both of Japan

PCT No. PCT/JP94/00976, § 371 Date Mar. 24, 1995, § 102(e) Date Mar. 24, 1995, PCT Pub. No. WO95/00456, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 16, 1994, Ser. No. 325,356

Claims priority, application Japan, Jun. 21, 1993, 5-149136

Int. Cl.[6] C08K *3/00;3/34*

U.S. Cl. 524—5 **9 Claims**

1. A process for producing a thermoplastic cement composition comprising the steps of: melting 100 parts by weight of a thermoplastic polymer; blending the molten thermoplastic polymer with 0.1 to 20 parts by weight of a hydrophilic substance selected from the group consisting of a polyolefin oxide, a polyhydric alcohol, a nonionic surfactant, a starch-acrylonitrile graft polymer, a starch-acrylic acid graft polymer, a starch-styrene sulfonic acid graft polymer, a starch-vinylsulfonic acid graft polymer, a starch-acrylamide graft polymer, a starch-polyvinyl ketone graft polymer, a cellulose-styrene sulfonic acid graft polymer, hyaluronic acid, agarose, chitosan, collagen, crosslinked PVA, a PVA elastomer, a crosslinked acrylic acid salt polymer, a partial hydrolysate of an acrylic ester-vinyl acetate copolymer, an acrylic acid salt-PVA

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copolymer, a partial hydrolysate of polyacrylonitrile, a hydroxyethyl methacrylate polymer, a salt of a maleic anhydride-isobutylene copolymer, a vinylpyrrolidone polymer, a vinylpyrrolidone copolymer, a polyethylene glycol diacrylate copolymer, a polyethyleneimine copolymer, and mixtures thereof, to render the molten thermoplastic polymer and the hydrophilic substance compatible with each other and form a polymer alloy; and mixing the polymer alloy with 50 to 600 parts by weight of at least one of a hydraulic cement selected from the group consisting of a portland cement, a Hauyen cement, an alumina cement, a dental cement, an oxychloride cement, an acid-proof cement, a gypsum cement, a mixture of activated silica and calcium hydroxide and a mixture of activated alumina and calcium hydroxide, or an air-hardening cement selected from the group consisting of lime cement, magnesia cement, calcium hydroxide cement, dolomite plaster, and powdered metal cement, to produce the thermoplastic cement composition.

5,624,981

POLYALKYLPIPERIDINE CONTAINING ACETIC ACID AND 3-AMINO-ACRYLIC ACID DERIVATIVES

Martin Holderbaum, Ludwigshafen; Alexander Aumueller, Neustadt, and Hubert Trauth, Dudenhofen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/00739, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/20051, PCT Pub. Date Oct. 14, 1993

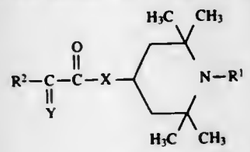
PCT Filed Mar. 26, 1993, Ser. No. 313,107

Claims priority, application Germany, Apr. 7, 1992, 42 11 603.1

Int. Cl.[6] C07D *211/68;211/08;401/00;* **C08K** *5/34*

U.S. Cl. 524—82 **11 Claims**

1. A polyalkylpiperidine-containing acetic acid or 3-aminoacrylic acid derivative of the general formula Ia



Ia

where

R^1 is hydrogen, C_1- to C_6-alkyl, formyl, C_2- to C_6-alkanoyl, C_1- to C_{12}-alkoxy, C_5- to C_6-cycloalkoxy, cyanomethyl, hydroxymethyl, 2-hydroxyethyl or a radical of the formula $-CR^3=CH-CO-OR^4$, where

R^3 is hydrogen, C_1- to C_6- alkyl or a radical of the formula $-CO-OR^4$ and

R^4 is C_1- to C_{20}-alkyl, C_5- to C_8-cycloalkyl, C_7- to C_{18}-aralkyl, phenyl, tolyl or a radical of the formula $-(CH_2CH_2O)_nH$ or $-[CH(CH_3)CH_2O]_nH$, where n is a number from 1 to 30,

R^2 is cyano,

X is O, NH or NR^6, where

R^6 is C_1- to C_{12}-alkyl, and

Y is a group of the formula $=CH-NHR^7$ or $=CH-NR^6R^7$, where

R^7 is phenyl which can be substituted by one to three C_1- to C_{12}-alkyl, C_1- to C_{12}-alkoxy, halogen, cyano, hydroxyl, phenyl or groups of the formula $-CO-OR^5$, $-CO-R^5$, $-CO-NHR^5$, $-O-CO-R^5$ or $-NH-CO-R^5$, where R^5 is C_1- to C_{12}-alkyl, C_5- to C_8-cycloalkyl, benzyl, phenyl or tolyl, is a 5- or 6 -membered unsaturated heterocyclic ring having up to three hetero atoms from the group consisting of nitrogen, oxygen and sulfur, which can additionally be benzo-fused and substituted by one to three C_1- to C_{12}-alkyl, C_1- to C_{12}-alkoxy, halogen, cyano, hydroxyl, phenyl, phenoxy or C_1- to C_{12}-alkoxycarbonyl.

5,624,982

STABILIZER SYSTEM FOR NON YELLOWING POLYMER COMPOSITION

Moh C. O. Chang, Feeding Hills; Chuan-Ju Chen, Amherst, and Allen R. Padwa, Worcester, all of Mass., assignors to Bayer Antwerpen SA/NV, Antwerp, Belgium

Continuation-in-part of Ser. No. 370,088, Jan. 9, 1995, Pat. No. 5,492,948, which is a continuation-in-part of Ser. No. 160,138, Dec. 2, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,313

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—91 **20 Claims**

1. A stabilizer system for styrene polymers consisting essentially of (a) a benzotriazole; (b) a hindered amine light stabilizer selected from the group consisting of (i) bis (2,2,6,6-tetramethyl-4-piperidinyl) sebacate; and (ii) bis-(1,2,2,6,6-pentamethyl-4-piperdinyl) ester of (3,5-di-tert-butyl-4-hydroxybenzyl)-butyl malonate; and (c) tris (3,5-di-tert-butyl-4-hydroxybenzyl) isocyanurate with the proviso that the stabilizer system does not contain phosphites or phosphonites stabilizers.

5,624,983

AMORPHOUS MODIFICATION OF 1,1',1''-NITRILO(TRIETHYL-TRIS-[2,2'-METHYLENE-BIS(4,6-DI-TERT-BUTYLPHENYL)] PHOSPHITE)

Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 2, 1995, Ser. No. 556,775

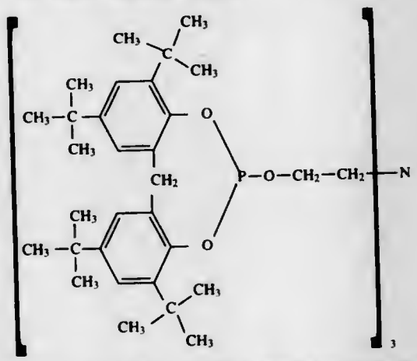
Int. Cl.[6] C08K *5/527;* **C07F** *9/6574*

U.S. Cl. 524—119 **14 Claims**

5. A composition stabilized against thermal, oxidative and actinic induced degradation which comprises

(a) an organic material subject to thermal, oxidative and actinic induced degradation, and

(b) an effective stabilizing mount of the amorphous form of 1,1',1''-nitrilo{ triethyl-tris-[2,2'-methylene-bis(4,6-di-tert-butylphenyl)]phosphite} having the formula I



(I)

characterized by a glass transition temperature (T_g) within the range of 120°–124° C. (DSC) and by an X-ray diffraction pattern which is featureless.

5,624,984

LIQUID CRYSTAL POLYESTER RESIN COMPOSITIONS AND PROCESS FOR PRODUCING THE SAME

Motonobu Furuta, Chiba, and Takanari Yamaguchi, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

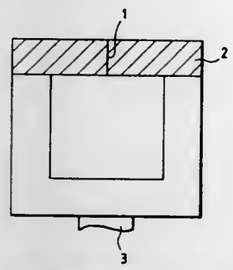
PCT No. PCT/JP94/00299, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/19407, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 24, 1994, Ser. No. 325,239

Claims priority, application Japan, Feb. 26, 1993, 5-038314; Oct. 13, 1993, 5-280511

Int. Cl.[6] C08K *5/17*

U.S. Cl. 524—243 **9 Claims**



1. A liquid crystal polyester resin composition comprising 100 parts by weight of a composition comprising (A) 1 to 99% by weight of a liquid crystal polyester and (B) 99 to 1% by weight of an aromatic polycarbonate, and (C) 0.0001 to 3 parts by weight of a diamine.

5,624,985

METHOD FOR PUTTING SILICONE ONTO POLYCARBONATE

Michael A. Lucarelli, Ballston Spa; William J. Raleigh, Rensselaer, and Kimberlie A. Schryer, Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 115,927, Sep. 1, 1993, Pat. No. 5,401,578, which is a continuation of Ser. No. 895,506, Jun. 8, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 353,866

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **7 Claims**

1. A method of forming solid polycarbonate particles having silicone deposited thereon, said method comprising:

(a) mixing or suspending a polycarbonate resin and a silicone in a solvent comprising an aromatic hydrocarbon liquid to form a mixture;

(b) heating said mixture to reflux to remove the solvent; and

(c) recovering powdery polycarbonate having silicone deposited thereon, wherein said powdery polycarbonate having silicone deposited thereon comprises from about 10 to about 50 weight percent silicone.

5,624,986

HOT MELT ADHESIVE HAVING CONTROLLED PROPERTY CHANGE

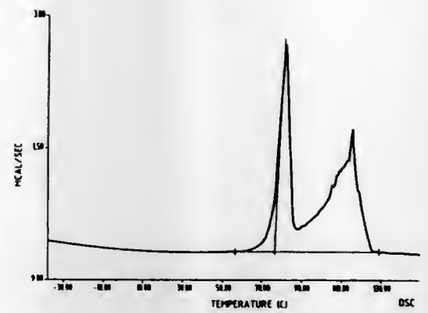
William L. Bunnelle, Hugo Township, and Christopher M. Ryan, Chisago City, both of Minn., assignors to H. B. Fuller Licensing & Financing Inc., St. Paul, Minn.

Continuation of Ser. No. 397,377, Mar. 2, 1995, which is a division of Ser. No. 919,999, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 385,315, Jul. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 213,789, Jun. 30, 1988, abandoned. This application Oct. 17, 1995, Ser. No. 544,043

Int. Cl.[6] C09J *9/00;11/06;193/00;* **C08K** *5/092*

U.S. Cl. 524—270 **27 Claims**

1. A hot melt adhesive composition comprising:



(a) about 5 to 50 wt-% of a plasticizer comprising a cycloaliphatic or aromatic ester of a benzene dicarboxylic acid or a cycloaliphatic polyester of aromatic carboxylic acids, which is a solid at room temperature;

(b) about 20 to 80 wt-% of a tackifier selected from the group consisting of an aromatic tackifying resin, aromatic-aliphatic tackifying resin, aliphatic tackifying resin and a rosin derived tackifying resin, and mixtures thereof; and

(c) about 0 to 55 wt-% of a thermoplastic polymer; wherein the composition, after application and cooling, cold flows for a controllable period of time at ambient temperature prior to subsequently increasing in modulus (G').

5,624,987

POLYALKYLENE ETHERS AS PLASTICIZERS AND FLOW AIDS IN POLY(1,4-CYCLOHEXANEDIMETHYLENE TEREPHTHALATE) RESINS

Andrew E. Brink, 1401 University Blvd. F10, Kingsport, Tenn. 37660; Sam R. Turner, 1037 Sussex Dr., Kingsport, Tenn. 37660, and Gerald T. Keep, P.O. Box 3203, Kingsport, Tenn. 37664

Filed Sep. 15, 1995, Ser. No. 528,971

Int. Cl.[6] C08K *5/10;5/06;5/05*

U.S. Cl. 524—290 **41 Claims**

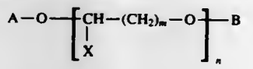
1. A polyester composition comprising a blend of:

(A) 99.5 to 75 weight % of a copolyester having an inherent viscosity of 0.1 to 1.2 dL/g and having a melting point in excess of 250° C., comprising:

(a) one or more dicarboxylic acids, and

(b) a glycol component comprising at least 80 mole % 1,4-cyclohexanedimethanol; and

(B) 0.5 to 25 weight % of one or more polyalkylene ethers, having the following formula:



wherein,

m is an integer from 1 to 3, inclusive,

n is an integer from 4 to 250 inclusive,

X is selected from one or more of the group consisting of CH_3, C_3H_7, C_2H_5, and H,

A is hydrogen, alkyl, aryl or aroyl of 1 to 10 carbon atoms, and

B is hydrogen, alkyl, aryl or aroyl of 1 to 10 carbon atoms, and

wherein the weight percentages of said copolyester and said one or more polyalkylene ethers equal 100 weight %.

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5,624,988

PROCESS FOR THE PRODUCTION OF POLYMER-BOUND RUBBER CHEMICALS

Armin Bauer, Brühl; Hans-Joachim Graf, Mannheim; Anton Hartmayer, Neulussheim; Harald Kleinknecht, Alzey; Rene Loix, Leimen; Arthur Relle, Ketsch, and Volker Schäfer, Altrip, all of Germany, assignors to Rhein Chemie Rheinau GmbH

Division of Ser. No. 239,962, May 9, 1994, abandoned. This application Mar. 23, 1995, Ser. No. 409,904

Claims priority, application Germany, May 17, 1993, 43 16 429.3

Int. Cl.[6] C08K *3/06;5/47*

U.S. Cl. 524—303 **6 Claims**

1. A process for preparing powder-form rubber vulcanization additives into polymer-bound form, which comprises finely dispersing the powder-form rubber vulcanization additive in a polymerizable liquid, initiating polymerization of the polymerizable liquid to form a polymer, and converting the polymer containing the rubber vulcanization additive bound therein into a pourable form, wherein the polymerizable liquid comprises an epoxidized fatty acid or fatty acid ester and polymerization is initiated by the addition of a polybasic acid.

5,624,989

SEMICONDUCTOR DEVICE

Miho Yamaguchi; Mitsuyoshi Shirai; Yoshitada Morikawa; Yoshiaki Mitsuoka, and Michio Komoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Apr. 19, 1995, Ser. No. 424,195

Int. Cl.[6] C08K *3/22;* **C08L** *63/00;* **H01L** *23/29*

U.S. Cl. 524—405 **7 Claims**

1. A semiconductor device, prepared by encapsulating a semiconductor element with a thermosetting resin composition comprising:

(I) a thermosetting resin;

(II) a hardener; and

(III) at least one of a composite metal hydroxide having a dehydration initiation temperature of not lower than 260° C. represented by the following formula (3) and a composite metal hydroxide represented by the following formula (4):

$$x(A_aO_b).y(B_cO_e).cH_2O \quad (3)$$

wherein A and B represent different metallic elements; x, y, a, b, d and e each represents a positive number; and c represents a positive number of more than 1, with the proviso that x, y, a, b, d and e may be the same or different;

$$x(C_aO_b).y(D_cO_e).z(E_fO_g).cH_2O \quad (4)$$

wherein C, D and E represent different metallic elements; x, y, z, a, b, d, e, f and g each represents a positive number; and c represents a positive number of more than 1, with the proviso that x, y, z, a, b, d, e, f and g may be the same or different.

5,624,990

METHOD OF MANUFACTURING RUBBER WHEELS USED ON A PORTABLE VEHICLE ADHESIVE REMOVER AND COMPOSITION OF THE RUBBER WHEELS

Howard Vipperman, Anaheim, Calif., assignor to Fisher Tool Co., Inc., City of Industry, Calif.

Filed Jul. 22, 1991, Ser. No. 733,879

Int. Cl.[6] C08K *3/26*

U.S. Cl. 524—425 **20 Claims**

1. A method of manufacturing rubber wheels used on a portable vehicle adhesive remover for removing pinstripes, decals, side moldings and other items adhering to a vehicle, comprising:

a. masticating approximately 100 parts of rubber in a mixer to produce a viscous rubber mixture having a temperature between approximately 170°–220° F.;

b. synthesizing a rubber compound having a temperature between approximately 100°–150° F. by mixing into said rubber mixture, for making a final rubber product which has a hardness of approximately 42:

(i) stabilizing agent;

(ii) less than 250 parts of vulcanized oil and at least 2 parts but not more than 7 parts of activating agent;

(iii) at least 50 parts but not more than 150 parts of inorganic filler;

(iv) less than 100 parts of processing oil;

(v) at least 0.5% but not more than 1.5% by parts of cross-linking agent; and

(vi) accelerating agent;

c. placing a coupling member made of metal material inside a mold; and

d. vulcanizing said rubber compound in said mold at a temperature between approximately 300°–350° F. and under a pressure between approximately 2,000–5,000 psi for a time period between approximately 10–20 minutes, to produce said final rubber product as a rubber wheel used on a portable vehicle adhesive remover for removing pinstripes, decals, side moldings and other items adhering to a vehicle.

5,624,991

POLYPROPYLENE RESIN COMPOSITION

Hiroyuki Harada, Ichihara; Yuji Ikezawa, Nagoya; Susumu Kanzaki, Ichihara; Hideo Shinonaga, Chiba, and Satoru Sogabe, Sodegaura, all of Japan, assignors to Sumitomo Chemical Company Limited., Osaka, Japan

Filed Oct. 24, 1994, Ser. No. 327,714

Claims priority, application Japan, Nov. 1, 1993, 5-273665

Int. Cl.[6] C08L *23/14;53/00*

U.S. Cl. 524—451 **6 Claims**

1. A polypropylene resin composition comprising:

30 to 92% by weight crystalline ethylene propylene block copolymer (A) comprising a crystalline polypropylene moiety and an ethylene-propylene random copolymer moiety having a ratio of ethylene/propylene in a range of 20/80 to 60/40 by weight, wherein said crystalline polypropylene moiety has a limiting viscosity $[\eta]_p$ of 0.8 to 2.0 dl/g and a ratio of molecular weight distribution, Q value=weight average molecular weight Mw/number average molecular weight Mn, of 3.0 to 5.0 as determined by GPC, and a content of solubles in xylene at 20° C. of not higher than 1.5% by weight, and wherein said ethylene-propylene random copolymer moiety is present in an amount of 7 to 25% by weight of said crystalline ethylene propylene block copolymer (A);

5 to 30% by weight ethylene-α olefin copolymer rubber (B) which is an amorphous random copolymer elastomer having a Mooney viscosity ML_{1+4} measured at 100° C. of 8 to 100 and a content of α-olefin of 10 to 55% by weight;

3 to 20% by weight ethylene-butene-1 copolymer (C) having

(C1) a density of 0.870 to 0.915 g/cm^3,

(C2) a melt index at 190° C. of 5 to 30 g/10 minutes, and

(C3) a melt peak at 100° C. or higher as determined in the thermogram with increasing temperature by a Differential Scanning Calorimeter; and

0 to 20% by weight inorganic filler (D).

5,624,992

AQUEOUS POLYMER DISPERSION

Oral Aydin, Mannheim; Michael Portugall, Wachenheim; Josef Neutzner, Neustadt, and Walter Maechtie, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 229,631, Apr. 19, 1994, Pat. No. 5,442,006, which is a division of Ser. No. 38,863, Mar. 29, 1993, Pat. No. 5,352,720. This application Mar. 29, 1995, Ser. No. 412,570

Claims priority, application Germany, Apr. 29, 1992, 42 13 967.8

Int. Cl.[6] C08K *5/11*

U.S. Cl. 524—458 **11 Claims**

1. A process for preparing a final aqueous polymer dispersion having a solids volume concentration of at least 50% by volume and a polydisperse particle size distribution, which comprises polymerizing at least one radical polymerizable monomer with the addition of at least one aqueous starting dispersion I of a starting polymer I and with the addition of at least one aqueous starting dispersion II of a starting polymer II in a polymerization vessel by the method of free radical aqueous emulsion polymerization in the presence of surface active substances and free radical polymerization initiators with the proviso that

a) the starting polymer I is present in the at least one aqueous starting dispersion I in the form of dispersed starting polymer particles I whose nonzero weight average particle diameter is equal to or less than 50 nm,

b) the mass of the at least one starting polymer I added relative to the total mass of the at least one radical polymerizable monomer and of the starting polymers I and II added in the form of aqueous starting dispersions I and II is from 0.2 to 0.7%,

c) the starting polymer II is present in the at least one aqueous starting dispersion II in the form of dispersed starting polymer particles II of whose total mass not more than 60% have a non-zero particle diameter≦200 nm and at least 40% have a particle diameter>200 nm,

d) the mass of the at least one starting polymer II added relative to the total mass of the at least one radical polymerizable monomer and of the starting polymers I and II added in the form of aqueous starting dispersions I and II is from 2 to 20%,

e) of the total amount of the at least one aqueous starting dispersion I to be added the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

f) the total amount of the at least one aqueous starting dispersion II to be added is introduced into the polymerization vessel as initial charge prior to the start of the free radical emulsion polymerization,

g) of the total amount of the at least one monomer to be polymerized the proportion introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

h) the total amount of the at least one monomer to be polymerized is added to the polymerization vessel from the start of the free radical aqueous emulsion polymerization in such a way that at any time of this addition the polymerization conversion of the total monomers already added previously to the polymerization vessel is at least 80 mol %,

i) at any time after the start of the free radical aqueous emulsion polymerization the ratio V of the number of moles of the particles of starting polymer I already added previously to the polymerization vessel in the form of the at least one aqueous starting dispersion I to the number of moles of the amount already added previously to the polymerization vessel of the at least one monomer to be radical polymerized, standardized for the ratio of the number of moles of the total starting polymer particles to be added in the form of the at least one aqueous starting dispersion I to the number of moles of the total amount of monomers to be radical polymerized, is within the range from >0 to 10,

j) on completion of the addition of the total amount to be added of the at least one aqueous starting dispersion I additionally at most 20 mol % of the total amount of the at least one monomer to be radical polymerized is added to the polymerization vessel,

k) the at least one aqueous starting dispersion I to be added contains at least 10–50% by weight, based on its starting polymer I content, of surface active substances,

l) the at least one aqueous starting dispersion II to be added contains at least 1–5% by weight, based on its starting polymer II content, of surface active substances,

m) the final aqueous polymer dispersion contains from 1 to 5% by weight of the surface active substances, based on the total mass formed of the at least one radical polymerizable monomer and of the starting polymers I and II to be added in the form of aqueous starting dispersions I and II,

n) the amount of surface active substances contained in the polymerization vessel at any time from the start of the free radical aqueous emulsion polymerization minus the minimum amounts mentioned under k) and l) of surface active substances introduced into the polymerization vessel is less than 5% by weight, based on the monomers already added previously to the polymerization vessel, and

o) the total amount used of free radical polymerization initiators is from 0.1 to 5% by weight, based on the total amount of the at least one monomer to be radical polymerized, and is added to the polymerization vessel in the course of the free radical aqueous emulsion polymerization in such a way that the free radical aqueous emulsion polymerization continues to a minimum polymerization conversion of the total amount of the at least one monomer to be polymerized of at least 90 mol %.

5,624,993

CHLOROPRENE POLYMER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Tsuyoshi Tsuji; Hiroaki Oba; Kousuke Watanabe, and Masao Koga, all of Niigata, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 444,369, May 18, 1995, Pat. No. 5,567,771. This application Jun. 3, 1996, Ser. No. 657,329

Claims priority, application Japan, May 20, 1994, 6-106914; Jun. 14, 1994, 6-131965; Nov. 8, 1994, 6-273529

Int. Cl.[6] C08L *11/02;27/04;11/00*

U.S. Cl. 524—501 **5 Claims**

1. A process for producing a chloroprene polymer composition, which comprises mixing a chloroprene rubber latex and an α,β-unsaturated carboxylate polymer emulsion, wherein said carboxylate polymer is a homopolymer of an α,β-unsaturated carboxylate or a copolymer consisting essentially of two or more α,β-unsaturated carboxylates, said α,β-unsaturated carboxylate polymer having a number average molecular weight of at least 300,000.

5,624,994

PROCESS FOR THE PREPARATION OF COMPOSITE MATERIAL FORMED FROM A VULCANIZED ELASTOMER IN COMBINATION WITH A THERMOPLASTIC ELASTOMER CONTAINING POLYAMIDE BLOCKS, COMPOSITE MATERIAL THUS FORMED AND SPORTS ARTICLES PRODUCED WITH THE AID OF SAID MATERIALS

Marius Hert, Serquigny, and Patrick Alex, Limours Pecquese, both of France, assignors to Elf Atochem S. A., Puteaux, France

Continuation of Ser. No. 375,567, Jan. 13, 1995, abandoned, which is a continuation of Ser. No. 999,401, Dec. 31, 1992, abandoned. This application Oct. 13, 1995, Ser. No. 543,064

Claims priority, application France, Dec. 31, 1991, 91 16400

Int. Cl.[6] C08J *3/24;* **C08K** *5/36;* **C08L** *53/00*

U.S. Cl. 524—505 **26 Claims**

1. A process for the preparation of a composite material comprising preparing a vulcanizable elastomer composition containing a vulcanizable elastomer having carboxylic acid or dicarboxylic acid anhydride groups, a crosslinking system and, optionally, diverse adjuvants; and vulcanizing said composition while in contact with a thermoplastic elastomer containing polyamide blocks, the vulcanization temperature being between −15° and +5° C. with

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respect to the Vicat point of said thermoplastic elastomer containing polyamide blocks, thus forming a composite of a vulcanized elastomer and said thermoplastic elastomer.

5,624,995

AGENT FOR WATER TREATMENT CONTAINING A POLYMER FOR WATER TREATMENT AND A PROCESS FOR PRODUCING SAID POLYMER

Mayumi Kira, and Norimasa Kobayashi, both of Tokyo, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Division of Ser. No. 317,882, Oct. 4, 1994. This application Apr. 3, 1996, Ser. No. 626,830

Claims priority, application Japan, Oct. 7, 1993, 5-276147

Int. Cl.[6] C08L *55/00; C02F 5/10*

U.S. Cl. 524—554 **9 Claims**

1. In an improved process for treating water wherein a polymer having the function of water treatment for corrosion prevention or scale prevention is added to the water in an effective amount for treatment, the improvement comprising said polymer being a labeled polymer incorporating units of a labeled monomer which is labeled with a fluorescent substance and having an allyl group.

5,624,996

DISPERSION OF FINE PARTICLES OF MODIFIED POLYETHYLENE AND PROCESS FOR PREPARATION THEREOF

Akio Morinaga; Takeo Kigami, both of Ohtake; Kunihiko Yorihiro, Yuu, and Toshihiko Okada, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Japan

Continuation of Ser. No. 103,559, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 939,430, Sep. 4, 1992, abandoned. This application May 31, 1995, Ser. No. 455,257

Claims priority, application Japan, Aug. 14, 1987, 62-201848

Int. Cl.[6] C08L *31/00*

U.S. Cl. 524—556 **21 Claims**

1. A dispersion of fine particles of modified polyethylene, which comprises:

(1) 80 to 100 parts by weight of a hydrocarbon organic solvent and fine particles of an ethylene polymer or ethylene polymer composition, and

(2) 0 to 25 parts by weight, based on the weight of the solvent and the polymer or polymer composition, of water, said fine particles being dispersed in the solvent and the water medium,

wherein the ethylene polymer or ethylene polymer composition is an organic acid graft-modified polymer or polymer composition having an acid value of 0.3 to 75 mg-KOH/g as a whole and baving a crystallinity of at least 45% as determined by X-ray diffractometry, the particles having an average dispersed particle size of 0.3 to 20 μm, and the weight ratio of the particles to the hydrocarbon organic solvent is 100/60 to 100/600.

5,624,997

PRECURED SILICONE EMULSION

Donald T. Liles, Midland, Mich., and Nick E. Shephard, Blacksburg, Va., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 113,029, Aug. 30, 1993, Pat. No. 5,438,095. This application Jan. 5, 1995, Ser. No. 369,194

Int. Cl.[6] C08K *3/10;* **C08L** *83/00*

U.S. Cl. 524—785 **15 Claims**

1. An aqueous silicone emulsion which yields an elastomer upon removal of the water comprising the product obtained by mixing

(A) 100 parts by weight of polydiorganosiloxane having alkoxysilyl endblocking groups with at least two alkoxy radicals attached to the silicon atom, and

(B) sufficient titanium catalyst selected from the group consisting of titanium esters, organosiloxy titanium compounds, and beta-dicarbonyl titanium compounds to crosslink the polydiorganosiloxane of (A), and

thereafter adding water and ionic or non-ionic stabilizer, emulsifying the resulting product, and obtaining the aqueous silicone emulsion.

5,624,998

HARDENABLE COMPOSITION, AQUEOUS GEL AND APPLICATIONS

Hiroshi Itoh, Kamakura; Takashi Abe, Yokohama; Hideo Kamio, Odawara; Hitoshi Yamashita, and Atsuhiko Nitta, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

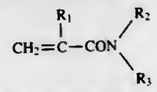
Division of Ser. No. 320,786, Oct. 11, 1994, Pat. No. 5,519,088, and a continuation of Ser. No. 913,710, Jul. 16, 1992, abandoned. This application Feb. 12, 1996, Ser. No. 600,029

Claims priority, application Japan, Jul. 18, 1991, 3-178230

Int. Cl.[6] C08K *3/10*

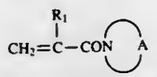
U.S. Cl. 524—812 **10 Claims**

1. An aqueous gel comprising a polymer consisting essentially of (1) water soluble (meth)acrylamide or (meth)acrylamide derivative(s) each represented by the following general formula (I) or (II)



(I)

wherein R_1 represents a hydrogen atom or a methyl group, and R_2 represents a hydrogen atom, a methyl group or an ethyl group, and R_3 represents a hydrogen atom, a methyl group, an ethyl group or a propyl group,



(II)

wherein R_1 represents a hydrogen atom or a methyl group, and A represents $-(CH_2)_n-$ (n is 4 to 6) or $-(CH2)_2-O-(CH_2)_2-$, (2) water insoluble particulate metal oxide(s) and (3) an aqueous medium,

wherein the proportions of the (meth)acrylamide or (meth)acrylamide derivative(s), the particulate metal oxide(s) and the aqueous medium are 1–40% by weight, 1–45% by weight and 98–15% by weight, respectively.

wherein the particle diameters of the particulate metal oxide(s) are in the range of 0.001–20 μm, said (meth)acrylamide or (meth)acrylamide derivative(s) (I) or (II) dissolving in said aqueous medium to form a solution, said water insoluble particulate metal oxide(s) being dispersed in said aqueous medium solution, and

wherein polymerization of said aqueous medium solution provides an aqueous gel containing said particulate metal oxide dispersed therein.

5,624,999

MANUFACTURE OF FUNCTIONALIZED POLYMERS

Alessandro Lombardi, Abingdon, United Kingdom; Geraldo Barini, Livorno, Italy; Carmine D'Antonio, Bergeggi, Italy, and Stefano Gusi, Bologna, Italy, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 108,685, Sep. 3, 1993, abandoned. This application May 12, 1995, Ser. No. 438,623

Claims priority, application United Kingdom, Mar. 5, 1991, 9104647

Int. Cl.[6] C08F *255/00;259/02*

U.S. Cl. 525—52 **24 Claims**

1. A process for the manufacture of a functionalised polymer suitable for use as a lubricating or fuel oil additive, or as an intermediate for use in the manufacture of such an additive, in which process a first reactant is present in a different phase from a second reactant, the first reactant comprises a polymeric substance containing a carbon-carbon backbone, and optionally containing a functional group, and the second reactant comprises a compound capable of introducing a functional group into the polymeric substance, and/or of modifying an existing functional group, the process comprising the step of reacting a mixture of the reactants in an apparatus comprising a reaction region defined by a surface and at least one member adjacent to the surface, the surface and the member(s) being separated by a distance of at most 25 mm, wherein the reactants are caused to move relative to the surface by relative movement between the surface and the member(s), and wherein a major part of each of the reactants is treated in the reaction region.

5,625,000

THERMOPLASTIC RESIN COMPOSITION

Motonobu Furuta, Chiba, and Takanari Yamaguchi, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 6, 1994, Ser. No. 319,229

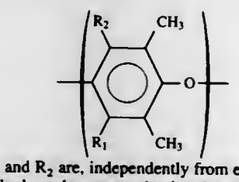
Claims priority, application Japan, Oct. 7, 1993, 5-251637; Nov. 15, 1993, 5-285177; Dec. 27, 1993, 5-330246

Int. Cl.[6] C08L *71/12*

U.S. Cl. 525—68 **10 Claims**

1. A thermoplastic resin composition comprising:

(A) 100 parts by weight of an amino group-containing modified polyphenylene ether comprising repeating units of the formula (1):



(1)

wherein R_1 and R_2 are, independently from each other, a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms and having a number average polymerization degree of 20 to 1200, in which 0.02/X to 1/X of methyl groups at the 2- and/or 6-positions of phenylene group are modified to an aminomethyl group wherein X is a number average polymerization degree; and

(B) 0.1 to 70 parts by weight of an epoxy group-containing ethylene copolymer comprising (a) 50 to 99% by weight of ethylene units, (b) 0.1 to 30% by weight of unsaturated carboxylic acid diglycidyl ester units or unsaturated glycidyl ether units and (c) 0 to 50% by weight of ethylenically unsaturated ester compound units.

5,625,001

TOUGHENED POLAR THERMOPLASTICS

Samuel J. Makower, Elkins Park; Richard M. Kopchik, Southampton; Wen-Long Liu, Richboro, and Alan D. Stein, Yardley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 106,453, Aug. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,760, Aug. 18, 1992, abandoned. This application Jun. 9, 1995, Ser. No. 489,266

Int. Cl.[6] C08L *25/00;27/06*

U.S. Cl. 525—78 **6 Claims**

1. A toughened blend comprising:

(a) 100 parts of poly(vinyl chloride), and

(b) from about 5 to about 80 parts of an impact modifier comprised of at least 50 weight percent of units derived from a C_2–C_8 alkyl acrylate and of at least 10 weight percent of units derived from a C_1–C_4 alkyl methacrylate, the impact modifier formed from an assemblage of multi-stage cross-linked emulsion-prepared polymer particles, the first stage being a polymer predominately of units derived from one or more C_2–C_8 alkyl acrylates and containing at least about 2 weight percent to about 10 weight percent of units derived from a copolymerizable monounsaturated carboxylic acid, the carboxylic acid being at least 40 % neutralized in the form of an ammonium salt at the time of formation of the second stage, and from about 0.2 to about 1.0 weight % of units derived from at least one unsaturated monomer having a plurality of addition polymerizable unsaturated groups, the second-stage polymer being formed in the presence of the first-stage polymer, the second-stage polymer being more than 50% of units derived from methyl methacrylate, the second-stage polymer being formed as cross-linked domains within the first polymer stage, the second-stage polymer being less than about 40 parts by weight of the total stages of the emulsion polymer particle, the second-stage polymer being free of units derived from maleimide or its N-substituted derivatives, and the second-stage polymer containing from about 0.5 to less than about 5 weight percent of units derived from at least one unsaturated monomer having a plurality of addition polymerizable unsaturated groups.

5,625,002

POLYPHENYLENE SULFIDE COMPOSITION AND SHAPED ARTICLES MADE THEREFROM

Sho Kadoi, Ichihara; Norio Shimasaki, Nagoya; Kazuhiko Kobayashi, Tokoname, and Katuya Ohno, Gifu, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 185,764, Dec. 24, 1994, abandoned, which is a continuation of Ser. No. 991,085, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 625,643, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 359,133, May 31, 1989, abandoned. This application Mar. 27, 1995, Ser. No. 410,938

Claims priority, application Japan, Jun. 2, 1988, 63-136288; Feb. 13, 1990, 2-33148

Int. Cl.[6] C08L *81/00*

U.S. Cl. 525—189 **8 Claims**

1. A polyphenylene sulfide composition comprising (A) at least about 55 weight % of a polyphenylene sulfide, (B) a copolymer of ethylene with a glycidyl ester of an α, β-unsaturated acid, which contains 0.1 to 30% by weight, based on the weight of the copolymer, of an epoxy group, and (C) at least one elastomer selected from the group consisting of ethylene/propylene copolymers, which are free of acid anhydride groups and contain 30 to 95% by weight, based on the weight of the copolymer, of ethylene units, ethylene/butene copolymers, ethylene/propylene/diene terpolymers, hydrogenated styrene/butadiene/styrene block copolymers, and copolymers of ethylene with alkyl esters of acrylic acid wherein the mixing weight ratio among the polyphenylene sulfide (A), the copolymer of ethylene with a glycidyl ester of an α, β-unsaturated acid (B) and the elastomer (C) is within a ratio such that the (A)/((B)+(C)) weight ratio is from 70/30 to 95/5 and the (B)/(C) weight ratio is from 10/90 to 80/20.

5,625,003

GOLF BALL

Akira Kato; Kuniyasu Horiuchi, both of Kobe, and Akihiko Hamada, Kakogawa, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Feb. 16, 1993, Ser. No. 18,206

Claims priority, application Japan, Feb. 17, 1992, 4-069237

Int. Cl.[6] C08L *23/08;37/00;33/02;* **A63B** *37/12*

U.S. Cl. 525—208 **18 Claims**

1. A golf ball comprising a core and a cover for covering said core, wherein said cover consists essentially of

(A) a base resin consisting essentially of a mixture of (1) an ionomer resin, and (2) a copolymer containing a glycidyl group and having a stiffness modulus of 20 to 2,000 Kgf/cm^2, which is prepared from 60 to 90% by weight of an olefin, 0 to

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35% by weight of a vinyl compound, and 1 to 15% by weight of an unsaturated epoxy compound, wherein said mixture has been heated during mixing; and

(B) optionally one or more pigments, dispersants, antioxidants, UV absorbers, or UV stabilizers.

5,625,004

TWO-STEP THERMAL PROCESS FOR THE PREPARATION OF ALKENYL SUCCINIC ANHYDRIDE

James J. Harrison, Novato, and William R. Ruhe, Jr., Benicia, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jul. 23, 1992, Ser. No. 918,990

Int. Cl.[6] C10M *145/02;* **C08F** *255/02;255/08;255/10*

U.S. Cl. 525—285 **13 Claims**

1. A process for the preparation of an alkenyl-substituted succinic anhydride wherein the alkenyl substituent has a number average molecular weight of from about 500 to 5000 and the average number of succinic groups per alkenyl group is greater than 1.2 which comprises:

(a) reacting a polyolefin having an alkylvinylidene isomer content of less than about 10 percent and a number average molecular weight of about 500 to 5000 with maleic anhydride at a temperature in the range of about 200° C. to 250° C. to provide a mixture of alkenyl succinic anhydride having an average of about 1.0 succinic group per alkenyl group and unreacted polyolefin, and

(b) reacting the mixture of alkenyl succinic anhydride and unreacted polyolefin from step (a) with maleic anhydride in the presence of a free radical initiator at a temperature in the range of about 100° C. to 220° C. to thereby provide an alkenyl succinic anhydride having an average of greater than 1.2 succinic groups per alkenyl group.

5,625,005

ACRYLIC SATURATED RUBBER HYBRID PRESSURE-SENSITIVE ADHESIVES

Prakash Mallya, Pasadena, and Colin C. Smith, Glendale, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 89,260, Jul. 8, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 548,255

Int. Cl.[6] C08F *255/08;279/02*

U.S. Cl. 525—301 **23 Claims**

1. A pressure-sensitive adhesive graft copolymer formed by reacting an acrylic monomer system comprising at least one alkyl acrylate ester containing from about 4 to about 8 carbon atoms in the alkyl group in the presence of a macromer selected from the group consisting of ethylene-butylene and ethylene-propylene macromers and mixtures thereof, each of said macromers having a molecular weight of from about 2,000 to about 30,000, a glass transition temperature of less than about 0° C. and a terminal reactive group selected from the group consisting of acrylate and methacrylate.

5,625,006

ADHESIVE BEADS

Joseph P. Callahan, Jr., St. Paul; Rudyard M. Enanoza, Woodbury, and Mark D. Weigel, Vadnais Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 232,698, Apr. 25, 1994, Pat. No. 5,536,786, which is a division of Ser. No. 28,338, Mar. 9, 1993, Pat. No. 5,322,731. This application Jan. 24, 1996, Ser. No. 590,884

Int. Cl.[6] C08F *265/02;263/04;265/04;* **C08L** *33/02*

U.S. Cl. 525—301 **12 Claims**

1. A method of forming an adhesive bead comprising a core that comprises a pressure sensitive adhesive material and an essentially discontinuous organic polymer coating disposed about said core, said method comprising the steps of:

(a) providing a core comprising a pressure sensitive adhesive material;

(b) providing an emulsion of monomers comprising a first material selected from the group consisting of vinyl group-containing monomers and acrylate group-containing monomers and, optionally, a polar monomer polymerizable with said first material;

(c) mixing said core and said emulsion of monomers;

(d) emulsion polymerizing said monomers in the presence of said core to provide an essentially discontinuous coating thereof on said core; and

(e) drying the product of step (d).

5. A method of forming an adhesive bead comprising a core that comprises a pressure sensitive adhesive material and an essentially discontinuous organic polymer coating disposed about said core, said method comprising the steps of:

(a) forming an aqueous suspension which includes a core comprising a pressure sensitive adhesive material by suspension polymerizing a first monomer selected from the group consisting of alkyl acrylates, alkyl fumarates and alkyl maleates with a functional monomer copolymerizable with the first monomer until an exotherm is detected;

(b) providing a latex of an organic thermoplastic homopolymer or an organic thermoplastic copolymer;

(c) combining said latex and said core subsequent to the detection of said exotherm without having filtered the core from the aqueous suspension;

(d) continuing the suspension polymerization for a time sufficient to provide an essentially discontinuous coating of said thermoplastic homopolymer or said thermoplastic copolymer about said core; and

(e) drying the product of step (d).

8. A method of forming an adhesive bead comprising a core that comprises a pressure sensitive adhesive material and an essentially discontinuous organic polymer coating disposed about said core, said method comprising the steps of:

(a) providing a monomer premix comprising a first monomer selected from the group consisting of vinyl group-containing monomers and acrylate group-containing monomers and a polar monomer polymerizable with the first monomer;

(b) providing a latex of an organic thermoplastic homopolymer or an organic thermoplastic copolymer;

(c) combining said premix and said latex to form a blend;

(d) heating said blend for a time and at a temperature sufficient to cause said premix to suspension polymerize to form a core comprising a pressure sensitive adhesive material and to cause said latex to form an essentially discontinuous coating of said organic thermoplastic homopolymer or said organic thermoplastic copolymer about said core; and

(e) drying the product of step (d).

5,625,007

PROCESS FOR MAKING LOW OPTICAL POLYMERS AND COPOLYMERS FOR PHOTORESISTS AND OPTICAL APPLICATIONS

Michael T. Sheehan, and James H. Rea, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 54,504, Apr. 27, 1993, abandoned, which is a division of Ser. No. 706,601, May 28, 1991, Pat. No. 5,239,015, which is a continuation-in-part of Ser. No. 608,847, Oct. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 548,344, Jun. 29, 1990, abandoned. This application Aug. 24, 1994, Ser. No. 295,362

Int. Cl.[6] C08F *8/14*

U.S. Cl. 525—328.8 **5 Claims**

1. A polymer comprising 4-hydroxystyrene having a molar absorbtivity of about 211 or less, at a wavelength of about 250 nm, and a weight average molecular weight M_w less than about 22,000 as measured by gel permeation chromatography using polystyrene standards, wherein said polymer contains less than about 2.5% by weight of residual 4-hydroxystyrene monomer or derivative residues thereof.

5,625,008

PREPARATION OF TELECHELIC STRUCTURES

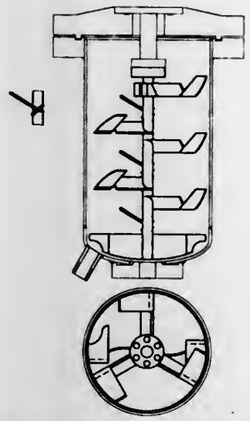
Klaus Bronstert, Carlsberg, and Konrad Knoll, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 29, 1994, Ser. No. 314,954

Claims priority, application Germany, Oct. 15, 1993, 43 35 220.0

Int. Cl.[6] C08C *19/00*

U.S. Cl. 525—333.1 **3 Claims**



1. A process for the preparation of a telechele by reacting a polyfunctional, living polymer obtained by anionic polymerization with a functionalizing agent, wherein the reaction is carried out while stirring with a stirrer having in the form of knives blades as stirring elements, the latter being inclined relative to their plane of movement and passing over essentially the complete space occupied by the reaction mixture.

5,625,009

ANTISTATIC POLYPHENYLENE ETHER RESIN COMPOSITION

Kazushige Inoue, Moka, Japan, assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 15, 1994, Ser. No. 340,095

Claims priority, application Japan, Nov. 15, 1993, 5-307017

Int. Cl.[6] C08G *65/00*

U.S. Cl. 525—390 **11 Claims**

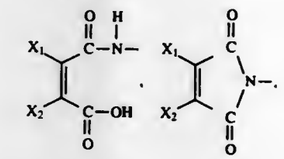
1. A composition comprising:

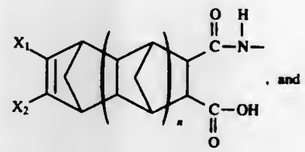
(A) 100 parts, by weight, of a polyphenylene ether resin or such a resin and styrene resin, containing at least one polyphenylene ether resin in which at least 0.01 unit having at least one substituent of the formula

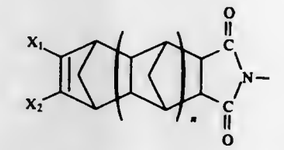


is present per 100 phenylene ether units, wherein R_1 and R_2 independently represent a hydrogen atom, alkyl group, halogen atom, or aryl group; R_3 and R_3' independently represent a hydrogen atom, alkyl group, or substituted alkyl group, but R_3 and R_3' are not simultaneously hydrogen atoms; and

(B) 3–30 parts, by weight, of poly(alkylene oxide) containing, intramolecularly, at least one structure selected from the group consisting of:







wherein X_1 and X_2 independently represent a hydrogen atom, halogen atom, or alkyl group, and n is an integer ranging from 0 to 10.

5,625,010

MACROMONOMERS HAVING REACTIVE SIDE GROUPS

Robert R. Gagné , Pasadena; Matthew L. Marrocco, III, Santa Ana; Mark S. Trimmer, Pasadena, and Neil H. Hendricks, Brea, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Division of Ser. No. 746,883, Aug. 19, 1991. This application Jun. 2, 1995, Ser. No. 458,758

Int. Cl.[6] C08L *65/02*

U.S. Cl. 525—416 **24 Claims**

1. A method of making a macromonomer having monomer repeat units of the formula:



wherein each A_1, A_2, A_3, and A_4, on each monomer unit, independently, is C or N; each G_1, G_2, G_3, and G_4, on each monomer unit, independently, is selected from the group consisting of H, solubilizing side groups, reactive side groups, and reactive solubilizing side groups, provided that (1) at least one monomer unit has at least one solubilizing side group and at least one monomer unit has at least one reactive side group, or (2) at least one monomer unit has at least one reactive solubilizing side group, wherein the reactive side groups and the reactive solubilizing side groups are other than alcohols and amines, and provided that when any of A_1, A_2, A_3, and A_4 is N, the corresponding G_1, G_2, G_3, or G_4 is nil; the macromonomer has a degree of polymerization, DP_n, greater than about 6; and adjacent monomer units are oriented head-to-head, head-to-tail, or randomly, comprising:

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preparing a homopolymer having a rigid-rod backbone and pendant, solubilizing side groups; and

reacting said homopolymer with a sufficient amount of a reagent to convert at least one of the solubilizing side groups into a reactive side group or into a reactive solubilizing side group.

5,625,011

MOLECULAR COMPOSITES, PROCESS FOR THE PREPARATION OF SAID COMPOSITES AND THEIR USES

Sanjay Palsule, Juniper Green, Scotland, assignor to Agence Spatiale Europeenne, Paris, France

Filed Jun. 29, 1994, Ser. No. 267,583

Claims priority, application France, Jun. 29, 1993, 93 07888

Int. Cl.[6] C08L *79/08*

U.S. Cl. 525—431 **14 Claims**

1. A molecular composite, comprising a rigid reinforcing thermoplastic polymer dispersed on a molecular scale in a flexible organosiloxane/thermoplastic polymer copolymer, wherein said rigid reinforcing thermoplastic polymer is a polyamideimide.

5,625,012

PROCESS FOR REDUCING POLYMER BUILD-UP IN RECYCLE LINES AND HEAT EXCHANGERS DURING POLYMERIZATION OF ALPHA OLEFINS

Fathi D. Hussein, Cross Lanes; Kiu H. Lee, South Charleston, both of W. Va., and Xinlai Bai, Piscataway, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 269,048, Jun. 29, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,985

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—74 **11 Claims**

1. A method for inhibiting polymer build-up in a recycle line and a heat exchanger during a polymerization of one or more alpha olefins in the presence of a transition metal catalyst which consists of introducing as an antifouling agent consisting of an alcohol having 1 to 10 carbon atoms, tetrahydrofuran, or a mixture thereof at one or more locations in the recycle gas line in an amount sufficient to inhibit polymer build-up.

5,625,013

PREPARATION OF A SUPPORTED CATALYST FOR THE POLYMERIZATION OF α-OLEFINS

Hans-Joachim Mueller, Gruenstadt; Godofredo Follmer, Maxdorf; Rainer Konrad, Goennheim; Roland Salve, Ludwigshafen; Martin Lux, Dannstadt-Schauernheim; Hans-Helmut Goertz, Freinsheim, and Guido Funk, Worms, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 124,047, Sep. 21, 1993, Pat. No. 5,455,216. This application May 24, 1995, Ser. No. 422,937

Claims priority, application Germany, Sep. 23, 1992, 42 31 749.5

Int. Cl.[6] B01J *35/08;* **C08F** *4/24*

U.S. Cl. 526—106 **2 Claims**

1. A process for the preparation of polymers of α-olefins by polymerizing the monomers at from 70° to 150° C. and at from 2 to 150 bar by means of a chromium trioxide catalyst, wherein the chromium trioxide catalyst used is the supported catalyst in which

(1) a silicon dioxide-containing support gel is prepared by

(1.1) introducing a sodium water glass or potassium water glass solution into a swirling stream of an aqueous mineral acid longitudinally and tangentially to the stream, spraying the resultant silica hydrosol in drop form into a gaseous medium and allowing it to solidify to form a hydrogen, and freeing the resultant hydrogel from salts by washing without prior ageing,

(1.2) drying the hydrogel resulting from (1.1.) to form the support gel,

(2) the support gel (1) is charged with chromium trioxide or a chromium compound which can be converted into chromium trioxide under the conditions of process step (3), giving a chromium-containing support gel, and

(3) the chromium-containing support gel (2) is heated at from 400° to 1100° C. for from 10 to 1000 minutes in an anhydrous gas stream containing oxygen in a concentration of greater than 10% by volume,

which comprises drying the hydrogel resulting from step (1.1) in step (1.2) within a time of not more than 60 seconds in a shaping, high-speed dryer at an inlet temperature of from 80° to 400° C.

5,625,014

METHOD FOR POLYMERIZATION OF OLEFINS

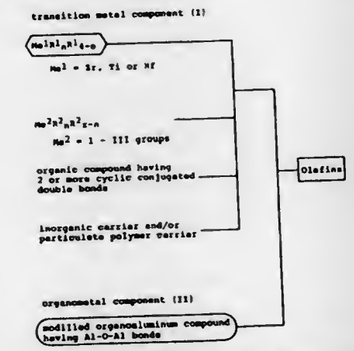
Naoki Kataoka; Yosuke Numao; Takashi Seki; Yoshio Tajima, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 212,449, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 974,546, Nov. 12, 1992, Pat. No. 5,331,071. This application Jun. 6, 1995, Ser. No. 467,336

Claims priority, application Japan, Nov. 12, 1991, 3-323848; Nov. 12, 1991, 3-323849

Int. Cl.[6] C08F *4/64*

U.S. Cl. 526—153 **31 Claims**



1. A process for the manufacture of polyolefins which comprises polymerizing an olefinic hydrocarbon or copolymerizing olefinic hydrocarbons in the presence of a catalyst composition comprised of a first component (I) and a second component (II),

said first component being the reaction product of

a compound (i) of the formula

$$Me^1R^1_4$$

wherein R^1 is selected from the group consisting of an alkyl, alkenyl, aryl, alkoxy, aryloxy and aralkyloxy moiety of 1–24 carbon atoms, and Me^1 is zirconium, titanium or hafnium;

a compound (ii) of the formula

$$Me^2R^2_mX^2_{z-m}$$

wherein R^2 is a hydrocarbon group of 1–24 carbon atoms, X^2 is a halogen atom, Me^2 is an element of Group III in the Periodic Table, z is the valence of Me^2 and m is a number such that $0 \leqq m \leqq 3$;

a cyclic hydrocarbon compound (iii) having two or more conjugated double bonds; and

a carrier (iv) selected from the group consisting of inorganic carriers, particulate polymer carriers and mixtures thereof;

said second component (II) being a modified organoaluminum compound having at least one Al—O—Al bond derived from the reaction of an organoaluminum compound and water.

5,625,015

METHOD FOR MAKING SUPPORTED CATALYST SYSTEMS AND CATALYST SYSTEMS THEREFROM

Jeffrey L. Brinen, League City; Anthony N. Speca, Kingwood; Kelly Tormaschy, Houston, and Kathryn A. Russell, Seabrook, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del., and Hoechst, Germany

Division of Ser. No. 344,837, Nov. 23, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 461,795

Int. Cl.[6] C08F *4/42*

U.S. Cl. 526—160 **12 Claims**

1. A process for producing polyolefins, said process comprising the step of contacting under polymerization conditions olefin(s) and supported catalyst wherein the catalyst is made by the process comprising the steps of:

(a) forming a spray from a volume of catalyst solution comprising a metallocene catalyst component; and

(b) contacting the spray with a porous support material while agitating the support material

wherein the volume of catalyst solution is in the range of from more than one times the total pore volume of the support material to less than that volume of solution required to form a slurry when contacted with the porous support.

5,625,016

HIGH TEMPERATURE SOLUTION POLYMERIZATION PROCESS

Rinaldo S. Schiffino, Kingwood, and Donna J. Crowther, Baytown, both of Tex., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Filed Oct. 20, 1995, Ser. No. 545,973

Int. Cl.[6] C08F *4/643;2/04;210/18*

U.S. Cl. 526—160 **10 Claims**

1. A process for the preparation of high molecular weight ethylene-α-olefin copolymers, or ethylene-α-olefin-diolefin copolymers, comprising contacting in solution at a polymerization temperature at or above about 80° C., ethylene and one or more α-olefin monomer, or, contacting in solution at a polymerization temperature at or above about 80° C., ethylene, one or more α-olefin monomer, and one or more diene monomer, with a catalyst system prepared from at least one unbridged Group 4 metal compound having a bulky monocyclopentadienyl ligand, a uninegative bulky Group 15 ligand and two uninegative, activation reactive ligands and at least one catalyst activator compound.

5,625,017

PROCESS FOR PREPARING A POLYMER USING LITHIUM INITIATOR PREPARED BY IN SITU PREPARATION

Koichi Morita; Atsushi Nakayama; Yoichi Ozawa, and Ryota Fujio, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 136,934, Oct. 18, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,975

Claims priority, application Japan, Oct. 19, 1992, 4-280137

Int. Cl.[6] C08F *2/06;4/08;36/04*

U.S. Cl. 526—180 **15 Claims**

1. A process for preparing a high molecular weight polymer comprising polymerization of at least one monomer selected from the group consisting of conjugated diene monomers and vinyl-aromatic hydrocarbon monomers in a hydrocarbon solvent in the presence of or in the absence of a randomizer by using a lithium polymerization initiator which is formed by bringing the following compounds (1) and (2) into contact with each other in the polymerization system in the presence of at least said monomer, wherein the polymerization conversion at the time of contact is less than 5%:

(1) an organolithium compound; and

(2) at least one secondary amine compound selected from the group consisting of imine compounds expressed by the formula (B):



(B)

wherein X is a group forming a cyclic structure with the nitrogen atom and is selected from the group consisting of (X-I) saturated type cyclic structure groups comprising $(CR^3R^4)_n$, (X-II) saturated type cyclic structure groups comprising $(CR^3R^6)_m$ and NR^7 or O, and (X-III) cyclic structure groups having a molecular structure which is derived from a structure group selected from the saturated type cyclic structure groups X-I and X-II by converting at least a part of carbon-carbon single bonds in the ring forming part thereof into a carbon-carbon double bond, R^3, R^4, R^5 and R^6 are, respectively, a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms selected from the group consisting of aliphatic hydrocarbon groups, alicyclic hydrocarbon groups and aromatic hydrocarbon groups, R^7 is a hydrocarbon group having 1 to 10 carbon atoms selected from the group consisting of aliphatic hydrocarbon groups, alicyclic hydrocarbon groups and aromatic hydrocarbon groups, R^3, R^4, R^5, R^6 and R^7 may be the same or different from each other, n is an integer of 3 to 15 and m is an integer of 2 to 9.

5,625,018

PROCESS FOR PRODUCING CHLOROPRENE RUBBER

Yoshitaka Tsutsumi, Kudamatsu; Takashi Yamamoto; Takeshi Hironaka, both of Shinnanyo, and Tadashi Hayashi, Tokuyama, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Jan. 31, 1996, Ser. No. 594,167

Claims priority, application Japan, Feb. 1, 1995, 7-015111

Int. Cl.[6] C08F *2/24*

U.S. Cl. 526—201 **10 Claims**

1. A process for producing a chloroprene rubber wherein chloroprene or a mixture comprised of chloroprene and a monomer copolymerizable therewith is subjected to an aqueous radical emulsion polymerization, characterized in that the polymerization is effected by using an alkali metal salt of a disproportioned rosin acid as an emulsifier, and a water-soluble polymeric substance as a dispersion stabilizer, said water-soluble polymeric substance having at least one kind of group selected from the group consisting of a sulfonic acid group and sulfate ester groups, which group has been introduced by at least one procedure selected from an addition polymerization procedure and a procedure of a polymeric reaction following an addition polymerization.

5,625,019

PEROXIDE CURABLE FLUOROELASTOMERS, PARTICULARLY SUITABLE FOR MANUFACTURING O-RINGS

Vincenzo Arcella, Novara; Giulio Brinati, Milan; Margherita Albano, Milan, and Vito Tortelli, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed May 15, 1995, Ser. No. 441,218

Claims priority, application Italy, May 18, 1994, MI94A0998

Int. Cl.[6] C08F *16/24;12/20*

U.S. Cl. 526—247 **3 Claims**

1. A method for manufacturing O-rings comprising peroxide curing peroxide-curable fluoroelastomers in the form of O-rings, the fluoroelastomers having iodine atoms in a terminal position, and monomeric units in the elastomer chain derived from an iodinated olefin of formula $CHR{=}CH{-}Z{-}CH_2CHR{-}I$ wherein R is —H or $-CH_3$; Z is a C_1–C_{18} (per)fluoroalkylene radical, linear or branched, optionally containing one or more ether oxygen atoms, or a (per)fluoropolyoxyalkylene radical.

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5,625,020

PHOTORESIST COMPOSITION

Gregory Breyta, San Jose, Calif.; Christopher J. Knors, Bound Brook, N.J.; Hiroshi Ito, San Jose, Calif., and Ratnam Sooriyakumaran, East Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 241,931, May 11, 1994, Pat. No. 5,492,793, which is a continuation of Ser. No. 970,745, Nov. 3, 1992, abandoned. This application Dec. 13, 1995, Ser. No. 571,571

Int. Cl.[6] C08F 220/12

U.S. Cl. 526—329.2 2 Claims

1. A process for making poly(hydroxystyrene-co-acrylate) comprising the steps of:

(i) copolymerizing acetoxystyrene with acrylate to form a copolymer;

(ii) deacylating the copolymer of (i) with a base in a nonaqueous solvent.

5,625,021

METHOD FOR THE PRODUCTION OF PLASTIC PARTICLES

Markus Parusel, Messel; Werner Siol, Darmstadt, and Heinz Vetter, Rossdorf, all of Germany, assignors to Roehm GmbH Chemishe Fabrik, Darmstadt, Germany

Filed Dec. 19, 1995, Ser. No. 575,036

Claims priority, application Germany, Dec. 23, 1994, 44 46 365.0

Int. Cl.[6] C08F 220/18

U.S. Cl. 526—329.7 25 Claims

1. A method for the production of poly(meth)acrylate particles with a particle diameter of 1–15 μm, comprising batch polymerizing 20–50 parts by weight of monomer in a liquid medium comprising 55–100% by weight of mineral oil, in the presence of 0.1 to 5 parts by weight of a polymer emulsifier and 0.05–5 parts by weight of a radical initiator.

5,625,022

CURABLE ORGANOPOLYSILOXANE COMPOSITION

Masayuki Onishi, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1996, Ser. No. 619,782

Claims priority, application Japan, Mar. 29, 1995, 7-096242

Int. Cl.[6] C08G 77/08

U.S. Cl. 528—15 4 Claims

1. A curable organopolysiloxane composition comprising

(A) 100 parts by weight of a mixture of

(a) an organopolysiloxane with a viscosity at 25° C. of 0.02 to 1,000 Pa.s that contains at least 2 silicon-bonded alkoxy groups in each molecule and the monovalent organic groups bonded to the silicon atoms other than the alkoxy groups are monovalent hydrocarbon groups or monovalent halogenated hydrocarbon groups, and

(b) an organopolysiloxane with a viscosity at 25° C. of 0.02 to 1,000 Pa.s that contains at least 2 silicon-bonded lower alkenyl groups in each molecule,

(B) an organopolysiloxane that contains at least 2 silicon-bonded hydrogen atoms in each molecule, in a quantity that gives a value in the present composition of 0.3 to 5 moles of silicon-bonded hydrogen in this component to one mole of silicon-bonded lower alkenyl in component (b),

(C) 0.1 to 20 parts by weight of an alkoxysilane with the general formula $R^1_xSi(OR^2)_{(4-x)}$, where R^1 represents a monovalent hydrocarbon group, R^2 is alkyl or alkoxyalkyl, and x is 0, 1, or 2 or partial hydrolysis condensate thereof,

(D) 0.01 to 20 parts by weight of an organozirconium compound or organoaluminum compound, and

(E) a hydrosilylation reaction catalyst in a catalytic quantity.

5,625,023

AEROSOL SUPPRESSANT COMPOSITIONS FOR SILICONE COATINGS

Kyuha Chung; Gary R. Homan, and Raymond L. Tabler, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 9, 1994, Ser. No. 353,017

Int. Cl.[6] C08G 77/08

U.S. Cl. 528—29 17 Claims

1. A method of making an aerosol suppressant composition, the method comprising the step of:

(I) reacting a mixture of:

(A) an organohydrogensilicon compound;

(B) a compound having its formula selected from the group consisting of:

$RO-(R^1O)_x-(R^2O)_y-R$,

$RO-(R^1O)_x-R$, and

$RO-(R^2O)_y-R$,

wherein R is selected from the group consisting of hydrogen and an olefinic hydrocarbon radical having from 3 to 14 carbon atoms, R^1 and R^2 are alkylene radicals having from 2 to 4 carbon atoms with the proviso that R^1 and R^2 are not the same alkylene radical at any given time, x has a value of from 1 to 200, y has a value of from 1 to 200, with the proviso that R is the same on both molecular chain ends;

(C) a catalyst selected from metal catalysts or complexes of metal catalysts; and

(D) an aliphatic, alicylic, aromatic or polycyclic monohydric alcohol having from 2 to 30 carbon atoms and containing olefinic unsaturation to form a reaction product.

5,625,024

BRANCHED POLYSILOXANE-POLYETHER-BASED COPOLYMERS, THEIR PREPARATION AND USE

Sabine Schlitte, Langenfeld; Hubertus Eversheim, Wermelskirchen; Gebhard Wagner, Odenthal; Karl-Heinz Kästler, Bergisch Gladbach; Jan Mazanek, Köln, and Hans-Ulrich Meier-Westhues, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 23, 1995, Ser. No. 409,113

Claims priority, application Germany, Mar. 30, 1994, 44 11 079.0

Int. Cl.[6] C08G 77/46

U.S. Cl. 528—29 9 Claims

1. A polysiloxane-polyether-based copolymer which contains T units and comprises chains of randomly linked organopolysiloxane units and linear polyether units, in which

the organopolysiloxane chains are linked to each other via polyether units, and wherein an organosiloxane unit in at least one of said chains is linked to an organosiloxane unit of another of said chains via a polyether unit linked by a carbon atom the one chain and by a —O—C-bond to the other chain,

at least one T unit is formed by organopolysiloxane units linked to each other, the ratio of T units to total siloxy units ranging from 0.02 to 0.25, and

the ratio of the number of polyether units to organopolysiloxane units is 0.07 to 0.33, and

the maximum number of siloxane units per total molecule is 50.

5,625,025

HEAT RESISTANT SILICONE COMPOSITIONS

Hiroki Ishikawa; Tsutomu Naganawa, and Isao Ona, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,983

Claims priority, application Japan, Feb. 22, 1994, 6-049847

Int. Cl.[6] C08G 77/26; C10M 107/50

U.S. Cl. 528—38 24 Claims

1. A silicone composition comprising:

(A) 100 weight parts of an amino-functional diorganopolysiloxane oil free of phenol groups; and

(B) 0.001 to 1,000 weight parts of a diorganopolysiloxane oil free of amino groups and having at least 1 phenol group per molelcule wherein the viscosity of said composition is from 10 to 100,000 mm^2/s at 25° C. and the average phenol equivalent weight of said composition is 10,000 to 5,000,000.

5,625,026

AMID GROUP-CONTAINING DIISOCYANATES AND AMIDE GROUP-CONTAINING EPOXY RESINS

Kenji Suzuki, Hitachi; Yoshiyuki Mukoyama, Chiba, and Toshihiko Ito, Ibaraki-ken, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

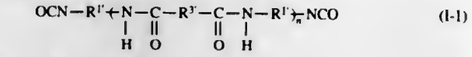
Filed May 18, 1994, Ser. No. 245,671

Claims priority, application Japan, May 21, 1993, 5-119702; Dec. 13, 1993, 5-311662

Int. Cl.[6] C07C 265/08; C07D 413/12; C08G 18/58;18/78

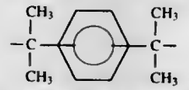
U.S. Cl. 528—44 10 Claims

1. An amide group-containing diisocyanate compound represented by the formula:



(I-1)

wherein $R^{1'}$ is a group of the formula:



(II-1)

and $R^{3'}$ is a divalent organic group, and when a plurality of $R^{1'}$'s and $R^{3'}$'s are present, these may be the same or different; and n in the formula (I-1) is 1 or more.

5,625,027

BRANCHED POLYCARBONATE

Shigeki Kuze, Ichihara; Ryozo Okumura, and Seiji Takahashi, both of Sodegaura, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

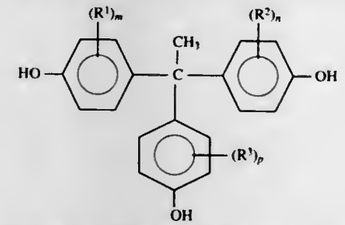
Division of Ser. No. 318,259, Oct. 5, 1994, Pat. No. 5,473,046. This application Sep. 20, 1995, Ser. No. 530,907

Claims priority, application Japan, Oct. 5, 1993, 5-249175

Int. Cl.[6] C08G 64/00; B01J 31/00

U.S. Cl. 528—196 5 Claims

1. A branched polycarbonate comprising units incorporated from a branching agent represented by the following general formula (I)



(I)

wherein R^1, R^2 and R^3 are each a hydrogen, an alkyl group having 1 to 5 carbon atoms or a halogen, and m, n and p are each an integer of 0 to 4,

and wherein said branched polycarbonate contains at most 1.0 ppm of residual sulfur as an impurity derived from said branching agent, and wherein said branched polycarbonate is prepared by an interfacial method.

5,625,028

THERMOSETTING POWDER COATING COMPOSITIONS

Robert B. Barbee, and Brian S. Phillips, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 265,564, Jun. 24, 1994, abandoned, which is a continuation of Ser. No. 51,746, Apr. 23, 1993, abandoned, which is a division of Ser. No. 909,480, Jul. 6, 1992, abandoned. This application Apr. 17, 1996, Ser. No. 633,349

Int. Cl.[6] C08G 63/199

U.S. Cl. 528—272 4 Claims

1. A semicrystalline polyester, said polyester consisting essentially of diol and/or triol residues and dicarboxylic acid residues, said diol residues selected from the group consisting of residues of 1,4-butanediol and 1,6-hexanediol; and said dicarboxylic acid residues consisting essentially of residues of 1,4-cyclohexanedicarboxylic acid wherein at least 70% of said residues of 1,4-cyclohexanedicarboxylic acid are in trans-form, said polyesters having an acid number of about 30 to 100, and an inherent viscosity of about 0.1 to 0.5 dL/g measured at 25° C. in a (60/40 by weight) mixture of phenol/tetrachloroethane at a concentration of 0.5 g/dL.

5,625,029

BIODEGRADABLE POLY (3-HYDROXYALKANOATE) COMPOSITIONS AND BLENDS

John C. Hubbs; Marti N. Harrison; Steven Gedon, all of Kingsport; Charles Buchanan, Bluff City; Robert M. Gardner, Gray; Douglas C. Hoffman, and Alan W. White, both of Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

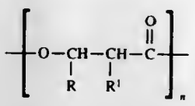
Division of Ser. No. 185,097, Jan. 21, 1994, Pat. No. 5,391,708, which is a division of Ser. No. 901,306, Jun. 19, 1992, Pat. No. 5,281,691. This application May 30, 1995, Ser. No. 452,937

Int. Cl.[6] C08G 63/08

U.S. Cl. 528—354 23 Claims

1. A biodegradable composition comprising;

(a) 1 to 99 wt. % of at least one atactic poly(3-hydroxyalkanoate) containing stereorandom recurring units of the formula:



wherein n is an integer from 50 to 10,000 and R and R^1 are each independently selected from the group consisting of C_1 to C_{20} alkyls and substituted alkyls, C_3 to C_{10} aryls and substituted aryls, and C_5 to C_{10} cycloalkyls and substituted cycloalkyls and R^1 is also selected from hydrogen;

(b) about 1 to 99 wt. % of at least one compatible polymer selected from the group consisting of polyethers, cellulose esters, polyesters, polyesterethers, and polyacrylates.

5,625,030

METHODS FOR SYNTHESIZING OLIGOMERS CONTAINING HYDROXY ACID UNITS

Simon F. Williams, Sherborn, and Oliver P. Peoples, Arlington, both of Mass., assignors to Metabolix, Inc., Cambridge, Mass.

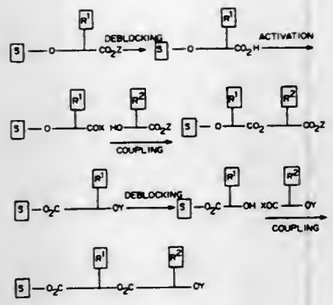
Continuation of Ser. No. 178,141, Jan. 6, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 561,139

Int. Cl.[6] C08G 63/06;63/685;63/91; C08L 77/00

U.S. Cl. 528—361 20 Claims

1. A method for preparing oligomers of hydroxy acids comprising the steps of

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a) selecting a first hydroxy acid monomer,
b) linking the first hydroxy acid monomer to a solid support via either the terminal carboxy group on the first monomer or the terminal hydroxy group on the first monomer,
c) selecting a second hydroxy acid monomer,
d) protecting the terminal group on the second hydroxy acid monomer opposite to the terminal group linked to the solid support in step b,
e) linking the first monomer and the second monomer through the unprotected terminal groups to form an oligomer bound to a solid support,
f) deprotecting the protected terminal group of the second monomer,
g) selecting additional hydroxy acid monomers,
h) protecting either the terminal carboxy group or the terminal hydroxy group on the additional monomers as necessary to link the additional monomers to the deprotected terminal group, and
i) linking the additional monomers to the oligomer,
wherein the method further comprises covalently incorporating in place of at least one of the additional hydroxy acid monomers a molecule selected from the group consisting of nucleotides, sugars, thio acids, lipids, steroids, and inorganic molecules, and oligomers thereof, wherein the molecule comprises at least one functional group capable of reacting with at least one terminal group on at least one of the hydroxy acid monomers, thereby to permit the molecule to be covalently incorporated into the oligomer.

5,625,031

PEPTIDE INHIBITORS OF THE P33^{CDK2} AND P34^{CDC2} CELL CYCLE REGULATORY KINASES AND HUMAN PAPILLOMAVIRUS E7 ONCOPROTEIN

Kevin R. Webster, Newton, Pa., and Kevin G. Coleman, Hopewell, N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Feb. 8, 1994, Ser. No. 193,977
Int. Cl.^{6} C07K *7/00;7/06;7/08;14/00*
U.S. Cl. 530—300 **5 Claims**

1. An inhibitor of p34^{cdk2} cell cycle regulatory kinase activity, or an inhibitor of the kinase activity of p33^{cdk2}, wherein the inhibitor is derived from the alpha-helix II domain of p107 and further wherein the inhibitor comprises a peptide including the amino acid sequence CAFYI (SEQ ID NO:3), or a peptide including substitutions of the sequence CAFYI (SEQ ID NO:3) which retain inhibitory activity.

5,625,032

SELECTIVE AMYLIN ANTAGONIST PEPTIDES AND USES THEREFOR

Lori Gaeta, Olivenhain, Kevin Beaumont, and Kathryn Prickett, both of San Diego, all of Calif., assignor to Amylin Pharmaceuticals, Inc., San Diego, Calif.

Filed Jul. 21, 1993, Ser. No. 96,172
Int. Cl.^{6} A61K *38/16;* C07K *14/00*
U.S. Cl. 530—324 **7 Claims**

1. An amylin antagonist peptide having the formula:

X-R_1ThrGlnR$_2$LeuAlaAsnR$_3$LeuValArgLeuGlnThrTyr-ProArgThrAsnValGlyR$_4$AsnThrTyr—NH_2

wherein
R_1 is the amino acid residue Ala or a bond;
R_2 is an amino acid residue selected from the group consisting of Arg, Gln, Lys, Asn and Leu;
R_3 is an amino acid residue selected from the group consisting of Gln, Glu, Asn, Asp and Phe;
R_4 is an amino acid residue selected from the group consisting of Ala and Ser; and
X is hydrogen or an acetyl group.

5,625,033

TOTALLY SYNTHETIC AFFINITY REAGENTS

Brian K. Kay, and Dana M. Fowlkes, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 176,500, Dec. 30, 1993, Pat. No. 5,498,538, which is a continuation of Ser. No. 13,416, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,133, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 480,420, Feb. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,052
Int. Cl.^{6} C12N *5/00;* C07H *21/02;* C12P *21/04*
U.S. Cl. 530—324 **1 Claim**

1. A protein which binds specifically to a metal ion and has an amino acid sequence selected from the group consisting of SEQ ID NOs. 34–63.

5,625,034

CORE ANTIGEN PROTEIN OF HEPATITIS C VIRUS, AND DIAGNOSTIC METHOD AND KIT USING THE SAME

Jaw-Ching Liao, and Cheng-Nan Wang, both of Taipei, Taiwan, assignors to EverNew Biotech Inc., Taipei, Taiwan

Division of Ser. No. 963,483, Oct. 16, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 143,579
Int. Cl.^{6} C07K *14/18;* C07H *21/04;* C12Q *1/70;* C12P *21/06*
U.S. Cl. 530—350 **2 Claims**

1. A partially purified, bacterially-produced core-env polypeptide having the amino acid sequence as given in SEQ ID No:4, wherein said core-env polypeptide has a molecular weight of about 25,000 daltons and which core-env polypeptide is an hepatitis C virus core antigen polypeptide fused to a part of an envelope region of an hepatitis C virus.

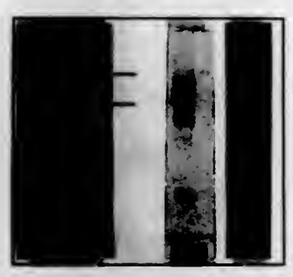
5,625,035

ERYTHROPOIETIN BINDING PROTEIN FROM MAMMALIAN SERUM

Gisela K. Clemons, Berkeley, Calif., assignor to The Regents, University of California, Oakland, Calif.

Continuation of Ser. No. 893,733, Jun. 5, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 202,717
Int. Cl.^{6} C07K *2/00;14/43;14/505;* A61K *38/02*
U.S. Cl. 530—380 **8 Claims**

1. A purified erythropoietin-binding protein, wherein said protein is obtainable from mammalian serum, has a molecular weight



of from about 90 kDa to 100 kDa as determined by size exclusion chromatography, and is capable of specifically binding to mammalian erythropoietin.

5,625,036

PREPARATION OF PROTHROMBIN TIME REAGENTS FROM RECOMBINANT HUMAN TISSUE FACTOR AND PURIFIED NATURAL AND SYNTHETIC PHOSPHOLIPIDS

Pamela L. Hawkins, Hialeah; Liliana Tejidor, Miami; James Maynard, Miami, and Kevin B. Johnson, Miami, all of Fla., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 32,562, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 771,294, Oct. 4, 1991, abandoned. This application Jan. 10, 1995, Ser. No. 371,052
Int. Cl.^{6} C07K *4/00;* C12Q *1/56*
U.S. Cl. 530—381 **11 Claims**

1. A prothrombin time reagent comprising:
(a) a recombinant protein having an amino acid sequence corresponding to the cytoplasmic portion of human tissue factor;
(b) a mixture of synthetic phospholipids in an amount sufficient to activate said protein wherein at least one of the phospholipids has an unsaturated fatty acid side chain;
(c) a buffer composition; and
(d) calcium ion in an amount sufficient to activate the recombinant protein.

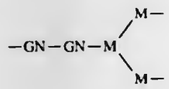
5,625,037

ANTIBODIES, METHOD OF PREPARING SAME, OLIGOSACCHARIDES AND CLONES FOR PROVIDING SAID ANTIBODIES, AND THE USE OF SAID ANTIBODIES FOR TUMOR DIAGNOSIS AND THERAPY

Werner Reutter, Arnimallee 22; Rolf Nuck, Sodenerstrasse 34, both of 1000 Berlin 33, and Martin Zimmermann, Dominicusstrasse 44, 1000 Berlin 62, all of Germany

Continuation of Ser. No. 556,960, Jan. 8, 1990, abandoned. This application Sep. 28, 1993, Ser. No. 128,264
Claims priority, application Germany, Mar. 8, 1988, 38 07 594.6
Int. Cl.^{6} C07K *16/30*
U.S. Cl. 530—387.5 **3 Claims**

1. Isolated and purified antibodies capable of specifically binding to a glycan moiety of a tumor cell membrane surface glycoprotein and Immunoreacting positively against antigenic oligosaccharides containing said glycan moiety, said glycan moiety having the formula:



where GN represents N-acetylglucosamine, M represents —D—mannose, and wherein the mannose groups are joined to each other through a 1,3- or 1,6-glycosidic bond.

5,625,038

MONOCLONAL ANTIBODIES SPECIFIC FOR *ERYSIPELOTHRIX RHUSIOPATHIAE*

Louise M. Henderson, 2106 Barr Dr., Ames, Iowa 50010-4932; Patricia S. Jenkins, 2608 Northwestern, Ames, Iowa 50010, and Katharine F. Scheevel, 606 11th St., Nevada, Iowa 50201

Filed Jul. 27, 1994, Ser. No. 281,220
Int. Cl.^{6} C12N *5/12;* C07K *16/12*
U.S. Cl. 530—388.4 **3 Claims**

1. A monoclonal antibody which specifically binds *Erysipelothrix rhusiopathiae*, which confers protection against infection by a virulent culture of *Erysipelothrix rhusiopathiae*, wherein said antibody has the protective properties of ERHU1-B60-91, which has been deposited in the American Type Culture Collection and has been assigned the designation HB 11636.

5,625,039

ANTI-HUMAN IGE MONOCLONAL ANTIBODIES

Naohiro Washida, and Toshiko Yoshida, both of Tochigi, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Continuation of Ser. No. 994,503, Dec. 21, 1992, abandoned. This application Nov. 9, 1994, Ser. No. 336,569
Claims priority, application Japan, Dec. 24, 1991, 3-357005
Int. Cl.^{6} C07K *16/42*
U.S. Cl. 530—388.25 **1 Claim**

1. Monoclonal antibodies:
1) which bind to immunoglobulin E (IgE) bound to human mast cells or basophils or CD23-positive cells, which bind to IgE bound Fc receptor on human mast cells, basophils or CD23-positive cells, which dissociate IgE antibody from Fc receptor on human mast cells, basophils or CD23-positive cells, which bind to IgE bound to Fc receptor without inducing the release of chemical mediators,
2) which have a molecular weight of about 150,000 daltons (as determined by SDS-PAGE; non-reduced state), and which
3) bind to human IgE-producing B cells.

5,625,040

PHOSPHACAN: A CHONDROITIN SULFATE PROTEOGLYCAN OF BRAIN THAT INTERACTS WITH NEURONS AND NEURAL CELL ADHESION MOLECULES

Richard U. Margolis; Renee K. Margolis, and Patrice Maurel, all of New York, N.Y., assignors to The Research Foundation of State University of New York, New York, and New York University, Albany, both of N.Y.

Filed Jan. 27, 1994, Ser. No. 188,375
Int. Cl.^{6} C07K *14/47;14/435;1/22;* A61K *35/30*
U.S. Cl. 530—395 **28 Claims**

1. An isolated phosphacan proteoglycan molecule or a functional derivative thereof which derivative binds noncovalently to the adhesion molecule Ng-CAM or N-CAM, wherein, when said proteoglycan is one which naturally occurs, said proteoglycan is substantially free of other proteins or proteoglycans with which it is natively associated.

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5,625,041

PURIFICATION OF PROTEINS

Richard A. Johnson, Nottingham, Great Britain; Alan V. Quirk, Loughborough, and John R. Woodrow, Nottingham, both of England, assignors to Delta Biotechnology Limited, Nottingham, England

Continuation of Ser. No. 30,255, Mar. 11, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 398,484

Claims priority, application United Kingdom, Sep. 12, 1990, 9019919; WIPO, Sep. 12, 1991, PCT/GB91/01556

Int. Cl.[6] C07K *1/18*

U.S. Cl. 530—416 9 Claims

1. A process for the purification of a protein from an aqueous liquid containing the protein and a protein-binding compound wherein the protein-binding compound is a synthetic textile dye or an intermediate or derivative thereof to which the protein can bind, or is bound, said process comprising:

(a) exposing the liquid to an ion exchange resin under conditions such that the ion exchange resin will not directly bind the protein, but will bind the protein-binding compound; and

(b) separating the resin having the protein-binding compound bound thereto from the liquid containing said protein, wherein, prior to either step (a) or step (b), the liquid is exposed to a disrupting material to disrupt binding of said protein to said protein-binding compound, said disrupting material comprising a mixture of a salt and a compound, other than said protein-binding compound, which disrupts hydrophobic interactions between the protein and said protein-binding compound.

5,625,042

DIAZO REACTIVE DYESTUFFS, THEIR PREPARATIONS AND USE

Horst Jäger, Leverkusen, and Joachim Wolff, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

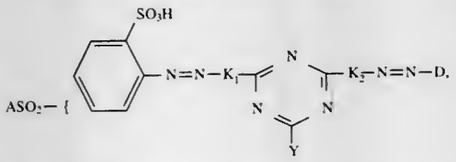
Filed May 24, 1995, Ser. No. 449,194

Claims priority, application Germany, May 31, 1994, 44 18 992.3

Int. Cl.[6] C09B *62/01;* D06P *1/38*

U.S. Cl. 534—637 10 Claims

1. A reactive dyestuff of the general formula (I)



(I)

in which

K_1 and K_2 are identical and each denotes the radical of a coupling component,

D represents the radical of a diazo component which corresponds to the formula

$$—D_2—B_1—SO_2A$$

in which

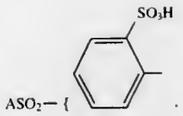
D_2 represents an optionally substituted phenylene or naphthylene radical,

B_1 represents a direct bond or a divalent bridge member,

A represents $CH=CH_2$ or $CH_2—CH_2Z$, in which Z denotes a substituent which can be split off under dyeing conditions,

Y represents fluorine or chlorine,

and the group $SO_2—A$ is bonded in the para position relative to the azo bridge, with the proviso that D differs from



5,625,043

ANTHRACYCLINES WITH UNUSUALLY HIGH ACTIVITY AGAINST CELLS RESISTANT TO DOXORUBICIN AND ITS ANALOGS

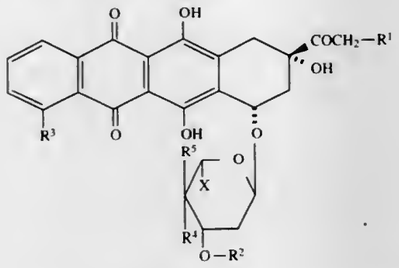
Waldemar Priebe, 4239 Emory, Houston, Tex. 77005; Piotr Skibicki, 04-015 Warsaw, ul. Waszyngtona 39m.24, Poland, and Roman Perez-Soler, 2906 Ria Blvd., Houston, Tex. 77005, assignors to Waldemar Priebe; Piotr Skibicki, and Roman Perez-Soler, Houston, Tex.

Continuation of Ser. No. 31,173, Mar. 12, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 396,290

Int. Cl.[6] C07M *15/24*

U.S. Cl. 536—6.4 19 Claims

1. A compound having a formula:



wherein,

R^1 is a hydrogen, hydroxyl, acylated hydroxyl, alkyl, arylalkyl or alkyl in ester linkage group;

R^2 is CH_2—AR, where Ar is defined as being an aryl group;

R^3 is a hydrogen or OCH_3 group;

R^4 and R^5 are either hydrogen or hydroxyl groups;

X is an alkyl group; and

the compound demonstrates the ability to kill a doxorubicin-resistant tumor cell.

5,625,044

METHODS FOR THE PREPARATION OF PURE HOMOLOGOUS SERIES OF MONO TO TETRA FATTY ACYL ESTERS OF SUGARS AND PHARMACEUTICAL FORMULATIONS USEFUL IN THE TREATMENT OF CANCER

Vijai N. Nigam, North Hatley; Prométéo Madarnas, and Gilles Dupuis, both of Sherbrooke, all of Canada, assignors to Goudreau Gage Dubec & Martineau, Montreal

Filed Dec. 16, 1994, Ser. No. 358,188

Int. Cl.[6] C07H *15/06;* C07G *3/00*

U.S. Cl. 536—18.2 26 Claims

1. A process of production of a pure homologous series of mono-,di-, tri- and tetra- fatty acyl esters of sugar which comprises the following successive steps:

a) mixing a fatty acyl chloride and an anhydrous sugar in a molar ratio of about 3:1 in a first solvent containing pyridine, at a temperature comprised between 60° and 80° C., for about eighteen hours, whereby fatty acyl esters of sugar consisting of a homologous series of mono- to octa- fatty acyl esters of sugars are produced;

b) evaporating said first solvent till the obtention of a dry residue;

c) extracting said dry residue with a second solvent that allows said first solvent to solubilize while said fatty acyl esters of sugar remain in the form of a precipitate, or

dissolving said dry residue in hot alcohol and pouring the solution so obtained in a mixture of ice:water, whereby said first solvent solubilize while the fatty acyl esters of sugar precipitate;

the steps a), b) and c) being followed by steps d) to g) or by steps d') to f');

d) extracting said precipitate in a third solvent consisting of a hot alcohol different from and more hydrophillic than the alcohol used in step c), whereby the homologous series of mono- to tetra- fatty acyl esters of sugar solubilize while the homologous series of penta- to octa- fatty acyl esters of sugar remain in the form of a precipitate;

e) separating and cooling the so obtained solution down to O° C., whereby said third solvent and remaining traces of said first solvent solubilize while the homologous series of mono- to tetra- fatty acyl esters of sugar precipitate;

f) extracting the precipitate so obtained in a fourth solvent of a hydrophilicity such that the homologous series of di- to tetra-fatty acyl esters solubilize while a precipitate consisting of a substantially pure mono- fatty acyl ester of sugar remains in the precipitate in a substantially pure form; and

g) fractionating and purifying the so obtained solution, whereby the pure di-, tri- and tetra- fatty acyl esters of sugar are obtained separately;

d') extracting said precipitate in a fifth solvent of a hydrophilicity such that the homologous series of di- to octa- fatty acyl esters of sugar solubilize while the mono-fatty acyl ester of sugar remains in the form of a precipitate, said precipitate being purified till a substantially pure mono- fatty acyl ester of sugar is obtained;

e') submitting the so obtained solution to a fractionation step, first in a sixth solvent of a hydrophilicity such that a first fraction containing the homologous series of penta- to octa-fatty acyl esters of sugar is obtained and second in a seventh solvent of a hydrophilicity such that a second fraction containing the homologous series of di- to tetra- fatty acyl esters of sugar is obtained; and

f') submitting said second fraction to a further fractionation step, whereby the di-, tri- and tetra-fatty acyl esters of sugar are obtained in separate fractions, which fractions are further purified to obtain the substantially pure homologous series of di-, tri- and tetra- fatty acyl esters of sugar.

5,625,045

PROCESS FOR THE PRODUCTION OF LOW VISCOSITY HIGH FUNCTIONALITY, LIGHT COLORED POLYETHERS BASED ON SUCROSE

Pramod Gupta, Bedburg; Hans-Joachim Sandhagen, Dormagen; Werner Betz, Odenthal; Ulrich Leyrer, and Martin Hoppe, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 18, 1994, Ser. No. 210,781

Claims priority, application Germany, Mar. 31, 1993, 43 10 504.1

Int. Cl.[6] C07H *1/00;15/04*

U.S. Cl. 536—18.6 9 Claims

1. A process for the production of a polyether having an arithmetically calculated functionality of from about 5.3 to about 7.5, a viscosity at 25° C. of from about 1,000 to about 19,000 mPa·s, and an APHA color number of from about 120 to about 150 comprising reacting

a) a mixture containing

i) approximately 100 parts by weight of sucrose,

ii) from about 30 to about 1000 parts by weight of a polyol having a molecular weight of from about 62 to about 420 g/mol or an alkoxylation product of such polyol or a mixture of such polyol and alkoxylation product, and

iii) an alkali metal hydroxide which was prepared at a temperature of from about 20° to about 110° C. with

b)

(1) from about 2 to about 90% by weight of ethylene oxide and

(2) from about 10 to about 98% by weight of propylene oxide or 1,2-butylene oxide or a combination thereof at a temperature of from about 85° to about 130° C. and under nitrogen at a pressure of from about 0.3 to about 4 bar.

5,625,046

HYDROXYL PROJECTING GROUPS FOR ORGANIC SYNTHESIS

Colin B. Reese, London, United Kingdom, assignor to King's College London, London, United Kingdom

PCT No. PCT/GB87/00198, § 371 Date Sep. 14, 1988, § 102(e) Date Sep. 14, 1988, PCT Pub. No. WO87/05906, PCT Pub. Date Oct. 8, 1987

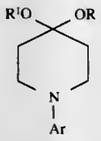
PCT Filed Mar. 23, 1987, Ser. No. 246,540

Claims priority, application United Kingdom, Mar. 24, 1986, 8607265

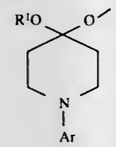
Int. Cl.[6] C07H *19/067;19/167;21/02;* C07D *211/44*

U.S. Cl. 536—22.1 14 Claims

1. A protected compound of the general formula:



wherein R^1 represents C_1-C_4 alkyl, R is the deoxy residue of a protected carbohydrate compound, R being different from R', and Ar is a monocyclic aryl group having an electron-withdrawing substituent which renders the



group acid-labile.

5,625,047

ENZYMATIC RNA MOLECULES

Michael D. Been; Sarah P. Rosenstein, both of Durham, and Anne T. Perrotta, Garner, all of N.C., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 821,155, Jan. 13, 1992, abandoned. This application May 5, 1994, Ser. No. 238,963

Int. Cl.[6] C07H *21/02;* C12P *19/34*

U.S. Cl. 536—23.1 17 Claims

1. A enzymatic ribonucleic acid molecule comprising ribonucleotides having RNA substrate-cleaving enzymatic activity which cleaves a separate RNA substrate at a cleavage site, comprising:

an RNA substrate binding portion which base pairs with the RNA substrate only 3' of the cleavage site, and

an enzymatic portion, which may include part or all of said RNA substrate binding portion, having said enzymatic activity located 3' and/or 5' of said RNA substrate binding portion,

wherein said ribonucleic acid molecule need base pair with the RNA substrate only 3' of the cleavage site and cause cleavage of said RNA substrate at the site.

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5,625,048

MODIFIED GREEN FLUORESCENT PROTEINS

Roger Y. Tsien, La Jolla, and Roger Heim, Del Mar, both of Calif., assignors to The Regents of the University of California

Filed Nov. 10, 1994, Ser. No. 337,915
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—23.4 **25 Claims**

1. A nucleic acid molecule comprising a nucleotide sequence encoding a functional mutant fluorescent protein whose amino acid sequence differs from the amino acid sequence of Aequorea green fluorescent protein (SEQ ID NO:2) by at least an amino acid substitution selected from the group consisting of T203I, I167V, I167T, Y66H, Y66W, and a substitution at S65, said functional mutant having a different excitation or emission spectrum from Aequorea green fluorescent protein.

5,625,049

NUCLEIC ACIDS ENCODING HUMAN ASTROVIRUS SEROTYPE 2

Stephan S. Monroe, 152 Poplar Cir., Decatur, Ga. 30030-3845; Roger I. Glass, 840 Springdale Rd., NE., Atlanta, Ga. 30306; Marion Koopmans, 750 Clifton Way, #3G, and Baoming Jiang, 1422-B Druid Valley Dr., both of Atlanta, Ga. 30329

Filed May 12, 1993, Ser. No. 61,465
Int. Cl.[6] C07H *21/02;21/04*
U.S. Cl. 536—23.72 **8 Claims**

1. An isolated nucleic acid encoding human Astrovirus serotype 2 as set forth in the Sequencing Listing as SEQ ID NO: 1.

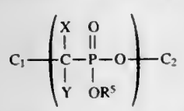
5,625,050

MODIFIED OLIGONUCLEOTIDES AND INTERMEDIATES USEFUL IN NUCLEIC ACID THERAPEUTICS

Graham Beaton, and Eric F. Fisher, both of Boulder, Colo., assignors to Amgen Inc., Thousand Oaks, Calif.

Filed Mar. 31, 1994, Ser. No. 221,425
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—24.1 **2 Claims**

1. A modified oligonucleotide of between 12 and 60 bases having at least three consecutive 3'-hydroxymethylene modified internucleotide linkages of the structure:



wherein, R^5 is a counterion, C_1 and C_2 represent the 3'-position and 5'-position, respectively, of the nucleoside units which are joined together in said oligonucleotide through said 3'-hydroxymethylene internucleotide linkages, and one of either X or Y is a hydroxyl (—OH—) group and the other of said X or Y is a hydrogen (—H—) atom.

5,625,051

NUCLEIC ACID STRUCTURE WITH PROTONATED CYTOSINE-CYTOSINE BASE PAIRS AND ITS USES

Kalle Gehring; Maurice Gueron, both of Paris, and Jean-Louis Leroy, Antony, all of France, assignors to Ecole Polytechnique, Palaiseu Cedex, France

Continuation of Ser. No. 121,200, Sep. 15, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,379
Int. Cl.[6] C07H *21/00*
U.S. Cl. 536—24.2 **17 Claims**

1. An isolated "i-motif" nucleic acid complex which comprises DNA and/or RNA which complex comprises at least four cytosine-rich regions or regions rich in cytosine derivatives and having two parallel-stranded duplexes in which the cytosine or cytosine derivatives form base pairs and wherein said duplexes are associated anti-parallel to one another and further wherein said pairs of cytosine or cytosine derivatives contained in one of said duplexes are intercalated with those of the second duplex.

5,625,052

METHOD FOR PREPARING 3'-NITROGEN CONTAINING POLYNUCLEOTIDES

Sam L. Woo, Redwood City, and Steven Fung, Palo Alto, both of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Division of Ser. No. 293,637, Aug. 17, 1994, Pat. No. 5,552,471. This application Dec. 21, 1995, Ser. No. 576,206
Int. Cl.[6] C07H *1/00;21/00*
U.S. Cl. 536—25.34 **12 Claims**

1. A method for synthesizing a polynucleotide having a nitrogen atom at the 3'-end comprising the steps of:

(a) providing a solid support reagent having the structure shown below:



wherein:

T is an acid-cleavable hydroxyl protecting group;

Q is a linker for connecting nitrogen and oxygen;

R_1 is a nitrogen substituent;

R_2 through R_4 are separately hydrogen or lower alkyl;

Y is an atom which is electronegative with respect to carbon;

X_1 is an atom which is electronegative with respect to carbon;

Z is a bond or spacer arm; and

W is a derivatized solid synthesis support capable of linking to Z;

(b) treating the solid support with acid to remove the acid-cleavable hydroxyl protecting group;

(c) adding a protected nucleoside monomer and a weak acid, forming a linkage;

(d) capping unreacted sites on the solid support:

(e) adding an oxidizing reagent;

(f) repeating steps (b)–(e) until the polynucleotide chain elongation is complete;

(g) cleaving the polynucleotide from the solid support; and

(h) deprotecting the polynucleotide.

5,625,053

METHOD OF ISOLATING PURIFIED PLASMID DNA USING A NONIONIC DETERGENT, SOLUTION

Gordon C. Kresheck, and Mitchell Altschuler, both of DeKalb, Ill., assignors to Board of Regents For Northern Illinois Univ., DeKalb, Ill.

Filed Aug. 26, 1994, Ser. No. 296,812
Int. Cl.[6] C07H *1/06*
U.S. Cl. 536—25.41 **15 Claims**

1. A method of isolating purified plasmid DNA comprising the steps of:

providing cells containing plasmid DNA;

lysing the cells with an alkyldimethylphosphine oxide (APO) detergent in the presence of a strong base and solubilizing the plasmid DNA, to produce a mixture;

centrifuging the cell and APO mixture to obtain a supernatant containing the plasmid DNA; and

isolating purified plasmid DNA from the supernatant.

5,625,054

DNA PURIFICATION BY SOLID PHASE EXTRACTION USING FLUORINATED CELITE

Daniel L. Woodard; Adriann J. Howard, both of Raleigh, and James A. Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,407, Sep. 27, 1993, Pat. No. 5,438,129. This application May 25, 1995, Ser. No. 450,036
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—25.4 **2 Claims**

1. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with a fluorinated surface prepared by reacting rehydrated Celite with from about 0.05 equivalent to an excess of fluoride ion under conditions suitable to bind DNA to said surface;

(b) washing said fluorinated surface having bound DNA; and

(c) eluting the DNA from said fluorinated surface.

2. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with a fluorinated surface prepared by reacting rehydrated Celite with from about 0.3 to about 0.9 equivalent of fluoride ion under conditions suitable to bind DNA to said surface;

(b) washing said fluorinated surface having bound DNA; and

(c) eluting the DNA from said fluorinated surface.

5,625,055

RAPID ISOLATION OF POLYNUCLEOTIDES

Brian Caddy, and Jing Cheng, both of Glasgow, United Kingdom, assignors to University of Strathclyde, Glasgow, United Kingdom

Continuation of Ser. No. 30,422, May 7, 1993, abandoned. This application May 25, 1995, Ser. No. 450,264
Claims priority, application United Kingdom, Sep. 22, 1990, 9020683
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—25.42 **5 Claims**

1. A process for the isolation of polynucleotides from isolated cellular material, the process comprising the sequential steps of:

i) suspending the cellular material in a lysis buffer within a holding tube so as to render the protein content of the cellular material accessible to a denaturing agent;

ii) denaturing and digesting the protein content in the holding tube by adding to the holding tube a mild oxidising agent which is free of both phenol and proteinase K and incubating the mixture thereafter, whereby to form an aqueous mixture of the polynucleotides and proteins in the holding tube;

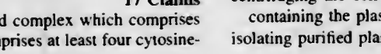
iii) forming a two phase solvent extraction system by adding to the tube and mixing with the aqueous mixture therein an immiscible organic solvent which extracts the proteins and results in a lower protein-containing solvent layer, an upper aqueous layer containing polynucleotides and an intermediate aqueous layer containing polynucleotides and proteins; and

iv) scavenging proteins from the aqueous layers by adding to the two phase system in the tube, without mixing of the layers, a powder of polymerised silica gel particles containing free aldehyde (CHO) or ketone (CO) groups which react with the proteins,

the arrangement being such that the particles descend through the aqueous layers, reactively binding proteins from the aqueous layers, and form a solid disc adherent to the walls of the tube at the interface between the aqueous and organic solvent layers so that thereafter the aqueous polynucleotide containing layer can be completely removed from the tube for precipitation of the polynucleotides therein without contamination from the protein-containing solvent layer.

3. The process of claim 1 or claim 2 wherein the material which is reactive to proteins has been prepared by

(i) cross-linking silica gel particles with an alkoxysilane of general formula (I)



(I)

where R^1 is C_{1-6} alkyl, and R^2 is C_{1-6} alkylidene;

and (ii) reacting the cross-linked particles with an amino-reactive compound of general formula (II)



(II)

where X is CR^3O or halo; R^3 is H or C_{1-6} alkyl; and n is 3 to 10.

5. The process of claim 1 wherein the mind oxidising agent is a perchlorate.

5,625,056

DERIVATIVES OF CYCLIC GUANOSINE-3',5'-MONOPHOSPHOROTHIOATE

Hans-Gottfried Genieser, Lemwerder-Ochtum; Ulrich Walter, Veitshöchheim, and Elke Butt, Heissenbüttel, all of Germany, assignors to BIOLOG Life Science Institute, Germany

Continuation-in-part of Ser. No. 430,164, Apr. 27, 1995, abandoned, which is a continuation of Ser. No. 64,555, May 21, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,664
Claims priority, application Germany, May 26, 1992, 42 17 679.4
Int. Cl.[6] C07H *19/213*
U.S. Cl. 536—26.12 **17 Claims**

1. A cyclic guanosine-3',5'-monophosphorothioate of the formula I

I

wherein

R^1 and R^2 are hydrogen,

X^1 is $—CF_3$ or a $—NR^3R^4$ or $—SR^4$ group, wherein R^3 is hydrogen and R^4 is an alkyl group with a terminal NH_2 or OH group, or R^4 is a phenyl group having in the 4-position a substituent Y of the formula:

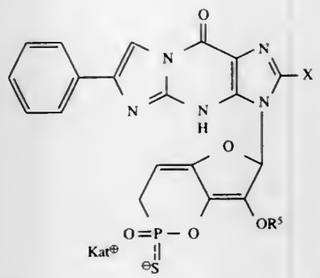
wherein Y is —F, —Cl, —Br, —I, —OH, —SH, $—NH_2$, $—NO_2$, $—OCH_3$, $—CH_3$ or $—CF_3$, or R^3 and R^4 both are alkyl groups which are connected to each other to form a ring, provided X is not a thiobenzyl group,

R^5 is hydrogen, a (tri)alkylsilyl group or an acyl group, and

Kat^+ is a proton or another physiologically acceptable metal cation or a trialkylammonium ion, or

R^1 and R^2 together are a styrylene group and form a condensed tricyclic ring system according to formula II:

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wherein

X^2 is hydrogen, —F, —Cl, —Br, —I, $—CF_3$ or an $—NR^3R^4$, $—SR^4$ group, wherein R^3 is hydrogen and R^4 is an alkyl group with a terminal NH_2 or OH group,

R^5 is hydrogen, a (tri)alkylsilyl or an acyl group, and

Kat^+ is a proton or another physiologically acceptable metal cation or a trialkylammonium ion.

5,625,057

PROCESS FOR PREPARING 2',3'-DIDEOXY-2',3'-DEHYDRONUCLEOSIDES

Hiroshi Shiragami; Yumiko Uchida, and Kunisuke Izawa, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

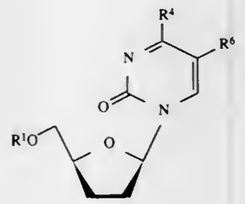
Continuation of Ser. No. 899,906, Jun. 17, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 295,478

Claims priority, application Japan, Jun. 19, 1991, 3-245290

Int. Cl.[6] C07H *1/00;19/073*

U.S. Cl. 536—55.3 **3 Claims**

1. A process for producing a nucleoside represented by formula (IV):



(IV)

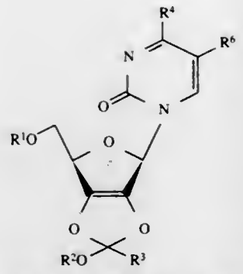
wherein

R^1 is selected from the group consisting of hydrogen, alkyl having from 1 to 19 carbon atoms, an acyl group having from 1 to 7 carbon atoms, and an organosilyl group;

R^4 is selected from the group consisting of hydroxyl; amino; hydroxyl protected with a protecting group selected from the group consisting of acyl, organosilyl, and alkyl; and an amino group protected with a protecting group selected from the group consisting of acyl, organosilyl, and alkyl;

R^6 is alkyl having from 1 to 12 carbon atoms or a halogen atom;

which comprises reacting a nucleoside represented by the formula (III):

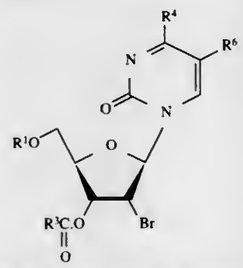


(III)

wherein R^2 is an alkyl having from 1 to 6 carbon atoms;

R^3 is selected from the group consisting of an alkyl group having from 1 to 6 carbon atoms and a phenyl group;

with a member of the group consisting of i) hydrogen bromide in acetic acid, (ii) acetyl bromide, and (iii) hydrogen bromide and acetyl bromide in acetic acid, to produce a nucleoside represented by the formula (VI):



(VI)

and then reducing the nucleoside of formula (VI) with zinc to produce the nucleoside of formula (IV) above.

5,625,058

PROCESS FOR THE PREPARATION OF CEPHALOSPORINS

Artemio Pessa, Peschiera Borromeo, and Antonio Lerpini, San Martino Siccomario, both of Italy, assignors to Farmabios S.r.l., Italy

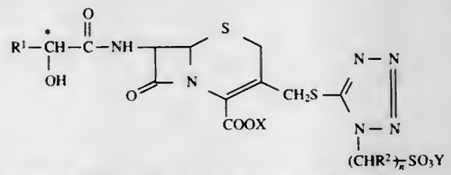
Filed Jul. 12, 1994, Ser. No. 273,841

Claims priority, application Italy, Jul. 16, 1993, MI93A1580

Int. Cl.[6] C07D *501/06*

U.S. Cl. 540—226 **55 Claims**

1. A process for the preparation of 7-α-hydroxyacylamino cephalosporins of formula (I)



(I)

wherein R^1 is selected from the group consisting of

(a) phenyl which may be optionally substituted with from 1 to 3 substituents selected from the group consisting of halogen and hydroxyl groups; and

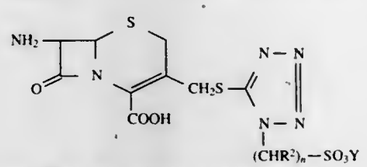
(b) cyclohexyl;

R^2 is hydrogen or a linear or branched alkyl group containing from 1 to 12 carbon atoms:

n is a whole number from 1 to 10;

X and Y, are equal or different, and are elected from the group hydrogen or pharmaceutically acceptable cations, said process comprising the following steps:

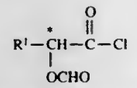
a) acylating a 7-amino-3-cephem-4-carboxylic acid derivative of formula (II):



(II)

where R^2 and n are as defined above,

by treating said derivative of formula (II) with a formyl derivative of formula (III):



(III)

where R^1 is as defined above, in a tetrahydrofuran/water mixture, while maintaining the pH between 6.5 and 7.0 by the addition of a proton acceptor; and at the end of acylation washing the resulting aqueous phase with a halogenated solvent;

b) deformylating the aqueous solution obtained in step a) with an acid, at a pH between 0.5 to 1.5 and at a temperature between 0° and 60° C.;

c) subjecting the acidic aqueous phase obtained in step b) to at least one extraction of the aqueous phase with a halogenated organic solvent, followed by salting out of the residual acidic aqueous phase, followed by extraction with an aprotic solvent selected from the group consisting of tetrahydrofuran, methylethylketone, and acetonitrile;

d) evaporating the aprotic solvent, to obtain the derivative of formula (I) wherein X=Y=H.

5,625,059

PROCESS FOR THE MANUFACTURE OF 4-ACETOXY-3-HYDROXYETHYL-AZETIDINONE

Gottfried Sedelmeier, Schallstadt, Germany, and Jacques Bersier, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

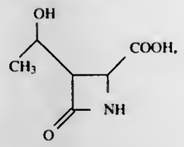
Division of Ser. No. 437,160, May 8, 1995, abandoned, which is a continuation of Ser. No. 180,723, Jan. 13, 1994, abandoned, which is a divisiion of Ser. No. 937,457, Aug. 27, 1992, Pat. No. 5,312,914, which is a continuation of Ser. No. 732,995, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 629,096, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 445,919, Dec. 4, 1989, abandoned, which is a continuation of Ser. No. 153,694, Feb. 8, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 463,487

Claims priority, application Switzerland, Feb. 17, 1987, 577/87

Int. Cl.[6] C07D *499/00*

U.S. Cl. 540—310 **1 Claim**

1. A diastereoisomerically pure (3S,4S,1'R)-diastereoisomer of a compound having the formula



(IV)

and the salts thereof.

5,625,060

POLYCYCLIC AMINE COMPOUNDS AND THEIR ENANTIOMERS, THEIR METHOD OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS ON WHICH THEY ARE PRESENT

Xavier Emonds-Alt, Combaillaux; Patrick Gueule, Teyrand; Vincenzo Proletto, Saint Georges D'Orques; Pierre Goulaouic, deceased, late of Montpellier; Marie Bousquet, legal representative, Bourg la Reine, and Catherine M. L. Goulaouic, legal representative, Gif sur Yvette, all of France, assignors to Elf Sanofi, Paris, France

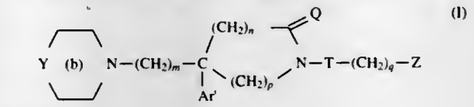
Division of Ser. No. 261,269, Jun. 15, 1994, which is a division of Ser. No. 878,710, May 4, 1992, Pat. No. 5,340,822. This application Jun. 5, 1995, Ser. No. 463,270

Claims priority, application France, May 3, 1991, 91 05487

Int. Cl.[6] C07D *401/02;401/14;* **A61K** *31/445;31/55*

U.S. Cl. 540—524 **5 Claims**

1. A method of preparing a compound of formula (I),



(I)

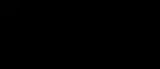
in which:

Y is

either a group Cy-N or Cy-CH_2-N, in which:

Cy is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl, a C_1–C_4 alkoxy, a C_1–C_4 alkyl and a trifluoromethyl, said substituents being identical or different; a C_3–C_7 cycloalkyl group; a pyrimidyl group or a pyridyl group;

or a group



in which:

Ar is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl, a C_1–C_4 alkoxy, a trifluoromethyl and a C_1–C_4 alkyl, said substituents being identical or different; a pyridyl group or a thienyl group;

x is zero or one; and

X is a hydrogen: a hydroxyl; a C_1–C_4 alkoxy; a C_1–C_4 acyloxy; a carboxyl;

a C_1–C_4 carbalkolxy; a cyano; a group-$N(X_1)_2$, in which the groups X_1 independently are hydrogen, a C_1–C_4 alkyl, a C_1–C_4 hydroxyalkyl or a C_1–C_4 acyl, or else -$(X_1)_2$, forms, with the nitrogen atom to which it is bonded, a heterocycle selected from the group consisting of pyrrolidine, piperidine and morpholine; or a group -S-X_2, in which X_2 is hydrogen or a C_1–C_4 alkyl group; or else X is a double bond between the carbon atom to which it is bonded and the adjacent carbon atom in the heterocycle;

m is 2 or 3;

Ar' is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a trifluoromethyl, a C_1–C_4 alkoxy and a C_1–C_4 alkyl, said substituents being identical or different; a thienyl; a benzothienyl; a naphthyl or an indolyl;

n is 0, 1, 2 or 3;

p is 1 or 2, and when p is equal to 2, n is then equal to 1 and Q is two hydrogen atoms;

Q is oxygen or two hydrogen atoms;

T is a group selected from

and

q is 0, 1, 2 or 3; and

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Z is phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of a halogen atom, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl and a C_1–C_4 alkoxy; a naphthyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of a halogen, a trifluoromethyl, a C_1–C_4 alkyl and a hydroxyl; a pyridyl; a thienyl; an indolyl; a quinolyl; a benzothienyl; an imidazolyl; said pyfidyl, thienyl, indolyl, quinolyl, benzothienyl or imidazolyl groups being unsubstituted or monosubstituted or polysubstituted by a C_1–C_4 alkyl or hydroxyl; or else when T is —C═O, $-(CH_2)_q$-Z represents a group where q═0, and Z iS a benzyl group substituted on the



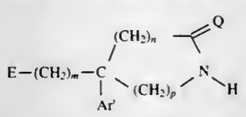
of the benzyl group by a substituent selected from the group consisting of a hydroxyl, a C_1–C_4 alkoxy and a C_1–C_4 alkyl, and the benzyl group is unsubstituted or substituted on the aromatic ring by a substituent selected from the group consisting of a halogen, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl and a C_1–C_4 alkoxy;

or a salt thereof with a mineral or organic acid, or, when



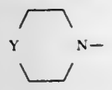
a quaternary ammonium salt thereof, formed with nitrogen (b) of the piperdine, or an N-oxide derivative formed with this same nitrogen atom, said method comprising:

a) treating a compound of the formula



(II)

in which m, Ar', n, p and Q are as defined above and E is a hydroxyl, an O-protected group or a group



in which Y is as defined above, it being understood that: when Y is the group



in which X is a hydroxyl, this hydroxyl can be protected,

either with a functional derivative of an acid of the formula



(III)

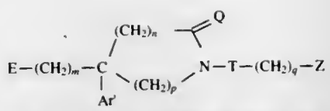
in which q and Z are as defined above, when a compound of formula (I) in which T is —CO— is to be prepared,

or with a halogenated derivative of the formula



(IV)

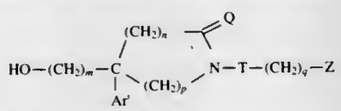
in which q and Z are as defined above and Hal is a halogen when a compound of formula (I) in which T is $—CH_2—$ is to be prepared, to give the compound of the formula



(V)

b) then, when E is a tetrahydropyranyloxy group, remaining the tetrahydropyranyloxy group by reaction with an acid,

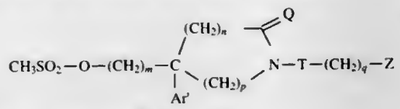
c) treating the resulting alcohol of the formula



(VI)

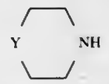
with methanesulfonyl chloride,

d) reacting the resulting mesylate of the formula



(VII)

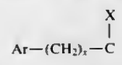
with a secondary amine of the formula



in which Y is as defined above, and

e) when X is a protected hydroxyl, deprotecting the hydroxyl group, and optionally converting the resulting product to one of its salts with mineral or organic acids, or

f) when Y is the group



optionally Converting the resulting product to one of its quaternary ammonium salts formed with nitrogen (b) of the piperidine, or to an N-oxide derivative formed with this same nitrogen atom.

5,625,061

COMPOUNDS USEFUL IN PREPARING ANTIPROLIFERATIVE AGENTS AND GARFT INHIBITORS

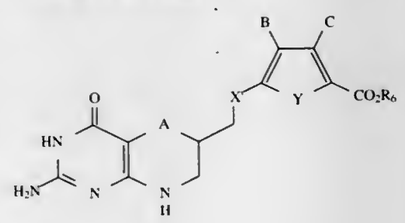
Michael D. Varney, Carlsbad; William H. Romines, San Diego, and Cynthia L. Palmer, La Mesa, all of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Division of Ser. No. 282,293, Jul. 28, 1994, which is a continuation-in-part of Ser. No. 10,861, Jan. 29, 1993. This application Jun. 7, 1995, Ser. No. 477,633

Int. Cl.[6] C07D *403/08;403/10;403/12*

U.S. Cl. 544—1 **8 Claims**

1. A compound of the formula XXI":



wherein:

A is oxygen, sulfur or selenium;

X' is a substituted or unsubstituted C_1–C_3 alkyl group, a substituted or unsubstituted C_2–C_3 alkenyl group, a substituted or unsubstituted C_2–C_3 alkynyl group, a substituted or unsubstituted amino group, sulfur or oxygen;

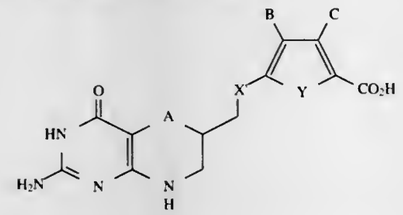
Y is oxygen, sulfur or NH;

B is hydrogen or a halogen;

C is hydrogen, a halogen or a substituted or unsubstituted C_1–C_6 alkyl group; and

R_6 is a hydrogen or a moiety that forms with the attached CO_2 a readily hydrolyzable ester group.

4. A compound of the formula XXII":



wherein:

A is oxygen, sulfur or selenium;

X' is a substituted or unsubstituted C_1–C_3 alkyl group, a substituted or unsubstituted C_2–C_3 alkenyl group, a substituted or unsubstituted C_2–C_3 alkynyl group, a substituted or unsubstituted amino group, sulfur or oxygen;

Y is oxygen, sulfur or

B is hydrogen or a halogen; and

C is hydrogen, a halogen or a substituted or unsubstituted C_1–C_6 alkyl group.

5,625,062

METHOD OF MAKING SOLUBLE SQUARAINE DYES

Roger A. Mader, Stillwater; William D. Ramsden, Afton; Terence D. Spawn, West Lakeland Township, and Daniel E. Saddoris, Hastings, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 29, 1996, Ser. No. 654,651

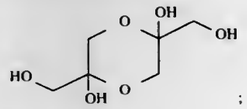
Int. Cl.[6] C07D *239/70*

U.S. Cl. 544—249 **20 Claims**

1. A method of making a compound comprising the steps of:

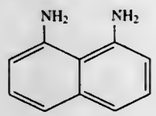
(a) forming a first mixture comprising:

(I) a compound of the structure



;

(II) a compound of the structure

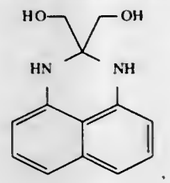


wherein the molar ratio of the compound of (a)(I) to the compound of (a)(II) is 0.5:1 or greater; and

(III) about 50 to about 90 percent by weight of a solvent selected from the group consisting of ethanol, n-propanol, isopropanol, and mixtures thereof, based upon the total weight of the first mixture;

wherein the first mixture is free of acid catalyst;

(b) heating the first mixture to allow the first mixture to react in order to form a first intermediate of the formula



wherein the first mixture is agitated during step (b);

(c) cooling the mixture of step (b) to a temperature below about 30° C. followed by isolating the first intermediate by filtration from the mixture of step (b);

(d) washing the first intermediate with a solvent selected from the group consisting of ethanol, propanol, isopropanol, and mixtures thereof;

(e) forming a second mixture, wherein the second mixture comprises:

(I) the first intermediate;

(II) squaric acid;

wherein the molar ratio of the first intermediate to squaric acid is about 2:1 to about 1.7:1;

(III) a solvent selected from the group consisting of heptanol, octanol, and mixtures thereof;

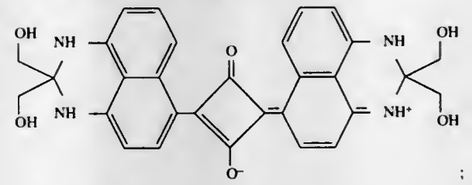
(IV) a cosolvent selected from the group consisting of n-hexane, cyclohexane, heptane, and mixtures thereof;

wherein the volume ratio of the solvent of (e)(III) to the cosolvent of (e)(IV) ranges from about 60:40 to about 90:10;

wherein the total amount of the solvent of (e)(III) plus the cosolvent of (e)(IV) present in the second mixture ranges from about 60 to about 95 percent by weight based upon the total weight of the second mixture;

(V) water, wherein the amount of water added in step (e) is sufficient to initiate the reaction of the first intermediate and squaric acid upon heating in step (f);

(f) heating, with agitation, the second mixture to reflux until consumption of the first intermediate ceases in order to form a second intermediate of the formula



;

optionally removing water from the mixture via azeotrope during step (f);

(g) cooling the second mixture to a temperature of about 10 to about 40 degrees C.;

(h) isolating the second intermediate by filtration from the mixture of step (g);

(i) washing the second intermediate in ethanol to remove any remaining octanol or heptanol, followed by washing the second intermediate in ethyl acetate to remove any remaining ethanol;

(j) forming a third mixture comprising:

(I) the second intermediate; and

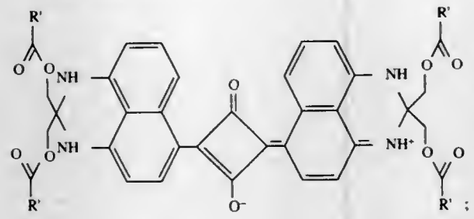
(II) pyridine;

wherein about 15 to about 40 molar equivalents of pyfidine are present in the third mixture based on the second intermediate;

(k) forming a fourth mixture by adding, with agitation, about 4 to about 6 molar equivalents of an aliphatic acid chloride comprising about 2 to about 8 carbon atoms, based on the second intermediate, to the third mixture; wherein the fourth mixture is not allowed to reach a temperature greater than about 50 degrees C. by virtue of one or both of the following

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(I) cooling the mixture; (II) controlling the rate at which the aliphatic acid chloride is added; in order to form a compound of the formula



wherein R' is $-(CH_2)_nH$ wherein n=1 to 7.

wherein essentially anhydrous conditions are maintained throughout steps (j) and (k);

(l) isolating the compound of step (k) by adding an acetate ester selected from the group consisting of ethyl acetate, isopropyl acetate, amyl acetate, methyl acetate, propyl acetate, butyl acetate, and mixtures thereof and an aqueous HCl solution to the fourth mixture in order to form a final mixture from which the compound precipitates, wherein the molar equivalent of the aliphatic acid chloride included in step (k) plus the molar equivalent of HCl included in step (l) approximately equals the molar equivalent of pyridine included in step (j); wherein the weight ratio of acetate ester plus water to pyridine is about 3: 1 to about 8:1; and

wherein the weight ratio of acetate ester to water is about 0.5: 1 to about 2:1;

(m) isolating the compound by filtration from the final mixture which is optionally warmed to solubilize any impurities prior to filtration; and

(n) washing the compound with ethyl acetate followed by methanol in order to purify the compound.

5,625,063

CERTAIN ARYL FUSED IMIDAZAOPYRIMIDINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Andrew Thurkauf, Branford; Alan Hutchison, Madison, and Pamela Albaugh, Clinton, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

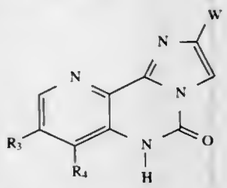
PCT No. PCT/US93/04095, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO94/26742, PCT Pub. Date Nov. 24, 1994

Continuation-in-part of Ser. No. 810,864, Dec. 19, 1991, Pat. No. 5,212,310. This PCT application May 6, 1993, Ser. No. 553,357

Int. Cl.[6] C07D *487/04;495/14;498/14;513/14*

U.S. Cl. 544—251 **2 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable non-toxic salts thereof wherein:

W is phenyl, thienyl, or pyridyl, each of is optionally mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms; and R_3 and R_4 independently represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms.

5,625,064

PROCESS FOR THE PREPARATION OF TRIAZOLONES

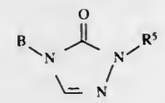
David R. Andrews, Maplewood; Dinesh Gala, East Brunswick, both of N.J.; Jacques Gosteli, Basel; Frank Guenter, Langnau, both of Switzerland; William Leong, Westfield, N.J.; Ingrid Mergelsberg, Dagmersellen, Switzerland, and Anantha Sudhakar, East Brunswick, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 425,028, Apr. 19, 1995. This application Jun. 2, 1995, Ser. No. 458,550

Int. Cl.[6] C07D *403/10*

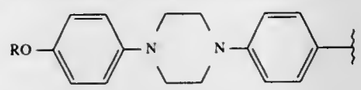
U.S. Cl. 544—366 **19 Claims**

1. A process for preparing a triazolone compound of the formula



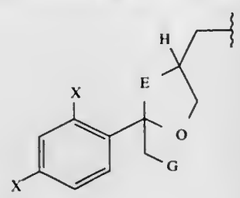
wherein:

B is aryl, substituted aryl or a group of the formula



wherein

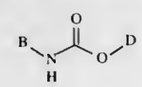
R is $C_6H_5CH_2$, CH_3, H or a group of the formula



where

G is imidazolyl or triazolyl, E is CH_2 or O, and each X is independently F or Cl; and

R^5 is C_1–C_{20} alkyl or substituted C_1–C_{20} alkyl; comprising heating a mixture of a compound of the formula



wherein:

B is as defined above, and

D is C_1–C_6 alkyl, aryl, substituted aryl or aryl(C_1–C_6 alkyl); with:

(a) a hydrazine derivative of the formula Z—NH—NH—R^5, wherein R^5 is C_1–C_{20} alkyl or substituted C_1–C_{20} alkyl, and Z is —CHO; or

(b) a hydrazine derivative of the formula Z—NH—NH—R^5, wherein R^5 is as defined above and Z is —$C(O)OC(CH_3)_3$ or —$C(O)OCH_2C_6H_5$, followed by hydrolyzing the Z group, and heating with a trialkylorthoformate and formic acid, in the optional presence of base, to form a triazolone;

wherein

"substituted alkyl" means an alkyl group bearing one to three substituents selected from the group consisting of halo, C_1–C_6 alkoxy, and aryloxy;

"aryl" means a carbocyclic aromatic group; and

"substituted aryl" means an aryl group bearing one to three substituents selected from the group consisting of halo, alkyl, and C_1–C_6 alkoxy.

5,625,065

STEREOSELECTIVE PROCESS FOR MAKING ENDO-TROPANAMINE AND LIKE COMPOUNDS

John M. McGill, III, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 265,992, Jun. 27, 1994, abandoned. This application Apr. 28, 1995, Ser. No. 431,379

Int. Cl.[6] C07D *451/02;451/06*

U.S. Cl. 546—124 **8 Claims**

1. A process for stereoselectively preparing a compound of the formula



(I)

wherein R^1 and R^2 are independently phenyl, C_1–C_4 alkyl, phenyl-C_1–C_4 alkyl or hydrogen, provided that no more than one of R and R^2 is hydrogen, and wherein phenyl groups are substituted with 0–2 C_1–C_3 alkyl or C_1–C_3 alkoxy groups; R^3 is hydrogen, a nitrogen protecting group, phenyl, C_1–C_3 alkyl, or phenyl-C_1–C_3 alkyl, wherein phenyl groups are substituted with 0–2 C_1–C_3 alkyl or C_1–C_3 alkoxy groups; comprising the steps of

a) providing a quantity of a compound of the formula



(II)

b) reducing the compound of formula II with an amine of the formula HNR^1R^2 in the presence of a triacyloxy borohydride salt of the formula $NaBH(OR^4)_3$ to form the endo-isomer of the compound of formula I, wherein R^4 is C_4–C_{10} α-branched alkanoyl.

5,625,066

OPTICALLY ACTIVE HYDROQUININE (AMINO-3 PHENYL)-1 ETHANESULFONATE, PREPARATION AND USE THEREOF

Claude Guyon, Saint Maur des Fosses, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00848, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/06792, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 6, 1993, Ser. No. 397,046

Claims priority, application France, Sep. 11, 1992, 92 10839

Int. Cl.[6] C07D *403/06;453/04*

U.S. Cl. 546—134 **5 Claims**

2. A process for preparing optically active hydroquinine 1-(3-aminophenyl)ethanesulphonate (Form A), which comprises the steps of:

a) acting an alkali metal sulphite on (RS)-1-(1-bromoethyl)-3-nitrobenzene in aqueous medium at a temperature ranging from 50° C. to 100° C. and converting the product of said acting to its potassium salt to obtain (RS)-potassium 1-(3-nitrophenyl)-ethanesulphonate,

b) converting (RS)-potassium 1-(3-nitrophenyl)ethanesulphonate to benzylquininium 1-(3-nitrophenyl)ethanesulphonate whose melting point is approximately 110° C. and the rotatory power α_D^{20} is −151.3° C.±1.5 (C=1.009%; methanol), by means of an N-benzylquininium halide, in the presence of potassium dihydrogenphosphate, in aqueous medium, at a temperature ranging from 10° C. to 30° C. and isolating, by recrystallization from 2-propanol, to produce form A benzylquininium 1-(3-nitrophenyl)ethanesulphonate,

c) reducing said form A benzylquininium 1-(3-nitrophenyl)ethanesulphonate obtained by b) by means of hydrogen under pressure, in the presence of a catalyst, at a temperature ranging from 10° C. to 30° C.

5,625,067

CYCLOPENTANE ETHER DERIVATIVES, PROCESSES FOR THEIR PRODUCTION, AND THEIR PHARMACEUTICAL USE

Hartmut Rehwinkel; Ulrich Klar; Helmut Vorbruggen; Karl-Heinz Thierauch, and Peter Verhallen, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/DE91/00925, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO92/09573, PCT Pub. Date Jun. 11, 1992

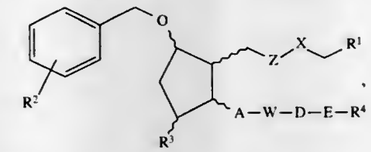
PCT Filed Nov. 23, 1991, Ser. No. 64,134

Claims priority, application Germany, Nov. 23, 1990, 40 37 941.8

Int. Cl.[6] C07D *215/00*

U.S. Cl. 546—152 **12 Claims**

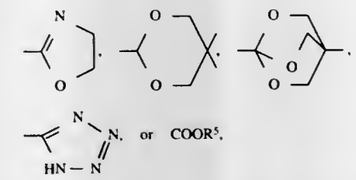
1. A cyclopentane ether compound of Formula I



(I)

wherein

R^1 is



wherein

R^5 is hydrogen, C_1–C_{10}-alkyl optionally substituted by halogen, phenyl, C_1–C_4-alkoxy, di-(C_1–C_4)-alkylamino, C_5–C_6-cycloalkyl, C_7–C_{16}-aralkyl, y-substituted-phenacyl, C_6–C_{12}-aryl, a 5- or 6-membered heterocyclic residue with at least one N, O or S atom, or —$CONHR^7$ wherein

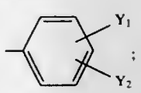
R^7 is hydrogen, C_1–C_{10}-alkanoyl, or C_1–C_{10}-alkanesulfonyl;

Z is a direct bond, (Z)—CH=CH—, (E)—CH=CH—, or —C≡C—;

X is $-(CH_2)p-$, $-CH_2-O-$, or $-CH_2-S-$;

p is 0 to 5;

R^2 is Y or

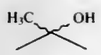


R^3 is hydrogen, F, R^6 or OR^6;

A is a direct bond, (Z)—CH=CH—, (E)—CH=CH—, or —C≡C—;

W is a direct bond, a $-[(CH_2)_n-V]_q$ group, a $-(CH_2)_n-V-(CH_2)_q-V$ group, a free or functionally modified hydroxymethylene group, or a free or functionally

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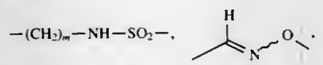


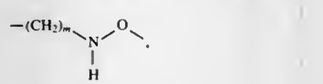
modified group wherein the hydroxy group can in each case be in the α- or β position;

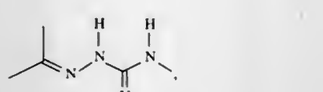
q is 1 or 2;

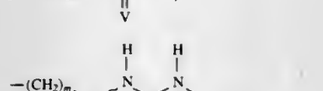
n is 0 to 2;

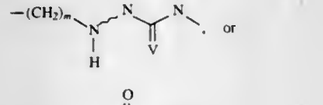
D is a direct bond, a straight-chain saturated alkylene group of 1–5 carbon atoms, a branched saturated alkylene group, a straight-chain or branched unsaturated alkylene group of 2–5 carbon atoms which can optionally be substituted by fluorine atoms,











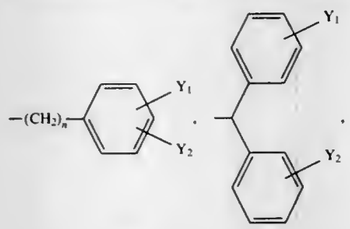
m is 0 to 2;

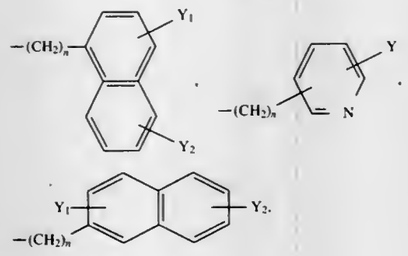
V is an O or S atom;

E is a direct bond, —C≡C—or —CH=CR^8 wherein R^8 is hydrogen, C$_1$–C$_5$-alkyl, halogen, or trifluoromethyl;

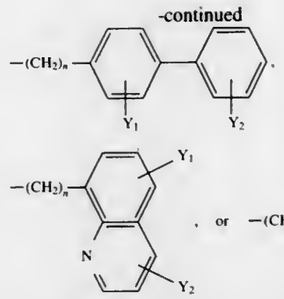
AW, DE, independently of each other, mean a direct bond,

R^4 is Y-substituted C$_1$–C$_{10}$-alkyl, C$_3$–C$_{10}$-cycloalkyl,





-continued



r is 1 or 2;

Y$_1$ and Y$_2$, being identical or different, are Y, wherein Y is hydrogen, halogen, CN, N$_3$, CF$_3$, OR^6, NO$_2$, —CH$_2$—OR^6, COOR$_6$ or C$_1$–C$_{10}$-alkyl;

R^6 is hydrogen, C$_1$–C $_{10}$-alkyl, halogen-substituted C$_6$–C$_{12}$-aryl or C$_7$–C$_{16}$-aralkyl and, if R^5 is hydrogen,

the salts thereof with physiologically compatible bases, the α-, β- or γ-cyclodextrin clathrates, or liposome-encapsulated compounds of Formula I, with the proviso that the compound is not (9α, 11α, 15S)-9-Benzyloxy-11,15-dihydroxy-5(Z), 13(E)-prostadienic acid, its 15-epi-compound, or 9α-Benzyloxy-15-(t-butyldimethylsilyloxy)-11α-hydroxy-13(E)-prostenic acid.

5,625,068

SUBSTITUTED QUINOLINE HERBICIDE INTERMEDIATES AND PROCESS

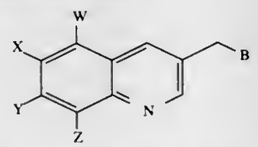
Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Madison, N.J.

Filed Jun. 5, 1995, Ser. No. 464,192

Int. Cl.^{6} C07D *215/18;215/40*

U.S. Cl. 546—171 **17 Claims**

1. A compound of the formula



wherein W, X, and Y are independently H, halogen, NO$_2$, NH$_2$ or —O—alkyl straight or branched C$_1$–C$_6$, Z is H, OH, halogen, NO$_2$, NH$_2$ or —O—alkyl straight or branched C$_1$–C$_6$ and B is a quaternary ammonium halide or —O—alkyl straight or branched C$_1$–C$_6$, provided that when B is —O—alkyl either W, X and Y are not H or Z is not OH or —O—alkyl.

5,625,069

PROCESS FOR PREPARING 2-CYANO-3,5-DIMETHYL-4-METHOXYPYRIDINE

Shan-Yen Chou, Taipei; Tsai-Mien Huang, Changhua; Shyh-Fong Chen, and Hao Ku, both of Taipei, all of Taiwan, assignors to Development Center for Biotechnology, China

Filed Jul. 22, 1996, Ser. No. 681,214

Int. Cl.^{6} C07D *213/12*

U.S. Cl. 546—250 **20 Claims**

1. A process of preparing 2-cyano-3,5-dimethyl-4-methoxypyridine, comprising the following steps:

acylating 2-methyl-1-penten-1-alkoxy-3-one to obtain 2-alkoxycarbonyl-3,5-dimethyl-4-pyrone;

ammonolyzing said 2-alkoxycarbonyl-3,5-dimethyl-4-pyrone to obtain 2-carboxamido-3,5-dimethyl-4(1H)-pyridone;

methylating said 2-carboxamido-3,5-dimethyl-4(1H)-pyridone to obtain 2-carboxamido-3,5-dimethyl-4-methoxypyridine; and

dehydrating said 2-carboxamido-3,5-dimethyl-4-methoxypyridone to obtain 2-cyano-3,5-dimethyl-4-methoxypyridine.

5,625,070

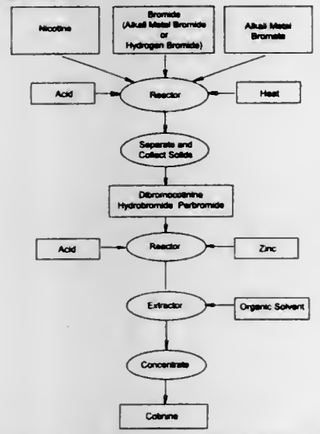
PREPARATION OF CONTININE BY REACTING NICOTINE WITH BROMIDE AND BROMATE

David Rolf, Minneapolis; David J. W. Goon, Bloomington, and Robert H. Michelson, Eagan, all of Minn., assignors to Lectec Corporation, Minnetonka, Minn.

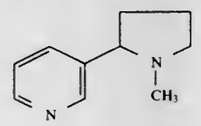
Filed Jun. 7, 1995, Ser. No. 481,769

Int. Cl.^{6} C07D *401/04;403/04*

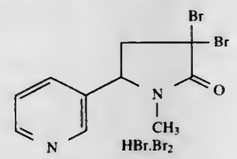
U.S. Cl. 546—278.4 **11 Claims**



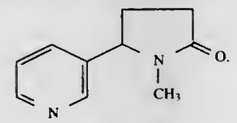
1. The process which comprises mixing a solution of a compound of the formula



or a salt thereof, and a compound of the formula selected from the group consisting of XBr and YBrO$_3$ in which X is hydrogen or an alkali metal and Y is an alkali metal to produce an intermediate compound of the formula



reducing and de-brominating said intermediate compound and recovering a product of the formula



5,625,071

CERTAIN 3-OXY-2-PYRIDYL SULFONAMIDE INTERMEDIATES

Werner Föry, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

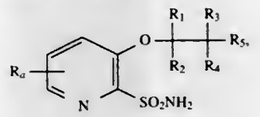
Division of Ser. No. 369,063, Jan. 5, 1995, abandoned, which is a division of Ser. No. 224,393, Apr. 7, 1994, Pat. No. 5,403,814, which is a continuation of Ser. No. 94,824, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 938,036, Nov. 12, 1992, abandoned. This application May 26, 1995, Ser. No. 451,704

Claims priority, application Switzerland, Mar. 25, 1991, 895/91

Int. Cl.^{6} C07D *213/62;213/71*

U.S. Cl. 546—294 **11 Claims**

1. A compound of formula II



(II)

wherein

R$_1$ is hydrogen or fluorine;

or R$_1$ together with R$_3$ is a C$_2$-C$_4$alkylene chain;

R$_3$ is hydrogen, fluorine or C$_1$-C$_3$alkyl;

R$_2$ is hydrogen, fluorine or C$_1$-C$_3$alkyl;

R$_4$ is hydrogen, fluorine, chlorine or C$_1$-C$_3$alkyl;

R$_5$ is hydrogen, fluorine, chlorine, C$_1$-C$_3$alkyl, or C$_1$-C$_3$alkyl substituted by fluorine or chlorine; and

R$_a$ is hydrogen or halogen, or a C$_1$-C$_4$alkyl, C$_1$-C$_4$alkoxy or C$_1$-C $_4$alkylthio radical each of which may be unsubstituted or mono-or poly-substituted by halogen;

with the proviso that at least one of the radicals R$_1$ to R$_5$ is fluorine, or one of the radicals R$_4$ and R$_5$ is chlorine.

5,625,072

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

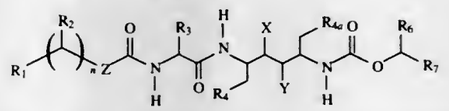
Dale J. Kempf, Libertyville; Daniel W. Norbeck, Crystal Lake; Hing L. Sham, and Chen Zhao, both of Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 158,587, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 998,114, Dec. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,626, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Apr. 3, 1995, Ser. No. 415,827

Int. Cl.^{6} C07D *277/30*

U.S. Cl. 548—204 **11 Claims**

1. A compound of the formula:



wherein R$_1$ is monosubstituted thiazolyl or monosubstituted oxazolyl wherein the substituent is selected from (i) heterocyclic wherein the heterocyclic is selected from aziridinyl, azetidinyl,

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pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, thiomorpholinyl, thiazolyl, oxazolyl, isoxazolyl, isothiazolyl, pyridinyl, pyrimidinyl, pyridazinyl and pyrazinyl and wherein the heterocyclic is unsubstituted or substituted with a substituent selected from C_1-to-C_6-loweralkyl, hydroxy, C_1-to-C_6-alkoxy or benzyloxy and C_1-to-C_6-thioalkoxy or benzyl-S— and (ii) (heterocyclic)-C_1-to-C_6-alkyl wherein heterocyclic is defined as above;

n is 1,2 or 3;

R_2 is hydrogen or C_1-to-C_6-loweralkyl;

R_3 is C_1-to-C_6-loweralkyl;

R_4 is phenyl wherein the phenyl ring is unsubstituted or substituted with a substituent selected from (i) halo, (ii) C_1-to-C_6-loweralkyl, (iii) hydroxy, (iv) C_1-to-C_6-alkoxy or benzyloxy and (v) C_1-to-C_6-thioalkoxy or benzyl-S—;

R_{4a} is thiazolyl or oxazolyl wherein the thiazolyl or oxazolyl ring is unsubstituted or substituted with a substituent selected from (i) halo, (ii) C_1-to-C_6-loweralkyl, (iii) hydroxy, (iv) C_1-to-C_6-alkoxy or benzyloxy and (v) C_1-to-C_6-thioalkoxy or benzyl-S—;

R_6 is hydrogen or C_1-to-C_6-loweralkyl;

R_7 is thiazolyl or oxazolyl wherein the thiazolyl or oxazolyl ring is unsubstituted or substituted with C_1-to-C_6-loweralkyl;

x is hydrogen and y is —OH; and

z is absent, —O—, —S—, $—CH_2—$ or $—N(R_8)—$ wherein R_8 is C_1-to-C_6-loweralkyl, C_1-to-C_6-cycloalkyl, —OH or $—NHR_{8a}$ wherein R_{8a} is hydrogen or C_1-to-C_6-loweralkyl; or a pharmaceutically acceptable salt thereof.

5,625,073

HERBICIDAL SUBSTITUTED TRIAZOLINONES

Markus Lindig, Kansas City, Mo.; Kurt Findeisen, Leverkusen, Germany; Klaus-Helmut Müller, Duesseldorf, Germany; Hans-Joachim Santel, Leverkusen, Germany; Robert R. Schmidt, Bergisch-Gladbach, Germany; Harry Strang, Kansas City, Mo.; Dieter Feucht, Monheim, Germany; Klaus König, Odenthal, Germany, and Klaus Lürssen, Bergisch Gladbach, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

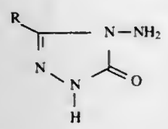
Continuation-in-part of Ser. No. 210,223, Mar. 18, 1994, Pat. No. 5,461,149, which is a division of Ser. No. 962,442, Oct. 16, 1992, Pat. No. 5,326,877, which is a division of Ser. No. 660,321, Feb. 22, 1991, Pat. No. 5,194,085, which is a continuation-in-part of Ser. No. 409,175, Sep. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,995, May 31, 1988, abandoned, and a continuation-in-part of Ser. No. 433,650, Nov. 8, 1989, abandoned. This application May 26, 1995, Ser. No. 451,582

Claims priority, application Germany, Jun. 12, 1987, 37 19 575.1; Feb. 5, 1988, 38 03 523.5; Nov. 19, 1988, 38 39 206.2

Int. Cl.[6] C07D *249/12*

U.S. Cl. 548—262.8 **3 Claims**

1. A triazolinone of the formula



(IIIa)

in which

R is s-butyl or cyclopropyl.

5,625,074

SULPHONYLAMINOCARBONYLTRIAZOLINONES

Werner Daum, Krefeld; Klaus-Helmut Müller, Düsseldorf; Michael Schwamborn, Köln; Peter Babczinski, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

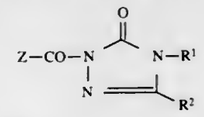
Division of Ser. No. 356,933, Dec. 15, 1994, Pat. No. 5,532,378, which is a division of Ser. No. 31,426, Mar. 15, 1993, Pat. No. 5,405,970, which is a division of Ser. No. 816,365, Dec. 30, 1991, Pat. No. 5,241,074, which is a division of Ser. No. 692,439, Apr. 29, 1991, Pat. No. 5,094,683, which is a division of Ser. No. 556,052, Jul. 20, 1990, Pat. No. 5,057,144, which is a continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application Apr. 16, 1996, Ser. No. 632,984

Claims priority, application Germany, May 9, 1988, 38 15 765.9; Oct. 12, 1989, 39 34 081.3

Int. Cl.[6] C07D *249/12;249/14*

U.S. Cl. 548—263.8 **20 Claims**

1. A triazolinone of the formula



(IV)

in which

Z is chlorine, C_1–C_4-alkoxy, benzyloxy or phenoxy,

a) R^1 is di-(C_1–C_4-alkyl)-amino, and

R^2 is hydrogen or C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy or C_1—C_4-alkoxycarbonyl, or is C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl, or is cyclohexenyl, or is phenyl-C_1–C_3-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxy-carbonyl, or is phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, fluorine- and/or chlorine-substituted C_1–C_3-alkoxy, C_1–C_4-alkylthio, fluorine- and/or chlorine-substituted C_1–C_3-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, and/or C_1–C_4-alkoxycarbonyl, or is C_1–C_6-alkoxy which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl;

or in which

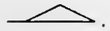
b) R^1 is C_1–C_4-alkoxy (which is optionally substituted by fluorine, chlorine, bromine, cyano, phenyl, C_1–C_4-alkoxy or C_1–C_4-alkoxycarbonyl) or is C_3—C_4-alkenyloxy, and

R^2 is hydrogen or is C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkyl-carbonyl, or C_1–C_4-alkoxycarbonyl, or is C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine, and/or C_1–C_4-alkyl, or is phenyl-C_1–C_3-alkyl, which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxycarbonyl, or is phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, methyl, C_1–C_4alkoxy, fluorine and/or chlorine-substituted C_1–C_3-alkoxy, C_1–C_4-alkylthio, fluorine- and/or chlorine-substituted C_1–C_3-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, and/or C_1–C_4-alkoxycarbonyl;

or in which

R^1 is	and	R^2 is
c)		C_3H_7,

-continued

	$CH(CH_3)_2$.
	C_4H_9.
CH_3	 .
C_2H_5	 .
C_3H_7	 .
	 .
	H.
	C_2H_5.
$CH_2CH=CH_2$	CH_3.
	CH_3.
CH_3	$—CH_2OCH_3$.
	$—CH_2OCH_3$.
	$—CH_2OC_2H_5$.
	$—N(CH_3)_2$.

5,625,075

METAL RADIONUCLIDE CHELATING COMPOUNDS FOR IMPROVED CHELATION KINETICS

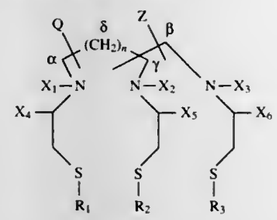
Ananthachari Srinivasan, Kirkland; Alan R. Fritzberg, Edmonds, and David S. Jones, Seattle, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Division of Ser. No. 804,123, Dec. 6, 1991, Pat. No. 5,436,352, which is a division of Ser. No. 589,449, Sep. 27, 1990, Pat. No. 5,075,099, which is a division of Ser. No. 201,134, May 31, 1988, Pat. No. 4,988,496. This application Jun. 2, 1995, Ser. No. 459,414

Int. Cl.[6] C07D *207/46;315/00;* **C07C** *233/01;67/00*

U.S. Cl. 548—542 **4 Claims**

1. A compound having the formula:



wherein:

R_1, R_2, and R_3 are independently selected from sulfur protecting groups;

X_1 and X_2 are independently selected from H and an alkyl group of C_6 or less;

X_3 is H, an alkyl group of C_6 or less, or Z;

X_4, X_5, and X_6 are independently selected from H and =0, with the provisos that X_4 is H when X_1 is an alkyl group, that X_5 is H when X_2 is an alkyl group, and that X_6 is H when X_3 is an group or Z;

Q is H or a polar group to increase the hydrophilicity of the compound;

n is 0 to 4; and

Z is $—(W)_m—R'$, where W is $—CH_2—$, $—CH_2—O—$, $—CH_2—CO—$, or combinations thereof, m is 0 to 5, and R' is a chemically reactive group.

5,625,076

CATALYST FOR PRODUCTION OF TERTIARY N-ALKENYL CARBOXYLIC ACID AMIDE, AND PROCESS FOR PRODUCTION OF TERTIARY N-ALKENYL CARBOXYLIC ACID AMIDE USING SAID CATALYST

Yuuji Shimasaki, Otsu; Hitoshi Yano, and Kimio Ariyoshi, both of Suita, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 18, 1995, Ser. No. 529,324

Claims priority, application Japan, Sep. 19, 1994, 6-222895

Int. Cl.[6] C07C *231/12;* **C07D** *207/26*

U.S. Cl. 548—552 **6 Claims**

1. A process for producing a tertiary N-alkenyl carboxylic acid amide by gas-phase intramolecular dehydration of a tertiary N-(2-hydroxyalkyl) carboxylic acid amide in the presence of a catalyst which is an oxide comprising silicon and at least one element selected from the group consisting of alkali metals and alkaline earth metals.

5,625,077

1,2-DIOXETANES

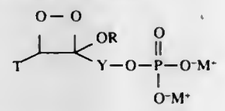
Irena Y. Bronstein, Newton, Mass., assignor to Tropix, Inc., Bedford, Mass.

Continuation of Ser. No. 559,152, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 367,772, Jul. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,197, Dec. 31, 1987, abandoned. This application Jan. 18, 1991, Ser. No. 619,526

Int. Cl.[6] C07F *9/06;* **C07D** *305/14*

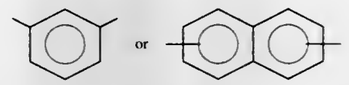
U.S. Cl. 549—218 **4 Claims**

1. A compound having the formula



wherein T is an adamantane group;

Y is



R is methyl, ethyl or propyl; and M^+ is independently an alkali metal, ammonium, NR_4^+, wherein R is C_{1-7} alkyl.

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5,625,078

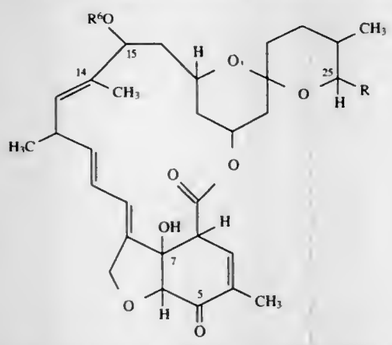
PROCESSES FOR THE PRODUCTION OF 13-ETHER DERIVATIVES OF MILBEMYCINS AND NOVEL INTERMEDIATES THEREFOR

Mitsugi Shibano, Hiratsuka; Mutsuo Suzuki, and Shunshi Kojima, both of Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 114,468, Aug. 31, 1993, Pat. No. 5,461,168. This application May 11, 1995, Ser. No. 439,228
Claims priority, application Japan, Sep. 1, 1992, 4-233444; Oct. 1, 1992, 4-263660; Dec. 2, 1992, 4-322847
Int. Cl.[6] C07D *315/00*
U.S. Cl. 549—264 **10 Claims**

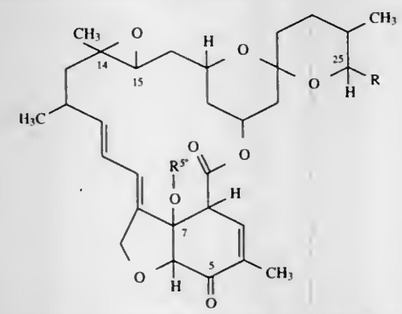
1. A process for the preparation of a compound of formula (IIIb):

(IIIb)



in which R represents a methyl group, an ethyl group, an isopropyl group or a sec-butyl group, R^6 represents a hydroxy-protecting group;
which process comprises subjecting a compound of formula (IIb):

(IIb)



wherein R is as defined above and $R^{5'}$ is a hydrogen atom; to a ring-opening etherification reaction.

5,625,079

SYNTHESIZING PSORALEN COMPOUNDS USEFUL AS INTERMEDIATES

Susan Wollowitz, Walnut Creek; Stephen T. Isaacs, Orinda; Henry Rapoport; Hans P. Spielmann, both of Berkeley, and Aileen Nerio, Santa Clara, all of Calif., assignors to Cerus Corporation, Concord, Calif.

Division of Ser. No. 212,113, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 83,459, Jun. 28, 1993, Pat. No. 5,399,719. This application Jun. 5, 1995, Ser. No. 462,377
Int. Cl.[6] C07D *493/00*
U.S. Cl. 549—282 **2 Claims**

1. A method of synthesizing 4,8-dialkyl-4'-bromomethyl-5'-methylpsoralens, without performing bromomethylation, comprising:

a) providing 4,8-dialky-7-(1-methyl-2-oxopropyloxy)psoralen;

d) stirring 4,8-dialky-4',5'-dimethylpsoralen in methylene chloride to obtain 4,8-dialkyl-4'-bromomethyl-5'-methylpsoralen.

5,625,080

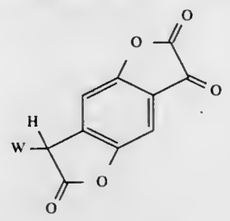
BENZODIFURANTRIONE COMPOUNDS AND PROCESS

Nigel Hughes, Oldham, Great Britain, assignor to Zeneca Limited, London, England

PCT No. PCT/GB93/02318, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/12501, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 11, 1993, Ser. No. 446,638
Claims priority, application United Kingdom, Nov. 25, 1992, 9224647; Nov. 25, 1992, 9224649; Jan. 25, 1993, 9301422
Int. Cl.[6] C07D *407/00*
U.S. Cl. 549—299 **10 Claims**

1. A benzodifurantrione of Formula (I):

Formula (I)



wherein:
W is unsubstituted or substituted aryl.

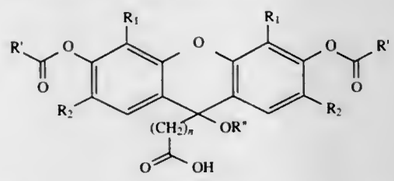
5,625,081

FLUORESCENT DYE INTERMEDIATES

George L. Trainor, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 981,026, Feb. 17, 1993, abandoned, which is a division of Ser. No. 780,346, Oct. 22, 1991, Pat. No. 5,242,796, which is a division of Ser. No. 57,566, Jun. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 881,372, Jul. 2, 1986, abandoned. This application Jan. 13, 1994, Ser. No. 181,284
Int. Cl.[6] C07D *311/82*
U.S. Cl. 549—392 **4 Claims**

1. A compound having the structure



wherein n=2 or 3 and R_1 and R_2 are H, lower alkyl, halo, lower alkoxy, and cyano and R' is an alkyl or aryl group and R" is an alkyl group.

5,625,082

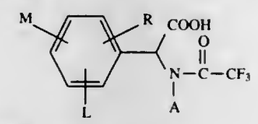
2-ARYL-5-(TRIFLUOROMETHYL)-2-PYRROLINE COMPOUNDS USEFUL IN THE MANUFACTURE OF INSECTICIDAL, NEMATOCIDAL AND ACARICIDAL ARYLPYRROLES

Robert F. Doehner, Jr.; Jerry M. Barton, both of East Windsor, N.J., and David G. Kuhn, Newtown, Pa., assignors to American Home Products Corporation, Madison, N.J.

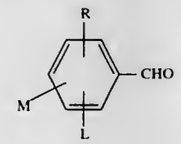
Division of Ser. No. 156,332, Nov. 22, 1993, Pat. No. 5,380,876, which is a division of Ser. No. 865,149, Apr. 8, 1992, Pat. No. 5,288,901, which is a division of Ser. No. 634,287, Dec. 26, 1990, Pat. No. 5,118,816. This application Nov. 3, 1994, Ser. No. 333,827
Int. Cl.[6] C07D *317/48;* **C07C** *231/10*
U.S. Cl. 549—441 **7 Claims**

1. A process for the preparation of a compound having the structure II

II



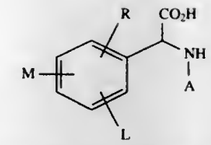
wherein
A is hydrogen or C_1–C_4 alkyl;
L is hydrogen or halogen and
M and R are each independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, halogen, CF_3, R_1CF_2Z, R_2CO or NR_3R_4 and when M and R are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MR represents the structure —OCH_2O—, —OCF_2O— or —CH=CH—CH=CH— with the proviso that when A is hydrogen, then at least one of L, M and R must be other than hydrogen;
Z is $S(O)_n$ or O;
R_1 is hydrogen, F, CHF_2, CHFCl or CF_3;
R_2 is C_1–C_4 alkyl, C_1–C_4 alkoxy or NR_3R_4;
R_3 is hydrogen or C_1–C_4 alkyl;
R_4 is hydrogen, C_1–C_4 alkyl or R_5CO;
R_5 is hydrogen or C_1–C_4 alkyl and
n is an integer of 0, 1 or 2;
which consists essentially of reacting an aldehyde having the structure



wherein L, M and R are as defined above with at lest one molar equivalent of a compound having the structure

H_2N—A.HCl

wherein A is as described above, in the presence of a solvent to form a first intermediate, reacting said first intermediate with an aqueous solution containing at least one molar equivalent of an alkali metal cyanide to form a second intermediate, extracting said second intermediate from the reaction mixture with a suitable extraction solvent, reacting said second intermediate with a lower alkyl anhydride in the presence of an organic base to form a third intermediate, reacting said third intermediate with a mineral acid in the presence of water, optionally at the reflux temperature of the solvent, to give an amino acid intermediate having the structure III



(III)

wherein A, L, M and R are as defined above; and trifluoroacetylating said amino acid intermediate with a trifluoroacetylation agent to give the desired compound having structure II.

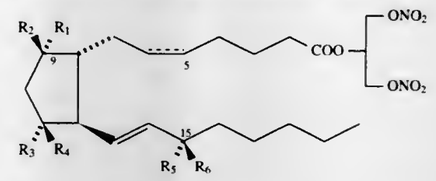
5,625,083

DINITROGLYCEROL ESTERS OF UNSATURATED FATTY ACIDS AND PROSTAGLANDINS

Vladimir V. Bezuglov, Apt. 100, 9 Acad. Artsymovicha St., Moscow 117437, and Igor V. Serkov, Apt. 119, 3 Institutskii Prospect, Chernogolovka Settlement, Moscow Province 152432, both of Russian Federation

Filed Jun. 2, 1995, Ser. No. 458,282
Int. Cl.[6] C07C *405/00*
U.S. Cl. 549—467 **32 Claims**

1. A dinitroglycerol ester of a prostaglandin of the formula:



wherein one of R_1 and R_2 is hydrogen and the other is hydroxyl, or R_1 and R_2 taken together form an oxo group or a hydroxyimino group; one of R_3 and R_4 is hydrogen and the other is hydroxyl, or R_3 and R_4 taken together form an oxo group or a hydroxyimino group, provided that R_3 and R_4 do not form an oxo or hydroxyimino group when R_1 and R_2 form an oxo or hydroxyimino group; one of R_5 and R_6 is hydrogen and the other is hydroxyl or fluorine; and - - - represents a single bond or a cis-double bond.

5,625,084

VAPOR PHASE OXIDATION OF PROPYLENE TO PROPYLENE OXIDE

Rangasamy Pitchai, West Chester; Andrew P. Kahn, Lafayette Hill, and Anne M. Gaffney, West Chester, all of Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Jan. 31, 1996, Ser. No. 595,007
Int. Cl.[6] C07D *301/10;303/04*
U.S. Cl. 549—536 **24 Claims**

1. A process for propylene epoxidation comprising contacting at a temperature of 180° C. to 350° C.
(i) a feedstream comprising propylene, an oxygen-containing gas, an organic halide, and carbon dioxide with
(ii) a supported silver catalyst comprising
(a) an inert refractory solid support comprised of alkaline earth metal carbonate;
(b) a catalytically effective amount of silver;
(c) a promoting amount of a potassium salt comprising potassium cation and a nitrogen oxyanion or precursor thereof; and
(d) a promoting amount of a molybdenum promoter.

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5,625,085

ESTERS OF ACYL L-CARNITINES AND PHARMACEUTICAL COMPOSITONS CONTAINING SAME FOR TREATING ENDOTOXIC SHOCK

Piero Foresta, Pomezia; Vito Ruggiero; Maria O. Tinti, both of Rome, and Nazareno Scafetta, Pavona di Albano, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Jul. 14, 1994, Ser. No. 274,686

Claims priority, application Italy, Jul. 14, 1993, RM93A0468

Int. Cl.[6] C07C *229/00*

U.S. Cl. 554—107 **3 Claims**

1. A pharmacologically acceptable salt of palmitoyl L-carnitine 2-trimethylammonium ethyl ester.

5,625,086

PROCESS FOR THE PREPARATION OF CYCLOPENTADIENYLTRIALKOXYTITANIUM DERIVATIVES

Richard Lisowsky, Kamen, Germany, assignor to Witco GmbH, Bergkamen, Germany

Filed Jun. 26, 1996, Ser. No. 674,496

Claims priority, application European Pat. Off., Jul. 12, 1995, 95110905

Int. Cl.[6] C07F *17/00;7/28*

U.S. Cl. 556—54 **4 Claims**

1. A process for the preparation of a cyclopentadienytrialkoxy derivative of the general formula

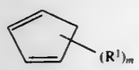
$$LTi(OR)_3$$

by reacting cyclopentadienyltitanium trihalide in an inert solvent, with one or more alcohols in the presence of one or more alkoxides in accordance with the general equation

$$LTiX_3 \xrightarrow[-3/n\,MX_n - 3ROH]{3ROH + (3/n(RO)_n M)} LTi(OR)_3$$

wherein

L is substituted cyclopentadienyl of the formula



wherein

m=1–5;

X is F, Cl, Br or I;

M is Li, Na, K, Mg, or Ca;

each R^1 and R group is independently of each other unsubstituted or substituted an alkyl or aryl radical containing 1 to 20 carbon atoms; and

n is the valency of the metal M.

5,625,087

SILYLIUM CATIONIC POLYMERIZATION ACTIVATORS FOR METALLOCENE COMPLEXES

David D. Devore; David R. Neithamer; Robert E. LaPointe, and Robert D. Mussell, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 12, 1994, Ser. No. 304,314

Int. Cl.[6] C07F *7/04;7/08;7/02*

U.S. Cl. 556—468 **3 Claims**

1. A process for preparing a silylium salt corresponding to the formula:

$$R_3Si(X')_q{}^+A^-$$

wherein

R independently each occurrence is selected from the group consisting of hydrocarbyl, silyl, hydrocarbyloxy, dihydrocarbylamino, and combinations thereof having up to 20 nonhydrogen atoms, X' is a neutral Lewis base having up to 20 non-hydrogen atoms; q is zero or one; and

A^- is a noncoordinating, compatible anion, said process comprising oxidizing by electrolyzing a solution comprising a disilane compound corresponding to the formula:

$$R_3SiSiR_3$$

wherein R is as previously defined, in the presence of a source of the noncoordinating counter ion, A^- and optionally a neutral Lewis base.

5,625,088

PROCESS FOR PREPARING DIMETHYLDICHLOROSILANE

Wilfried Kalchauer, Burghausen, Germany, assignor to Wacker-Chemie GmbH, Munich, Germany

Filed Jun. 25, 1996, Ser. No. 668,667

Claims priority, application Germany, Aug. 17, 1995, 195 30 292.3

Int. Cl.[6] C07F *7/16*

U.S. Cl. 556—473 **6 Claims**

1. A process for preparing dimethyldichlorosilane by reacting chloromethane with silicon in the presence of a catalyst combination of the metals or components of the metals

a) copper,

b) zinc and

c) tin and/or antimony, and

activators selected from the group consisting of chlorosilanes of the formula

$$(H_3C)_aSiH_bCl_c \qquad (I),$$

where

a and b are, independently of one another, 0, 1, 2 or 3 and

c is 1, 2, 3 or 4,

and chlorodisilanes of the formula

$$(H_3C)_dHeCl_fSi{-}Si(H_3C)_gH_hCl_i \qquad (II),$$

where

d and e are, independently of one another, 0, 1 or 2,

f is 1, 2 or 3 and

g, h and i are, independently of one another, 0, 1, 2 or 3,

where the activators are added in gaseous form containing at most 15% by volume of hydrogen.

5,625,089

ANILINE DERIVATIVES

Manfred Patsch, Wachenheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

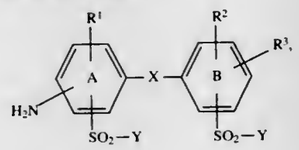
Filed Feb. 28, 1996, Ser. No. 608,198

Claims priority, application Germany, Mar. 9, 1995, 195 08 311.3

Int. Cl.[6] C07C *305/24;317/14*

U.S. Cl. 558—26 **6 Claims**

1. Anilines of the formula I



(I)

where

rings A and B may each be benzofused,

X is a radical of the formula CO, SO_2, CONZ or SO_2NZ, where Z is in each case hydrogen or C_1–C_4-alkyl,

R^1 and R^2 are each independently of the other hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, hydroxysulfonyl, carboxyl, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkylsulfonyl,

R^3 is hydrogen, amino, C_1–C_4-alkanoylamino or nitro, and

Y is vinyl or a radical of the formula C_2H_4—Q, where Q is a group detachable under alkaline reaction conditions.

5,625,090

CRYSTALLINE MODIFICATION OF 1,1',1"-NITRILO{TRIETHYL-TRIS-[2,2'-METHYLENE-BIS(4,6-DI-TERT-BUTYLPHENYL)]PHOSPHITE}

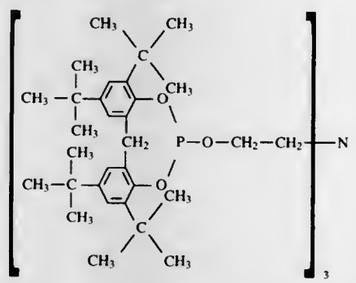
Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 2, 1995, Ser. No. 551,967

Int. Cl.[6] C07F *9/6574*

U.S. Cl. 558—78 **5 Claims**

1. 1,1',1"-Nitrilo{triethyl-tris-[2,2'-methylene-bis(4,6-di-tert-butylphenyl)] phosphite} having the formula I



(I)

which is a polymorphic compound characterized by two melting points in the range of 232°–243° C. and 267°–272° C.; and by an X-ray diffraction pattern obtained using Cu-K_α which exhibits

Diffraction Angle (2Θ)	Relative Intensity (%)
5.26	17
6.89	21
7.92	100
8.7	21
9.18	21
9.92	31
10.7	23
13.5	34
14.34	19
15.06	29
16.04	28
16.94	67
18.52	69
19.48	26
20.36	28
21.32	21
23.08	17

5,625,091

PROCESS FOR THE PRODUCTION OF DIARYL CARBONATES

Hans-Josef Buysch; Carsten Hesse, both of Krefeld, and Johann Rechner, Kempen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 10, 1996, Ser. No. 662,431

Claims priority, application Germany, Jun. 23, 1995, 19523390.5

Int. Cl.[6] C07C *68/00*

U.S. Cl. 558—274 **6 Claims**

1. A process for the production of an aromatic carbonate of the formula

$$R{-}O{-}CO{-}O{-}R \qquad (I)$$

in which

R is selected from the group consisting of substituted or non-substituted C_6–C_{12} aryl

by reaction of an aromatic hydroxy compound of the formula

$$R{-}O{-}H \qquad (II)$$

in which R has the significance specified above,

with carbon monoxide and oxygen in fire presence of a platinum-group metal catalyst, a co-catalyst, a quaternary salt and a base at a temperature of 30° to 200° C. and a pressure of 1 to 200 bar, characterised in that the reaction water is continuously removed from a partial flow of the reaction solution under reduced pressure and largely isothermal conditions and the dehydrated partial flow is again supplied to the reaction.

5,625,092

PROCESS FOR THE PREPARATION OF A SUBSTITUTED 2.5-DIAMINO-3-HYDROXYHEXANE

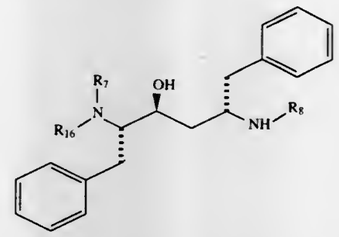
Timothy L. Stuk, Lindenhurst, Ill.; Michael S. Allen, Silver Lake, Wis.; Anthony R. Haight, Mundelein, Ill.; Francis A. J. Kerdesky, Grayslake, Ill.; Denton C. Langridge, Wildwood, Ill.; M. Robert Leanna, Grayslake, Ill.; Linda M. Lijewski, Milwaukee, Wis.; Laura Melcher, Deerfield, Ill.; Howard E. Morton, Gurnee, Ill.; Daniel W. Norbeck, Crystal Lake, Ill.; Daniel S. Reno, Kenosha, Wis.; Timothy A. Robbins, Gurnee, Ill.; David Scarpetti, Evanston, Ill.; Hing L. Sham, Mundelein, Ill.; Thomas J. Sowin, Grayslake, Ill.; Jien-Heh J. Tien, Libertyville, Ill., and Chen Zhao, Gurnee, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 281,502, Jul. 27, 1994, Pat. No. 5,491,253, which is a continuation-in-part of Ser. No. 141,795, Oct. 22, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,168

Int. Cl.[6] C07C *261/00;233/00;* **C07D** *209/04*

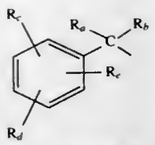
U.S. Cl. 560—24 **2 Claims**

1. A process for the preparation of a substantially pure compound of the formula:



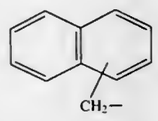
wherein R_6 and R_7 are each hydrogen or R_6 and R_7 are independently selected from

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(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

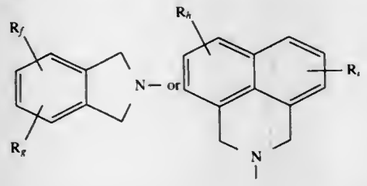


(ii)

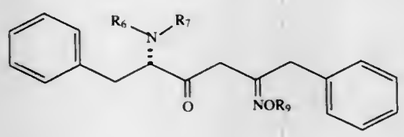
wherein the napthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is $R_{7a}OC(O)$— wherein R_{7a} is loweralkyl or

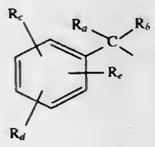
R_6 and R_7 taken together with the nitrogen atom to which they are bonded are



wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or —C(O)R" wherein R" is loweralkyl, alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or an acid addition salt thereof comprising reacting a compound of the formula:

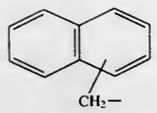


wherein R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

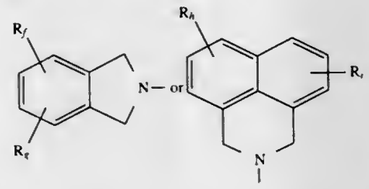


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is $R_{7a}OC(O)$— wherein R_{7a} is loweralkyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are



wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_9 is hydrogen, loweralkyl or benzyl with a reducing agent.

5,625,093

SUBSTITUTED β-AMINO ACID DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

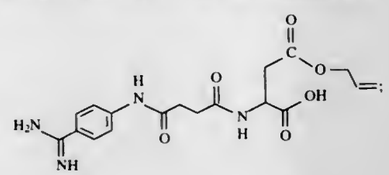
Thomas E. Rogers, Ballwin, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

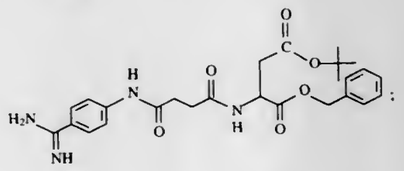
Continuation-in-part of Ser. No. 221,913, Apr. 1, 1994, abandoned, which is a division of Ser. No. 953,601, Oct. 6, 1992, Pat. No. 5,344,957, which is a continuation-in-part of Ser. No. 866,933, Apr. 10, 1992, Pat. No. 5,239,113, which is a continuation-in-part of Ser. No. 777,811, Oct. 15, 1991, abandoned. This application May 25, 1995, Ser. No. 452,621

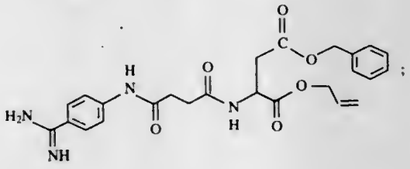
Int. Cl.[6] C07C *229/40;229/42*

U.S. Cl. 560—35 **1 Claim**

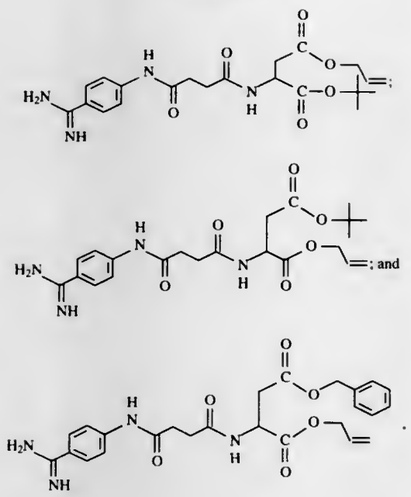
1. A compound selected from the group consisting of







-continued



5,625,094

RHODIUM/IRIDIUM CATALYZED SYNTHESIS OF CARBOXYLIC ACIDS OR ESTERS THEREOF

Dominique Nobel, Fontaines/Saint/Martin; Robert Perron, Charly, and Philippe Denis, Decines, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 221,233, Mar. 31, 1994, abandoned. This application May 26, 1995, Ser. No. 450,137

Claims priority, application France, Mar. 31, 1993, 93 03733

Int. Cl.[6] C07C *67/36*

U.S. Cl. 560—232 **29 Claims**

1. A process for the preparation of a carboxylic acid or ester thereof, comprising reacting at least one alcohol, alkyl or aryl halide, ether or ester, with carbon monoxide in the presence of a catalytically effective amount of at least one rhodium compound or rhodium metal and at least one iridium compound or iridium metal, or at least one mixed rhodium/iridium compound; and at least one halogen-containing promoter therefor.

5,625,095

PROCESS FOR PRODUCING HIGH PURITY ACETIC ACID

Hiroyuki Miura; Masahiko Shimizu, both of Hyogo; Takashi Sato, Hiroshima; Yoshiaki Morimoto, Niigata, and Masahiro Kagotani, Hyogo, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 458,348

Claims priority, application Japan, Jun. 15, 1994, 6-132724; Jun. 20, 1994, 6-137213; Jun. 30, 1994, 6-149652; Jul. 6, 1994, 6-154401; Aug. 22, 1994, 6-196524

Int. Cl.[6] C07C *51/12*

U.S. Cl. 562—519 **2 Claims**

1. A process for producing a high purity acetic acid, comprising the steps of continuously reacting methanol with carbon monoxide in the presence of a rhodium catalyst, an iodide salt, and methyl iodide, wherein the reaction is carried out while maintaining an acetaldehyde concentration in the reaction liquid at 400 ppm or lower.

5,625,096

HYDROXYCARBONYLATION OF BUTADIENE

Phillipe Denis, Decines; Carl Patois, Lyons, and Robert Perron, Charly, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Oct. 19, 1994, Ser. No. 325,077

Claims priority, application France, Oct. 19, 1993, 93 12666

Int. Cl.[6] C07C *51/14*

U.S. Cl. 562—522 **22 Claims**

1. A process for the hydroxycarbonylation of butadiene or derivative thereof into at least one pentenoic acid, comprising reacting said butadiene or derivative thereof with carbon monoxide and water, at a pressure greater than atmospheric, in the presence of a catalytically effective amount of (1) a palladium catalyst which is soluble in the medium of reaction and (2) crotyl chloride, the amount of said crotyl chloride being at least two mol thereof per mole of palladium values and said palladium values/crotyl chloride at least in part comprising a palladium/crotyl pi-complex, and the amount of water present in said medium of reaction being no greater than about 20% by weight thereof wherein butadiene is present in an amount of at least 0.2% by weight relative to the total weight of the reaction mixture and the medium of reaction has substantially no amount of a quaternary onium salt.

5,625,097

PROCESS FOR PREPARING DIPHENYLAMINES AND CATALYSTS USABLE FOR THIS PURPOSE

Hans-Josef Buysch, Krefeld; Christine Mendoza-Frohn, Erkrath; Jürgen Scharschmidt, Krefeld; Ulrich Notheis; Rudolf J. Klee, both of Dormagen, and Gerhard Darsow, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

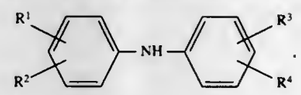
Filed Sep. 7, 1995, Ser. No. 524,556

Claims priority, application Germany, Sep. 14, 1994, 44 32 646.7

Int. Cl.[6] C07C *209/22*

U.S. Cl. 564—398 **4 Claims**

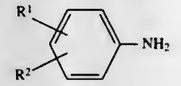
1. A process for preparing a diphenylamine of the formula



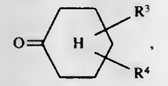
where

R^1, R^2, R^3 and R^4 are, independently of one another, hydrogen, C_1–C-alkyl or C_1–C_4-alkoxy,

by reaction of an aniline of the formula



with a cyclohexanone of the formula



where R^1 to R^4 are as defined above,

at 200°–450° C. and 0.1–20 bar using a supported catalyst containing from 0.05 to 5% by weight of Rh or a mixture of Rh and one or more noble metals from the group consisting of Pt, Pd, Ru and Ir, where in the case of a mixture Rh makes up from 10 to 90% of the weight of the mixture, and where the catalyst can further contain from 0.05 to 8% by weight of Cr and Mn in a weight ratio Cr:Mn=5:1 to 1:5, from 0.05 to 15% by weight of alkali metal and from 0.05 to 6% by weight of sulphur, where all figures are calculated as metal or elemental

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sulphur and are based on the total weight of the catalyst, wherein the support used for preparing the catalyst and the compounds of the noble metals, the Cr, Mn, the alkali metals and the S used are halogen-free.

5,625,098

PROCESS FOR PREPARING N-ALKYL POLYHYDROXYALKYL AMINES IN AQUEOUS/ HYDROXY SOLVENTS

Junan Kao; Jeffrey J. Scheibel; Robert E. Sbumate; Cynthia M. Stark; Roland G. Severson, Jr., all of Cincinnati; Kevin L. Garber, Maineville, and Scott A. VanDiest, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 907,382, Jul. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 736,172, Jul. 26, 1991, abandoned, and Ser. No. 820,712, Jan. 14, 1992, Pat. No. 5,449,770. This application Jun. 5, 1995, Ser. No. 462,343

Int. Cl.[6] C07C *209/44*

U.S. Cl. 564—487 **37 Claims**

1. A process, carried out under non-oxidizing conditions, for preparing N-alkylamino polyols, said process being selected from the group consisting of:

(A) a process using a preformed adduct, comprising the steps of:

(a) preparing an adduct of a reducing sugar and a primary amine, comprising reacting a solution of said sugar, having a Gardner Color of less than about 1 and being essentially free of oxygen, with said amine, which is also essentially free of oxygen, at a temperature that is less than about 70° C., the molar ratio of said amine to said sugar being less than about 30:1, and the time of the reaction being short enough to give a Gardner Color of less than about 7 and long enough to give yield of adduct based on said sugar of at least about 90%;

(b) reacting said adduct from Step (a), said adduct being substantially free from unreacted sugar starting material and said adduct being dissolved/suspended in aqueous solvent, with hydrogen in the presence of a hydrogenation catalyst, in two stages, the first stage being at a temperature of from about 20° C. to about 70° C. and a hydrogen pressure of more than about 100 psi to convert at least about 80% of said adduct to the corresponding amine and the second stage being at a temperature of more than about 75° C. to convert any remaining adduct and destroy any color material precursors; and

(c) removing said catalyst; and

(B) a process in which a reducing sugar is added to a mixture of a nickel catalyst and N-alkylamine containing substantially no oxides of nickel comprising the steps of:

(a) admixing the nickel catalyst with the N-alkylamine to provide mixture (a) under H_2 pressure prior to admixture with the sugar;

(b) admixing the sugar with mixture (a) under hydrogen pressure;

(c) conducting the reaction of the sugar with the N-alkylamine/nickel catalyst mixture (a) at a temperature below about 80° C. and under hydrogen pressure until at least about 95% of reducible compounds are no longer present in the reaction mixture;

(d) continuing the reaction of step (c), optionally at a temperature of up to about 120° C., until at least about 99.9% of the reducible compounds are no longer present in the reaction mixture; and

(e) recovering the N-alkylamino polyol;

the catalyst in process (A) optionally being nickel, any said nickel catalyst in process (A) or process (B) being maintained under conditions of temperature and hydrogen pressure when in contact with either said adduct; said N-alkylamino polyol; or mixtures thereof to minimize solubilization of said nickel, and any said nickel catalyst optionally being washed with solvent and treated with hydrogen to substantially remove all, when present, of oxides of nickel; organic materials; excess caustic; alumina fines; or mixtures thereof; and, also, optionally, after said processes are substantially complete, providing an improvement selected from the group consisting of: maintaining the temperature at about 20° C. to about 135° C., and the hydrogen pressure higher than 100 psig to deposit solubilized nickel and regenerate said nickel catalyst; separating said nickel catalyst from said N-alkylamino polyol at low temperature under non-oxidizing atmosphere; and combinations thereof.

5,625,099

PREPARATION OF ASTAXANTHIN, NOVEL INTERMEDIATES THEREFOR AND THE PREPARATION THEREOF

Hansgeorg Ernst, Bussardweg 62, 67346 Speyer; Walter Dobler, Liebermannstrasse 23, 69126 Heidelberg; Joachim Paust, Ringstrasse 3, 67141 Neuhofen, and Udo Rheude, Wildentenstrasse 1, 67166 Otterstadt, all of Germany

Division of Ser. No. 265,741, Jun. 27, 1994, Pat. No. 5,455,362. This application May 23, 1995, Ser. No. 471,314

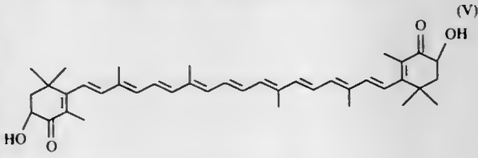
Claims priority, application Germany, Jul. 5, 1993, 43 22 277.3

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—347 **2 Claims**

1. A process for preparing astaxanthin of the formula V,

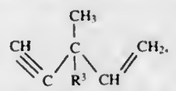
(V)



which comprises

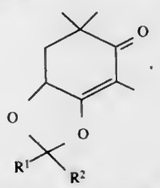
A. reacting an alkenyne of the formula II

(II)



where R^3 is an ether, or acetal protective group which can be converted into a hydroxyl group by hydrolysis, in an inert solvent in the presence of lithium amide with a cyclohexenone of the formula III

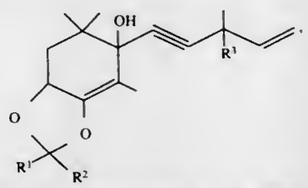
(III)



where R^1 i s H or C_1–C_4-alkyl and R^2 is C_1–C_4-alkyl,

B. eliminating from the resulting tertiary alcohol of the formula I

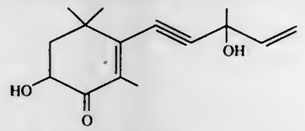
(I)



the protective groups in aqueous acidic medium,

C. reducing the resulting alkynediol of the formula VI

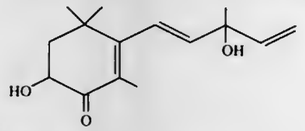
(VI)



with zinc dust in methylene chloride/acetic acid,

D. reacting the resulting C_{15}-diol of the formula IV

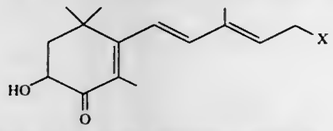
(IV)



with hydrochloric or hydrobromic acid,

E. reacting the resulting halide of the formula VII

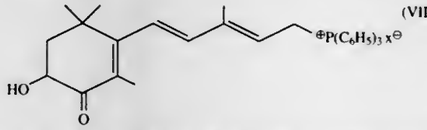
(VII)



where x is Cl or Br, with triphenylphosphine, and

F. subjecting the resulting triphenylphosphonium salt of the formula VIII

(VIII)



where x is Cl or Br, to a Witrig reaction with 2,7-dimethyl-2,4,6-octa-trienedial to give astaxanthin.

5,625,100

VULCANIZABLE LIQUID COMPOSITIONS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa.; Demetreos N. Matthews, Ewing, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Company, Fairfax, Va.

Continuation of Ser. No. 382,814, Feb. 3, 1995, Pat. No. 5,545,783, which is a division of Ser. No. 179,051, Jan. 7, 1994, Pat. No. 5,387,730, which is a division of Ser. No. 922,341, Dec. 17, 1992, Pat. No. 5,288,937, which is a continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application Dec. 26, 1995, Ser. No. 578,407

Int. Cl.[6] C10L *1/16*

U.S. Cl. 585—12 **38 Claims**

1. A blend comprising a liquid copolymer as hereinafter defined and a different polymer which is a liquid or solid unsaturated elastomer, said liquid copolymer being either 1) a straight chain block copolymer having at least three alternating blocks bonded to each other, each terminal block of said alternating blocks being either a) a polymer of at least one hydrocarbon conjugated diene I (I polymer), said diene I containing at least five carbon atoms, with at least one carbon atom of each pair of residual double-bonded carbon atoms of polymerized diene I units being additionally single-bonded to two carbon atoms; or b) a copolymer of about 30 to 70 mol % of said at least one diene I and about 30 to 70 mol % of at least one aryl-substituted olefin (I copolymer), the blocks between said I polymer or copolymer blocks being a polymer of at least one polymerized hydrocarbon conjugated diene B (B polymer), said diene B being different from diene I and containing at least four carbon atoms, with each residual double-bonded carbon atom of polymerized diene B units being additionally bonded to a hydrogen atom; 2) a straight chain random copolymer of about 1.0 to about 25 mol % of said at least one diene I, optionally about 0.3 to about 15 mol % of at least one aryl-substituted olefin and the remainder said at least one diene B; or 3) a star-branched copolymer wherein the branches are either a) a block copolymer wherein the free end block is said I polymer or copolymer and an interior block is said B polymer; or b) said random copolymer of dienes I and B, with optionally an aryl-substituted olefin.

5,625,101

CYCLODIMERIZATION OF BUTADIENE

Tin-Tack P. Cheung, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 30, 1995, Ser. No. 497,004

Int. Cl.[6] C07C *2/46*

U.S. Cl. 585—369 **14 Claims**

1. A process for converting 1,3-butadiene to 4-vinylcyclohexene which comprises contacting a feed comprising 1,3-butadiene with a catalyst comprising at least one copper(I) sulfonate in a reaction zone at effective cyclodimerization conditions to produce 4-vinylcyclohexene.

5,625,102

METHOD OF ALKYLATING THE SIDE CHAIN OF ALKYL-SUBSTITUTED AROMATIC HYDROCARBONS

Takaya Matsumoto; Yoshiichi Kumagai, and Fumio Kumata, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,446

Claims priority, application Japan, Dec. 27, 1993, 5-346937

Int. Cl.[6] C07C *15/067;2/72*

U.S. Cl. 585—453 **12 Claims**

1. A method of alkylating the side chain of an alkyl-substituted aromatic hydrocarbon, comprising the steps of:

(A) thermally treating an alumina by calcining in air at 100° to 1000° C. for 1 to 20 hours and degassing under vacuum so as to prepare a thermally treated alumina carrier;

(B) loading an alkali metal on the thermally treated alumina carrier of step (A) by an impregnation method, wherein the alkali metal is contacted with the thermally treated alumina carrier while the alkali metal is dissolved in liquid ammonia, so as to prepare an alkali metal loaded alumina carrier;

(C) thermally treating the alkali metal loaded alumina carrier of step (B) at 100° to 500° C. for 10 minutes to 10 hours under vacuum, so as to prepare a catalyst; and

(D) reacting an alkyl-substituted aromatic hydrocarbon with an aliphatic monoolefin using the catalyst of step (C) under an atmosphere substantially free of oxygen, water and carbon dioxide gas to alkylate a side chain of the alkyl-substituted aromatic hydrocarbon.

5,625,103

CONTINUOUS TOLUENE DISPROPORTIONATION PROCESS

Jeevan S. Abichandani, Voorhees; Jeffrey S. Beck, Princeton; Ronald H. Fischer, Cherry Hill; Ivy D. Johnson, Medford, and David L. Stern, Lawrenceville, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 15, 1995, Ser. No. 441,105

Int. Cl.[6] C07C *5/52*

U.S. Cl. 585—475 **11 Claims**

1. A continuous process for disproportionating toluene, said process comprising contacting toluene with a catalyst under conditions sufficient to disproportionate toluene, said catalyst comprising ZSM-5, said catalyst being selectivated with a siliceous mate-

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rial, wherein said process comprises an adjustment phase and at least one steady-state phase,

wherein said adjustment phase comprises introducing toluene into a reactor comprising said catalyst under conditions sufficient to increase the para-selectivity of said catalyst,

wherein said steady-state phase comprises introducing toluene into said reactor under conditions sufficient to achieve essentially constant levels of toluene conversion and para-xylene selectivity, the inlet temperature of said reactor being incrementally adjusted upwardly to compensate for aging of said catalyst,

wherein, during said adjustment phase, the inlet temperature of said reactor is maintained continuously for a period of at least 9 hours at a temperature which is at least 20° C. greater than the average inlet temperature during the first 10 days of operation of said steady-state phase.

5,625,104

ALKALI METAL ION EXCHANGED SELECTIVATED ZEOLITE CATALYST

Jeffrey S. Beck, Princeton, and David L. Stern, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 6, 1995, Ser. No. 471,631
Int. Cl.[6] C07C *5/22*
U.S. Cl. 585—475 **3 Claims**

1. A process for disproportionating toluene, said process comprising contacting toluene and hydrogen with a selectivated catalyst under toluene disproportionating conditions, wherein said catalyst is prepared according to the steps of:

(a) contacting a catalyst comprising a zeolite with an organosilicon compound under conditions sufficient to deposit a siliceous material on said catalyst;

(b) contacting the catalyst comprising a zeolite and siliceous material from step (a) with an aqueous solution comprising sodium cations;

(c) washing the aqueous solution treated catalyst from step (b) with water;

(d) drying the washed catalyst from step (c) ; and

(e) recovering a catalyst composition comprising and zeolite, said siliceous material and alkali metal ions from said aqueous solution of step (b).

5,625,105

PRODUCTION OF VINYLIDENE OLEFINS

Kaung-Far Lin, Baton Rouge, and Carroll W. Lanier, Baker, both of La., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 5, 1996, Ser. No. 596,848
Int. Cl.[6] C07C *2/26*
U.S. Cl. 585—511 **21 Claims**

1. A process for producing vinylidene olefin using a trialkylaluminum compound as the sole catalyst component charged to the reaction vessel, which process comprises dimerizing vinyl olefin with at least one trialkylaluminum compound as the catalyst in a ratio in the range of 0.001 to 0.05 mol of trialkylaluminum per mol of the initial vinyl olefin at a temperature in the range of over 140° and below 172° C. for a period of time in the range of 1 to 24 hours sufficient to convert at least 10% by weight of the initial vinyl olefin to a different product with at least 80 wt % vinylidene dimer selectivity.

5,625,106

METHOD FOR DIMERIZING AN α-OLEFIN

Tobin J. Marks, and Xinmin Yang, both of Evanston, Ill., assignors to Northwestern University, Chicago, Ill.

Division of Ser. No. 336,864, Nov. 9, 1994, Pat. No. 5,500,398. This application Dec. 11, 1995, Ser. No. 570,331
Int. Cl.[6] C07C *2/24*
U.S. Cl. 585—512 **4 Claims**

1. A method of dimerizing an α-olefin comprising the step of adding a catalyst $(L_2MR')^+X^-$ to said α-olefin under conditions effective for the dimerization of said α-olefin where

L is $R_2(C_5H_3)$; R is a C_3–C_{20} tert-alkyl; R' is a C_1–C_{20} alkyl group or H;

M is Ti, Zr, or Hf;

X^- is $R'B(C_6F_5)_3^-$ or the negative anion of methylalumoxane.

5,625,107

CATALYST FOR CONVERSION OF METHANE TO ETHYLENE, PREPARATION THEREOF, AND PROCESS FOR MANUFACTURING ETHYLENE USING SAID CATALYST

Dae C. Park, Daejon, and Pyung K. Ahn, Kwangju, both of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejon, Rep. of Korea

PCT No. PCT/KR94/00186, § 371 Date Aug. 30, 1995, § 102(e) Date Aug. 30, 1995, PCT Pub. No. WO95/17962, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 30, 1994, Ser. No. 507,280
Claims priority, application Rep. of Korea, Dec. 31, 1993, 1993/31984
Int. Cl.[6] C07C *2/24*; B01J *27/18;27/185;23/75*
U.S. Cl. 585—514 **9 Claims**

2. A process for converting methane to ethylene comprising:

contacting a source gas comprising methane with a conversion catalyst, said catalyst comprising a compound of the general formula:

$$M_aP_cD/S \quad (1)$$

wherein M is a metal cluster or metal complex compound containing a metal selected from the group consisting of Group VIII, VII and VI metals;

S is an inorganic carrier;

P is a phosphorus compound promoter;

D is a cobalt compound;

wherein a is an amount of M corresponding to 0.01 to 10 wt. % of said catalyst and c is an amount of P corresponding to 1.0 to 35.0 wt. % of said catalyst at a temperature of 350°–1050° C. under 1–10 atm. pressure;

catalytically converting the methane to ethylene; and recovering the ethylene so formed.

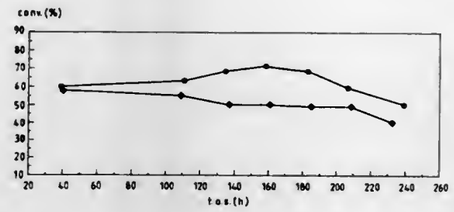
5,625,108

PROCESS FOR PREPARING AMORPHOUS, CATALYTICALLY ACTIVE SILICOALUMINAS

Carlo Perego; Stefano Peratello, and Roberto Millini, all of Milan, Italy, assignors to Eniricerche S.p.A., Milan; AGIP Petroli S.p.A., Rome, and Enichem Synthesis S.p.A., Palermo, all of Italy

Division of Ser. No. 361,581, Dec. 22, 1994. This application Jun. 1, 1995, Ser. No. 457,814
Claims priority, application Italy, Dec. 22, 1993, MI93A2696
Int. Cl.[6] C07C *2/02*
U.S. Cl. 585—520 **15 Claims**

1. A method comprising propylene oligomerization in the presence of a silica-alumina gel catalyst, wherein said catalyst is an amorphous silica-alumina gel having a surface area of at least 500 m^2/g and a molar ratio of SiO_2:Al_2O_3 of at least 30:1, wherein said catalyst is prepared by



(1) hydrolyzing and gelling an aqueous reaction medium comprising a tetra-(C_2-C_5)-alkyl ammonium hydroxide, an aluminum tri-(C_2-C_4)-alkoxide and a tetra-(C_1-C_5)-alkyl orthosilicate at a temperature equal to or higher than the boiling temperature at atmospheric pressure of any alcohol produced during said hydrolyzing and gelling steps, without substantially removing said alcohol from said reaction media to produce a gel; and

(2) drying and firing said gel.

5,625,109

LIQUID PHASE DEHYDRATION OF TERTIARY BUTYL ALCOHOL

Vijai P. Gupta, 816 Newtown Rd., Berwyn, Pa. 19312

Filed Nov. 21, 1994, Ser. No. 342,560
Int. Cl.[6] C07C *1/20;1/24*
U.S. Cl. 585—639 **3 Claims**

1. A process for the liquid phase dehydration of tertiary butyl alcohol to isobutylene which comprises subjecting tertiary butyl alcohol to catalytic liquid phase dehydration conditions in a dehydration zone, removing a vapor mixture from said dehydration zone consisting essentially of isobutylene, water, tertiary butyl alcohol and isobutanol and/or secondary butanol, cooling the separated vapor mixture to condense a mixture of tertiary butyl alcohol, water and isobutanol and/or secondary butanol, recovering isobutylene, phase separating the condensed mixture of tertiary butyl alcohol, water and isobutanol and/or secondary butanol into an organic-rich upper liquid phase and a water-rich lower liquid phase, and recycling the organic-rich Upper liquid phase to the dehydration step.

5,625,110

HYDRODEHALOGENATION CATALYST

Rainer Schoedel, Halle; Hans-Dieter Neuhauer, Merseburg; Peter Birke, Langenbogen; Hans-Dieter Berrouschot, Langendorf; Hans-Georg Friese, Halle; Klaus Weber, Duerrenberg; Ulrich Neumann, Halle, and Hannelore Grundmann, Leuna, all of Germany, assignors to Leuna-Katalysatoren GmbH, Leuna, Germany

Filed Jul. 20, 1995, Ser. No. 504,630
Claims priority, application Germany, Jul. 26, 1994, 44 26 389.9; Jul. 26, 1994, 44 26 390.2
Int. Cl.[6] C07C *1/00*
U.S. Cl. 585—641 **13 Claims**

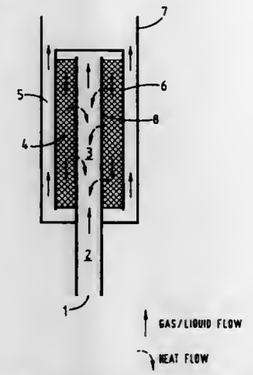
1. A hydrodehalogenation catalyst for the hydrogenating disposal of halogenated hydrocarbons comprising a support of aluminosilicate saturated with a chlorine-free palladium salt solution, the palladium being present in an amount of 0.5 to 8% by weight and silica being present in an amount of 1 to 50% by weight, the palladium concentration over a cross section of the support passing through a maximum of 50 to 250 μm below an outer surface of the support and being 1.5 to 7 times an average palladium concentration of the catalyst, and the catalyst being prepared by impregnating the support with a chlorine-free palladium salt solution, the ratio of solution volume to support volume being at most 2:1, drying the catalyst and reducing the catalyst in a stream of hydrogen at temperatures between 100° and 500° C.

5,625,111

PROCESS FOR THE PRODUCTION OF MONO-OLEFINS

Christopher J. Astbury, London; David C. Griffiths, Surrey, and Ian A. B. Reid, London, all of England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 107,128, Aug. 17, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,720
Claims priority, application United Kingdom, Aug. 20, 1992, 9217685
Int. Cl.[6] C07C *4/02*
U.S. Cl. 585—653 **11 Claims**



1. A process for the production of mono-olefins from a liquid hydrocarbon feed comprising one or more paraffins having at least two carbon atoms, the process comprising the steps of:

partially combusting a mixture of the liquid hydrocarbon feed and a molecular oxygen-containing gas in a reaction chamber with a combustion catalyst;

transferring at least part of the heat of reaction produced during said partial combustion to the incoming feed mixture through the reaction chamber, and

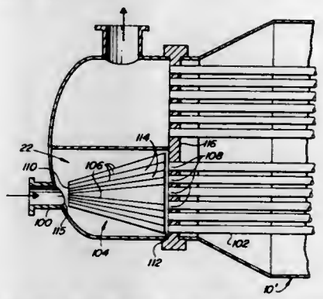
maintaining the velocity of the incoming feed mixture at a value above the burning velocity of the feed mixture to produce said mono-olefins.

5,625,112

METHOD OF INDIRECT HEAT EXCHANGE FOR TWO PHASE FLOW DISTRIBUTION

Elias G. Ragi, Williamsville, and Thomas J. Godry, Tonawanda, both of N.Y., assignors to UOP, Des Plaines, Ill.

Divislon of Ser. No. 174,510, Dec. 28, 1993, Pat. No. 5,531,266. This application Sep. 20, 1995, Ser. No. 530,982
Int. Cl.[6] C07C *2/62;2/56*
U.S. Cl. 585—709 **8 Claims**



1. In a process of alkylating isoparaffinic hydrocarbons with olefinic hydrocarbons in the presence of an acid catalyst comprising the steps of reacting isoparaffinic hydrocarbons and olefinic hydrocarbons in the presence of acid catalyst in a reaction zone to

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form alkylate, withdrawing a mixture of hydrocarbons with acid catalyst as effluent from said reaction zone, separating said effluent into an acid phase and a hydrocarbon phase in a first separating zone, reducing the pressure on the hydrocarbon phase to refrigerate it and vaporize volatile hydrocarbons, passing the refrigerated hydrocarbon phase into contact with a boiling surface located on the interior of a plurality of heat exchange tubes to effect indirect heat exchange with the reaction mixture of hydrocarbons and catalyst in the reaction zone and to remove exothermic heat of reaction and vaporize further volatile hydrocarbons in the hydrocarbon phase, separating the liquified portion of the hydrocarbon phase from the vapor portion thereof in a second separating zone, fractionating the liquid portion of the hydrocarbon phase to remove alkylate, passing the vapor phase material removed in said second separating zone through a compressor and a condenser to compress and condense the vapor phase to form a liquid phase, reducing the pressure on the liquid phase to refrigerate it and vaporize volatile hydrocarbons forming an isoparaffinic hydrocarbon liquid phase and a volatile hydrocarbon vapor phase, separating the refrigerated isoparaffinic hydrocarbon liquid phase from the volatile hydrocarbon vapor phase in a third separating zone, and adding the separated refrigerated isoparaffinic hydrocarbon liquid phase as a reactant in the reaction zone, the improvement which comprises:

passing the hydrocarbon phase to a tube inlet chamber that supplies said hydrocarbon phase to said plurality of heat exchange tubes;

dividing said hydrocarbon phase in said chamber into a plurality of inlet streams in a manner to equalize any weight ratio of liquid to vapor and the total liquid distribution of each of said streams; and, directing each of said inlet streams into an inlet of one or more of said heat exchange tubes.

5,625,113

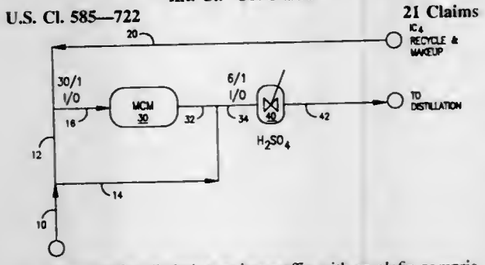
ISOPARAFFIN/OLEFIN ALKYLATION

Mohsen N. Harandi, Langhorne, Pa.; James H. Beech, Jr., Wilmington, Del.; Albin Huss, Jr., Chadds Ford, Pa.; Robert A. Ware, Wyndmoor, Pa., and Altaf Husain, Marlton, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 142,036, Oct. 28, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,334

Int. Cl.[6] C07C *2/58*

U.S. Cl. 585—722 **21 Claims**



1. A process for alkylating an isoparaffin with an olefin comprising the steps of:

(a) reacting an isoparaffin having from 4 to 8 carbon atoms with an olefin having from 2 to 12 carbon atoms in a first alkylation reaction stage at temperature from about –40° C. to about 500° C. and overall isoparaffin:olefin feed weight ratio of from about 1:1 to about 250:1 with a solid alkylation catalyst comprising a synthetic porous crystalline material characterized by an X-ray diffraction pattern including values substantially as set forth in Table I of the specification and having a composition comprising the molar relationship

$$X_2O_3:(n)YO_2,$$

wherein n is less than about 35, X is a trivalent element selected from the group consisting of Al, B, Fe, and Ga and Y is a tetravalent element selected from the group consisting of Si and Ge;

(b) mixing the effluent from said first alkylation stage with additional olefin to evolve an intermediate stream having an isoparaffin:olefin weight ratio of from about 2:1 to about 100:1; and

(c) reacting said intermediate stream in a second alkylation stage in the absence of intermediate fractionation with a liquid acid catalyst comprising H_2SO_4 to produce C_5+ alkylate.

5,625,114

PROCESS FOR THE RECOVERY OF SPENT ACID CATALYST

Sven I. Hommeltoft, Hillerød, Denmark, assignor to Haldor Topsøe A/S, Denmark

Filed May 25, 1995, Ser. No. 450,389

Claims priority, application Denmark, Jun. 2, 1994, 0622/94

Int. Cl.[6] C07C *2/58;* **B01J** *20/34*

U.S. Cl. 585—731 **6 Claims**

1. A process for the alkylation of a hydrocarbon feedstock. With an olefinic alkylating agent by contact with a sulfonic acid catalyst and recovery of a sulfonic acid catalyst from an aqueous extract of an alkylation effluent stream comprising the steps of:

alkylating the hydrocarbon feedstock in an alkylation zone to obtain an alkylation effluent stream;

extracting the alkylation effluent stream with water to obtain an aqueous extract;

evaporating the extract to obtain a hydrate of the sulfonic acid catalyst;

reacting the hydrate with an olefin containing hydrocarbon stream to its corresponding sulfonic acid ester; and

introducing the acid ester to the alkylation zone, thereby decomposing the sulfonic acid ester to its catalytically active acid form.

5,625,115

WAX HYDROISOMERIZATION USING A DIFUNCTIONAL CATALYST

Cristina Flego, Trieste, and Laura Zanibelli, Milan, both of Italy, assignors to Enitricerche S.p.A., Milan, and AGIP Petroli S.p.A., Rome, both of Italy

Division of Ser. No. 241,585, May 12, 1994, Pat. No. 5,518,978. This application Jan. 4, 1996, Ser. No. 582,976

Claims priority, application Italy, May 12, 1993, MI93A0960

Int. Cl.[6] C07C *5/13*

U.S. Cl. 585—750 **7 Claims**

1. Process for hydroisomerization of n-paraffins having more than 15 carbon atoms, characterized in that said n-paraffin, or n-paraffin mixture, is brought into contact, under hydroisomerization conditions, with a difunctional catalyst,

wherein said difunctional catalyst has a specific surface area comprised within the range of from 300 to 700 m^2/g, and is characterized in that it comprises:

a) silica particles having a specific surface area comprised within the range of from 500 to 100 m^2/g partially coated with ZrO_2, with the coverage being comprised within the range of from 10 to 90% and provided with sulfate moieties, with said sulfate moieties being present in amounts comprised within the range of from 3 to 24% by weight, and

b) one of more metals belonging to Group VIIIA, in an amount comprised within the range of from 0.05 to 5% by weight.

5,625,116

PROCESS FOR THE REMOVAL OF CARBON MONOXIDE FROM ALPHA-OLEFINS AND SATURATED HYDROCARBONS

Roberto Flammini, Piazzale San Benedetto, and Giovanni Patroncini, Via Ferrariola, both of Italy, assignors to Montell North America Inc., Wilmington, Del.

Continuation of Ser. No. 958,386, Oct. 8, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,720

Claims priority, application Italy, Oct. 8, 1991, M191A2666

Int. Cl.[6] C07C *7/148;7/152*

U.S. Cl. 585—848 **3 Claims**

1. Process for removing carbon monoxide from a liquid hydrocarbon containing 0.5 to 5 ppm by moles of carbon monoxide, said hydrocarbon being selected from the group consisting of propylene, 1-butene, ethane, propane, butane, and mixtures thereof, said process comprising contacting said hydrocarbon at a temperature in the range from 0° C. to 150° C., and at a pressure at which said hydrocarbon is maintained in the liquid state, with a catalyst system comprising a mixture or a reaction product or both of CuO and Cr_2O_3, the molar ratio of CuO to Cr_2O_3 being from 1:10 to 10:1, said catalyst system having been preheated in air or oxygen at 80°–500° C. for 1–100 hours.

5,625,117

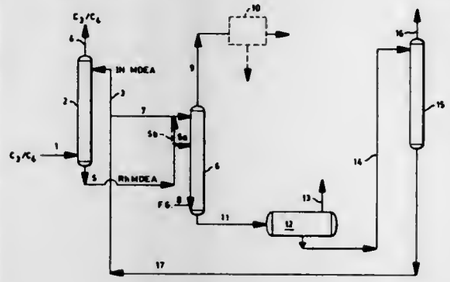
FUEL GAS STRIPPING OF RICH AMINE TO REMOVE HYDROCARBONS

Gerald O. Henderson; William M. Rice, both of Ashland, Ky., and Ric T. Zima, Huntington, W. Va., assignors to Ashland Inc., Ashland, Ky.

Filed Aug. 18, 1995, Ser. No. 517,004

Int. Cl.[6] C07C *7/00;* **C10G** *29/00;29/20*

U.S. Cl. 585—860 **17 Claims**



1. A process comprising:

a. contacting liquid C_3–C_4 hydrocarbon containing H_2S with lean amine absorbent in a first absorption zone under conditions to absorb H_2S, and producing a purified C_3–C_4 liquid hydrocarbon and rich amine absorbent containing H_2S and a minor amount of C_{3-C4} hydrocarbon, said rich amine having residual H_2S absorptive capacity;

b. contacting a hydrocarbon gas containing H_2S in a second absorption zone with rich amine absorbent from said first absorption zone under conditions to absorb H_2S; and

c. stripping C_3–C_4 hydrocarbon from the rich amine with said hydrocarbon gas, forming a purified hydrocarbon gas containing C_3–C_4 hydrocarbon, and a loaded amine absorbent containing H_2S removed in the first absorption zone and in the second absorption zone.

5,625,118

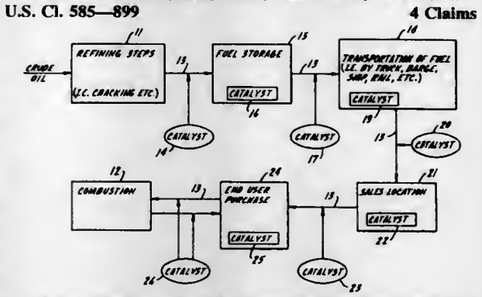
METHOD OF IMPROVING THE PERFORMANCE OF HYDROCARBON FUELS

Anthony W. Finkl, 445 E. Royal Flamingo Dr., Sarasota, Fla. 34236

Filed Jul. 6, 1995, Ser. No. 498,854

Int. Cl.[6] C07C *7/20;* **B01J** *23/02;* **C22C** *30/00;* **F02B** *75/12*

U.S. Cl. 585—899 **4 Claims**



1. A method of improving the performance of liquid hydrocarbon fuels, the method consisting of the following step:

contacting said fuel with a base metal alloy catalyst prior to combustion of said fuel

wherein said base metal alloy catalyst is further characterized as including the following components in weight percent:

Sb	15–25
Pb	3–7
Hg	10–16
Tl	.05–1

and the balance consisting essentially of Sn.

5,625,119

METHOD FOR TREATING SLUDGE AND SOIL CONTAMINATED WITH HYDROCARBONS

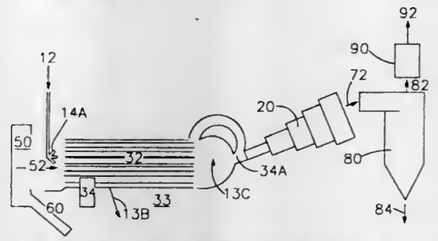
Siegfried E. Tischler, Jakarta Selatan, Indonesia, assignor to Successful Venture Enterprises Inc., Virgin Islands (Br.)

Continuation-in-part of Ser. No. 68,512, May 27, 1993, Pat. No. 5,414,205. This application Feb. 3, 1995, Ser. No. 382,980

Claims priority, application Indonesia, Jun. 22, 1992, P-003381

Int. Cl.[6] A63D *3/00*

U.S. Cl. 588—205 **16 Claims**



1. A method for treating sludge comprising organic compounds and solids, the method comprising the steps of:

spraying the sludge into a preheating chamber;

producing a stream of air into the preheating chamber, the air being preheated to a sufficient temperature to initiate spontaneous combustion of a portion of the organic compounds;

combining the sludge and the preheated air at a lower end of a cocurrent flow fluidized bed oxidizer;

spontaneously combusting a portion of the organic compounds while generating heat for oxidizing substantially all of the remaining organic compounds and producing a mixture of

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treated solids and process gas and while pneumatically conveying the solids through the fluidizied bed oxidizer in an upward direction;

pneumatically removing the mixture of treated solids and process gas from an upper end of said fluidized bed oxidizer; and

separating the treated solids from the process gas.

5,625,120

Patent Not Issued For This Number

5,625,121

MICE DEFICIENT IN NERVE GROWTH FACTOR RECEPTORS ENCODED BY TRKB

Rudiger Klein, Nussloch, Germany; Alexandra Joyner, Toronto, Canada, and Mariano Barbacid, Lawrenceville, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Oct. 14, 1993, Ser. No. 114,859

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 800—2 **3 Claims**

1. A mouse homozygous for a disrupted trkB gene, wherein the trkB gene is disrupted by the insertion of a selectable marker sequence and wherein said mouse exhibits a decrease in the number of neurons which comprise the facial motor nucleus, spinal cord, trigeminal ganglia and dorsal root ganglia.

5,625,122

MOUSE HAVING A DISRUPTED LCK GENE

Tak W. Mak, Toronto, Canada, assignor to The Ontario Cancer Institute, Toronto, Canada

Continuation of Ser. No. 872,985, Apr. 24, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,043

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 800—2 **7 Claims**

1. A mouse homozygous for a disrupted lck gene, wherein the lck gene is disrupted by a selectable marker sequence and wherein said mouse has an absence of $CD4^+CD8^-$ and $CD4^-CD8^+$ thymocytes.

5,625,123

NEUROTROPHIN-3-DEFICIENT EMBRYONIC STEM CELLS AND MICE AND THEIR USE

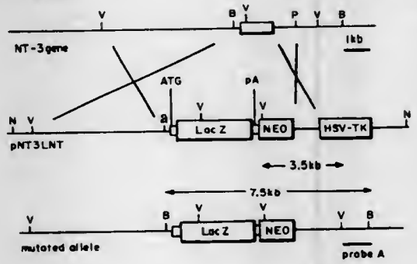
Osamu Shiho, Takashima-gun; Yoshihiko Kaisho, Sakai, and Hideaki Tojo, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 29, 1994, Ser. No. 268,020

Claims priority, application Japan, Jul. 6, 1993, 5-166936; Jan. 19, 1994, 6-003824; Jun. 23, 1994, 6-141858

Int. Cl.[6] A61K *49/00;* **C12N** *15/00;15/06;* **G01N** *31/00*

U.S. Cl. 800—2 **7 Claims**



1. A mutant mouse comprising a homozygous disruption in the endogenous neurotrophin-3 gene, wherein said mutation has been introduced by homologous recombination and results in the insertion of a reporter gene or a drug-resistance gene into an exon of the neurotrophin-3 gene and further wherein said mouse has a reduced number of sensory neurons compared with the number of sensory neurons in a mouse lacking said homozygous disruption.

5,625,124

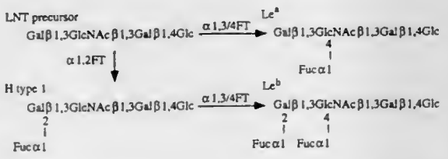
ANIMAL MODEL FOR *HELICOBACTER PYLORI* INFECTION

Per Falk, Sollentuna, Sweden, and Jeffrey I. Gordon, St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Filed Jul. 11, 1994, Ser. No. 273,411

Int. Cl.[6] C12N *5/00;* **A61K** *49/00;* **G01N** *33/567*

U.S. Cl. 800—2 **9 Claims**



1. A transgenic mouse expressing in its gut epithelial cells, under control of a gut epithelial cell specific promoter, an enzyme selected from the group consisting of human GDP-L-fucose: β-D-galactoside 2-α-L fucosyltransferase and human GDP-L-fucose: β-D-N-acetylglucosamide 3/4-α-L-fucosyltransferase, wherein *Helicobacter pylori* adhere to the gut epithelial cells.

5,625,125

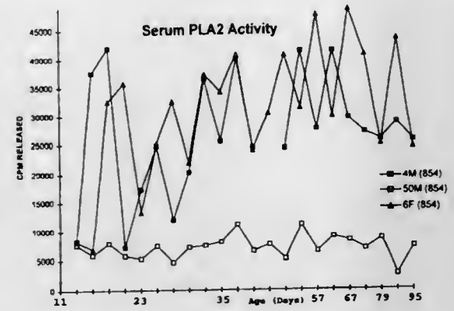
PHOSPHOLIPASE A_2 EXPRESSING TRANSGENIC ANIMALS

C. Frank Bennett, Carlsbad, Calif.; David S. Grass, Lawrenceville, and Mark E. Swanson, Princeton Junction, both of N.J., assignors to DNX Biotherapeutics, Princeton, N.J.

Filed Aug. 9, 1994, Ser. No. 287,980

Int. Cl.[6] C12N *5/00;15/00;* **G01N** *33/48*

U.S. Cl. 800—2 **10 Claims**



1. A mouse or rat expressing a transgene encoding non-pancreatic, low molecular weight phospholipase A_2 so that the serum phospholipase A_2 activity, as determined by hydrolysis of oleic acid-labelled *E. coli* lipids, is increased relative to a normal animal of the same species, wherein said mouse or rat displays a pathologic phenotype selected from the group consisting of adnexal hyperplasia, alopecia, exfoliative dermatitis and hyperkeratosis.

5,625,126

TRANSGENIC NON-HUMAN ANIMALS FOR PRODUCING HETEROLOGOUS ANTIBODIES

Nils Lonberg, Redwood City, and Robert M. Kay, San Francisco, both of Calif., assignors to GenPharm International, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 209,741, Mar. 9, 1994, which is a continuation-in-part of Ser. No. 165,699, Dec. 10, 1993, which is a continuation-in-part of Ser. No. 161,739, Dec. 3, 1993, which is a continuation-in-part of Ser. No. 155,301, Nov. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 96,762, Jul. 22, 1993, which is a continuation-in-part of Ser. No. 53,131, Apr. 26, 1993, which is a continuation-in-part of Ser. No. 990,860, Dec. 16, 1992, Pat. No. 5,545,806, which is a continuation-in-part of Ser. No. 904,068, Jun. 23, 1992, which is a continuation-in-part of Ser. No. 853,408, Mar. 18, 1992, which is a continuation-in-part of Ser. No. 834,539, Feb. 5, 1992, Pat. No. 5,633,425, which is a continuation-in-part of Ser. No. 810,279, Dec. 17, 1991, Pat. No. 5,569,825, which is a continuation-in-part of Ser. No. 575,962, Aug. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 574,748, Aug. 29, 1990, abandoned. This application Dec. 7, 1994, Ser. No. 352,322

Int. Cl.[6] C12N *15/00;* **C07H** *21/02;21/04*

U.S. Cl. 800—2 **5 Claims**

1. A transgenic mouse containing in its genome a transgene comprising in operable linkage a plurality of human V genes, a plurality of human D genes, a pluraliiy of human J genes, a human μ C_H gene, at least two different non-μ human C_H genes and associated isotype switching sequences, wherein human μ and human γ switch sequences are located in closer proximity to each other than in the naturally occurring human immunoglobulin locus; and wherein in lymphocytes of said mouse the transgene undergoes productive VDJ rearrangement and μ to γ isotype switching by recombination between the human μ and human γ switch sequences such that the mouse produces a serum containing immunoglobulins of at least three human heavy chain isotypes in response to antigenic stimulation.

5,625,127

EXTENDED HUMAN HEMATOPOIESIS IN A HETEROLOGOUS HOST

Hideto Kaneshima; Reiko Namikawa, both of Palo Alto, and Joseph M. McCune, San Francisco, all of Calif., assignors to SyStemix, Inc., Palo Alto, Calif.

Continuation of Ser. No. 245,250, May 17, 1994, Pat. No. 5,476,997, which is a continuation of Ser. No. 836,195, Feb. 13, 1992, which is a continuation of Ser. No. 347,912, May 5, 1989, abandoned. This application May 4, 1995, Ser. No. 434,706

Int. Cl.[6] A61K *35/00*

U.S. Cl. 800—2 **8 Claims**

1. A chimeric immunocompromised mouse, said mouse comprising:

an immunodeficient mouse host lacking functional syngeneic lymphocytes as a result of a genetic defect in immunoglobulin and T cell receptor gene rearrangement; and;

viable human bone marrow equivalent capable of providing mature cells of a multiplicity of hematopoietic lineages wherein said human bone marrow equivalent is comprised of human fetal thymus and human fetal liver tissue grown in juxtaposition, and wherein said bone marrow equivalent is prepared by the contiguous co-implantation of said human fetal thymus and human fetal liver tissue.

5,625,128

NON-HUMAN ANIMAL MODEL OF A HUMAN AIRWAY

James M. Wilson, and John F. Engelhardt, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 943,952, Sep. 11, 1992, abandoned. This application May 19, 1995, Ser. No. 445,072

Int. Cl.[6] C12N *5/00;15/00;* **A66K** *51/00*

U.S. Cl. 800—2 **8 Claims**

1. A non-human animal model of a human airway, wherein the non-human animal is an immunocompromised rodent and the airway has continuously open ends and supports a fully differentiated epithelium around its lumen.

5,625,129

INBRED CORN LINE PHDD6

Roy Luedtke, Jr., Thompson, N. Dak., and William B. Ambrose, Urbandale, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 831,031, Feb. 3, 1992, abandoned. This application Nov. 2, 1994, Ser. No. 333,614

Int. Cl.[6] H01H *5/00;4/00;* **C12H** *5/04;* **A01H** *1/00*

U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated PHDD6 and having ATCC Accession No. 97410.

5,625,130

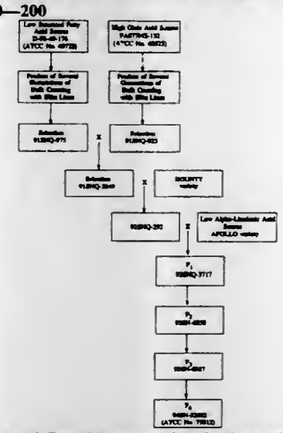
OILSEED BRASSICA BEARING AN ENDOGENOUS OIL WHEREIN THE LEVELS OF OLEIC, ALPHA-LINOLENIC, AND SATURATED FATTY ACIDS ARE SIMULTANEOUSLY PROVIDED IN AN ATYPICAL HIGHLY BENEFICIAL DISTRIBUTION VIA GENETIC CONTROL

Ian Grant, and David G. Charne, both of Guelph, Canada, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 7, 1995, Ser. No. 399,926

Int. Cl.[6] A01H *5/00;5/10;1/06;* **C12N** *15/01*

U.S. Cl. 800—200 **36 Claims**



19. An oil seed *Brassica napus* plant having satisfactory agronomic characteristics which upon self-pollination is capable of forming oilseeds that yield an endogenous vegetable oil having an improved distribution of fatty acids, said oilseeds bearing an oil which exhibits following crushing and extraction in the absence of hydrogenation or other chemical or physical modification (1) an alpha-linolenic acid content of less than 3.5 percent by weight based upon the total fatty acid content, (2) an oleic acid content of at least 77 percent by weight based upon the total fatty acid content (3) a total saturated fatty acid content of no more than 4.5 percent

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by weight based upon the total fatty acid content, and (4) an erucic acid content of no more than 2 percent by weight based upon the total fatty acid content, wherein each of said recited traits of said oil is controlled by genetic means in the absence of cancellation as the result of the formation of the other recited traits and said genetic means for said oleic acid content and said saturated fatty acid content are obtainable by mutagenesis.

5,625,131
INBRED CORN LINE ZSO541
Raymond J. Lerette, Greeley, Colo., assignor to Zenco (No. 4) Limited, London, England
Filed Mar. 28, 1995, Ser. No. 413,205
Int. Cl.[6] A01H *1/02;4/00;5/00;* **C12N** *5/04*
U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated ZS0541, wherein a seed sample of ZS0541 has been deposited under ATCC number 97703.

2. A corn plant produced by the seed of claim 1.

5,625,132
INBRED MAIZE LINE PH08B
Keith M. Davis, Shelbyville, Ill., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa
Filed Sep. 1, 1995, Ser. No. 522,824
Int. Cl.[6] A01H *1/02;4/00;5/00;* **C12N** *5/04*
U.S. Cl. 800—200 **14 Claims**

1. Seed of maize inbred line designated PH08B and having ATCC Accession No. 97654.

2. A maize plant arid its parts produced by the seed of claim 1 and its plant parts.

5,625,133
INBRED MAIZE LINE PHOC7
Todd E. Piper, Eau Claire, Wis., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa
Filed Sep. 21, 1995, Ser. No. 532,193
Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12M** *5/04*
U.S. Cl. 800—200 **14 Claims**

1. Inbred corn seed designated PHOC7 and having the genotype of ATCC Accession No. 97746.

5,625,134
SOYBEAN CULTIVAR 9246337447
Christopher Tinius, Memphis, Tenn.; William K. Rhodes, Queenstown, Md., and Yolanda I. Otero-Ortiz, Aguadilla, Puerto Rico, assignors to Asgrow Seed Company, Kalamazoo, Mich.
Filed Dec. 4, 1995, Ser. No. 566,924
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 9246337447, deposited as ATCC Accession Number 97717.

5,625,135
INBRED CORN LINE LH233
Gary D. Arthur, Iowa City, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa
Filed Dec. 4, 1995, Ser. No. 566,926
Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

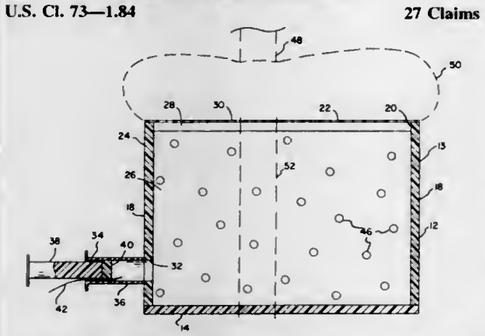
1. Inbred corn seed designated LH233 having ATCC accession No. 97359.

5,625,136
SYNTHETIC DNA SEQUENCE HAVING ENHANCED INSECTICIDAL ACTIVITY IN MAIZE
Michael G. Koziel; Nalini M. Desai, both of Cary; Kelly S. Lewis; Vance C. Kramer, both of Hillsborough; Gregory W. Warren, Cary; Stephen V. Evola, Apex; Lyle D. Crossland, Chapel Hill; Martha S. Wright, Cary; Ellis J. Merlin, Raleigh; Karen L. Launis, Franklinton, all of N.C.; Steven J. Rothstein, Guelph, Canada; Cindy G. Bowman, Cary, N.C.; John L. Dawson; Erik M. Dunder, both of Chapel Hill, N.C.; Gary M. Pace, Cary, N.C., and Janet L. Suttie, Raleigh, N.C., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Continuation-in-part of Ser. No. 772,027, Oct. 4, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,715
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *15/32*
U.S. Cl. 800—205 **25 Claims**

1. A nucleotide sequence comprising the DNA sequence set forth in SEQ ID NO:3.

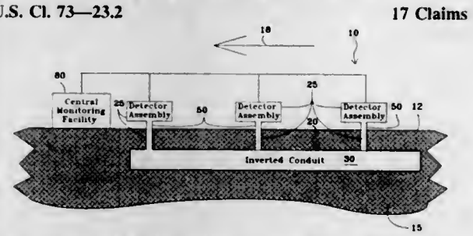
6. A plant stably transformed with the nucleotide sequence of claim 1.

5,625,137
VERY LOW SCATTER LIQUID AND SOLID TISSUE MIMICKING MATERIAL FOR ULTRASOUND PHANTOMS AND METHOD OF MAKING THE SAME
Ernest L. Madsen, and Gary R. Frank, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed May 25, 1995, Ser. No. 449,755
Int. Cl.[6] G01N *37/00;29/06*
U.S. Cl. 73—1.84 **27 Claims**



1. A low scatter ultrasound tissue mimicking material comprising: an aqueous mixture of large organic water soluble molecules and an emulsion of fatty acid esters mixed with a hydroxy compound soluble in water.

5,625,138
EARTHQUAKE EARLY WARNING SYSTEM
Jack D. Elkins, 185 Pickel Farm Rd., Kingston, Tenn. 37763
Continuation-in-part of Ser. No. 238,506, May 5, 1994, Pat. No. 5,408,862. This application Feb. 23, 1995, Ser. No. 393,375
Int. Cl.[6] G01V *5/00;* **G01N** *27/16;1/26*
U.S. Cl. 73—23.2 **17 Claims**



6. An earthquake early warning system for detecting seismic activity that precedes an earthquake, said earthquake early warning system comprising:

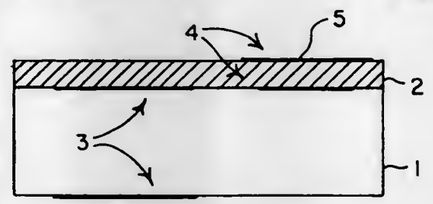
a plurality of gas collector assemblies each including a subterranean, inverted conduit member having a known length and a known cross-sectional width for collecting gases migrating through subterranean strata, said conduit member filled with an inert aggregate and including a flange member for preventing surface originated groundwater from seeping directly beneath said inverted conduit and further including a gas permeable soil interface member for retaining said aggregate within said inverted conduit while allowing gases to migrate into said inverted conduit;

at least one gas detector assembly carried by said gas collector assembly, said gas detector assembly including a gas detecting member for detecting gas collected within said gas collector assembly;

electronic analyzer circuitry in electronic communication with said gas detecting member for monitoring a rate of migration of gas detected by said gas detecting member, comparing the rate of migration to a known normal background rate of migration, and for indicating when the rate of migration accelerates beyond the normal background rate of migration; and

electronic circuitry for communicating between said gas detecting member and said electronic analyzer circuitry wherein said electronic analyzer circuitry is located at a central monitoring facility and is in electronic communication with a plurality of said gas detecting members, said electronic circuitry further including processing circuit for determining an earthquake index, said earthquake index corresponding to the area of a curve corresponding to gas activity versus time up to time T_x multiplied by the slope of said curve at time T_x.

5,625,139
METHOD OF MEASURING CONCENTRATION OF NONPOLAR GASES SUCH AS CARBON DIOXIDE BY MEANS OF A POLYMER-BASED SENSOR AND CONCENTRATION SENSOR STRUCTURE
Lars Stormbom, Vantaa, Finland, assignor to Vaisala Oy, Helsinki, Finland
Filed Oct. 18, 1995, Ser. No. 544,736
Claims priority, application Finland, Oct. 21, 1994, 944950
Int. Cl.[6] G01N *7/00*
U.S. Cl. 73—23.21 **8 Claims**



2. A sensor for measuring the concentration of nonpolar gases, said sensor comprising:

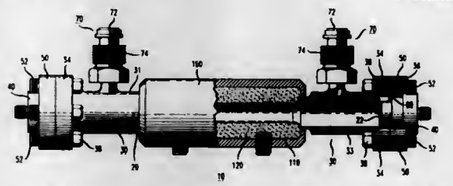
a piezoelectric crystal;

a first pair of electrodes formed on opposite surfaces of the crystal for generating oscillations in the crystal;

a polymer film formed on one surface of said crystal; and

a second pair of electrodes formed on opposite surfaces of the polymer film wherein the outer electrode is permeable to the gas to be measured.

5,625,140
ACOUSTIC ANALYSIS OF GAS MIXTURES
Gardy Cadet, Orange, and Jorge L. Valdes, Bedminster, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 12, 1995, Ser. No. 570,906
Int. Cl.[6] G01N *29/02*
U.S. Cl. 73—24.01 **7 Claims**



1. An acoustic cell for determining the composition of a gas mixture comprising:

a hollow conduit for containing a gas mixture to be analyzed, said conduit having first and second ends;

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a first transducer housing sealingly engaged with said first end of the conduit, said first transducer housing supporting a first transducer, the first transducer housing being made of a metal;

a second transducer housing sealingly engaged with said second end of the conduit, said second transducer housing supporting a second transducer, the second transducer housing being made of metal.

a sound-absorbing sleeve assembly surrounding the conduit;

a first gas port coupled to said first end of the conduit; and

a second gas port coupled to said second end of the conduit;

wherein sound-absorbing sleeve assembly provides an acoustic cell that produces a signal-to-noise ratio of at least 4:1.

5,625,141

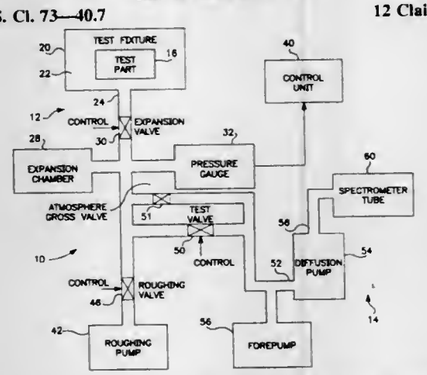
SEALED PARTS LEAK TESTING METHOD AND APPARATUS FOR HELIUM SPECTROMETER LEAK DETECTION

David G. Mahoney, Londonderry, N.H.; Glenn E. Ruiz, Billerica, Mass.; Jack W. Farmer, Sierra Madre, Calif.; Thomas L. Pflanz, Westwood, Mass.; William D. Hall, Deerfield, N.H., and Roy F. Parsons, deceased, late of Dunstable, Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 29, 1993, Ser. No. 84,003

Int. Cl.[6] G01M *3/20*

U.S. Cl. 73—40.7 **12 Claims**



1. An improved trace gas leak detection apparatus for testing small hermetically sealed parts approximating the size of devices such as impact sensors in which a test fixture for sealable enclosure of the parts is coupled through a test valve to a foreline of a high vacuum pump, the high vacuum pump is coupled to an inlet of a mass spectrometer tube, wherein the improvement comprises:

an expansion chamber coupled by a gas conduit to said test fixture, said test fixture having an internal volume surrounding the test part being approximately equal to an internal volume of said expansion chamber;

an expansion valve connected between said test fixture and said expansion chamber in said gas conduit;

means for evacuating said expansion chamber with said expansion valve closed;

means for opening said expansion valve with said test part sealed in said test fixture so that gas in said test fixture expands into the evacuated expansion chamber, said test fixture and said expansion chamber defining a test chamber;

means for measuring the pressure in said test chamber after said expansion valve is opened;

means for comparing the measured pressure to a reference value indicating said test part leaking; and

said mass spectrometer tube being coupled to said test chamber for performing a trace gas leak test when said means for comparing does not indicate said test part is leaking.

5,625,142

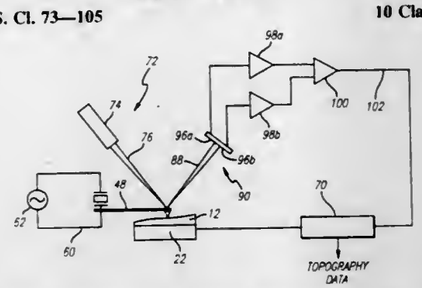
RESONANCE CONTACT SCANNING FORCE MICROSCOPE

Ronald C. Gamble, Pasadena, Calif., assignor to Topometrix Corporation, Santa Clara, Calif.

Continuation of Ser. No. 55,236, Apr. 28, 1993, Pat. No. 5,481,908. This application Jul. 11, 1995, Ser. No. 500,544

Int. Cl.[6] G01B *11/24*

U.S. Cl. 73—105 **10 Claims**



2. In a resonance contact scanning force microscope for examining surface contours of a specimen, the microscope having a cantilever arm having a fundamental resonance frequency, a probe secured to said cantilever arm having a probe tip adapted to follow the surface contours of the specimen, the improvement comprising:

an oscillator driver for causing the cantilever arm to oscillate at a desired resonance harmonic frequency of said fundamental resonance frequency while the probe tip remains in substantially constant contact with the specimen.

5,625,143

MISFIRE DETECTOR FOR INTERNAL COMBUSTION ENGINE

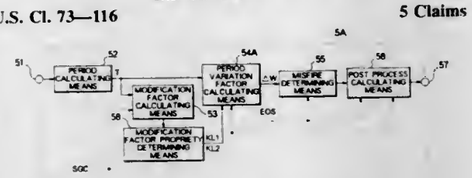
Yoichi Kadota, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,503

Claims priority, application Japan, Jul. 20, 1994, 6-168396

Int. Cl.[6] F02P *17/00*

U.S. Cl. 73—116 **5 Claims**



1. A misfire detector for an internal combustion engine comprising:

period measuring means for measuring periods of a plurality of signals per one revolution of a crankshaft generated by a crank angle sensor for a plurality predetermined crank angles in said internal combustion engine,

modification factor calculating means for, based on a ratio between the periods of the plurality of signals in a steady operating condition, calculating a plurality of modification factors used to modify errors in period measurements,

modification factor propriety determining means for determining whether the plurality of modification factors calculated by said modification factor calculating means are in the proper range or not,

period variation factor calculating means for, based on the periods measured by said period measuring means and the modification factors which have been determined as being proper by said modification factor propriety determining means, calculating each period variation factor used to quantitize variations in the period,

misfire determining means for determining the occurrence of a misfire based on the period variation factor calculated by said period variation factor calculating means, and

processing means for resetting the plurality of modification factors to initial values when the difference between a maximum one and a minimum one of the plurality of modification factors calculated by said modification factor calculating means exceeds a predetermined value,

to thereby avoid erroneous misfire detection due to electrical interference and manufacturing inaccuracies in said period measuring means.

5,625,144

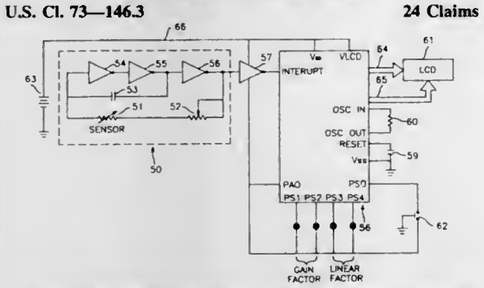
SIMPLE, LOW-COST, LOW-NOISE, AND ENERGY-EFFICIENT DIGITAL TIRE GAUGE

Yih-Min Chang, 3rd Fl., No. 40, Yin-Shan Street, Kaohsiung, Taiwan

Continuation-in-part of Ser. No. 193,293, Feb. 8, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 595,413

Int. Cl.[6] B60C *23/02*; G01L *9/00*

U.S. Cl. 73—146.3 **24 Claims**



1. A digital tire gauge adapted to be electrically connected to a power supply for measuring a pressure of a fluid in a tire comprising:

a gauge housing mounting therein said power supply;

a transducing oscillator mounted in said housing for transducing an imposed pressure of said fluid into a signal of a periodic sequence of cycles, and including:

a pressure sensor having at least a resistor having a resistance thereof changing with said imposed pressure;

a capacitor electrically connected to said pressure sensor for forming therewith an oscillating circuit; and

a plurality of inverters electrically connected to said capacitor and said pressure sensor to provide a gain for said transducing oscillator;

an isolating inverter electrically connected to said transducing oscillator, and functioning as a buffer for the impedance matching of said transducing oscillator to prevent said transducing oscillator from been noised;

a processor mounted in said housing and electrically connected to said buffer for generating a numerical value in response to said signal generated from said buffer;

a display mounted in said housing and electrically connected to said processor for displaying a digital reading in accordance with said numerical value; and

a manually on/off switch mounted in said housing and electrically connected respectively at both ends thereof to said processor and said power supply.

5,625,145

ANGULAR VELOCITY DETECTION METHOD AND ANGULAR VELOCITY DETECTION APPARATUS

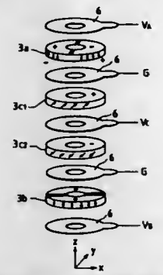
Takashi Maeno, Kawasaki; Takayuki Tsukimoto, Fujisawa; Hajime Kanazawa, Tama, and Ichiro Chiba, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1994, Ser. No. 228,268

Claims priority, application Japan, Apr. 16, 1993, 5-089895

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.12 **27 Claims**



1. A method for detecting an angular velocity comprising:

obtaining from a vibration member three vibration modes having components movable in three orthogonal axial directions which orthogonal axial directions are intersecting, one of said three vibrational modes being a torsional vibration mode around an axis of one of the three axial directions and the other two vibration modes being bending vibration modes in different planes with a phase difference of 90° which planes include axes of the three axial directions; and

detecting an angular velocity around an axis of each of two of the axial directions by exciting one of said three vibration modes and detecting a vibration of the other two vibration modes.

5,625,146

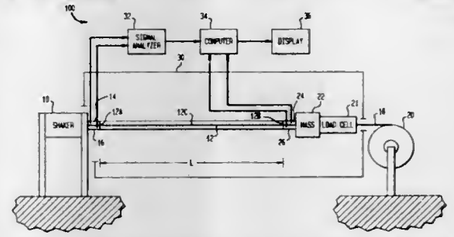
METHOD AND SYSTEM FOR DETERMINING AXIAL MODULUS

Andrew J. Hull, New London, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1995, Ser. No. 587,766

Int. Cl.[6] G01N *3/00*; G01H *13/00*

U.S. Cl. 73—574 **7 Claims**



1. A method for determining the axial modulus of a material, comprising the steps of:

selecting an elongate sample of the material having a mass density ρ and a length L that is considerably greater than a lateral dimension of said elongate sample;

driving a first end of said elongate sample longitudinally at a frequency of excitation ω;

determining, at said frequency of excitation ω, longitudinal displacement of said elongate sample at said first end and a second end opposite said first end; and

determining, at said frequency of excitation ω, longitudinal force experienced at said first end and said second end, wherein said axial modulus is calculated as a function of said mass

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density ρ, said length L, said frequency of excitation ω, said longitudinal displacement of said elongate sample at said first end and said second end, and said longitudinal force experienced at said first end and said second end.

5,625,147

APPARATUS AND METHOD FOR MONITORING THE EATING QUALITY OF MEAT

Christopher A. Miles, Bristol, and Christopher C. Warkup, Milton Keynes, both of United Kingdom, assignors to Meat and Livestock Commission, Milton Keynes, United Kingdom

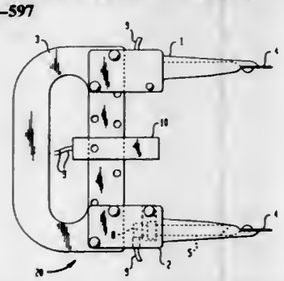
PCT No. PCT/GB94/00203, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/18554, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 4, 1994, Ser. No. 500,973

Claims priority, application United Kingdom, Feb. 10, 1993, 9302601

Int. Cl.[6] G01N *29/08; A61B 10/00*

U.S. Cl. 73—597 **19 Claims**



1. A method for obtaining information relating to the eating quality of meat, comprising the steps of:

injecting an acoustic signal into the meat;

monitoring the effect of the meat on at least one characteristic of said acoustic signal propagated into the meat; and

applying said monitored effects to a predetermined algorithm relating eating quality as determined by human panel analysis to monitored acoustic effects to indicate the eating quality of the meat under test.

5,625,148

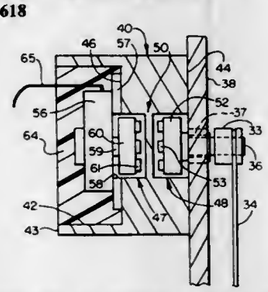
ULTRASONIC SCANNING HEAD AND METHOD

Jerry Rutherford, Anaheim, Calif., assignor to Rohrback Cosasco Systems, Inc., Santa Fe Springs, Calif.

Filed Apr. 25, 1995, Ser. No. 428,546

Int. Cl.[6] G01N *29/04*

U.S. Cl. 73—618 **22 Claims**



1. A scanning head for ultrasonic testing of metal structures comprising a scanhead body adapted to move over the surface of the structure being scanned, an encoder operative to create an image in relation to the position of the scanhead body, drive means to drive the encoder as said scanhead body moves, and barrier wall means to isolate and seal the encoder from the environment of said drive means.

5,625,149

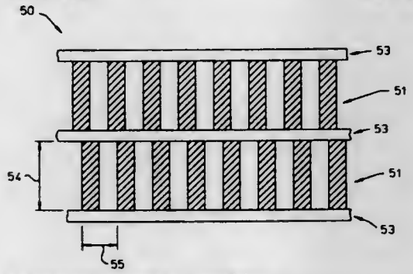
ULTRASONIC TRANSDUCTOR

Turukevere R. Gururaja, North Andover, and Larry A. Ladd, Methuen, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 27, 1994, Ser. No. 281,323

Int. Cl.[6] G01N *29/00;* **H01L** *41/08;* **A61B** *8/14;* **H04R** *17/00*

U.S. Cl. 73—632 **20 Claims**



1. An ultrasonic transducer comprising:

a plurality of first layers, the first layers comprising a composite of a piezoelectric material and a low acoustic impedance material;

a plurality of internal electrodes, a first internal electrode overlying a first layer and successive internal electrodes overlying successive first layers; and

a first and second external electrode, a first internal electrode being coupled to the first external electrode and a second internal electrode being coupled to the second external electrode, successive internal electrodes being coupled alternatively to the first and second external electrodes.

5,625,150

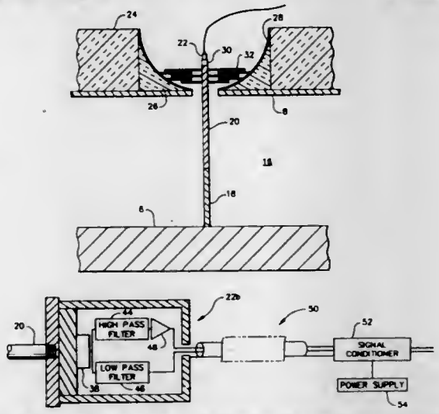
INTEGRATED ACOUSTIC LEAK DETECTION SENSOR SUBSYSTEM

David A. Greene; Rosemary A. Greene, both of San Jose, and Donald C. Gaubatz, Cupertino, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 18, 1994, Ser. No. 292,675

Int. Cl.[6] G01H *11/00;* **G01M** *3/00;* **G21C** *17/00*

U.S. Cl. 73—649 **6 Claims**



1. An apparatus for detecting a source of acoustic waves inside a vessel having a wall, comprising:

a transducer for outputting an analog electrical signal in response to vibrational displacement of a structure coupled thereto;

rigid attachment means for coupling said transducer to the external surface of a localized portion of said vessel wall,

wherein said transducer outputs an analog electrical signal in response to vibrational displacement of said localized portion of said vessel wall;

a labyrinth seal subassembly attached to said rigid attachment means at a location between said transducer and said localized portion of said vessel wall; and

electrical circuit means for splitting the analog electrical signal output by said transducer into low- and high-frequency components,

said low-frequency component being a function of the vibrational displacement of said localized portion of said vessel wall and said high-frequency component being a function of vibrational/ultrasonic waves propagating through said localized portion of said vessel wall.

5,625,151

SILICONE OIL-FILLED SEMICONDUCTOR PRESSURE SENSOR

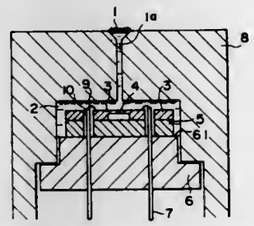
Yasuo Yamaguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 456,306

Claims priority, application Japan, Dec. 27, 1994, 6-325824

Int. Cl.[6] G01L *13/02;15/00;7/00*

U.S. Cl. 73—716 **5 Claims**



1. A semiconductor pressure sensor comprising:

a case having a central through hole and a metallic diaphragm covering the through hole;

a stem bonded to said case and defining a space between said case and said stem, said stem having an upper surface within and opposite said case and having an area;

a pedestal mounted on the upper surface of said stem, having an area nearly equal to the area of the upper surface of said stem and including lead insertion holes;

a semiconductor pressure sensor chip mounted on said pedestal, having an area nearly equal to the area of the upper surface of said stem, and including lead insertion holes aligned with the lead insertion holes in said pedestal, said semiconductor pressure sensor chip including a thin diaphragm;

leads extending through the lead insertion holes in said pedestal and said semiconductor pressure sensor chip and penetrating through said stem outwardly from said sensor;

wires connected to said semiconductor pressure sensor chip and to said leads; and

silicone oil filling the space between said case and said stem.

5,625,152

HEATED PRESSURE TRANSDUCER ASSEMBLY

Robert C. Pandorf, Newton Highlands; Archibald J. DeMone, Westford; Frank W. Thomas, Lunenberg, and Steven D. Blankenship, Melrose, all of Mass., assignors to MKS Instruments, Inc., Andover, Mass.

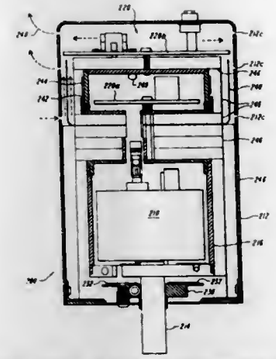
Filed Jan. 16, 1996, Ser. No. 585,535

Int. Cl.[6] G01L *7/00;9/12*

U.S. Cl. 73—756 **55 Claims**

1. A pressure transducer assembly comprising:

(A) an external enclosure defining an interior cavity;



(B) a pressure sensor, disposed in one portion of said interior cavity and including an input port for receiving a gas or vapor, for sensing the pressure of the gas or vapor at the input port as a function of a parameter value that varies according to the pressure of the gas or vapor at the input port;

(C) controller means, disposed in another portion of said interior cavity, for sensing the parameter value and for generating in response thereto an output signal representative of the pressure at said input port;

(D) first temperature control means for controlling the temperature of said sensor;

(E) second temperature control means for controlling the temperature of said controller means; and

(F) thermal control means for controlling said first temperature control means to control the temperature of said sensor at a first preselected temperature, and for controlling said second temperature control means to control the temperature of said controller means at a second preselected temperature different from the first preselected temperature.

5,625,153

METHOD OF NON-DESTRUCTIVELY ESTIMATING LIFE OF CERAMIC MEMBER

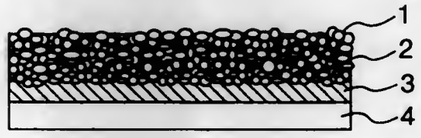
Yuichi Sawai, Hitachi; Yoshiyuki Yasutomi, Mito; Motoyuki Miyata, Hitachi; Hideki Tamaki, Hitachi, and Katsuo Wada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1995, Ser. No. 572,891

Claims priority, application Japan, Dec. 19, 1994, 6-314873

Int. Cl.[6] G01N *3/00*

U.S. Cl. 73—762 **22 Claims**



1. A method of estimating non-destructively a life expectancy of members, at least a surface layer of which is made of ceramics, comprising measuring a variation in at least one of physical qualities of said ceramics, and estimating the life expectancy of the members on a basis of a predetermined relationship between a life of said ceramics and variation in the at least one of the physical qualities.

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5,625,154

METHOD AND APPARATUS FOR TESTING CERAMIC SPECIMENS BY SIMULTANEOUS APPLICATION OF MECHANICAL AND THERMAL STRESSES

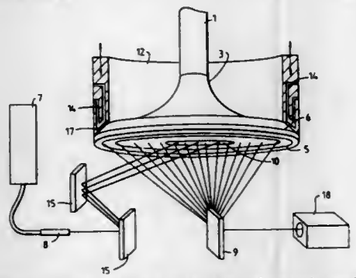
Keiji Matsuhiro, Komaki, Japan; Carine A. M. C. Dewitte, Ottignies, and Jeffrey P. J. Pattimore, Mons, both of Belgium, assignors to NGK Ceramics Europe S.A., Belgium, and NGK Insulators, Ltd., Japan

Filed Dec. 15, 1994, Ser. No. 357,130

Claims priority, application United Kingdom, Dec. 24, 1993, 9326472

Int. Cl.[6] G01B *7/16;* **G01L** *1/00*

U.S. Cl. 73—774 **27 Claims**



1. A method of proof-testing a plurality of ceramic engine valve members for quality assurance, wherein each valve member has a stem, a head at one end of the stem, an annular seating face on the side of the head towards the stem and a head face at the side of the head facing away from the stem, the method comprising subjecting each valve member (a) to mechanical stress applied by pressing the seating face against a tool and (b) simultaneously with said mechanical stress, to thermal stress applied by locally heating a central region of the head face.

5,625,155

ELECTROMAGNETIC FLOWMETER

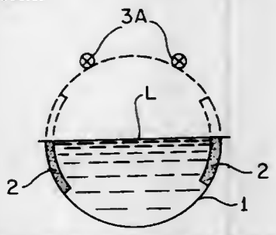
Yutaka Yoshida, Aichi-Ken, Japan, assignor to Aichi Tokei Denki Co., Ltd., Aichi-Ken, Japan

Continuation-in-part of Ser. No. 968,508, Oct. 29, 1992, abandoned, and a continuation-in-part of Ser. No. 39,407, Apr. 20, 1993, abandoned, and a continuation-in-part of Ser. No. 39,433, Apr. 20, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 231,727

Claims priority, application Japan, Sep. 3, 1901, 3-222939; Sep. 3, 1991, 3-222940; Dec. 18, 1991, 3-335050

Int. Cl.[6] G01F *1/58*

U.S. Cl. 73—861.11 **20 Claims**



12. A method of measuring a flow rate of a fluid flowing through conduit means and being monitored by an electromagnetic flow meter, wherein said electromagnetic flow meter includes an upper coil disposed above said conduit means, a lower coil disposed below said conduit means, sensor means disposed at a side of said conduit means and a control circuit for controlling excitation of said upper and lower coils; said method comprising the steps of:

determining arithmetically a first ratio between an output obtained from said sensor means when said upper coil is excited and an output obtained from said sensor means when said lower coil is excited;

storing in first storage means a first relation between said first ratio and a level of said monitored fluid as measured when said fluid flows through reference conduit means;

storing in second storage means a second relation between an output obtained from said sensor means upon excitation of said upper coil disposed above said reference conduit means and the level of said fluid within said conduit means;

identifying a level of said fluid flowing through said reference conduit means at said first ratio on the basis of said first ratio obtained for said conduit means by reference to said first storage means storing said first relation;

identifying a first output obtained from the sensor means of said reference conduit means at said fluid level on the basis of said fluid level by reference to said second storage means storing said second relation;

identifying a first flow rate of the fluid flowing through said reference conduit means when said reference conduit means is at said identified fluid level;

determining arithmetically a second ratio between said first flow rate and said first output; and

determining arithmetically a flow rate of the fluid being monitored on the basis of said second ratio and the second output obtained from said sensor means upon excitation of the upper coil.

5,625,156

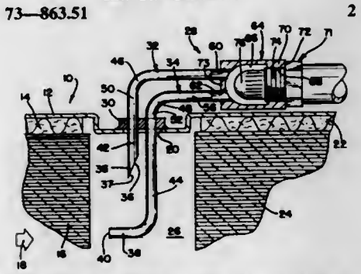
APPARATUS FOR SENSING EXHAUST GAS

Dana M. Serrels, Davison; Brian M. Bibb, Ortonville; Stephen J. Myers, Owosso; John A. Horton, Clio, and Walter Jenkins, Linden, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1996, Ser. No. 639,822

Int. Cl.[6] G01N *1/14*

U.S. Cl. 73—863.51 **2 Claims**



1. An apparatus for sensing exhaust gas comprising: first and second tubular passages; a solid plug through which the first and second tubular passages pass and to which the tubular passages are sealingly engaged; a sampling chamber mounted to and in flow contact with the first and second tubular passages, wherein the first tubular passage provides gas flow into the sampling chamber and the second tubular passage takes gas flow out of the sampling chamber; and a flow passage having a tubular wall with an opening therein to which the solid plug is sealingly engaged, wherein the first and second tubular passages extend from inside the flow passage, through the plug, to the sampling chamber mounted outside of the flow passage, wherein the solid plug comprises part of a housing for the sampling chamber.

5,625,157

DEVICE FOR TAKING A FILTRATE SAMPLE FROM SLUSH PULP

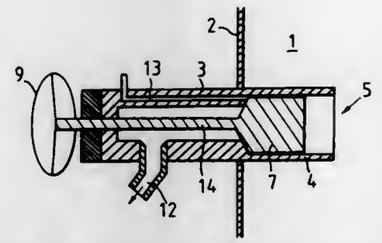
Esa Piirainen, and Teuvo Peltomäki, both of Kajaani, Finland, assignors to Kajaani Elektroniikka Oy, Kajaani, Finland

Filed Dec. 15, 1995, Ser. No. 574,411

Int. Cl.[6] G01N *1/22*

U.S. Cl. 73—863.86 **10 Claims**

1. A device for taking a liltrate sample from slush pulp containing fibers through a wall (2) of a container (1) containing pulp, said device comprising:



a cylinder (3) limited by walls (4) and forming a cylinder space (6) open at one end (5), said cylinder being mounted on the wall (2) so that it goes through the wall, with its open end (5) in the direction of the container (1);

a reciprocating valve element having an end that can move backward and forward within the cylinder and which is placed in the cylinder space;

a sampling duct (8) for passing a sample from the open cylinder space into the cylinder space behind the reciprocating valve element;

an actuator (9) for moving the reciprocating valve element;

a drain duct (12) for draining off the sample penetrating through the sampling duct into the space behind the reciprocating valve element for analysis;

characterized in that the reciprocating valve element has a rear position, in which it closes the drain duct (12),

an intermediate position, in which the reciprocating valve element end has sunk through some distance into the open end (5) of the cylinder (3), forming a pocket (10) limited by the cylinder walls (4) and the reciprocating valve element end for gathering fibrous slush pulp and forming a pillow-like filter (11) in the pocket, and

a front position, in which the reciprocating valve element end has been pushed at least mainly to the level of the open end of the cylinder for removing the pillow-like filter and emptying the pocket into the container.

5,625,158

MUSICAL TONE GENERATING APPARATUS

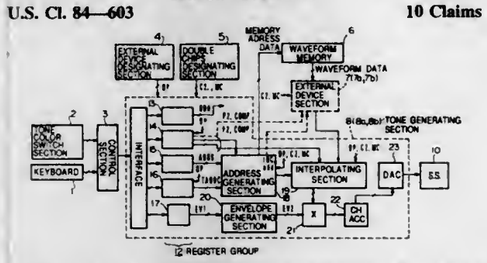
Tetsuji Ichiki, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 20, 1994, Ser. No. 360,208

Claims priority, application Japan, Dec. 22, 1993, 5-325266

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—603 **10 Claims**



1. A musical tone generating apparatus operating based on a time division control method using a plurality of channels, said musical tone generating apparatus comprising:

a waveform memory for storing original waveform data;

first tone generating means for generating a plurality of addresses corresponding to said plurality of channels within a sampling period, and for reading out N samples of said original waveform data according to each address for each channel from said waveform memory, and for generating a plurality of musical tones based on said N samples corresponding to said plurality of channels within said sampling period;

second tone generating means for generating a plurality of musical tones adapted to be selectively installed in said musical tone generating apparatus for the purpose of increasing the number of musical tones that can be generated by said musical tone generating apparatus within said sampling period, the second tone generating means accessing the waveform memory together with the first tone generating means when the second tone generating means is used for tone generation; and

access control means for decreasing the number of samples of said original waveform data read for each channel from said waveform memory from N to M, which is a number less than N, based on which each said musical tone of each said channel is generated, when the second tone generating means is installed.

5,625,159

TANK TURRET ROTATION SYSTEM AND METHOD

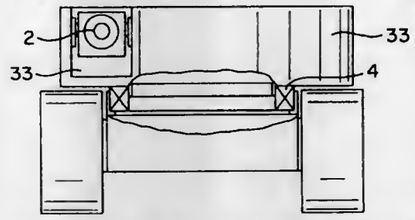
Hans-Peter Malolepsy, Vellmar, and Hilmar Rabe, Wanfried-Aue, both of Germany, assignors to Firma Wegmann & Co., GmbH, Germany

Continuation of Ser. No. 517,649, Apr. 18, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 884,533

Claims priority, application Germany, Apr. 27, 1989, 39 13 902.6

Int. Cl.[6] F41H *7/02*

U.S. Cl. 89—36.08 **9 Claims**



1. A combat vehicle, having a weapon mounted on a ring mount for rotation about a vertical axis, said weapon being mounted off said axis, and said ring mount being connected to the hull of the vehicle by a rotation ring wherein:

said rotation ring comprises a controllable coupling comprising plural coupling elements distributed along the surface of the rotation ring;

said coupling elements having engaged positions and disengaged positions, whereby in the disengaged position the coupling elements are freely rotable in the ring mount;

said controllable coupling further comprising control means to control the position of said coupling elements whereby when a projectile is fired from the weapon the coupling elements are disengaged and after the exit of the projectile from the weapon, and before the end of recoil of the weapon, the coupling elements are moved to an engaged position.

5,625,160

PROTECTION ARRANGEMENT FOR AFFORDING PROTECTION FROM AN APPROACHING PROJECTILE

Karl Rudolf, Schrobenhausen, and Raimar Steuer, Diepersdorf, both of Germany, assignors to Diehl GmbH & Co., Nuremberg, Germany

Filed Feb. 16, 1996, Ser. No. 602,334

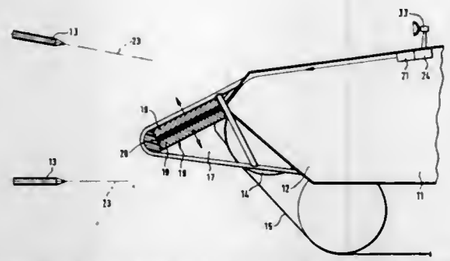
Claims priority, application Germany, Feb. 18, 1995, 195 05 629.9

Int. Cl.[6] F41H *11/00*

U.S. Cl. 89—36.17 **6 Claims**

1. A protective arrangement for affording protection from a threat to a vehicle (11) by an approaching projectile (13) comprising at least one module (18) including a plurality of plates (19); a

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sensor (22) for initiating an acceleration of at least one said plate from the vehicle (11) against said projectile; wherein said sensor (22) initiates the acceleration of respectively two of said plurality of plates (19) away from each other, said at least one module (18) being mounted in a front structure (17) carried by said vehicle (11).

5,625,161

SAFETY DEVICE FOR A SPIN STABILIZED PROJECTILE FUSE, PROCESS FOR MAKING SUCH A SAFETY DEVICE AND SPIN-STABILIZED FUSE HAVING SUCH A SAFETY DEVICE

Jacques Nicolas, Lecheix/Morge, and Jean-Paul Oberle, Cusset, both of France, assignors to Manurbin Defense, Versailles, France

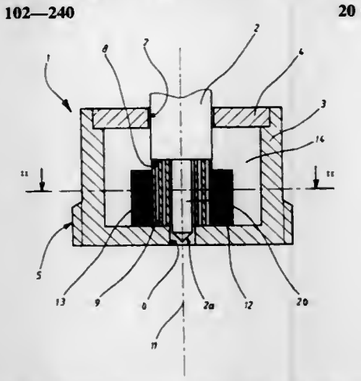
PCT No. PCT/FR94/01356, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO95/16891, PCT Pub. Date Jun. 22, 1995

PCT Filed Nov. 22, 1994, Ser. No. 491,871

Claims priority, application France, Dec. 17, 1993, 93 15203

Int. Cl.[6] F42C *15/23;15/22*

U.S. Cl. 102—240 **20 Claims**



1. A safety device to lock a firing pin of a spin-stabilized projectile fuse, said safety device comprising:

a flexible strip disposed around said firing pin, said flexible strip having a first end, a second end, and a length, wherein said flexible strip is in contact with the firing pin in a wound position; and

a spiral spring made of an elastic material and windable around said flexible strip in a safe position and disposed to unwind under centrifugal force to a firing position, said spiral spring being made of a spring strip that is wound around itself, wherein when said spiral spring unwinds, said flexible strip unwinds within said spiral spring, and wherein said length of said flexible strip is dimensioned such that said first end overlaps said second end by an offset amount when said flexible strip presses against said spiral spring in said firing position.

5,625,162

SIGNAL TUBE OF IMPROVED OIL RESISTANCE

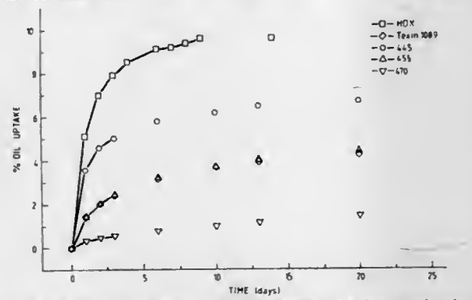
Rodney W. Appleby, Camira, Australia, assignor to ICI Australia Operations Pty Ltd, Melbourne, Australia

Filed Dec. 19, 1994, Ser. No. 358,375

Claims priority, application Australia, Dec. 20, 1993, PM3053

Int. Cl.[6] F42B *3/00*

U.S. Cl. 102—331 **14 Claims**



1. A signal tube of improved oil resistance having a sub-tube comprising polyethylene and an outer jacket comprising a thermoplastic polyurethane resin of the polyester type.

5,625,163

CARTRIDGE AMMUNITION HAVING ACCIDENTAL IGNITION PREVENTING MEANS

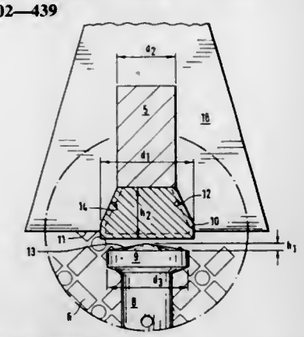
Stefan Thiesen, Willich; Thomas Heitmann, Unterlüss; Holger Brase, Bergen; Reiner Bukowski, and Ulrich Schulte, both of Hermannsburg, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Jan. 17, 1996, Ser. No. 587,941

Claims priority, application Germany, Jan. 17, 1995, 195 01 122.8

Int. Cl.[6] F42B *5/02;12/38*

U.S. Cl. 102—439 **13 Claims**



1. A cartridge comprising

(a) a case having a longitudinal axis and a case bottom; said case defining an inner space;

(b) a propellant powder accommodated in said inner space;

(c) a propellant igniter centrally arranged on said bottom and having a closure remote from said bottom;

(d) a projectile held by said case and having a rear portion extending into said inner space;

(e) a tracer assembly held in said rear portion; said tracer assembly being spaced from said closure; and

(f) filler means for preventing said propellant igniter from pressing propellant powder into said tracer assembly; said filler means comprising a filler member of inert material positioned within the rear portion of the projectile between said closure and said tracer assembly; said filler member having a diameter d_1 measured generally perpendicularly to said longitudinal axis and said tracer assembly having a diameter d_2 measured parallel to the diameter d_1; the diameter d_1 being greater than the diameter d_2.

5,625,164

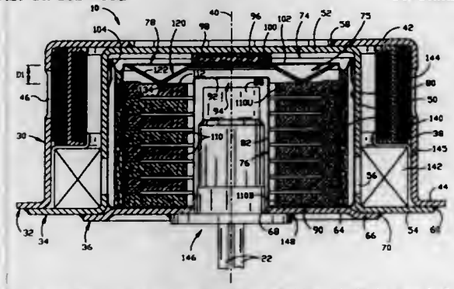
AIR BAG INFLATOR

Eric R. McFarland, Mesa, and Eric J. Champa, Gilbert, both of Ariz., assignors to TRW Inc., Lyndhurst, Ohio

Filed Sep. 22, 1995, Ser. No. 532,893

Int. Cl.[6] C06D *5/00*

U.S. Cl. 102—531 **16 Claims**



1. Apparatus for providing inflation fluid for inflating an inflatable vehicle occupant restraint, said apparatus comprising:

gas generating material;

an enclosure having an end wall portion defining an enclosure chamber;

said gas generating material being within said enclosure chamber and spaced a distance from said end wall portion; and

yieldable means located adjacent to said end wall portion and said gas generating material, said yieldable means providing a force acting on said gas generating material and on said end wall portion to inhibit movement of said gas generating material relative to said enclosure and relative to said end wall portion, said force being constant and unrelated to the distance between said gas generating material and said end wall portion.

5,625,165

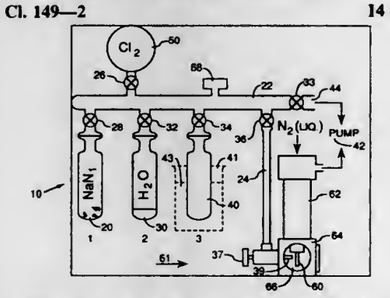
DESENSITIZED ENERGETIC MATERIALS

Charles A. Wight, 1457 E. 1300 South, Salt Lake City, Utah 84105, and Peter M. Kligmann, 735 E. 4565 S., Murray, Utah 84107

Filed Feb. 24, 1992, Ser. No. 844,014

Int. Cl.[6] C06B *45/00;47/08;25/34*

U.S. Cl. 149—2 **14 Claims**



1. A method for making an energetic material less accidentally explosive due to mechanical shock or application of heat comprising, forming said material as an amorphous solid by deposition of the vapor of said energetic material onto a cold surface.

5,625,166

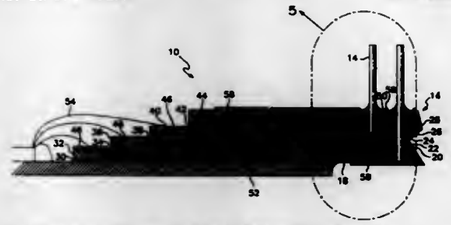
STRUCTURE OF A THERMALLY AND ELECTRICALLY ENHANCED PLASTIC PIN GRID ARRAY (PPGA) PACKAGE FOR HIGH PERFORMANCE DEVICES WITH WIRE BOND INTERCONNECT

Siva Natarajan, Gilbert, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 1, 1994, Ser. No. 333,144

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **11 Claims**



I. An integrated circuit package assembly, comprising:

a printed circuit board that has a shelf with an edge and a plurality of inner bonding pads that wrap around said edge and are connected to an inner conductive layer of said printed circuit board, said inner conductive layer being routed directly to a plurality of conductive holes;

a plurality of pins coupled to said conductive holes; and,

an integrated circuit coupled to said inner bonding pads.

5,625,167

CABLE SEAL

Lodewijk C. M. Van Noten, Leuven, Belgium, and Tommy Petersen, Ishoej, Denmark, assignors to N.V. Raychem S.A., Kessel-Lo, Belgium

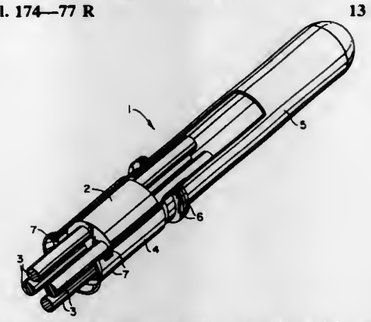
PCT No. PCT/GB93/00294, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO93/17477, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 12, 1993, Ser. No. 290,845

Claims priority, application United Kingdom, Feb. 25, 1992, 9203943

Int. Cl.[6] H01R *4/22*

U.S. Cl. 174—77 R **13 Claims**



7. An assembly for forming a seal on a cable, which comprises:

(a) housing for positioning around a cable and having an outlet for the cable;

(b) a sealing material for positioning around the cable to form a seal between the cable and the housing; and

(c) a restricting means for restricting movement of the sealing material out of the outlet of the housing, the restricting means comprising a resilient metal or plastics band which is a push-on fit around an external surface of the housing and which has at least one inwardly substantially radially-extending projection that extends, in use, through a hole in the housing into the outlet thereof, thereby restricting the movement of the sealing material.

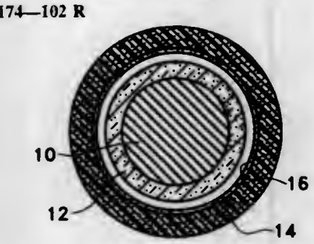
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5,625,168

SECONDARY IGNITION LEAD STRUCTURE

Howard E. Van Siclen, Jr., San Diego, Calif., assignor to Precision Engine Controls Corporation, San Diego, Calif.

Filed Dec. 13, 1994, Ser. No. 354,610
Int. Cl.[6] H01B 7/22
U.S. Cl. 174—102 R 10 Claims



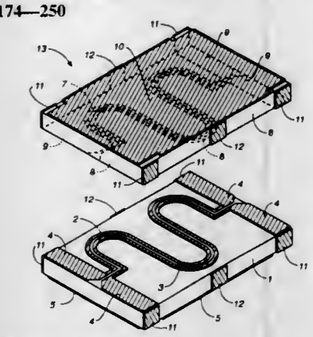
1. A high-voltage lead with no outer metallic shield, the high-voltage lead comprising:
an insulated inner conductor;
a conductive layer over the insulated conductor, the conductive layer being of non-metallic material having a resistance higher than that of metallic shields, whereby safety from possible arcing to a ground external to the lead is achieved but conventional pickup devices can still be used to detect electrical pulses in the inner conductor; and
an insulating layer over the conductive layer.

5,625,169

ELECTRONIC PARTS WITH AN ELECTRODE PATTERN BETWEEN TWO DIELECTRIC SUBSTRATES

Hiroaki Tanaka, Osaka, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 22, 1995, Ser. No. 447,255
Claims priority, application Japan, Jul. 4, 1994, 6-152264
Int. Cl.[6] H05K 1/00
U.S. Cl. 174—250 4 Claims



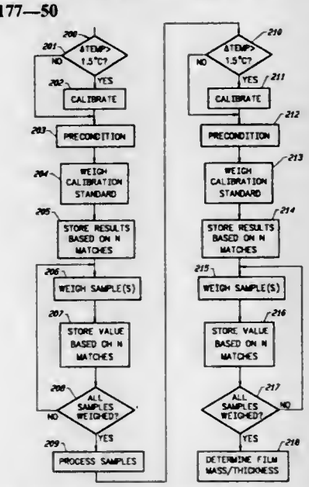
1. An electronic part comprising:
a pair of dielectric substrates consisting of a first substrate and a second substrate, each having an upper surface and a lower surface;
a pair of mutually symmetric electrode patterns, one of said patterns being formed on the upper surface of said first substrate, the other of said patterns being formed on the bottom surface of said second substrate; and
main surface grounding electrodes formed on the lower surface of said first substrate and the upper surface of said second substrate, the lower surface of said second substrate being attached to the upper surface of said first substrate, said pair of patterns matching each other and contacting each other.

5,625,170

PRECISION WEIGHING TO MONITOR THE THICKNESS AND UNIFORMITY OF DEPOSITED OR ETCHED THIN FILM

Jaime Poris, Los Gatos, Calif., assignor to Nanometrics Incorporated, Sunnyvale, Calif.

Filed Jan. 18, 1994, Ser. No. 183,476
Int. Cl.[6] G01G 19/50; G01C 17/38
U.S. Cl. 177—50 16 Claims



1. A time delayed differential weighing process, comprising the steps of:
weighing at least one sample with a balance before sample processing to obtain a first value corresponding to sample mass;
weighing a calibration standard of substantially the same density as said sample at substantially the same time as the sample is weighed before said sample processing to obtain a first value corresponding to calibration standard mass;
reweighing said sample after sample processing to obtain a second value corresponding to sample mass;
reweighing said calibration standard at substantially the same time as the sample is weighed after sample processing to obtain a second value corresponding to calibration standard mass; and
compensating for temperature and air density changes during a sample processing interval by comparing calibration standard mass values obtained before and after sample processing to eliminate temperature and air density errors.

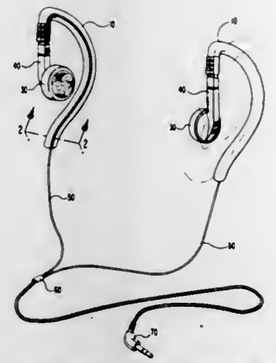
5,625,171

INTERCHANGEABLE EARPIECE FOR STEREO LISTENING

Christina M. Marshall, 840 N. 1130 West, Provo, Utah 84604

Filed May 9, 1995, Ser. No. 437,554
Int. Cl.[6] H04R 25/02;25/00
U.S. Cl. 181—130 4 Claims

1. An interchangeable earpiece for stereo listening, comprising:
a speaker;
an earpiece having an external surface connected to the speaker, wherein the earpiece is to be placed behind each ear to support the speaker;
a conductor which is electrically connected to the speaker;



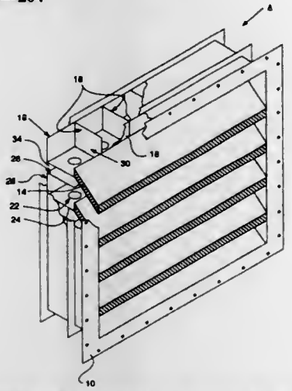
and a plug which is electrically connected to the conductor, wherein the earpiece has a groove in the external surface of the earpiece to removably receive the conductor.

5,625,172

ENGINE ENCLOSURE AIR INLET/DISCHARGE SOUND ATTENUATOR

John R. Bilchmann, Lafayette, Ind., and Brian S. Johnson, New York, N.Y., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 18, 1995, Ser. No. 424,676
Int. Cl.[6] E04F 17/04
U.S. Cl. 181—204 22 Claims



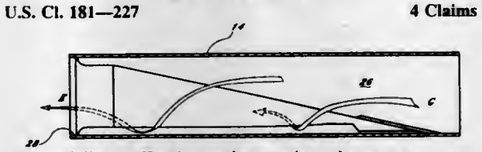
1. An apparatus for attenuating sound from an enclosure, comprising:
a frame, said frame being adapted for mounting in a wall, said frame having inner and outer surfaces;
a plurality of sound absorptive panels positioned in said frame and being substantially parallel and spaced apart from one another;
a plurality of resonator units, each said resonator unit having a preselected volume and an opening of a preselected diameter, a selected number of said resonator units interconnected to form a plurality of first resonator rows;
each said first resonator row extending across said frame and being spaced apart from one another and positioned between said sound absorptive panels, said first resonator rows being fixedly positioned to said frame such that each said opening is arranged in a direction substantially parallel to the flow direction of air in and out of said enclosure.

5,625,173

SINGLE BAFFLE LINEAR MUFFLER FOR MARINE ENGINES

Woodrow E. Woods, Riviera Beach, Fla., assignor to Marine Exhaust Systems, Inc.

Continuation-in-part of Ser. No. 318,525, Oct. 5, 1994, Pat. No. 5,444,196, which is a continuation-in-part of Ser. No. 105,511, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 785,687, Oct. 31, 1991, Pat. No. 5,262,600. This application Jun. 7, 1995, Ser. No. 480,125
Int. Cl.[6] F01N 7/08
U.S. Cl. 181—227 4 Claims



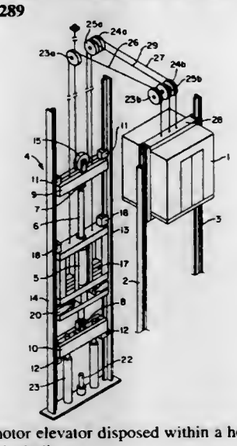
1. An inline muffler for use in a marine exhaust system, comprising:
an elongate member, said member having a first upstream end, a second downstream end, and a side wall connecting said ends, said side wall having an inner peripheral surface and an outer peripheral surface, said inner and outer peripheral surfaces converging at said first upstream end and diverging at said second downstream end, said outer peripheral surface having a planar portion functioning as a baffle between said first upstream and said second downstream ends for reflecting acoustical waves from said outer peripheral surface thereby dissipating acoustical energy and for impeding reverse water flow by forming an inner peripheral surface barrier, said member side wall further defining a slotted aperture originating at said second downstream end and extending longitudinally toward said first upstream end; and
a ramp attached to said member first upstream end, said ramp having a pair of laterally extending flanges.

5,625,174

LINEAR MOTOR ELEVATOR

Hideki Ito, and Makoto Yoshihara, both of Kawasaki, Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 2, 1994, Ser. No. 349,165
Claims priority, application Japan, Dec. 17, 1993, 5-317224
Int. Cl.[6] B66B 1/06;7/08;9/02
U.S. Cl. 187—289 12 Claims



1. A linear motor elevator disposed within a hoistway, the linear motor elevator including:
a car disposed for motion within the hoistway; and
a linear motor engaged with the car to provide motion of the car, the linear motor including a primary and a secondary element, wherein both the primary and the secondary element move

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within the hoistway, and wherein the motion of the primary and secondary elements is relative to, and proportional to, the motion of the car.

5,625,175

METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF ELEVATOR CAR DOORS

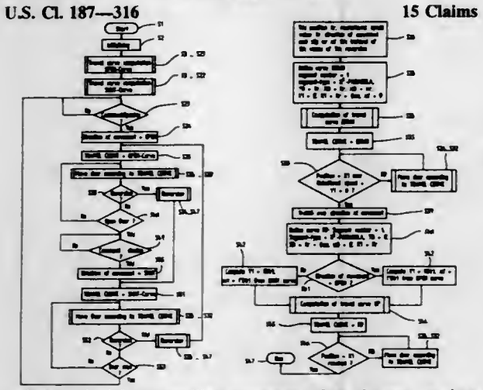
Norbert Gutknecht, and Andreas Sukale, both of Berlin, Germany, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Jan. 19, 1995, Ser. No. 375,281

Claims priority, application European Pat. Off., Jan. 28, 1994, 94101255

Int. Cl.[6] B66B *13/14*

U.S. Cl. 187—316 **15 Claims**



4. A method for controlling movement of an elevator car door coupled to a door drive connected to a drive control for the operations of opening, closing and reversing the door along a travel path comprising the steps of:

a. storing one algorithm including at least one mathematical function for computing a continuous travel curve defining values of door speed as a function of door position for an elevator door and storing another algorithm including a mathematical function for computing a continuous first reversal curve for decelerating the elevator door during a door reversal operation, and a mathematical function for computing a continuous second reversal curve for accelerating the elevator door during the door reversal operation;

b. computing the travel curve according to the mathematical function to generate target values of door speed as a function of door position;

c. sensing a door operation command signal generated by an elevator control associated with the elevator door;

d. controlling movement of the elevator door in response to the door operation command signal by generating a door drive control signal to a door drive control for the elevator, the door drive control signal representing a difference between actual values of door speed and the target values of door speed according to the travel curve;

e. ascertaining the actual values of door speed as a function of door position during operation of the elevator door;

f. upon detecting a cause for door reversal during movement of the elevator door according to travel curve, using the current values of door speed, door position and curve slope from the travel curve as beginning support points for computing the first reversal curve; and

g. controlling movement of the elevator door by generating the door drive control signal to the door drive control for the elevator door, the door drive control signal representing values of door speed as a function of door position defined by the first reversal curve.

5,625,176

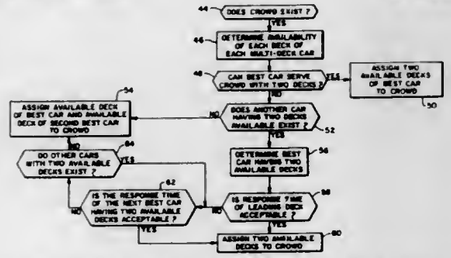
CROWD SERVICE ENHANCEMENTS WITH MULTI-DECK ELEVATORS

Anne R. L. Davis, Middlefield; Jannah Stanley, Cromwell, and Daniel S. Williams, Meriden, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jun. 26, 1995, Ser. No. 494,906

Int. Cl.[6] B66B *1/20*

U.S. Cl. 187—393 **4 Claims**



1. In an elevator dispatching system controlling the assignment of elevator cars in a building, a method of assigning a multi-deck elevator car, said method comprising the steps of:

determining if a crowd exists at a floor in the building;

determining a best elevator car;

determining if two decks of the best elevator car are available, if it is determined that the crowd exists at the floor in the building; and

assigning the two available decks of the best elevator to the floor where the crowd exists, if it is determined that two decks of the best elevator car are available; wherein, the best elevator car makes one stop for each of the two available decks at the floor where the crowd exists.

5,625,177

HIGH FREQUENCY SWITCH AND METHOD OF TESTING H-F APPARATUS

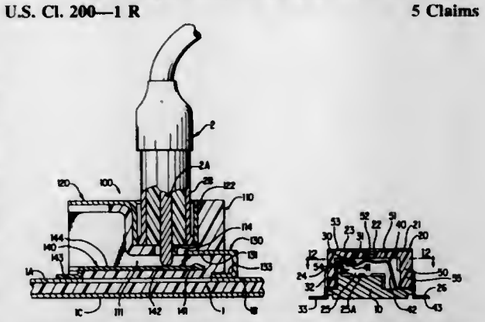
Miyake Yukinori; Kaneko Mitsunori; Masuzaki Yasuhiro, and Ozaki Tetsuya, all of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,553

Claims priority, application Japan, Mar. 3, 1995, 7-044397

Int. Cl.[6] H01H *9/00;27/00;* G01R *1/04;31/28*

U.S. Cl. 200—1 R **5 Claims**



2. A high frequency switch to be mounted on a board of a high frequency apparatus on which ground and signal conductors are disposed, comprising:

an insulating housing to be mounted on said board;

a pair of parallel ground conductive plates disposed on opposite sides of said insulating housing in a direction perpendicular to said board such that when said insulating housing is mounted on said board, said ground plates are connected to said ground conductors;

a non-ground conductive plate disposed in said insulating housing between and at right angles with said parallel ground conductive plates such that when said insulating housing is mounted on said board, said non-ground conductive plate is connected to said signal conductors, said non-ground conductive plate including:

an intermediate plate;

a first leaf spring contact to be connected to one of said signal conductors on one side, and

a second leaf spring contact to be connected to another of said signal conductors on the other side,

free ends of said first and second leaf spring contacts being pressed against free ends of said intermediate connection plate by spring forces in a direction perpendicular to said board but, when a probe is inserted in a direction perpendicular to said board to depress one of said first and second leaf spring contacts, said free end of said one of said leaf spring contacts being separated from one of said free ends of said connection plate so that incoming signals are transmitted to said probe through said one of said first and second leaf spring contacts.

5,625,178

PROCESS AND SYSTEM USING AN ELECTROMAGNETIC WAVE TO PREVENT THE FORMATION OF HYDRATES

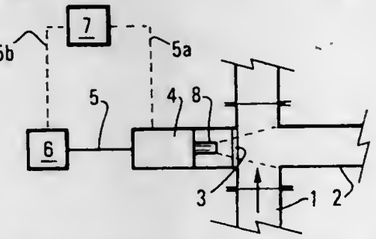
Alexandre Rojey, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Nov. 8, 1995, Ser. No. 555,291

Claims priority, application France, Nov. 8, 1994, 94 13516

Int. Cl.[6] C07C *1/00;2/00;4/00;* C07B *63/00*

U.S. Cl. 204—157.15 **15 Claims**



1. A process for preventing formation of crystalline bonds to control the formation of hydrates in a fluid containing at least an aqueous phase and hydrocarbons which comprises subjecting the fluid to an electromagnetic wave to induce a disturbance in the fluid preventing the organization of water molecules in the aqueous phase and the formation of crystalline bonds responsible for the formation of hydrates, said electromagnetic wave being sent out intermittently in time in the form of pulses.

5,625,179

ISOLATOR FOR A METAL-ENCAPSULATED, GAS-INSULATED, HIGH-VOLTAGE SWITCHING INSTALLATION

Daniel Bleiker, Zürich; Sven Forss, Steffisburg, and Herbert Schifko, Glattbrugg, all of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 28, 1995, Ser. No. 411,563

Claims priority, application Switzerland, Apr. 19, 1994, 1216/94

Int. Cl.[6] H01H *33/53*

U.S. Cl. 218—80 **11 Claims**

1. An isolator for a metal-encapsulated, gas-insulated high-voltage switching installation comprising:

two contact supports;

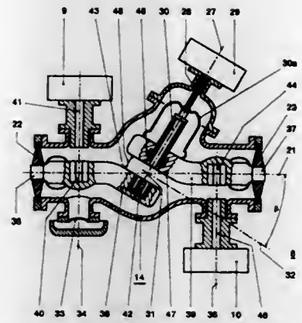
an enclosure, the enclosure having a longitudinal axis and being filled with insulating gas;

the two contact supports being arranged in the enclosure, each of the contact supports having a surface, a surface of a first one of the contact supports and a surface of the second one of the contact supports each other to form opposing surfaces and defining a separation that forms an isolating gap between the opposing surfaces;

a contact arrangement, the contact arrangement being movable along an operating axis between a connected state and a disconnected state, the contact arrangement electrically conductively shorting the separation when the contact arrangement is in the connected state, wherein

the longitudinal axis and the operating axis form a first angle with one another, and

the opposing surfaces extend parallel to one another in a region of the isolating gap and are bent through a second angle with respect to the longitudinal axis.



5,625,180

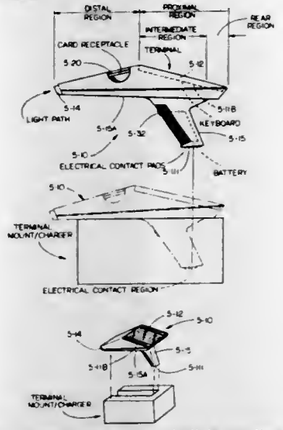
DATA CAPTURE SYSTEM WITH COMMUNICATING AND RECHARGING DOCKING APPARATUS AND HAND-HELD DATA TERMINAL MEANS COOPERABLE THEREWITH

George E. Hanson; Phillip Miller; Darald R. Schultz; Jerry L. Walter, and Darrell L. Boatwright, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Division of Ser. No. 50,704, Apr. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 909,139, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 345,200, Apr. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 305,302, Jan. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 136,097, Dec. 21, 1987, abandoned. This application Feb. 13, 1995, Ser. No. 387,530

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **12 Claims**



1. In a data capture system, an indicia reading terminal for reading indicia having parts of different light reflectivity, said indicia reading terminal having a rechargeable battery and comprising:

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(a) a generally gun-shaped housing having an elongated body portion including a proximal region, and a distal region in front of the proximal region, and a handle portion connected to the body portion to enable an operator to hold the housing and aim the body portion at the indicia located at a distance from the front of the housing;
(b) an optical reader for receiving reflected light along a light path from the indicia to produce electrical signals representative of the indicia; and
(c) a user actuated input section disposed on the proximal region of the housing out of the light path for enabling operation by the user without blocking the reflected light path;
(d) the reading terminal having charging contacts arranged so that battery charging can be effected while the user actuated input section remains accessible to the user;
(e) a charging and communicating docking receptacle for engaging portions of the reading terminal other than the user actuated input section so that battery charging can be effected via the charging contacts while the user actuated input section remains accessible to the user; and
(f) said docking receptacle having a slot accommodating the handle portion of the reading terminal, with surface portions of the receptacle confronting surface regions of the terminal to support the terminal with respect to manually produced actuating forces applied to said input section.

5,625,181

LIGHT-RECEIPT SYSTEM WITH CURRENT BIAS CIRCUIT AND PRE-AMPLIFIER FOR USE IN OPTICAL DIGITAL COMMUNICATION

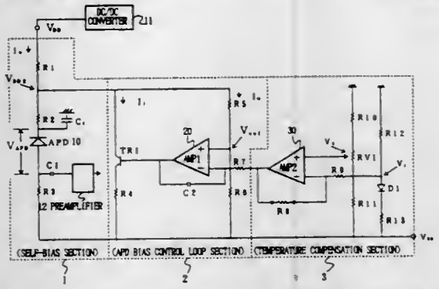
Akihiko Yasuda; Setsuo Misaizu; Hisaya Sakamoto, all of Yokohama; Yuji Miyaki, Kawasaki; Norio Nagase, Kawasaki, and Hiroshi Kuzukami, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 10, 1994, Ser. No. 288,582

Claims priority, application Japan, Jan. 12, 1994, 6-014785; Jul. 5, 1994, 6-153245

Int. Cl.[6] H04B *10/06;* **H03G** *3/20*

U.S. Cl. 250—214 A **22 Claims**



1. A light receipt system for use in optical digital communication comprising:
a series circuit of a first bias resistor means and a light-receipt element having a cathode connected to said first bias resistor means;
a preamplifier connected to the series circuit for converting a current corresponding to a level of an optical input which is detected by the light-receipt element to a corresponding voltage and outputting said corresponding voltage;
a main amplifier for amplifying the corresponding voltage output from the preamplifier;
an identifying and reproducing circuit for identifying the output of the main amplifier and reproducing data corresponding to said optical input; and
a second bias resistor means having a larger value than an input impedance of the preamplifier and provided between the input of the preamplifier and the ground potential for flowing a bias current therethrough and increasing an input saturation current of the preamplifier.

5,625,182

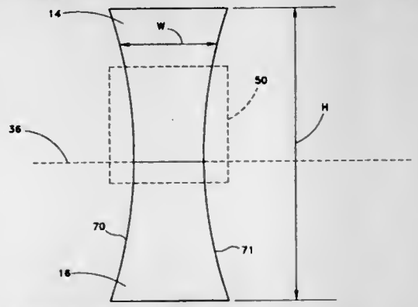
LIGHT SENSOR WITH POSITION COMPENSATION ACCOMPLISHED BY AREA DISTRIBUTION

James K. Guenter, Garland, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 21, 1995, Ser. No. 576,143

Int. Cl.[6] G01B *11/00*

U.S. Cl. 250—229 **20 Claims**



1. A photoelectric sensor, comprising:
a light source;
a first light sensor having a first light sensitive area; and
a movable object disposed between said light source and said first light sensor, said movable object having an aperture formed therethrough to permit a limited amount of light to pass from said light source to said first light sensor through said movable object, said movable object being movable relative to said light source and said first light sensor along a first axis, said first light sensitive area having a first height parallel to said first axis and a first width perpendicular to said first height, the magnitude of said first width at each of a plurality of predetermined positions along said first height being a function of the distance of said each of said plurality of predetermined positions from a second axis, the plane of said second axis being perpendicular to the plane of said first axis.

5,625,183

ROTARY MIRROR SCANNER UNIT HAVING OPTICAL ANGULAR DISPLACEMENT SENSOR

Atsushi Kashitani, and Satoshi Segawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

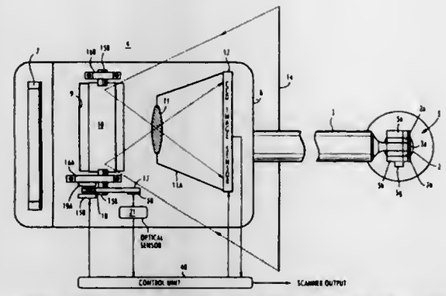
Filed Jun. 15, 1995, Ser. No. 490,572

Claims priority, application Japan, Jun. 15, 1994, 6-133079; Jun. 20, 1994, 6-137035

Int. Cl.[6] H04N *1/04;* **G03B** *3/00*

U.S. Cl. 250—236 **17 Claims**

1. A scanner unit comprising:
a linear image sensor;
a light source for illuminating a surface to be scanned;
a rotatably mounted mirror for reflecting light from said surface, said mirror being elongated in the direction of an axis about which said minor is rotatable;
a focusing lens for collecting the light from said mirror and forming an optical image of a scanned line on said linear image sensor;
electromagnetic drive means for driving said mirror about said axis;
an angular displacement sensor for detecting when said mirror is rotated by a predetermined amount of arc and producing an angular displacement signal; and



control means for processing said angular displacement signal and supplying a current to said electromagnetic drive means so that said mirror is driven at a substantially constant speed and for supplying a line-scan trigger pulse at said constant speed to said linear image sensor to cause said optical image of the scanned line to be converted to an electrical signal.

5,625,184

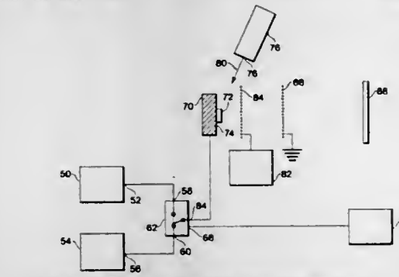
TIME-OF-FLIGHT MASS SPECTROMETRY ANALYSIS OF BIOMOLECULES

Marvin L. Vestal, Houston, Tex., and Peter Juhasz, Watertown, Mass., assignors to PerSeptive Biosystems, Inc., Framingham, Mass.

Filed May 19, 1995, Ser. No. 446,544

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—287 **109 Claims**



1. A time-of-flight mass spectrometer comprising:
a) a sample holder for providing a source of ions from a liquid or solid sample;
b) an ionizer for ionizing the source of ions to form sample ions;
c) means for controllably generating a preselected non-periodic non-zero electric field which imposes a retarding force on the sample ions; and
d) means for generating a different electric field at a time subsequent to ionizing the source of ions and generating the preselected electric field to extract the ions.

5,625,185

MASS SPECTROMETER, ESPECIALLY ICP-MS

Bernd Laser, Stuhr, Germany, assignor to Finnigan Mat GmbH, Bremen, Germany

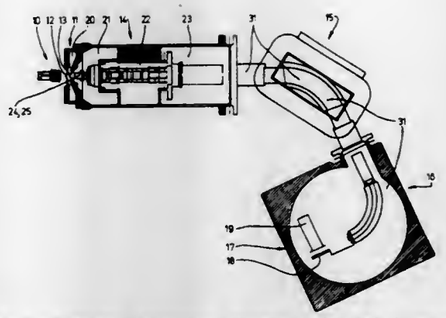
Filed Sep. 22, 1995, Ser. No. 532,456

Claims priority, application Germany, Sep. 22, 1994, 44 33 807.4

Int. Cl.[6] H01J *49/02;* **G01N** *27/62;* **B01J** *19/02*

U.S. Cl. 250—288 **8 Claims**

1. A mass spectrometer, of the ICP (inductively coupled plasma) or API (atmospheric pressure ionization) type with an ion source (10) at substantially atmospheric pressure, an ion optical system (14) and mass analyzer at a high vacuum and an interface (11) between such ion source and ion optical system at an intermediate pressure, the interface (11) being provided with a chamber (20) having a sampler (12) facing toward the ion source and a skimmer (13) facing toward the ion optical system, characterized in that at least one of the sampler (12) or the skimmer (13) or both have at least a surface made from carbon.



5,625,186

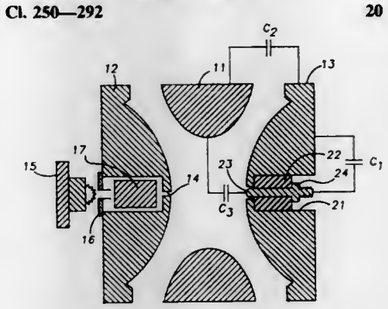
NON-DESTRUCTIVE ION TRAP MASS SPECTROMETER AND METHOD

Vladimir E. Frankevich; Manish H. Soni; Mario Nappi; Robert E. Santini; Jonathan W. Amy, and Robert G. Cooks, all of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Mar. 21, 1996, Ser. No. 620,035

Int. Cl.[6] H01J *49/42*

U.S. Cl. 250—292 **20 Claims**



1. An ion trap mass spectrometer of the type having an ion trapping volume defined by a ring electrode and end cap electrodes in which ions over a predetermined mass-to-charge ratio can be trapped by the application of rf or rf and dc voltages to the electrodes characterized in that, at least one small independent image current electrode is associated with at least one of said ion trap electrodes, and said image current electrode generates image currents in response to movement of ions trapped in said trapping volume resulting from the application of an excitation voltage pulses to one of said electrodes which causes ions to move towards and away from said image current electrode whereby image currents electrode generates image currents.

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5,625,187
APPARATUS FOR MEASURING THE DENSITY OF ACCUMULATIONS OF FIBROUS MATERIAL IN MULTIPLE ROD MAKING MACHINES OF THE TOBACCO PROCESSING INDUSTRY

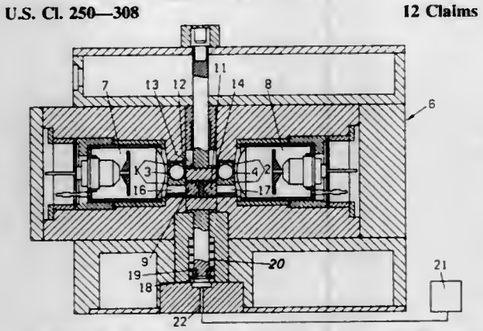
Wolfgang Siems, Hamburg; Erwin Schmalfeld, Reinbek, and Elke Köhler, Flensburg, all of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed Dec. 29, 1995, Ser. No. 580,945

Claims priority, application Germany, Feb. 8, 1995, 195 04 027.9

Int. Cl.[6] G01N *23/08*

U.S. Cl. 250—308 **12 Claims**



1. Apparatus for measuring the density of plural elongated rods which contain particulate material of the tobacco processing industry and are advanced lengthwise along predetermined paths, comprising an ionization chamber for each of the rods, said chambers being adjacent the respective paths; a radiation source for each of the rods; and a carrier for said sources, said carrier being movable between a first position in which radiation issuing from said sources penetrates across the respective paths and enters the respective chambers and a second position in which the radiation issuing from said sources enters the respective chambers while bypassing the respective paths.

5,625,188
PYROELECTRIC INFRARED ARRAY SENSOR

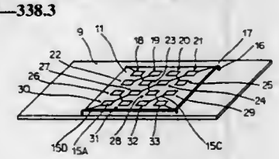
Kenji Hori, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

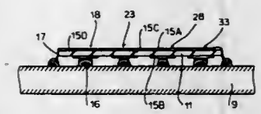
Filed Oct. 26, 1994, Ser. No. 329,333

Claims priority, application Japan, Oct. 29, 1993, 5-272219; Dec. 3, 1993, 5-071171

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—338.3 **15 Claims**





1. A pyroelectric infrared array sensor, comprising:

a pyroelectric element including a plurality of sensing sections arranged two-dimensionally, each having upper and lower electrodes which are confronted with each other, said pyroelectric element producing charges according to heat generated by infrared rays applied thereto, said pyroelectric element having said upper electrodes on a light receiving surface;

a substrate to which said pyroelectric element is fixedly secured;

connecting conductors provided on said light receiving surface of said pyroelectric element for connecting said upper electrodes of said plurality of sensing sections to one another; and

lead conductors provided on said light receiving surface of said pyroelectric element so as to extend from the upper electrodes of respective ones of said sensing sections which are located adjacent to edges of said light receiving surface;

wherein said lead conductors and lower electrodes are fixedly connected to said substrate with conductive paste; and

wherein said lead conductors are disposed respectively at corners of said pyroelectric element.

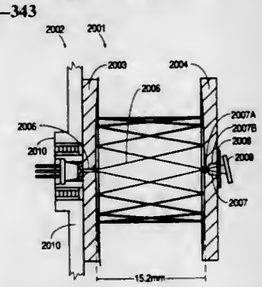
5,625,189
GAS SPECTROSCOPY

Bruce W. McCaul, 1370 Lincoln Ave., Palo Alto, Calif. 94301, and David E. Doggett, Sunnyvale, Calif., assignors to Bruce W. McCaul, Palo Alto, Calif.

Continuation-in-part of Ser. No. 228,964, Apr. 15, 1994, Pat. No. 5,491,341, which is a continuation-in-part of Ser. No. 49,474, Apr. 16, 1993, Pat. No. 5,448,071. This application Mar. 16, 1995, Ser. No. 407,520

Int. Cl.[6] G01N *21/00*

U.S. Cl. 250—343 **12 Claims**



1. An absorption spectroscopy device, comprising:

a hollow mouthpiece member defining a sample cell, human breath being present in said sample cell;

a photodetector;

a laser diode, laser radiation emitted from said laser diode passing through said human breath in said sample cell and being incident on said photodetector, said laser radiation reflecting off a reflective surface in its path between said laser diode and said photodetector; and

means for controlling said laser diode to lock onto a single absorption line of a gas in said human breath in said sample cell without passing laser radiation through a reference cell and to a second photodetector.

5,625,190
FORWARD PROJECTION ALGORITHM

Peter S. Crandall, Oconomowoc, Wis., assignor to General Electric Company, Milwaukee, Wis.

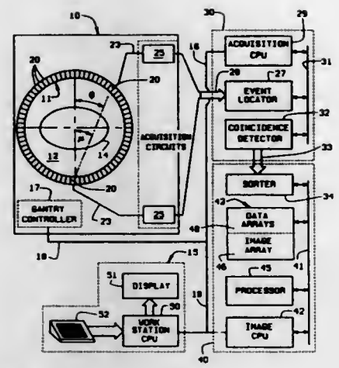
Filed Jul. 11, 1995, Ser. No. 501,185

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.03 **11 Claims**

4. A system for performing forward projection of data from image volume to a projection plane, said system comprising a processor programmed to perform the step of:

rotating the image data by a transaxial angle ϕ to align the image data with the projection plane so that the image coordinates (x', y'z') are then related to the projection plane coordinates (u, v) by:



u=x', and

v=y'sin Θ+z'cosΘ,

where Θ is the axial angle.

5,625,191
SCINTILLATION CAMERA AND SENSOR FOR USE THEREIN

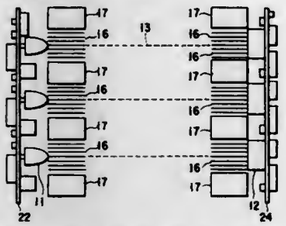
Nobuyuki Nakamura, Yaita; Toshikatsu Ruike, and Tsutomu Yamakawa, both of Tochigi-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 28, 1993, Ser. No. 142,050

Claims priority, application Japan, Oct. 28, 1992, 4-290511; Feb. 2, 1993, 5-015705; Mar. 25, 1993, 5-066432; May 7, 1993, 5-107043

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.04 **8 Claims**



1. A scintillation camera having detecting means with a surface and designed to acquire data from a subject by detecting radiation emitted from radio isotope administered to the subject, said camera comprising:

data acquiring means for acquiring data from the subject;

a sensor connected to said detecting means for sensing a distance between said detecting means and a body surface of the subject at a front portion of said detecting means facing the subject for outputting a signal representing the position of the subject; and

holding means for holding said detecting means at a previously set distance from the body surface of the subject while said data acquiring means is acquiring the data;

wherein said sensor includes:

a light-emitting element,

a light-receiving element opposing said light-emitting element, and located in the same plane as said light-emitting element, and

a honeycomb slit unit located in front of at least one of said elements.

5,625,192
IMAGING METHODS AND IMAGING DEVICES

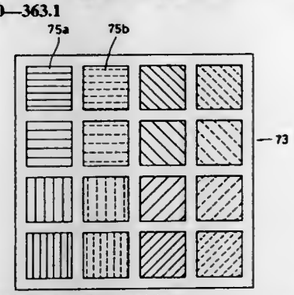
Minoru Oda, Tokyo; Kazuo Makishima, Saitama; Yoshiaki Ogawara, Tokyo; Masaru Matsutaka, Saitama, and Shigenori Miyamoto, Hyogo, all of Japan, assignors to The Institute of Physical and Chemical Research

Filed Aug. 22, 1995, Ser. No. 518,140

Claims priority, application Japan, Aug. 23, 1994, 6-198699

Int. Cl.[6] G01K *7/00*

U.S. Cl. 250—363.1 **12 Claims**



1. An imaging method comprising:

providing a grid system including an objective grid array with a plurality of coplanarly arranged grid couples, and a detector grid array having a similarly enlarged configuration of the objective grid array and spaced a predetermined distance apart from the objective grid array; the coupled grids having the same slit direction and the same pitch but having phases shifted from each other by $\pi/4$, the grid couples having a plurality of intermittent slit directions and having different pitches in each of the slit directions,

placing an object to be observed in the vicinity of the focal point of the grid system, on which lines connecting corresponding grids in the detector grid array and the objective grid array converge,

individually detecting energy rays each of which has been emitted from the object and transmitted through the corresponding two grids in the grid system, and

subjecting each set of the detected signals corresponding to the coupled grids having the same slit direction and the same pitch but having phases shifted from each other by $\pi/4$ as cosine and sine components in Fourier transform to an operation using linear orthogonal integral transform or a non-linear optimization method to synthesize an image of the object.

5,625,193
OPTICAL INSPECTION SYSTEM AND METHOD FOR DETECTING FLAWS ON A DIFFRACTIVE SURFACE

Sergey V. Broude, Newton Centre; Nicholas Allen, Bedford; Abdu Boudour, West Newton; Eric Chase, Carlisle; Carl Johnson, Tewksbury; Pascal Miller, North Chelmsford, and Jay Ormsby, Salem, all of Mass., assignors to QC Optics, Inc., Burlington, Mass.

Filed Jul. 10, 1995, Ser. No. 500,191

Int. Cl.[6] G01N *21/47*

U.S. Cl. 250—372 **41 Claims**

1. An improved optical inspection system for detecting flaws on a diffractive surface containing surface patterns, comprising:

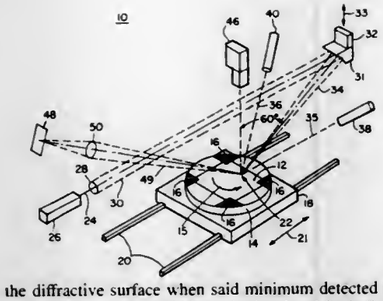
an ultraviolet illumination means for illuminating a region on the diffractive surface with a stationary ultraviolet beam to generate a scattered intensity distribution in response to either a flaw or a surface pattern;

means for detecting the intensity level of said scattered intensity distribution at a plurality of locations about the diffractive surface;

means, responsive to said means for detecting, for establishing a minimum detected intensity level;

means, responsive to said minimum detected intensity level, for indicating the absence of a flaw on the illuminated region of

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the diffractive surface when said minimum detected intensity level is below a threshold intensity level and for indicating the presence of a flaw on the illuminated region of the diffractive surface when said minimum detected intensity level exceeds said threshold intensity level; and

means for moving the diffractive surface to generate a scan pattern on the diffractive surface to inspect the surface;

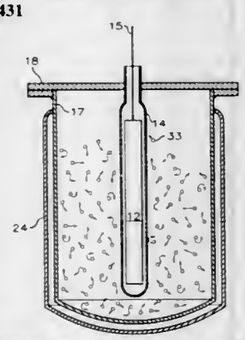
said means for moving includes means for positioning the diffractive surface in a first position with respect to said ultraviolet illumination means for conducting a first inspection of the diffractive surface and for positioning the diffractive surface in a second position with respect to said ultraviolet illumination means for conducting a second inspection of the diffractive surface to insure full inspection of the surface.

5,625,194

CONTINUOUS CLEANING OF LAMP WELLS FOR ULTRAVIOLET (UV) LIGHT PRODUCING LAMPS

Robert K. Stitzel, Fritch, and C. Stewart Denton, Borger, both of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 20, 1995, Ser. No. 546,383
Int. Cl.[6] G01N *21/00*
U.S. Cl. 250—431 **20 Claims**



1. A photochemical reactor comprising a vessel having an inner wall which defines a chamber for containing a reaction solution, at least one ultraviolet lamp positioned in said chamber for illumination of said chamber, a protective tubular lamp well surrounding said at least one ultraviolet lamp formed of a material transparent to ultraviolet light, and cleaning means for said protective tubular lamp well, said cleaning means comprising:

(a) a plurality of small solid bodies for suspension in a reaction solution, wherein the size of said small bodies ranges in volume from about 0.003 cc to about 100 cc;

(b) means for containing said plurality of small bodies within said chamber; and

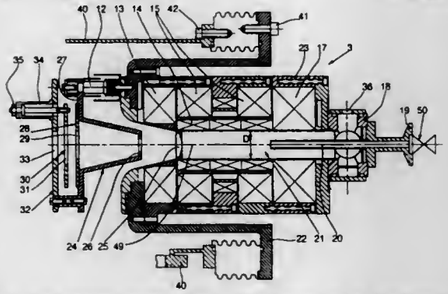
(c) means for maintaining said small bodies in continuous turbulent motion in a reaction solution within said chamber so as to cause frequent impacts with the outer surface of said protective tubular lamp well, wherein the impacts of said small bodies with the outer surface of said protective tubular lamp well have sufficient momentum for preventing deposits of material which discolor the surface from adhering to the surface of said protective tubular lamp well so as to maintain transparency of said protective tubular lamp well to ultraviolet light.

5,625,195

HIGH-ENERGY IMPLANTATION PROCESS USING AN ION IMPLANTER OF THE LOW-OR MEDIUM-CURRENT TYPE AND CORRESPONDING DEVICES

Andre Grouillet, Grenoble, France, assignor to France Telecom, Paris, France

PCT No. PCT/FR95/00433, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO95/27996, PCT Pub. Date Oct. 19, 1995
PCT Filed Apr. 5, 1995, Ser. No. 564,121
Claims priority, application France, Apr. 6, 1994, 94 04027
Int. Cl.[6] H01J *37/317*
U.S. Cl. 250—492.21 **15 Claims**



1. High-energy implantation process using an ion implanter of the low- or medium-current type, characterized in that:

a microwave generator, having a traveling-wave tube generating an electromagnetic field with a frequency greater than or equal to 6 GHz, is arranged in the implanter;

an electron cyclotron resonance multiply-charged ion source (3) is arranged in the implanter, this source including a waveguide-forming plasma cavity (21) whose characteristic dimension (D), in the transverse plane of the cavity, is of the same order of magnitude as the wavelength of the electromagnetic field;

the microwave generator (60) and the plasma cavity (21) of the multiply-charged ion source are electromagnetically coupled;

a complex gaseous medium, compatible with the beam of ions desired, is admitted into the plasma cavity and the inlet flow rate of the gaseous medium is adjusted so as to maintain a residual vacuum in the plasma cavity which is less than a pressure threshold compatible with the production of multiply-charged ions; and

the focusing of the ion beam extracted from the plasma cavity is adjusted onto the focal point of the scanning magnet (7) of the implanter.

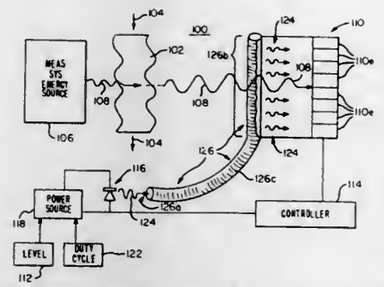
5,625,196

METHOD AND APPARATUS FOR MONITORING/CALIBRATING A PROCESS MEASURING SYSTEM

Paul Williams, Columbus, Ohio, assignor to ABB Industrial Systems, Inc., Columbus, Ohio

Filed May 30, 1995, Ser. No. 453,272
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.1 **20 Claims**

1. A method of monitoring a detector of a system for measuring one or more characteristics of a process without interrupting measurement operations of the system wherein measuring system energy is directed upon said detector for performing said measurement operations, said method comprising the steps of:



directing detector sensitive energy above and beyond said measuring system energy onto said detector;

modulating said detector sensitive energy with a defined modulation which can be detected in measurement signals generated by the detector; and

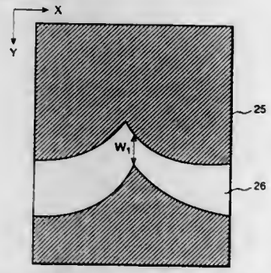
detecting said defined modulation in measurement signals generated by said detector.

5,625,197

METHOD OF DETERMINING A SCANNING INTERVAL IN SURFACE INSPECTION

Yoshimi Shimbara, 4-30, Kusatsu Higashi 2-chome, Nishi-ku, Hiroshima-shi, Hiroshima-ken, Japan

Filed Oct. 17, 1994, Ser. No. 322,508
Claims priority, application Japan, Oct. 15, 1993, 5-258238
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.22 **26 Claims**



1. A method of determining a scanning interval, at which (1) an area illumination for illuminating a surface of a subject including surface irregularities in a transverse direction perpendicular to a scanning direction and (2) an image pick-up device for providing multi-valued data representative of an image of an illuminated area of the subject surface are moved relative to said subject surface in the scanning direction so as to scan the subject surface continually for surface defect inspection, the scanning interval determining method comprising the steps of:

transforming the multi-valued data representative of each of a plurality of picture elements of said image provided by said image pick-up device into two-valued data;

scanning said image in said transverse direction so as to extract transitional points between two of said picture elements adjacent to each other in said transverse direction which have differences in said two-valued data;

providing a histogram of picture elements, existing between two adjacent extracted transitional points in said scanning direction, with respect to said transverse direction and determining a minimum value from said histogram; and

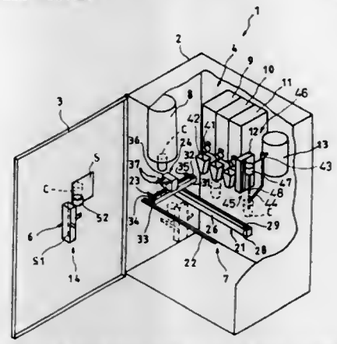
determining said scanning interval, based on said minimum value, at which said area illumination and said image pickup device are moved relative to said subject surface in said scanning direction for scanning another area of said subject surface.

5,625,198

TWO-DIMENSIONAL POSITIONING APPARATUS WITH OPTICAL SENSORS ALIGNED TO AVOID INTERFERENCE

Noboru Chigira, Saitama-ken, Japan, assignor to Sanyo Electric Co., Ltd., Osaku-fu, Japan

Continuation of Ser. No. 257,338, Jun. 9, 1994, abandoned.
This application Feb. 8, 1996, Ser. No. 598,403
Claims priority, application Japan, Jun. 11, 1993, 5-166170
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.29 **4 Claims**



1. A positioning apparatus adapted to perform positioning of a movable second member relative to a stationary first member only in respect of an X direction and a Y direction perpendicular to each other comprising:

X-direction moving means for moving said second member only in said X direction;

Y-direction moving means for moving said second member only in said Y direction;

a first optical sensor for detecting a predetermined position of said movable second member relative to said stationary first member in said X direction and delivering a first detection signal in response thereto,

said first optical sensor having one of a light projector and a light receiver separately arranged on said first member and the other of said light projector and light receiver arranged on said second member such that said light projector and said light receiver of said first optical sensor are opposed to each other in said Y direction when said second member is in said predetermined position in respect of said X direction;

a second optical sensor for detecting a predetermined position of said movable second member relative to said stationary first member in said Y direction and delivering a second detection signal in response thereto,

said second optical sensor having one of a light projector and a light receiver separately arranged on said first member and the other of said light projector and light receiver arranged on said second member such that said light projector and said light receiver of said second optical sensor are opposed to each other in said X direction, when said second member is in said predetermined position in respect of said Y direction; and

control means receiving said first and second detection signals from said first and second optical sensors for stopping a moving operation of said X-direction moving means upon receiving said first detection signal from said first optical sensor upon said second member reaching said predetermined position in the X-direction and for stopping a moving operation of said Y-direction moving means upon receiving said second detection signal from said second optical sensor upon said second movable member reaching said predetermined position in said Y-direction.

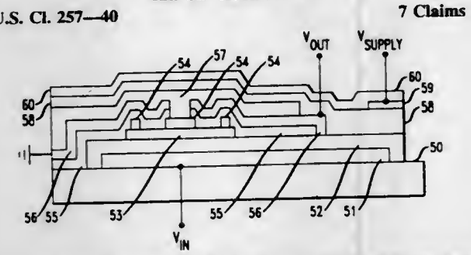
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5,625,199

ARTICLE COMPRISING COMPLEMENTARY CIRCUIT WITH INORGANIC N-CHANNEL AND ORGANIC P-CHANNEL THIN FILM TRANSISTORS

Joerg Baumbach, New Providence; Ananth Dodabalapur, Millington, and Howard E. Katz, Summit, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 16, 1996, Ser. No. 587,426
Int. Cl.[6] H01L 35/24
U.S. Cl. 257—40 7 Claims



1. An article comprising a first and a second transistor, said first and second transistors being operatively connected together, the first transistor being a n-channel transistor and the second transistor being a p-channel transistor;

CHARACTERIZED IN THAT

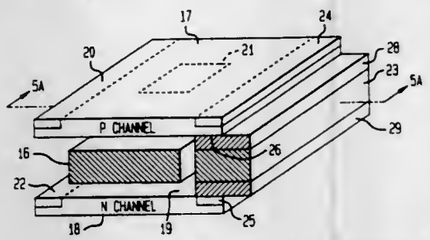
the n-channel transistor is an inorganic thin film transistor and the p-channel transistor is an organic thin film transistor.

5,625,200

COMPLEMENTARY TFT DEVICES WITH DIODE-EFFECT ELIMINATION MEANS INDEPENDENT OF TFT-CHANNEL GEOMETRY

Kuo-Hua Lee, 1308 Country Club Rd., Wescosville, Pa. 18106, and Chun-Ting Liu, 70 Grandview Ave., Berkeley Heights, N.J. 07922

Continuation of Ser. No. 298,258, Aug. 30, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,196
Int. Cl.[6] H01L 27/11
U.S. Cl. 257—69 6 Claims



1. A complementary field effect device for eliminating a diode effect comprising:

a thin film field effect transistor of a first polarity having a first drain region;

a field effect transistor of a second polarity having a second drain region;

a layer of semiconducting material positioned between said first and second drain regions;

a first conducting means positioned to make physical and electrical contact with said first drain region of said thin film transistor and said layer of semiconducting material for eliminating said diode effect;

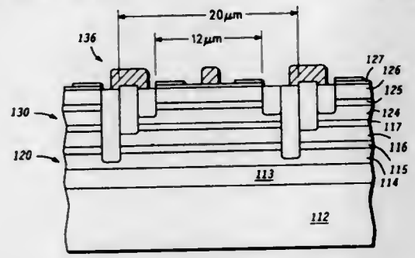
a second conducting means positioned to make physical and electrical contact with said second drain region of said field effect transistor and said layer of semiconductor material for eliminating said diode effect.

5,625,201

MULTIWAVELENGTH LED DEVICES AND METHODS OF FABRICATION

Paige M. Holm, Phoenix, and Benjamin W. Gable, Chandler, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 12, 1994, Ser. No. 354,193
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—88 16 Claims



110

1. A multiwavelength light emitting diode device comprising:

a first light emitting diode constructed to emit light of a first wavelength and a second light emitting diode constructed to emit light of a second wavelength, different than the first wavelength, the first and second light emitting diodes being stacked together and positioned to both emit light in the same direction, and one of the first and second light emitting diodes being transparent to light emitted by the other of the first and second light emitting diodes, whereby light from both of the first and second light emitting diodes is emitted through a common aperture at a surface of the device, each of the first and second light emitting diodes including an active layer of material sandwiched between two confinement layers of material and first and second electrical contacts positioned with the two confinement layers and active layer sandwiched therebetween, the first electrical contact of each of the first and second light emitting diodes being formed with a first type of conductivity, and the second electrical contact of each of the first and second light emitting diodes being formed with a second type of conductivity, the first and second light emitting diodes being stacked together with the first electrical contact of the second light emitting diode being positioned in overlying contact with the second electrical contact of the first light emitting diode, and the first electrical contact of the first light emitting diode being coupled to a common terminal and the second electrical contact of the second light emitting diode being coupled to the common terminal to electrically connect the first and second light emitting diodes in a push-pull configuration.

5,625,202

MODIFIED WURTZITE STRUCTURE OXIDE COMPOUNDS AS SUBSTRATES FOR III-V NITRIDE COMPOUND SEMICONDUCTOR EPITAXIAL THIN FILM GROWTH

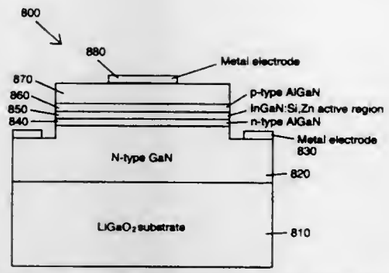
Bruce H. T. Chai, Oviedo, Fla., assignor to University of Central Florida, Orlando, Fla.

Filed Jun. 8, 1995, Ser. No. 488,741
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—94 20 Claims

1. A semiconductor light device for LED, LD, optical sensors and optically pumped laser diodes, the device having a modified wurtzite structural oxide crystal substrate capable to lattice match to III–V nitride compound semiconductor thin films, the device comprising:

a substrate having at least a Lithium Aluminum Oxide ($LiAlO_2$) single crystal; and

$Al_xIn_yGa_{1-x-y}N$, formed as epitaxial thin film layers on the substrate crystal, where $0 \leqq x \leqq 1$ and $0 \leqq y \leqq 1$ and $0 \leqq x+y \leqq 1$,



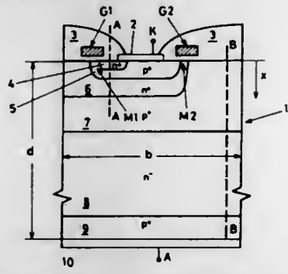
whereby the crystal is lattice-matched to the thin film layer to form a semiconductor light device.

5,625,203

CONTROLLED TURN-OFF POWER SEMICONDUCTOR DEVICE

Klas Lilja, Fislisbach, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Continuation of Ser. No. 158,495, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 795,375, Nov. 21, 1991, abandoned. This application May 26, 1995, Ser. No. 451,994
Claims priority, application Switzerland, Nov. 29, 1990, 3783/90
Int. Cl.[6] H01L 29/74;29/78
U.S. Cl. 257—132 14 Claims



1. Controlled turn-off power semiconductor device, comprising:

(a) a multiplicity of adjacently arranged, electrically parallel-connected unit cells in a semiconductor substrate between an anode and a cathode;

(b) a layer sequence of a plurality of successive layers doped with alternating polarity within each unit cell between the anode and the cathode; and

(c) within each unit cell, a first MOSFET which is arranged on the cathode side and which is provided for turning off the device;

wherein

(d) the layer sequence comprises at least five layers, of which the first layer is formed as a p^+-doped p-type emitter layer, the second layer as an n^--doped n-type base layer, the third layer as a p^+-doped p-type base layer, the fourth layer as an n^+-doped n-type emitter layer and the fifth layer as a p^+-doped contact region;

(e) the p-type emitter layer is arranged on the anode side and is contacted by an anode contact, and the contact region is arranged on the cathode side and is contacted by a cathode contact;

(f) the first MOSFET produces a switchable connection between the n-type emitter layer and the cathode contact and is formed from the n-type emitter layer, the contact region, an n^+-doped source region connected to the cathode contact and a first gate electrode arranged in an insulated fashion above the contact region; and

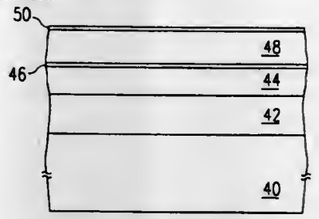
(g) means are furthermore provided by which a conducting connection can be produced between the contact region and the p-type base layer during turning-off, wherein the means comprise a second MOSFET which is formed from the contact region, the n-type emitter layer, the p-type base layer and the second gate electrode arranged above the n-type emitter layer.

5,625,204

COMPOUND SEMICONDUCTORS AND A METHOD FOR THIN FILM GROWTH

Yung-Chung Kao, and Francis G. Celii, both of Dallas, Tex., assignors to Texas Instruements Incorporated, Dallas, Tex.

Division of Ser. No. 304,985, Dec. 1, 1994, Pat. No. 5,490,880, which is a division of Ser. No. 958,888, Oct. 9, 1992, Pat. No. 5,400,739. This application Jun. 7, 1995, Ser. No. 480,722
Int. Cl.[6] H01L 31/0328
U.S. Cl. 257—190 3 Claims



1. A semiconductor device, comprising:

one or more layers of gallium arsenide formed over a gallium arsenide substrate;

an indium gallium arsenide layer formed over said one or more layers of gallium arsenide;

a cap layer of gallium arsenide having a thickness of twelve angstroms or less and formed over said indium gallium arsenide layer; and

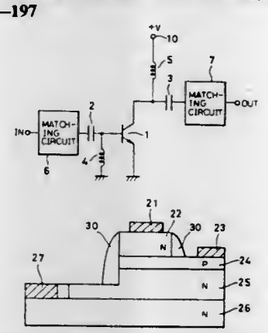
an aluminum gallium arsenide layer formed over said cap layer.

5,625,205

BIPOLAR TRANSISTOR CIRCUIT

Noboru Kusama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 252,921, Jun. 2, 1994, abandoned. This application Sep. 24, 1996, Ser. No. 710,973
Claims priority, application Japan, Jun. 2, 1993, 5-156299; Jun. 2, 1993, 5-156300; Jun. 2, 1993, 5-156301
Int. Cl.[6] H01L 31/0328;31/0336;31/072;31/109
U.S. Cl. 257—197 1 Claim



1. A bipolar transistor circuit for use in a microwave high output amplifier, comprising:

an NPN-type hetero-junction bipolar transistor used as an active element for amplification and including an emitter formed as an emitter layer of AlGaAs, a base formed of AlGaAs, and a collector,

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said bipolar transistor further comprising a high resistance or P⁻ semiconductor layer having a smaller electron affinity than a semiconductor of said base, said semiconductor layer being provided around a periphery of said emitter layer and having a portion extending towards said collector to overlap a laterally exposed part of said base layer and a laterally exposed part of said collector; and

amplifying means comprising an inductance connected between said base and a ground, said emitter being connected to the ground,

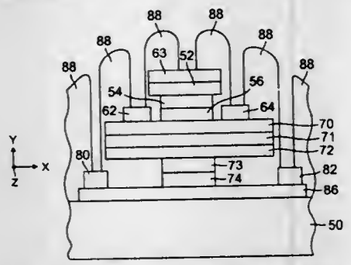
wherein a microwave signal is inputted to said base and an amplified signal is outputted from the collector of said bipolar transistor.

5,625,206

HIGH-SPEED DOUBLE-HETEROSTRUCTURE BIPOLAR TRANSISTOR DEVICES

S. Chandrasekhar, Matawan; Andrew G. Dentai, Atlantic Highlands, both of N.J., and Yasuyuki Miyamoto, Nagareyama, Japan, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 3, 1996, Ser. No. 657,255
Int. Cl.⁶ H01L *29/201*
U.S. Cl. 257—198 **5 Claims**



1. A double-heterostructure bipolar device having vertically extending intrinsic and extrinsic portions, said device comprising

multiple compound-semiconductor layers on a substrate, said layers comprising in order, from top to bottom, emitter-contact, emitter, base, collector and subcollector regions,

each of said collector and subcollector regions, comprising plural layers, the bottom layer of said collector region and the top layer of said subcollector region each having a lateral extent which is approximately the same as the lateral extent of said emitter-contact and emitter regions and narrower than the lateral extents said base region and the other layers of said collector and subcollector regions, the lateral extents of said emitter and emitter-contact regions, of said bottom collector layer and of said top subcollector layer being definitive of the lateral extent of the intrinsic portion of said device, and the lateral extents of said base region and of the other layers of said collector region on either side of said intrinsic portion being definitive of the lateral extent of the extrinsic portions of said device,

and a material disposed adjacent the sides of said bottom collector layer and of said top subcollector layer in said extrinsic portions of said device, said material being characterized by a dielectric constant that is less than the dielectric constant of the semiconductor material from which said bottom collector layer is made,

wherein said relatively-low-dielectric-constant material comprises polyimide material,

wherein said polyimide material covers substantially the entirety of the surfaces of said semiconductor layers,

wherein said polyimide material includes openings therethrough, and further including means extending through said openings for making electrical connections to said emitter-contact, base and bottom subcollector layers,

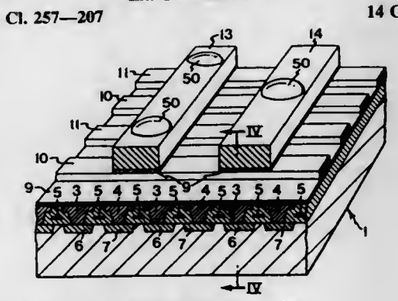
and wherein said bottom collector layer and said top subcollector layer each comprise indium phosphide, and wherein said bottom subcollector layer comprises indium gallium arsenide.

5,625,207

SEMICONDUCTOR COMPONENT WITH CONDUCTORS AT DIFFERENT LEVELS

Sten Trolle, Ystad, and Christer Svensson, Ljungsbro, both of Sweden, assignors to Elsa Elektroniska Systems and Applications AB, Ystad, Sweden

PCT No. PCT/SE93/00819, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/09511, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 11, 1993, Ser. No. 411,814
Claims priority, application Sweden, Oct. 9, 1992, 9202984
Int. Cl.⁶ H01L *27/10*
U.S. Cl. 257—207 **14 Claims**



1. A semiconductor component, comprising:

a first component electrode;

a second component electrode;

a plurality of semiconductor elements integrated on a semiconductor chip;

each of said semiconductor elements including a first element electrode and a second element electrode, both provided on a same side of said semiconductor chip, so as to provide a plurality of first element electrodes, and a plurality of second element electrodes;

a plurality of first conductor means comprising a plurality of different levels of first conductors, including a level closest to said semiconductor chip, and a level furthest from said semiconductor chip; said first element electrodes providing said level of said first conductors closest to said semiconductor chip; said first conductors of said level furthest from said semiconductor chip being connected to said first component electrode; and said first conductors all being successively connected from level to level, so that all of said first element electrodes are effectively connected to said first component electrode; and

a plurality of second conductor means comprising a plurality of different levels of second conductors, including a level closest to said semiconductor chip, and a level furthest from said semiconductor chip; said second element electrodes providing said level of said second conductors closest to said semiconductor chip; said second conductors of said level furthest from said semiconductor chip being connected to said second component electrode; and said second conductors all being successively connected from level to level, so that all of said second element electrodes are effectively connected to said second component electrode;

each respective level of said first conductors which is relatively further from said semiconductor chip containing fewer of said first conductors than each respective level of said first conductors which is relatively closer to said semiconductor chip; and

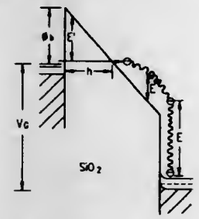
each respective level of said second conductors which is relatively further from said semiconductor chip containing fewer of said second conductors than each respective level of said second conductors which is relatively closer to said semiconductor chip.

5,625,208

METHOD FOR USING A CHARGE INJECTION TRANSISTOR

Young K. Jun, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation of Ser. No. 219,787, Mar. 30, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 545,886
Claims priority, application Rep. of Korea, Mar. 4, 1994, 4219/1994
Int. Cl.⁶ H01L *29/76*
U.S. Cl. 257—214 **22 Claims**



1. A method for using a charge injection transistor including a substrate having an electric potential barrier layer, a gate on the electric potential barrier layer, and source and drain regions at opposite sides of the gate in the substrate, said method comprising the steps of:

forming a conduction channel in the substrate between the source and the drain regions by passing charges through the electric potential barrier layer and injecting the charges into the substrate using a voltage applied to the gate, in order to form a current path between the source and the drain regions; and

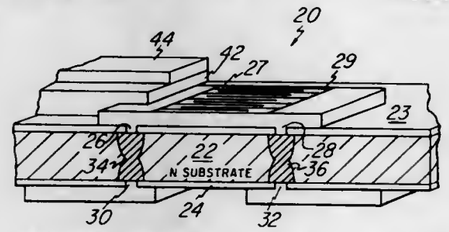
removing the conduction channel, in order to cut off the current path between the source and the drain regions by no charges passing through the electric potential barrier layer.

5,625,209

SILICON BASED SENSOR APPARATUS

Mark Appleton, Bedford, England, and William R. Krenik, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 894,894, Aug. 26, 1992, abandoned. This application May 4, 1995, Ser. No. 434,816
Int. Cl.⁶ H01L *23/58*
U.S. Cl. 257—253 **11 Claims**



1. A biosensor, comprising:

a semiconductor substrate having a first side and a second side;

a first contact region on the first side of the substrate to directly connect to the biosensor;

a second contact region on the second side of the substrate; and

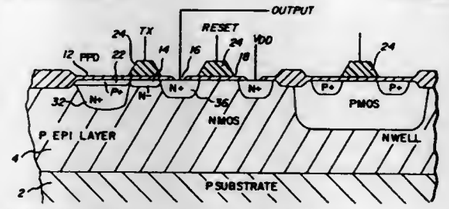
conductive region extending from the contact region on the first side to the second contact region on the second side.

5,625,210

ACTIVE PIXEL SENSOR INTEGRATED WITH A PINNED PHOTODIODE

Paul P. Lee, Pittsford; Robert M. Guidash, Rush; Teh-Hsuang Lee, Webster, and Eric G. Stevens, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,173
Int. Cl.⁶ H01L *31/062;31/113*
U.S. Cl. 257—292 **15 Claims**



7. An active pixel image sensor comprising:

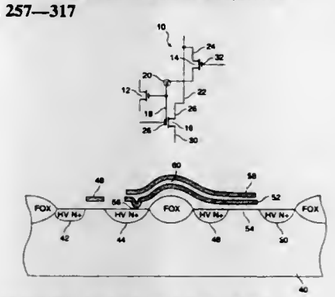
a pinned photodiode operatively coupled to CMOS control circuitry.

5,625,211

TWO-TRANSISTOR ELECTRICALLY-ALTERABLE SWITCH EMPLOYING HOT ELECTRON INJECTION AND FOWLER NORDHEIM TUNNELING

Vikram Kowshik, Fremont, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Filed Jan. 12, 1995, Ser. No. 371,685
Int. Cl.⁶ H01L *29/788;27/108*
U.S. Cl. 257—317 **3 Claims**



1. An electrically-alterable switch including:

a floating gate MOS transistor having a source, a drain, a control gate, and a floating gate;

a select transistor including a source capacitively coupled to said floating gate via a tunneling oxide, a drain connected to the drain of said floating gate MOS transistor, and a gate; and

a pass transistor, having a source, a drain, and a pass gate, said pass gate comprising a portion of said floating gate.

5,625,212

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Takahiro Fukumoto, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

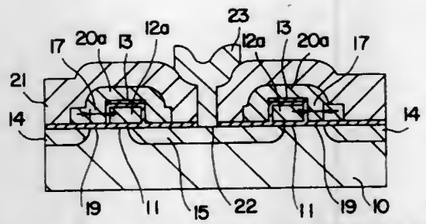
Continuation of Ser. No. 36,072, Mar. 23, 1993, abandoned. This application May 22, 1995, Ser. No. 445,925
Claims priority, application Japan, Mar. 23, 1992, 4-064591
Int. Cl.⁶ H01L *29/788*
U.S. Cl. 257—321 **12 Claims**

1. A semiconductor memory device comprising:

a semiconductor substrate having a first conductivity type,

a first diffusion layer and a second diffusion layer each having a second conductivity type, said first diffusion layer and said

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second diffusion layer formed at a first position and a second position respectively with a channel region therebetween in said semiconductor substrate, said second conductivity type of opposite conductivity type to said first conductivity type,

a gate dielectric film formed on said semiconductor substrate,

a floating gate electrode formed (a) on said gate dielectric film, (b) above at least a part of said second diffusion layer (c) remote and separate from said first diffusion layer, said floating gate electrode having a surface, and (d) above only a portion of said channel region,

a dielectric film formed on and at least partially covering said surface of said floating gate electrode,

a control gate electrode formed on said dielectric film and at least partially covering said surface of said floating gate electrode through said dielectric film and above a) said portion of said channel region and b) a further portion of said channel region not having thereabove said floating gate electrode,

an interlayer dielectric film formed on said control gate electrode, and

means for injecting electrons into said floating gate electrode using tunnel injection and ejecting electrons from said floating gate electrode using tunnel ejection,

wherein all of said gate dielectric film under said floating gate electrode consists of a tunneling dielectric film.

5,625,213

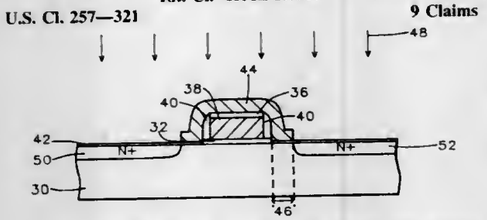
TOP FLOATING-GATE FLASH EEPROM STRUCTURE

Gary Hong, and Chen-Chiu Hsue, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 275,269, Jul. 15, 1994, Pat. No. 5,457,061. This application Jul. 10, 1995, Ser. No. 500,104

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—321 **9 Claims**



1. A Flash EEPROM with an array of top floating gate memory cells, comprising:

a plurality of parallel, conductive lines formed over a silicon substrate, whereby said parallel, conductive lines are word lines and act as a control gate at said memory cells;

a first insulating layer between said parallel, conductive lines and said silicon substrate, whereby said first insulating layer is a gate oxide;

a first conductive structure over vertical and horizontal surfaces of said word lines at said memory cells, and extending over a portion of said silicon substrate adjacent to said word lines, whereby said first conductive structure is a floating gate;

a second insulating layer between said silicon substrate and said floating gate, whereby said second insulating layer is a tunnel oxide;

a third insulating layer over the surfaces of said word lines, extending between said word lines and said floating gate;

source/drain regions in said silicon substrate, implanted with a conductivity-imparting dopant, under said second insulating layer but horizontally a distance from said first insulating layer;

a fourth insulating layer over said memory cells, and over said silicon substrate between said memory cells;

an interconnecting metallization system over said fourth insulating layer, to connect said word lines and said source/drain regions to peripheral circuits of said array; and

a means to provide voltage to said word lines and said source/drain regions, wherein said providing means are used to program said memory cells by applying a voltage of between about 10 and 20 volts to said word line, a voltage of 0 volts to a drain region, and a floating voltage to a source region.

5,625,214

SEMICONDUCTOR DEVICE

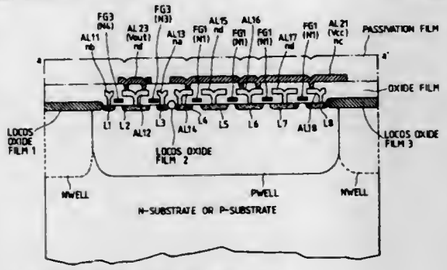
Yoshitaka Kinoshita, Koganei; Yukio Kawashima, Chitose, and Hideaki Nakamura, Kodaira, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 323,939, Oct. 17, 1994, Pat. No. 5,495,118. This application Sep. 8, 1995, Ser. No. 525,214

Claims priority, application Japan, Oct. 20, 1993, 5-285958; Feb. 28, 1994, 6-054507

Int. Cl.[6] H01L *29/68*

U.S. Cl. 257—355 **13 Claims**



1. A semiconductor device comprising:

an external output terminal;

a first terminal for receiving a power supply voltage;

a second terminal for receiving a ground potential;

a P-channel type output MOSFET having a source coupled to said first terminal and a drain coupled to said external output terminal;

an N-channel type output MOSFET having a source coupled to said second terminal and a drain coupled to said external output terminal; and

an N-channel type first protection MOSFET having a gate coupled to said second terminal and a source-drain path provided between a gate of said N-channel type output MOSFET and said external output terminal.

5,625,215

SRAM CELL WITH BALANCED LOAD RESISTORS

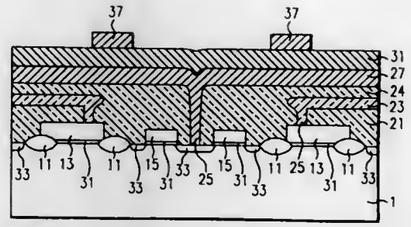
Min-Liang Chen, Hsin-chu, Taiwan, and Werner Juengling, Graz, Austria, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 200,843, Feb. 22, 1994, abandoned, which is a continuation of Ser. Nn. 980,859, Nov. 24, 1992, abandoned. This application Mar. 28, 1995, Ser. No. 413,014

Int. Cl.[6] H01L *27/11*

U.S. Cl. 257—379 **4 Claims**

1. A semiconductor integrated circuit having an SRAM cell having four transistors comprising:



a substrate;

a plurality of transistors, said transistors being on said substrate;

two of said transistors being access transistors and two of said transistors being pull-down transistors;

a dielectric layer;

two high resistance load resistors comprising silicon, said dielectric layer being between said load resistors and said substrate;

a first dielectric layer over said load resistors;

a metal layer on said first dielectric layer, said metal layer both providing electrical communication to at least one of said transistors and covering substantially all surface area of said load resistors thereby providing a field shield for said covered surface area of said load resistors;

a second dielectric layer on said metal layer, said second dielectric layer containing trapped charged ions capable of inducing conduction paths wherein said metal layer prevents said ions from inducing conduction paths in said covered surface area of said load resistors; and

conductors on said second dielectric layer,

wherein said load resistors have longitudinal axes and said metal layer comprises a plurality of bit lines, said bit lines being parallel to said longitudinal axes of said two load resistors.

5,625,216

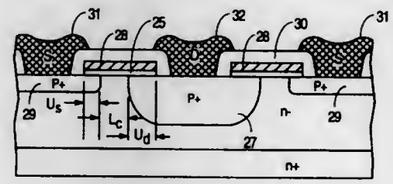
MOS TRANSISTOR HAVING INCREASED GATE-DRAIN CAPACITANCE

Bernard D. Miller, San Jose, Calif., assignor to Micrel, Inc., San Jose, Calif.

Continuation of Ser. No. 510,581, Aug. 2, 1995, abandoned, which is a continuation of Ser. No. 296,294, Aug. 25, 1994, abandoned, which is a division of Ser. No. 140,746, Oct. 21, 1993, Pat. No. 5,397,715. This application Jul. 1, 1996, Ser. No. 674,043

Int. Cl.[6] H01L *29/76;29/94;31/062*

U.S. Cl. 257—387 **4 Claims**



1. A self-aligned MOS transistor comprising:

a semiconductor substrate of a first conductivity type;

a gate overlying and insulated from a surface of said substrate;

a drain region of a second conductivity type self-aligned with said gate, said drain region extending into said substrate a drain diffusion depth and extending beneath said gate a drain underdiffusion length, wherein said drain underdiffusion length achieves a desired capacitance between said gate and said drain region, an increase in said drain diffusion depth causing an increase in said drain underdiffusion length, an impurity concentration at a surface of said drain region being sufficiently high such that a separate drain contact region is not required for conduction between said drain region and a metal drain electrode, said drain region having no separate drain contact region formed therein;

a source region of said second conductivity type self-aligned with said gate, said source region extending into said substrate a source diffusion depth that is less than said drain diffusion depth, and extending beneath said gate a source underdiffusion length,

wherein said drain underdiffusion length is substantially greater than said source underdiffusion length; and

said metal drain electrode in direct contact with said surface of said drain region.

5,625,217

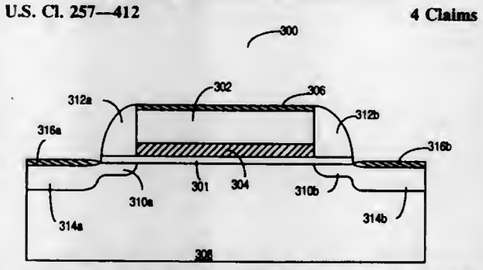
MOS TRANSISTOR HAVING A COMPOSITE GATE ELECTRODE AND METHOD OF FABRICATION

Robert S. Chau, Beaverton, Oreg.; David B. Fraser, Danville, Calif.; Kenneth C. Cadien, Portland, Oreg.; Gopal Raghavan, Mountain View, Calif., and Leopoldo D. Yau, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 989,080, Dec. 11, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,352

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—412 **4 Claims**



1. A lightly doped drain metal oxide semiconductor transistor formed on a substrate of a first conductivity type comprising:

a gate insulating layer formed on said substrate;

a composite gate electrode having laterally opposite sidewalls along the width of said composite gate electrode, said composite gate electrode comprising:

a conductive layer formed on said gate insulating layer wherein said conductive layer is selected from the group consisting of titanium nitride (TIN), polycrystalline carbon, and metallic silicides;

a polysilicon layer formed on said conductive layer, said polysilicon layer thick enough to mask a subsequent source/drain implant and thick enough to support a silicide reaction;

a pair of lightly doped drain regions of a first concentration of a second conductivity type formed in said substrate in alignment with said laterally opposite sidewalls of said composite gate electrode;

a pair of spacers formed adjacent to said laterally opposite sidewalls of said composite gate electrode;

a pair of source/drain regions of a second concentration of said second conductivity type wherein said second concentration is greater than said first concentration, said source/drain regions formed in said substrate in alignment with the outside edges of said spacers; and

silicide formed on said source/drain regions and on said polysilicon layer.

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5,625,218

SEMICONDUCTOR DEVICE EQUIPPED WITH A HEAT-FUSIBLE THIN FILM RESISTOR AND PRODUCTION METHOD THEREOF

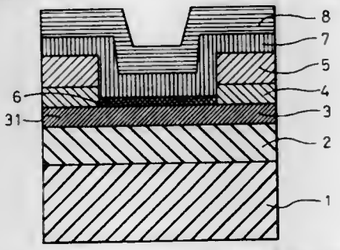
Hideya Yamadera; Takeshi Ohwaki; Yasunori Taga, all of Nagoya; Makio Ilda, Ichinomiya; Makoto Ohkawa, Toyoake; Hirofumi Abe, Okazaki, and Yoshihiko Isobe, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, both of Japan

Filed Jun. 16, 1995, Ser. No. 491,543

Claims priority, application Japan, Jun. 17, 1994, 6-135706

Int. Cl.[6] H01L *27/10;29/00*

U.S. Cl. 257—529 **21 Claims**



1. A semiconductor device having a fuse whose state can be changed by an application of fusing energy, said device comprising:

a silicon substrate;

a first insulator film formed on said silicon substrate, being made of a silicon type oxide;

a thin film resistor formed on said first insulator film, as said fuse, comprising chromium, silicon and tungsten before application of fusing energy;

a wiring portion formed over a portion of said thin film resistor, being made of aluminum or an alloy thereof; and

a passivation film formed over said wiring portion and said thin film resistor, being made of at least one compound selected from a silicon nitride and an insulator including silicon.

5,625,219

PROGRAMMABLE SEMICONDUCTOR DEVICE USING ANTI-FUSE ELEMENTS WITH FLOATING ELECTRODE

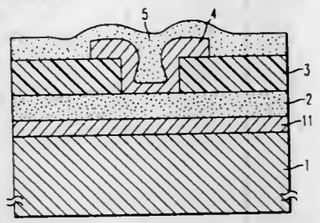
Mariko Takagi, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1994, Ser. No. 220,706

Claims priority, application Japan, Apr. 15, 1993, 5-112195

Int. Cl.[6] H01L *29/04;27/10;29/00*

U.S. Cl. 257—530 **28 Claims**



1. An anti-fuse element in a semiconductor device including a semiconductor substrate, comprising:

an insulator layer formed over the substrate;

at least two wiring lines formed on the insulator layer, predetermined portions of the at least two wiring lines being in proximity to each other at a node;

a dielectric anti-fuse film formed on the two wiring lines at the node;

a floating electrode formed on the dielectric anti-fuse film to overlap the predetermined portions of the at least two wiring lines at the node, and having no direct contact with a potential source; and

at least one additional layer inserted between the insulator layer and the semiconductor substrate, the additional layer having no direct contact with the floating electrode at the node,

wherein upon application of a destructive electric potential difference across the at least two wiring lines, the dielectric anti-fuse film breaks down and conductive paths are respectively formed between the floating electrode and each of the at least two wiring lines.

5,625,220

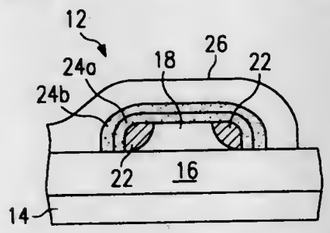
SUBLITHOGRAPHIC ANTIFUSE

David K.-Y. Liu, Cupertino, Calif.; Kueing-Long Chen, Plano, and Bert R. Riemenschneider, Murphy, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 233,483, Apr. 26, 1994, abandoned, which is a continuation of Ser. No. 41,304, Mar. 31, 1993, abandoned, which is a division of Ser. No. 860,473, Mar. 30, 1992, Pat. No. 5,219,782, and a continuation-in-part of Ser. No. 113,507, Aug. 27, 1993, Pat. No. 5,365,105, which is a continuation of Ser. No. 954,593, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 657,703, Feb. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 20,272, Feb. 18, 1993, abandoned, which is a continuation of Ser. No. 657,597, Feb. 19, 1991, abandoned. This application Aug. 8, 1994, Ser. No. 287,323

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—530 **10 Claims**



1. A sublithographic semiconductor antifuse, said antifuse comprising:

a substrate;

a horizontally sublithographic conductive pattern overlying and distinct from said substrate, the entire breadth of at least one dimension of said sublithographic conductive pattern being less than a minimum lithographic feature size and wherein said horizontally sublithographic conductive pattern includes substantially vertical sidewalls;

an antifuse material overlying said horizontally sublithographic conductive pattern;

a conductive layer over said antifuse material whereby an antifusing area is formed between said horizontally sublithographic conductive pattern and said conductive layer; and

a sidewall insulator material on at least one of said sidewalls of said horizontally sublithographic conductive pattern and underlying said antifuse material.

5,625,221

SEMICONDUCTOR ASSEMBLY FOR A THREE-DIMENSIONAL INTEGRATED CIRCUIT PACKAGE

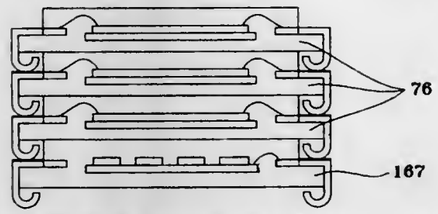
Jae J. Kim, Seoul; Dong K. Kim, Chunan, and Seung H. Ahn, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 3, 1995, Ser. No. 368,165

Claims priority, application Rep. of Korea, Mar. 3, 1994, 94-4282

Int. Cl.[6] H01L *23/02;23/34*

U.S. Cl. 257—686 **12 Claims**



1. A semiconductor chip package which is stackable, in a stacking height direction, with at least one like semiconductor chip package for providing a stacked semiconductor chip package module on a printed circuit board, comprising:

a semiconductor chip package body having at least two edges which oppose one another in a lateral direction relative to said stacking height direction as a respective pair;

said body having two opposite faces relative to said stacking height direction;

each edge of at least one pair of said edges of said body being provided with a plurality of recesses which are spaced from one another along the respective edge and which open through one of said faces of said body; and

a plurality of leads each of which is electrically connected to said semiconductor chip; said leads being arranged in sets, each corresponding to a said recess of a said edge of a said pair of edges of said body; each lead having a first portion which is located within a respective corresponding said recess so as to be exposed through said one of said faces of said body; each lead further having a second portion which extends from the respective said first portion, out of the respective said recess, and to a respective location in which said second portion is disposed for electrically contacting a first portion of a corresponding lead of a like package or a corresponding lead of a printed circuit board, upon stacking of said body in said stacking direction.

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SEMICONDUCTOR DEVICE IN A RESIN PACKAGE HOUSED IN A FRAME HAVING HIGH THERMAL CONDUCTIVITY

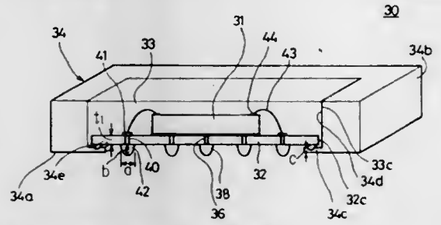
Yoshiyuki Yoneda, and Kazuto Tsuji, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1994, Ser. No. 281,098

Claims priority, application Japan, Nov. 18, 1993, 5-289538

Int. Cl.[6] H01L *23/08;23/10;23/28;23/34*

U.S. Cl. 257—687 **8 Claims**



1. A semiconductor device, comprising:

a substrate having upper and lower major surfaces;

solder bumps provided on said lower major surface of said substrate;

a semiconductor chip provided on said upper major surface of said substrate;

a resin package body provided on said upper major surface of said substrate so as to bury said semiconductor chip therein, said resin package body having an upper major surface and side walls surrounding said package body;

a thermally conductive frame member having a thermal conductivity substantially greater than that of said resin package body and extending along to and in an intimate contact with said side walls of said resin package body thereby leaving the upper major surface of said resin package body exposed to the air; said thermally conductive frame having a flange part supporting said substrate thereon at a rim part of said substrate.

5,625,223

SURFACE MOUNTING TYPE DIODE

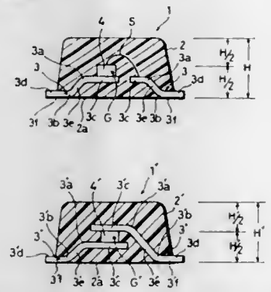
Shigemasa Sunada, Ukyo-ku, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 296,585, Aug. 29, 1994, Pat. No. 5,508,557, which is a continuation of Ser. No. 132,243, Oct. 6, 1993, abandoned. This application Dec. 22, 1995, Ser. No. 577,511

Claims priority, application Japan, Oct. 9, 1992, 4-272079

Int. Cl.[6] H01L *23/48;23/52*

U.S. Cl. 257—692 **6 Claims**



1. A surface mounting type diode, intended to be mounted on a circuit board, comprising:

a diode chip;

a pair of plate-like leads held in electrical conduction with the diode chip, each of the leads including a substantially flat inner end, an outer end, a first bend closer to the inner end, a second bend closer to the outer end, and an intermediate portion between the first and second bends; and

a single resin package enclosing the diode chip together with part of the respective leads, the resin package having a flat bottom surface and a top surface;

wherein the inner end, first bend, second bend and intermediate portion of said each lead are contained in the single resin package even before mounting the diode;

wherein the outer end of said each lead extends laterally outward from the resin package and has an exposed flat mounting surface flush with the bottom surface of the resin package;

wherein the inner end of one lead has a bonding surface;

wherein the diode chip is directly mounted on the bonding surface of the inner end of said one lead in electrical conduction therewith, the diode chip being electrically connected to the inner end of the other lead through a metal wire;

wherein the diode has a gravitational center located below a height center of the diode;

wherein the bonding surface is located below the gravitational center of the diode; and

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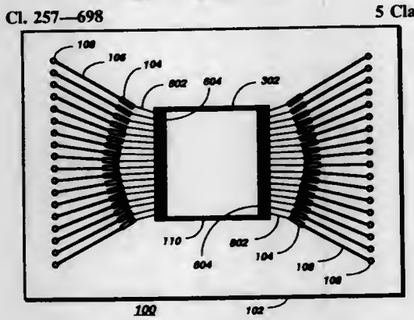
wherein the inner end of said one lead is longer than that of the other lead.

5,625,224

METHOD AND APPARATUS FOR AN INTEGRATED CIRCUIT CHIP CARRIER HAVING IMPROVED MOUNTING PAD DENSITY

Jonathon Greenwood, Boynton Beach, Fla., and Reed A. George, El Reno, Okla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1994, Ser. No. 288,513
Int. Cl.[6] H01L *23/04*
U.S. Cl. 257—698 **5 Claims**



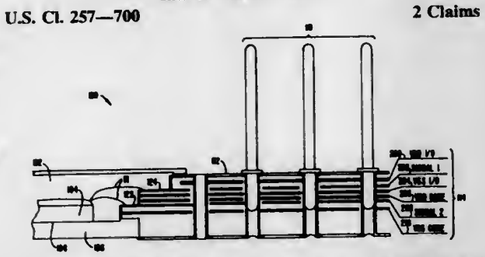
1. A communication receiver comprising:
an antenna for intercepting a signal including information;
a receiver element coupled to the antenna for demodulating the signal to derive the information;
a processor coupled to the receiver for processing the information;
a support circuit coupled to the processor for providing miscellaneous support functions;
a circuit bearing substrate coupled to the antenna, the receiver element, the processor, and the support circuit for interconnecting the same; and
an integrated circuit chip carrier attached to at least one of the receiver element, the processor, and the support circuit for carrying and interconnecting the same while providing an improved mounting pad density, the integrated circuit chip carrier comprising:
a flexible substrate having top and bottom surfaces;
a plurality of pads disposed on the top surface of the flexible substrate and coupled to the at least one of the receiver element, the processor, and the support circuit for interconnection thereof;
a mounting pad array disposed on the bottom surface of the flexible substrate and having an interconnection with said plurality of pads;
a rigid substrate having an array of holes extending therethrough, the rigid substrate also having top and bottom surfaces, wherein the top surface of the rigid substrate is fixedly attached to the bottom surface of the flexible substrate, and wherein locations of individual holes of said array of holes correspond to and align with locations of individual pads of said mounting pad array; and
solder disposed on said mounting pad array and extending through said array of holes beyond the bottom surface of the rigid substrate for mounting the integrated circuit chip carrier to the circuit bearing substrate.

5,625,225

MULTI-LAYERED, INTEGRATED CIRCUIT PACKAGE HAVING REDUCED PARASITIC NOISE CHARACTERISTICS

Chin-Ching Huang, San Jose; Sang S. Lee, Sunnyvale; Ramachandra A. Rao, Pleasanton, and Fernand N. Forcier, Jr., San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 172,502, Dec. 22, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,751
Int. Cl.[6] H01L *23/053*
U.S. Cl. 257—700 **2 Claims**



1. A multi-layered package structure for encasing an integrated circuit die having first and second ground reference buses, first and second voltage supply buses, a plurality of transistors coupled together and to said first and second ground reference and said first and second voltage supply buses so as to define an integrated circuit having a plurality of input/output connections for communicating input/output signals, first and second pluralities of input/output bond pads coupled to corresponding ones of said plurality of input/output connections, a first plurality of ground bond pads coupled to said first ground reference bus, a second plurality of ground bond pads coupled to said second ground reference bus, a first plurality of voltage supply bond pads coupled to said first voltage supply bus, and a second plurality of voltage supply bond pads coupled to said second voltage supply bus, wherein said plurality of transistors include a plurality of core transistors coupled to said second plurality of ground bond pads and said second plurality of voltage supply bond pads, and a plurality of input/output transistors coupled to said first plurality of ground bond pads and said first plurality of voltage supply bond pads for controlling input/output signals to and from said plurality of core transistors, said package structure comprising:
a plurality of contact fingers including first and second pluralities of input/output contact fingers, first and second pluralities of ground contact fingers, and first and second pluralities of voltage supply contact fingers positioned such that individual ones of said first plurality of input/output contact fingers are coupled to corresponding ones of said first plurality of input/output bond pads, individual ones of said second plurality of input/output contact fingers are coupled to corresponding ones of said second plurality of input/output bond pads, individual ones of said first plurality of ground contact fingers are coupled to corresponding ones of said first plurality of ground bond pads, individual ones of said second plurality of ground contact fingers are coupled to corresponding ones of said second plurality of ground bond pads, individual ones of said first plurality of voltage supply contact fingers are coupled to corresponding ones of said first plurality of voltage supply bond pads, and individual ones of said second plurality of voltage supply contact fingers are coupled to corresponding ones of said second plurality of voltage supply bond pads of said integrated circuit die when said integrated circuit die is encased in said package structure;
a first signal metallization layer coupled to said first plurality of input/output contact fingers;
a second signal metallization layer coupled to said second plurality of input/output contact fingers;
a first ground metallization layer coupled to said first plurality of ground contact fingers, and interposed between said first and second signal metallization layers so as to inhibit cross-talk between said first and second signal metallization layers;

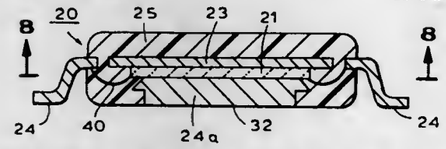
a first voltage supply metallization layer coupled to said first plurality of voltage supply contact fingers, wherein said first signal metallization layer is interposed between said first ground and said first voltage supply metallization layers;
a second voltage supply metallization layer coupled to said second plurality of voltage supply contact fingers, and interposed between said second signal and said first ground metallization layers; and
a second ground metallization layer coupled to said second plurality of ground contact fingers, wherein said second signal metallization layer is interposed between said second voltage supply and said second ground metallization layers.

5,625,226

SURFACE MOUNT PACKAGE WITH IMPROVED HEAT TRANSFER

Daniel M. Kinzer, El Segundo, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Continuation of Ser. No. 308,739, Sep. 19, 1994. This application Aug. 18, 1995, Ser. No. 516,683
Int. Cl.[6] H01L *23/495;23/10;23/34*
U.S. Cl. 257—705 **11 Claims**



1. A surface mount package comprising, in combination: a thin, flat semiconductor die having a bottom surface and a top surface and having heat-generating junctions formed in said top surface and having lead connection regions on its top surface; a lead frame having a body portion having a top surface and a bottom surface and having a lead conductor insulated from and extending from portions adjacent to side portions of said body surface and a thermally conductive slug having top and bottom parallel, generally flat surfaces; said bottom surface of said die being thermally connected directly to said bottom surface of said lead frame; said top surface of said slug being directly connected to said top surface of said die and being wider than said bottom surface of said slug; at least one of said lead conductors having first portions thereof connected to at least one of said lead connection regions of said top surface of said die; a molded housing enclosing at least portions of said die, said lead frame and said slug; said bottom surface of said slug being exposed for connection to a flat mounting surface; portions of said lead conductors extending beyond the exterior of said molded housing; said lead conductor being downwardly bent at the exterior of said package and terminating in a plane which is generally coplanar with said bottom surface of said slug.

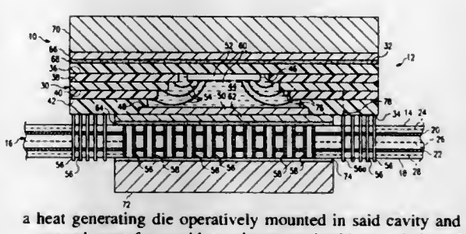
5,625,227

CIRCUIT BOARD-MOUNTED IC PACKAGE COOLING APPARATUS

Scott Estes, and Deepak Swamy, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 18, 1995, Ser. No. 374,320
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—712 **17 Claims**

1. Electronic apparatus comprising:
a circuit board having first and second opposite sides;
an IC package mounted on said first side of said circuit board and including:
a body portion having a first side facing said first side of said circuit board and having an opening, an opposite second side, and a cavity extending from said opening through said body portion toward said second side thereof,



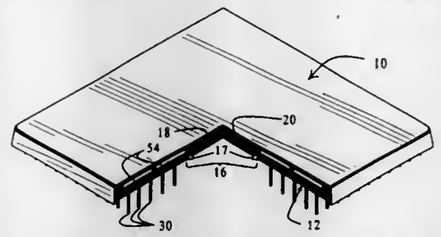
a heat generating die operatively mounted in said cavity and spaced apart from said opening toward said second side of said body portion,
a lid member sealingly received in said opening, and
a thermally conductive liquid disposed within and filling said cavity and serving to conduct die heat therethrough to said lid member; and
heat dissipation means, thermally coupled to said lid member and extending therefrom through said circuit board, for conducting die heat from said body portion through said circuit board toward said second side thereof.

5,625,228

HIGH PERFORMANCE SEMICONDUCTOR PACKAGE WITH AREA ARRAY LEADS

Philip E. Rogren, 624 Silver Ave., Half Moon Bay, Calif. 94019-1565

Filed Feb. 27, 1995, Ser. No. 395,385
Int. Cl.[6] H01L *23/34;* **H05K** *7/20*
U.S. Cl. 257—712 **9 Claims**



1. A package for a semiconductor device comprising an enclosure, a connecting means for electrically connecting between said semiconductor device and an interconnecting means, said interconnecting means for electrically interconnecting said connecting means to another electronic system; said connecting means comprising in combination:
(a) a substantially planar structure having a first surface and a second surface, said first surface being separated from said second surface by a thickness;
(b) a plurality of attachment pads, arrayed on said first surface, for forming an attachment between said connecting means and said enclosure;
(c) a plurality of first level interconnect pads, arrayed on said connecting means, for establishing electrical connections from said semiconductor device to said connecting means;
(d) a mounting means for mounting said semiconductor device such that the thermal resistance between said semiconductor device and said enclosure is reduced and said semiconductor device is positioned substantially concentric with respect to the array of said plurality of first level interconnect pads, and with the active surface of said semiconductor device substantially parallel to the major surfaces of said connecting means; and
(e) a plurality of electrically conductive members, arranged to distribute electrical signals among said first level interconnect pads and said interconnecting means, said electrically conductive members being supported and separated by an electrically insulating material;

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said interconnecting means comprising an array of contacting structures which are accessible from said second surface of said connecting means and are in electrical contact with said electrically conductive members;

said enclosure comprising in combination:

(a) a structure comprised of thermally conductive material and sized to substantially enclose said first surface and the edges of said connecting means, having an exterior surface and an interior surface; and

(b) an attachment means for mounting said connecting means to said interior surface comprising a plurality of pedestals positioned such that individual ones of the plurality of pedestals correspond with individual ones of the plurality of attachment pads of said connecting means;

said connecting means being attached to the interior surface of said enclosure by an adhesive material between the attachment means of said enclosure and the attachment pads of said connecting means;

whereby providing a package for a high performance semiconductor device that can be produced at reduced cost while providing electrical, thermal and cosmetic properties that are superior to current art.

5,625,229

HEAT SINK FIN ASSEMBLY FOR COOLING AN LSI PACKAGE

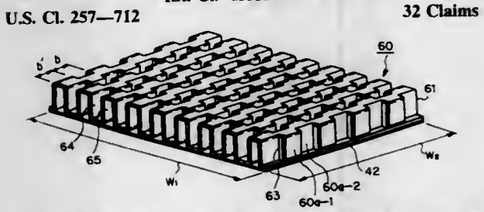
Masayasu Kojima; Chihiro Hayashi, both of Takarazuka; Tetsuo Abiko, Nara, and Keiji Miki, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, and Sumitomo Precision Products, Co., Ltd., Amagasaki, both of Japan

Filed Oct. 3, 1995, Ser. No. 538,232

Claims priority, application Japan, Oct. 3, 1994, 6-239236; Mar. 23, 1995, 7-091525; Aug. 21, 1995, 7-211896

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—712 **32 Claims**



1. A heat sink fin assembly of the corrugated type for cooling an LSI package, which comprises a flat base plate and a heat dissipating member made of a thin metal sheet having convex and concave portions which are comprised of a repeated series of side wall portions, top portions, and bottom portions, said base plate and said bottom portions of said heat dissipating member being integrated with each other by bonding and said top portions being exposed, said heat dissipating member comprising a corrugated metal sheet with a zig-zag shape in a plane parallel to said bottom portions.

5,625,230

INTEGRATED CIRCUIT CHIP STRUCTURE

Jin-woo Park, Suwon, and Chang-hoon Lee, Seoul, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea

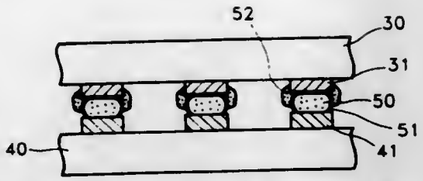
Filed Sep. 22, 1995, Ser. No. 532,984

Claims priority, application Rep. of Korea, Dec. 28, 1994, 94-38300

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—736 **22 Claims**

1. An integrated circuit chip structure comprising an integrated circuit chip on which a first electrode of a predetermined pattern is formed, and a base on which a second electrode is formed in



correspondence with said first electrode, said chip and base being joined to be electrically connected to each other,

wherein a first adhesive is attached to the upper surface of one of said first and second electrodes, conductive metal substance for electrically contacting the other of said electrodes is deposited around said first adhesive, and a second adhesive for joining said conductive metal substance and the other of said electrodes is deposited on the conductive metal substance.

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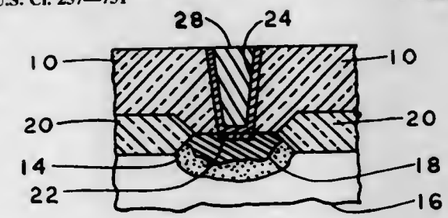
LOW COST SOLUTION TO HIGH ASPECT RATIO CONTACT/VIA ADHESION LAYER APPLICATION FOR DEEP SUB-HALF MICROMETER BACK-END-OF LINE TECHNOLOGY

Richard J. Huang, Milpitas, and Robin W. Cheung, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 10, 1995, Ser. No. 402,254

Int. Cl.[6] H01L *23/48;29/41*

U.S. Cl. 257—751 **5 Claims**



1. A multilayer interconnect structure formed in a dielectric comprising:

(a) at least one high aspect ratio contact/via opening etched in said dielectric, each said contact/via opening having a bottom and sidewalls;

(b) a first layer of TiN on said bottom of said contact/via openings having a thickness;

(c) a second layer of TiN having a thickness deposited on said first layer of TiN and on said sidewalls of said contact/via openings, said second layer of TiN substantially covering said sidewalls and serving as an adhesion layer, said thickness of said second layer of TiN being smaller than said thickness of said first layer of TiN; and

(d) a metal plug in each said contact/via opening and adhered to said bottom and sidewalls thereof by said second layer of TiN.

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RELIABILITY OF METAL LEADS IN HIGH SPEED LSI SEMICONDUCTORS USING DUMMY VIAS

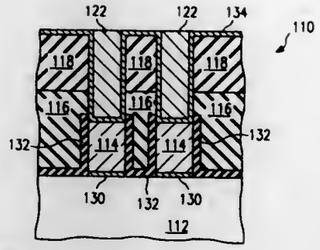
Ken Numata, Dallas, and Kay L. Houston, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 15, 1994, Ser. No. 275,570

Int. Cl.[6] H01L *23/48;23/52*

U.S. Cl. 257—758 **1 Claim**

1. A semiconductor device having metal leads with improved reliability, comprising:



a substrate;

at least two metal leads on said substrate;

a first insulating layer comprising a low-dielectric constant material between said metal leads, said low-dielectric constant material having a dielectric constant of less than about 3.5;

a second insulating layer in contact with at least said first insulating layer;

first dummy vias formed within said second inflating layer in contact with said metal leads, wherein heat from said metal leads is transferable to said first dummy vias, and wherein said first dummy vias are capable of conducting said heat away from said metal leads;

first dummy leads in contact with said first dummy vias, wherein heat from said metal leads is transferable to said first dummy leads, and wherein said first dummy leads are capable of conducting said heat away from said metal leads; and

second dummy vias in contact with said first dummy leads, wherein heat from said metal leads is transferable to said second dummy leads, and wherein said second dummy vias are capable of conducting said heat away from said metal leads;

wherein said second insulating layer is comprised of a thermoconductive material comprising AlN, Si_3N_4, or both.

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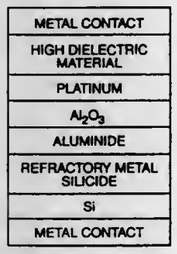
THIN FILM MULTI-LAYER OXYGEN DIFFUSION BARRIER CONSISTING OF REFRACTORY METAL, REFRACTORY METAL ALUMINIDE, AND ALUMINUM OXIDE

Cyril Cabral, Jr., Ossining; Evan G. Colgan, Suffern, and Alfred Grill, White Plains, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 13, 1995, Ser. No. 372,633

Int. Cl.[6] H01L *23/482;29/45*

U.S. Cl. 257—771 **19 Claims**



1. A multilayer diffusion barrier comprising:

a conducting substrate,

a layer of a refractory metal overlying said substrate,

a layer of refractory metal aluminide overlying said refractory metal layer, and

an aluminum oxide layer overlying said refractory metal aluminide layer.

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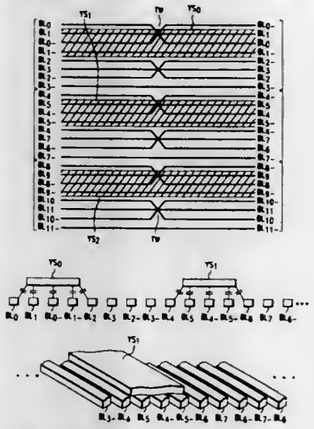
SEMICONDUCTOR MEMORY DEVICE WITH BIT LINE AND SELECT LINE ARRANGEMENT MAINTAINING PARASITIC CAPACITANCE IN EQUILIBRIUM

Yukihide Suzuki, Akishima, and Hiroyuki Yoshida, Ryugasaki, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex., and Hitachi Ltd., Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 292,480

Int. Cl.[6] G11C *7/02;5/06*

U.S. Cl. 257—773 **11 Claims**



1. A semiconductor memory device comprising:

an array of memory cells arranged in a matrix of rows and columns of individual memory cells for storage of binary data;

a plurality of word lines and a plurality of bit lines respectively corresponding to the rows and columns of said matrix of memory cells;

said plurality of bit lines being arranged in odd and even numbered bit line pairs respectively including a bit line and an auxiliary bit line;

said odd and even numbered bit line pairs being further arranged in a plurality of bit line pair sets, each bit line pair set including

a first even bit line pair having a single twist therein intermediate the opposite ends of the even bit line and the even auxiliary bit line,

a first odd bit line pair interrelated with said first even bit line pair and including an odd bit line and an odd auxiliary bit line extending in parallel relation with respect to each other,

the odd bit line of said first odd bit line pair intersecting the single twist in said first even bit line pair and extending between the respective portions of said first even bit line pair disposed on opposite sides of the single twist in said first even bit line pair, and

the odd auxiliary bit line of said first odd bit line pair being outwardly disposed with respect to the respective portions of said first even bit line pair disposed on opposite sides of the single twist in said first even bit line pair and in parallel relation thereto; and

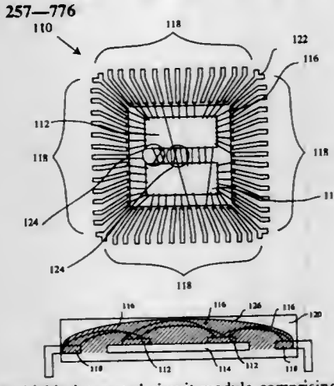
select lines for connecting a bit line or an auxiliary bit line for read or write data operation in response to a memory address, said select lines being arranged in electrically insulated registration with respect to selected bit line pair sets so as to establish an equilibrium condition with respect to parasitic capacitance existing between a select line and the bit line pair adjacent thereto.

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MULTICHIP INTEGRATED CIRCUIT MODULE WITH CROSSED BONDING WIRES

Hem P. Takiar, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 15, 1995, Ser. No. 490,776
Int. Cl.[6] H01L *23/28;23/48*
U.S. Cl. 257—776 **5 Claims**

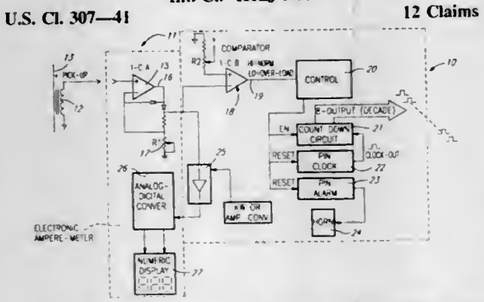


1. A multichip integrated circuit module comprising:
a multiplicity of leads;
a plurality of integrated circuit dies electrically connected to the leads;
a multiplicity of bonding wires arranged to electrically connect the integrated circuit dies to each other and to the leads wherein at least two of the bonding wires are crossed, the crossed bonding wires including a metal oxide layer formed on the crossed bonding wires that electrically insulates the crossed bonding wires to prevent short circuiting between the crossed bonding wires; and
a package surrounding the multiplicity of integrated circuit dies, the multiplicity of bonding wires, and a portion of the leads.

5,625,236
ELECTRICAL LOAD CONTROLLER TO REGULATE POWER CONSUMPTION

Gaston Lefebvre, Sherbrooke, Canada, and Réginald Paquin, 109, 2nd. Ave., Lac André,, La Plaine, Quebec, Canada, assignors to Reginald Paquin, Fleurimont, Canada

Filed Jul. 19, 1994, Ser. No. 277,095
Int. Cl.[6] H02J *1/00*
U.S. Cl. 307—41 **12 Claims**

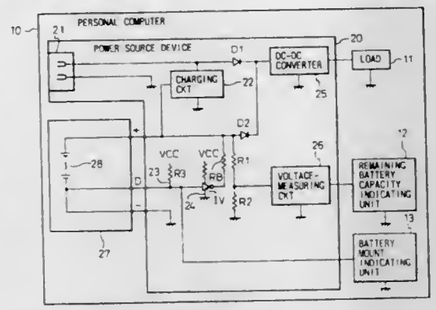


1. An electrical load controller circuit for controlling power consumption, said controller circuit being secured to a domestic electrical distribution box to which an electrical supply line is connected, said controller circuit comprising a detection circuit connected to said electrical supply line and having a redresser amplifier with an adjustable gain to produce an output signal representative amperage flowing through said supply line, a comparator circuit connected to said output signal of said detection circuit and having a reference signal for comparison with said output signal, said reference signal being an adjustable reference signal indicative of a maximum preset power consumption of loads connected to said supply line, a switching circuit network connected to said comparator circuit and having inverting circuit means operable when said output signal exceeds said reference signal, said switching circuit network incorporating a pulse generating time circuit which is connected to a step switching circuit for controlling said step switching circuit, said step switching circuit having a plurality of outputs for controlling switching means each associated with one or more electrical loads to connect and disconnect said electrical supply line thereto, said timer circuit providing clock signals to said step switching circuit to actuate said switching means associated with said plurality of outputs in a sequential manner at regular time intervals as long as said output signal is below said reference signal, and modulating means to intermittently control time periods that said electrical loads are connected to said supply line, said switching means associated with said electrical loads comprises timing circuits receiving at inputs thereof said plurality of outputs of said step switching circuit, said input timer circuits being connected to said modulating means, said modulating means having adjustable ON-OFF timers for actuating and deactuating power switches connecting said supply line to said electrical loads, thereby controlling time periods that said supply line is connected to said electrical loads, said modulator circuit being provided with two sets of ON-OFF timers which are independently programmed to have different "on" and "off" time periods dependent on daytime or nighttime operation.

5,625,237
REMOVE POWER SOURCE DEVICE HAVING IMPROVED CAPACITY INDICATION CAPABILITY, AND AN ELECTRONIC DEVICE USING THE REMOVABLE POWER SOURCE DEVICE

Mituo Saeki; Masafumi Okumura, and Hidekiyo Ozawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 29, 1995, Ser. No. 496,616
Claims priority, application Japan, Nov. 9, 1994, 6-274739
Int. Cl.[6] H02J *1/16*
U.S. Cl. 307—48 **34 Claims**

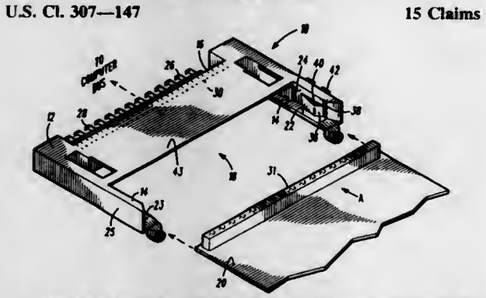


1. A power source device comprising:
first input terminals for connection to an external DC power source;
output terminals;
second input terminals for connection to a battery;
a blocking diode, connected between said output terminals and the second input terminals, said blocking diode preventing a flow of current from the external DC power source to the second input terminals via the first input terminals;
a voltage-measuring circuit for measuring a voltage across the second input terminals;
a battery mount detecting means for detecting that a battery is connected to the second input terminals; and
control means for short-circuiting the second input terminals when it is detected by the battery mount detecting means that a battery has not been connected to the second input terminals.

5,625,238
APPARATUS FOR NON-DISRUPTIVELY INTERCONNECTING PERPHERAL DEVICE MODULES WITH A HOST DEVICE

Roger W. Ady, Lisle; Charles D. Hood, III, Elmhurst, and William R. Groves, Naperville, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1995, Ser. No. 383,394
Int. Cl.[6] G06F *13/00*
U.S. Cl. 307—147 **15 Claims**



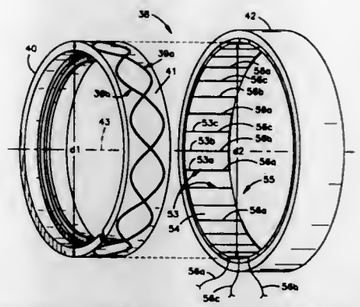
1. An apparatus for non-disruptively adding and removing peripheral device modules from a card header of a digital circuit, the digital circuit having a signal bus in communication with the card header, the card header having a three-sided frame with a set of parallel guide rails, a back rail connecting the two parallel rails, and an open end disposed opposite the back rail, the apparatus comprising:
a switch coupled to the digital circuit disposed between the back rail and the open end, the switch responsive to physical insertion and de-insertion of the module;
a plurality of mating pins mounted on the card header wherein selected mating pins of the plurality of mating pins are coupled to the signal bus and at least one selected mating pin of the card header has a first length for detecting substantially complete insertion and de-insertion of the module;
the digital circuit comprising circuitry responsive to the switch and mating pins such that the signal bus is deactivated to prevent corruption of the bus signals when the switch responds to insertion of the module, the signal bus remaining deactivated until the module is in communication with the at least one pin of first length, whereupon the signal bus is reactivated, and responsive to the switch and mating pins such that the signal bus is deactivated to prevent corruption of the signals when the module is no longer in communication with the at least one pin of first length, the signal bus remaining deactivated until the switch detects de-insertion of the module, whereupon the signal bus is reactivated.

5,625,239
METHOD AND APPARATUS FOR SENSING RELATIVE POSITION BETWEEN TWO RELATIVELY ROTATABLE MEMBERS USING CONCENTRIC RINGS

Erland K. Persson, Golden Valley, Minn.; Don Blandino, Sterling Heights, Mich.; Michael J. Boyer, Lake Orion, Mich., and Michael J. Medora, Sterling Heights, Mich., assignors to TRW Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 893,090, Jun. 3, 1992, Pat. No. 5,406,155. This application Oct. 26, 1994, Ser. No. 329,206
Int. Cl.[6] H02K *11/00;17/42;* **G01B** *7/14*
U.S. Cl. 310—68 B **21 Claims**

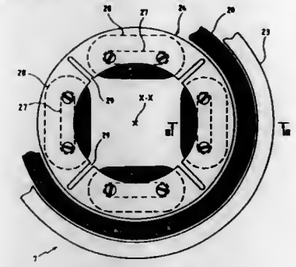
1. An apparatus for sensing the relative rotational position between first and second relatively rotatable members, comprising:
a transmitting ring being mountable to said first member, said transmitting ring having a transmitting coil mounted thereon and arranged in a circumferentially varying sinusoidal pattern; and
a receiving ring being mountable to said second member so that said transmitting ring and said receiving ring are concentric, said receiving ring having a receiving coil mounted thereon and arranged in a pattern so as to receive a signal from said transmitting ring and output a signal indicative of the relative rotational position between said first and second members.

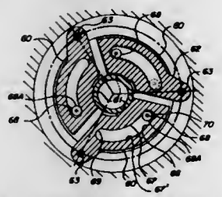


5,625,240
MAGNETIC BEARING AND MECHANICAL THRUST BEARING DEVICE FOR POSITIONING A BODY ROTATING RELATIVE TO A STATOR BODY

Christophe Bernus, Paris, France, assignor to Aerospatiale Societe Nationale Industrielle, France

PCT No. PCT/FR93/00921, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO94/07044, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 22, 1993, Ser. No. 244,180
Claims priority, application France, Sep. 22, 1992, 92 11261
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **25 Claims**





1. A device for positioning a body having a shaft and rotating about an axis relative to a stator body, said device having a locking/unlocking device comprising:
a plurality of clamps;
clamping shoes disposed on said plurality of clamps and adapted to bear radially on said shaft of said body;
means disposed at a first predetermined distance from said axis for enabling articulation of said plurality of clamps relative to said body, said means enabling articulation being equiangularly distributed around said axis;
means for pivoting said plurality of clamps about said enabling means between an unlocked configuration in which said clamping shoes are at a first predetermined maximum distance from said axis and a locked configuration in which said

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clamping shoes are at a first predetermined minimal distance from said axis such that said shaft is clamped radially;

each of said plurality of clamps having a circumferentially disposed slot having a first end located radially at a second predetermined minimal distance from said axis and a second opposite end located radially at a second predetermined maximum distance from said axis; and

said pivoting means further comprising:

an annular ring concentric with said axis of said body and being capable of an angular displacement; and

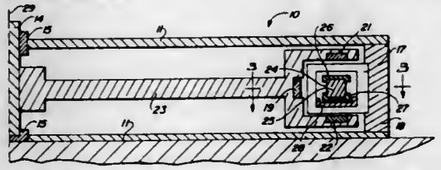
a plurality of pins extending from said annular ring and engaging said circumferentially disposed slots, said plurality of pins being at said first ends of said circumferentially disposed slots when said plurality of clamps are in said unlocked configuration and said plurality of pins being at said second opposite ends of said slots when said plurality of clamps are in said locked configuration.

5,625,241

CAROUSEL ELECTRIC GENERATOR

Harold E. Ewing, Chandler; Russell R. Chapman, and David R. Porter, both of Mesa, all of Ariz., assignors to Energy Research Corporation, Mesa, Ariz.

Filed Jul. 28, 1994, Ser. No. 281,552
Int. Cl.[6] H02K *21/12*
U.S. Cl. 310—156 **22 Claims**



1. A device for converting rotational motion into electrical current and vice versa, the device having a stator, a rotor, means for rotating said rotor, and means for transmitting electrical current, the device comprising:

said stator having a plurality of coils, each of said coils having an interior and an exterior, the interiors of said coil being oriented along the circumference of a circle, the coils being in electrical communication with the transmitting means;

said rotor having a plurality of permanent magnets, said permanent magnets being arranged in a configuration having a plurality of sectors equal to the plurality of coils, with alternating sectors being populated with one or more permanent magnets and the remaining sectors being unpopulated, said permanent magnets traversing the exterior of said coils during rotor rotation, and

a carousel being positioned to pass through the interior of said coils during rotor rotation, the carousel having carousel magnets mounted thereon wherein one or more carousel magnets correspond to each of said populated sectors, each of said carousel magnets being magnetically locked to the permanent magnets of said corresponding populated sectors.

5,625,242

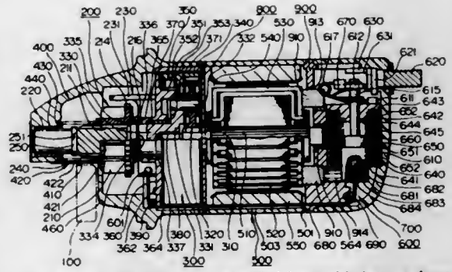
STARTER WITH SPEED REDUCTION MECHANISM

Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo, and Masami Niimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 25, 1995, Ser. No. 378,383
Claims priority, application Japan, Sep. 20, 1994, 6-225042
Int. Cl.[6] H02K *1/06;3/00;17/06*
U.S. Cl. 310—198 **10 Claims**

1. A starter for an engine having a ring gear, comprising:

a starter motor having an armature core with slots, an armature shaft that rotates integrally with said armature core, upper and



lower armature coil bars assembled into said slots, and magnetic poles disposed around an outer circumference of said armature core;

a pinion moving member having a pinion engageable with said ring gear of said engine;

an output shaft rotatably supporting said pinion moving member;

a speed reduction mechanism installed between said armature shaft and said output shaft, which conveys rotation of said armature shaft to said output shaft at a reduced speed;

a magnet switch disposed adjacent to one axial end of said starter motor for driving said pinion moving member toward said ring gear and supplying electric power to said starter motor; and

brush means disposed in direct contact with said upper armature coil bars for supplying said electric power to said upper coil bars and said lower coil bars.

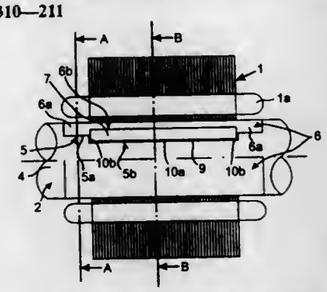
wherein each of said lower armature coil bars has a pair of lower coil ends disposed adjacent to a pair of axial ends of said armature core, respectively, and extending toward said armature shaft approximately perpendicularly to said armature shaft.

5,625,243

ROTOR CONSTRUCTION IN AN ASYNCHRONOUS ELECTRIC MACHINE

Olli Lindgren, Helsinki, and Antero Arkkio, Espoo, both of Finland, assignors to High Speed Tech Oy Ltd., Tampere, Finland

Filed Jun. 15, 1994, Ser. No. 260,738
Claims priority, application Finland, Jun. 15, 1993, 932732
Int. Cl.[6] H02K *17/16;1/22*
U.S. Cl. 310—211 **19 Claims**



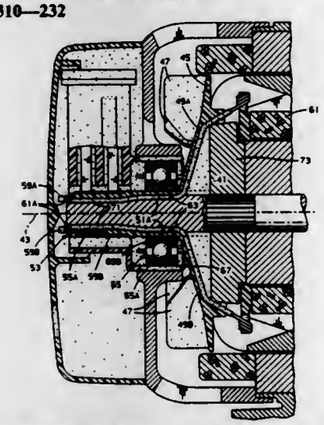
1. A rotor in an asynchronous electrical machine used in high speed applications, the rotor comprising an electrically conductive conductor surrounding a rotor shaft and located substantially adjacent to a stator of the asynchronous electrical machine, a coating layer made of a ferromagnetic particulate material having an electric conductivity substantially lower than that of the conductor, said coating layer being placed between the rotor shaft and the conductor, and a metallic intermediate layer between the coating layer and rotor shaft, said metallic intermediate layer having yield point lower than that of the coating layer and the rotor shaft.

5,625,244

FAN AND SLIP RING ASSEMBLY

Michael D. Bradfield, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 25, 1995, Ser. No. 533,574
Int. Cl.[6] H02K *13/02*
U.S. Cl. 310—232 **3 Claims**



1. A fan and slip ring assembly for a dynamoelectric machine comprising:

a rotor for said dynamoelectric machine, said rotor comprising a rotatable shaft along a longitudinal axis and a field coil having a pair of coil leads;

a fan having a central aperture through which the shaft and the pair of coil leads pass;

a pair of slip rings longitudinally spaced from said fan and having respective coupling terminals;

connecting means for connecting said fan to said pair of slip rings;

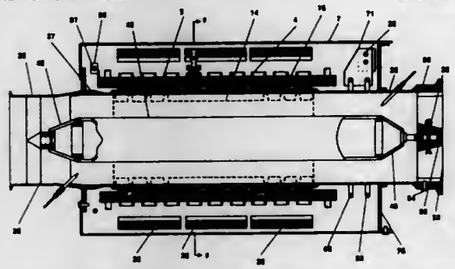
said rotor shaft and said connecting means cooperating to form a pair of closed longitudinal channels, each one of said pair of coil leads passing through a respective one of said pair of closed longitudinal channels and coupled to a respective one of said coupling terminals.

5,625,245

THERMOELECTRIC GENERATOR FOR MOTOR VEHICLE

John C. Bass, 6121 La Pintra Dr., La Jolla, Calif. 92037

Filed Oct. 19, 1993, Ser. No. 139,311
Int. Cl.[6] H02N *3/00*
U.S. Cl. 310—306 **6 Claims**



1. A thermoelectric generator for producing electric power for an engine driven motor vehicle from heat contained in the exhaust gasses from the engine of said motor vehicle comprising:

A) a heat transfer support structure, defining an inside surface and an outside surface, comprising:

1) an inlet and an outlet and a passageway in between said inlet and outlet for passage of said exhaust gasses produced by said engine,

2) a plurality of fin means located on said inside surface for improving the transfer of heat out of said exhaust gasses,

3) a plurality of thermoelectric module seat means on said outside surface for easy seating of thermoelectric module on said outside surface,

B) an exhaust flow distributor means positioned inside said passageway for distributing exhaust gas flow within said passageway,

C) a plurality of thermoelectric modules defining electrical outputs seated on said thermoelectric module seat means,

D) at least one good contact cylinder means surrounding at least a portion of said heat transfer support structure for providing a framework from which spring forces can be applied to hold said modules in good contact with the outside surface of said heat transfer support structure,

E) a plurality of module spring means for providing a spring force between said plurality of thermoelectric modules and said at least one good contact cylinder means,

F) a heat sink means for cooling one side of said plurality of thermoelectric modules, and

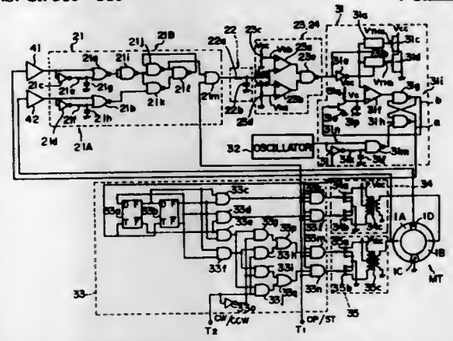
G) an electric circuit means for connecting the electrical outputs of said plurality of thermoelectric modules in order to provide electric power to said motor vehicle.

5,625,246

DRIVING CONTROL DEVICE FOR VIBRATION WAVE MOTOR

Ryoichi Suganuma, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 190,570, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 645,329, Jan. 24, 1991, abandoned, which is a continuation of Ser. No. 423,331, Oct. 17, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 472,743
Claims priority, application Japan, Oct. 19, 1988, 63-264726; Dec. 23, 1988, 63-326919
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—316 **4 Claims**



1. A control device for controlling a vibration driven motor having an elastic member, and an electro-mechanical converting element mounted on said elastic member, vibrations being generated on said elastic member by applying at least a pair of alternating voltages, of which phases are different from each other, onto said electro-mechanical converting element through an amplifier, comprising:

a duty ratio setting circuit for setting a duty ratio of pulses relating to the alternating voltages and for outputting pulses of the set duty ratio to said amplifier; and

a transformer circuit provided in said amplifier, which is driven by the output pulses from said duty ratio circuit.

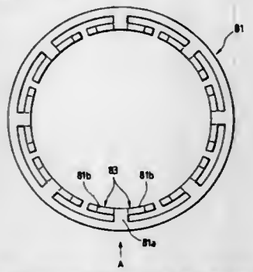
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5,625,247

VIBRATION DRIVEN MOTOR

Tsuneo Watanabe, Kawasaki; Tadao Takagi, Yokohama; Daisuke Saya, Urayasu; Ryoulchi Suganuma, Yokohama, and Kunihiro Fukino, Fujisawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 339,283, Nov. 7, 1994, Pat. No. 5,446,331, which is a continuation of Ser. No. 16,841, Feb. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 472,724
Claims priority, application Japan, Mar. 5, 1992, 4-48283
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—323 20 Claims



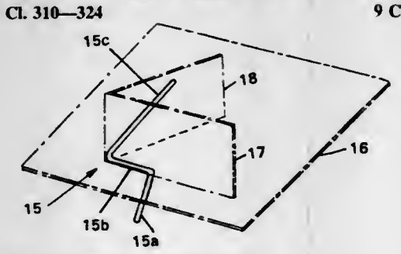
1. An ultrasonic vibration driven motor comprising:
a vibration member which generates a vibration;
a movable member driven by said vibration member; and
a pressing mechanism which presses one of said vibration member and said movable member so that said vibration member and said movable member become close to each other, said pressing mechanism including a plate portion with a small thickness along an axial direction, and a spring formed by a plurality of projections radially and axially extending from said plate portion, said projections being T-shaped, ends of said T-shaped projections pressing either said vibration member or said movable member.

5,625,248

PIEZOELECTRIC BUZZER

Shuho Saito; Isao Okada; Osamu Segawa, and Toshiaki Yamashita, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 13, 1994, Ser. No. 322,934
Claims priority, application Japan, Oct. 15, 1993, 5-258647
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—324 9 Claims



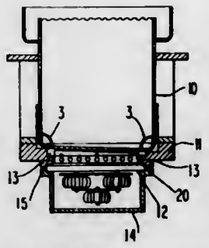
1. A piezoelectric buzzer, comprising:
A) a piezoelectric diaphragm;
B) a case for housing said diaphragm, said case having a side whose inner surface extends along a first plane;
C) a first metal terminal fixed to said case and being electrically connected to said piezoelectric diaphragm, said first metal terminal including:
(1) a terminal drawing portion extending through said side of said case in a direction which is substantially perpendicular to said first plane;
(2) a terminal fixing portion coupled to said terminal drawing portion and supported by said side of said case, said terminal fixing portion extending along a substantially straight line which lies in a second plane which is perpendicular to said first plane; and
(3) a terminal connecting portion coupled to said terminal fixing portion and extending away from said first plane along a substantially straight line which lies in a third plane which is perpendicular to said first plane and which forms an acute angle with respect to said second plane;
D) a second metal terminal fixed to said case and being electrically connected to said piezoelectric diaphragm, said second metal terminal including:
(1) a terminal drawing portion extending through said side of said case in a direction which is substantially perpendicular to said first plane;
(2) a terminal fixing portion coupled to said terminal drawing portion of said second metal terminal and supported by said side of said case, said terminal fixing portion of said second metal terminal extending along a substantially straight line which lies in a fourth plane which is perpendicular to said first plane; and
(3) a terminal connecting portion coupled to said terminal fixing portion of said second metal terminal and extending away from said first plane along a substantially straight line which lies in a fifth plane which is perpendicular to said first plane and which forms an acute angle with respect to said fourth plane.

5,625,249

MEGASONIC CLEANING SYSTEM

Robert Grant, Allentown, Pa., assignor to SubMicron Systems, Inc., Allentown, Pa.

Filed Jul. 20, 1994, Ser. No. 277,792
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—334 10 Claims



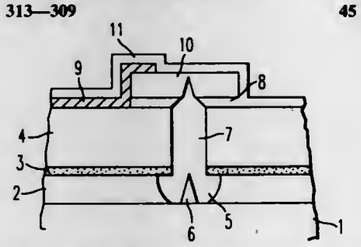
1. A megasonic cleaning system for cleaning articles such as semiconductor wafers comprising:
a cleaning tank adapted to hold cleaning liquid and an article to be cleaned in said cleaning liquid;
a transducer for converting electrical energy into acoustical energy, said transducer having at least first and second opposite sides, said transducer mounted outside of, spaced from and with said first side facing said cleaning tank, said transducer having an acoustical impedance greater than that of the cleaning liquid;
a source of oscillating electrical energy electrically coupled to said transducer for driving said transducer to produce said acoustical energy at substantially megasonic frequencies;
an impedance matching layer interposed between said first side of said transducer and said cleaning fluid, said matching layer having an acoustical impedance between that of said transducer and that of said cleaning liquid, said matching layer being coupled to said first side of said transducer, said matching layer and said cleaning tank being acoustically coupled together by an intervening liquid layer and an acoustically matched backing layer not being coupled to said second side of said transducer.

5,625,250

ELECTRONIC MICRO-COMPONENT SELF-SEALED UNDER VACUUM, NOTABLY DIODE OR TRIODE, AND CORRESPONDING FABRICATION METHOD

Didier Pribat, Paris, and Jean-Pierre Le Pesant, Gif sur Yvette, both of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 991,715, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 670,717, Apr. 10, 1991, abandoned, which is a division of Ser. No. 377,090, Jul. 7, 1989, Pat. No. 5,127,990. This application Aug. 15, 1994, Ser. No. 290,092
Claims priority, application France, Jul. 8, 1988, 88 09303
Int. Cl.[6] H01J *1/30*
U.S. Cl. 313—309 45 Claims



1. An electronic microcomponent having a stacked structure comprising:
a substrate layer;
at least one dielectric layer formed on said substrate layer;
an anode layer formed above said at least one dielectric layer;
at least one cavity formed in said at least one dielectric layer and extending partially into said anode layer, said at least one cavity being covered and self-sealed by said anode layer, and said at least one cavity being self-sealed under a vacuum;
a connecting lug connected to said anode layer; and
a microcathode having a triplet formed in each of the at least one cavity.

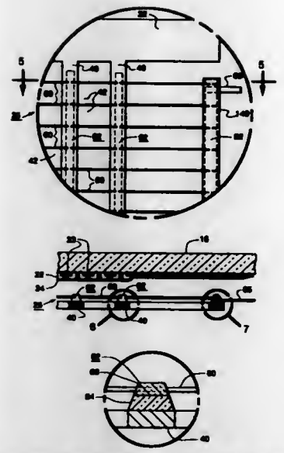
5,625,251

UNIAXIAL TENSION FOCUS MASK FOR COLOR CRT AND METHOD OF MAKING SAME

Richard W. Nosker, Princeton; Joey J. Michalchuk, Lambertville, and Dennis L. Matthies, Princeton, all of N.J., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 26, 1995, Ser. No. 509,321
Int. Cl.[6] H01J *9/18*
U.S. Cl. 313—403 11 Claims

1. A color cathode-ray tube comprising an evacuated envelope having therein an electron gun for generating at least one electron beam, a faceplate panel having a luminescent screen with phosphor lines on an interior surface thereof, and a uniaxial tension focus mask having a plurality of spaced-apart first metal strands which are adjacent to an effective picture area of said screen and define a plurality of slots substantially parallel to said phosphor lines, each of said first metal strands across said effective picture area having a substantially continuous first insulator layer on a screen-facing side thereof, a second insulator layer overlying said first insulator layer, and a plurality of second metal strands oriented substantially perpendicular to said first metal strands, said second metal strands being bonded by said second insulator layer.

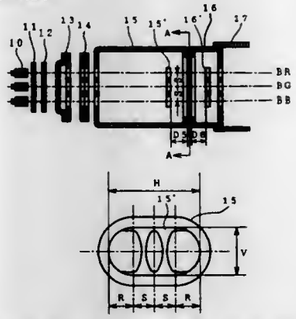


5,625,252

MAIN LENS STRUCTURE FOR A COLOR CATHODE RAY TUBE

Mamoru Tsuzurahara, and Shoji Shirai, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,465
Claims priority, application Japan, Mar. 1, 1994, 6-031478
Int. Cl.[6] H01J *29/50*
U.S. Cl. 313—414 9 Claims



1. A color cathode ray tube comprising an electron gun having electron beam emitting means for emitting three electron beams including one center electron beam and two side electron beams generally disposed in parallel in one direction toward a fluorescent face; and a main lens for focusing said three electron beams upon said fluorescent face,
wherein the main lens of said electron gun includes two electrodes arranged to confront each other with flattened apertures such that a diameter H taken in said one direction is larger than a diameter V taken perpendicularly to said one direction,
wherein the orbits of the two side ones of said three electron beams passing through said main lens are spaced by a constant gap S from the orbit of said center electron beam, and
wherein the relations of H=2(S+R) and R>S hold, in an aperture end portion of the two electrodes of the main lens arranged to confront each other, with the distance between the orbits of said two side electron beams and the inner circumference, as taken in said one direction, of said electrodes constituting said main lens being designated as R.

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5,625,253

FLAT-PANEL TYPE PICTURE DISPLAY DEVICE

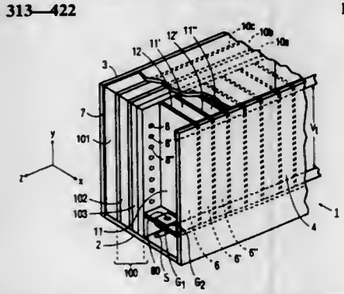
Gerardus G. P. Van Gorkom; Siebe T. De Zwart; Petrus H. F. Trompenaars, and Nicolaas Lambert, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 23,520, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 830,951, Feb. 6, 1992, Pat. No. 5,313,136, which is a continuation of Ser. No. 528,677, May 24, 1990, abandoned, said Ser. No. 23,520is a continuation-in-part of Ser. No. 954,949, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 637,039, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,677, said Ser. No. 23,520is a continuation-in-part of Ser. No. 223,962, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 715,072, Jun. 13, 1991, abandoned. This application Sep. 8, 1994, Ser. No. 303,555

Claims priority, application European Pat. Off., Mar. 12, 1992, 92200709; Aug. 19, 1992, 92202542

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—422 14 Claims



1. A picture display device having a vacuum envelope which is provided with a transparent face plate with a luminescent screen and with a rear wall, said display device comprising a plurality of juxtaposed sources for emitting electrons, a plurality of electron transport ducts cooperating with the sources and extending substantially parallel to the face plate for transporting said electrons in the form of electron currents, and an active selection structure for withdrawing each electron current at predetermined locations from its transport duct and for directing said current towards desired pixels of the luminescent screen, characterized in that the active selection structure comprises a preselection structure having extraction locations which can be activated and communicate row by row with the transport ducts and a selection plate having apertures which can be activated and are each associated with a pixel, and in that an apertured obstruction plate is arranged between the preselection structure and the selection plate, each aperture of the obstruction plate communicating with an activatable extraction location of the preselection structure and at least two activatable apertures of the selection plate.

5,625,254

FLUORESCENT CHARACTER DISPLAY TUBE WITH VIBRATION PREVENTION STRUCTURE

Shinichi Hamada, Kagoshima, Japan, assignor to NEC Corporation, Tokyo, Japan

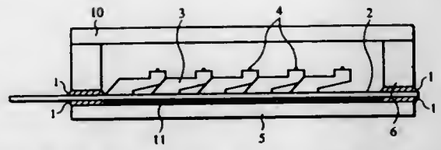
Filed Jun. 16, 1995, Ser. No. 491,216

Claims priority, application Japan, Jun. 21, 1994, 6-138843

Int. Cl.[6] H01J *63/06*

U.S. Cl. 313—493 6 Claims

1. In a fluorescent character display tube comprising an anode base plate; a frame spaced above said anode base plate, a filament-supporting member welded on said frame, and means sealingly interconnecting marginal portions of said base plate to said frame; the improvement comprising a fixing layer disposed between said



frame and said anode base plate and securely fixing said frame to said anode base plate in central regions of said frame.

5,625,255

INORGANIC THIN FILM ELECTROLUMINESCENCE DEVICE

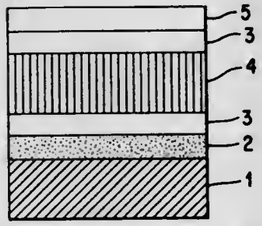
Masao Watanabe, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 136,770

Claims priority, application Japan, Dec. 25, 1992, 4-358048; Dec. 25, 1992, 4-358049

Int. Cl.[6] H01J *1/62*

U.S. Cl. 313—506 16 Claims



1. An inorganic thin film EL device which comprises a substrate, a light emission layer sandwiched between paired insulating layers, said insulating layers sandwiched between a pair of electrode layers, said substrate approximating one layer of the pair of electrode layers and arranged such that light emitted from the light emission layer is taken out from one side of the light emission layer, the light emission layer being made of composition having a formula $M_{1-x}F_{2+y}$:RE, wherein M represents a metal of group II of the Periodic Table, x is a value ranging from 0.001 to 0.0, F represents fluoride, y is a value ranging from 0.001 to 1.8 and RE represents a rare earth element.

5,625,256

HIGH-PRESSURE DISCHARGE LAMP HAVING A CERAMIC DISCHARGE VESSEL, SINTERED BODY SUITABLE THEREFOR, AND METHOD FOR PRODUCING THE SINTERED BODY

Rita Tiedt; Helmut Weske, both of Berlin, Germany; Koichiro Maekawa, Ichinomiya, and Junichi Doi, Aichi, both of Japan, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany, and NGK Insulators, Ltd., Nagoya, Japan

Filed Nov. 29, 1994, Ser. No. 346,424

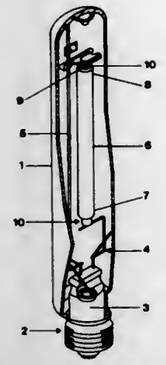
Claims priority, application European Pat. Off., Dec. 10, 1993, 93119959

Int. Cl.[6] C04B *35/10;* H01J *61/30*

U.S. Cl. 313—636 22 Claims

1. An optically translucent polycrystalline sintered body suitable as a discharge vessel for lamps and comprising alumina doped substantially with oxides of magnesium and zirconium,

wherein, in accordance with the invention,



the sintered body is formed of alumina and doping materials which consist essentially of the following components (in ppm by weight):

MgO	100–800 ppm
ZrO_2	200–1200 ppm
Y_2O_3	10–300 ppm.

5,625,257

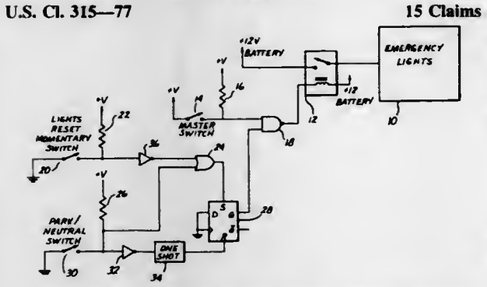
EMERGENCY VEHICLE LIGHT SWITCHING AND CONTROLLING CIRCUIT

Ewing D. Nunn, Yorba Linda, Calif., assignor to Dunbar-Nunn Corporation, Anaheim, Calif.

Filed Aug. 11, 1995, Ser. No. 514,301

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 315—77 15 Claims



1. An emergency vehicle lighting system wherein emergency lights are controlled for an emergency vehicle comprising:

one or more emergency vehicle lights;

a source of power connected to said one or more emergency vehicle lights;

switch means in association with said emergency vehicle which is operable by movement of said emergency vehicle transmission shifter;

electronic circuit means for disconnecting power to an one or more emergency lights when said emergency vehicle shifter is shifted into a park or neutral position;

a master switch means connected to said emergency vehicle lights for selectively lighting said emergency vehicle lights; and,

resetting means connected to said electronic circuit means for resetting said emergency vehicle lights when said emergency vehicle transmission shifter is in the park or the neutral position.

5,625,258

CLOCKED POWER SUPPLY

Karl-Heinrich Preis, Bühlertal, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

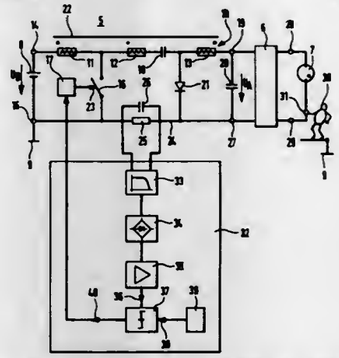
PCT No. PCT/DE94/01446, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO95/17032, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 3, 1994, Ser. No. 492,116

Claims priority, application Germany, Dec. 14, 1993, 43 42 590.9

Int. Cl.[6] B60Q *1/02*

U.S. Cl. 315—82 9 Claims



1. A clocked power supply, in particular for operating gas discharge lamps, having a voltage converter which is clocked by a switching signal and contains a line in which the alternating operating current of the clocked voltage converter flows, the frequency of which alternating operating current is equal to the frequency of the switching signal, having a fault current detection means which evaluates a voltage drop occurring at an ohmic measuring resistor and which emits a switch-off signal to the voltage converter, wherein the ohmic measuring resistor is arranged in the line which conducts the alternating operating current, and wherein means, which bridge said ohmic measuring resistor, are provided for suppressing the portion of the voltage drop which occurs across the ohmic measuring resistor and whose frequency corresponds to that of the switching signal.

5,625,259

MICROWAVE PLASMA APPLICATOR WITH A HELICAL FLUID COOLING CHANNEL SURROUNDING A MICROWAVE TRANSPARENT DISCHARGE TUBE

William M. Holber, Cambridge; Donald K. Smith, Belmont; Matthew M. Besen, Tewksbury, all of Mass.; Matthew P. Fitzner, Nashua, N.H., and Eric J. Georgelis, Canton, Mass., assignors to Applied Science and Technology, Inc., Woburn, Mass.

Filed Feb. 16, 1995, Ser. No. 389,243

Int. Cl.[6] H05H *1/46*

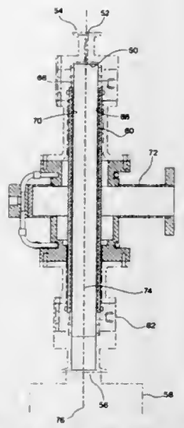
U.S. Cl. 315—111.21 23 Claims

1. A fluid-cooled plasma applicator comprising:

a discharge tube substantially transparent to microwave and RF energy; and

a cooling member formed from an insulating material and surrounding the tube defining (i) a channel formed along an inner surface of the member and encircling an outer surface of the tube in a helical path for transporting a microwave or RF absorbing cooling fluid over the outer surface of the tube, and (ii) a medium adjacent to the channel which allows an electric field oriented parallel to a longitudinal axis extending through

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the center of the tube to enter the tube and sustain a plasma in the tube while the fluid is flowing through the channel.

5,625,260

SYSTEMS AND METHODS FOR TRANSMITTING PULSE SIGNALS

Lars Millgard, Ostersund, Sweden, assignor to Airport Technology in Scandinavia AB, Sweden

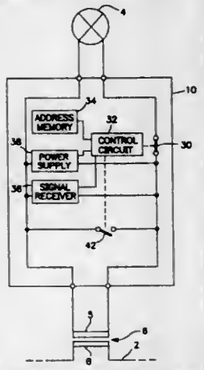
PCT No. PCT/SE93/00994, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO94/13119, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 436,366

Claims priority, application Sweden, Nov. 20, 1992, 9203491-7; Jan. 22, 1993, 9300193-1

Int. Cl.[6] H01J *1/60*

U.S. Cl. 315—136 **25 Claims**



1. A method for communicating from a secondary side of an isolation transformer to receiver means in a system including a primary of said transformer connected via a power cable to a circuit fed with a periodic voltage from a constant current generator, said receiver means being connected to said circuit and said secondary side including a load comprising:

generating high frequency communicating pulse signals by pulse wise affecting an impedance of the secondary side by means of a switch in series with the load, thereby changing the load on the secondary side while current is flowing through it during a short time period in comparison to the period of the current, controlled by a control circuit, whereby a voltage pulse will appear across the primary of said transformer during said short time;

and transferring said voltage pulse to the primary winding of the transformer as said pulse signals for propagation along the cable to said receiver means while current is flowing through the transformer during said period.

5,625,261

STABILIZING CIRCUIT FOR STABILIZING THE HORIZONTAL PICTURE SIZE ON THE DISPLAY OF A TELEVISION RECEIVER

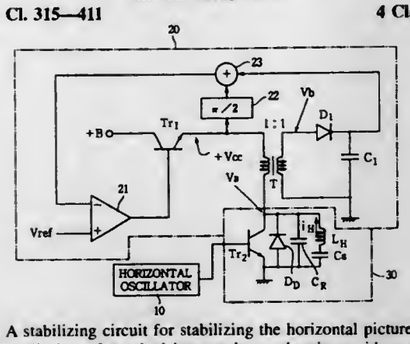
Tsutomu Ogawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,393

Claims priority, application Japan, Feb. 23, 1995, 7-035339

Int. Cl.[6] H01J *29/70*

U.S. Cl. 315—411 **4 Claims**



1. A stabilizing circuit for stabilizing the horizontal picture size on the display of a television receiver, wherein a video signal containing a horizontal synchronizing signal having a horizontal scanning frequency is inputted, said stabilizing circuit comprising:

a horizontal output circuit including a horizontal output transistor and a horizontal deflection coil for receiving a signal sychronizing with said horizontal synchronizing signal and corresponding to said horizontal scanning frequency and for supplying a horizontal deflection current;

a power source for supplying an electric power to the above horizontal output circuit;

a control transistor connected between the power source and the horizontal output transistor;

an output voltage generating circuit for generating an output voltage corresponding to an output pulse from the horizontal output transistor;

a multiplier for multiplying the output from the control transistor with a predetermined multiple;

an adder for adding together the output from the multiplier and the output from the output voltage generating circuit, thereby controlling the control transistor by virtue of the output from the adder.

5,625,262

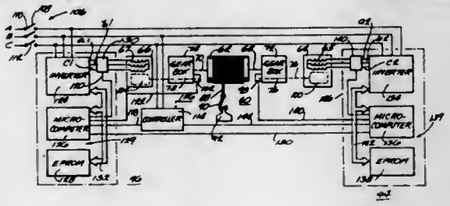
SYSTEM FOR EQUALIZING THE LOAD OF A PLURALITY OF MOTORS

Robert J. Lapota, Greenfield, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Jan. 3, 1996, Ser. No. 582,405

Int. Cl.[6] H02P *5/50*

U.S. Cl. 318—71 **11 Claims**



1. A system for equalizing the torque of at least two A.C. motors driving the same load, comprising:

a first one of the two motors including a first stator winding and a first rotor having a rotating speed, the second one of the two motors including a second stator winding and a second rotor having a rotating speed, the stator windings and rotors each conducting current having a vector representative of the magnitude and angular position of the current in the respective rotor or stator winding;

stator current sensing means for producing an indication of the magnitude of the stator flux current vector in each of the first and second stator windings;

encoder means for sensing the rotating speed of the first and second rotors and producing an indication of each such speed;

first torque control means responsive to the indications of the magnitude of the first stator winding current vector and the speed of the first rotor for controlling the magnitude of the torque of the first motor to be at a maximum value at the rotating speed of the first rotor, the first torque control means further producing an indication of the magnitude of the torque of the first motor; and

second torque control means receiving and being responsive to the indication of the magnitude of the torque of the first motor and the indications of the magnitude of the second stator winding current vector and the speed of the second rotor for controlling the magnitude of the torque of the second motor to be substantially the same as the magnitude of the torque of the first motor.

5,625,263

DRIVING DEVICE FOR ULTRASONIC WAVE MOTOR

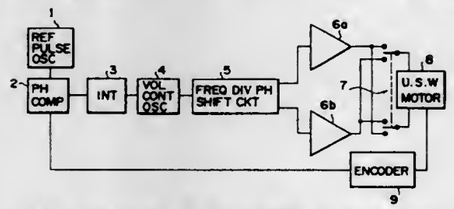
Ryoichi Suganuma, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 192,952, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 850,257, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 536,300, Jun. 11, 1990, abandoned. This application Feb. 28, 1995, Ser. No. 396,324

Claims priority, application Japan, Jun. 15, 1989, 1-153114

Int. Cl.[6] H01L *41/08*

U.S. Cl. 318—116 **15 Claims**



1. A driving device for an ultrasonic vibration motor, comprising:

a vibration element having an electro-mechanical converting element and an elastic member, and adapted to generate vibration in said elastic member by excitation with said electro-mechanical converting element;

a relative moving element maintained in pressure contact with said vibration element and driven by said vibration;

a reference pulse oscillator circuit which generates reference pulses of a frequency determined corresponding to a requested speed of said relative moving element;

an encoder which generates output pulses in response to an amount of movement of said relative moving element;

a phase difference signal generating circuit which compares a phase of the output pulses generated by said encoder with a phase of the reference pulses generated by said reference pulse oscillator circuit to generate a phase difference signal corresponding to a phase difference between said reference pulses and said output pulses; and

a control circuit which controls frequency of voltage signals to be applied to said electro-mechanical converting element based on said phase difference signal.

5,625,264

SYSTEM FOR CONTROLLING A BRUSHLESS DC MOTOR

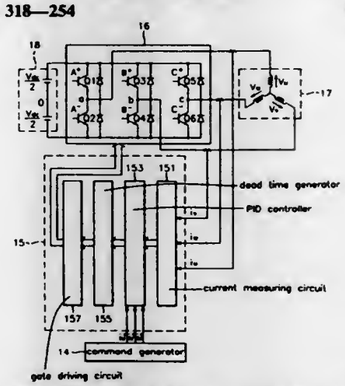
Sung-jung Yoon, Kyunggi-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jan. 24, 1995, Ser. No. 377,431

Claims priority, application Rep. of Korea, May 31, 1994, 94-12091

Int. Cl.[6] H02P *6/00*

U.S. Cl. 318—254 **9 Claims**



1. A system for controlling a brushless DC motor, comprising,

first means for producing a current command signal by multiplying data representing a wave form of the current command signal in one-to-one correspondence with position information by a selected peak amplitude of the current command signal;

second means for controlling actual current in the motor to follow the current command signal produced from said first means by a feedback error correction signal including proportional, integral, and differential elements, said feedback error correction signal having a bi-level output for turning current ON or OFF, the second means including a sawtooth comparator providing the proportional element as a relatively high-gain element, and including means for providing dead time in the feedback error correction signal of an amount such that some high frequency ripple is not responded to in the feedback error correction signal; and

third means for controlling switching elements to be turned ON/OFF by the feedback error correction signal produced from said second means and for passing a desired amount of correction current to be applied to three-phase coils in the motor by a power supply unit.

5,625,265

COMPACT, HIGH EFFICIENCY ELECTRONIC MOTOR CONTROLLER WITH ISOLATED GATE DRIVE FOR POWER TRANSISTORS

Saso P. Vlahu, Munster, Ind., assignor to Kollmorgen Corporation, Waltham, Mass.

Filed Jun. 7, 1995, Ser. No. 473,214

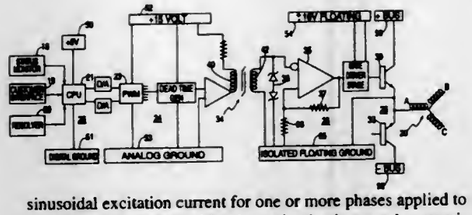
Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—254 **2 Claims**

1. A controller for a brushless motor comprising:

an electronic pulse width modulator for providing signals indicating pulse width for one or more pulse trains for creating

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sinusoidal excitation current for one or more phases applied to said brushless motor, said pulse trains having a pulse repetition rate greater than 6,000 Hertz;

a saturable pulse transformer coupled

to receive a pulse train from said pulse width modulator, and

to pass through voltage spikes corresponding to the leading and trailing edges of pulses in said pulse train indicating pulse width as said saturable transformer goes into and out of saturation;

one or more power transistors coupled to said brushless motor for controlling current flow to said motor according to the conductive state thereof; and

a gate drive coupled to control the conductive state of said power transistors, said gate drive being connected to said saturable pulse transformer to receive said voltage spike corresponding to said leading and trailing edges, said gate drive being capable of generating a rectangular pulse having a width corresponding to said leading and trailing edges; and

wherein said saturable pulse transformer has an interwinding capacitance less than 1 picofarad.

5,625,266

SLIDING DOOR WITH A DRIVE MOTOR SYSTEM AND CONTROL AND REGULATION FOR A DOOR DRIVEN BY AN ELECTROMECHANICAL MOTOR

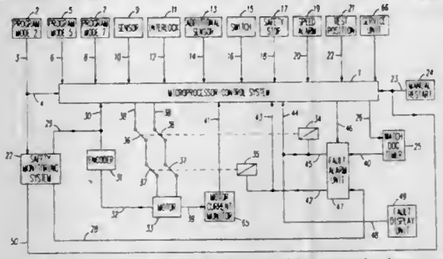
Jürgen Stark, Hattingen, Germany, assignor to DORMA GmbH & Co. KG, Ennepetal, Germany

Filed Jul. 28, 1995, Ser. No. 527,823

Claims priority, application Germany, Nov. 30, 1993, 43 40 715.2

Int. Cl.[6] E05F *15/20*

U.S. Cl. 318—466 **20 Claims**



1. An automatic door for a building, said automatic door comprising:

door means;

means for opening and closing said door means;

means for operating said door opening and closing means;

sensor means for producing operating signals to control the operation of said door opening and closing means;

said sensor means comprising means for determining an unsafe operating condition of said automatic door;

said means for determining an unsafe operating condition comprising means for producing safety-related signals;

electronic controller means for controlling the operation of said door opening and closing means;

means for providing the operating signals to said electronic controller means;

means for providing the safety-related signals to said electronic controller means;

said electronic controller means comprising means for operating said door opening and closing means in response to the operating signals;

said electronic controller means comprising first means for de-activating said door opening and closing means;

said first means for de-activating said door opening and closing means comprising means for de-activating said door opening and closing means in response to the safety-related signals;

second means for de-activating said door opening and closing means;

said second means for de-activating said door opening and closing means comprising a safety monitoring system;

means for providing the safety-related signals to said safety monitoring system;

said safety monitoring system comprising means for evaluating the safety-related signals based on predetermined parameters;

said evaluating means comprising means for determining a fault condition; and

said second means for de-activating said door opening and closing means comprising means for de-activating said door opening and closing means in response to a fault condition.

5,625,267

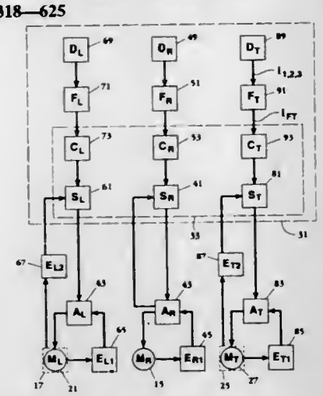
CONSTANT DELAY FILTERING FOR SYNCHRONIZED MOTION ON MULTIPLE AXES

Raymond D. Gregory, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Dec. 13, 1995, Ser. No. 571,443

Int. Cl.[6] G05B *11/32*

U.S. Cl. 318—625 **5 Claims**



1. A constant delay filter system for synchronizing motion on multiple axes in a linear feedback servo control system in which a first servo loop controls operation of a first drive mechanism causing motion on one axis at relatively high frequencies and a second servo loop controls operation of a second drive mechanism causing motion on another axis at relatively low frequencies comprising:

a first constant delay filter filtering an input signal to the first servo loop and having an amplitude response curve which is substantially an inversion of an amplitude response curve of the first servo loop over the relatively high frequencies; and

a second constant delay filter filtering an input signal to the second servo loop and having a phase lag response curve substantially the same as a phase lag response curve of said first constant delay filter.

5,625,268

STEPPING MOTOR DRIVE UNIT

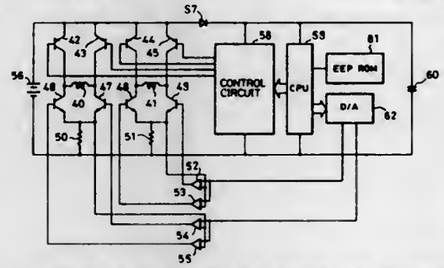
Hiroshi Miyanari, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 275,747

Claims priority, application Japan, Jul. 29, 1993, 5-207312

Int. Cl.[6] H02P *8/00*

U.S. Cl. 318—696 **6 Claims**



1. A stepping motor drive unit for a stepping motor including a driven member rotatable in a first direction or a second direction opposite the first direction, and having a first load torque when driven in the first direction and a second load torque when driven in the second direction, the drive unit comprising:

at least two energizing coils;

at least two bridge circuits for providing respective current flow through said energizing coils in forward and reverse flow directions, each of said bridge circuits including a plurality of transistors for switching the current flow between the forward and reverse flow directions;

control means for selectively switching said plurality of transistors in accordance with a direction of rotation of the driven member, so that current flows through said energizing coils in either the forward or reverse flow direction; and

current setting means for setting a value of current flow through said energizing coils in accordance with

current setting means for setting a value of current flow through said energizing coils in accordance with the direction of rotation of the stepping motor,

wherein said current setting means includes a memory in which first and second current value data corresponding to the first and second load torques of a stepping motor are stored, and reference voltage setting means for feeding current value data read from said memory as a reference voltage value to said bridge circuits so that a predetermined current corresponding to a selected one of said first and second current value data will flow through said energizing coils.

5,625,269

STEPPING MOTOR CONTROL SYSTEM AND RECORDING APPARATUS USING THE SAME

Tetsuhito Ikeda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1995, Ser. No. 447,753

Claims priority, application Japan, May 24, 1994, 6-133805

Int. Cl.[6] H02P *8/00*

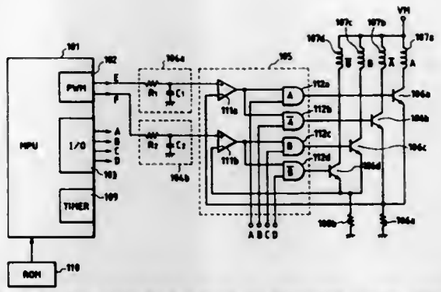
U.S. Cl. 318—696 **16 Claims**

1. A stepping motor control system, comprising:

a stepping motor;

a driving circuit for driving said stepping motor, said driving circuit, in response to each supplied step driving signal, changing-over a phase of excitation current supplied to an excitation coil of said stepping motor and controlling the excitation current in accordance with an applied voltage signal;

a step driving signal generation portion for supplying the step driving signal to said driving circuit to drive said stepping motor;



a pulse signal generation portion for generating a pulse signal whose duty ratios are set

a memory for storing a plurality of duty ratio data of the pulse signal;

a control portion for varying the duty ratio of the pulse signal generated by said pulse signal generation portion in accordance with a plurality of the duty ratio data stored in said memory, said control portion dividing a single step driving of said stepping motor into a plurality of sections in which the duty ratio of the pulse signal is varied in each of the plurality of sections to form a staircase-like pulse voltage level; and

a low-pass filter for converting the staircase-like pulse voltage level successively output from said pulse signal generation portion into a smooth and substantially continuous applied voltage signal, said low-pass filter supplying said applied voltage signal to said driving circuit to control the driving current of said stepping motor.

5,625,270

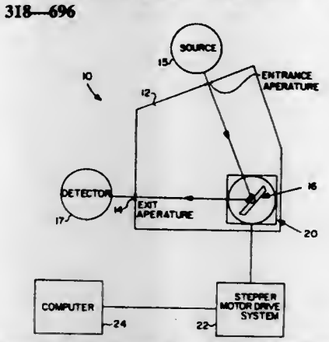
SCANNING MONOCHROMATOR WITH DIRECTLY DRIVEN SPECTRAL-DISPERSION ELEMENT

Bruce Barker, Fort Collins, Colo., assignor to Hach Company, Loveland, Colo.

Filed Feb. 29, 1996, Ser. No. 608,765

Int. Cl.[6] H02P *8/30*; G01J *3/12*

U.S. Cl. 318—696 **9 Claims**



1. A method for controlling a stepper motor having two phase winding and an output shaft which is directly connected to a spectral-dispersion element of a monochromator, the method comprising the steps of:

(a) providing first and second electrical currents to said two phase winding; and

(b) controlling the ratio of said first current to said second current; and

(c) obtaining a desired wavelength of the monochromator by the controlling step (b).

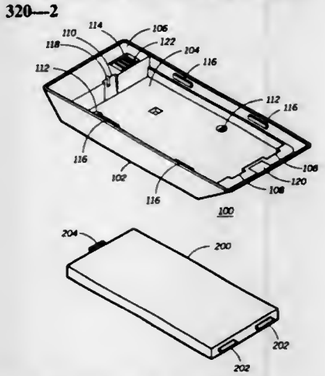
VOL 1197 ISS 5 AP 29 1997 UMI

5,625,271

BATTERY CHARGER ADAPTER AND METHOD THEREFOR

Steven C. Shapiro, Lake Worth; Eugene R. Fay, Delray Beach, and Charles R. McMurray, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1995, Ser. No. 546,476
Int. Cl.[6] H02J *7/00;* **H01M** *10/46;2/10*
U.S. Cl. 320—2 **6 Claims**



5. A battery charger adapter, comprising:

a housing receptacle formed as a battery for a cellular telephone, said housing receptacle, comprising:

a recessed portion formed in a base surface of the housing receptacle for receiving a battery pack to be charged;

at least one holding clip for securing the battery pack in the recessed portion, said at least one holding clip, comprising:

at least one retaining means; and

an opening oppositely located to the at least one retaining

means for securing the battery pack, the opening further comprises a latching means for latching the battery pack in the recessed portion;

an electrical coupler for coupling the battery pack to the housing receptacle, the electrical coupler comprises two battery contacts for making electrical contact to the battery pack when the battery pack is secured in the recessed portion; and

an access port, coupled to the electrical coupler, for electrically coupling the housing receptacle to a charger for enabling the battery pack to be charged in the battery charger adapter.

5,625,272

BATTERY CHARGE/DISCHARGE CONTROL METHOD FOR ELECTRIC VEHICLE

Tsutomu Takahashi, Oota, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

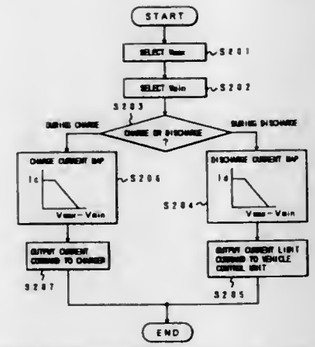
Filed Nov. 2, 1995, Ser. No. 556,844
Claims priority, application Japan, Nov. 9, 1994, 6-275346
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—6 **8 Claims**

1. A method of controlling charge or discharge of a battery for an electric vehicle, said method comprising the steps of:

dividing the battery into a plurality of blocks each having a plurality of cells for constituting the battery in all;

detecting terminal voltages (V_n) of the divided blocks, respectively, to obtain a difference (V_{max}–V_{min}) in voltage between a maximum value (V_{max}) and a minimum value (V_{min}) from among the detected terminal voltages of the respective divided blocks; and

controlling the charge or discharge of the battery (4) on the basis of the obtained difference (V_{max}–V_{min}) in voltage between the



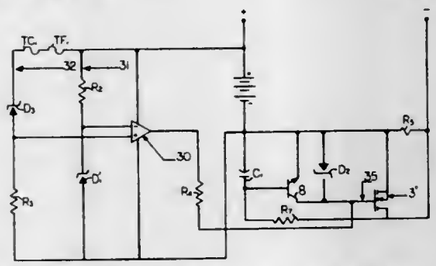
maximum and minimum values (V_{max}, V_{min}) of the terminal voltages (V_n) of the divided blocks.

5,625,273

BATTERY SAFETY DEVICE

John R. Fehling, New Hyde Park; Charles Meierdierck, Huntington Station, and Donald F. Fagon, Mount Vernon, all of N.Y., assignors to Bren-Tronics Inc., Commack, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,833
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—13 **9 Claims**



1. A protection device for an electrochemical cell or battery of electrochemical cells, said device comprising a circuit having gating transistor and latching means, wherein the gating transistor is in series with a discharge circuit of said cell or battery, whereby under an untoward battery discharge condition, the gating transistor is latched by the latching means into an open, off position, to shut down battery discharge, until reset by removal of a load in the discharge circuit and wherein the latching means comprises a gate circuit separate from the discharge circuit whereby discharge conditions do not affect said latching, wherein said gate circuit comprises one or more thermal switches, said untoward battery discharge condition is excessive heat, and wherein the one or more thermal switches effect said latching.

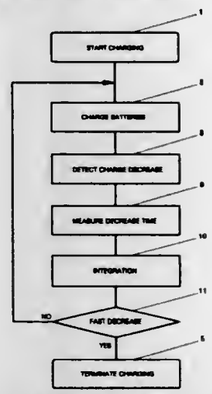
6. A method of protecting a battery of cells against detrimental effects of short circuit, voltage reversal and heat generation conditions from battery discharge conditions, said method comprising the steps of providing a transistor in the battery discharge circuit and providing said transistor with a gate circuit separate from said battery discharge circuit, said gate circuit comprising detector means for said short circuit, voltage reversal and heat generation conditions, and wherein said detector means trigger a signal in the gate circuit to latching means which latch said transistor in the open, off condition.

5,625,274

METHOD FOR FAST CHARGING OF DIFFERENT TYPES OF BATTERIES

Matti Naskali, Yliskulma, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland

Filed Nov. 8, 1995, Ser. No. 555,206
Claims priority, application Finland, Nov. 11, 1994, 945309
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—23 **8 Claims**



1. A method for charging a battery wherein the charging of the battery voltage is terminated when the battery is fully charged and the voltage of the battery begins to decrease, comprising the steps of:

step 1, a voltage decrease $-\Delta V$ of a battery;

step 2, measuring 9 length of the time during which the voltage decrease is detected,

step 3, integrating the detected voltage decrease $-\Delta V$ over the measured length of time of step 2,

step 4, comparing the integrated detected voltage decrease of step 4 to a predetermined total value, and

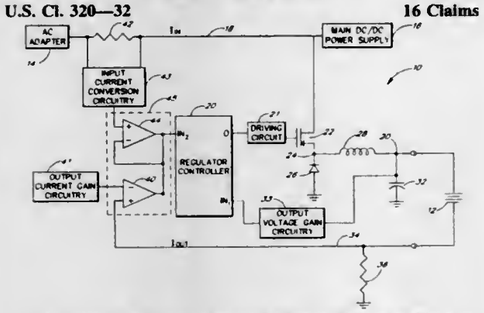
step 5, terminating the charging of the battery when the integrated detected voltage decrease exceeds the predetermined total value.

5,625,275

POWER SUPPLY WHICH PROVIDES A VARIABLE CHARGING CURRENT TO A BATTERY IN A PORTABLE COMPUTER SYSTEM

Roy Tanikawa, Irvine, and Hien Le, Garden Grove, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Filed May 24, 1995, Ser. No. 449,534
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—32 **16 Claims**



1. A power supply for recharging a battery in a portable computer system from a conventional AC adapter, said power supply comprising:

a conventional AC adapter which supplies input current, said input current comprising a system current for operating said computer

system and a charging current for charging said battery, said AC adapter having a substantially constant DC output voltage across first and second terminals of said AC adapter, said AC adapter supplying said input current via said first and second terminals;

a first sensor connected to measure a level of said input current supplied by said AC adapter to said computer system and to said battery, said input current having a first maximum limit;

a second sensor connected to measure a level of said charging current supplied to said battery, said charging current having a second maximum limit;

a third sensor connected to measure an output voltage level of said battery, said output voltage level having a third maximum limit;

a controller connected to said first, second and third sensors, wherein said controller monitors said input current level, said charging current level, and said output voltage level and generates a control signal responsive to said input current level, said charging current level and said output voltage level; and

a charging current control circuit connected to receive said control signal from said controller, said control circuit further being connected between said AC adapter and said battery to control charging current flow between said AC adapter and said battery based upon said control signal generated by said controller, said controller generating said control signal to cause said control circuit to block charging current flow when at least one of said input current level, said charging current level and said output voltage level exceeds its respective maximum limit, said controller generating said control signal to cause said control circuit to provide charging current at a variable level when all of said input current level, said charging current level and said output voltage level are less than said respective maximum limits, said variable charging current level controlled to cause said input current level to be maintained approximately at said first maximum limit as long as said second maximum limit and said third maximum limit are not exceeded.

15. A method of regulating the amount of charging current supplied to a rechargeable battery by a regulator in a portable computer system, wherein said computer system includes a conventional AC adapter which supplies input current, said input current including a system current for operating said computer system and a charging current for charging said battery, said method comprising the steps of:

sensing a level of said input current supplied by said AC adapter;

sensing a level of said charging current supplied to said battery;

sensing a level of an output voltage of said regulator;

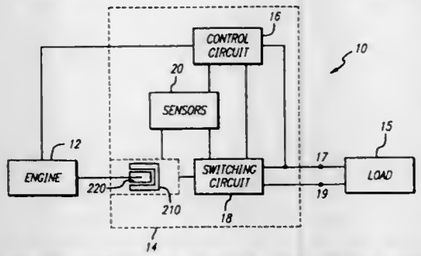
comparing said input current level with a maximum input current level, comparing said charging current level with a maximum charging current level, and comparing said output voltage level with a maximum output voltage level;

generating a control signal responsive to results of said comparing steps; and

controlling charging current flow from said AC adapter to said battery based upon said control signal, said control signal adjusted in response to changes in said system current to cause said charging current to have a level selected to maintain said input current level approximately equal to said maximum input current level as long as said charging current level is less than said maximum charging current level and said output voltage level is less than said maximum output voltage level.

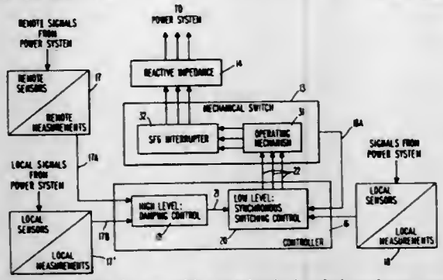
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5,625,276
CONTROLLER FOR PERMANENT MAGNET GENERATOR
Harold C. Scott, and William Anderson, both of Alamogordo, N.M., assignors to Coleman Powermate, Inc., Kearney, Nebr.
Continuation-in-part of Ser. No. 322,012, Oct. 11, 1994, abandoned, and Ser. No. 306,120, Sep. 14, 1994. This application Jan. 9, 1995, Ser. No. 370,577
Int. Cl.[6] H02P 9/00
U.S. Cl. 322—24 **150 Claims**



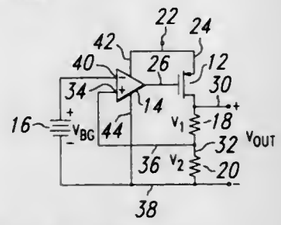
1. A control system for a generator, said generator having a plurality of substantially magnetically independent windings generating electricity and a connector for connecting a load to the windings, comprising:
- a plurality of switches, wherein each of said switches is connected between one of the generator windings and the load connector such that said switch may connect and disconnect the windings to the load connector; and
- a controller connected to said plurality of switches for selectively activating and deactivating said switches to vary the number of windings connected to the load connector in accordance with an operating parameter of the generator.

5,625,277
DYNAMIC MECHANICALLY SWITCHED DAMPING SYSTEM AND METHOD FOR DAMPING POWER OSCILLATIONS USING THE SAME
Aftab H. Khan; Willie K. Wong, both of Cary; Kevin J. Timko, Apex, and John G. Reckleff, Raleigh, all of N.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.
Filed Jan. 30, 1995, Ser. No. 379,920
Int. Cl.[6] H02P 9/00
U.S. Cl. 322—58 **24 Claims**



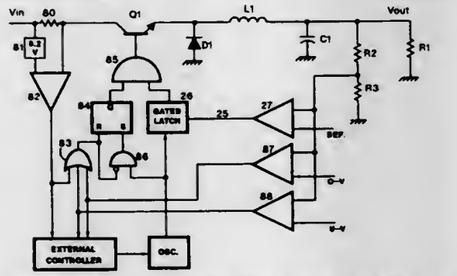
15. A controller for use with a mechanical switch to damp power oscillations, said power oscillations being characterized by a frequency and a magnitude, said controller comprising:
- a damping control means for receiving an input of measurement signals related to said frequency and magnitude of said power oscillations and for generating based on said measurement signals, switching command signals indicative of a reactance and a modulation frequency required to damp said power oscillations; and
- a switching control means coupled to said damping control means to receive an input of said switching command signals and for generating a switching control signal output to said mechanical switch whereby said mechanical switch operates to switch said reactance at a rate related to said modulation frequency.

5,625,278
ULTRA-LOW DROP-OUT MONOLITHIC VOLTAGE REGULATOR
Frank L. Thiel, Richardson; Todd M. Neale, Carrollton; Baoson Nguyen, Plano, and Fernando D. Carvajal, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 502,405, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 339,310, Nov. 14, 1994, abandoned, which is a continuation of Ser. No. 70,576, Jun. 2, 1993, abandoned. This application Mar. 28, 1996, Ser. No. 623,595
Int. Cl.[6] G05F 1/40
U.S. Cl. 323—280 **16 Claims**



1. A voltage regulator circuit comprising:
- a PMOS transistor connected between a voltage supply line and an output line, the PMOS transistor providing a stable voltage on the output line independent of voltage transients on the voltage supply line and independent of current transients on the output line;
- an amplifier connected to the PMOS transistor for controlling the response of the PMOS transistor, a supply voltage input of the amplifier is connected to the voltage supply line; and
- feedback circuitry connected between the output line and the amplifier, the feedback circuitry providing feedback to the amplifier.

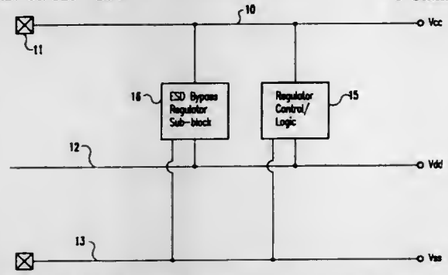
5,625,279
DC-DC CONVERTER WITH DYNAMICALLY ADJUSTABLE CHARACTERISTICS
Huston W. Rice, and George Barbehenn, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 28, 1996, Ser. No. 625,573
Int. Cl.[6] H02M 3/335
U.S. Cl. 323—283 **14 Claims**



1. A switching DC-DC converter incorporating a feedback loop for regulating the voltage across an output load, and operable in any of a plurality of different operating states, the converter comprising:

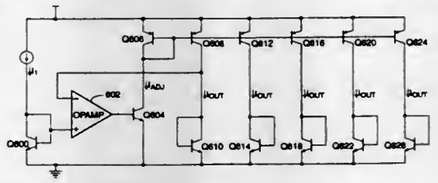
- a switching element having an input connected to a DC power source, an output, and a switching control input;
- a filter circuit having an input connected to the output of the switching element and an output supplying filtered a DC voltage to the output load;
- a latching circuit having first and second inputs and an output coupled to the control input of the switching element;
- a comparator circuit having a first input connected to a reference voltage, a second input connected to a voltage representative of the voltage across the output load, and an output coupled to the first input of the latching circuit; and
- an oscillator circuit having an output supplying a oscillator signal to the second input of the latching circuit, and a control input for adjusting the waveform of the oscillator signal; and
- a digital controller having means for determining a converter operating state, and an output coupled to the oscillator circuit control input for adjusting the oscillator signal according to the converter operating state.

5,625,280
VOLTAGE REGULATOR BYPASS CIRCUIT
Steven H. Voldman, South Burlington, Vt., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 30, 1995, Ser. No. 550,423
Int. Cl.[6] H02H 9/00;3/24
U.S. Cl. 323—284 **8 Claims**



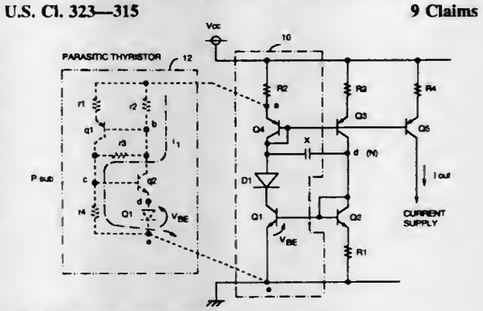
1. A regulator circuit for a multi-voltage compatible integrated circuit chip comprising:
- a first power rail connected to an externally supplied voltage Vcc;
- a second power rail internal to said integrated circuit chip, a regulated voltage Vdd being applied to said second power rail where Vdd is less than Vcc;
- a third power rail internal to said integrated circuit chip, said third power rail being a ground voltage Vss;
- a voltage regulator connected between said first and second power rails for lowering the voltage Vcc on said first power rail to a required voltage Vdd on said second power rail; and
- an electrically triggered bypass network connected between said first power rail and said second power rail, said bypass network detecting an onset of an over voltage condition on said first power rail and bypassing said voltage regulator by providing a shunt current path from said first power rail to said second power rail, said electrically triggerable bypass network comprising
  - a rise time network connected to said first power rail for generating a first delayed output voltage level;
  - a level shift network responsive to said first delayed output voltage level for generating a first logic level;
  - a logic gate connected to receive as inputs said first logic level and the second power rail, said logic gate generating a control output; and
  - a bypass network connected between said first and second power rails and controlled by said control output for providing a shunt path from said first power rail to said second power rail.

5,625,281
LOW-VOLTAGE MULTI-OUTPUT CURRENT MIRROR CIRCUIT WITH IMPROVED POWER SUPPLY REJECTION MIRRORS AND METHOD THEREFOR
Craig N. Lambert, San Jose, Calif., assignor to Exar Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 398,235, Mar. 3, 1995, Pat. No. 5,512,816. This application Jun. 16, 1995, Ser. No. 491,465
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—315 **10 Claims**



4. A circuit comprising:
- a current source providing a reference current (I1) through a first diode-connected transistor;
- an amplifier having a first input coupled to said first diode-connected transistor;
- a current adjust transistor having a control terminal coupled to an output of said amplifier;
- a current mirror circuit coupled to said current adjust transistor; and
- a second diode-connected transistor coupled to an output of said current mirror circuit and a second input of said amplifier,
- wherein, a current through said current adjust transistor is adjusted by said amplifier such that a current flowing through said output of said current mirror is forced to be substantially equal to said reference current.

5,625,282
CONSTANT CURRENT CIRCUIT FOR PREVENTING LATCH-UP
Tadashi Kawahara, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, East Hills, N.Y.
Filed Feb. 9, 1996, Ser. No. 598,892
Claims priority, application Japan, Sep. 1, 1995, 7-225152
Int. Cl.[6] G05F 3/04;3/08;3/16;3/20
U.S. Cl. 323—315 **9 Claims**



1. A constant current circuit comprising:
- a P type semiconductor substrate having a first N type well area and a second N type well area;
- first current mirror circuit having:
  - 1) a first PNP type transistor including a collector electrode, an emitter electrode and a base electrode,
  - 2) a power supply potential node,

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3) a resistor interconnecting the power supply potential node and the emitter electrode, and

4) a second PNP type transistor having a base electrode connected to the base electrode of the first PNP transistor, a collector electrode and a base electrode;

a diode having an anode electrode connected to the collector electrode of the first PNP type transistor and a cathode electrode;

a second current mirror circuit having:

1) a first NPN type transistor including a collector electrode connected to the cathode electrode of the diode and having an emitter electrode connected to a ground potential node,

2) a second NPN type transistor having a collector electrode connected to the collector electrode of the second PNP type transistor, a base electrode connected to the collector electrode of the second NPN type transistor and to the base electrode of the first NPN type transistor and an emitter electrode, and

3) a third resistor interconnecting the emitter electrode of the second NPN transistor and the ground potential node;

a capacitor having a first electrode disposed on a first N type well area of said P type semiconductor substrate and a second electrode disposed on the first N type well area, the first electrode being connected to the collector electrode of the first PNP type transistor and the second electrode being connected to the collector electrode of the second PNP type transistor; and

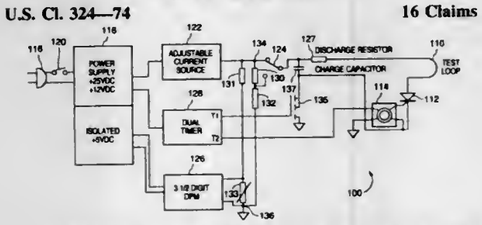
a drawing terminal disposed on the first N type well area, said drawing terminal being connected to the base of the first NPN type transistor.

5,625,283

METHOD AND APPARATUS FOR CALIBRATING AN ARC COUNTER

Mahmoud Badenlou, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Aug. 25, 1995, Ser. No. 519,633
Int. Cl.[6] G01R *27/02*
U.S. Cl. 324—74 **16 Claims**



1. An apparatus for calibrating a device for detecting a current of a predetermined value flowing in a wire comprising;

an inductor for generating an electromagnetic field for emulating a current flowing in a wire to be sensed by said device for detecting a current,

a current source for supplying a current to said inductor for generating said electromagnetic field,

a current divider coupled between said current source and said inductor for selectively providing first and second scaled versions of said current to said inductor, said first current having said predetermined value and said second current having a lesser value, and

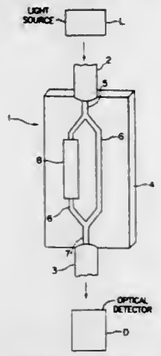
a switch coupled to said inductor, said switch having a first position in which said inductor is coupled to receive said first current from said current source through said current divider and a second position in which said inductor is coupled to receive said second current from said current source through said current divider.

5,625,284

ELECTRIC FIELD SENSOR HAVING SENSOR HEAD WITH UNBALANCED ELECTRIC FIELD SHIELD TO SHIELD BRANCHED OPTICAL WAVEGUIDES AGAINST AN APPLIED ELECTRIC FIELD

Yuichi Tokano, Sendai, Japan, assignor to Tokin Corporation, Miyagi, Japan

PCT No. PCT/JP94/01104, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO95/02192, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 7, 1994, Ser. No. 392,995
Claims priority, application Japan, Jul. 7, 1993, 5-168020; Mar. 18, 1994, 6-049178
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—96 **8 Claims**



1. An electric field sensor for measuring an electric field intensity existing in a space, comprising:

a sensor head including a substrate, and two branched optical waveguides formed on said substrate;

said sensor head being arranged to be disposed within said space and having a structure such that an intensity of a light beam transmitted through said branched optical waveguides is varied in response to an electric field applied thereto to produce a varied light beam emitted therefrom;

a light source coupled to said sensor head, said light source emitting light, and wherein the emitted light is coupled so as to be incident to said branched optical waveguides;

an optical detector arranged to receive light output from said sensor head for detecting said varied light beam emitted from said sensor head; and

an electric field shielding member arranged in the vicinity of at least one part of said two branched optical waveguides for shielding said at least one part of said two branched optical waveguides from said electric field, so that said two branched optical waveguides are shielded in a non-symmetrical manner and are unbalancedly exposed to said applied electric field so as to produce said varied light beam emitted from the sensor head.

5,625,285

AC POWER OUTLET GROUND INTEGRITY AND WIRE TEST CIRCUIT DEVICE

Larry A. Virgilio, Lake Zurich, Ill., assignor to A. W. Sperry Instruments, Inc., Hauppauge, N.Y.

Filed Jun. 1, 1995, Ser. No. 457,236
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—133 **9 Claims**

9. A self-contained, hand-held, plug-in device for testing the current carrying ability of the Hot wire and the safety Ground return wire of a standard AC outlet having Hot, Neutral, and Ground wire connections, the Hot wire and the Ground wire connections each having a resistance, the device comprising:

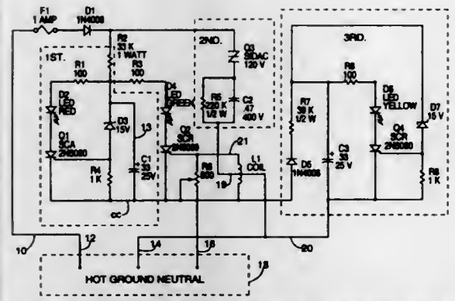
a test circuit for detecting occurrence of any miswired connections of the Hot, Neutral, and Ground connections of said AC outlet and for visually indicating such occurrences, said test circuit having light means actuable to indicate both a proper wiring condition of said AC outlet and conditions including wherein a total resistance that is equal to the arithmetic sum of the resistances of the Hot wire and Ground wire connections is less than that required for safely tripping a circuit breaker of said AC outlet in response to a fault in which the Hot wire connection is accidentally coupled to the Ground wire connection, said light means being actuably coupled between the Hot and Neutral wire connections of said AC outlet under test, and wherein said test circuit is powered by the Hot wire connection of the AC outlet under test and eliminates any need for an internal power supply for said device, said test circuit having a circuit common (CC) that is connected to said Neutral connection and comprising;

(a) a first relaxation oscillator having first and second ends with the first end connected to said Hot wire connection and the second end connected to said Neutral connection, said first relaxation oscillator having a serial arrangement comprising a first LED comprising said light means, a first capacitor and a first switch means, said first capacitor and said first switch means being arranged so that said first switch means is responsive to a first predetermined amplitude of voltage present between said first and second ends of said first relaxation oscillator so as to repetitively charge and discharge said first capacitor which, in turn, renders conductive and non-conductive said first LED;

(b) a second relaxation oscillator having first and second ends with the first end connected to said first end of said first relaxation oscillator and said second end connected to said Ground connection, said second relaxation oscillator having a serial arrangement comprising a first loop of wire, a second capacitor and a second switch means rendered conductive in response to a second predetermined amplitude of voltage present between said first and second ends of said second relaxation oscillator;

(c) a third relaxation oscillator having first and second ends with the first end connected to said Neutral connection and said second end connected to said Ground connection, said third relaxation oscillator comprising an arrangement comprising a diode having its anode connected to said Neutral connection and its cathode having means for being connected to one of a third connection, said arrangement further comprising a second LED comprising said light means and a third switch means being rendered conductive in response to a third predetermined amplitude of voltage present between said first and second ends of said third relaxation oscillator, said second LED and third switch means being arranged in parallel with said third capacitor so that said third switch means is responsive to said third predetermined amplitude so as to repetitively charge and discharge said third capacitor which, in turn, correspondingly renders conductive and non-conductive said second LED;

(d) an arrangement for operatively coupling together said first and second relaxation oscillators and having first and second ends respectively connected to said first and second ends of said first relaxation oscillator, said operatively coupling arrangement comprising a third LED comprising said light means having means for connecting its anode to the first end thereof, and a fourth switch means having anode, cathode and gate electrodes with the anode electrode connected to the cathode of said third LED and the cathode electrode connected to said Neutral connection and the gate electrode serially connected to a first coil having said first loop of wire of said second relaxation oscillator coupled thereto, said first coil receiving energy when said second switch means is rendered conductive which, in turn, renders said fourth switch means conductive which, in turn, renders conductive said third LED conductive while also bypassing said first capacitor to render said first LED non-conductive.

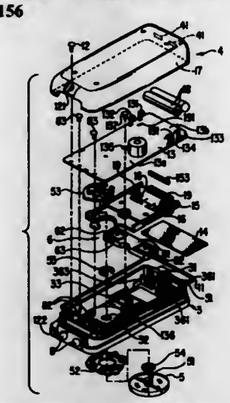


5,625,286

DIGITAL MULTIMETER HAVING AN IMPROVED DESIGN AGAINST MECHANICAL SHOCK

Manabu Kamiya, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 6, 1995, Ser. No. 383,983
Claims priority, application Japan, Apr. 1, 1994, 6-065217
Int. Cl.[6] G01R *15/12;1/04*
U.S. Cl. 324—156 **31 Claims**



1. A digital multimeter comprising an enclosure which comprises an upper enclosure and a lower enclosure, further comprising:

a circuit board on which circuit elements are mounted;

a protecting plate for protecting the circuit elements mounted on said circuit board;

a battery holder; and

a display panel disposed at a back side of a transparent display window in said upper enclosure, wherein said protecting plate is provided with one or more elastic projections which elastically press said display panel toward said upper enclosure.

5,625,287

TEST TRAY POSITIONING STOPPER MECHANISM FOR AUTOMATIC HANDLER

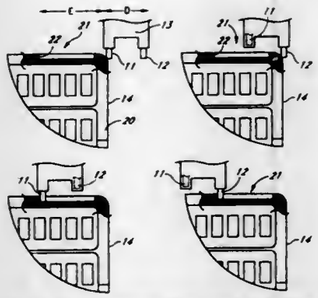
Hiroto Nakamura, Kazo; Makoto Sagawa, and Yoshihito Kobayashi, both of Gyoda, all of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 410,821
Claims priority, application Japan, Jun. 30, 1994, 6-171913
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—158.1 **4 Claims**

1. An automatic handler for an IC test system to test IC devices by transferring the IC devices from a supply area to a test head area which has a plurality of test contactors and further transferring the tested IC devices from the test head area to a discharge area, comprising:

a test tray for carrying said IC devices to be tested in a plurality of lines each line of which carries a plurality of said IC

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devices, said test tray transferring said IC devices to said test head area and said discharge area, said IC devices to be tested are aligned in said test tray with a distance between adjacent IC devices which is shorter than a distance between adjacent test contactors in said test head area;

a pair of positioning stoppers provided in said test head area along a moving direction of said test tray, said positioning stoppers being spaced by a distance equal to said distance of said IC devices to be tested in said test tray;

wherein said distance of said contactors is adjusted to be two times or more of said distance of said IC devices to be tested in said test tray, one of said positioning stoppers contacts said test tray to determine a first position for simultaneously testing said IC devices in a first group of said lines in said test tray, and said test tray is transferred until other positioning stoppers contacts said test tray in a second position for simultaneously testing said IC devices in a second group of said lines in said test tray, said test tray being transferred to said discharge area after said testing.

5,625,288

ON-CLIP HIGH FREQUENCY RELIABILITY AND FAILURE TEST STRUCTURES

Eric S. Snyder, and David V. Campbell, both of Albuquerque, N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Continuation of Ser. No. 141,834, Oct. 22, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 590,690

Int. Cl.[6] G01R *15/12*

U.S. Cl. 324—158.1 **22 Claims**

17. An on-chip testing system comprising:

oscillator means for producing pulses at frequencies above about 100 kHz;

external DC control means for the oscillator to control the frequency of the pulses;

test structure means driven by the pulses from the oscillator means;

means to buffer and control the pulses to the test structure means;

heating means for the test structure means; and

temperature sensing means for determining the temperature of the test structure means and wherein said buffer means, temperature means and test structure means are connected to said external DC control means.

5,625,289

MAGNETIC DEVICE FOR DETECTING ANGLE OF ROTATION

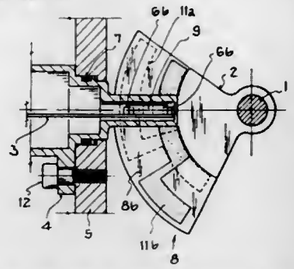
Michael Daetz, Tiddische, and Roger Pohlmann, Braunschweig, both of Germany, assignors to Deutsche Automobilgesellschaft mbH, Braunschweig, Germany

Filed Sep. 26, 1994, Ser. No. 313,854

Claims priority, application Germany, Oct. 4, 1993, 43 33 800.3

Int. Cl.[6] G01B *7/30;* **B60K** *20/00;* **G05G** *1/00;* **H03M** *1/22*

U.S. Cl. 324—207.14 **20 Claims**



1. Device for detecting the angle of rotation of a shaft where the position of the shaft is scanned without contacting or touching by means of magnetic-field-sensitive sensors disposed in a support casing and where the magnetic field strength varies at the point where the sensors are located according to the position of the shaft, said device comprising:

a U-shaped carrier arrangement mounted in the support casing and having legs extending adjacent a shaft whose rotation is to be detected;

a permanent magnet mounted on a first leg of said carrier with its pole axis extending along said first leg of said carrier;

a pair of spaced sensors arranged on a second leg of said carrier opposite said first leg and adjacent to the magnet along a line parallel to said pole axis such that the sensors can be permeated by the magnetic field of the magnet;

a field strengthening plate of ferromagnetic material extending between the two sensors and arranged on the side of the sensors facing away from the magnet; and,

a screening device connected to the shaft for rotation therewith, said screening device comprising a flat plate mounted on the shaft and extending into the space between the first and second legs of the carrier substantially parallel to the permanent magnet; and

means disposed on the plate and arranged in a coded pattern for the respective sensors for influencing the magnetic field flowing through the respective sensors such that the sensors generate a signal that unambiguously identifies the position of the shaft.

5,625,290

COMPLEX SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE AND CIRCUIT

Hong K. You, San Gabriel, Calif., assignor to Micontech, Inc., San Gabriel, Calif.

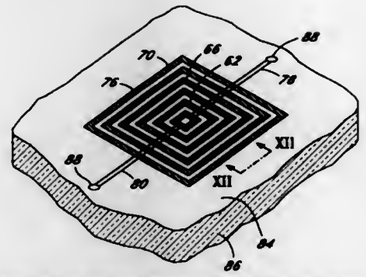
Continuation-in-part of Ser. No. 200,641, Feb. 12, 1994. This application Jun. 6, 1995, Ser. No. 467,413

Int. Cl.[6] G01R *33/02;33/035;* **H01L** *29/06;39/22*

U.S. Cl. 324—248 **17 Claims**

1. A SQUID device including:

a plurality of loops of superconducting material, the loops being concentric with one another,



a plurality of Josephson Junctions in each loop of superconducting material, each Josephson Junction being formed in a segment of its loop, each Josephson Junction lying substantially transverse to its loop segment, the Josephson Junctions being substantially aligned such that they all lie in substantially a straight line extending across the concentric loops, and

means electrically connecting the loops to produce an output proportional to the current flow in the superconducting loops.

5,625,291

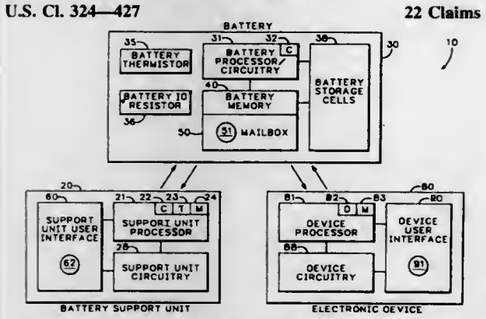
SYSTEM FOR EXCHANGING INFORMATION IN A BATTERY MAILBOX

Gregory D. Brink, 1230 Clifton Ct.; Carl E. Benvegar, 350 Huckleberry Ct.; Dennis E. Ochs, 533 N. Davis St., all of McMinnville, Oreg. 97128, and Jonathan N. Andrews, 279 Jacobson Way SE., Monmouth, Oreg. 97361

Filed May 16, 1995, Ser. No. 442,435

Int. Cl.[6] H02J *1/04*

U.S. Cl. 324—427 **22 Claims**



1. A method of exchanging information amongst components of a battery system comprising a battery, a battery support unit for testing said battery and an electronic device powered by said battery, said battery having storage cells and a battery memory, said method comprising the steps of:

placing said battery in said battery support unit;

said battery support unit testing said battery for a first error condition;

said battery support unit detecting a first error condition in said battery;

said battery support unit transmitting first error data to a mailbox located in said battery memory, responsive to said detecting said first error condition step;

removing said-battery from said battery support unit;

placing said battery in said electronic device;

said electronic device reading said first error data in said mailbox located in said battery memory; and

said electronic device enabling a first indicator in response to said reading said first error data step.

5,625,292

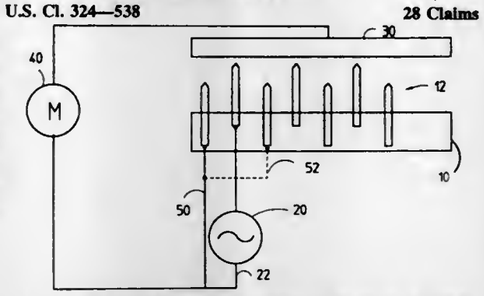
SYSTEM FOR MEASURING THE INTEGRITY OF AN ELECTRICAL CONTACT

David T. Crook; Kevin W. Keirn, both of Loveland, Colo., and Ugur Cilingiroglu, Istanbul, Turkey, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 127,400, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 892,868, Jun. 3, 1992, Pat. No. 5,254,953, which is a continuation-in-part of Ser. No. 631,609, Dec. 20, 1990, Pat. No. 5,124,660. This application Oct. 19, 1993, Ser. No. 139,362

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—538 **28 Claims**



1. A system for measuring the integrity of an electrical contact between an electrical connection pin of an electrical component comprising a plurality of connection pins and a circuit assembly, said system comprising:

(a) a signal supply, comprising an output and a common signal return, supplying an electrical signal via said output to a first pin of said electrical component;

(b) an electrical connection between a second pin of said electrical component and said common signal return of said signal supply;

(c) a conductive electrode comprising a surface placed in a fixed position in proximity to said first and second pins; and

(d) measuring means, operatively coupled to said conductive electrode, for determining a parameter indicative of the integrity of the electrical connection between said first pin and said circuit assembly.

5,625,293

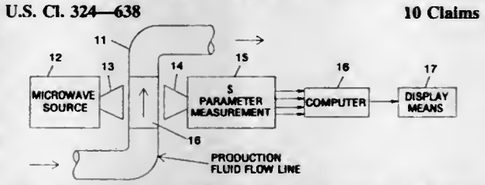
DETERMINATION OF THE WATERCUT OF A MULTIPHASE FLOW DIRECTLY FROM MEASURED MICROWAVE FREQUENCY DIELECTRIC PROPERTIES

John D. Marrelli; Joseph D. Stafford, both of P.O. Box 770070, Houston, Tex. 77217-0070; David A. Helms, 6223 Braesheather, Houston, Tex. 77096; Michael G. Durrett, 9010 Railton, Houston, Tex. 77080, and Gregory J. Hatton, 3207 Rambling Creek, Kingwood, Tex. 77345

Filed May 1, 1995, Ser. No. 431,873

Int. Cl.[6] G01N *22/00*

U.S. Cl. 324—638 **10 Claims**



1. A method for measuring the water fraction of a flowing multi-phase fluid having a water phase and an oil phase directly comprising the steps of:

flowing an unknown multiphase fluid through a test cell having known geometry and a window substantially transparent to microwave frequency electromagnetic energy;

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continuously irradiating said test cell window with microwave energy and repetitively measuring microwave energy transmitted through said test cell and reflected from said test cell;

determining from said measured transmitted and reflected microwave energy the wave number κ_x of the unknown multiphase fluid; and

determining from said wave number and the known geometry of said test cell directly, the water fraction f of said unknown multiphase fluid.

5,625,294

APPARATUS FOR DETECTING SEATED CONDITION FOR TOILET SEAT

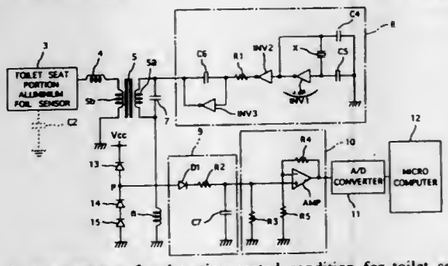
Shinji Kawai; Mitsugu Nonomura; Yuji Yamaguchi; Seiji Tanaka, and Akira Takamata, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Inax Corporation, Tokoname, both of Japan

Filed Nov. 18, 1994, Ser. No. 343,984

Claims priority, application Japan, Nov. 19, 1993, 5-290152

Int. Cl.[6] A47K *3/22*

U.S. Cl. 324—668 **8 Claims**



1. An apparatus for detecting seated condition for toilet seat comprising:

a toilet seat which is rotatively displaced in the state in which an opening edge of a toilet seat is covered and in the state in which said toilet seat is apart from said opening edge;

a conductor provided in the inside of said toilet seat;

a means for detecting electrostatic capacity, in the form of electric information, which exists between said conductor in said toilet seat in the state in which the opening edge of said toilet seat is covered and the ground or between said conductor and another conductor which is provided in the inside of said toilet seat; and

a determining means which determines whether a human body is seated on said toilet seat or a human body is not seated on said toilet seat based on said electric information of said means for detecting electrostatic capacity, which compares a first set value for determining in response to the level of electric information which will be detected in the un-seated condition and a second set value for determining in response to the level of electric information which will be detected in the seated condition with electric information which is repeatedly outputted from said means for detecting electrostatic capacity, and which determines whether the seated condition exists in which a human is seated on said toilet seat or the un-seated condition exists in which a human is not seated on said toilet seat based on said compared result;

wherein said determining means, when the present result of determining shows "un-seated condition", computes and renews said first set value for determining in response to electric information which is detected in seated condition and said second set value for determining in response to electric information which is detected in un-seated condition every time when the gradual change in electric information outputted from said means for detecting electrostatic capacity is detected.

5,625,295

BIPOLAR TRANSISTOR CIRCUIT CAPABLE OF HIGH PRECISION MEASUREMENT OF CURRENT AMPLIFICATION FACTOR

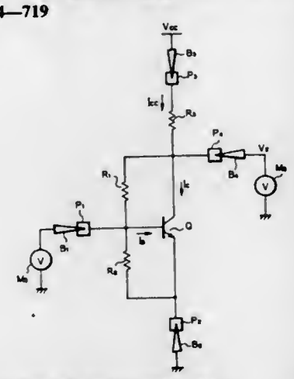
Masakazu Kurisu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,062

Claims priority, application Japan, Nov. 29, 1993, 5-320848

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—719 **4 Claims**



1. A semiconductor device comprising:

a dummy bipolar transistor having a base, a collector, and an emitter for a current amplification factor measurement;

a first resistor connected between the base and the collector of said dummy bipolar transistor;

a second resistor connected between the base and the emitter of said dummy bipolar transistor;

a third resistor connected to the collector of said dummy bipolar transistor;

a first pad connected to the base of said dummy bipolar transistor;

a second pad connected to the emitter of said dummy transistor;

a third pad connected to said third resistor; and

a fourth pad connected to the collector of said dummy bipolar transistor,

wherein said semiconductor device accurately provides said current amplification factor measurement irrespective of a parasitic oscillation of said transistor and an absolute value of said first resistor,

wherein said first pad is connected to a voltage meter, said second pad is connected to a first external power supply means, said third pad is connected to a second external power supply means, and said fourth pad is connected to a second voltage meter.

5,625,296

ELECTRO-OPTIC VOLTAGE MEASUREMENT APPARATUS

Hironori Takahashi; Yutaka Tsuchiya, both of Hamamatsu, and Takeshi Kamiya, Suginami-ku, all of Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Feb. 6, 1996, Ser. No. 597,226

Claims priority, application Japan, Feb. 7, 1995, 7-019252

Int. Cl.[6] G01R *31/308;31/02*

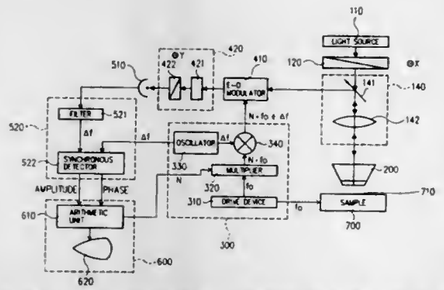
U.S. Cl. 324—753 **8 Claims**

1. A voltage measurement apparatus for detecting a voltage of a sample, comprising:

a light source for emitting a continuous emission light beam;

a polarizer for receiving the light beam emitted from said light source, selecting a component of a first polarization direction, and outputting the component as a probe light beam;

a first optical system for guiding the probe light beam output from said polarizer toward the sample;



an electro-optic conversion probe arranged in a path way of the probe light beam from said first optical system, said probe having a member to be arranged near the sample, said member including an electro-optic material;

a drive unit for driving the sample at frequency f_0 and outputting signals of frequencies f and Δf, wherein $f=N\cdot f_0+\Delta f$, where N is an integer and Δf is a frequency smaller than the frequency f_0,

an optical modulator for receiving the light beam and performing frequency modulation of the light beam input thereinto based on the signal of the frequency f which is supplied from said drive unit;

an optical selection unit for receiving the modulated light beam output from said optical modulator, shifting a phase of the modulated light beam, and selecting and outputting a component of a second polarization direction;

a photodetector for receiving the light beam output from said optical selection unit and outputting a photodetection signal corresponding to an intensity of the received light beam;

a synchronous detection unit for receiving the photodetection signal output from said photodetector to select a component of frequency Δf in synchronism with the signal of the frequency Δf output from said drive unit; and

a processing unit for informing said drive unit of the integer N, and processing synchronous detection signal output from said synchronous detection unit to obtain the voltage of the sample.

5,625,297

TESTING DEVICE FOR TESTING ELECTRICAL OR ELECTRONIC TEST SPECIMENS

Konstantin Arnaudov, Wertheim-Bettingen, and Manfred Prokopp, Wertheim, both of Germany, assignors to atg electronic GmbH, Wertheim-Reicholzheim, Germany

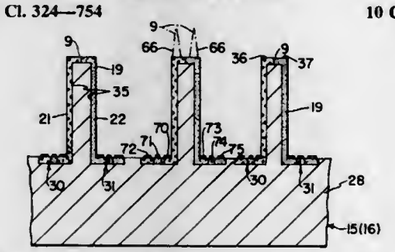
PCT No. PCT/EP90/00668, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO90/13039, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 25, 1990, Ser. No. 772,356

Claims priority, application Germany, Apr. 26, 1989, 39 13 796.1

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—754 **10 Claims**



10. A testing device for an electrical or electronic component, particularly a printed circuit board, a chip or a multichip system, having a plurality of test points for the transfer of test signals between the component and said device, said device comprising a support; and a multiplicity of sensing elements which engage said support at least during testing of the component, each of said elements defining at least one sensing point for the transfer of test signals between the component and said device, and said elements being arranged such that at least two of said sensing points confront each of said test points during testing of the component, wherein at least one of said elements comprises a micromechanical structure, and wherein said micromechanical structure comprises a projection integral with said support, said projection being provided with at least one sensing point of said one element and, wherein said projection comprises an n-doped region and a p-doped region.

5,625,298

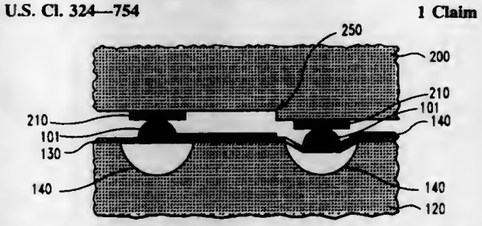
SEMI-CONDUCTOR CHIP TEST PROBE

Toshiki Hirano, Tokye-to; Atsuo Kimura, Ohtsu, and Shinichiro Mori, Kusatsu, all of Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 12, 1994, Ser. No. 321,503

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—754 **1 Claim**



1. A probe structure for testing semi-conductor chips, comprising:

a substrate having first and second substantially planar surfaces;

a plurality of cavities formed in said first surface;

a film disposed on said first surface and extending over said cavities;

a plurality of electrodes disposed on said surface, each of said electrodes being positioned over a respective cavity;

a respective conductive lead connected to each respective electrode and extending over said film to the edge of said substrate; and

said film has a hole therein over each of said cavities.

5,625,299

MULTIPLE LEAD ANALOG VOLTAGE PROBE WITH HIGH SIGNAL INTEGRITY OVER A WIDE BAND WIDTH

Thomas F. Uhling, 18300 Knollwood Blvd., Monument, Colo. 80132; David J. Dascher, 4435 Whispering Clr. North, Colorado Springs, Colo. 80917, and Keith C. Griggs, P.O. Box 2197, Colorado Springs, Colo. 80907

Filed Feb. 3, 1995, Ser. No. 384,296

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **12 Claims**

1. An analog voltage probe comprising:

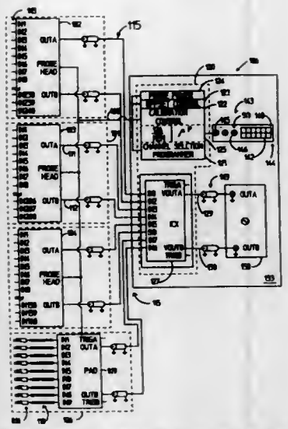
an integrated circuit having a plurality of IC inputs, an output, and an analog amplifier connectable between said inputs and said output;

a circuit board having a probe ground including a ground plane;

a plurality of input leads, one end of each lead connected to one of said IC inputs and the other end adapted to be connected to a circuit under test, each lead comprising a trace on said circuit board, each trace being from 0.5 mils to 5 mils wide; and

said circuit board further including a dielectric material between said ground plane and said traces, said dielectric material

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having a dielectric constant of 5 or less and a thickness of between 4 mils and 6 mils.

5,625,300

SEPARATE I_{DDQ}-TESTING OF SIGNAL PATH AND BIAS PATH IN AN IC

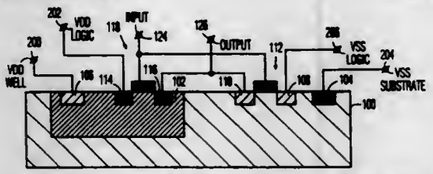
Manoj Sachdev, Groenewoudseweg 1, 5621 BA Eindhoven, Netherlands

Filed Dec. 14, 1994, Ser. No. 355,569

Claims priority, application European Pat. Off., Dec. 16, 1993, 93203546; Feb. 28, 1994, 94200505

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—765 **10 Claims**



1. A method of testing an active electronic circuit integrated in a semiconductor substrate, wherein the substrate comprises a region of a first conductivity type with a first supply node for supply of the active electronic circuit and with a first biasing node for connection to a first biasing voltage to bias the region, and wherein the method includes determining a quiescent current through the active electronic circuit, characterized in that the determining of the quiescent current comprises determining a magnitude of a current through a single one of said nodes.

5,625,301

FLEXIBLE FPGA INPUT/OUTPUT ARCHITECTURE

William C. Plants, Santa Clara; Sinan Kaptanoglu, San Carlos; Jung-Cheun Lien, San Jose; King W. Chan, Los Altos, and Khaled A. El-Ayat, Cupertino, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed May 18, 1995, Ser. No. 444,243

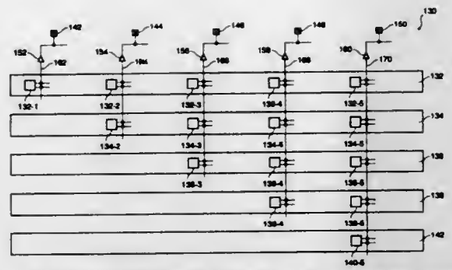
Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **35 Claims**

1. A field-programmable gate array architecture disposed on an integrated circuit, including:

a plurality of logic function modules in an array of rows and columns, each of said modules having at least one input conductor and at least one output conductor;

a plurality of input/output pads;



a plurality of input/output kernels, each input/output kernel comprising an input buffer having a data input connected to one of said I/O pads and a data output connected to an input buffer data conductor, an output buffer having a data input connected to an output buffer data conductor, a data output connected to said one of said I/O pads, and an enable input connected to an output buffer enable conductor;

said input buffer data conductors extending in a direction comprising one of along said rows and along said columns, some ones of said input buffer data conductors extending different numbers of said rows or said columns than other ones of said input buffer data conductors, said input buffer data conductors forming first intersections with ones of said inputs of said modules;

said output buffer data conductors and said output buffer enable conductors extending in a direction comprising one of along said rows and along said columns, some ones of said output buffer data conductors and said output buffer enable conductors extending different numbers of said rows or said columns than other ones of said output buffer data conductors and said output buffer enable conductor, said output buffer data conductors and said output buffer enable conductors forming second intersections with ones of said outputs of said modules; and

user-programmable interconnect elements connected across selected ones of said first and second intersections.

5,625,302

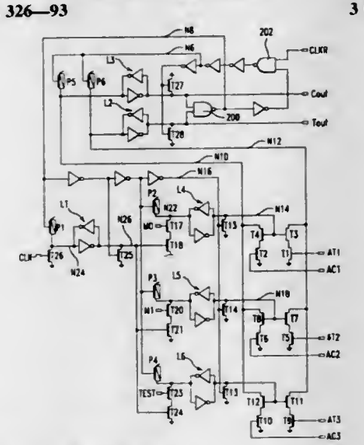
ADDRESS BUFFER FOR SYNCHRONOUS SYSTEM

James J. Covino, Essex, and Jose R. Sousa, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1996, Ser. No. 598,304

Int. Cl.[6] H03K *19/096*

U.S. Cl. 326—93 **3 Claims**



1. A logic circuit comprising:

a system clock having a leading and a trailing edge;

a first sequential logic circuit including a plurality of receiver circuits, each receiver circuit having an input terminal connected to a bus;

a first sub-circuit responsive to the trailing edge of said system clock signal for enabling an input signal to be asynchronously received and latched;

a second sub-circuit responsive to a latched input signal for isolating the receiver circuit from the latched input signal;

a second sequential logic circuit responsive to the leading edge of said system clock for restoring the receiver circuits.

5,625,303

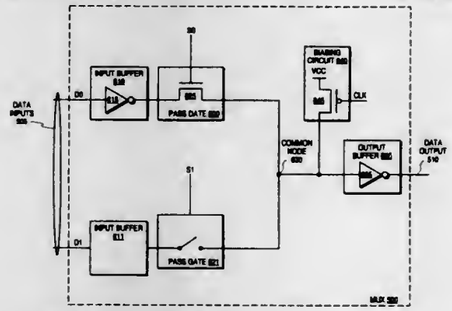
MULTIPLEXER HAVING A PLURALITY OF INTERNAL DATA PATHS THAT OPERATE AT DIFFERENT SPEEDS

Shahram Jamshidi, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1995, Ser. No. 534,485

Int. Cl.[6] H03K *19/084;19/094*

U.S. Cl. 326—106 **18 Claims**



1. A multiplexer comprising:

a first data input;

a second data input;

a logic gate having a first input and a second input coupled to provide a data output;

a first input buffer and a first pass gate coupled in series between the first data input and the first input of the logic gate;

a first biasing circuit coupled to the first input of the logic gate, the first biasing circuit being operative to bias the first input of the logic gate to a known voltage when the first pass gate is switched off;

a second data path coupled between the second data input and the second input of the logic gate, a maximum of one of the first pass gate and the second data path being enabled to pass data at any given time.

5,625,304

VOLTAGE COMPARATOR REQUIRING NO COMPENSATING OFFSET VOLTAGE

Kameran Azadet, Middletown; Alexander G. Dickinson, Neptune, and David A. Inglis, Holmdel, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 21, 1995, Ser. No. 426,510

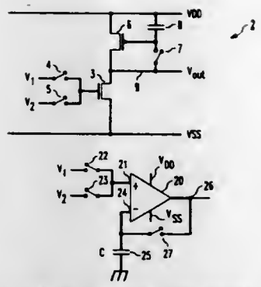
Int. Cl.[6] H03K *5/22;* **G11C** *27/02*

U.S. Cl. 327—63 **31 Claims**

1. A method for comparing a first input voltage to a second input voltage, said method comprising the steps of:

transforming a first input voltage into a first current flowing through a first transistor and a second transistor;

transforming a second input voltage into a second current flowing through said first transistor while said first current continues flowing through said second transistor, wherein said first and second input voltages are transformed using a direct connection from the input voltages through a switch to the first transistor;



developing a difference current representing the difference between said first current and said second current; and

generating an indicator signal indicating the larger of the first and second input voltages based on the value of the difference current.

5,625,305

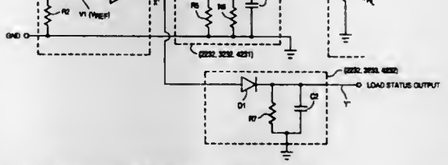
LOAD DETECTION APPARATUS

Ching-Tung Hwang, Lungtan, Taiwan, assignor to Acer Incorporated, Taipei, Taiwan

Filed Oct. 20, 1994, Ser. No. 325,972

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—78 **28 Claims**



1. A load detection apparatus comprising:

a load-connecting terminal for electrically connecting to a load device;

an output terminal for outputting a load present signal, said load present signal indicating that said load-connecting terminal is electrically connected to said load device;

a load-potential adjusting device electrically connected to said load-connecting terminal for adjusting a potential for said load device in response to a potential adjusting signal; and

a load sensor electrically connected to said load-connecting terminal and said load-potential adjusting device for generating the load-present signal at said output terminal and said potential adjusting signal in response to a potential change generated from said load-connecting terminal when said load-connecting terminal is electrically connected to said load device, wherein said load sensor comprises:

a potential comparing device electrically connected to said load-connecting terminal for comparing said potential with a reference potential to output a compared result;

a potential adjusting signal generator electrically connected to said potential comparing device and said load-potential adjusting device to generate said potential adjusting signal according to said compared result for controlling said load potential adjusting device; and

a load-present signal output device electrically connected to said potential comparing device for outputting said load present signal when said potential change is detected to be present, wherein said output device includes a clipper cir-

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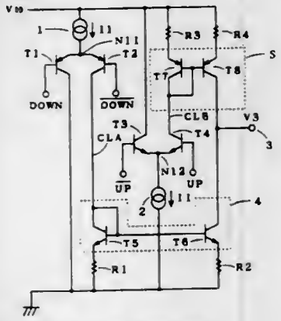
cuit converting an inputted square-wave signal into a clipper signal to be outputted as said load present signal.

5,625,306

CHARGE PUMPING CIRCUIT AND PLL CIRCUIT

Masashige Tada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,524
Claims priority, application Japan, Oct. 31, 1994, 6-267045
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—112 **9 Claims**



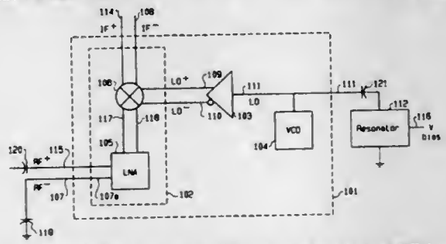
1. A charge pumping circuit comprising:
an output terminal;
first current supply means for supplying a first current to a first current path;
second current supply means for supplying a second current to a second current path;
a first current mirror circuit being connected to a first power source and said output terminal, for supplying a first current mirror current being proportional in amount to said first current in a first condition from said first power source to said output terminal during conduction of current in said first current path;
a second current mirror circuit being connected to a second power source and said output terminal, for supplying a second current mirror current being proportional in amount to said second current in a second condition from said output terminal to said second power source during conduction of current in said second current path;
control means receiving one of first and second switching control signals of complementary logic for controlling conduction of at least one of said first and second current paths on the basis of said one of first and second switching control signals and carrying out a source operation of feeding a current from said first power source to said output terminal or a sink operation of feeding a current from said output terminal to said second power source, comprising,
first switching means provided on said first current path for receiving said first switching control signal and a logically inverted signal of said first switching control signal, and
second switching means provided on said second current path for receiving said second switching control signal and a logically inverted signal of said second switching control signal;
said first switching means comprises a differential pair of first conductivity type first and second transistors, for receiving said first switching control signal and said logically inverted signal of said first switching control signal in control electrodes of said first and second transistors respectively, and allowing conduction or non-conduction of current in said first current path by turning one of said first and second transistors on or off; and
said second switching means comprises a differential pair of second conductivity type third and fourth transistors, for receiving said second switching control signal and said logically inverted signal of said second switching control signal in control electrodes of said third and fourth transistors respectively, and allowing conduction or non-conduction of current in said second current path by turning one of said third and fourth transistors on or off.

5,625,307

LOW COST MONOLITHIC GALLIUM ARSENIDE UPCONVERTER CHIP

Norman R. Scheinberg, South River, N.J., assignor to Anadigics, Inc., Warren, N.J.

Filed Mar. 3, 1992, Ser. No. 845,293
Int. Cl.[6] H03B *19/00;* **H01L** *25/00;* **H04B** *1/28*
U.S. Cl. 327—113 **25 Claims**



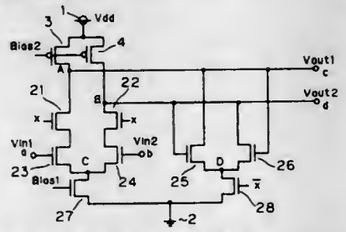
1. A low noise upconverter chip for modulating an RF input signal to a higher frequency IF output signal, said upconverter chip including a mixer circuit in combination with and packaged in a low cost plastic dual inline package having a plurality of pins.

5,625,308

TWO INPUT-TWO OUTPUT DIFFERENTIAL LATCH CIRCUIT

Osamu Matsumoto; Takahiro Miki, and Toshio Kumamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,556
Claims priority, application Japan, Jun. 8, 1995, 7-141788
Int. Cl.[6] H03K *3/289;3/356*
U.S. Cl. 327—203 **14 Claims**



1. A differential latch circuit comprising:
a first load resistor having a first terminal coupled to a first power supply terminal, and a second terminal coupled to a first node;
a second load resistor having a first terminal coupled to said first power supply terminal, and a second terminal coupled to a second node;
a first transistor having a first electrode, a second electrode, and a control electrode coupled to a first input terminal;
a second transistor having a first electrode, a second electrode, and a control electrode coupled to a second input terminal;
a constant current source having a first terminal directly connected to the second electrodes of said first and second transistors, and a second terminal directly connected to a second power supply terminal;

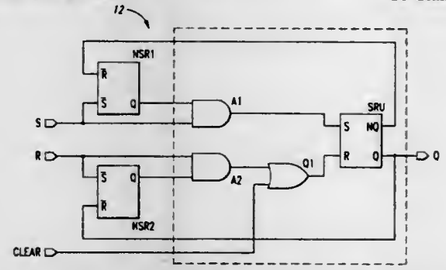
a latch circuit receiving signals from said first and second nodes for generating two complementary logic signals from the voltages of the received signals to output the two complementary logic signals from first and second output terminals;
a first switch circuit for simultaneously controlling current conduction and non-conduction between said first node and said first transistor and between said second node and said second transistor; and
a second switch circuit for operating the latch circuit in a through mode in which signals at said first and second nodes amplified by said first and second transistors are output from said first and second output terminals, respectively, when said first switch circuit is in a current conduction mode and for operating said latch circuit in a latch mode to latch signals existing at said first and second modes when said first switch circuit is in a current non-conduction mode.

5,625,309

BISTABLE SEQUENTIAL LOGIC NETWORK THAT IS SENSITIVE TO THE EDGES OF INPUT SIGNALS

Giona Fucili, and Aldo Novelli, both of Milan, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 455,856
Claims priority, application European Pat. Off., May 31, 1994, 94830265
Int. Cl.[6] H03K *3/289;3/037*
U.S. Cl. 327—217 **16 Claims**



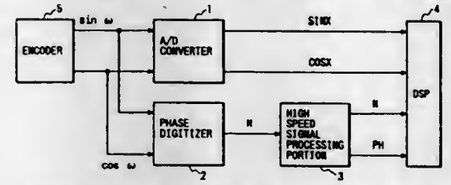
5. A latch circuit for producing latch output signals, comprising:
a first flip-flop having a first input terminal, a second input terminal, and an output terminal;
a second flip-flop having a first input terminal, a second input terminal, and an output terminal;
a first gate circuit having a first input coupled to the output terminal of the first flip flop and a second input terminal, the first gate circuit producing an output signal;
a second gate circuit having a first input coupled to the output terminal of the second flip flop and a second input coupled to the input terminal of the second flip flop, the second gate circuit producing an output signal in response to a selected pattern of logic signals at its first and second inputs;
a third gate circuit having a first input coupled to the receive the output signal from the second gate circuit, the third gate circuit further including a control input, the third gate circuit configured to provide an output signal in response to a selected pattern of logic states at its first and control inputs; and
a third flip flop having a first input coupled to receive the output signal from the first gate circuit and a second input coupled to receive the output signal from the third gate circuit, the third flip flop producing the latch output signals in response to a selected pattern of logic signals at its first and second inputs.

5,625,310

SIGNAL PROCESSING APPARATUS AND DISPLACEMENT DETECTING APPARATUS USING THE SAME

Hiroaki Takeishi, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,563
Claims priority, application Japan, Feb. 18, 1994, 6-21065
Int. Cl.[6] H03K *3/286;* **G05B** *1/02*
U.S. Cl. 327—233 **8 Claims**



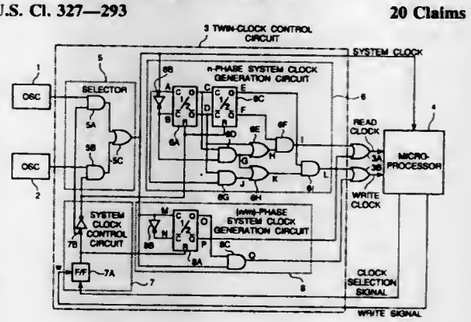
1. A signal processing apparatus for processing first and second periodic analog signals having the same period and having a fixed phase relationship therebetween, comprising:
digitizing means for converting respective amplitudes of the first and second periodic analog signals into first and second digital signals;
signal generating means for generating a signal from the first periodic analog signal, the generated signal having an angular resolution that is larger than the angular resolution of the first periodic analog signal;
first processing means for generating, from the signal generated by said signal generating means, a third digital signal representing the periodicity of the first periodic analog signal and a first interpolation signal representing a first interpolation value within a period of the first periodic analog signal; and
second processing means for producing a second interpolation signal representing a second interpolation value within a period of the first periodic analog signal from the first and second digital signals from said digitizing means, wherein the first interpolation signal has a angular resolution lower than a angular resolution of the second interpolation signal, and for changing the third digital signal on the basis of the first interpolation signal and the second interpolation signal.

5,625,311

SYSTEM CLOCK GENERATING CIRCUIT HAVING A POWER SAVING MODE CAPABLE OF MAINTAINING A SATISFACTORY PROCESSING SPEED

Shinichi Nakatsu, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 9, 1994, Ser. No. 239,520
Claims priority, application Japan, May 7, 1993, 5-105783
Int. Cl.[6] G06F *1/04*
U.S. Cl. 327—293 **20 Claims**



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1. A system clock generating circuit for supplying a system clock to a microprocessor, the system clock generating circuit comprising:

a first oscillator for generating a main clock signal having a first frequency,

a second oscillator for generating a sub clock signal having a second frequency, said second frequency being lower than said first frequency,

a twin-clock control circuit receiving said main clock signal and said sub clock signal and being controlled by said microprocessor so as to generate, based on said main clock signal and said clock signal, a system clock to be supplied to said microprocessor,

said twin-clock control circuit generating, when said microprocessor is operating in an ordinary operating speed mode, an (n)-phase system clock, based on said main clock selected as said system clock, which comprises (n) clock pulses for each one instruction cycle, where (n) is a positive even number, and

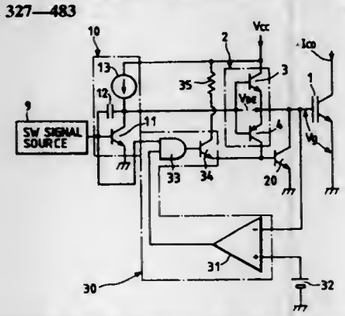
when said microprocessor is in a power saving mode, said twin-clock control circuit generating, based on said sub clock selected as said system clock, an (n/m)-phase system clock which comprises (n/m) clock pulses for each one instruction cycle of said microprocessor, where (m) is a positive even number smaller than (n).

5,625,312

CONTROL CIRCUIT FOR SEMICONDUCTOR DEVICE

Hiroyuki Kawakami, and Noriho Terasawa, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1995, Ser. No. 496,243
Claims priority, application Japan, Jun. 29, 1994, 6-147222
Int. Cl.[6] H03K *17/615*
U.S. Cl. 327—483 **6 Claims**



1. A control circuit for controlling the switching operation of an insulated-gate semiconductor device, comprising:

a switching signal source for generating an on/off signal;

a drive circuit having a series circuit semiconductor which consists of an npn transistor and a pnp transistor, each of said npn transistor and said pnp transistor having a collector connected to a control power supply, a base receiving the on/off signal from said switching signal source, and an emitter outputting an on/off drive voltage, said drive circuit having an output terminal connected to a gate terminal of said semiconductor device; and

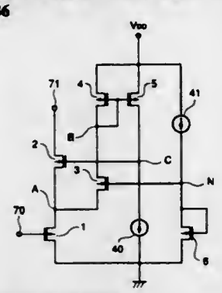
switching speed control means for supplying the bases of said npn transistor and said pnp transistor of said drive circuit with the on/off signal from said switching signal source while giving predetermined slopes to rise and fall of the on/off signal.

5,625,313

CASCODE CIRCUIT OPERABLE AT A LOW WORKING VOLTAGE AND HAVING A HIGH OUTPUT IMPEDANCE

Toshiyuki Etoh, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 12, 1994, Ser. No. 304,389
Claims priority, application Japan, Sep. 13, 1993, 5-226294
Int. Cl.[6] H03K *17/60;* **G06G** *7/12*
U.S. Cl. 327—486 **6 Claims**



1. A cascode circuit comprising:

a first MOS transistor of N-channel type having a gate connected to an input terminal of the cascode circuit and a source connected to ground;

a second MOS transistor of N-channel type having a drain connected to an output terminal of the cascode circuit and a source connected to a drain of said first MOS transistor, so that a series connection of said first and second MOS transistors is constituted between said ground and said output terminal;

a third MOS transistor of N-channel type having a source connected to a series-connecting node between said first and second MOS transistors and a gate connected to a fixed voltage generated by a bias voltage generating circuit; and

a current mirror circuit comprising fourth and fifth MOS transistors of P-channel type having sources connected in common to a voltage supply potential, a gate of said fourth MOS transistor being connected to a gate of said fifth MOS transistor, a drain of said fourth MOS transistor and a drain of said third MOS transistor, a drain of said fifth MOS transistor being connected through a first constant current source to said ground and also to a gate of said second MOS transistor,

so that a negative feedback loop is formed to start from said series-connecting node between said first and second MOS transistors, to pass through said third MOS transistor, said fourth MOS transistor, said fifth MOS transistor and said second MOS transistor in the named order, to return to said series-connecting node between said first and second MOS transistors.

5,625,314

SELF-CALIBRATING MULTIPLEXER CIRCUIT

Chris P. Wahl, North Huntingdon, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 11, 1995, Ser. No. 499,886
Int. Cl.[6] G01R *31/30*
U.S. Cl. 327—519 **16 Claims**

1. A time domain multiplexer system with automatic error determination, comprising:

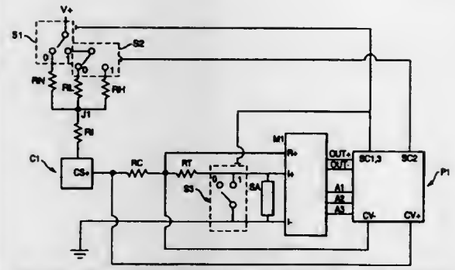
constant current source means for generating at least three distinct predetermined current output levels;

a time domain multiplexer;

a computing means;

two series resistances of predetermined magnitude;

one end of said series resistances being connected to, and driven by, said constant current source means, the other end of said series resistances being connected to said multiplexer at an input;



said multiplexer, said current source means, and said computing means being interconnected, said computing means controlling an output from said multiplexer with said multiplexer outputs being inputted to said computing means;

said computing means also selecting a current level of said at least three output levels for said current source means; the current at a first level being employed to energize sensors for normal multiplexer operations, the currents at second and third levels being employed to develop second and third voltages across each of said two series resistances, said second and third voltages across one of said resistances being inputted to said computing means to determine the magnitude of said second and third current levels, said second and third voltages across said second of said series resistances being inputted to said multiplexer, outputted from said multiplexer, and inputted to said computing means; and

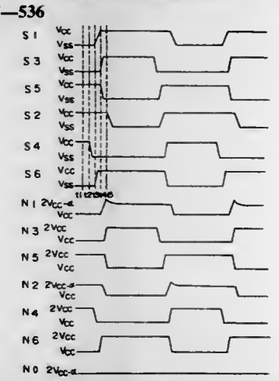
said computing means, employing said inputted voltages, for determining acceptable limits of voltage output from said multiplexer during normal multiplexer operation.

5,625,315

BOOSTER POWER GENERATING CIRCUIT

Katsuaki Matsui; Sampei Miyamoto, and Hidekazu Kikuchi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 256,228, Jun. 29, 1994. This application Sep. 18, 1995, Ser. No. 529,546
Claims priority, application Japan, Nov. 18, 1992, 4-308555; Mar. 16, 1993, 5-055498
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—536 **3 Claims**



1. A booster power generating circuit comprising:

a first booster circuit for supplying a first booster potential to a first node in response to a first pulse signal;

a second booster circuit for supplying a second booster potential to a second node in response to a second pulse signal;

a third booster circuit for supplying a third booster potential to a third node in response to a third pulse signal;

a fourth booster circuit for supplying a forth booster potential to a fourth node in response to a fourth pulse signal;

a fifth booster circuit for supplying a fifth booster potential to a fifth node in response to a fifth pulse signal;

a sixth booster circuit for supplying a sixth booster potential to a sixth node in response to a sixth pulse signal;

a first precharge circuit for precharging said first node upon reception of said fourth booster potential, having a different potential than a potential of an output node, from said fourth node;

a second precharge circuit for precharging said second node upon reception of said third booster potential, having a different potential than a potential of said output node, from said third node;

a first output circuit for outputting said first booster potential of said first node to said output node; and

a second output circuit for outputting said second booster potential of said second node to said output node;

wherein said first, second, third, fourth, fifth and sixth booster circuits, and said first and second precharge circuits have a first conductive type transistor, and

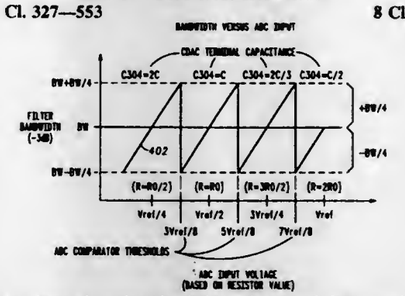
wherein said first and second output circuits have a second conductive type transistor.

5,625,316

TUNING CIRCUIT FOR AN RC FILTER

Mark J. Chambers, Plantation, Fla.; Jesus P. Finol, Chandler, Ariz., and James B. Phillips, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1994, Ser. No. 269,509
Int. Cl.[6] G25F *3/02;* **H03K** *5/00*
U.S. Cl. 327—553 **8 Claims**



1. An electronic tuning circuit for tuning an RC filter circuit, the RC filter circuit including a resistor and a programmable capacitor array, the electronic tuning circuit being coupled externally to the RC filter circuit, the electronic tuning circuit comprising:

a reference current source for generating a substantially stable reference current, the reference current source including a bandgap reference for providing a bandgap voltage;

a reference resistor substantially matched to the resistor, the reference resistor coupled to the bandgap reference for receiving the reference current and transforming the reference current into a voltage signal at a node:

an analog-to-digital converter coupled between the node and the programmable capacitor array for receiving the voltage signal and providing a digital output to the programmable capacitor array.

5,625,317

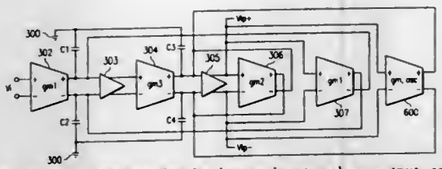
TUNING METHOD FOR INTEGRATED CONTINUOUS-TIME FILTERS

Geert Develrman, Tustin, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 8, 1994, Ser. No. 287,173
Int. Cl.[6] H03K *5/00;* **H04B** *1/00*
U.S. Cl. 327—353 **49 Claims**

15. A filter circuit having a built-in test mode for tuning a cutoff frequency, said filter comprising:

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at least one filter section having an input and an output, said filter section filtering an input signal received on said input to provide a filtered output, said at least one filter section having a filter element with a first value;

pole shifting means coupled to said filter element, said pole shifting means enabled in said test mode, said pole shifting means altering said first value of said filter element to cause oscillation of said filter section at said cutoff frequency. by repositioning a plurality of poles of said filter section into a region of the right half-plane of the s-plane, said plurality of poles returning to the left half-plane when said pole shifting means is disabled after said tuning is complete.

5,625,318

DIFFERENTIAL AMPLIFIER HAVING A DOUBLE DIFFERENTIAL AMPLIFIER PAIR WITH INTERCONNECTED CONTROL ELECTRODES

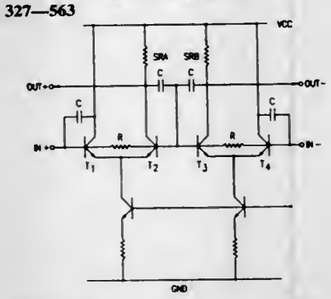
Joannes M. J. Sevenhans, Brasschaat; Eric Duvivier, Anderlues, and Daniel Sallaerts, Aarschot, all of Belgium, assignors to Alcatel NV, Rijswijk, Netherlands

Filed Oct. 10, 1995, Ser. No. 541,904

Claims priority, application European Pat. Off., Oct. 11, 1994, 94202939

Int. Cl.[6] G06G *7/26*

U.S. Cl. 327—563 **2 Claims**



DDPA

1. A differential amplifier (DDPA) coupled to a tail current source and having a differential input (IN+, IN−) and a differential output (OUT+, OUT−),

wherein said tail current source is a variable double tail current source having a first and second current branch each with a series connection of a respective bias transistor and a respective resistor, both bias transistors being simultaneously controlled by a control signal coupled to respective bases of respective bias transistors; and

wherein said differential amplifier (DDPA) is a double differential pair amplifier having first (SRA, T2) and second (SRB, T3) branches each being connected between a power supply (VCC) and respectively to said first and second current branch, each of said first and second branches having a respective series connection with a respective load resistor (SRA, SRB) and a respective first transistor (T2, T3) and having respective control electrodes that are interconnected, said double differential pair amplifier (DDPA) also having third (T1) and fourth (T4) branches each being connected between said power supply (VCC) and respectively to said first (SRA, T2) and second (SRB, T3) current branches, each of said third (T1) and fourth (T4) branch having a corresponding second transistor (T1, T4) with a corresponding control electrode that constitutes an associated differential input (IN+, IN−) of said double differential pair amplifier (DDPA), junction points of respective load resistors (SRA, SRB) with respective first transistors (T2, T3) constituting an associated differential output (OUT+, OUT−) of said double differential pair amplifier (DDPA), and the respective control electrodes of said respective first transistors (T2, T3) being connected via a respective second resistor (R) to corresponding control electrodes of corresponding second transistors (T1, T4) and also being connected via a respective capacitor (C) to the junction points of the respective load resistors (SRA, SRB) with said respective first transistors (T2, T3).

5,625,319

FM DEMODULATOR FOR RECEPTION OF SATELLITE BROADCASTING

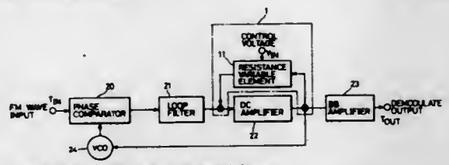
Kazuya Miki, Hyogo, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 550,677

Claims priority, application Japan, Oct. 31, 1994, 6-266857; May 31, 1995, 7-133829

Int. Cl.[6] H03D *3/00;* **H03L** *7/093*

U.S. Cl. 329—325 **6 Claims**



1. An FM demodulator, comprising:

a voltage-controlled oscillator for outputting a signal whose frequency is a function of a control input;

a phase comparator for comparing an FM modulated input signal with an output signal of said voltage-controlled oscillator and outputting a phase comparison signal representing a phase difference therebetween;

a loop filter for attenuating noise which falls out of a predetermined band from an output of said phase comparator;

a DC amplifier for amplifying an output of the loop filter and applying the amplified signal to the voltage-controlled oscillator as the control input;

a BB amplifier connected to an output of said DC amplifier and demodulating an input signal from the output of said DC amplifier; and

a feedback circuit whose resistance is a function of an external control voltage for feeding back the output of said DC amplifier to an input of said DC amplifier.

5,625,320

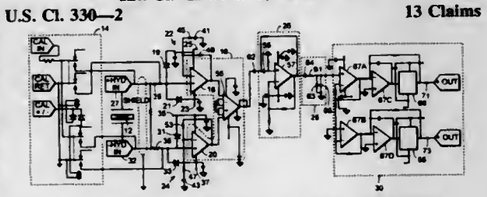
DIFFERENTIAL PREAMPLIFIER AND PRE-EMPHASIS NETWORK

James D. Hagerty, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 7, 1994, Ser. No. 319,688

Int. Cl.[6] H03F *3/45;* **H04B** *11/00*

U.S. Cl. 330—2 **13 Claims**



1. A pre-amplifier and pre-emphasis network, comprising:

a differential amplifier having first and second differential inputs and one output and exhibiting common-mode noise rejection at the differential inputs;

first and second variable gain buffers of high input impedance and low noise floor, each of said first and second variable gain buffers having an input and an output, each output of said first and second variable gain buffers connected to a respective one of said first and second differential inputs of said differential amplifier for preventing current noise degradation at said first and second differential inputs of said differential amplifier;

first and second differential pre-emphasis networks, each first and second differential pre-emphasis network connected to a respective one of the first and second variable gain buffers of high input impedance, for providing balanced, differential gain of a sensor element signal coupled across the inputs of the first and second variable gain buffers such that comparatively lower frequency components of the sensor element signal are amplified less than comparatively higher frequency components;

a high pass filter having an input coupled to said one output of said differential amplifier, and an output;

a roll-off network having an input coupled to said output of said high-pass filter, and an output; and

a differential output buffer having an input coupled to said output of said roll-off network, and first and second outputs for providing inverted and non-inverted signals.

5,625,321

VARIABLE GAIN AMPLIFIER APPARATUS

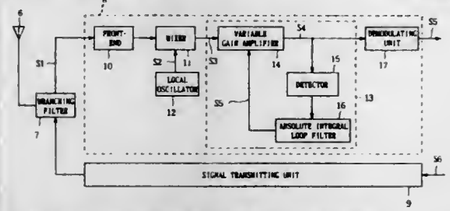
Kazuji Sasaki; Masayuki Katakura, both of Kanagawa, and Kazuyuki Saijo, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 547,120

Claims priority, application Japan, Oct. 28, 1994, 6-289140

Int. Cl.[6] H03F *3/68;* **H03G** *3/20*

U.S. Cl. 330—124 R **4 Claims**



1. A variable gain amplifier apparatus comprising:

first and second variable gain amplifiers having different noise characteristics and different saturation input levels, said first and second variable gain amplifiers receiving a common input signal, and the gains of said first and second variable gain amplifiers being controlled by a common gain control signal; and

an adding circuit for adding an output signal of the first variable gain amplifier and an output signal of the second variable gain amplifier to each other, wherein the gains of said first and second variable gain amplifiers change in a complementary manner in response to said common gain control signal.

5,625,322

AMPLIFIER BIAS CONTROL DEVICE

Frédéric Gourgue, and Véronique Soula, both of Paris, France, assignors to Alcatel N.V., Rijswijk, Netherlands

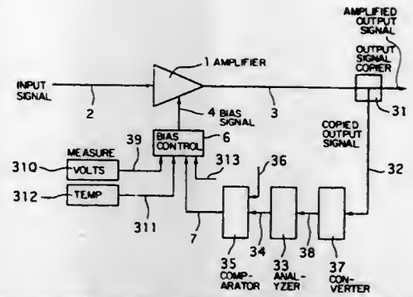
Filed Feb. 10, 1995, Ser. No. 386,630

Claims priority, application France, Feb. 11, 1994, 94 01581

Int. Cl.[6] H03G *3/20;* **H03F** *1/26*

U.S. Cl. 330—129 **16 Claims**

1. Device for controlling the biasing of an amplifier comprising:



amplifier means which receives both an input signal to be amplified and a bias signal, said amplifier means supplying an output signal therefrom that is principally in a predetermined frequency band and comprises at least two separate power output values;

bias control means for controlling the biasing of said amplifier, said bias control means receiving a linearity control information and transmitting said bias signal therefrom such that an actual out-band send level substantially equals a required out-band send level,

wherein said actual out-band send level is defined as a send level of said amplified output signal outside said predetermined frequency band, and

wherein said required out-band send level is defined as a predetermined maximal out-band send threshold level for any of said separate possible output power values.

5,625,323

FET GATE BIAS CIRCUIT

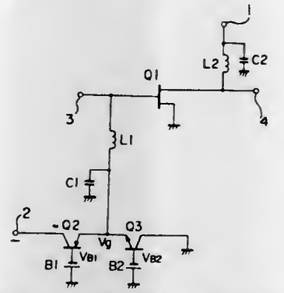
Norio Tozawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 18, 1995, Ser. No. 544,606

Claims priority, application Japan, Feb. 15, 1995, 7-026634

Int. Cl.[6] H03F *3/16*

U.S. Cl. 330—277 **5 Claims**



1. An FET gate bias circuit having a Schottky barrier gate incorporated therein, comprising:

a PNP transistor having a collector thereof connected to a negative power supply;

an NPN transistor having a collector thereof grounded and an emitter thereof connected to an emitter of said PNP transistor;

a Schottky barrier gate FET having a source thereof grounded and a gate thereof connected to a node between the emitter of said PNP transistor and the emitter of said NPN transistor; and

base voltage applying means for applying predetermined base voltages to respective bases of said PNP transistor and said NPN transistor.

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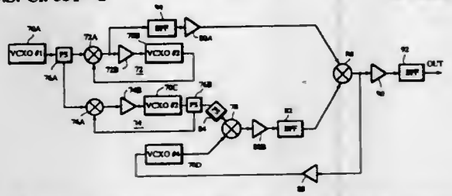
ULTRA LOW NOISE FREQUENCY GENERATOR PRODUCING THE SUM OF PLURAL SIGNAL SOURCES

Steve I. Hsu, Rancho Palos Verdes, and Stephen D. Taylor, Agoura, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 482,334

Int. Cl.[6] H03L *7/07*

U.S. Cl. 331—2 **21 Claims**



10. A low noise, non-programmable, fixed reference frequency signal generator, comprising:

N signal sources for producing N signals each having a signal frequency;

circuitry for summing the frequencies of the N signals to produce a signal generator output signal having a non-programmable, fixed output frequency which is the sum of the signal frequencies of the N signals, and

circuitry for phase locking said N signal sources to a common frequency, wherein said N signal source signal frequencies are integer multiples of said common frequency.

5,625,325

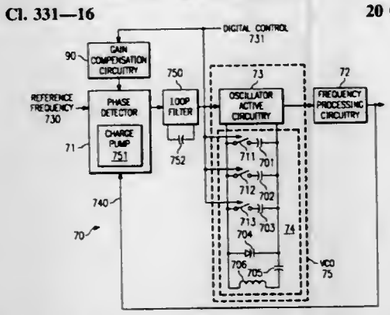
SYSTEM AND METHOD FOR PHASE LOCK LOOP GAIN STABILIZATION

Robert R. Rotzoll, Allen, and Jaideep Prakash, Dallas, both of Tex., assignors to Microtune, Inc., Plano, Tex.

Filed Dec. 22, 1995, Ser. No. 577,780

Int. Cl.[6] H03L *7/093;7/099*

U.S. Cl. 331—16 **20 Claims**



11. A method for stabilizing the gain of a phase lock loop comprising the steps of:

creating a digital control signal representing a selected oscillator frequency band;

feeding the digital control signal to a gain compensator to alter a gain of a phase detector in a phase lock loop; and

controlling a resonant inductance-capacitance circuit using the digital control signal to alter a gain of a voltage controlled oscillator in the phase lock loop.

5,625,326

LOCK ALARM CIRCUIT OF A SYNTHESIZER

Olli-Pekka Raikaa, Irving, Tex., assignor to Nokia Telecommunications OY, Espoo, Finland

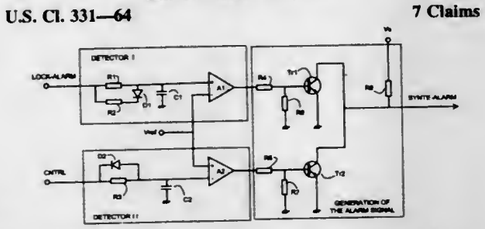
PCT No. PCT/FI95/00564, § 371 Date Jun. 12, 1996, § 102(e) Date Jun. 12, 1996, PCT Pub. No. WO96/12348, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 11, 1995, Ser. No. 656,316

Claims priority, application Finland, Oct. 14, 1994, 944856

Int. Cl.[6] H03L *7/06;7/095*

U.S. Cl. 331—64 **7 Claims**



1. An alarm circuit for a synthesizer in which a locking detector signal of a phase-locked loop indicates in a first state that the loop is locked, and in a second state that the loop is unlocked, and for activating and temporary deactivating of which at least an operating voltage of a voltage controlled oscillator may be switched on in response to a first state of a switching signal of the operating voltage, and correspondingly, switched off in response to a second state of the switching signal, comprising:

a first detector, comprising a first means for changing the state of an output of the detector with a delay, in response to the change of the signal of the detector conveyed to said detector,

a second detector, comprising a second means for changing the state of the output of the detector with a delay, in response to the change of the switching signal conveyed to said detector, and

a device generating an alarm signal, providing an output signal of the alarm circuit in response to the output signal of the first detector and that of the second detector.

5,625,327

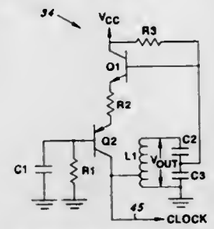
MODIFIED COLPITTS OSCILLATOR FOR DRIVING AN ANTENNA COIL AND GENERATING A CLOCK SIGNAL

Gary T. Carroll, Boulder, and J. Donald Pauley, Estes Park, both of Colo., assignors to GnuCo Technology Corporation, Boulder, Colo.

Filed Jul. 13, 1995, Ser. No. 502,313

Int. Cl.[6] H03B *5/12*

U.S. Cl. 331—74 **12 Claims**



9. An oscillator circuit consisting of:

a first transistor;

a second transistor coupled to the first transistor;

the first and second transistors being operatively coupled to a supply voltage;

an LC circuit coupled to provide positive feedback between the first and second transistors, the LC circuit consisting of first and second capacitors connected in series forming a capacitive divider network, which capacitive divider network is connected in parallel with a coil having an inductance, the value of the inductance and the value of capacitance of the first and second capacitors in series determining a resonant frequency at which the oscillator circuit oscillates, the capacitive divider network providing a low impedance feedback via the second transistor to the first transistor,

the first and second transistors each comprising bipolar transistors, each having a base, a collector and an emitter, and wherein the emitter of the second transistor is connected to the emitter of the first transistor via a first resistor, and wherein the LC circuit is coupled between the collector of the first transistor and the base of the second transistor, and

a bias network comprising a third capacitor and a second resistor coupled to the first transistor;

whereby the oscillator circuit produces a high Q, low distortion output signal in the coil.

5,625,328

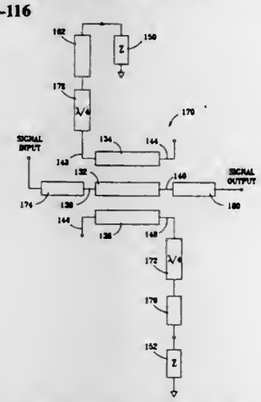
STRIPLINE DIRECTIONAL COUPLER TOLERANT OF SUBSTRATE VARIATIONS

William E. Coleman, Jr., Clearwater, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Sep. 15, 1995, Ser. No. 529,070

Int. Cl.[6] H01P *5/18*

U.S. Cl. 333—116 **15 Claims**



1. A stripline directional coupler tolerant of substrate material and process variations, the coupler comprising:

a first transmission line comprising a substrate material and defining an input port and a thru port;

a second transmission line electromagnetically coupled to the first transmission line and defining a coupled port and an isolation port wherein said second transmission line comprises the same substrate material as the first transmission line;

a third transmission line electromagnetically coupled to the first transmission line and defining a coupled port and an isolation port wherein said third transmission line comprises the same substrate material as the first transmission line; and

a first quarter-wave transmission line comprising the same substrate material as the first transmission line and coupled between the isolation port of the second transmission line and a first impedance.

5,625,329

SURFACE ACOUSTIC WAVE FILTER WITH AN OPTIMIZING REFLECTOR THICKNESS-TO-WAVELENGTH RATIO

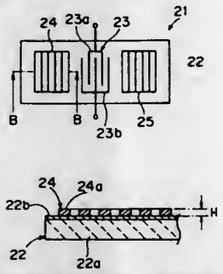
Jun Koike, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 293,717, Aug. 22, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 634,064

Claims priority, application Japan, Aug. 24, 1993, 5-209228

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—195 **6 Claims**



1. A surface acoustic wave (SAW) filter having a bandwidth, said filter comprising:

a piezoelectric substrate consisting of a non-piezoelectric (01$\bar{1}$2) plane α-Al_2O_3 substrate and a (11$\bar{2}$0) plane ZnO piezoelectric thin film being formed thereon;

at least one interdigital transducer being formed on said piezoelectric substrate; and

reflectors being arranged on both sides of said at least one interdigital transducer along a surface wave propagation direction,

each said reflector being so formed that a ratio H/λ of its thickness H to a wavelength λ of a surface wave is in a range of 0.015 to 0.041 whereby said range of H/λ ratio optimizes said bandwidth of said filter.

5,625,330

RESONATOR COUPLING DEVICE WITH A ROTATABLE RING FOR ADJUSTING THE LOADED Q

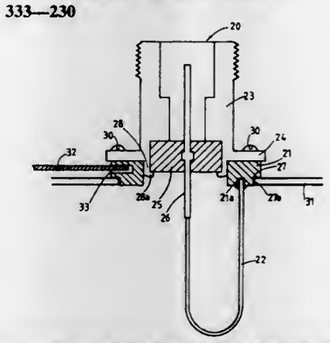
William E. Wilson, Wainuiomata, and Trevor J. Nixon, Tawa, both of New Zealand, assignors to Deltec New Zealand Limited, Tawa, New Zealand

Filed Aug. 30, 1994, Ser. No. 298,453

Claims priority, application New Zealand, Aug. 31, 1993, 248549

Int. Cl.[6] H01P *7/06;5/04*

U.S. Cl. 333—230 **2 Claims**



2. A resonator having a top wall with an aperture therethrough that defines an edge of said wall, said resonator capable of adjustment of a loaded Q factor, said resonator comprising:

a coupling device extending through said aperture and mounted to said top wall, said coupling device comprised of a connec-

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tor having a base, a body portion, and a cylindrical portion which extends below said base;

a mounting plate connected to the coupling device and secured directly to the resonator top wall by fastening means;

an electrically conductive ring having a central bore therein and an annular recess which fits into said top wall edge, said ring encompassing said cylindrical portion of said connector and further including at least one radial blind bore extending into said ring normal to said central bore;

a conductive loop having a pair of ends, one end electrically and rotatably connected to said central conductor of said connector and said other end attached to said ring,

wherein said loop, said ring and said central conductor are rotatable relative to the cylindrical portion of said connector when a removable shaft is inserted within said radial blind bore and manipulated so as to rotate said ring in one of a clockwise or counterclockwise direction when adjusting said loaded Q factor of the resonator.

5,625,331

SUPERCONDUCTING DEFLECTION ELECTROMAGNET APPARATUS

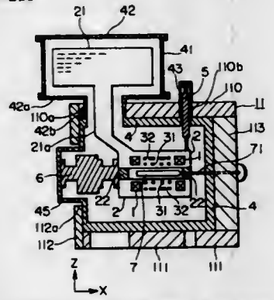
Tadatoshi Yamada, Amagasaki; Takeo Kawaguchi, Kobe; Tetuya Matuda, Amagasaki; Toshie Takeuchi, Amagasaki; Ituo Kodera, Amagasaki; Shunji Yamamoto, Amagasaki, and Shirou Nakamura, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 139,305

Claims priority, application Japan, Oct. 21, 1992, 4-283187

Int. Cl.[6] H01F *1/00*

U.S. Cl. 335—216 **7 Claims**



1. A superconducting electromagnet apparatus for deflecting charged particles, comprising:

means defining passage for the charged particles having an arcuate path in a plane;

a superconducting coil assembly arranged about the passage, the superconducting coil assembly being configured to generate a magnetic field when electrically excited, a portion of the magnetic field passing through the superconducting coil assembly and intersecting the passage in a direction transverse to the plane of the passage;

a cryostat accommodating said superconducting coil assembly;

a magnetic shield surrounding said cryostat and superconducting coil assembly, a portion of the magnetic shield extending transverse to the portion of the magnetic field passing through the superconducting coil assembly, the magnetic shield having at least one port therein to provide communication with the passage for the charged particles; and

a coolant medium reservoir disposed outside of said magnetic shield and constructed to provide a coolant medium to said cryostat.

5,625,332

OXIDE SUPERCONDUCTING WIRE AND SUPERCONDUCTING APPARATUS THEREOF

Tomoichi Kamo, Toukai-mura; Keiji Fukushima, Hitachi, and Seizi Takeuchi, Hitachioota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1994, Ser. No. 240,314

Claims priority, application Japan, May 17, 1993, 5-114366

Int. Cl.[6] H01F *1/00*

U.S. Cl. 335—216 **11 Claims**



1. Oxide superconducting wire comprising

a conductor core composed of oxide superconducting material, an elementary wire having a metallic sheath material composed of silver or a silver alloy formed at periphery of said conductor core, and

said metallic sheath material formed at periphery of a plurality of said elementary wire, characterized in that

said metallic sheath material is a composite containing dispersed oxide particles therein.

5,625,333

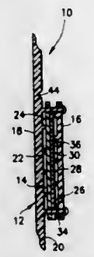
BEND SENSOR HORN SWITCH ASSEMBLY

Marcus T. Clark, Kaysville; Howard W. Hambleton, Jr., South Ogden, and Kevin W. Booth, Roy, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 22, 1995, Ser. No. 532,433

Int. Cl.[6] G01L *1/22*

U.S. Cl. 338—2 **12 Claims**



1. In a horn switch assembly for mounting on a steering wheel of a motor vehicle and comprising an airbag module cover having a front outer face and a rear inner face, a substantially rigid backing plate positioned so that a forward surface of the backing plate faces the rear inner face of the module cover, and a flexible bend sensor connectable to a remote horn control circuit that responds to a threshold rate of change of resistance, the bend sensor positioned between the rear inner face of the module cover and the forward surface of the backing plate, whereby pressure applied to the front outer face of the module cover causes at least one of a plurality of resistive elements in the bend sensor to bend and rapidly change resistance so that the remote horn control circuit activates a horn, the improvement comprising:

a plurality of force concentrators on the rear inner face of the cover extending rearwardly therefrom and positioned over the resistive elements of the bend sensor;

a plurality of spaced-apart supports on the forward surface of the backing plate, extending forwardly therefrom and arranged so that each resistive element is positioned between two adjacent supports, whereby pressure applied to the front outer face of the airbag module cover will cause the rear inner face to deformably depress towards the bend sensor causing at least one force concentrator to bend at least one resistive element about two adjacent supports.

5,625,334

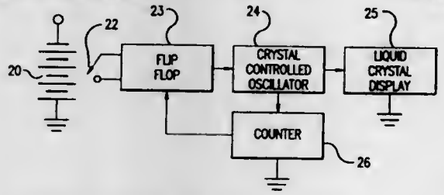
INDICATING DEVICE FOR WARNING A USER THAT A PRESCRIBED INTERVAL OF THE TIME AFTER EVENT HAS NOT ELAPSED

Karen A. Compton, 1619 Waters Edge La., Reston, Va. 22090

Continuation-in-part of Ser. No. 84,148, Jul. 1, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,366

Int. Cl.[6] G08B *1/00*

U.S. Cl. 340—309.15 **17 Claims**



1. Medication container apparatus comprising:

a container for medication which is to be dispensed therefrom and ingested no more frequently than once per predetermined time period;

an access mechanism for opening and closing said container to dispense medication thereof;

a sensor to detect closing of said access mechanism; and

an electrically actuated visual display apparatus, activated when said sensor detects closing of said access mechanism and deactivated upon expiration of a time period corresponding to said predetermined time period thereafter, for displaying during said predetermined time period, a visible caution signal indicating that said access mechanism has been operated within said preceding time period corresponding to said predetermined time period, whereby a consumer of said medication is informed not to ingest said medication during said predetermined time period.

5,625,335

FIFTH WHEEL HITCH WARNING INTERLOCK DEVICE

Stuart F. Kelly, 1725 Marley Ave., Glen Burnie, Md. 21060

Filed Jun. 1, 1995, Ser. No. 456,326

Int. Cl.[6] G08B *21/00*

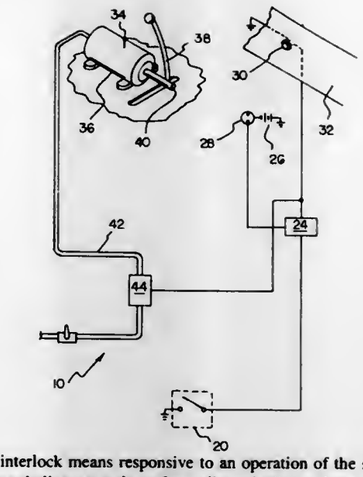
U.S. Cl. 340—431 **11 Claims**

1. A fifth wheel hitch warning interlock device comprising:

a fifth wheel hitch having a pivotally mounted lock lever for coupling a trailer to a towing vehicle;

a switch mounted relative to the fifth wheel hitch and including a follower responsive to a pivoting of the lock lever;

an indicator light responsive to an actuation of the switch for alerting an individual to a position of the lock lever;



an interlock means responsive to an operation of the switch for precluding operation of a trailer raise/lower lever when the lock lever is in an open orientation.

5,625,336

DISPLAY APPARATUS FOR A BICYCLE HAVING A SPEED CHANGER

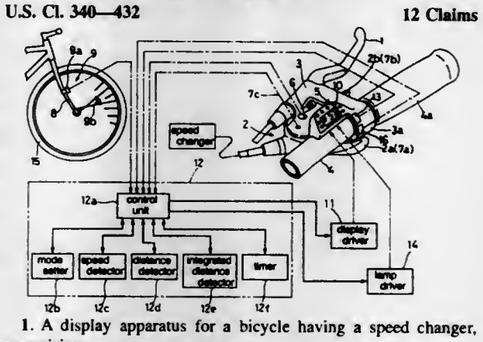
Seiji Yamamoto, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Sep. 7, 1994, Ser. No. 301,530

Claims priority, application Japan, Sep. 8, 1993, 5-222979

Int. Cl.[6] G04B *47/00*

U.S. Cl. 340—432 **12 Claims**



1. A display apparatus for a bicycle having a speed changer, comprising:

a takeup element for winding a control cable;

a shifting device for rotating said takeup element, wherein said shifting device comprises shift levers adapted to be manipulated by a user;

display means switchable between a running mode for displaying running information and a shifting mode for displaying shifting information;

switching command generating means for generating a command to switch said display means from said running mode to said shifting mode, said switching command generating means including contact sensors provided to said shift levers so that manipulation of said shift levers causes said generation of said command; and

automatic mode change means for automatically switching said display means from said shifting mode to said running mode upon lapse of a predetermined time after switching of said display means to said shifting mode.

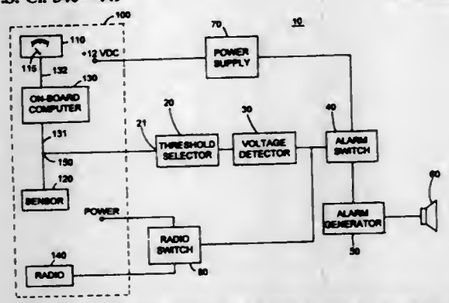
VOL 1197 ISS 5 AP 29 1997 UMI

5,625,337

SUPPLEMENTARY VEHICLE WARNING SYSTEM

Phillip C. Medawar, 2921 Breton, SE., Grand Rapids, Mich. 49512-1745

Filed Feb. 8, 1995, Ser. No. 389,273
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—449 **19 Claims**



1. A vehicle warning system for warning a vehicle operator of a dangerous condition resulting from an abnormal engine parameter for use in a vehicle having a sensor for measuring the engine parameter, a computer connected to the sensor by a first line, and a gauge connected to the computer by a second line, for displaying the measured engine parameter, said system comprising:

a power supply;

an input port;

a connector for connecting said input port to the first line of the vehicle;

threshold selecting means for selecting a threshold level for the engine parameter at which an alarm is to be generated;

a voltage detector for detecting when a voltage level at said input port reaches the selected threshold level;

an alarm generator for generating an alarm to warn an operator of a dangerous condition when provided with power from said power supply;

a first switch having a control terminal connected to said threshold detecting means for controllably connecting and disconnecting said alarm generator to said power supply, wherein said first switch connects said alarm generator to said power supply when said voltage detector detects that the voltage level has reached the selected threshold level; and

a second switch connected between said first switch and said alarm generator and having a control terminal connected to a starter of the vehicle such that said alarm generator is prevented from generating an alarm prior to vehicle ignition.

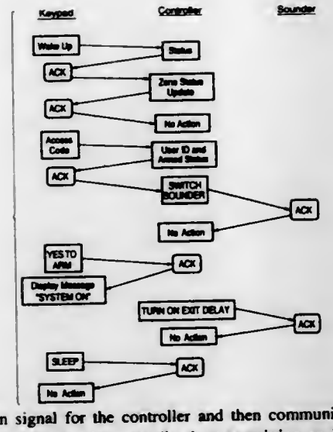
5,625,338

WIRELESS ALARM SYSTEM

Reinhart K. Pildner, Brampton, and James Parker, North York, both of Canada, assignors to Digital Security Controls Ltd., Downsview, Canada

Continuation-in-part of Ser. No. 171,460, Dec. 16, 1993, abandoned. This application Sep. 15, 1995, Ser. No. 529,046
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 **5 Claims**

1. A wireless keypad for a security system in combination with a controller of the security system, said wireless keypad comprising a transmitter for transmitting RF signals to the controller, a receiver for receiving RF signals from the controller, means for selectively turning said transmitter on and off, input keys for allowing a user to input information, a display screen for displaying prompts to assist a user in inputting pertinent information, logic processing means for determining which prompts are displayed and in what order, said logic processing means accumulating information in response to multiple prompts to define an instruction signal for the controller and then communicating the instruction signal to the controller by transmitting an RF signal, after which said receiver is temporarily activated for receipt of an acknowledgement signal from the controller indicating that the information was received, and upon receipt, turning the receiver off; said keypad including standalone a battery power supply.

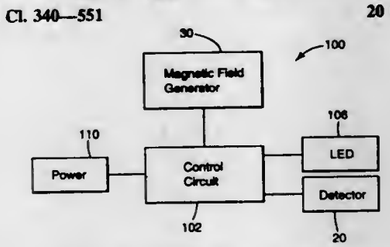


5,625,339

APPARATUS FOR CHANGING THE STATUS OF MAGNETIC MARKERS IN AN ELECTRONIC ARTICLE SURVEILLANCE SYSTEM

Peter J. Zarembo, Shoreview; Philip E. Edstrom, Minneapolis; Anthony M. Belka, Stillwater; Dennis L. Sando, Minneapolis; William R. Weber, III, Vadnais Heights, and Mark R. Crellin, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1996, Ser. No. 583,925
Int. Cl.[6] G08B *13/187*; **H01F** *13/00*
U.S. Cl. 340—551 **20 Claims**



1. An apparatus for changing the status of a magnetic marker associated with an object, wherein the marker is attached to or otherwise associated with an object to be protected, comprising:

detection means for detecting presence of the object and for producing therefrom an object detected signal;

a magnetic field generating means for generating a marker status changing magnetic field; and

control means for controlling an activation time of the magnetic field generating means in response to the object detected signal, and for controlling a time between successive activations of the magnetic field generating means;

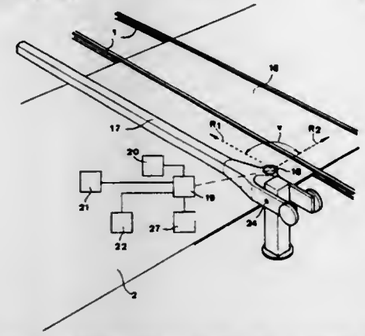
wherein movement of the object through the marker status changing magnetic field causes a change in the status of the marker.

5,625,340

DEVICE FOR SUPERVISING AN AREA

Kenneth Gustavsson, Murkelvägen 5, Åkersberga, Sweden

PCT No. PCT/SE93/00071, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/15416, PCT Pub. Date Aug. 5, 1993
PCT Filed Feb. 1, 1993, Ser. No. 256,833
Claims priority, application Sweden, Jan. 31, 1992, 9200265; Dec. 23, 1992, 9203904
Int. Cl.[6] G08B *13/26*
U.S. Cl. 340—561 **8 Claims**



1. A device for supervising a crossing (16) by detecting an object in a predetermined effective detection area of the crossing lying between railway gates of a railway and another way, the device comprising:

a detector (18) including means for transmitting a detection signal beam and receiving beam reflections from the object;

reciprocating means for pivotally reciprocating the detector to transmit the detection signal beam over a pivot angle (v);

a signal processing unit (19) coupled to the detector, the signal processing unit including means for delimiting the effective detection area by determining an effective distance as a function of the pivot angle and considering only objects within the effective distance; wherein:

the crossing area (16) is substantially rectangular; and

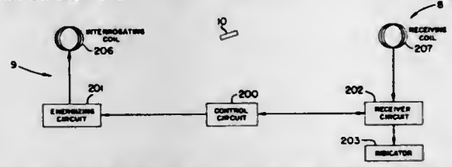
the angle (v) is bounded by a first direction (R1) extending substantially parallel to one of the railway gates, and a second direction (R2) extending substantially perpendicularly to the one of the railway gates.

5,625,341

MULTI-BIT EAS MARKER POWERED BY INTERROGATION SIGNAL IN THE EIGHT MHZ BAND

Olin S. Giles; Hubert A. Patterson, both of Boca Raton; Richard Frederick, Lighthouse Point, and David B. Ferguson, Boca Raton, all of Fla., assignors to Sensormatic Electronics Corporation, Deefield Beach, Fla.

Filed Aug. 31, 1995, Ser. No. 522,023
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **4 Claims**



1. An electronic article surveillance system, comprising:

generating means for generating an interrogation field signal that is swept through a predetermined frequency range according to a predetermined cyclic pattern;

first and second EAS markers simultaneously exposed to said interrogation field; the first marker including a first resonant circuit for electrically resonating at a first predetermined frequency within said predetermined frequency range, first data storage means for storing and reading out a first multi-bit data signal, and first switch means responsive to said first multi-bit data signal read out from said first data storage means for selectively changing a resonance characteristic of said first resonant circuit in accordance with said read out first multi-bit data signal; the second marker including a second resonant circuit for electrically resonating at a second predetermined frequency within said predetermined frequency range but different from said first predetermined frequency, a second data storage means for storing and reading out a second multi-bit data signal, and second switch means responsive to said second multi-bit data signal read out from said second data storage means for selectively changing a resonance characteristic of said second resonant circuit in accordance with said read out second multi-bit data signal; and

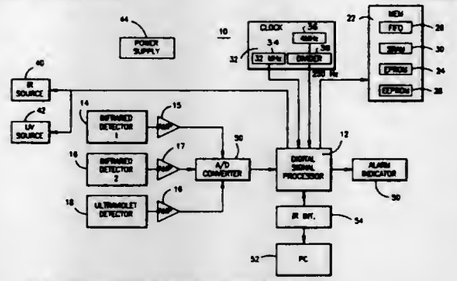
detecting means for receiving the first and second multi-bit data signals by detecting respective fluctuations in said interrogation field signal caused by the selective changing of the resonant characteristics of the first and second resonant circuits.

5,625,342

PLURAL-WAVELENGTH FLAME DETECTOR THAT DISCRIMINATES BETWEEN DIRECT AND REFLECTED RADIATION

Gregory H. Hall, Rockledge, Fla.; Heidi L. Barnes, Covington, La.; Pedro J. Medelius, Merritt Island; Howard J. Simpson, Melbourne, both of Fla., and Harvey S. Smith, Bay St. Louis, Miss., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 6, 1995, Ser. No. 561,202
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—578 **20 Claims**



1. A flame detector apparatus comprising:

a) first and second radiation responsive detectors, said first radiation responsive detector being responsive to radiation of a first wavelength and said second radiation responsive detector being responsive to radiation of a second wavelength, wherein said first and second wavelengths are present in radiation from a flame to be detected, but are reflected differently off of a reflective surface, each said detector generating a signal in response to detected radiation;

b) processor means for analyzing the signals generated by said first and second detectors, and determining therefrom whether radiation detected by said first and second detectors is received directly from a flame, or is received from a reflection of a flame, said processor means including means for generating an alarm signal if it is determined that radiation detected by said first and second detectors is received directly from a flame; and

c) alarm indicator means responsive to said alarm signal for indicating that a flame has been detected.

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DEVICE FOR DETERMINING AND/OR MONITORING A PREDETERMINED FILLING LEVEL

Werner Rottmar, Steinen, Germany, assignor to Endress + Hauser GmbH + Co., Maulburg, Germany

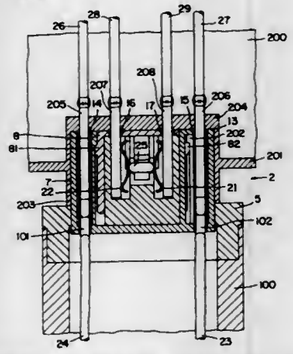
PCT No. PCT/DE93/00917, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO94/08214, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 25, 1993, Ser. No. 244,520

Claims priority, application Germany, Oct. 2, 1992, 42 33 185.4

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—620 13 Claims



1. An apparatus for monitoring a predetermined level of filling material in a container, the apparatus having a sensor arranged in the container at the elevation of the level to be monitored so that it comes in contact with the filling material once the filling material has reached the predetermined level, an electronic excitation circuit which excites the sensor to perform mechanical oscillations at its self-resonant frequency via a transducer, and an evaluation circuit for triggering at least one process as a function of the frequency of mechanical oscillations of the sensor, the improvement comprising

a characteristic impedance having a value which is a function of the self-resonant frequency of the sensor, and

a plug connection being arranged between the electric excitation circuit and the transducer as well as between the characteristic impedance and the evaluation circuit and producing an electrical connection between the electronic excitation circuit and the transducer as well as an electrical connection between the characteristic impedance and the evaluation circuit.

5,625,344

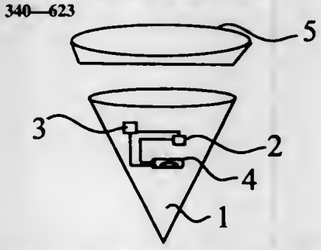
LOW FLUID LEVEL WARNING DEVICE

Ashok K. Shukla, and Mukta Shukla, both of 10024 Century Dr., Ellicott City, Md. 21042

Filed Feb. 25, 1994, Ser. No. 201,793

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—623 8 Claims



1. A liquid level sensor device for sensing when liquid in a container has dropped to a predetermined level, comprising a mercury switch affixed to a conical container of a size and density such that said container unanchored floats stably in said liquid until said predetermined level is reached, and tilts so as to close said mercury switch when said liquid drops below said predetermined level.

5,625,345

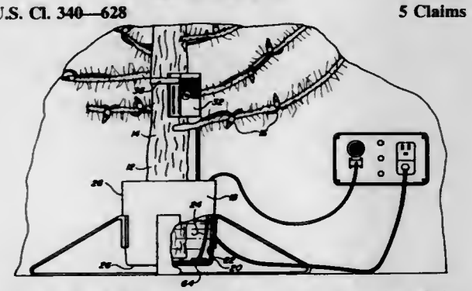
FIRE SAFETY APPARATUS

Patrick B. Stark, 5045 Bradford Ct., Brighton, Mich. 48116-9060, and Paul Schepp, 41862 Metaline Dr., Canton, Mich. 48187

Continuation-in-part of Ser. No. 342,862, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 987,747, Dec. 8, 1992, abandoned. This application May 8, 1995, Ser. No. 440,355

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—628 5 Claims



1. A fire safety apparatus for monitoring the operation of electrical Christmas tree ornamentation equipment supported on a Christmas tree, said apparatus comprising:

a low water level detector for detecting a low water level within a tree stand in which a portion of said Christmas tree is disposed, said low water detector having a low water detector circuit for detecting the presence of low water and generating an electrical alarm signal in response to the detection of a low water condition;

a smoke detector releasably securable to a portion of said Christmas tree, said smoke detector having a smoke detector circuit for detecting the presence of smoke and a first audible alarm for generating a first audible alarm signal in response to the detection of smoke in the vicinity of said Christmas tree;

a shut-off mechanism adapted to be removably electrically coupled to an existing AC wall receptacle and also coupled to said low water level detector, said shut-off mechanism including a sensing circuit for sensing the presence of the first audible alarm signal from said smoke detector;

said sensing circuit providing an electrical warning signal upon detection of the first audible alarm signal or in response to the detection of a low water condition within said tree stand;

said shut-off mechanism including:

a secondary AC receptacle for electrically coupling with said Christmas tree ornamentation equipment, said secondary electrical receptacle being electrically coupled with said existing AC receptacle;

means for interrupting current supplied from said existing AC receptacle to said secondary AC receptacle in the event of either a sensed low water level condition within said tree stand or the detection of said first audible alarm signal;

whereby upon detection of the first audible alarm signal or said lower water level condition said current interrupting means causes power supplied from existing AC receptacle to said secondary AC receptacle to be interrupted, thereby causing power to said Christmas tree lights to be interrupted; and

a second audible alarm responsive to said electrical warning signal for generating a second audible alarm signal indicative of a warning condition representing either a low water level condition or the detection of said smoke.

5,625,346

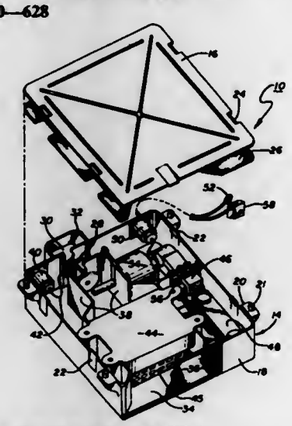
ENHANCED CAPABILITIES OF SMOKE DETECTORS

Hyo Shim, Cerritos; Sham S. Hariram, Laguna Hills; Wai-Pak Wong, Cerritos; Ronald Blumke, Covina, and Stanley C. Yu, Pico Rivera, all of Calif., assignors to McDonnell Douglas Corporatin, St. Louis, Mo.

Continuation of Ser. No. 325,129, Oct. 20, 1994, abandoned. This application May 16, 1996, Ser. No. 649,426

Int. Cl.[6] G08B *17/10*

U.S. Cl. 340—628 6 Claims



1. A smoke detection unit, comprising:

a housing;

a fan that is located within said housing, said fan creates a flow of air through said housing;

a smoke detector that is located within said housing and which detects smoke in the flow of air created by said fan;

a flow sensor, when activated, senses the flow of air and activates said smoke detector to initiate a self-diagnostic test when the flow of air exceeds a threshold level;

a test button that is operatively connected to said smoke detector through said flow sensor for selectively activating said flow sensor to activate said smoke detector to initiate said self-diagnostic test when the test button is depressed; and,

an indicator light that is illuminated when said button is depressed, said flow sensor senses that the flow of air exceeded said threshold level, and said smoke detector passes said self-diagnostic test.

5,625,347

ELECTRONIC BOTTLE CAP

Chris J. MacLean, Toronto, and Richard Dupuis, Pickering, both of Canada, assignors to Molson Breweries, Toronto, Canada

Filed May 2, 1994, Ser. No. 236,332

Claims priority, application Canada, Sep. 20, 1993, 2106528

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—686. 5 Claims

1. A device for delivering an audible message, comprising:

a crown-type twist-off bottle cap for releasable emplacement on an externally threaded bottle neck, said bottle cap including a substantially disc-shaped main body having a perimeter, a downwardly depending skirt around the perimeter of said main body;,

a cylindrical body extending beneath said main body and being provided with a radially disposed aperture;

a circuit in said cylindrical body, said circuit including means for securing thereto a source of electrical energy, and programmable means for encoding an audible message on said circuit;

a speaker in said cylindrical body, electrically connected to said circuit for delivering said audible message; and



a switch associated with said circuit, such that a portion of said switch extends through said radially disposed aperture of said cylindrical body, said switch including radially outwardly biasing spring means for maintaining said circuit in a closed state, emplacement of said bottle cap on said bottle causing said switch means to be urged inwardly to open said circuit and removal thereof causing said switch means to close said circuit, whereby removal of said bottle cap from said bottle causes said audible message to be delivered.

5,625,348

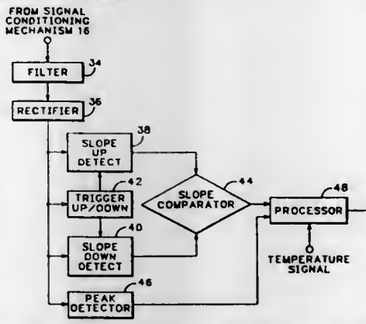
METHOD AND APPARATUS FOR DETECTING LOCAL PRECURSOR SEISMIC ACTIVITY

David F. Farnsworth, 1934 SW. Stringtown Rd., Forest Grove, Oreg. 97116, and Larry A. Park, 50631 NW. Gheen Rd., Manning, Oreg. 97125

Continuation-in-part of Ser. No. 424,409, Mar. 10, 1994. This application Aug. 30, 1995, Ser. No. 521,612

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—690 20 Claims



1. An apparatus for detecting precursor seismic activity, comprising:

a first skin wave sensing mechanism for producing a first electrical signal representative of sensed skin waves: and

a detection circuit, responsive to slopes of said first electrical signal, having a slope up detector, a slope down detector and a slope comparator, said slope comparator producing an indication of the presence of precursor seismic activity when the signal produced by said slope up detector exceeds the signal produced by said slope down detector.

VOL 1197 ISS 5 AP 29 1997 UMI

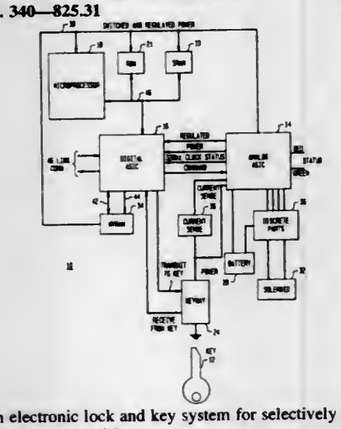
5,625,349
ELECTRONIC LOCK AND KEY SYSTEM

James E. Disbrow, Palm Bay; Christopher W. Malinowski, Melbourne; Eric L. Smitt, Indian Harbor Beach; Michael R. Mellen; Peter S. Danile, both of Palm Bay, and K. N. Singh Chhatwal, West Melbourne, all of Fla., assignors to Intellikey Corporation, Melbourne, Fla.

Continuation of Ser. No. 174,036, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 843,998, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 596,100, Oct. 11, 1990, abandoned. This application May 19, 1995, Ser. No. 444,395

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.31 8 Claims



1. An electronic lock and key system for selectively operating a locking device comprising:

an electronic lock circuit contained within said electronic lock and which is operative to controllably actuate said locking device, said electronic lock circuit including a first microprocessor and a first communications transceiver unit coupled with said first microprocessor, said first communications transceiver unit being operative, under control of said first microprocessor, to transmit a first encrypted communication signal sequence to said key; and

an electronic key circuit contained within said key and including a second microprocessor and a second communications transceiver unit coupled with said second microprocessor, said second communications transceiver unit being operative to receive a first encrypted communication signal sequence transmitted to said electronic key circuit by said electronic lock circuit, said second microprocessor being operative to deencrypt said first encrypted signal sequence and to perform a first prescribed task in response to deencryption of said first encrypted signal sequence, and wherein said electronic key circuit contains reprogrammable memory, associated with and accessible by said second microprocessor, which stores information representative of the ability of said electronic key circuit to access said electronic lock circuit for controllably actuating said locking device, and wherein said electronic lock circuit contains a power supply unit which supplies power to said electronic key circuit for operating said electronic key circuit, and wherein said power supply unit of said electronic lock circuit is configured to be coupled to and supply power to said electronic key circuit via first and second terminals, so that said second microprocessor and said second transceiver unit of said electronic key circuit may receive power from said electronic lock circuit for their operation, and wherein said electronic lock circuit contains an electrical current sense and monitoring circuit that is operative to sense and monitor an electrical condition of said first and second power supply terminals and, in response to detecting a magnitude of said electrical condition falling within a prescribed range of values, enabling the transmission and processing of communication signal sequences between said electronic key circuit and said electronic lock circuit.

5,625,350
AUDIO/VIDEO COMMUNICATION SYSTEM AND METHOD

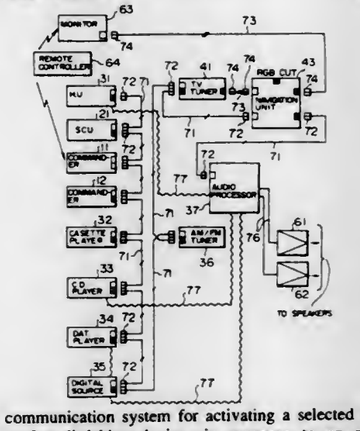
Hitoshi Fukatsu; Takashi Miyake; Tadashi Tanihira; Kouichi Sato, and Tadashi Sano, all of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,861

Claims priority, application Japan, Dec. 27, 1993, 5-330317; Dec. 27, 1993, 5-330322

Int. Cl.[6] H04Q *9/00*

U.S. Cl. 340—825.25 6 Claims



1. A communication system for activating a selected one of a plurality of audio/video devices in response to an activation request signal transmitted on a first bus line, the selected audio/video device transmitting signals to an audio/video output device on a second bus line, wherein the signals transmitted by the selected audio/video device are adjustable in response to adjustment command signals transmitted on the first bus line from a command unit, the communication system comprising:

a bus, including the first and second bus lines, connectable to the plurality of audio/video devices, the command unit and the output device; and

a system control unit, connected to the first bus line, for generating an activation command signal on the first bus line in response to the activation request signal transmitted from the command unit;

wherein the selected audio/video device transmits signals to the output device on the second bus line in response to the activation command signal; and

wherein the adjustment command signals are transmitted unchanged on the first bus line from the command unit to the selected audio/video device.

5,625,351
MESSAGING SYSTEM HAVING ROAMING CAPABILITY

David F. Willard, Plantation; Barbara D. Laflin, Ocean Ridge; William J. Kuznicki, Coral Springs; Mark Aronson, Boynton Beach, and Eric T. Eaton, Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1995, Ser. No. 378,136

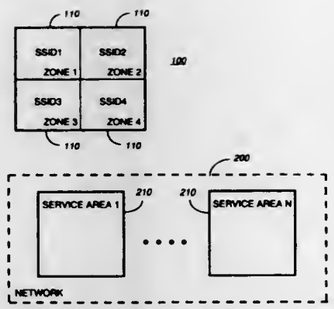
Int. Cl.[6] H04B *7/26*

U.S. Cl. 340—825.52 11 Claims

1. A method for communicating messages to a plurality of addressable receivers in a multiplicity of coverage areas, each coverage area accommodating the transmission of messages to at least one addressable receiver, the method comprising steps of:

dividing each coverage area into a plurality of zones;

storing in each receiver at least one set of coverage identification information, a set of coverage area identification information comprising digital words representing a coverage area identifier for identifying at least one coverage area, at least one zone identifier for identifying at least one zone within a



corresponding coverage area, and a frequency identifier for identifying a frequency on which the receiver receives message information in a corresponding coverage area, such that coverage area identifiers for different coverage areas may share the same;

encoding a signal for transmission in each zone, the signal including a coverage area identifier associated with the coverage area, a zone identifier corresponding to a zone within the coverage area, and a message for at least one receiver in the zone:

transmitting the signal in each zone of each coverage area on at least one transmission frequency; and

in a receiver, receiving the signal transmitted in a coverage area where the receiver is located if the transmission frequency of the signal corresponds to the frequency identifier stored in the receiver, decoding the signal to recover the coverage area identifier and zone identifier in the transmitted signal to determine whether the coverage area identifier and zone identifier stored in the receiver match the coverage area identifier and zone identifier in the transmitted signal, and further decoding the transmitted signal to recover a message addressed for the receiver if a match is determined.

5,625,352
METHOD AND ARRANGEMENT FOR TRANSMITTING DATA, SIGNALS AND ENERGY

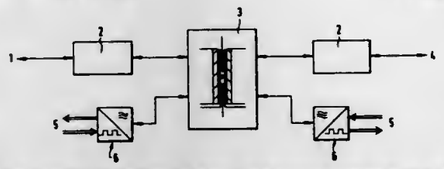
Peter Klemm, Stuttgart; Burkhard Schumann, Ottenbach, and Hilmar Rudloff, Koengen, all of Germany, assignors to Schuler Pressen GmbH & Co., Goeppingen, Germany

Filed May 17, 1995, Ser. No. 443,409

Claims priority, application Germany, Apr. 20, 1994, 44 13 789.3

Int. Cl.[6] G08C *14/16*

U.S. Cl. 340—870.01 12 Claims



1. A method of operating a press to transmit at least one of data, signals, and power, the method comprising the steps of:

arranging a sliding table of said press so as to be displaceable relative to a stationary device of said press;

providing the stationary device with a first transmitter, a coupling loop, a data coupler and a first antenna;

providing the sliding table with a second transmitter and a second antenna displaceable relative to said coupling loop and first antenna;

transmitting in a contactless manner at least one of said data, said signals and said power between the sliding table and the stationary device of said press.

5,625,353
DEVICE FOR TRANSMITTING SIGNALS FROM POSITION DETECTOR AND METHOD OF SUCH SIGNAL TRANSMISSION

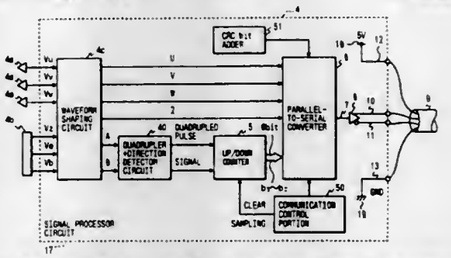
Takashi Katagiri, and Tetsuo Momose, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Dec. 28, 1993, Ser. No. 174,044

Claims priority, application Japan, Dec. 29, 1992, 4-361076; Jan. 11, 1993, 5-019356; Jan. 21, 1993, 5-004643 U; Jan. 21, 1993, 5-026172; Mar. 25, 1993, 5-090878; Mar. 31, 1993, 5-096629

Int. Cl.[6] G08C *15/06*

U.S. Cl. 340—870.03 22 Claims



1. A device for transmitting position detector signals to a control unit which comprises:

a position detector with a magnetic pole detecting portion, said position detector producing both pole detecting phase signals and two-phase signals,

a waveform shaping circuit for shaping said pole detecting phase signals and two-phase signals into rectangular waves, respectively;

a counter that counts two-phase incremental signals which are converted from said two-phase signals in an ascending or descending order during a predetermined time period and transmits counter value signals therefrom;

a converting circuit in which said counter value signals and an output signal from said waveform shaping circuit on the basis of said pole detecting phase signals are converted to a serial signal; and

a transmission path for transmitting said serial signal to said control unit.

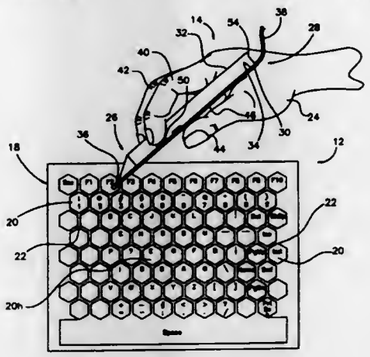
5,625,354
COMPACT STYLUS KEYBOARD

Samuel I. Lerman, 22450 Twyckingham, Southfield, Mich. 48034

Filed Jan. 26, 1996, Ser. No. 592,593

Int. Cl.[6] H03K *17/94*; H03M *11/00*

U.S. Cl. 341—20 18 Claims



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1. A compact stylus keyboard assembly coupled to a computer for reducing physical effort required to input keyboard data into the computer, comprising:

a computer; and

a compact stylus keyboard assembly, further comprising

a generally planar surface member having a plurality of adjacently positioned, electrically conductive key members forming a keyboard with an upper, planar surface, and said key members each having a second upper planar surface located coplanar with the keyboard upper planar surface, each of said key members providing said computer with respective key signals when coupled to a predetermined voltage, said generally planar surface member having electrical insulating material disposed between each of said key members for providing electrical isolation therebetween, and means for enabling communication between said hand-held stylus member and said computer, and

a hand-held stylus member having a first, contact end and a second, opposite end; said hand-held stylus member having an electrically conductive tip on said contact end and being coupled to said predetermined voltage, for individually contacting and thereby coupling said predetermined voltage to any one of said electrically conductive key members; and

whereby said hand held stylus member is gripped by a single hand and said electrically conductive tip is selectively manually slidable from a first of said key members across said electrical insulating material to at least a second, adjacent said key member and is manually lifted from said first key member and placed in contact with another, non-adjacent said key member in order to provide said computer with respective key signals from said first and said second key members, and whereby physical effort required to operate said compact stylus keyboard assembly is minimized by said stylus member sliding between adjacent said key members, and wherein said electrically conductive key members are hexagonally shaped and grouped in a honeycomb pattern in order to minimize distances between said key members as well as distances that said hand-held stylus member must traverse in order to contact adjacent said key members.

5,625,355

APPARATUS AND METHOD FOR DECODING VARIABLE-LENGTH CODE

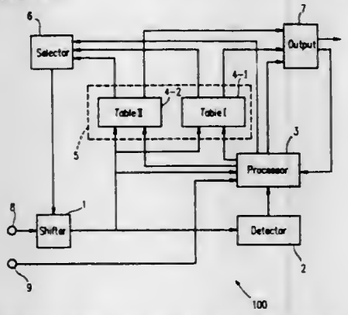
Hiroshi Takeno, Kyoto; Eiji Miyagoshi, Osaka; Hiroshi Imanishi, Takatsuki; Shintarou Nakatani, Osaka, and Toshihide Akiyama, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 27, 1995, Ser. No. 379,900

Claims priority, application Japan, Jan. 28, 1994, 6-008261

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **22 Claims**



1. A variable-length-code decoder which decodes an input bit stream including an input bit string having a codeword of a fixed-length code (a fixed-length codeword) and a plurality of codewords of variable-length codes (variable-length codewords), the fixed-length codeword and the variable-length codewords being combined according to a format, the variable-length codes being at least two variable-length codes by which data is coded/decoded using different code tables, the decoder comprising:

shift means for receiving the input bit string, shifting the received input bit string, and outputting the shifted input bit string by a unit, said unit comprising a predetermined number of bits;

pattern detection means for detecting a specific pattern in the bit string output by the shift means, and outputting a detection signal;

table means including at least two code tables provided for the at least two variable-length codes, respectively, each code table having a length of each codeword (codeword length) which belongs to a corresponding one of the variable-length codes and a decoded-word corresponding to the codeword, and outputting a codeword length and a decoded-word of a corresponding codeword based on the bit string output from the shift means; processing means for identifying and storing the format of the input bit string, outputting a length of the fixed-length code and decoded data of the fixed-length code, and selecting, for each of the plurality of variable-length codewords, one of the code tables to which the variable-length codeword belongs, based on the detection signal and the format;

codelength selection means for receiving the codeword length output from the table means and the length of the fixed-length code output from the processing means, for selectively inputting one of the codeword a length and the fixed-length code to the shift means, and for setting a shift amount for the input bit string in the shift means; and

output means for receiving the decoded-word output from the table means and the decoded data output from the processing means, and selectively outputting the decoded-word and the decoded data.

5,625,356

METHOD FOR RE-SYNCHRONIZING VARIABLE LENGTH CODE AT HIGH SPEED USING PARALLEL-PROCESSING PATTERN MATCHING

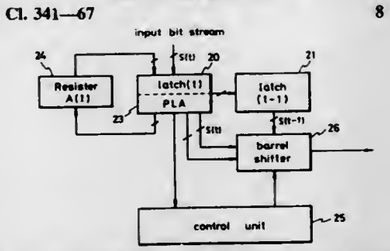
Sang H. Lee, and Jong S. Youn, both of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Rep. of Korea

Filed Feb. 28, 1995, Ser. No. 395,713

Claims priority, application Rep. of Korea, Feb. 28, 1994, 94-3769

Int. Cl.[6] H04L *1/00;7/00*

U.S. Cl. 341—67 **8 Claims**



2. A method for finding a synchronous code to recover a bit string transmitted when a variable length code of the bit string involves a transmission error in a system requiring a high processing speed such as a broad band integrated service digital network terminal, a bigh definition TV or multimedia, comprising the steps of:

transmitting a unit bit string having n+1 bits to a program logic array, comparing the input bit string with each of synchronous code match patterns sequentially shifted one bit by one bit from the input bit string in a forward direction, in a parallel manner, to find a location matched with the synchronous code from the input bit string, storing the number of forward matches in a register, comparing the input bit string with each of synchronous code match patterns sequentially shifted one bit by one bit from the input bit string in a backward direction, in a parallel manner, to determine the number of backward matches, and checking whether the sum of the number of backward matches and the number of forward matches stored in the register is identical to the number of bits of the synchronous code pattern;

if the sum is different from the number of bits of the synchronous code pattern, transmitting a next unit input bit string to the program logic array and repeating the above steps until the sum is identical to the number of bits of the synchronous code pattern;

if the sum is identical to the number of bits of the synchronous code pattern, sending a pattern find signal to a control unit and sending the number of shift bits to a barrel shifter; and

inputting a previous unit input bit string and the current unit input bit string at the barrel shifter to that the inputted input bit strings are shifted by the number of shift bits in a barrel shifter, whereby the synchronous code is accurately found from the input bit string with a fixed length shift amount at a high speed.

5,625,357

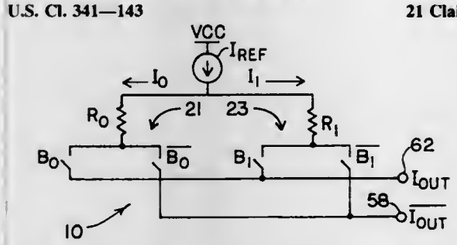
CURRENT STEERING SEMI-DIGITAL RECONSTRUCTION FILTER

Carlin D. Cabler, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 16, 1995, Ser. No. 389,362

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—143 **21 Claims**



1. A current steering semi-digital reconstruction filter for a digital-to-analog conversion circuit, comprising:

(a) a shift register having a 1-bit digital input stream and a plurality of output taps, wherein each said output tap provides a 1-bit signal which has a value of a logic 1 or a logic 0;

(b) a plurality of resistive paths, wherein each said resistive path includes a resistive element which is connected to a common current source, and to a first terminal of an active high switch and a first terminal of an active low switch;

wherein a single output tap is used to control said active high switch and said active low switch for a single resistive path; and

wherein a second terminal of each said active high switch of each of said plurality of resistive paths is connected to a non-inverted current path, and a second terminal of each said active low switch for each of said plurality of resistive paths is connected to an inverted current path.

5,625,358

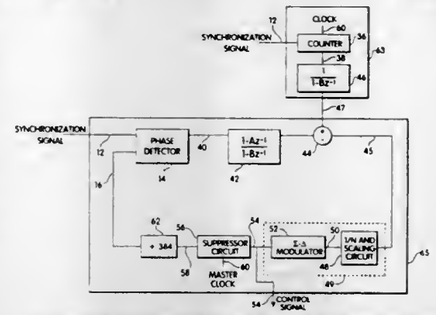
DIGITAL PHASE-LOCKED LOOP UTILIZING A HIGH ORDER SIGMA-DELTA MODULATOR

James Wilson, Foxboro, and Ronald A. Cellini, Newton, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 121,104, Sep. 13, 1993, and a continuation-in-part of Ser. No. 120,957, Sep. 13, 1993, and a continuation-in-part of Ser. No. 241,059, May 11, 1994, Pat. No. 5,497,152, and a continuation-in-part of Ser. No. 343,713, Nov. 22, 1994, and a continuation-in-part of Ser. No. 373,864, Jan. 17, 1995, Pat. No. 5,489,903, and a continuation-in-part of Ser. No. 328,560, Oct. 25, 1994, Pat. No. 5,485,152. This application Mar. 14, 1995, Ser. No. 403,291

Int. Cl.[6] H03M *3/02*

U.S. Cl. 341—143 **15 Claims**



1. A circuit which can be phase and frequency locked to a phase and frequency of an input signal, comprising:

a counter, responsive to the input signal and a master clock signal, for determining a period of the input signal and for outputting a period signal representative of the period; and

a phase-locked loop, responsive to the period signal and to the input signal, for locking to a phase and a frequency of the input signal and for providing a phase difference signal representative of a phase difference between the period signal and the input signal.

5,625,359

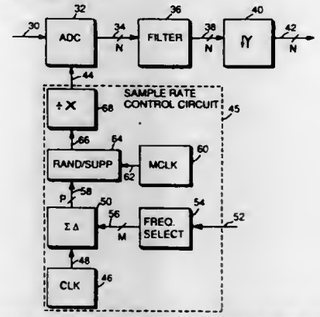
VARIABLE SAMPLE RATE ADC

James Wilson, Sharon; Ronald A. Cellini, Newton, and James M. Sobol, Norfolk, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 343,713, Nov. 22, 1994. This application Jun. 6, 1995, Ser. No. 466,215

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—143 **3 Claims**



1. A method for producing, from an analog input signal, digital samples at a predetermined sample rate, comprising the steps of:

computing a frequency select signal corresponding to the predetermined sample rate;

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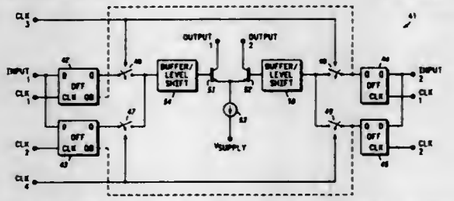
VOL 1197 ISS 5 AP 29 1997 UMI

producing, from the frequency select signal, a noise-shaped clock signal;
converting the analog input signal to digital samples at an oversampling rate equal to the frequency of the noise-shaped clock signal; and
decimating the digital samples to reduce the rate of the digital samples to the predetermined sample rate.

5,625,360
CURRENT SOURCE FOR REDUCING NOISE GLITCHES GENERATED IN A DIGITAL TO ANALOG CONVERTER AND METHOD THEREFOR

Douglas A. Garrity, Gilbert, Ariz., and Patrick L. Rakers, Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 524,095
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—144 **18 Claims**



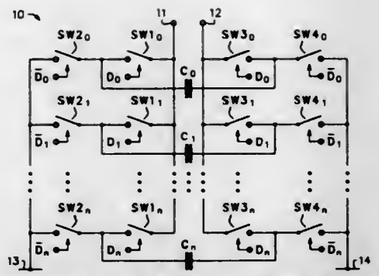
1. A switchable current source for a Digital to Analog Converter (DAC) comprising:
a first flip flop having an input coupled to a first input of the switchable current source, a clock input coupled for receiving a first clock signal, and an output;
a second flip flop having an input coupled to said first input of the switchable current source, a clock input coupled for receiving a second clock signal, and an output;
a first switch having a first terminal coupled to said output of said first flip flop, a control terminal coupled for receiving a third clock signal, and a second terminal;
a second switch having a first terminal coupled to said output of said second flip flop, a control terminal coupled for receiving a fourth clock signal, and a second terminal coupled to said second terminal of said first switch;
a first transistor having a first electrode coupled to a first output of the switchable current source, a control electrode coupled to said second terminal of said first switch, and a second electrode; and
a current source having a first terminal coupled to said second electrode of said first transistor and a second terminal coupled for receiving a power supply voltage.

5,625,361
PROGRAMMABLE CAPACITOR ARRAY AND METHOD OF PROGRAMMING

Douglas A. Garrity, Gilbert; Brad D. Gunter, Phoenix, and Danny A. Bersch, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 14, 1994, Ser. No. 338,295
Int. Cl.[6] H03M *1/00*
U.S. Cl. 341—172 **20 Claims**

1. An array of capacitors that can be selectively coupled to one another to form a programmable capacitor array, comprising:
a first capacitor having first and second terminals;
a second capacitor having first and second terminals;
a first switching circuit coupled between a first circuit node and said first terminal of the first capacitor;
a second switching circuit coupled between the first terminal of the first capacitor and a first reference terminal;

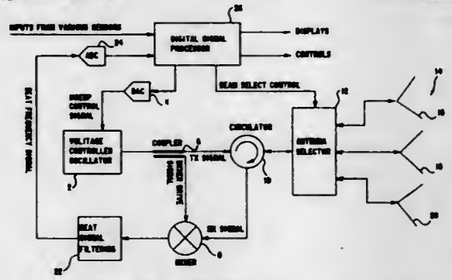


a third switching circuit coupled between a second circuit node and the second terminal of the first capacitor;
a fourth switching circuit coupled between the second terminal of the first capacitor and a second reference terminal;
a fifth switching circuit coupled between the first circuit node and the first terminal of the second capacitor;
a sixth switching circuit coupled between the first terminal of the second capacitor and the first reference terminal;
a seventh switching circuit coupled between the second circuit node and the second terminal of the second capacitor; and
an eighth switching circuit coupled between the second terminal of the second capacitor and the second reference terminal.

5,625,362
RADAR EQUIPMENT AND METHOD FOR ITS OPERATION

Michael R. Richardson, Romsey, Great Britain, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 6, 1996, Ser. No. 643,640
Claims priority, application United Kingdom, Nov. 6, 1993, 9322924
Int. Cl.[6] G01S *13/93;13/06*
U.S. Cl. 342—70 **13 Claims**

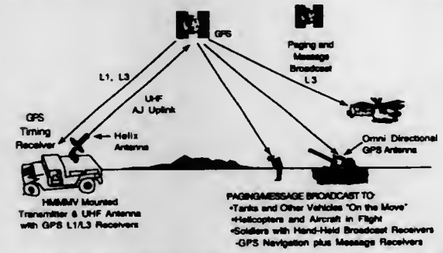


1. A radar equipment, comprising:
at least one antenna for transmitting and receiving radar signals;
a signal processor for supplying said at least one antenna; and
a mixer and a filter for producing a mixed signal;
said signal processor receiving the mixed signal and further sensor signals, recording frequencies of maxima in a spectrum of the mixed signal separately on the basis of a rising and a falling modulation phase as object frequencies, and calculating a distance and a relative speed of a target object from the object frequencies;
the object frequencies of the target object being stored separately over a number of measurement cycles on the basis of the rising and falling modulation phases;
object tracks describing a previous time response of the object frequencies being formed from the stored object frequencies;
estimated values for the object frequencies to be expected in a next measurement cycle being formed from a previous response of the object tracks;
object frequency pairs in each case having the lowest error being assigned to one another, after calculation of an error from the object frequencies and from the estimated values obtained from the object tracks; and
correct values for a range and a relative speed of the target object being calculated from the pairs.

5,625,363
PAGING/MESSAGING SYSTEM USING GPS SATELLITES

James J. Spilker, Woodside, Calif., assignor to Stanford Telecommunications, Inc., Sunnyvale, Calif.

Filed Mar. 15, 1995, Ser. No. 413,986
Int. Cl.[6] H04B *7/185;* G01S *5/02*
U.S. Cl. 342—352 **4 Claims**

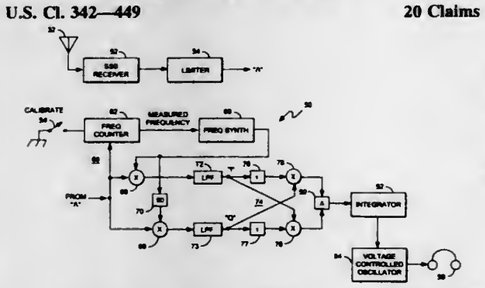


1. A paging/messaging system using the L3 transmission channel of a constellation of GPS satellites orbiting the earth, comprising:
an earth-based injection terminal having a source of paging/messaging signals and a UHF radio transmitter having an anti-jam uplink channel for broadcasting said paging/messaging signals on an anti-jam uplink transmission channel to in-view ones of said constellation of GPS satellites, and
a plurality of earth-based mobile receiving stations, each mobile receiving station having an omnidirectional receiving antenna and an L3 transmission channel receiver for receiving the L3 transmission channel broadcasts from said in-view ones of said constellation of GPS satellites and demodulating and decoding to recover the paging/messaging signals and means to present the paging/message signals to a designated user.

5,625,364
APPARATUS AND METHOD FOR FINDING A SIGNAL EMISSION SOURCE

David L. Herrick, Mont Vernon, and William F. Matthews, III, Hudson, both of N.H., assignors to Lockheed Sanders, Inc., Nashua, N.H.

Filed Jul. 8, 1994, Ser. No. 272,724
Int. Cl.[6] G01S *5/04;13/00*
U.S. Cl. 342—449 **20 Claims**

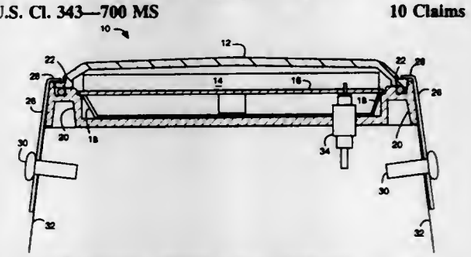


1. A method for sensing the direction of a source of emf emissions including a monotone signal, comprising the steps of:
receiving the monotone signal with an omnidirectional antenna;
moving the antenna relative to the source of emissions and in a known direction while the emissions including the monotone signal are being received;
detecting the amount of phase change of the received monotone signal due to the moving of the antenna; and
generating an output signal indicative of the amount of phase change detected as an indication of the relationship between the known direction of movement and the direction of the source of emissions.

5,625,365
DUAL-FREQUENCY MICROWAVE RADIO ANTENNA SYSTEM

Paul K. W. Tom, Saratoga, and Valentine L. Denninger, Sunnyvale, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Mar. 10, 1995, Ser. No. 402,194
Int. Cl.[6] H01Q *1/38;1/42*
U.S. Cl. 343—700 MS **10 Claims**



1. A dual-frequency antenna system, comprising:
a first rectangular planar microwave patch antenna mounted to a substrate and particularly dimensioned for receiving radio transmissions from orbiting navigation satellites on a first carrier frequency;
a second rectangular planar microwave patch antenna mounted to said substrate and particularly dimensioned and larger than the first rectangular planar microwave patch antenna for receiving radio transmissions from orbiting navigation satellites on a second different carrier frequency and positioned adjacent to and in the same plane as the first rectangular planar microwave patch antenna; and
a dual-frequency radio frequency amplifier having a first input and a second input respectively connected to the first and second rectangular planar microwave patch antennas and having selective amplification means for selectively amplifying one of said first and second frequencies through to a radio frequency output connection.

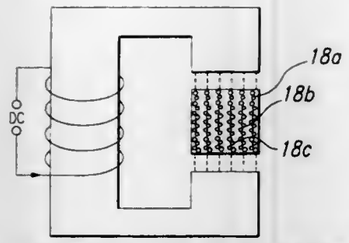
5,625,366
FLAT FLEXIBLE ANTENNA

Loek D'Hont, Almelo, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 4,362, Jan. 14, 1993, Pat. No. 5,408,243.
This application Mar. 2, 1995, Ser. No. 398,194
Claims priority, application Netherlands, Feb. 5, 1992, 92200331.4
Int. Cl.[6] H01Q *1/00;7/08*
U.S. Cl. 343—718 **11 Claims**

1. A flexible antenna comprising:
a flexible antenna core including a plurality of stacks of longitudinally extending strip-shaped layers of magnetic soft material maintained in a fixed relationship with each other, said flexible antenna core also including an insulating material for

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electrically insulating adjacent ones of said strip-shaped layers within each stack from each other and also electrically insulating adjacent ones of said stacks from each other; and

electrical windings surrounding said flexible antenna core.

5,625,367

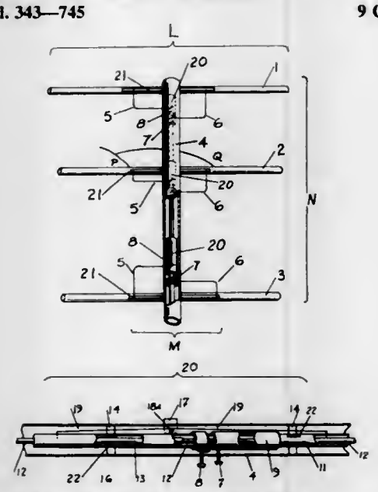
VARIABLE CAPACITANCE ANTENNA FOR MULTIBAND RECEPTION AND TRANSMISSION

Art Unwin, Rte. 13 Box 9, Bloomington, Ill. 61704

Filed Mar. 20, 1995, Ser. No. 406,421

Int. Cl.[6] H01Q *9/00*

U.S. Cl. 343—745 **9 Claims**



1. A variable capacitance antenna comprising:

a support boom for housing a variable capacitance;

a fixed distributed inductance of appreciable physical length with respect to the wavelength of operation;

a continuous, driven dipole element;

an outer fixed cylindrical conductive tube defining a first plate of said variable capacitance;

an inner linearly movable cylindrical conductive tube defining a second plate of said variable capacitance, and sliding relative to said outer tube for providing said variable capacitance;

said plates being connected to respective wires having ends;

said tubes insulated from each other by a fixed cylindrical non-conductive tube;

said distributed inductance characterized as a linear conductive means disposed along said driven dipole element; and

said variable capacitance and distributed inductance electrically connected in parallel to define a tuneable parallel resonant circuit.

5,625,368

RADIOWAVE ANTENNA SYSTEM

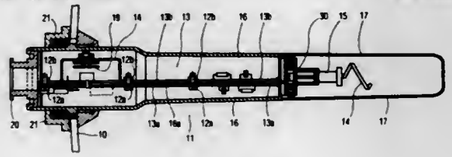
Christopher Howson, Strasbourg, France; Masahiro Fujimoto, Kawasaki, Japan; Patrice Fremanteau, and David Harrison, both of Strasbourg, France, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

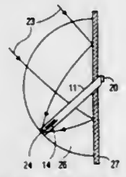
Filed Nov. 12, 1993, Ser. No. 150,903

Claims priority, application European Pat. Off., May 13, 1991, 91401231

Int. Cl.[6] H01Q *19/06;1/36*

U.S. Cl. 343—753 **6 Claims**





1. An antenna system for the reception of radiowaves, with a radiowave concentration means which concentrates by reflection, refraction and/or by diffraction radiowave beams in at least one focal point, said antenna system comprising:

a helical primary feed located at said focal point, said helical primary feed being a backfire helical antenna;

electronic means for converting, filtering and/or amplifying signals corresponding to said received radiowaves and which are disposed in a hollow housing which supports said primary feed,

said concentration means providing a hemispherical microwave lens, and

said hollow housing being disposed between the reflecting side of said microwave lens and said focal point.

5,625,369

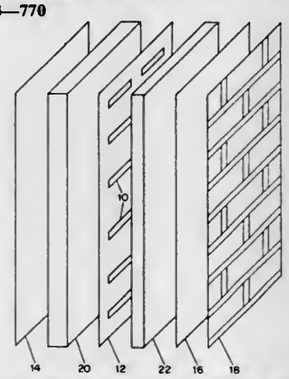
GRAPHIC-DISPLAY PANEL ANTENNAS

Edward M. Newman, Nesconset, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Feb. 28, 1994, Ser. No. 203,200

Int. Cl.[6] H01Q *13/10;1/42*

U.S. Cl. 343—770 **10 Claims**



1. A graphic-display slot panel antenna, of thin construction relative to width and height and suitable for mounting to a wall of a structure with predetermined surface form and coloration, comprising:

a plurality of vertically-arrayed horizontal slot radiating elements formed in a first conductive sheet;

excitation means, including signal coupling portions positioned in spaced relation to the back of said first conductive sheet and extending across said slot radiating elements, for providing slot excitation;

a second conductive sheet extending at least partially coextensively with said back of said first conductive sheet and in spaced relation to said excitation means and including a substantially flat panel arranged for mounting contiguous to said wall;

graphic display means, comprising a radome formed of radiation transmissive material and positioned in spaced relation to the front of said first conductive sheet, for supporting a graphic representation on an outward-facing portion of said graphic display means;

a graphic representation with predetermined coloration positioned on said graphic display means and having a compatible visual relationship to said surface form and coloration of said structure; and

coupling means for enabling signals to be coupled to and from said excitation means;

whereby positioning of said antenna in relation to said structure permits viewing of said visual relationship.

5,625,370

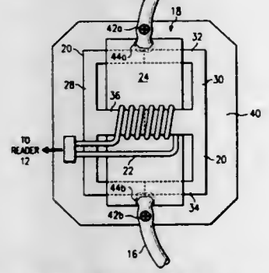
IDENTIFICATION SYSTEM ANTENNA WITH IMPEDANCE TRANSFORMER

Loek J. D'Hont, Almelo, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 25, 1994, Ser. No. 280,104

Int. Cl.[6] H01Q *7/08*

U.S. Cl. 343—788 **23 Claims**



1. An electromagnetic device comprising:

a magnetic core formed in a first loop and a second loop;

an electrical winding package surrounding said magnetic core; and

a strip of electrically conductive material disposed such that said strip passes through both said first loop and said second loop and overlies said electrical winding package, said strip having a width and a thickness wherein said width is substantially greater than said thickness, said strip also having a first end and a second end.

5,625,371

FLAT PLATE TV ANTENNA

Paul E. Miller, Spring Lake, Mich.; Glen J. Seward, Cincinnati, Ohio, and Robert M. Lynas, Spring Lake, Mich., assignors to R.A. Miller Industries, Inc., Grand Haven, Mich.

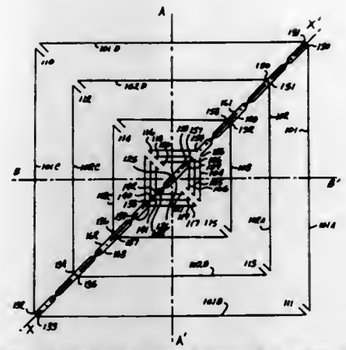
Filed Feb. 16, 1996, Ser. No. 602,696

Int. Cl.[6] H01Q *21/00*

U.S. Cl. 343—867 **24 Claims**

1. A planar antenna module comprising:

a dielectric substrate;



a plurality of concentric loops formed of conductive material and disposed on the substrate;

first and second antenna terminals;

each loop comprising first and second opposing loop sections of like physical dimensions formed by two adjacent sides of one of the loops, the first and second opposing loop sections of each loop having adjacently disposed ends;

a first of the two adjacent sides of each loop having one end electrically connected to the first antenna terminal and a second of the two adjacent sides of each loop having one end connected to the second antenna terminal;

the first and second opposing loop sections together forming an antenna loop for signals within a predetermined frequency band;

the plurality of concentric antenna loops together forming an antenna structure for a plurality of frequency bands within a predetermined frequency spectrum.

5,625,372

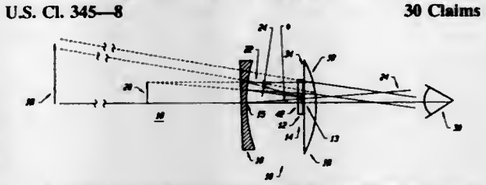
COMPACT COMPOUND MAGNIFIED VIRTUAL IMAGE ELECTRONIC DISPLAY

Alfred P. Hildebrand, Palo Alto, and Gregory J. Kintz, Mountain View, both of Calif., assignors to Siliscape, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 361,035, Dec. 21, 1994. This application Mar. 17, 1995, Ser. No. 407,102

Int. Cl.[6] G09G *3/20;* **G02B** *27/01*

U.S. Cl. 345—8 **30 Claims**



1. A compact virtual image electronic display system comprising:

a microdisplay for producing a source object;

a first magnification optic for providing a magnification function and a reflection function, the microdisplay and the first magnification optic each having a centerpoint defining a first optical axis, the first magnification optic magnifying the source object and reflecting a magnified virtual image, the center of the magnified virtual image defining a second optical axis, the second optical axis being at an angle ϕ relative to the first optical axis;

a second magnification optic for providing a compound magnified virtual image of the magnified virtual image to an observer, the angle ϕ between the first and second optical axes being sufficiently small that the source object is within the full field of view provided by the second magnification optic; and

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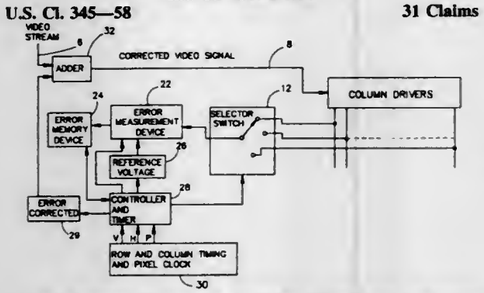
a control mechanism for providing control signals to the microdisplay which modifies the source object produced by the microdisplay.

5,625,373

FLAT PANEL CONVERGENCE CIRCUIT

Michael J. Johnson, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 14, 1994, Ser. No. 274,936
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—58 **31 Claims**



1. A convergence circuit for providing voltage error compensation in a flat panel display, where the flat panel display has a plurality of column driving means which receive a video signal column driver input and provide image signals to pixel columns of the flat panel display comprising:

means to receive the image signals from each of said driving means and to compare the magnitude of the image signals against a reference signal of a known magnitude;

first memory means to store error signals which are proportionate to the difference between the image signals output by said driving means and said reference signal, said error signals for all pixel columns or pixel column groups are stored in said memory according to an address which corresponds to the driving means from which the error signal was generated; and

means to retrieve the error signals from said memory means which corresponds to the driving means currently being driven by the video signal, modify said error signal, and combine the modified error signal with the video signal column driver input to provide voltage error compensation for the column being driven by one of said driving means.

5,625,374

METHOD FOR PARALLEL INTERPOLATION OF IMAGES

Kenneth E. Turkowski, Menlo Park, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

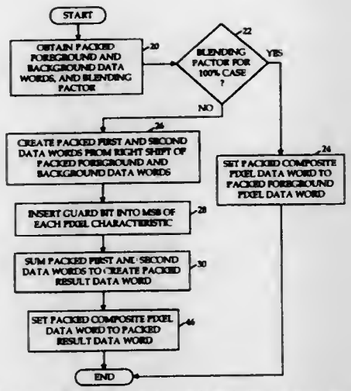
Filed Sep. 7, 1993, Ser. No. 116,796
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—113 **27 Claims**

1. A method for combining images using parallel interpolation between a packed foreground pixel data word having a plurality of foreground pixel characteristics and a packed background pixel data word having a plurality of background pixel characteristics, the interpolation specified by a blending factor and resulting in the creation of a packed composite pixel data word having a plurality of composite pixel characteristics, the method comprising the steps of:

retrieving the packed foreground pixel data word, the packed background pixel data word, and the blending factor;

creating a packed first data word from the packed foreground pixel data word and a packed second data word from the packed background pixel data word;

inserting a guard bit into the most-significant bit (MSB) position of each pixel characteristic within the packed first data word and the packed second data word; and



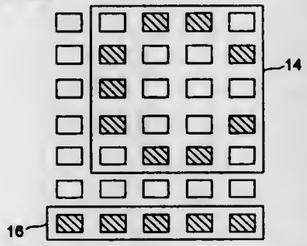
adding the packed first data word and the packed second data word to create a packed composite pixel data word.

5,625,375

METHOD AND APPARATUS FOR A MULTIPLE FONT DISPLAY

Donald M. Keen, Indianapolis, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 163,453, Dec. 7, 1993, abandoned.
This application Jan. 6, 1995, Ser. No. 369,556
Int. Cl.[6] G09G *5/26*
U.S. Cl. 345—128 **11 Claims**



1. A method for creating a character in a first visually distinctive font for display on a limited size dot matrix display device, the limited size dot matrix display device comprising a plurality of independent five column by seven row pixel matrices in which the pixels have an activated state and an inactivated state, where a character of a standard font is created using the full extent of one of the plurality of independent five column by seven row pixel matrices and a character of the first visually distinctive font is created using a maximum of four columns of pixels to define the width of the character and a maximum of six rows of pixels to define the height of the character, and wherein pixels not defining the character of the first visually distinctive font are used to create a background characteristic, and wherein a one-to-one correspondence exists between the number of independent five column by seven row pixel matrices and a maximum number of characters that can be displayed in either the standard font or the first visually distinctive font, comprising the steps of:

defining the character by identifying which pixels of the four columns and six rows of pixels should be activated to display the character;

defining a background characteristic by identifying which of the pixels that are not used to define the character should be activated and

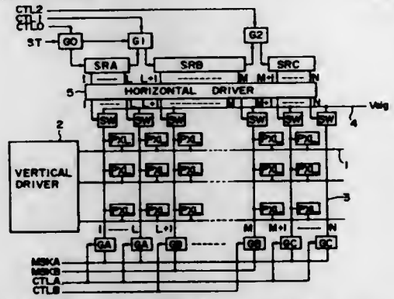
activating the pixels to display the character and the background characteristic.

5,625,376

ACTIVE MATRIX DISPLAY DEVICE

Toshikazu Maekawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 29, 1994, Ser. No. 267,608
Claims priority, application Japan, Jun. 30, 1993, 5-189079
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—132 **6 Claims**



1. An active matrix display device, comprising:

a plurality of picture elements disposed in rows and columns on a horizontally elongated screen, the columns of said picture elements being divided into a first area allocated to a normal display and a second area included together with the first area in a wide display;

a gate line connected to each of the rows of said picture elements;

a vertical drive circuit connected to the gate lines;

a data line connected to each of the columns of said picture elements;

a signal line for supplying a video signal;

a plurality of sampling switches for selectively interconnecting said signal line and the data lines;

a horizontal shift register for controlling sequential opening and closing operations of said sampling switches, said horizontal shift register being divided into a predetermined stage section which corresponds to the columns of said picture elements in said first area and an expansion stage section which corresponds to the columns of said picture elements in said second area; and

a gate circuit interposed between said predetermined stage section and said expansion stage section for permitting said predetermined stage section and said expansion stage section to be serially connected for said wide display and operate as a common shift register and permit a sequential opening and closing of said sampling switches controlled by the predetermined stage section and said expansion stage section, said gate circuit disconnecting the expansion stage section from the predetermined stage section for said normal display.

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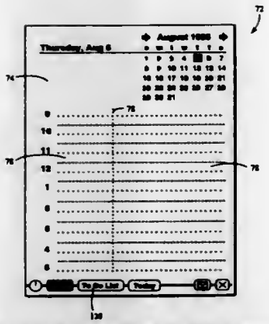
METHOD FOR CONTROLLING A COMPUTERIZED ORGANIZER

Scott A. Jenson, Redwood City, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 68,523, May 27, 1993, Pat. No. 5,457,476, which is a continuation-in-part of Ser. No. 57,101, May 3, 1993, and a continuation-in-part of Ser. No. 889,470, May 27, 1992. This application May 26, 1995, Ser. No. 451,201
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—146 **39 Claims**

1. A method for entering data into a scheduler comprising:

displaying a scheduling field on a screen of a pen-based computer system, said field having an appointment area and an annotation area, said appointment area and said annotation area being concurrently active;



entering data on said scheduling field with a pointer mechanism; and

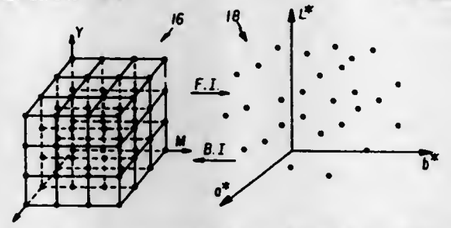
processing said data according to its placement on said scheduling field.

5,625,378

METHOD AND APPARATUS FOR CONVEX INTERPOLATION FOR COLOR CALIBRATION

Shijie J. Wan, Rochester; Rodney L. Miller, Fairport, and James R. Sullivan, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1993, Ser. No. 68,823
Int. Cl.[6] G09G *5/02*
U.S. Cl. 345—150 **4 Claims**



1. A method of converting a color signal from a device independent color space to a device dependent color space for an output device, comprising the steps of:

(a) performing a convex interpolation of the color signal in the device independent color space (x) to produce a converted color signal in the device dependent color space (y), a convex hull interpolation performed substantially by

$$y = [f(x)] = \sum_{i=1}^{k} w_i y_i, \; k > n,$$

where n=dimensionality of the device independent color space and includes the steps of:

(a1) determining whether a set of color signals in the independent color space (x_i) form a convex hull defined by a finite number of points according to

$$x = \sum_{i=1}^{k} w_i x_i, \; \sum_{i=1}^{k} w_i = 1, \; w_i, \ldots, w_1 \geq 0.,$$

that encloses the color signal, said finite number comprising at least four points;

(a2) selecting the points y_i in the dependent color space which corresponds to the points x_i in the independent color space; and

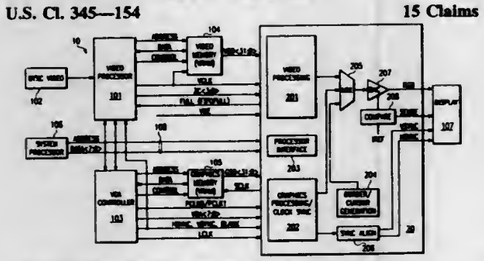
(b) providing signals representative of said determination.

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5,625,379
VIDEO PROCESSING APPARATUS SYSTEMS AND METHODS

Christopher L. Reinert; Sudhir Sharma; Robert M. Nally, all of Plano, and John C. Schafer, Wylie, all of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 99,194, Jul. 29, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,935
Int. Cl.[6] G09G 5/04
U.S. Cl. 345—154 **15 Claims**



1. Video data processing circuitry comprising:

a memory, for storing video data words and associated control codes, input of said video data words synchronized to a first time base established by an associated video processor and output of said video data words synchronized with a second time base established by an associated graphics processor;

format alignment circuitry coupled to said memory and operable to receive a said video data words output from said memory in a first format and align the said video data words into a second format;

chrominance interpolator circuitry coupled to said format alignment circuitry and operable to receive from said format alignment circuitry a said video data word in YUV format of a predetermined number of bits and provide in response an interpolated YUV data word of a greater number of bits;

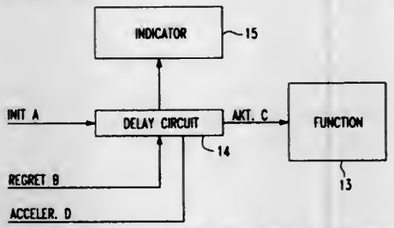
a decoder operable to receive ones of said video data words output from said chrominance interpolator circuitry in a YUV format and output RGB color data words defining selected display pixels in response; and

a scaler operable to receive said RGB words output from said decoder and said associated control codes and provide in response RGB data words defining other display pixels.

5,625,380
METHOD AND CIRCUIT FOR GENERATING AN ACTIVATION SIGNAL AND USES FOR THE SAME

John P. Hansen, Kildehusvej 51, DK-40000 Roskilde, Denmark, assignor to John Paulin Hansen, Roskilde, Denmark

Filed Feb. 8, 1995, Ser. No. 385,545
Int. Cl.[6] G09G 5/08
U.S. Cl. 345—157 **21 Claims**



1. A method of performing a function at the end of a predetermined time period in response to the generation of an activation signal, said method comprising:

generating a time initiation signal;

initiating the predetermined time period for performing the function in response to the initiation signal;

excluding the generation of the activation signal at times when an externally applied regret signal is activated;

accelerating the generation of the activation signal at times when an externally applied acceleration signal is activated;

indicating the time remaining in the predetermined time period for performing the function, said step of indicating including the substeps of:

activating the regret signal at times when the regret signal is applied during the time remaining in said time period, and

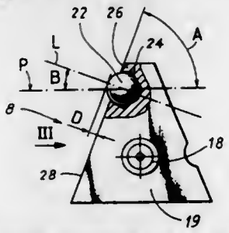
activating the acceleration signal at times when the acceleration signal is applied during the time remaining in the predetermined time period; and

generating the activation signal for performing the function, during said predetermined time period in response to the activation of the applied acceleration signal or the step of indicating zero time remaining in the predetermined time period, whichever is first to occur, at times when the regret signal remains inactive during said predetermined time period prior to the activation of the acceleration signal.

5,625,381
CONTROL ELEMENT CONSTITUTING A MOUSE

Peter Wyss, Thun, Switzerland, assignor to Comadur S.A., Le Locle, Switzerland

Filed Feb. 7, 1992, Ser. No. 832,342
Claims priority, application Switzerland, Feb. 12, 1991, 432/91
Int. Cl.[6] G09G 3/02
U.S. Cl. 345—163 **4 Claims**



1. A control element constituting a mouse designed to be connected to a cursor visualization assembly and having:

a housing;

a mobile ball protruding outside said housing to be directly or indirectly actuated by a user;

a support device adapted to receive said mobile ball and having at least three bearings which are angularly offset and which comprise contact members of a material of low coefficient of friction on which said mobile ball rests, said contact members cooperating with said ball by a rolling friction and said contact members comprising ball-bearings freely supported for rotation in all directions,

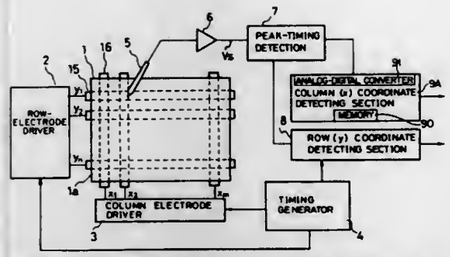
said ball-bearings defining a geometric plane (P) and said seatings being disposed in a surface of the bearing inclined at an angle (A) comprising between 60° and 75° in relation to said geometric plane (P).

5,625,382
DISPLAY-INTEGRATED TABLET

Masaji Ebihara, and Yasusi Nakato, both of Kanagawa-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 988,745, Dec. 10, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,882
Claims priority, application Japan, Feb. 21, 1992, 4-034676
Int. Cl.[6] G09G 3/02
U.S. Cl. 345—173 **7 Claims**

1. A display-integrated tablet for displaying images and for detecting an input position by means of time division, the tablet comprising:



a matrix panel in which a plurality of first electrodes and a plurality of second electrodes provided under the first electrodes are arranged like a lattice and a panel surface is set on the first electrodes,

a first-electrode driver and a second-electrode driver for supplying signals to the first and second electrodes respectively,

a first-electrode input position detecting section and a second-electrode input position detecting section for detecting and outputting an input position with respect to both the first electrodes and the second electrodes respectively,

an input position detecting conductor for detecting scanning pulses supplied to each electrode from each electrode driver through capacitance linkage with each electrode by contacting any position on the panel surface, and

a peak timing detecting section for detecting the peak timings of detected scanning pulses and for sending scanning-pulse peak voltage values to the first- and second-electrode input position detecting sections, and performing display and position detection by means of time division;

wherein

the second-electrode input position detecting section is provided with a memory in which are stored correspondences between scanning-pulse peak voltage values and a plurality of predetermined input positions with respect to the second electrodes, for scanning-pulses supplied from one end of each first electrode, and

wherein

the second-electrode input position detecting section is provided with means for determining the input position by comparing a scanning pulse peak voltage value with stored scanning-pulse peak voltage values corresponding to the respective input positions when scanning pulses are supplied to one end of each first electrode and the input position detecting conductor is contacted with any position on the panel surface,

the second electrode input position detecting section further provided with means for determining input positions with respect to the second electrodes by comparing actual scanning-pulse detected values detected and the scanning-pulse peak voltage values stored in the memory.

5,625,383
DEVICE AND METHOD FOR GENERATING READ ADDRESSES FOR VIDEO MEMORY

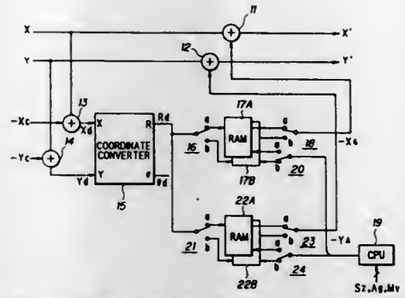
Toshihiro Shiraishi, and Katsuakira Moriwake, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 226,936, Apr. 13, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 674,616
Claims priority, application Japan, Apr. 15, 1993, 5-112094
Int. Cl.[6] G09G 5/36
U.S. Cl. 345—200 **8 Claims**

1. A read address generator for generating read addresses for a read memory comprising:

first conversion means for converting input read addresses indicated using an orthogonal coordinate system into equivalent addresses in a polar coordinate system;

means for dividing said polar coordinate system into blocks according to distances from the pole of said polar coordinate system, said blocks being concentric and having radial widths that are controlled on the basis of values obtained by adding random values to a reference value;



vector setting means for setting vectors for said blocks, the angles of said blocks in said polar coordinate system sequentially increasing or decreasing;

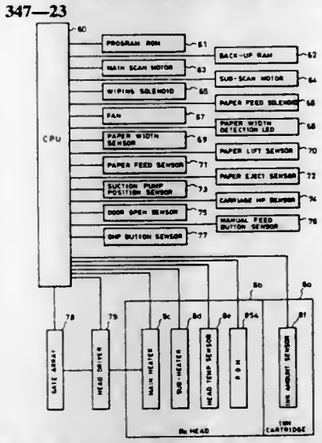
second conversion means for converting coordinate values indicated by said vectors into coordinate values in the orthogonal coordinate system; and

means for generating output read addresses by subtracting said coordinate values from said input read addresses indicated in said orthogonal coordinate system and for supplying said output read addresses to said video memory.

5,625,384
INK JET RECORDING APPARATUS AND METHOD USING REPLACEABLE RECORDING HEADS

Yasuhiro Numata, Yokohama; Kazuyoshi Takahashi, Kawasaki; Yoshiaki Takayanagi, Yokohama; Hiroshi Tajika, Yokohama; Noribumi Koitabashi, Yokohama; Hitoshi Sugimoto, Yokohama, and Souhei Tanaka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 822,617
Claims priority, application Japan, Jan. 18, 1991, 3-004400
Int. Cl.[6] B41J 2/165;2/14
U.S. Cl. 347—23 **46 Claims**



1. An ink jet recording apparatus for recording information on a recording medium, comprising:

at least one replaceable recording head having a discharge portion;

detection means for detecting replacement of said recording head with a replacement recording head;

discharge recovery means for effecting a discharge recovery operation on said recording head to recover ink; and

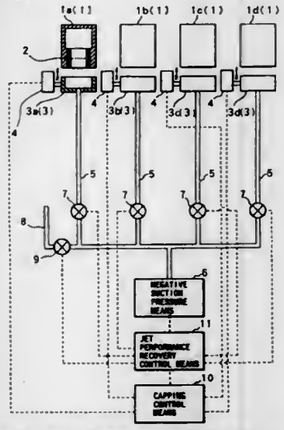
recovery control means for automatically causing said discharge recovery means to perform the discharge recovery operation on said replacement recording head in response to detection of replacement of said replaceable recording head by said detection means.

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5,625,385
INK JET RECORDING APPARATUS

Takashi Suzuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 229,224
Claims priority, application Japan, Apr. 19, 1993, 5-115361
Int. Cl.[6] B41J 2/165
U.S. Cl. 347—24 6 Claims



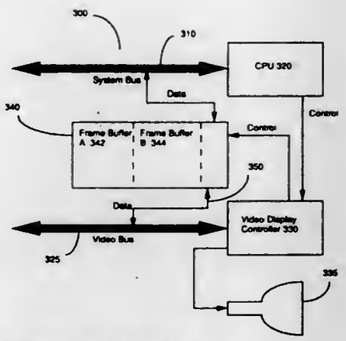
1. An ink jet recording apparatus, comprising:
a plurality of recording heads with nozzle surfaces for jetting their respective different color ink components according to image information;
a plurality of independently moving caps disposed corresponding to said recording heads for covering the nozzle surfaces of said recording heads;
a plurality of cap opening/closing drive means for moving said caps to said recording heads, respectively, to allow said caps to open and close said nozzle surfaces of said recording heads, selectively;
a plurality of ink suction passages disposed corresponding to said caps;
a single means for generating suction connected to said caps through said ink suction passages;
a plurality of passage communicate/interrupt means correspondingly disposed in the middle of said ink suction passages for communicating/interrupting said ink suction passages;
a plurality of air opening passages correspondingly branched from the middle of said ink suction passages;
a plurality of air open/interrupt means for opening/interrupting said air opening passages; and
capping control means for controlling each of said passage communicate/interrupt means to communicate said ink suction passage of said cap corresponding to the recording heads to be capped and controlling said corresponding air open/interrupt means to open said corresponding air opening passage, and, in this state, for controlling said corresponding cap opening/closing drive means to cover the nozzle surface of said recording head to be capped with said corresponding cap.

5,625,386
METHOD AND APPARATUS FOR INTERLEAVING DISPLAY BUFFERS

Brian D. Howard, Menlo Park, and Robert L. Bailey, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1994, Ser. No. 315,653
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—201 18 Claims

1. A computer system including a processor and a display system, said display system comprises:



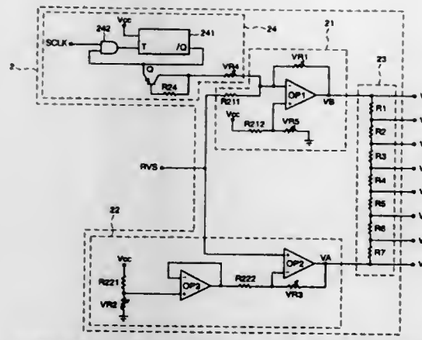
a display means for displaying images;
a video bus having a sequence of T-bit data words for carrying image information;
a first logical frame buffer and a second logical frame buffer containing the image information and the image information from each frame buffer is carried in separate T-bit data words and both frame buffers having P_1 bits per pixel and P_2 bits per pixel respectively where
1) $P_2/P_1=n$, and n is a number ranging from 1 to T;
2) $T \geq P_1$ and $T \geq P_2$;
3) X_1 and X_2 being integers and are numbers of pixels separately stored in each T-bit data word for the first logical frame buffer and the second logical frame buffer respectively, X_1 ranging from 1 to TRUNCATE (T/P_1) and X_2 ranging from 1 to TRUNCATE (T/P_2); and
4) the sequence of the T-bit data words carrying the image information in a repeating pattern such that for each X_1 pixels of the first frame buffer carried there is an immediate corresponding X_1 pixels of the second frame buffer also being carried by the sequence so that the pattern repeats itself after every $2X_1$ pixels;
a memory system of sufficient size for storing the image information as represented by both logical frame buffers, the memory system being coupled to the video bus for transferring the image information, the memory system is arranged such that the two logical frame buffers are stored therein for the simultaneous transfer of the image information from each frame buffer according to a data clock rate; and
a video display controller being coupled to the display means and to the video bus for receiving the image information and for processing the image information for use by said display means.

5,625,387
GRAY VOLTAGE GENERATOR FOR LIQUID CRYSTAL DISPLAY CAPABLE OF CONTROLLING A VIEWING ANGLE

Seung H. Moon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 26, 1995, Ser. No. 378,274
Claims priority, application Rep. of Korea, Jan. 26, 1994, 94-1363
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—211 11 Claims

1. A gray voltage generator for a liquid crystal display capable of controlling a viewing angle, said liquid crystal using one of a plurality of types of liquid crystals, each of said plurality of types of liquid crystals having at least one different characteristic which affects said viewing angle, comprising:
first means for inverting and amplifying a reverse signal from a microcontroller in a liquid crystal display to produce a reverse phase signal having a first controlled voltage level, said first means including first adjustment means that compensates said first controlled voltage level for said characteristic of said one liquid crystal type;

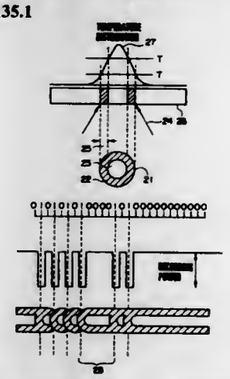


second means for amplifying said reverse signal from the microcontroller in the liquid crystal display to produce an in-phase signal having a second controlled voltage level, said second means including second adjustment means that compensates said second controlled voltage level for said characteristic of said one liquid crystal type; and
third means having terminals connected to output signals from said first and second means for producing a plurality of gray voltages each having a sequentially different potential and having a plurality of serially connected resistors connected between said terminals.

5,625,388
OVERWRITABLE OPTICAL RECORDING MEDIUM AND RECORDING METHOD OF THE SAME

Takeshi Maeda, Kokubunji, and Masahiko Takahashi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 126,766
Claims priority, application Japan, Sep. 28, 1992, 4-257845; Mar. 22, 1993, 5-061605
Int. Cl.[6] G01D 9/00
U.S. Cl. 346—135.1 13 Claims

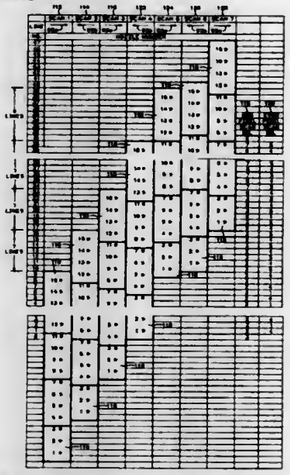


1. An optical recording method of recording information by preparing a recording medium having a recording film on a substrate, radiating laser light from a light source to said recording film, and controlling a temperature distribution on said recording film, said optical recording method comprising the steps of:
forming a light spot having a predetermined intensity from said laser light;
radiating said light spot onto said recording film;
changing said predetermined intensity in keeping with a relative movement between said light spot and said recording medium; and
recording a recording mark on said recording film, said recording mark having a ring-shaped based upon said predetermined intensity and a characteristic of said recording film.

5,625,389
INK-JET PRINT HEAD ARRAY AND INTERLACE METHOD

Joern B. Eriksen, Oregon City; Michael D. Stevens, Portland, and Howard V. Goetz, Tigard, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 31, 1994, Ser. No. 189,336
Int. Cl.[6] B41J 2/15
U.S. Cl. 347—41 5 Claims



3. A method for interlaced printing with an ink-jet printer having a print head that repetitively scans a print medium in a print head scan direction capable of selectively printing an image in an even numbered set of pixel columns and an odd numbered set of pixel columns in successive scans, the image having a plurality of line sets, the line sets being even and odd numbered, and the print medium moves in a direction substantially orthogonal to the print head scanning direction, the method comprising the steps of:
providing a linear nozzle array in the print head, the nozzle array having an odd number of nozzles that are spaced apart in the direction of print medium movement a distance of about two line-widths;
printing on the print medium by ejecting ink through the nozzles during a first scan of the print head only in an even-numbered set of pixel columns located in a first line set of an image that is even numbered;
moving the print medium a predetermined number of line-widths;
printing on the print medium by ejecting ink through the nozzles during a second scan of the print head only in an odd-numbered set of pixel columns located in a second line set of the image that is odd numbered;
moving the print medium a number of line-widths substantially equal to the predetermined number;
printing on the print medium by ejecting ink through the nozzles during a third scan of the print head only in one of the

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odd-numbered set of pixel columns and the even-numbered set of pixel columns located in a third line set of the image that is even numbered;

moving the print medium a number of line-widths substantially equal to the predetermined number;

printing on the print medium by ejecting ink through the nozzles during a fourth scan of the print head only in one of the even-numbered set of pixel columns and the odd-numbered set of pixel columns located in a fourth line set of the image that is odd numbered; and

moving the print medium a number of line-widths substantially equal to the predetermined number.

5,625,390

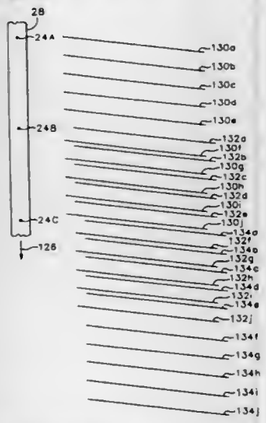
PAIRING OF INK DROPS ON A PRINT MEDIUM

Edward F. Burke, Lake Oswego; Mark R. Parker, Portland, and David D. Martenson, Milwaukie, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 30, 1995, Ser. No. 381,615

Int. Cl.[6] B41J *2/145;2/15*

U.S. Cl. 347—41 **5 Claims**



1. A method for positioning ink drops on a print medium in an ink-jet printer having a print head with nozzle arrays therein, the print head and the print medium having relative movement therebetween and the print head having nozzles within the nozzle arrays spaced apart at n pixel widths comprising the steps of:

(a) printing an initial set of scan lines spaced apart at least two pixel widths;

(b) moving the print head 2 pixel widths with respect to the print medium;

(c) repeating steps (a) and (b) to print subsequent sets of scan lines and correspondingly move the print head until the print head is moved a distance of n+1 pixel widths with respect to the medium;

(d) moving the print head in one of two opposing directions so a next set of scan lines printed is offset and closely spaced with an adjacent set of scan lines already printed, the next set of scan lines being interlaced with the initial set of scan lines and having a spacing between adjacent pairs of the initial set of scan lines and the subsequent sets of scan lines being less than one pixel width; and

(e) repeating steps (a) and (b) until the print head is moved (2+) (n) pixel widths with respect to the print medium.

5,625,391

INK JET RECORDING METHOD AND APPARATUS

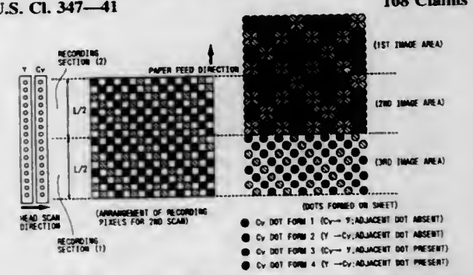
Hiromitsu Hirabayashi, Yokohama; Shigeyasu Nagoshi; Hitoshi Sugimoto, both of Kawasaki; Miyuki Matsubara, Tokyo, and Kiichiro Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 407,244, Mar. 20, 1995, abandoned, which is a continuation of Ser. No. 990,796, Dec. 10, 1992, abandoned. This application Dec. 18, 1995, Ser. No. 573,755

Claims priority, application Japan, Dec. 13, 1991, 3-330677

Int. Cl.[6] B41J *2/21*

U.S. Cl. 347—41 **108 Claims**



1. An ink jet recording method for reciprocally moving recording means for recording, said recording means having a plurality of recording element lines for discharging respective different color ink droplets, said recording means being moved relative to a recording medium in a main scan direction, to record a color image corresponding to image data on the recording medium, and for moving said recording medium relative to said recording in a sub-scan direction different from said main scan direction, comprising:

a first step of recording an image corresponding a first thinned pattern for each color to a predetermined area of the recording medium by using a first recording section of said recording means in a forward movement in main scan direction of said recording means;

a second step of moving said recording medium relative to said recording means in the sub-scan direction after the forward movement of said recording means; and

a third step of recording an image corresponding to a second thinned pattern for each color to said predetermined area of said recording medium by using a second recording section of said recording means in a backward movement in the main scan direction of said recording means,

wherein said first thinned pattern and said second thinned pattern are complementary to each other and are set such that a number of dots recorded in each of said first step and said third step are substantially equal without regard to the image data.

5,625,392

IMAGE FORMING DEVICE HAVING A CONTROL ELECTRODE FOR CONTROLLING TONER FLOW

Masataka Maeda, Konan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 4, 1994, Ser. No. 205,827

Claims priority, application Japan, Mar. 9, 1993, 5-047848

Int. Cl.[6] B41J *2/035;2/06*

U.S. Cl. 347—55 **23 Claims**

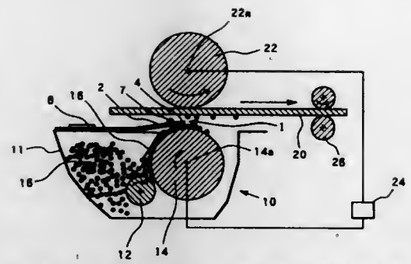
1. An image forming device, for forming images on a recording medium, comprising:

toner supply means for supplying charged toner particles;

a back electrode wherein electric lines of force capable of attracting charged toner particles are produced by applying a voltage to the back electrode;

control means disposed between the toner supply means and the back electrode and within the electric lines of force produced by applying the voltage to the back electrode, the control means having a control electrode portion for selectively producing electric lines of force that attract the toner particles supplied by the toner supply means into the electric lines of force produced by applying the voltage to the back electrode, thereby controllingly producing a flow of toner particles from the toner supply means toward the back electrode, the control electrode portion being situated at only one side of the flow of toner particles;

wherein the recording medium is disposed between the back electrode and the control means in the flow of toner particles so that the flow of toner particles impinges on the recording medium as controlled by the control means.



5,625,393

INK EJECTING APPARATUS WITH EJECTING CHAMBERS AND NON EJECTING CHAMBERS

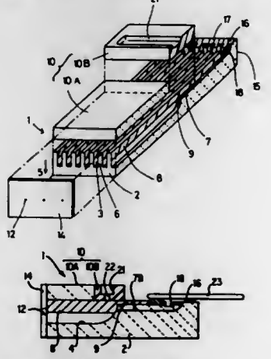
Hiroki Asai, 2-78, Nabekata, Shinkawa-cho, Nishikasugai-gun Aichi-ken, Japan

Filed Oct. 12, 1994, Ser. No. 321,614

Claims priority, application Japan, Nov. 11, 1993, 5-282368

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—69 **26 Claims**



10. An ink ejecting head, comprising:

a first plate having a plurality of grooves formed therein with walls between each of the grooves and having a direction of polarization;

a second plate mounted to a free end of said walls to convert said plurality of grooves into a plurality of chambers, said plurality of chambers divided into at least a first subset and a second subset;

a plurality of first electrodes located on each side of each of said walls;

means for supplying ink to each chamber of said first subset;

a second electrode electrically connected to the first electrodes on opposite walls in one chamber of said first subset; and

a third electrode electrically connected to said first electrodes in each chamber in said second subset, wherein said first electrodes in one of said first subset and said second subset introduce an electrical field transverse to the direction of polarization, said first subset providing ink chambers and said second subset providing air chambers with said first subset and said second subset so positioned that an ink chamber has an air chamber on each side thereof, each of said ink chambers and each of said air chambers have a first portion and a second portion with different depths, a depth of the first portion greater than a depth of the second portion, wherein the depth of the second portion in said air chambers is different from the depth of the second portion in said ink chambers.

5,625,394

DIRECT COLOR THERMAL PRINTING METHOD PREVENTING YELLOW STAINS

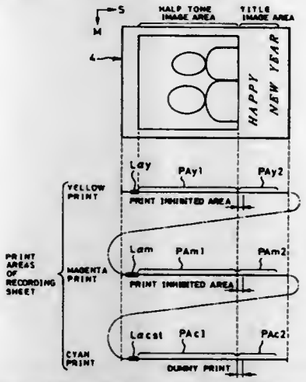
Hiroshi Fukuda, and Kazuo Miyaji, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 2, 1995, Ser. No. 382,494

Claims priority, application Japan, Feb. 8, 1994, 6-014673

Int. Cl.[6] B41J *2/32;2/38*

U.S. Cl. 347—175 **16 Claims**



1. A direct color thermal printing method of printing an image on a print area of a color thermosensitive recording sheet by pressing and heating said color thermosensitive recording sheet with a thermal head, said color thermosensitive recording sheet being formed by at least first to third thermosensitive coloring layers having a different developing color and a different heat sensitivity, respectively laid in order on a base, said image being printed frame-sequentially starting from said third thermosensitive coloring layer lying uppermost and having a highest heat sensitivity, said third and second thermosensitive coloring layers being optically fixed immediately after the printing by radiating an electromagnetic wave having a specific wavelength range, said thermal head including a heating element array having a plurality of heating elements disposed in line in a main scan direction, said thermal head and said color thermosensitive recording sheet relatively moving in a subsidiary direction perpendicular to said main scan direction, said direct color thermal printing method comprising the steps of:

in printing said image on said third and second thermosensitive coloring layers, applying a bias heat energy slightly short of starting coloring of said thermosensitive coloring layers and an image heat energy corresponding to a coloring density to said color thermosensitive recording sheet through each said heating element for printing one dot;

in printing said first thermosensitive coloring layer lying lowermost, dividing said plurality of heating elements into a first group to record part of said image and a second group to face a blank area of said image;

applying a bias heat energy slightly short of starting coloring of said first thermosensitive coloring layer and an image heat energy corresponding to a coloring density to said color thermosensitive recording sheet, through each said heating element belonging to said first group for printing one dot; and

applying a first heat energy lower than said bias heat energy slightly short of starting coloring of said first thermosensitive

VOL 1197 ISS 5 APR 29 1997 UMI

coloring layer to said color thermosensitive recording sheet, thorough each said heating element belonging to said second group.

5,625,395

DRIVING DEVICE FOR AN INK JET PRINT HEAD

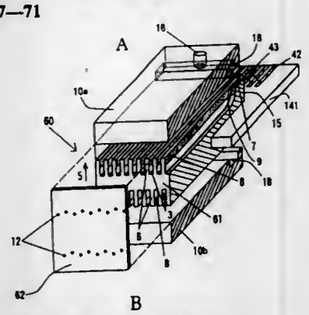
Koji Imai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 26, 1994, Ser. No. 329,454

Claims priority, application Japan, Oct. 27, 1993, 5-268562

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—71 **18 Claims**



1. An ink jet head assembly, comprising:

an actuator formed from a piezoelectric material polarized in a direction, the actuator having a first surface, a second surface opposite the first surface, and a third surface perpendicular to both said first surface and said second surface, a plurality of partition walls being formed at equi-interval in each of said first surface and said second surface wherein each of said plurality of partition walls has two side surfaces opposite to each other and a top surface, a plurality of grooves being formed in each of said first surface and said second surface wherein each of said plurality of grooves is defined by two adjacent partition walls;

a plurality of first electrode pairs provided in one-to-one correspondence to said plurality of partition walls in said first surface, two electrodes of each of said first electrode pairs being attached respectively to two side surfaces of each of said plurality of partition walls;

a plurality of second electrode pairs provided in one-to-one correspondence to said plurality of partition walls in said second surface, two electrodes of each of said second electrode pairs being attached respectively to two side surfaces of each of said plurality of partition walls;

a first cover plate having a side facing the actuator, the side of the first cover plate facing the actuator being substantially flat, the top surface of each of said plurality of partition walls in said first surface being attached to the side of said first cover plate facing the actuator;

a second cover plate having a side facing the actuator, the side of the second cover plate facing the actuator being substantially flat, the top surface of each of said plurality of partition walls in said second surface being attached to the side of said second cover plate facing the actuator, ink channels being defined by each of said first cover plate and said second cover plate and each of said plurality of grooves in each of said first surface and said second surface, said ink channels being filled with ink;

a nozzle plate attached to said third surface of said actuator, said nozzle plate being formed with a plurality of nozzles in positions corresponding to the ink channels; and

a driving device including a single power source, a plurality of first connecting means for connecting said single power source to said plurality of first electrode pairs, said plurality of first connecting means being provided in one-to-one correspondence to said plurality of first electrode pairs, a plurality of second connecting means for connecting said single power source to said plurality of second electrode pairs, said plurality of second connecting means being provided in one-to-one correspondence to said plurality of second electrode pairs, and control means for controlling said plurality of first connecting means to connect said single power source to selected ones of said plurality of first electrode pairs in said first surface and to disconnect said single power source from non-selected electrode pairs in said first surface, and for controlling said plurality of second connecting means to disconnect said single power source from selected ones of said plurality of second electrode pairs in said second surface and to connect said single power source to non-selected electrode pairs in said second surface, so that selected partition walls corresponding to said selected ones of said plurality of first electrode pairs in said first surface and said selected ones of said plurality of second electrode pairs in said second surface deform, thereby ejecting an ink droplet from each of said nozzles corresponding to the selected partition walls.

5,625,396

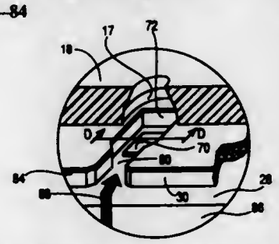
INK DELIVERY METHOD FOR AN INKJET PRINT CARTRIDGE

Brian J. Keefe, La Jolla; Steven W. Steinfield; Winthrop D. Childers, both of San Diego, all of Calif.; Paul H. McClelland, Monmouth, and Kenneth E. Trueba, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 862,086, Apr. 2, 1992, Pat. No. 5,278,584. This application Jan. 11, 1994, Ser. No. 179,866

Int. Cl.[6] G01D *15/18*

U.S. Cl. 347—84 **26 Claims**



1. A method for printing comprising the steps of:

supplying ink from an ink source around one or more outer edges of a substrate's periphery and to a top surface of said substrate to allow ink, which has flowed around said one or more outer edges, to enter ink ejection chambers each essentially surrounding an ink election element formed overlying said substrate; and

energizing said ink ejection element to eject a portion of ink in an associated one of said ink ejection chambers and expelling ink from an orifice.

5,625,397

DOT ON DOT INK JET PRINTING USING INKS OF DIFFERING DENSITIES

Donald R. Allred, Westford; John L. Ingraham, North Chelmsford, and Foster M. Fargo, Lincoln, all of Mass., assignors to Iris Graphics, Inc., Bedford, Mass.

Filed Nov. 23, 1994, Ser. No. 344,114

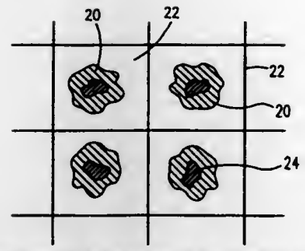
Int. Cl.[6] B41J *2/205;* **G01D** *15/18*

U.S. Cl. 347—100 **17 Claims**

1. An ink jet printer comprising:

a plurality of ink jets arranged for dot-on-dot continuous ink jet printing; and

an ink supply assembly associated with said plurality of ink jets and being operative to supply at least two of said plurality of ink jets with inks of the same dye and different dye concentrations,



said at least two of said plurality of ink jets being operative to produce multi-pixel ink dots including at least one pixel at which ink having a relatively higher dye concentration is printed over only part of a region printed with ink having a relatively lower dye concentration.

5,625,398

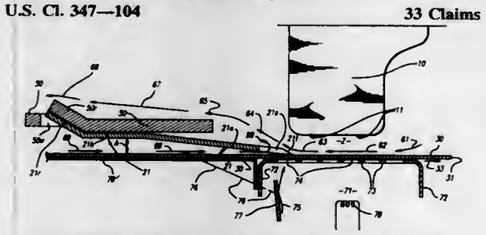
THIN, SHALLOW-ANGLE SERRATED HOLD-DOWN WITH IMPROVED WARMING, FOR BETTER INK CONTROL IN A LIQUID-INK PRINTER

Joseph P. Milkovits, San Diego, and Craig A. Maurer, Oceanside, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 57,364, Apr. 30, 1993, abandoned. This application May 2, 1994, Ser. No. 236,433

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—104 **33 Claims**



1. Apparatus for printing images, by marking with a liquid-base ink, on a printing medium; said apparatus comprising:

means for supporting such medium;

a marking head disposed for marking on such medium;

means for engaging such medium and for advancing such medium, in a particular direction, past the marking head;

guide means, having a print-medium-contacting edge, for vertically restraining such medium in an area that is upstream from the marking head in relation to said particular direction of medium advance;

means for establishing, above such medium and said guide means, air flow to carry airborne waste ink away from the marking head in a direction that is counter to said particular direction of medium advance; and

means for minimizing deposition of ink from said air flow onto the guide means.

5,625,399

METHOD AND APPARATUS FOR CONTROLLING A THERMAL PRINTHEAD

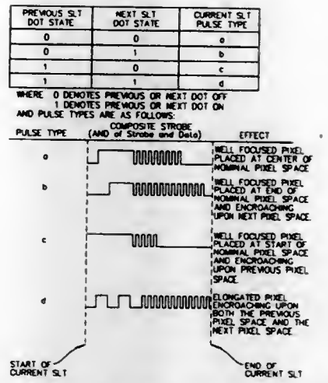
Christopher A. Wikiof, Everett; Edward M. Millet, Seattle, and Thomas A. Sweet, Everett, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Jan. 31, 1992, Ser. No. 830,310

Int. Cl.[6] B41J *2/36;2/365*

U.S. Cl. 347—195 **44 Claims**

1. A method for producing a desired response of a selected first thermal print element within a present interval of time in accordance with a sequence of print commands for the first print element, the sequence of print commands including a present print command designating the printing or non-printing of a pixel during the present interval of time, comprising the steps of:



(a) establishing the present print command in a sequence of print commands for the first print element;

(b) establishing at least one future print command in the sequence of print commands for the first print element;

(c) specifying a data signal for the first print element for the present interval of time as a function of the present and the at least one future print commands for the first print element, the data signal representing energization of the print element during a selected number and order of a plurality of segments of the present interval of time;

(d) generating a strobe signal having a plurality of pulses within the present interval of time, the strobe having a variable number or duration of pulses within the present interval of time;

(e) generating an energization signal for the first print element as a combination of the data signal and the strobe signal to produce the desired response of the first print element during the present interval of time; and

(f) applying the energization signal to the first print element.

5,625,400

POSITIONING DEVICE FOR A DOCUMENT PROCESSING DEVICE

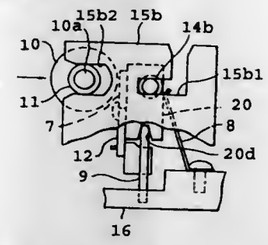
Hiroki Kubo, Takamatsu, Japan, assignor to Aoi Electronics Co., Ltd., Takamatsu, Japan

Filed Mar. 7, 1995, Ser. No. 400,081

Claims priority, application Japan, Mar. 11, 1994, 6-068075; Jun. 11, 1994, 6-152647

Int. Cl.[6] B41J *25/304*

U.S. Cl. 347—197 **10 Claims**



1. A positioning device for a document processing device, comprising,

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an elongated frame having a center portion, two side portions located at both ends of the center portion and bent relative to the center portion, and guide grooves formed in the respective side portions,

a platen roller attached between the two side portions,

a processing device attached between the two side portions and situated adjacent to the platen roller, said processing device having support grooves at one side thereof, and

fixing means for fixing the processing device to the frame and including two projections projecting from the processing device at portions away from the support grooves to engage the processing device to the side portions, said projections being located in the guide grooves to position the processing device to the platen roller, a supporting point for positioning the processing device to the platen roller, said support grooves forming the supporting point for the processing device, and a pressing member for urging the processing device to the platen roller.

5,625,401

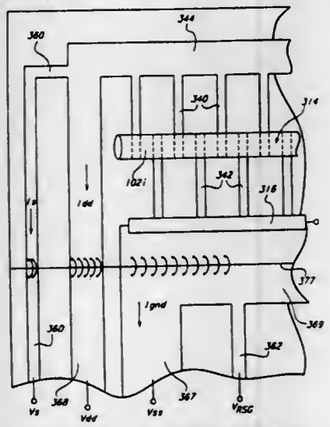
THERMAL PRINTHEAD WITH ENHANCED REMOTE VOLTAGE SENSE CAPABILITY

Christopher A. Wiklof; Pixie A. Austin, both of Everett; Joseph R. Wade, Monroe, and Melanie Z. Pate, Kirkland, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Continuation-in-part of Ser. No. 951,870, Sep. 25, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,284

Int. Cl.[6] B41J *2/345*

U.S. Cl. 347—208 **7 Claims**



1. A printhead for a thermal printer comprising:

a plurality of individual thermal print elements, each of the thermal print elements having a first end and a second end and undergoing an increase in temperature when said each of the thermal print elements are selected, each thermal print element having a heating current passing therethrough from the first end to the second end;

a common electrode which has a first side edge and a second side edge, the common electrode being connected via respective conductive traces to the first end of each of the thermal print elements, respectively;

a first electrical conductor connected to the common electrode and being connectable to a first voltage terminal of a power supply for providing the heating current to the thermal print elements;

at least one power supply pin connected to the first electrical conductor for coupling to the power supply to provide a connection of the first electrical conductor to the first voltage terminal of the power supply;

a second electrical conductor connectable to the second ends of the plurality of thermal print elements and being connectable to a second voltage terminal of the power supply, the second voltage terminal being a lower voltage potential than the first voltage terminal;

at least one ground power supply pin connected to the second electrical conductor for attachment to a ground terminal of the power supply to provide a connection of the second electrical conductor to the second voltage terminal of the power supply for completing a current path for the heating current supplied to the thermal print elements such that the heating current to heat the selected thermal print elements will pass through the power supply pins, through the first electrical conductor, through the common electrode, through the selected thermal print elements, through the second electrical conductor, and through the ground power supply pins;

a first remote sense electrode connected to the common electrode at a connection point in proximity to the conductive traces such that said first remote sense electrode is at a voltage potential approximately equal to a voltage potential of the first ends of the thermal print elements, the first remote sense electrode providing a voltage sense signal path of the first ends of the thermal print elements;

a voltage sense pin connected to the first remote sense electrode, the voltage sense pin being connectable to a voltage sense circuit to permit sensing of the voltage potential of the first ends of the thermal print elements using a conductive path different from the current path used to conduct heating current from the power supply to heat the thermal print elements; and

a remote ground sense electrode coupled to the second electrical conductor at a position in proximity to the second ends of the thermal print elements such that the remote ground sense electrode is at a voltage potential approximately equal to a voltage potential of the second end of the selected thermal print elements.

5,625,402

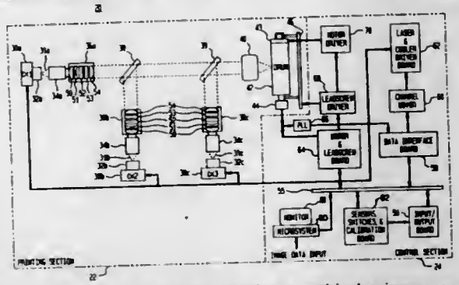
DIGITAL PRINTERS USING MULTIPLE LASERS OR LASER ARRAYS WITH DIFFERENT WAVELENGTHS

Sanwal P. Sarraf, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1993, Ser. No. 54,486

Int. Cl.[6] B41J *2/455;2/47*

U.S. Cl. 347—232 **4 Claims**



1. A laser color printer for printing a multicolor image on a light-sensitive color printing medium having a surface that is responsive to separate wavelengths of light for each different color printed thereon comprising:

a plurality of laser diode arrays, each of said laser diode arrays generating light beams of different wavelengths, each of said laser diode arrays comprising a plurality of diode lasers with each of said diode lasers of a laser diode array generating a separate diverging light beam of a predetermined substantially same wavelength; and

an optical system comprising:

a) a first optical means for shaping the light beams into beams of a predetermined cross-sectional size and directing said light beams so that said light beams intersect at a common location, said first optical means having a plurality of lenses, each of said lenses receiving the light beams from a separate one of the plurality of diode arrays; and

b) second optical means for creating a plurality of small discrete spots on the surface of the printing medium, said second optical means comprising a focusing lens receiving said light beams from the first optical means and focusing the light beams onto the surface of the printing media, said focusing lens having an entrance pupil positioned at said common location for receiving all of said shaped beams prior to impinging on said focusing lens.

5,625,403

METHOD AND APPARATUS FOR RECORDING ON OPTICALLY-SENSITIVE MEDIA

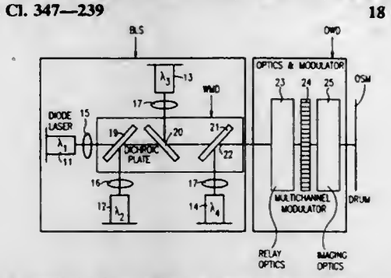
Erez Hazman, Kiryat Ono, Israel, assignor to Orbotech Ltd., Yavne, Israel

Filed Sep. 21, 1994, Ser. No. 309,773

Claims priority, application Israel, Nov. 5, 1993, 107508

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;* **G02F** *1/11;* **G03B** *27/72*

U.S. Cl. 347—239 **18 Claims**



1. A method of recording on an optically-sensitive medium optically-sensitive to light of a wavelength within a predetermined sensitivity range, comprising the steps of: providing a plurality of at least two light sources each emitting a source beam of light of a different wavelength falling within the sensitivity range of said optically-sensitive medium; combining, by wavelength multiplexing, said plurality of source beams into a combined beam of at least on watt of power; and directing said combined beam onto said optically-sensitive medium.

5,625,404

METHOD AND SYSTEM FOR ACCESSING MULTIMEDIA DATA OVER PUBLIC SWITCHED TELEPHONE NETWORK

John Grady, Fairfax, Va.; Kenneth Hand, Silver Spring; John Modrowsky, Burtonsville, both of Md., and Arthur A. Richard, III, Springfield, Va., assignors to Bell Atlantic Network Services, Arlington, Va.

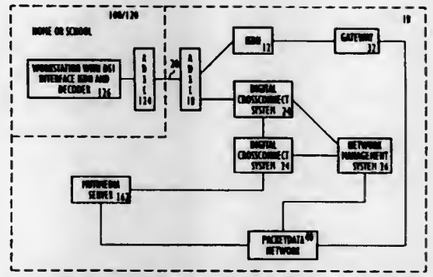
Continuation of Ser. No. 99,381, Jul. 30, 1993, Pat. No. 5,528,281, which is a continuation-in-part of Ser. No. 42,270, Apr. 2, 1993, Pat. No. 5,410,343, and a continuation-in-part of Ser. No. 766,535, Sep. 27, 1991, Pat. No. 5,247,347, and a continuation-in-part of Ser. No. 42,107, Apr. 1, 1993, abandoned. This application May 31, 1995, Ser. No. 455,782

Int. Cl.[6] H04N *7/14;* **H04M** *11/00*

U.S. Cl. 348—7 **18 Claims**

1. A public switched telephone network for providing information from a multimedia information server to any one of a plurality of subscriber premises, comprising:

a telephone company central office receiving multimedia information signals from a multimedia information server and subscriber orders from a prescribed subscriber, said central office including a gateway for providing routing data in response to subscriber orders and a switch for routing multimedia signals from said server to the prescribed subscriber in accordance with said routing data;



a central office interface including a first multiplexer/demultiplexer unit for audio telephone service signals, subscriber control signals and digital multimedia information signals on, respectively, first, second and third signal channels;

each said subscriber premises including a second multiplexer/demultiplexer unit for transmitting or receiving audio telephone service signals, subscriber control signals and digital multimedia information signals on, respectively, the first, second and third signal channels; and

a plurality of subscriber local loops interconnecting a corresponding subscriber interface and said central office interface;

wherein said subscriber interface includes a decoder for converting an incoming digital multimedia information signal to an analog signal having a video component and wherein said decoder includes a decompressor for decompressing the incoming digital multimedia information signal and producing an analog video signal and associated audio output signals.

5,625,405

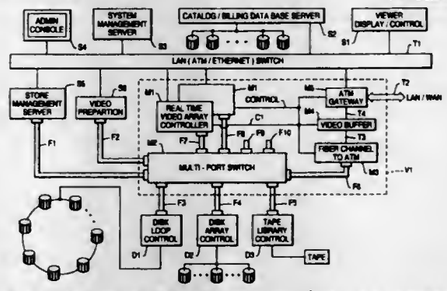
ARCHITECTURAL ARRANGEMENT FOR A VIDEO SERVER

Keith B. DuLac, Derby, Kans., and T. M. Ravi, Sunnyvale, Calif., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 295,199, Aug. 24, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,694

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **14 Claims**



1. A video server for providing video data via a telephony technology network to multiple subscribers, the video server comprising:

a data converter for converting a current video data stream transmitted via computer technology to another video data stream for transmission via a telephony technology network;

a multi-port switch connected to receive said current video data stream from one of a plurality of video data storage devices and connected to provide said current video data stream to said data converter;

a controller connected to receive a viewer request signal from a subscriber via said telephony technology network and responsive thereto to generate and provide control signals to said

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multi-port switch and said data converter for coordinating transfer of video data streams from said video data storage devices to said telephony technology network, said controller controlling said multi-port switch in outputting said video data stream from said multi-port switch, said controller controlling said data converter in converting said current video data stream to said another video data stream having a telephony technology data format different from a data format of said current video data stream and said controller controlling outputting of said another video data stream to the telephony technology network.

5,625,406

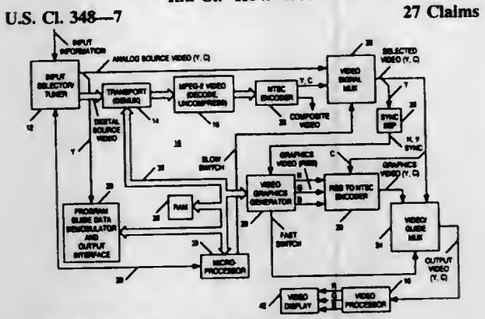
UNIFIED PROGRAM GUIDE INTERFACE

Thomas P. Newberry, Westfield; Timothy W. Saeger, Indianapolis, both of Ind., and Enrique Rodriguez-Cavazos, L'Etang la Ville, France, assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 397,003, Mar. 1, 1995, abandoned, which is a continuation of Ser. No. 362,649, Dec. 21, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 674,666

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—7 **27 Claims**



21. A program guide interface, comprising:

a source of analog and digital video signals, each of which is representative of a picture and each of which may carry program guide information;

respective means for separating said program guide information from each of said analog and digital video signals;

a video graphics generator;

a microprocessor for routing said separated program guide information to said video graphics generator, said video graphics generator formatting a graphics video signal representative of said program guide information; and,

means for combining said graphics video signal with either one of said analog and digital video signals to generate a combined video display including said program guide information and any one of said pictures.

5,625,407

SEAMLESS MULTIMEDIA CONFERENCING SYSTEM USING AN ENHANCED MULTIPOINT CONTROL UNIT AND ENHANCED ENDPOINT DEVICES

John T. Biggs, Bricktown; Diane G. Landante, East Brunswick; Sandra C. Milstead, Clarksburg; Dale L. Skran, Marlboro, and Arthur R. Snowdon, Tinton Falls, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

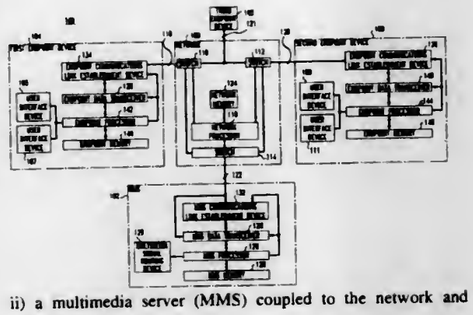
Filed Jul. 8, 1994, Ser. No. 272,503

Int. Cl.[6] H04N *7/15;* **H04M** *11/00*

U.S. Cl. 348—16 **7 Claims**

1. A method for implementing a multimedia conference in a system comprising

i) a network including a plurality of network communications links, each network communications link being associated with a network address;



ii) a multimedia server (MMS) coupled to the network and comprising

a) multimedia bridge means for mixing and switching multimedia electronic signals representing audio, video, data, and control among a plurality of endpoint devices through the network;

b) MMS communications link establishment means for establishing multimedia communications links on the network;

c) MMS network address transceiver for transmitting and receiving network addresses over the network;

d) processing means comprising a microprocessor; and

e) memory means;

iii) a plurality of endpoint devices, including a first and a second endpoint device, each endpoint device comprising

a) user interface means for accepting input from a user and for providing multimedia output to a user, the multimedia output including at least one of audio, video, and data;

b) endpoint communications link establishment means for establishing communications links on the network;

c) an endpoint network address transceiver for transmitting and receiving network addresses over the network;

d) processing means including a microprocessor; and

e) memory means;

THE METHOD INCLUDING THE STEPS OF:

a) the network assigning the MMS an MMS network address uniquely specifying a particular MMS; and

b) programming the MMS network address into the memory means of at least one of the plurality of endpoint devices.

5,625,408

THREE-DIMENSIONAL IMAGE RECORDING/ RECONSTRUCTING METHOD AND APPARATUS THEREFOR

Masakazu Matsugu, Chiba-ken, and Katsumi Iijima, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 263,754, Jun. 22, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,332

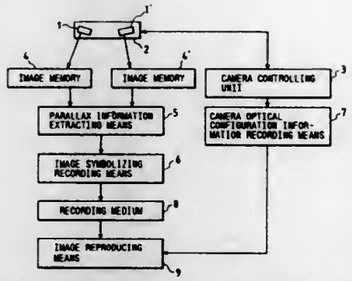
Claims priority, application Japan, Jun. 24, 1993, 5-153859; Sep. 21, 1993, 5-234583

Int. Cl.[6] H04N *13/02;13/04*

U.S. Cl. 348—42 **5 Claims**

1. An image recording/reproducing method for taking and recording a plurality of images using a plurality of cameras, and reproducing the recorded images, comprising the steps of:

extracting discriminating information between a double area comprising an area or parts of an image of a camera which is visible to at least two of the plurality of cameras and single eye areas comprising an area or parts of an image which is visible to only one of the plurality of cameras in each image taken by the plurality of cameras, intensity information of pixels, and parallax information on the double area;



recording the discriminating, intensity, and parallax information on a recording medium in a predetermined format;

storing optical configuration information of the plurality of cameras; and

calculating proper parallax values upon reproducing on the basis of the recorded information and the optical configuration information.

5,625,409

HIGH RESOLUTION LONG-RANGE CAMERA FOR AN AIRBORNE PLATFORM

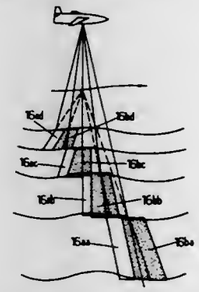
Jean-Claude Rosier, Giverny, and Francis Bretaudeau, Rouen, both of France, assignors to Matra Cap Systemes, Velizy-Villacoublay, France

Continuation of Ser. No. 136,001, Oct. 14, 1993, abandoned. This application Aug. 16, 1995, Ser. No. 515,496

Claims priority, application France, Oct. 14, 1992, 92 12297

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—117 **13 Claims**



1. A camera device for use on an airborne platform to provide recordable high-resolution images of a scene in the form of a strip that is elongated in a travel direction of the platform, said camera device comprising:

first detector means arranged for being securely connected on the platform, including a first detector having a two dimensional matrix of opto-electronic sensors and a first optical system of long focal length forming an image of a zone of said scene on said first detector which is arranged to acquire all points of said image simultaneously and to deliver a signal representing said image as a full frame on an output thereof;

second detector means arranged for being securely connected to the platform, including a second detector having a two dimensional matrix of opto-electronic sensors and a second optical system, having a short focal length as compared with the focal length of said first optical system, forming an image on said second detector which is arranged to deliver a signal representing the image formed on said second detector;

means for synchronizing times at which images are simultaneous taken by the two detector means and for recording the signals representing the images, said times being sufficiently close to each other for two successive images from said first detector means to overlap mutually;

optical scanning means optically associated with said first detector means for scanning transversely to said travel direction, arranged for directing a field of view of said first detector means into a plurality of successive directions for scanning transversely to said travel direction, said successive directions being such that different zones of the scene each in the field of view of said first detector in a respective one of said successive directions overlap partially and are all within the field of view of said second detector; and image processing means for mutually repositioning said images formed by said first detector means and providing a two dimensional mosaic of images.

5,625,410

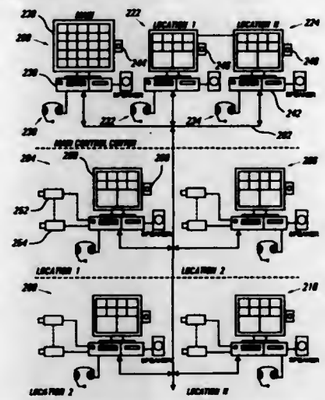
VIDEO MONITORING AND CONFERENCING SYSTEM

Kinya Washino, Dumont, N.J., and Barry H. Schwab, West Bloomfield, Mich., assignors to Kinywa Washino, Mahwah, N.J.

Continuation-in-part of Ser. No. 50,861, Apr. 21, 1993, Pat. No. 5,450,140, and Ser. No. 298,104, Aug. 30, 1994, Pat. No. 5,537,157. This application Apr. 7, 1995, Ser. No. 418,823

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—154 **15 Claims**



1. A video storage and display system, comprising:

a plurality of video cameras, each outputting a signal representative of a video image;

means to receive the signals from each camera and digitally compress the images;

two forms of high-capacity storage media, one being randomly searchable while the other continues to store the digitally compressed image; and

a computer configured to receive the digitally compressed images, the computer being interfaced to the following devices:

a display screen,

means to receive externally derived operator commands, and

the high-capacity storage media, and wherein the computer is programmed to perform the following functions:

display the digitally compressed images from the cameras in different windows on the display screen, each window being associated with an update rate and dimensions in pixels,

vary the dimensions and the rate at which a particular image is updated in its window in accordance with one of the externally derived commands,

store the digitally compressed images in the high-capacity storage medium, and

vary the dimensions and the rate at which a particular image is stored in accordance with one of the externally derived commands.

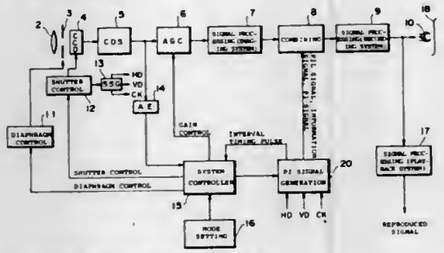
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5,625,411

VIDEO CAMERA PRINTER APPARATUS AND METHOD OF CONTROLLING SAME AND APPARATUS AND METHOD FOR DETECTING PRINT INHIBIT SIGNAL

Masafumi Inulya; Michitoshi Takayama; Kazuya Oda; Takeshi Misawa, and Yasuko Sonoda, all of Asaka, Japan, assignors to Fuji Photo Film, Ltd., Kanagawa, Japan

Continuation of Ser. No. 171,664, Dec. 22, 1993, abandoned. This application Jun. 21, 1995, Ser. No. 493,113
Claims priority, application Japan, Dec. 22, 1992, 4-356405; Dec. 22, 1992, 4-356406; Dec. 29, 1992, 4-361190
Int. Cl.[6] H04N *5/225;5/335*
U.S. Cl. 348—220 **28 Claims**



1. A movie video camera comprising:

shutter implementing means for implementing a shutter having a high shutter speed and a shutter having an ordinary shutter speed, the high shutter speed being relatively higher than the ordinary shutter speed;

mode setting means for selectively setting one of at least a movie photography mode wherein a subject is photographed continuously at the ordinary shutter speed and an interval photograph mode;

shutter control means for controlling said shutter implementing means in response to the selective setting of the interval photography mode, periodically for each n times photography is performed, to automatically implement the shutter one time at the high shutter speed and to automatically implement the shutter n−1 times at the ordinary shutter speed, wherein n is an integer;

photographic means, responsive to selective setting of the interval photography mode, for outputting a first video signal representing an image of a subject when the subject is exposed at the ordinary shutter speed and for outputting a second video signal representing an image of the subject when the subject is exposed at the high shutter speed; and

recording means, responsive to selective setting of the interval photography mode, for recording the first and second video signals, which are output from the photographic means, on a recording medium.

5,625,412

HIGH-FRAME RATE IMAGE ACQUISITION AND MOTION ANALYSIS SYSTEM

Alexandru V. Aclu, Toms River, N.J.; Petru Pop, and Radu Corlan, both of Bucharest, Romania, assignors to Vision Research, Wayne, N.J.

Filed Jul. 13, 1995, Ser. No. 502,213
Int. Cl.[6] H04N *5/228*
U.S. Cl. 348—222 **20 Claims**

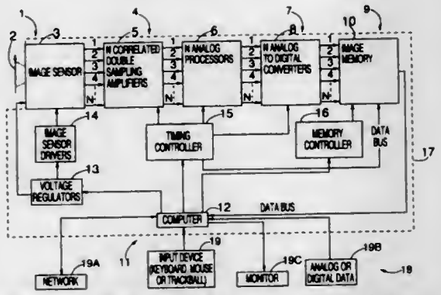
1. A high-frame rate image acquisition and motion analysis system comprising:

first means to obtain an image of an object;

second means coupled to said first means to slice said image into N analog segments, where N is equal to an integer greater than one;

third means coupled to said second means to convert said N analog segments into N digital data streams;

fourth means coupled to said third means to store each of said N digital data streams;



fifth means coupled to said first means, said second means, said third means and said fourth means to provide software control of the operation thereof, said fifth means further controlling said first means and said second means to adjust separately predetermined variables of each of said N analog segments and further controlling said fourth means to provide a read out of an adjusted version of said image;

a common enclosure for said first means, said second means, said third means, said fourth means and said fifth means; and

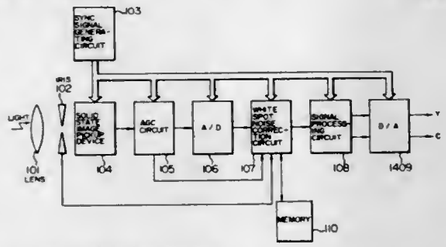
sixth means disposed externally of said enclosure coupled to said fifth means to control the operation of said fifth means and to display said adjusted version of said image present in said fourth means.

5,625,413

VIDEO CAMERA WITH A FUNCTION TO CORRECT DEFECTIVE PIXELS OF SOLID STATE IMAGE PICKUP DEVICE AND METHOD OF CORRECTING DEFECTIVE PIXELS OF SOLID STATE IMAGE

Minoru Katoh; Kenji Itoh, both of Katsuta, and Hiroyasu Ohtsubo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 249,286, May 25, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,010
Claims priority, application Japan, Jun. 2, 1993, 5-132169
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—246 **15 Claims**



1. A video camera comprising:

a lens system for forming an image from an incident light;

a solid state image pickup device for converting the image of an object formed by said lens system into an electric signal corresponding to a plurality of pixels;

a light shielding means for shielding the incident light to said solid state image pickup device;

a detecting means for comparing an output signal of each pixel of the solid state image pickup device and a predetermined level, thereby detecting defective pixels of the solid state image pickup device;

a means for controlling said light shielding means so as to shield the incident light to said solid state image pickup device when said detecting means detects defective pixels;

an automatic gain control circuit amplifying an output of said solid state image pickup device with an object imaging gain within an object imaging gain range for keeping a brightness of the image constant during times when the image of said object is formed, and with a defective pixel detecting gain during times when said detecting means detects said defective pixels, wherein said defective pixel detecting gain has a gain level which is higher than a highest gain level of said object imaging gain range;

a means for raising a gain of said automatic gain control circuit to said defective pixel detecting gain during times when said detecting means detects said defective pixels;

a memory for storing position information on said defective pixels detected by said detecting means; and

a replacing means for replacing a signal of a defective pixel of said defective pixels, which is specified by said position information in said memory by a signal formed based on a signal of a peripheral pixel of said defective pixel,

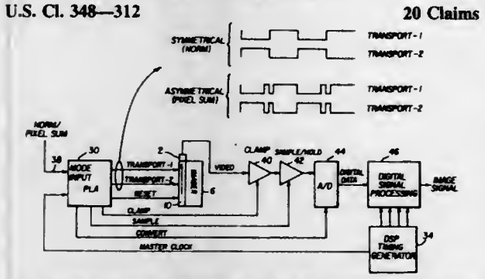
wherein said detecting means detects said defective pixels in a state in which the incident light is shielded by said light shielding means.

5,625,414

IMAGING DEVICE USING ASYMMETRICAL TIMING FOR PIXEL SUMMING

Thomas J. Manning, Canandaigua, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1995, Ser. No. 380,486
Int. Cl.[6] H04N *3/14*
U.S. Cl. 348—312 **20 Claims**



1. A charge transfer imaging device that performs charge summing upon image charge from adjacent pixels, said image charge being transferred from the device by a transport signal having a waveform with a pattern of transitions that cause shifting of the image charge, said imaging device comprising:

a charge transfer imager having a photosensitive area for producing image charge, a floating diffusion for converting the image charge to a voltage proportional to an image level, an output register for transferring the image charge to the floating diffusion, and an output circuit including the floating diffusion for producing an output signal waveform incorporating the voltage proportional to the image level, said waveform containing image information as a function of the difference between a predetermined reference level and the image level, both levels characterized by respective pedestal regions; and

a clock generator for generating a) a reset signal of predetermined frequency that resets the voltage level of the floating diffusion to the predetermined reference level and b) the transport signal that is applied to the output register for shifting the image charge to the floating diffusion at a multiple of the reset clock frequency so that charge summing is effected at the output circuit,

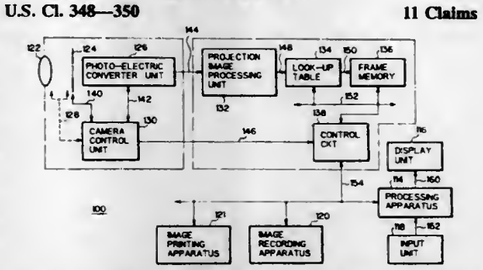
wherein the transitions of the transport signal waveform are characterized by an asymmetrical pattern which accordingly affects charge transfer so as to achieve charge summing.

5,625,415

APPARATUS AND METHOD FOR AUTOMATIC FOCUSING IN A CAMERA SYSTEM

Hitoshi Ueno, and Takeshi Misawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 17, 1994, Ser. No. 243,795
Claims priority, application Japan, May 20, 1993, 5-141492; May 21, 1993, 5-120103
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—350 **11 Claims**



1. A camera system for producing image data representative of an optical image of an object to be photographed, the optical image being incident via a shooting lens system, comprising:

pick-up means for producing pixel signals representative of the optical image through photographing the object;

first control means for controlling said pick-up means and for processing the pixel signals produced in said pick-up means to generate a first image data of the object and a second image data of the object;

second control means for focusing an image of the object on the basis of the first image data, and supplying, to said first control means, an instruction to generate the second image data after said first control means controls said pick-up means in accordance with information obtained by the focusing;

display means for displaying a first image represented by the first image data; and

input means for detecting an operational state by an operator to be operated in accordance with the first image displayed on said display means,

wherein said first control means controls said pick-up means in accordance with the instruction supplied by said second control means to photographically form the image of the object, and generates the first image data and the second image data, and

said second control means identifies operational information representative of the operational state detected by said input means to set up a focusing area on the first image in accordance with the operational information, and implements the focusing for the image of the object in accordance with pixel signals corresponding to the set up focusing area;

wherein said second control means includes

input processing means for identifying the operational information representative of the operational state detected by said input means,

pre-shot processing means for informing said first control means of an instruction to generate said image data in accordance with the operational information,

display processing means for providing such a processing that said first image represented by said first image data processed in said first control means is displayed in accordance with the instruction of said pre-shot processing means,

area processing means for setting up an area for focusing in said first image in accordance with the operational information,

focusing processing means for detecting a focusing state of the image of the object in accordance with said first image data corresponding to the area set up by said area processing means, and for producing lens position information indicating a position of the shooting lens in the focusing state in accordance with information representative of a state of said pick-up device, said information being transmitted from said first control means, and

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correction means for instructing said first control means to correct a position of the shooting lens system in accordance with the lens position information.

5,625,416

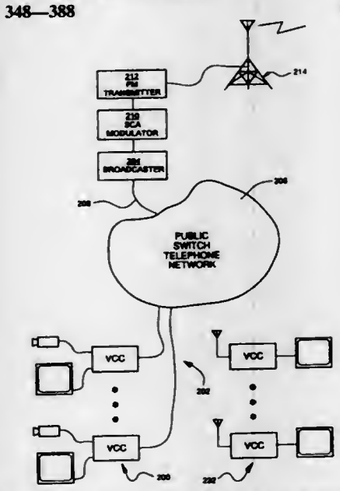
VIDEO COMMUNICATION CONTROLLER UTILIZING MULTIPLE DATA CHANNELS TO DELIVER SEPARATE PROGRAM SEGMENTS

Ling-yuan Tseng, 13772 Calle Tacuba, Saratoga, Calif. 95070, and Sheng-wen Hong, 4th Floor, No. 11, Lane 47, Kuang Hwei Road, Mu-cha, Taipei, Taiwan

Continuation-in-part of Ser. No. 123,299, Sep. 17, 1993. This application Dec. 1, 1993, Ser. No. 160,426

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—388 **17 Claims**



1. A method of delivering a video program, comprising the steps of:

generating a video program;

segmenting said video program;

broadcasting said video program on a plurality of FM subcarriers, at least one of said FM subcarriers being an SCA-authorized FM subcarrier, each of said subcarriers being used to transmit a different segment of the video program;

recovering and reassembling said video program segments from said subcarriers at a remote location; and

viewing said video program on a display device.

5,625,417

IMAGE PROCESSING SYSTEM USING A FEATURE POINT-BASED MOTION ESTIMATION

Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

Filed Sep. 13, 1995, Ser. No. 527,612

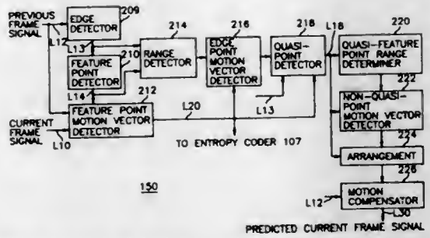
Claims priority, application Rep. of Korea, Aug. 8, 1995, 95-24377

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—416 **2 Claims**

1. An apparatus, for use in a motion-compensated video signal encoder, for determining a predicted current frame based on a current frame and a previous frame of a digital video signal, comprising:

means for detecting edge points representative of pixels forming edges of an image in the previous frame;



means for selecting a number of pixels among the edge points in the previous frame as feature points;

means for detecting a first set of motion vectors for the feature points, each of the first set of motion vectors representing a spatial displacement between one of the feature points and a most similar pixel thereto in the current frame;

means for detecting a second set of motion vectors for non-selected edge points in the previous frame by using the first set of motion vectors and the edge points;

means for detecting quasi-feature points in the current frame corresponding to the feature points and a third set of motion vectors for the quasi-feature points based on each of the first set of motion vectors and detecting quasi-edge points in the current frame based on each of the second set of motion vectors and a fourth set of motion vectors for the quasi-edge points;

means for determining a quasi-feature point range for each of the quasi-feature points by indexing each of the remaining pixels in the current frame, excluding both the quasi-feature points and the quasi-edge points, to its closest quasi-feature point;

means for detecting the distance between a quasi-feature point and each of the remaining pixels in a quasi-feature point range and setting the distance as a search radius for said each of the remaining pixels;

means for determining one or more quasi-feature point ranges dispersed within the search radius from each of the remaining pixels, and detecting a fifth set of motion vectors for the remaining pixels, each of the fifth set of motion vectors being determined by averaging the motion vectors of the quasi-feature points included in said one or more quasi-feature point ranges;

means for arranging the third, the fourth and the fifth sets of motion vectors to determine a group of motion vectors for all of the pixels in the current frame; and

means for providing a pixel value from the previous frame based on a position of each pixel in the current frame and a motion vector thereof, to thereby determine the predicted current frame.

5,625,418

METHOD AND ARRANGEMENT FOR INSERTING FRAME MARKERS IN DATA FOR TRANSMISSION AND FOR RETRIEVING THE DATA WITH THE AID OF SUCH FRAME MARKERS

Jann Binder, Aspach; Georg Süssmeier, Backnang; Klaus Krull, Weissach; Wolfgang Bambach, Oberstenfeld, and Karlheinz Grotz, Fellbach, all of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Germany

Filed Apr. 28, 1995, Ser. No. 431,287

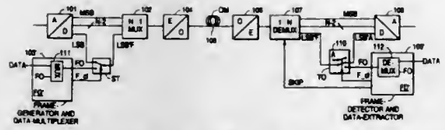
Claims priority, application Germany, Apr. 30, 1994, 44 15 288.4

Int. Cl.[6] H04N *7/52*

U.S. Cl. 348—495 **17 Claims**

1. A method of preparing digital data for transmission, comprising:

providing the digital data in a form of parallel partial data streams of different bit significance; and



periodically replacing useful data in at least one partial data stream of low bit significance with a frame marker.

5,625,419

VERTICAL FILTER CIRCUIT FOR PICTURE IN PICTURE DISPLAY DEVICE OF TELEVISION SYSTEM AND METHOD THEREFOR

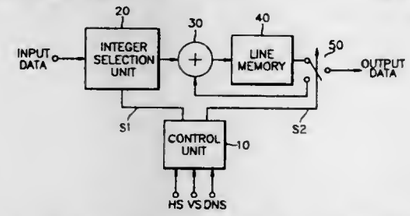
Seong-Wook Pyeong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 24, 1995, Ser. No. 506,375

Claims priority, application Rep. of Korea, Jul. 26, 1994, 18113/1994

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—568 **14 Claims**



1. A vertical filter circuit of a picture in picture (PIP) display device of a television set, said vertical filter circuit comprising:

control means receiving a horizontal sync signal and a mode signal, for generating a first control signal for selecting an attenuation coefficient by dividing said horizontal sync signal and based on said mode signal, and for generating a second control signal for compressing a predetermined number of horizontal lines, wherein said first and second control signals are generated based on said horizontal sync signal and said mode signal, wherein said mode signal indicates a normal scan mode and a double scan mode;

attenuating means, receiving image data, for attenuating said image data with the selected attenuation coefficient determined by said first control signal and for outputting the attenuated image signal;

adding means, having first input terminals connected to output terminals of said attenuating means, for adding and averaging the attenuated image data received at said first input terminals and stored image data provided to second input terminals of said adding means;

line memory means connected to output terminals of said adding means, for storing said attenuated image data as said stored image data corresponding to a horizontal line; and

switching means having respective input terminals connected to output terminals of said line memory, first output terminals for output of said stored image data, and second output terminals connected to said second input terminal of said adding means, for switching between said first and said second output terminals of said switching means responsive to said second control signal, thereby attenuating said image data received during a horizontal line period with said selected attenuation coefficient determined by said first control signal, and thereby compressing said image data averaged by said predetermined number of horizontal lines responsive to said second control signal and outputting the compressed image data, wherein said predetermined number of horizontal lines is based on said mode signal.

5,625,420

SPECIAL EFFECT PICTURE DEVICE

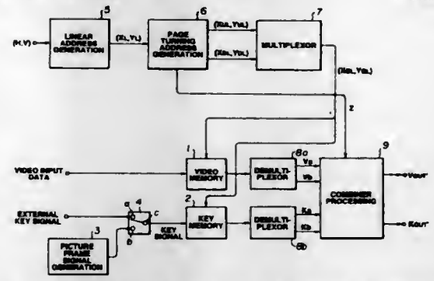
Tetsuro Nakata; Tetsuya Harada, and Motomu Ueta, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,546

Claims priority, application Japan, Apr. 28, 1994, 6-091543

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—580 **3 Claims**



1. A special effect picture device for forming a transformed picture which is non-linear with respect to an original picture, using a video signal and a key signal for said original picture, comprising:

video signal storage means for storing said video signals;

key signal storage means for storing said key signals;

read-out address generating means for generating read-out addresses for information concerning an upper picture of the transformed picture and for information concerning a lower picture of the transformed picture and for generating information concerning depth;

means for dividing the key signal and the video signal read-out from the key signal storage means and the video signal storage means respectively according to the read-out address output from the read-out address generating means into an upper key signal and a lower key signal and into an upper video signal and a lower video signal respectively; and

means for generating the transformed picture by synthesizing the upper picture and the lower picture of the transformed picture using the upper and lower key signals output from said dividing means; and

eliminating unnecessary portions according to the depth information generated by said read-out address generating means.

5,625,421

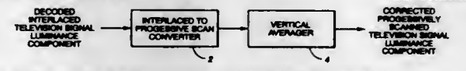
SUPPRESSION OF SAWTOOTH ARTIFACTS IN AN INTERLACE-TO-PROGRESSIVE CONVERTED SIGNAL

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022, and Peter D. Swartz, San Rafael, Calif., assignors to Yves C. Faroudja, Los Altos Hills, Calif.

Filed Jan. 14, 1994, Ser. No. 181,565

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—607 **21 Claims**



1. Apparatus for processing a video signal, comprising

means for converting an interlaced video signal to a progressively scanned video signal, wherein said progressively scanned video signal exhibits artifacts in the form of jagged vertical or diagonal transitions, and

means for vertically averaging the progressively scanned video signal picture at least in the region or regions of the picture in which said artifacts are present, said means for vertically averaging including means for detecting said artifacts by determining if there are differences among pixels in more than one set of three adjacent scan lines of the progressively scanned video signal, said means for determining if there are

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differences including means for deriving differences among pixels in adjacent sets of lines according to the relationships:

|line n–line (n+2)|=0, and

|line n–line (n+1)|<>0.

5,625,422

METHOD FOR CHANNEL SELECTION AND TUNING BASED UPON SET CHANNEL POSITIONS

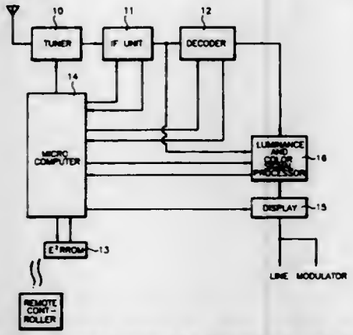
Tae Y. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 361,375

Claims priority, application Rep. of Korea, Dec. 22, 1993, 29107/1993

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—731 **3 Claims**



1. A channel memory method for channel selection and tuning comprising the steps of:

sequentially inputting a user's desired broadcasting station names to a channel table to set channel positions for the station names (a first step);

performing a tuning (a second step);

comparing and sorting broadcasting station names so that a tuned channel is matched with a set channel position in the channel table (a third step); and

displaying channels in an order corresponding to the set channel positions in the channel table (a fourth step).

5,625,423

INFRARED RAY GENERATING APPARATUS AND OPERATION DESIGNATING SYSTEM FOR USE WITH ELECTRONIC APPARATUS

Natsuo Ito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 30, 1995, Ser. No. 454,066

Claims priority, application Japan, May 31, 1994, 6-141239

Int. Cl.[6] H04N *5/76;7/18*

U.S. Cl. 348—734 **5 Claims**

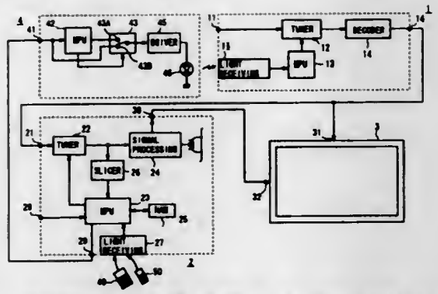
1. An operation designating system for use with an electronic apparatus, the system comprising:

a first electronic device in a first apparatus for generating an input command signal of a first format and having a memory for storing an updated command signal of a second format;

input means in said first apparatus for inputting an updated command signal of said second format to said first electronic device for storage in said memory;

control means in a second apparatus for converting the input command signal of the first format into a command signal of the second format;

switch means in said second apparatus for selecting as an output signal one of the input command signal of the first format



converted to the second format by the control means or the updated command signal of the second format from the first electronic device;

wherein said control means causes the switch means to select the input command signal of the second format converted by the control means when the input command signal is not in accordance with the second format and to select the updated command signal when the updated command signal is in accord with the second format; and

an infrared ray generator for generating an infrared ray signal corresponding to the output signal from the switch means transmitted to a third apparatus whose operation state is designed according to the command signal of the second format.

5,625,424

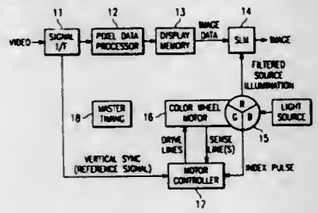
DIGITAL MOTOR CONTROLLER FOR COLOR WHEEL

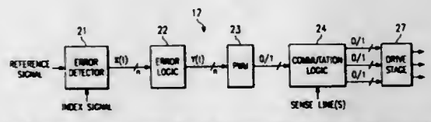
James L. Conner, Rowlett; Joseph G. Egan, Garland, and William R. Breithaupt, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1994, Ser. No. 339,373

Int. Cl.[6] H04H *9/12*

U.S. Cl. 348—743 **14 Claims**





1. A digital motor controller for controlling the speed and phase of a color wheel driven by a brushless DC motor, comprising:

a digital error detection unit for receiving a phase feedback signal representing an index of the time when said color wheel is at a known position and determining a phase error value based on said phase feedback signal, and for receiving a speed feedback signal and determining a speed error value based on said speed feedback signal;

an error logic unit comprised of logic devices for implementing a feed forward function for calculating a speed control value based on said phase error value or said speed error value;

a digital pulse width modulation unit for generating a modulation signal based on said speed control value; and

a commutation logic unit for modulating the pulse width of a drive signal to said motor in accordance with said modulation signal.

5,625,425

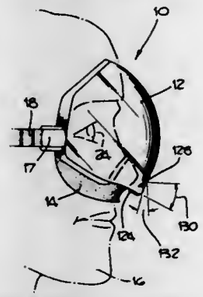
DIVING MASK WITH LENSES AND METHOD OF FABRICATING THE SAME

Jon Kranhouse, 838 Hartzell St., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 750,988, Aug. 28, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 114,551

Int. Cl.[6] G02C *1/00*

U.S. Cl. 351—43 **64 Claims**



10. An underwater diving mask comprising:

a flexible portion,

two generally hemispherically-shaped lenses, having peripheral edges, mounted on said flexible portion;

means for releasably securing said flexible portion to a face of a user, said peripheral edges of said hemispherically-shaped lenses being shaped to substantially fit contours of said user's face so that a spherical center of curvature of each of said hemispherically-shaped lenses substantially coincides with an optical nodal point of a corresponding eye of said user's face; and retractable corrective lenses mounted to said hemispherically-shaped lenses.

5,625,426

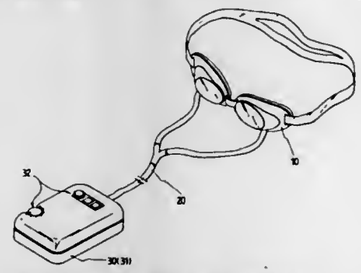
VISION CORRECTING DEVICE

Hsing Chuan Liu, No. 168, Taichung Road, Taichung City, Taiwan

Filed Feb. 20, 1996, Ser. No. 603,946

Int. Cl.[6] G02C *1/00;* **A61F** *5/00*

U.S. Cl. 351—158 **7 Claims**



I. A vision correcting device, which comprises:

an eye shield for fitting over both eyes of a person;

an air tube fastened at one end thereof with said eye shield; and

a pressure apparatus fastened with another end of said air tube for adjusting air pressure inside said eye shield for the treatment of myopia or hyperopia of said person;

Wherein said pressure apparatus has a housing provided with a plurality of control buttons, said housing further provided therein with a hollow interior for housing a motor, a speed-changing mechanism, an eccentric wheel, a roller, a push rod, and an air sac, said motor intended for use in driving said speed-changing mechanism to actuate said eccentric wheel making contact with said roller which is fastened with said push rod capable of causing said air sac to contract rapidly and relax slowly so as to bring about a positive air pressure in said shield via said air tube when said eccentric wheel is actuated by said speed-changing mechanism to turn clockwise, said push rod further capable of causing said air sac to contract slowly and relax rapidly so as to bring about a negative air pressure in said shield via said air tube when said eccentric wheel is actuated by said speed-changing mechanism to turn counterclockwise.

5,625,427

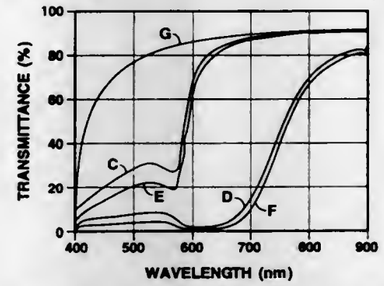
OPHTHALMIC LENS

Roger J. Araujo, Horseheads; Nicholas F. Borrelli, Elmira; Josef C. Lapp, and David W. Morgan, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 166,833, Dec. 15, 1993, Pat. No. 5,430,573. This application Aug. 23, 1994, Ser. No. 294,636

Int. Cl.[6] G02C *7/02;* **C03C** *15/00*

U.S. Cl. 351—159 **7 Claims**



1. An ophthalmic lens of photochromic glass having an R_2O-Al_2O_3-B_2O_3-SiO_2 base glass composition, the lens containing precipitated cuprous halide crystals that are elongated and oriented, whereby the lens, in the darkened state, exhibits dichroic behavior and provides polarization of radiation across the entire visible wavelength region of the spectrum, the lens having a sharp spectral cutoff for radiation below the 400 nm wavelength, thereby eliminating UV transmission, the lens having a transmittance not over about 40% in the darkened state and a ratio of phase shift due to birefringence that is not less than about 0.7.

5,625,428

OPHTHALMIC APPARATUS WITH ALIGNMENT INDICATING SYSTEM

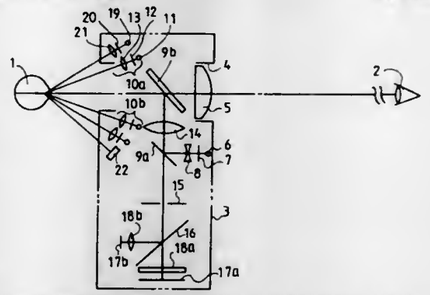
Naoki Isogai, Nishio, Japan, assignor to Nidek Co., Ltd., Japan

Filed Mar. 30, 1994, Ser. No. 219,895

Claims priority, application Japan, Mar. 31, 1993, 5-098941

Int. Cl.[6] A61B *3/14;3/10*

U.S. Cl. 351—208 **10 Claims**



1. An ophthalmic apparatus having a measurement optical system for measuring an eye of an examines, comprising:

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an observing optical system for observing an anterior portion of the examinee's eye;

an alignment index projecting optical system for projecting an index onto the examinee's eye to align the examinee's eye and the measurement optical system;

an alignment detecting optical system having a photoelectric conversion element for detecting the index projected by the alignment index projecting optical system;

judging means for judging an alignment condition based on the detected result by the alignment detecting optical system; and

displaying means for displaying luminous flux indicative of the judged result of the judging means,

whereby the displaying luminous flux is emitted toward the cornea of the examinee's eye so that an examiner is informed of the judged result by observing the luminous flux introduced into the observing optical system after being reflected on the cornea.

5,625,429

CAMERA WITH COMMUNICATIONS CAPABILITY WITH AN EXTERNAL DEVICE

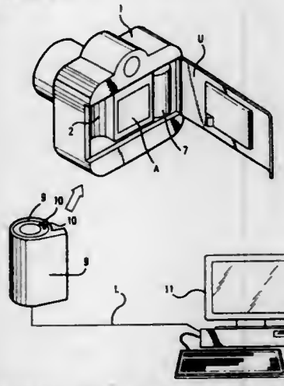
Kazuyuki Kazami, Tokyo; Norikazu Yokonuma, Kanagawa-ken; Hideo Hibino, Kanagawa-ken, and Youichi Yamazaki, Kanagawa-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,461

Claims priority, application Japan, Dec. 27, 1993, 5-333618; Dec. 27, 1993, 5-333619; Dec. 27, 1993, 5-333620; Dec. 27, 1993, 5-333622

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—300 **39 Claims**



13. An apparatus communications control system comprising:

an apparatus having an apparatus photoelectric element including an apparatus light-emitting element and an apparatus light-receiving element located in a film cartridge chamber of said apparatus;

an external device located externally from said apparatus, said external device including a dummy cartridge that is insertable into said film cartridge chamber of said apparatus, said dummy cartridge having a cartridge photoelectric element located so that said cartridge photoelectric element opposes said apparatus photoelectric element when said dummy cartridge is inserted into said film cartridge chamber of said apparatus;

a controller electrically coupled with said apparatus photoelectric element, said controller determining whether to communicate with said external device using said apparatus photoelectric element, said controller activating the apparatus light-receiving element prior to activating the apparatus light-emitting element and communicating with said external device by transmission of light signals between said apparatus photoelectric element and said cartridge photoelectric element when said controller determines to communicate with said external device in response to output of the apparatus light-receiving element activated prior to the apparatus light-emitting element.

5,625,430

PHOTOGRAPHIC CAMERA SYSTEM

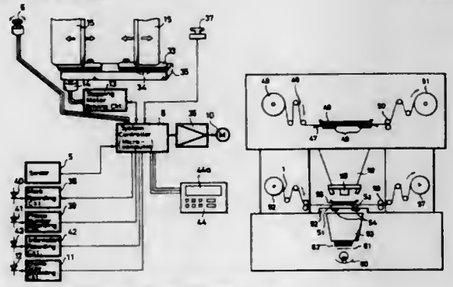
Takahiko Saito, Kanagawa; Akira Nakanishi, Tokyo; Shunzi Obayashi, Tokyo; Kyoji Genda, Tokyo, and Hideki Toshikage, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 26,415, Mar. 4, 1993, abandoned. This application Nov. 2, 1994, Ser. No. 333,593

Claims priority, application Japan, Mar. 17, 1992, 4-060684; Mar. 23, 1992, 4-065304

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—65 **25 Claims**



1. A photographic system comprising:

a photographic camera, including

a camera body,

a first housing disposed in the camera body for housing photographic film in a photographic film cartridge,

a second housing disposed in the camera body for housing the photographic film drawn from the photographic film cartridge,

film drive means disposed in the camera body for driving the photographic film between the first and second housings,

control means disposed in the camera body including a micro-computer electrically connected to a selector switch operable by a user for receiving a selection signal from the selector and controlling an aspect of an effective area of the photographic film drawn from the photographic film cartridge available to an image of a subject to be recorded on the photographic film, and

recording means disposed in the camera body and responsive to the micro-computer for recording at least an aspect signal between an edge of the photographic film and an effective exposure area of the photographic film that indicates the aspect of the effective area where an exposed area on the photographic film is to be printed on photosensitive print paper; and

a photographic film printer for printing on photosensitive print paper processed photographic film recorded using the photographic camera, including

a printer body,

a light source and a variable width mask for exposing the photosensitive print paper,

detecting means disposed on the printer body for non-mechanically detecting the aspect signal recorded between the edge of the photographic film and the effective exposure area of the photographic film by the photographic camera,

processed photographic film drive control means disposed on the printer body for controlling driving of the processed photographic film,

logic circuit means for determining if the aspect signal corresponds to a first aspect format or a second aspect format, and

printing means disposed on the printer body for varying an opening width of the variable width mask used to expose the image of the subject in the exposure area of the photographic film on the photosensitive print paper based on the format determined by the logic circuit means.

5,625,431

AUTOMATIC FILM WINDING DEVICE FOR A CAMERA

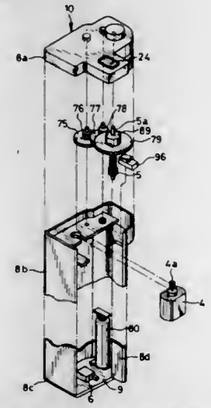
Mikio Kogane; Yoshikazu Majima, both of Kanagawa, and Kazuo Daigo, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 20, 1995, Ser. No. 375,703

Claims priority, application Japan, Feb. 8, 1994, 6-014456; Apr. 27, 1994, 6-089555

Int. Cl.[6] G03B *1/18;17/42;1/00*

U.S. Cl. 396—418 **10 Claims**



1. In a film winding device for a camera having a film winding mechanism which winds up a filmstrip on a spool by rotating the spool and has means which is locked to stop rotating the spool each time the filmstrip has been advanced one frame amount, and a shutter mechanism which is cocked during the one frame advance of the filmstrip and is released to make an exposure upon depression of a shutter button, wherein said means of said film winding mechanism is unlocked responsive to the shutter mechanism being released, said film winding device comprising:

a drive source;

a rotary member which can be coupled to the spool to drive the spool to rotate in a film winding direction;

a power transmission device for transmitting rotational movement of said drive source to said rotary member;

an activating device for activating said drive source after the shutter mechanism is released;

a clutch member included in said power transmission device so as to disconnect said drive source from the spool when the film winding mechanism is locked; and

an inactivating device for inactivating said drive source in cooperation with the disconnecting movement of said clutch member;

the improvement wherein said clutch member slips to move to a disconnecting position responsive to a high load which is applied no said drive source and said power transmission device when said film winding mechanism is locked, and said inactivating device inactivates said drive source when said inactivating device detects that said clutch member moves to said disconnecting position.

5,625,432

CAMERA WITH FILM DETECTION AND METHOD

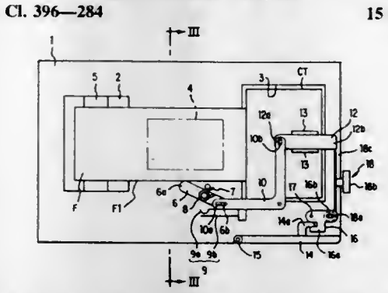
Junichi Omi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 22, 1996, Ser. No. 603,866

Claims priority, application Japan, Feb. 23, 1995, 7-035752

Int. Cl.[6] G03B *17/02;7/00*

U.S. Cl. 396—284 **15 Claims**



1. A camera capable of detecting a presence of film, the film having a front surface, a back surface, a top edge, and a bottom edge, said camera having a front, a back, a top portion, and a bottom portion, said camera comprising:

a camera body;

a film receiving assembly positioned within said camera body, said film receiving assembly including an opening for receiving the film and a cover for said opening;

a film detection assembly positioned within said camera body detecting the presence of film loaded into the camera by detecting a force exerted by one of the top edge and the bottom edge of the film on said film detection assembly; and

a cover opening prevention assembly connected to said film detection assembly preventing said cover from being opened when said film detection assembly detects the presence of film loaded into said camera.

5,625,433

APPARATUS AND METHOD FOR DEVELOPING RESIST COATED ON A SUBSTRATE

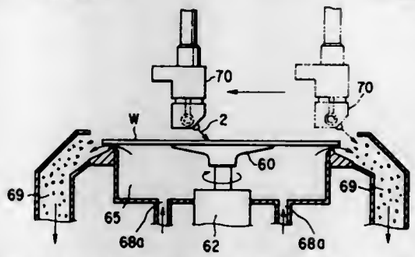
Hiroichi Inada, and Kunie Tsunematsu, both of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed Sep. 28, 1995, Ser. No. 535,895

Claims priority, application Japan, Sep. 29, 1994, 6-259155

Int. Cl.[6] G03D *5/00;3/02*

U.S. Cl. 396—604 **23 Claims**



1. An apparatus for developing photoresist coated on a substrate comprising:

a spin chuck for rotating the substrate while keeping the substrate substantially horizontal with a resist-coated surface up;

a nozzle having a linear array of a plurality of solution discharging apertures for supplying a developer solution obliquely downward from said solution discharging apertures to the resist-coated surface of the substrate on the spin chuck;

a source for supplying the developer solution to the nozzle;

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a cup arranged to enclose a peripheral portion of the substrate on the spin chuck and having a drain passage through which the developer solution supplied to the substrate is discharged and drained; and

means for moving the nozzle in a horizontal plane to allow the developer solution to be discharged in the direction in which the substrate is rotated, thereby permitting the developer solution to be supplied straight from said solution discharging apertures toward the substrate and also permitting the supplied developer solution to land on the substrate without being splashed on the substrate.

5,625,434

AUTOMATIC FOCUS DEVICE AND METHOD

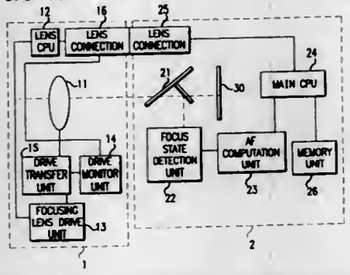
Toru Iwane, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,732

Claims priority, application Japan, Aug. 31, 1994, 6-206982

Int. Cl.[6] G03B *3/10*

U.S. Cl. 396—95 **21 Claims**



1. An automatic focus device for an imaging device having a film plane and a photographic optical system for forming an image of a subject in a region of the film plane, said automatic focus device comprising:

a focus state detection device that detects a defocus amount between said film plane and an image-forming plane of the image formed by said photographic optical system;

an image-forming plane velocity calculation device that computes a velocity of said image-forming plane based on the defocus amount detected by said focus state detection device;

a lens drive control device that controls driving of said photographic optical system toward a focus position based on the velocity of said image-forming plane computed by said image-forming plane velocity calculation device; and

an image-forming plane velocity prediction device that predicts the velocity of said image-forming plane based on a hyperbolic function of said computed velocity of said image-forming plane and on time, wherein said lens drive control device controls driving of said photographic optical system based on said predicted velocity of said image-forming plane so that said image-forming plane and said film plane coincide.

5,625,435

NON-SCANNING 3D PHOTOGRAPHIC PRINTER WITH A PARTITIONED APERTURE

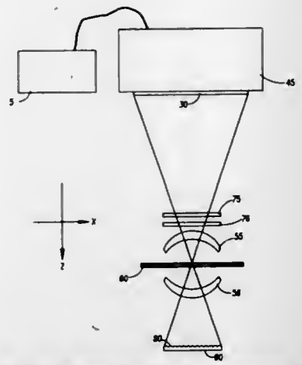
Allen K. W. Lo, Dunwoody, and Kenneth Q. Lao, Atlanta, both of Ga., assignors to Image Technology International, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 140,681, Oct. 21, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 349,481

Int. Cl.[6] G03B *35/14*

U.S. Cl. 355—22 **24 Claims**

1. A 3D photographic printer for printing an image array on the photosensitive surface of lenticular print material from a plurality of 2D images of different 2D views, said image array consisting of compressed line-form images within each of the lenticules on said



print material and said print material being stationary during printing, said printer comprising:

a. an image displaying means for displaying 2D images of different 2D views one at a time prior to exposing the 2D images of each of said 2D views displayed thereon at a stationary exposing position for printing;

b. a stationary projection lens for exposing said displayed 2D images of 2D views onto said print material, said projection lens having a large aperture sufficient for filling the entire area of each of said lenticules with said line-form images, with said lens aperture being partitioned into a plurality of horizontally-spaced sections;

c. means to control said aperture of said projection lens for transmitting light rays from displayed 2D images of each view through a different aperture section of said projection lens during printing.

5,625,436

SCANNING TYPE EXPOSURE APPARATUS AND EXPOSURE METHOD

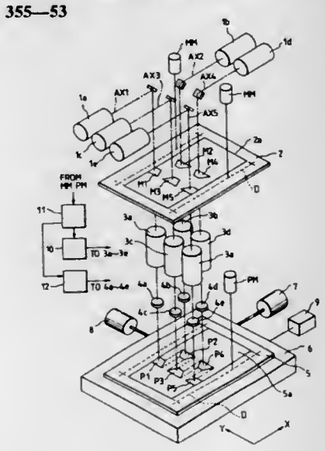
Masamitsu Yanagihara, Yokohama; Susumu Mori; Tsuyoshi Naraki, both of Tokyo; Masami Seki, Shiki; Seiji Miyazaki, Yokohama; Tsuyoshi Narabe, Ohmiya, and Hiroshi Chiba, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 337,467, Nov. 8, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 689,691

Claims priority, application Japan, Nov. 11, 1993, 5-282308; Sep. 28, 1994, 6-232963

Int. Cl.[6] H01L *21/027*

U.S. Cl. 355—53 **14 Claims**



14. A scanning type exposure apparatus comprising:

a plurality of projection optical systems for respectively projecting a pattern image of a mask onto a substrate;

a moving device for moving said mask and said substrate relative to said projection optical systems, while holding said mask and said substrate together; and

an adjusting device for detecting a change of shape of said substrate, and for adjusting at least one imaging characteristic of said projection optical systems.

5,625,437

IMAGE FORMING APPARATUS

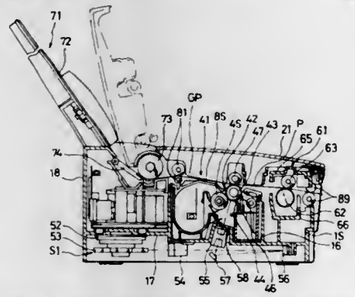
Kimiaki Furukawa, Tagata-gun, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Jun. 20, 1995, Ser. No. 492,813

Claims priority, application Japan, Jun. 21, 1994, 6-139203

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—107 **16 Claims**



1. An image forming apparatus for forming an image on recording paper through electrophotographic processes, comprising:

a process unit having a photosensitive member for sequentially performing electrophotographic processes from charging said photosensitive member to developing an image thereon;

an exposure device for radiating light in accordance with printing data on said photosensitive member after the charging process has been performed by said process unit;

a transfer device for transferring, after the developing process has been performed by said process unit, the developed image on said photosensitive member to said recording paper;

a fixing device for fixing the image transferred to recording paper by said transfer device;

a paper supply device for supplying said recording paper to said process unit;

a paper transport device for guiding recording paper supplied by said paper supply device along a predetermined guide path including said process unit and said fixing device; and

a body frame covered by an outer case and integrally formed of a main frame portion and an optical frame portion, said main frame portion being provided with positioning references of said process unit, said fixing device, said paper supply device, and said paper transport device and having said process unit, said fixing device, said paper supply device, and said paper transport device fixed thereon, and said optical frame portion being provided with positioning references of optical parts constituting said exposure device and having said optical parts fixed thereon;

wherein said body frame is formed of a material having a small coefficient of thermal expansion.

5,625,438

TONER, AND DEVICES FOR ELECTROSTATICALLY DEPOSITING A UNIFORM APPLICATION THEREOF

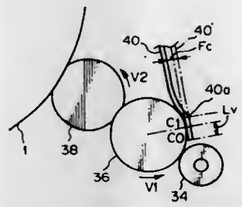
Toshihiro Sugiyama, Atsugi; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Isehara; Tetsuo Yamanaka, Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,542

Claims priority, application Japan, May 12, 1994, 6-098707; Jun. 6, 1994, 6-123877; Jun. 6, 1994, 6-123880; Jun. 10, 1994, 6-129006; Jun. 30, 1994, 6-170429; Jul. 14, 1994, 6-184158

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—272 **8 Claims**



1. A developing device for an image forming apparatus and for developing a latent image electrostatically formed on an image carrier by toner, said device comprising:

first conveying means for conveying the toner deposited thereon;

regulating means contacting said first conveying means, and for regulating the toner on said first toner conveying means to form a thin toner layer while charging said toner by friction; and

second conveying means contacting said first conveying means and the image carrier, and for receiving the toner from said first conveying means and causing said toner to deposit on the latent image of said image carrier;

wherein said regulating means and said first conveying means contact each other under a pressure of higher than or equal to 20 gf but lower than or equal to 360 gf.

5,625,439

ELECTROPHOTOGRAPHIC RECORDING APPARATUS HAVING TONER DELIVERING MEMBER WITH LARGE WETTING ANGLE

Eisaku Murakami, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 24, 1995, Ser. No. 448,785

Claims priority, application Japan, May 24, 1994, 6-109779; Apr. 11, 1995, 7-085591

Int. Cl.[6] G03G *15/06*

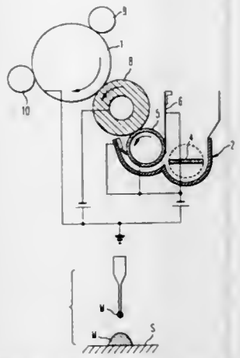
U.S. Cl. 399—272 **24 Claims**

1. An electrophotographic recording apparatus comprising:

an image supporting member for supporting an electrostatic latent image on a surface thereof; and

a developing unit for supplying a one-component toner to said image supporting member, said developing unit having a toner delivering member for directly delivering toner to said image supporting member,

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wherein an included wetting angle to water of a surface of said toner delivering member is more than 20 degrees.

5,625,440

DEVELOPING DEVICE HAVING SEALS BETWEEN A TONER TRANSPORT ROLLER AND THE TONER HOPPER WHICH PREVENT TONER LEAKAGE AND SCATTERING

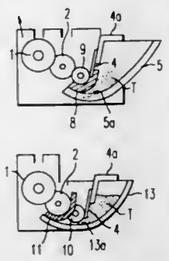
Iwao Matsumae, Musashino; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Isehara; Toshihiro Sugiyama, Atsugi; Tetsuo Yamanaka, Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,101

Claims priority, application Japan, Sep. 9, 1994, 6-240800

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—272 **9 Claims**



1. A developing device for use with an image forming system, comprising:

a first toner transporting roller having two ends;

a second toner transporting roller in contact with the first toner transporting roller which transports toner from the first toner transporting roller;

an image forming member which receives transported toner from the second toner transporting roller;

a toner hopper having a bottom portion which extends under the first toner roller;

side supports which rotatably support the first toner transporting roller, the second toner transporting roller, and the image forming member; and

a seal at each of the ends of the first toner transporting roller disposed between an outer circumferential portion of the first toner transporting roller and the bottom portion of the toner hopper.

5,625,441

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

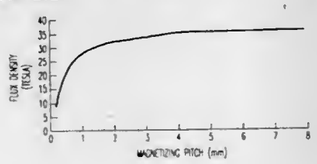
Toshihiro Sugiyama, Atsugi; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Isehara; Tetsuo Yamanaka, Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

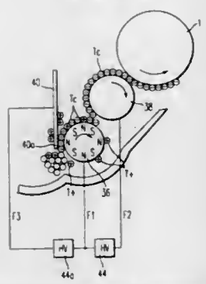
Division of Ser. No. 438,542, May 10, 1995. This application Apr. 17, 1996, Ser. No. 633,453

Claims priority, application Japan, May 12, 1994, 6-98707; Jun. 6, 1994, 6-123877; Jun. 6, 1994, 6-123880; Jun. 10, 1994, 6-129006; Jun. 30, 1994, 6-170429; Jul. 14, 1994, 6-184158

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—272 **9 Claims**





1. A developing device for an image forming apparatus and for developing a latent image electrostatically formed on an image carrier by toner, said device comprising:

first conveying means for conveying the toner deposited thereon;

regulating means for regulating an amount of the toner to be conveyed by said first toner conveying means while charging said toner by friction; and

second conveying means contacting said first conveying means, and for receiving the charged toner from said first conveying means;

wherein said first toner conveying means comprises a magnetic field generating layer which is magnetized at a pitch ranging from 1 mm to 5 mm.

5,625,442

FIXING DEVICE HAVING A CLEANING BLADE

Takayuki Seki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,615

Claims priority, application Japan, Jan. 24, 1995, 7-009183

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—327 **6 Claims**

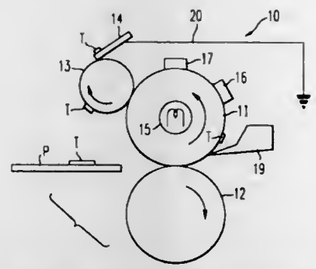
1. A fixing device comprising:

a fixing roller,

a pressing roller in contact with the fixing roller,

a cleaning roller in contact with the fixing roller for cleaning the fixing roller, and

a blade in contact with the cleaning roller for scraping toner from the cleaning roller,



wherein said blade is covered with a coating layer which comprises a fluorine resin containing an additive and has a surface resistance value of 1×10 Ω or less.

5,625,443

CLEANING DEVICE FOR THE XEROGRAPHY MACHINE

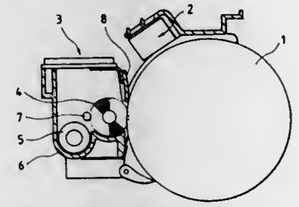
Kouji Ohta; Yoshiaki Abe, and Minoru Niwa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,446

Claims priority, application Japan, Dec. 24, 1993, 5-328571; Oct. 14, 1994, 6-249740

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—353 **13 Claims**



1. A cleaning device for removing and collecting toner left on the surface of a photoreceptor, comprising:

a housing;

brush means including a rotary shaft rotatably supported by the housing and a brush, provided on the outer surface of the rotary shaft, for scraping off toner from the surface of the photoreceptor;

a bar-like member that is made of reinforced plastic and fastened at both ends thereof to the housing and positioned at a location where the bar-like member is flicked with the brush with rotation of the brush means;

toner transporting means, positioned at a predetermined location within the housing, for transporting the toner scraped off to a given direction; and

the bar-like member being disposed so as to prevent the toner transporting means from being further moved from the predetermined position and from contacting with the brush means.

5,625,444

IMAGE FORMING APPARATUS WITH AIR BLOWER TO SECURE RECORDING MATERIAL TO CONVEYING DEVICE

Kazuo Suzuki, Yokohama; Takahiro Kubo, Tokyo, and Hisakazu Ohkubo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 374,100, Jan. 18, 1995, abandoned. This application Jun. 24, 1996, Ser. No. 668,972

Claims priority, application Japan, Jan. 24, 1994, 6-022168

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—400 **33 Claims**

1. An image forming apparatus comprising:

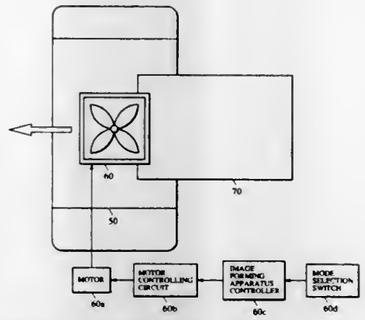


image forming means for forming an image on a recording material;

fixing means for fixing the image formed on the recording material;

recording-material carrying means for carrying a recording material from said image forming means to said fixing means; and

air blowing means for generating a wind pressure in a direction pressing said recording material against said recording-material carrying means, wherein the recording material is being carried between said recording-material carrying means and said air blowing means.

5,625,445

COLOR IMAGE FORMING APPARATUS HAVING MEANS FOR DETERMINING THE NUMBER OF TRANSFER MEMBERS SUPPORTED ON THE TRANSFER MEMBER RETAINING MEANS

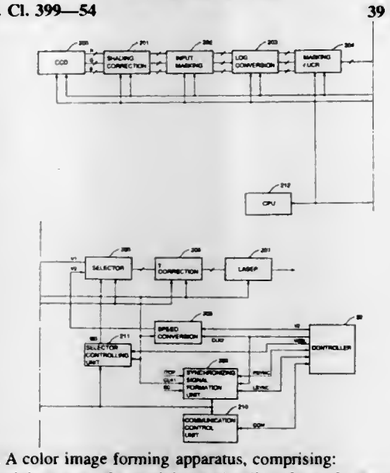
Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 310,332, Sep. 22, 1994, abandoned, which is a division of Ser. No. 891,206, Jun. 1, 1992, Pat. No. 5,383,012. This application Dec. 8, 1995, Ser. No. 569,863

Claims priority, application Japan, Jun. 3, 1991, 3-131204

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—54 **39 Claims**



1. A color image forming apparatus, comprising:

retaining means for retaining a plurality of transfer members;

converting means for converting a color space image signal, which is different from a color space corresponding to a color of an image forming color member and which is input repeatedly according to the number of said transfer members in the image forming apparatus, from an external apparatus into a

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color space image signal corresponding to the color of the image forming color member; and

image forming means for sequentially forming an image based on the image signal converted by said converting means on the plurality of transfer members.

5,625,446

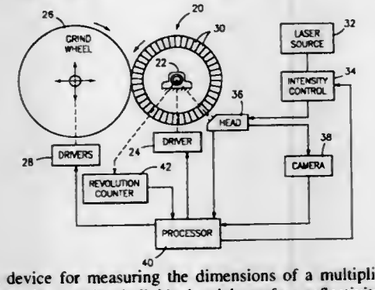
OPTICAL MEASUREMENT SYSTEM FOR ARTICLES WITH VARYING SURFACE REFLECTIVITY

Kenneth J. Bedard, Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 18, 1993, Ser. No. 138,737

Int. Cl.[6] G01C *3/00;* **G01B** *11/14;* **B24B** *49/12*

U.S. Cl. 356—3.08 **16 Claims**



1. A device for measuring the dimensions of a multiplicity of articles having varying individual article surface reflectivity comprising:

a light source, for providing a light beam;

means for repetitively and individually impinging the light beam at a point of measurement onto each article of the multiplicity, so the light beam is reflected from the surface of each article in a direction which varies according to the distance of the surface from the light source;

means for serially generating an image signal for each article of the multiplicity, indicative of the position and intensity of the light beam reflected from the surface of each article each time the light beam is impinged on the article; the means generating a first image signal for each article at the first time said light beam is impinged on each article at the point of measurement;

means for comparing the intensity of said first image signal for each article to a desired image signal intensity level having a selected favorable signal to noise ratio and total intensity ratio, and for generating and storing a light beam intensity modulation signal; and,

means, responsive to said stored light beam intensity modulation signal, for modulating the intensity of the beam from the light source the second time the beam is individually impinged on each article, so that compared to said first image signal for each article, the second image signal for the same article which is generated is made more nearly at said desired image signal intensity level to thereby make more uniform the intensities of reflected light beam for all the articles.

5,625,447

SCANNING TYPE LASER RADAR SYSTEM FOR VEHICLE

Hayato Kikuchi, and Mahito Ishiyama, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

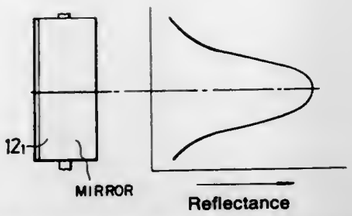
Filed Mar. 10, 1995, Ser. No. 401,504

Int. Cl.[6] G01C *3/08;* **G01B** *11/26;* **G02B** *26/08;* **B60T** *7/16*

U.S. Cl. 356—4.01 **4 Claims**

1. A scanning type laser radar system for a vehicle, comprising:

a laser beam source;



a mirror for forming a beam directed forwardly by reflection of a laser beam from said laser beam source, said mirror having upper, lower, and central reflecting portions;

driving means for driving the mirror for turning movement about an axis vertical to a road surface to laterally scan the beam from said mirror; and

a light receiver for receiving beam reflected from an object,

wherein a reflectance of at least one of the upper and lower reflecting portions of said mirror is set at a value lower than a reflectance of the central reflecting portion of said mirror.

5,625,448

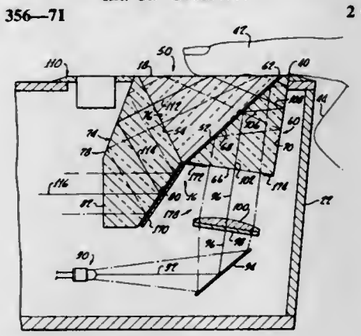
FINGERPRINT IMAGING

Eliseo Ranalli, Irvine, and Barry G. Broome, Glendora, both of Calif., assignors to Printrak International, Inc., Anaheim, Calif.

Continuation-in-part of Ser. No. 404,931, Mar. 16, 1995. This application May 8, 1995, Ser. No. 436,842

Int. Cl.[6] G06K *9/00*

U.S. Cl. 356—71 **2 Claims**



1. A fingerprint reader comprising:

an imaging system for generating an optical beam defining an optical image of a fingerprint;

a scanning galvanometer;

a scanning mirror mounted on said galvanometer for angular movement through a plurality of positions;

a linear array of sensors;

an optical system for directing said optical image at said scanning mirror for reflection to said linear array of sensors, said optical system comprising;

an F-Theta scan lens in which lateral displacement of the image from the optical axis is proportional to the angle of entry of light to the lens over a relatively large entry angle;

a focus lens, said scan lens and said focus lens having a common focal point between them, said scanner mirror being interposed between said scan lens and said focus lens at said common focal point;

a mirror controller for energizing said galvanometer to scan said mirror about a scan axis and scan said optical image across said linear array of sensors;

a means for generating a scan position command signal in accordance with a position of said finger as said finger moves over said platen, wherein said mirror controller and said galvanometer are responsive to said scan position command signal to drive said scanning mirror to an angular position precisely proportional to said scan position command signal.

5,625,449

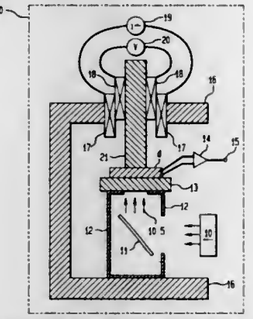
APPARATUS FOR SIMULTANEOUSLY MEASURING THE THICKNESS OF, AND THE OPTICAL INTENSITY TRANSMITTED THROUGH, A SAMPLE BODY

John E. Graebner, Short Hills, and Sungho Jin, Millington, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 31, 1995, Ser. No. 509,410

Int. Cl.[6] G01N *21/59*

U.S. Cl. 356—72 **2 Claims**



1. Apparatus for measuring the thickness t and the intensity I of light emerging from a first major surface of a sample solid body, having first and second opposing major planar surfaces, comprising:

(a) a source of optical radiation for directing a beam of optical radiation on a first portion of said second major surface of the sample body, said source of radiation comprising a light source, a mirror and a hollow chamber enclosing said mirror, said chamber having a planar exterior surface for supporting said second major surface of said sample body, a first aperture for permitting a light beam from said light source to shine on said mirror and a second aperture in said planar exterior surface for permitting exit of a beam reflected by said mirror onto said sample body;

(b) an optical detector located on a second portion of the first major surface of the sample body, the second portion being the first major surface being located opposed to the first portion of the second major surface; and

(c) a thickness measuring device comprising a differential displacement transformer located on the optical detector.

5,625,450

APPARATUS FOR MEASURING CONNECTION LOSS AND REFLECTION ATTENUATION OF OPTICAL FIBER CORD

Hideki Ikeno, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1996, Ser. No. 607,664

Claims priority, application Japan, Feb. 28, 1995, 7-065016

Int. Cl.[6] G01N *21/59*

U.S. Cl. 356—73.1 **2 Claims**

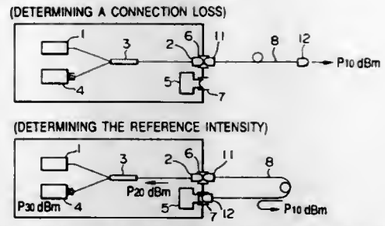
1. An apparatus for determining an optical power loss caused by a connection loss and a reflection attenuation of an optical fiber cord, having a first optical connector at one end and a second optical connector at an opposite end, comprising:

a light source for generating forward light;

an optical coupler for transmitting said forward light through said first optical connector into said optical fiber cord, and for receiving reflected light reflected from said second optical connector through said optical fiber cord, said first and second optical connectors being identical in structure;

a photo-detector for determining optical power of said reflected light passing through said optical coupler; and

a total reflection means for receiving said forward light and reflecting said forward light back to said optical fiber cord without loss in optical power, said total reflection means being connected by said second optical connector and being a unitary portion of the apparatus.



5,625,451

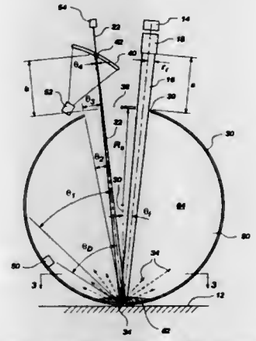
METHODS AND APPARATUS FOR CHARACTERIZING A SURFACE

Tod F. Schiff, Beaverton, and Marvin L. Bernt, Scappoose, both of Oreg., assignors to Schmitt Measurement Systems, Inc., Portland, Oreg.

Filed Nov. 27, 1995, Ser. No. 562,876

Int. Cl.[6] G01J *1/04*

U.S. Cl. 356—236 **33 Claims**



1. A method for characterizing a surface, comprising the steps of:

selecting a plurality of bands of spatial frequencies, each having an upper and a lower limit;

directing a beam of light having a known wavelength onto the surface at a known incident angle with respect to normal of the surface;

collecting the total scatter of light corresponding to each of the selected bands of spatial frequencies;

measuring the total integrated scatter of each of the selected bands of spatial frequencies by detecting the intensity of the collected light;

using the total integrated scatter data and the upper and lower limits of spatial frequency for each of the selected bands to estimate the spectral integrated scatter function; and

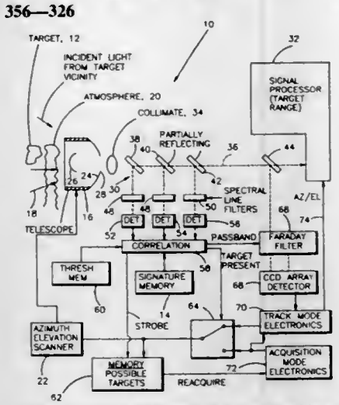
approximating the total integrated scatter of the surface over desired spatial frequency limits from the spectral integrated scatter function.

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5,625,452
PASSIVE DETECTION OF SOURCE OF KNOWN SPECTRAL EMISSION

Victor H. Hasson, Winchester, Mass., assignor to Textron Systems Corporation, Wilmington, Mass.

Filed Jul. 25, 1995, Ser. No. 506,805
Int. Cl.[6] G01J *3/28*
U.S. Cl. 356—326 **9 Claims**



1. A system for passive detection of a source of known spectral emission, comprising:

optical apparatus for receiving radiation propagating from the source;

means for storing a known spectrum of the radiation as emitted by the source, said known spectrum having at least a first known spectral line and a second known spectral line;

means operatively coupled to said optical apparatus for analyzing a received spectrum of the radiation as received by said optical apparatus, said received spectrum having at least a first received spectral line and a second received spectral line;

means for comparing spectral lines of the received spectrum with spectral lines of the known spectrum to determine a presence of Doppler frequency shift and a broadening of line width in at least one received spectral line of the received spectrum; and

means responsive to measurements of frequency shift and line width in said at least one received spectral line for identification of the source of radiation.

5,625,453
SYSTEM AND METHOD FOR DETECTING THE RELATIVE POSITIONAL DEVIATION BETWEEN DIFFRACTION GRATINGS AND FOR MEASURING THE WIDTH OF A LINE CONSTITUTING A DIFFRACTION GRATING

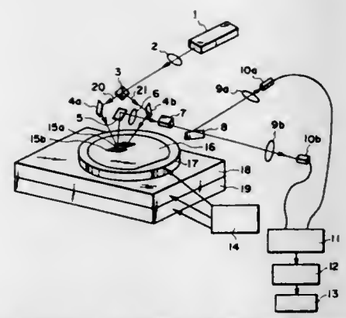
Takahiro Matsumoto, Zama; Yoshiaki Ohtsu; Kenji Saitoh, both of Atsugi, and Koichi Sentoku, Samukawamachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 328,884
Claims priority, application Japan, Oct. 26, 1993, 5-290025; Dec. 27, 1993, 5-348814; Oct. 17, 1994, 6-277104
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—351 **24 Claims**

1. A deviation detecting system for detecting a relative positional deviation between first and second diffraction gratings, comprising:

a light source;

illuminating means for projecting first and second light beams from said light source, having different directions of polarization, onto the first and second diffraction gratings along different directions;



first signal detecting means for detecting a first interference light signal from the first diffraction grating, being based on a combination of diffraction light of the first light beam and diffraction light of the second light beam;

second signal detecting means for detecting a second interference light signal from the second diffraction grating, being based on a combination of diffraction light of the first light beam and diffraction light of the second light beam;

first phase difference detecting means for detecting a phase difference between the first and second interference light signals;

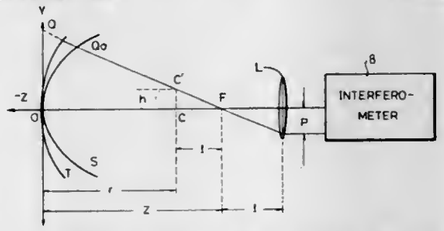
second phase difference detecting means for producing third and fourth interference light signals for correction of a phase error involved in the detected phase difference, and for detecting a phase difference between the third and fourth interference light signals, wherein the phase error is produced by the first and second diffraction gratings which differ with respect to their affect on the phase of light reflected therefrom in dependence upon the state of polarization of light impinging thereon; and

determining means for determining the relative positional deviation between the first and second diffraction gratings on the basis of a phase difference as detected by said first and second phase difference detecting means.

5,625,454
INTERFEROMETRIC METHOD FOR OPTICALLY TESTING AN OBJECT WITH AN ASPHERICAL SURFACE

June-Jei Huang, Taipei, and Chie-Ching Lin, Taichung, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 24, 1995, Ser. No. 449,393
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—359 **7 Claims**



1. A method for testing an aspherical surface which uses a plurality of spherical surfaces with different paraxial radii of curvature as referenced spherical surfaces and an interferometer for measuring interferograms reflected from the aspherical object, said method comprising the steps of:

(a) moving said aspherical surface along an optical axis of said interferometer and measuring an amount of movement of said aspherical surface;

(b) recording two interferograms measured by said interferometer at each movement of said aspherical surface for each referenced spherical surface;

(c) finding out a point in each of said interferograms where the density of the interferogram is smallest and calculating a position thereof, said point being an intersection point of said aspherical object and one of said referenced spherical surfaces;

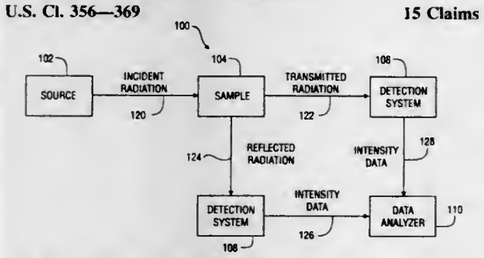
(d) calculating a lateral aberration (W(y)) of said aspherical surface from said referenced surfaces according to said amount of movement and said intersected positions; and

(e) integrating the lateral aberration calculated by step (d) to obtain a profile of said aspherical surface.

5,625,455
ROTATING ANALYZER ELLIPSOMETER AND ELLIPSOMETRY TECHNIQUE

Patrick L. Nash, and Robert J. Bell, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jun. 6, 1995, Ser. No. 466,041
Int. Cl.[6] G01N *21/21*
U.S. Cl. 356—369 **15 Claims**



1. An ellipsometry method for determining optical and spectroscopic properties of a material, comprising:

subjecting a material to an incident radiation at a single frequency having a determined arbitrary elliptical polarization state;

measuring at said single frequency a resultant radiation from said material due to interaction with said incident radiation;

determining a polarization state for said resultant radiation said determining step, comprising:

converting said resultant radiation into digitized intensity data representative of said resultant radiation;

analyzing said digitized intensity data (I) to obtain values for U and β utilizing the equation:

$$I = I_{ave}[1 + U \sin(2\Psi + \beta)].$$

I_{ave} representing an average intensity of said measured resultant radiation,

Ψ representing a known angular difference between an angle of incidence of the incident radiation upon the sample material and a rotation angle of an analyzer measuring said resultant radiation,

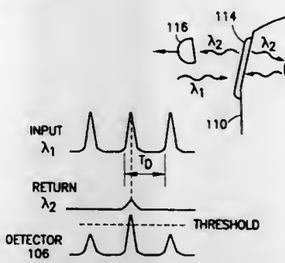
said values for U and β representing the polarization state of said resultant radiation through their proportionality to the polarization vectors of said resultant radiation; and

utilizing said representation of the polarization state of said resultant radiation to determine an optical property of said material from modifications to said known polarization state of said incident radiation due to interaction with said material.

5,625,456
OPTICAL SOURCES HAVING A STRONGLY SCATTERING GAIN MEDIUM PROVIDING LASER-LIKE ACTION

Nabil M. Lawandy, Providence, R.I., assignor to Brown University Research Foundation, Providence, R.I.

Division of Ser. No. 210,710, Mar. 18, 1994, Pat. No. 5,448,582, and Ser. No. 210,356, Mar. 18, 1994, Pat. No. 5,434,878. This application Mar. 9, 1995, Ser. No. 401,356
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 **3 Claims**



3. A method for detecting the presence of a structure within an object, comprising the steps of:

providing a surface region of the object with a gain medium comprised of an electromagnetic radiation emitting and amplifying first phase and an electromagnetic radiation scattering second phase, the gain medium being responsive to electromagnetic radiation having a first wavelength for emitting electromagnetic radiation with wavelengths within a band of wavelengths having a second wavelength that differs from the first wavelength;

irradiating the gain medium with a first pulse of radiation having the first wavelength;

propagating the emitted radiation having the second wavelength into the object;

in response to the propagating radiation encountering a change in an index of refraction that is associated with the structure, reflecting a portion of the propagating radiation back toward the surface of the object;

in response to the reflected radiation entering the gain medium coincidentally with a second pulse, enhancing the emission of the electromagnetic radiation with wavelengths within the band of wavelengths having the second wavelength;

detecting the enhanced emission; and

correlating the detected enhanced emission with a time between the occurrence of the first and the second pulses for determining at least a distance from the structure to the surface of the object.

5,625,457
METHOD AND APPARATUS FOR NON-CONTACT MEASUREMENT OF RELATIVE DISPLACEMENT

Hirofumi Ogawa, Tsukuba; Yuichi Ishikawa, Tokyo, and Tokio Kitahara, Tsukuba, all of Japan, assignors to Agency of Industrial Science & Technology Ministry of International Trade & Industry, Tokyo, Japan

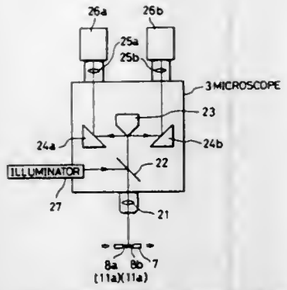
Filed Oct. 31, 1995, Ser. No. 550,732
Claims priority, application Japan, Nov. 1, 1994, 6-292343
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—390 **2 Claims**

1. A method for non-contact measurement of relative displacement, comprising the steps of:

placing a mark at each of two points of measurement on a test piece;

separately locating each mark in a field of view of a microscope having two fields of view;

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capturing, using a first camera, an image of a first one of said marks through a first one of said fields of view through an objective lens;

capturing, using a second camera, an image of a second one of said marks through a second one of said fields of view through said objective lens; and

measuring a relative displacement of the images of the two marks captured using the camera.

5,625,458

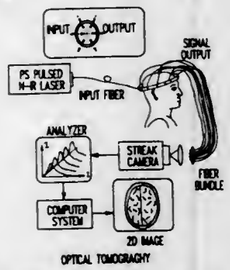
METHOD AND SYSTEM FOR IMAGING OBJECTS IN TURBID MEDIA USING DIFFUSIVE FERMAT PHOTONS

Robert R. Alfano, Bronx, and Alexander Y. Polishchuk, Brooklyn, both of N.Y., assignors to Research Foundation of City College of New York, New York, N.Y.

Continuation-in-part of Ser. No. 338,019, Nov. 10, 1994, abandoned. This application Feb. 3, 1995, Ser. No. 384,112

Int. Cl.[6] A61B *5/00;6/00*

U.S. Cl. 356—446 **26 Claims**



1. A method of imaging an object located in a turbid medium, said method comprising the steps of:

(a) illuminating the object through the turbid medium with a pulse of light, whereby light emerges from the turbid medium, the emergent light from the turbid medium consisting of a ballistic component, a snake-like component and a diffusive component, said diffusive component including Fermat photons and non-Fermat photons;

(b) gating the emergent light from the turbid medium to preferentially select Fermat photons; and

(c) forming an image of the object using the gated light.

5,625,459

DIFFUSE REFLECTANCE PROBE

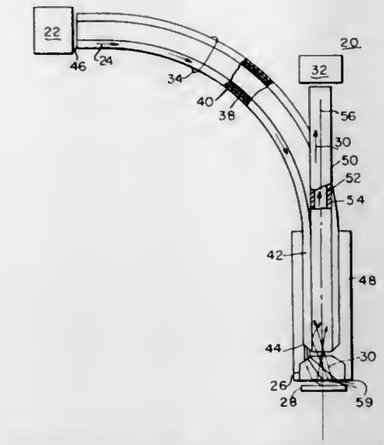
Richard D. Driver, Cambridge, Mass., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed Mar. 3, 1995, Ser. No. 398,595

Int. Cl.[6] G01N *21/47;* **G02B** *6/00;6/26*

U.S. Cl. 356—446 **29 Claims**

1. A probe for viewing a sample in a viewing area immediately adjacent the probe comprising:



a light transmitting element having a first axis and a first distal end for transmitting light;

a light collecting element having a second axis and a second distal end being located adjacent to the light transmitting element for collecting light; and

a sample viewing window disposed adjacent the first and second distal ends, said sample viewing window having sample viewing surface and a light coupling surface including a peripheral bevel surface in communication with the light transmitting element proximate the first distal end and central end face in communication with the light collecting element proximate the second distal end, said light transmitting element and said light collecting element being in optical communication with the viewing area through said window so that when a sample is positioned within the viewing area proximate the sample viewing surface a substantial portion of the light transmitted by light transmitting element is directed from the first distal end to the bevel surface through the window into the viewing area and is reflected by the sample through the window as diffusely reflected light and is collected from the end face by the second distal end of the light collecting element, said bevel surface of the window resulting in a working distance of the viewing area within about 5 mm of said window.

5,625,460

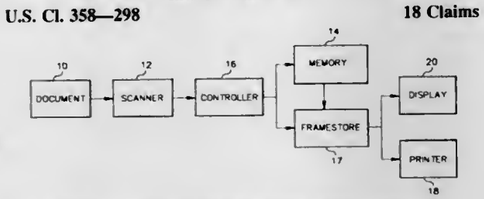
METHOD AND APPARATUS FOR LOCALLY SWITCHING GRAY DOT TYPES TO REPRODUCE AN IMAGE WITH GRAY LEVEL PRINTING

Hwai T. Tai, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,274

Int. Cl.[6] H04N *1/23*

U.S. Cl. 358—298 **18 Claims**



1. A method of reproducing an original image, comprising:

scanning an original image to digitize the image so as to produce a digitized image signal;

collecting statistical information of dot regions from the digitized image signal;

for each dot region of the digitized image signal, selecting a dot type to render that dot region in accordance with the statistical information, the dot type being either a mixed dot type or a fixed threshold dot type or a dot type mathematically modified from said mixed dot type; and

controlling a printer to print the digitized image signal by rendering the dot regions in accordance with the selected dot type for each dot region.

5,625,461

RECORDING AND REPRODUCING APPARATUS

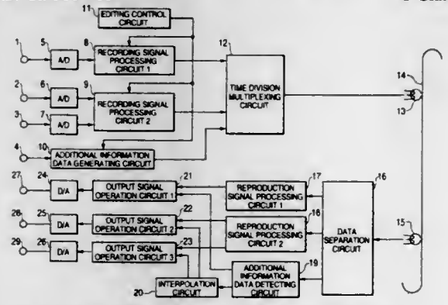
Keishi Okamoto, Kadoma, and Tatsushi Bannai, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 980,561, Nov. 23, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,804

Claims priority, application Japan, Nov. 22, 1991, 3-307392

Int. Cl.[6] H04N *5/76;* **G11B** *27/02;5/02*

U.S. Cl. 386—53 **1 Claim**



1. A recording and reproducing apparatus comprising:

means for recording input video and audio signals in video and audio recording areas on a recording medium;

means for generating additional information data containing a multiplication factor for specifying an output level of reproduced video and audio signals;

means for recording the additional information data in an independent area separated from the video and audio recording areas on the recording medium;

means for reproducing the recorded video and audio signals and the recorded additional information data from the recording medium to obtain the reproduced video and audio signals and a reproduced additional information data;

means for detecting the multiplication factor contained in the recorded additional information data; and

means for multiplying the reproduced video and audio signals by the multiplication factor detected by said means for detecting to thereby control an output level of the reproduced video and audio signals;

wherein the additional information data for the video signal comprises first level variable A indicating a first shift of the video signal, second level variable B indicating a second shift of the video signal which corresponds to black level or colorless level, and multiplication factor X indicating a gain of the video signal, and in level control of an output video signal in reproduction, an output video signal data d is obtained by operation of $d=A+(D-B)^{*}X$ for a reproduced video signal data D.

5,625,462

PANORAMA IMAGE PRODUCING METHOD AND APPARATUS WHICH CALCULATES A CUMULATIVE AMOUNT OF MOTION OF THE IMAGE

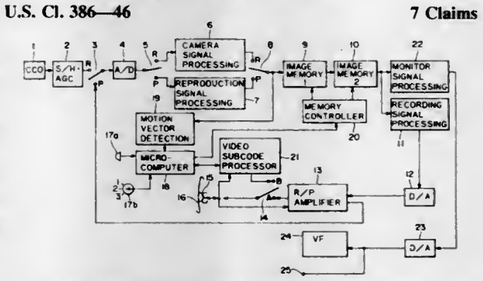
Masashi Ohta, Tokyo; Hiroshi Kobayashi, Chiba; Tsuneo Sekiya; Toshimichi Hamada, both of Tokyo; Kyoko Fukuda, and Koji Iijima, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 133,377, Oct. 8, 1993, Pat. No. 5,548,409. This application Feb. 27, 1995, Ser. No. 396,173

Claims priority, application Japan, Oct. 9, 1992, 4-297771; Oct. 9, 1992, 4-297772; Oct. 9, 1992, 4-297773; Oct. 9, 1992, 4-297774; Oct. 23, 1992, 4-309451

Int. Cl.[6] H04N *13/02;5/91*

U.S. Cl. 386—46 **7 Claims**



1. An apparatus for recording a panorama image, comprising:

imaging means for imaging a subject to produce an image signal;

motion detecting means for detecting motion of an image from said image signal;

joining means for joining a plurality of images formed from said image signal to produce a panorama image;

calculating means for calculating, in response to the motion detected by said motion detecting means, a cumulative amount of motion of the image after a point in time at which imaging for production of a panorama image is started and for calculating a total amount of motion of the image necessary to produce said panorama image; and

displaying means for displaying a proceeding condition of imaging relative to a completion condition of imaging in response to the cumulative amount of motion and the total amount of motion calculated by said calculating means.

5,625,463

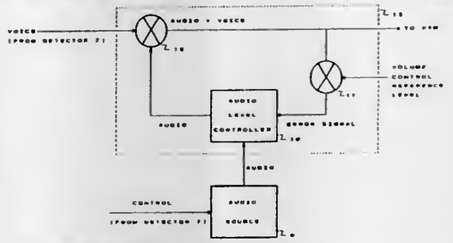
VIDEO RECORDER WITH BACKGROUND AUDIO

Tuan Ha-Ngoc, 8 Kitson Park Dr., Lexington, Mass. 02173

Filed Jul. 20, 1994, Ser. No. 277,815

Int. Cl.[6] H04N *5/91;5/76;5/226;5/78*

U.S. Cl. 386—106 **7 Claims**



1. A video recorder comprising:

a) a video camera producing a video signal based on a video image;

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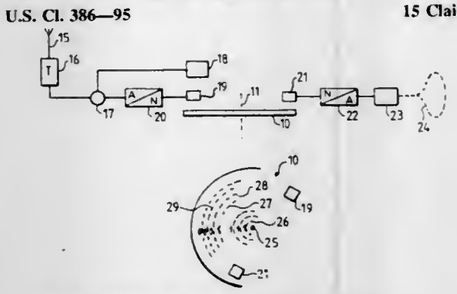
b) a microphone producing an audio signal;
c) a video tape recorder being coupled to the video camera and the microphone, and recording the video and audio signals;
d) a detector being coupled to the microphone and sensing a voice signal during recording; and
e) an audio source being coupled to the video tape recorder and the detector and providing a preselectable audio signal to the video recorder when voice signals lower than a preselected adjustable level are being detected by the detector;
f) a controller being coupled between the microphone and the video tape recorder and controlling an audio signal level being recorded by the video tape recorder so that during playback a constant volume results, wherein the controller further comprises:
(i) a summing element having a first input receiving the voice signal from the detector, having a second input receiving the preselected audio signal and outputting a sum of the voice signal and the preselectable audio signal as the combined audio signal;
(ii) a difference element having a first input receiving the combined audio signal, having a second input receiving a volume control reference level, and outputting an error signal which represents a difference between the combined audio signal and the volume control reference level;
(iii) an audio level controller having a first input receiving the preselectable audio signal, having a second input receiving the error signal, and outputting the preselectable audio signal at a level based on the error signal.

5,625,464

CONTINUOUS TELEVISION TRANSMISSION REPRODUCTION AND PLAYBACK

Philippe Compoint; Paul-Louis Meunier; Alain Staron, all of Paris, France, and Dietmar Uhde, Konigsfeld, Germany, assignors to Thomson Consumer Electronics, Courbevoie, France

Continuation of Ser. No. 768,184, Oct. 16, 1991, abandoned. This application Apr. 29, 1994, Ser. No. 235,244
Claims priority, application France, Mar. 16, 1990, 90 03385
Int. Cl.[6] H04N *5/76;5/781*
U.S. Cl. 386—95 **15 Claims**



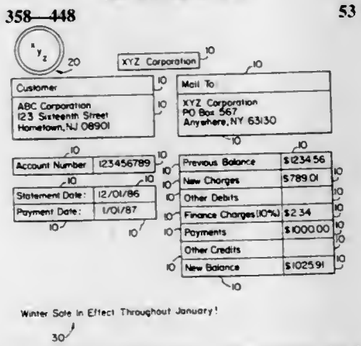
14. The apparatus for recording data comprising:
means for continuously recording said data onto a random access rewritable recording medium wherein said means for recording provides for continuous recording of received data;
means for periodically writing to said medium a code representing a filling of said medium wherein said code remains the same until a specified filling is completed and wherein said code is automatically changed to a second value when the recording head is returned to the beginning of the medium.

5,625,465

INFORMATION PROCESSING METHODOLOGY

Robert Lech, Jackson; Mitchell A. Medina, Essex Fells, and Catherine B. Elias, Plainsboro, all of N.J., assignors to International Patent Holdings Ltd., Hamilton, Bermuda

Continuation of Ser. No. 143,135, Oct. 29, 1993, Pat. No. 5,369,508, which is a continuation of Ser. No. 672,865, Mar. 20, 1991, Pat. No. 5,258,855. This application Nov. 28, 1994, Ser. No. 348,224
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—448 **53 Claims**



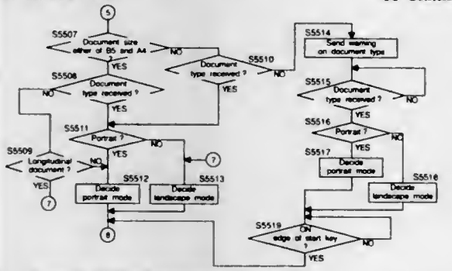
1. A multimode information processing system for inputting information from a hard copy document into at least one application program, comprising:
(a) an automated digitizing unit providing digitized image information representative of an image of at least a portion of said document;
(b) a display to display information;
(c) an input device to receive user instructions from a user; and
(d) a computer, operable with at least one of the automated digitizing unit, the display, and the input device;
said system having character recognition capabilities for recognizing at least a portion of alpha/numeric characters appearing on said document for providing textual data, said digitized image information and said textual data collectively comprising document information, and said system configured to route at least a portion of said document information as input data to be processed by at least one application program to said at least one application program, and to operate in at least one of:
(1) an interactive mode wherein at least a portion of said document information is displayed on the display and the input device conveys instructions from the user for locating information required by the application program within said document information and for transferring said located information to at least one field of information required by said at least one application program;
(2) an interactive template creation mode wherein an image representative of at least a portion of said document is displayed on the display and the input device conveys instructions from the user to create and store in said system a template which identifies a location within said document information of at least one field of information required by said at least one application program; and
(3) an automatic mode to match at least a portion of said document information with a template created or compatible with said interactive template creation mode stored in said system to extract fields of information required by the application program and to transfer said fields of information to said at least one application program;
wherein the display projects an image showing at least a portion of said document information and at least one field of information required by said at least one application program during the interactive mode.

5,625,466

IMAGE FORMING APPARATUS PROVIDING LANDSCAPE OR PORTRAIT IMAGE FORMAT BASED ON DETECTED SIZE OF ORIGINAL

Akio Nakajima, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 19, 1994, Ser. No. 358,733
Claims priority, application Japan, Mar. 4, 1994, 6-034575
Int. Cl.[6] H04N *1/387*
U.S. Cl. 358—449 **18 Claims**



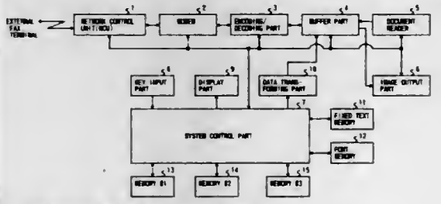
1. An image forming apparatus comprising:
an image reader for detecting an image of a document placed on a platen;
an image memory for storing image data detected by said image reader;
a document size sensor for detecting a size of the document;
a document type input means for specifying a document type by a user;
a document direction detection sensor for detecting a direction of the document on the platen;
a decision means for deciding a document type according to the document direction detected by said document direction detection sensor;
an image processing means for performing a prescribed processing according to the document type specified by said document type input means when the document size detected by said document size sensor allows the document to be placed on the platen only along a specified direction and according to the document type decided by said decision means when the document size detected by said document size sensor does not limit the document to be placed on the platen only along the specified direction; and
an image forming means for forming an output image on a paper according to image data received by said image processor.

5,625,467

FACSIMILE APPARATUS FOR PRODUCING AN IMAGE BY USING A NEWLY STORED FONT PATTERN

Shunji Kurokawa, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 113,740, Aug. 30, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,125
Claims priority, application Japan, Aug. 31, 1992, 4-232180; Aug. 31, 1992, 4-232181; Jul. 23, 1993, 5-183004
Int. Cl.[6] H04N *1/40;* **G06F** *15/00*
U.S. Cl. 358—470 **13 Claims**



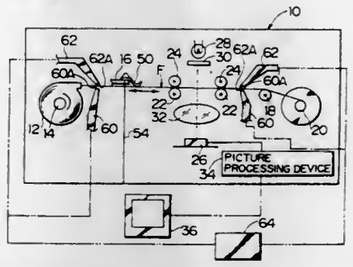
1. A facsimile apparatus comprising:
reading means for optically reading font pattern data by raster scanning a font pattern sheet on which a desired font pattern is marked by an operator, said font pattern data optically read by said reading means comprising a plurality of dots arrayed in rows and columns in a two-dimensional matrix formation, each of said dots of said font pattern data being marked in either one of two optically different densities;
communication means for receiving image data from an external facsimile terminal via a telephone line, and for transmitting image data read from a document to an external facsimile terminal via said telephone line;
memory means for temporarily storing the image data received or transmitted by said communication means;
printing means for printing an image on a recording sheet in accordance with said image data stored in said memory means;
converting means, coupled to said reading means and to said memory means, for converting said font pattern data from said reading means into font data, said font data indicating said desired font pattern of said font pattern sheet, and for supplying said font data to said memory means;
storage means for storing said font data produced by said converting means; and
control means for reading said font data from said storage means, and for allowing said printing means to print an image in accordance with said image data stored in said memory means by using the read font data, so that said printed image comprises data represented by said desired font pattern marked by the operator.

5,625,468

FILM IMAGE INPUT SYSTEM WITH A GROUNDED CONDUCTIVE MEMBER CONTACTING A FILM PORTION OTHER THAN A PHOTOGRAPHIC EXPOSURE SURFACE, TO REMOVE UNWANTED STATIC ELECTRICITY

Shigenori Oosaka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1995, Ser. No. 374,859
Claims priority, application Japan, Jan. 20, 1994, 6-004662
Int. Cl.[6] H04N *1/04;* **H05F** *3/00*
U.S. Cl. 358—487 **15 Claims**



1. A film imaging system comprising:
a guide member for feeding a developed photographic film in continuous form in a longitudinal direction;
an image sensor for imaging the photographic film conveyed along said guide member; and
a conductive member, contacting a portion of the photographic film other than a photographic exposure surface, the conductive member being grounded to remove static electricity generated during the feeding of the photographic film.

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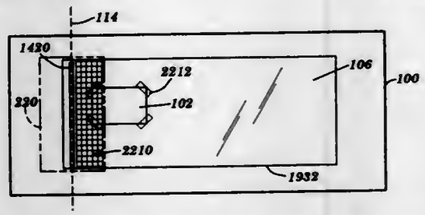
APPARATUS FOR ALIGNMENT OF MATERIAL TO BE SCANNED IN A FLAT-BED SCANNER

Joseph A. Wheeler, Gloucester; John F. Omvik, North Andover; Christopher R. Duval; Mark E. Tellam, both of Charlestown, all of Mass.; Mark G. Brook, Londonderry, N.H., and David M. Leclerc, Peabody, Mass., assignors to AGFA Division, Bayer Corp., Wilmington, Mass.

Filed Jun. 29, 1995, Ser. No. 496,506

Int. Cl.[6] H04N 1/04;1/40; G03B 27/36; G03G 15/02

U.S. Cl. 358—487 6 Claims



1. A flat-bed scanner for scanning an original document to obtain a digitized representation of said original document, said flat-bed scanner comprising the following:

(A) An object focal plane;

(B) Scanning means, movably disposed for linear motion along a scanning axis, for illuminating a scan line of said original document located in said object focal plane, and for obtaining a digitized representation of said scan line;

(C) An alignment grid fixed to an upper surface of said scanning means, and spaced apart from, and formed independently of, said object focal plane, said alignment grid including indicia visible below said object focal plane, said alignment grid establishing a positional relationship between said original document positioned in said object focal plane, said scanning axis, and said scan line; and,

(D) Means for moving said scanning means along said scanning axis to obtain digitized representations of successive scan lines of said original document, said digitized representations of said successive scan lines together comprising said digital representation of said original document.

5,625,470

COLOR IMAGE SCANNER HAVING MULTIPLE LEDS AND COLOR IMAGE SCANNING METHOD THEREOF

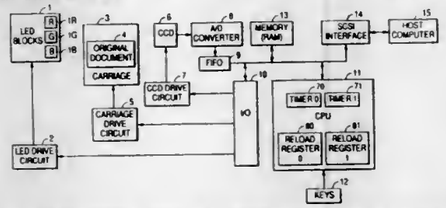
Souichi Ueta; Hidehisa Tsuchihashi, both of Kawasaki, and Toru Ochiai, Matsudo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 165,504, Dec. 13, 1993, abandoned. This applicatioo Feb. 21, 1995, Ser. No. 391,084

Claims priority, application Japan, Dec. 11, 1992, 4-352962; Dec. 25, 1992, 4-093260

Int. Cl.[6] H04N 1/04

U.S. Cl. 358—505 19 Claims



1. A color image scanner for reading images from a document, the color image scanner comprising:

a plurality of light-emitting diodes radiating a corresponding plurality of light colors onto the document;

means for reading the plurality of light colors radiated on the document and forming image signals;

control means for generating timing control signals corresponding to said plurality of light-emitting diodes and said reading means; and

means for alternatively driving said plurality of light-emitting diodes by supplying respective currents through said plurality of light-emitting diodes in response to said corresponding timing control signals and maintaining the currents constant in response to feed-back of the values of the currents flowing in said respective light-emitting diodes.

5,625,471

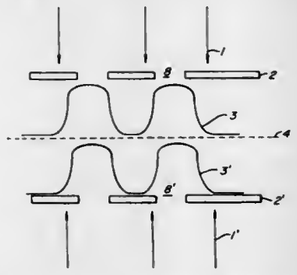
DUAL PLATE HOLOGRAPHIC IMAGING TECHNIQUE AND MASKS

Adlai H. Smith, San Diego, Calif., assignor to Litel Instruments, San Diego, Calif.

Filed Nov. 2, 1994, Ser. No. 333,555

Int. Cl.[6] G03H 1/00;1/08; G02B 5/32; G21K 5/00

U.S. Cl. 359—30 22 Claims



1. In a method of projection of an image from a broadcast mask to a workpiece, the process comprising the steps of:

providing a first broadcast mask having the image to be projected;

providing a second desired working image mask having an intended working image to be projected to the workpiece;

aligning the first broadcast mask and the second desired working image mask in alignment for projection with the first broadcast mask in position for broadcast of an image and the second desired working image mask in position of the intended working image on a workpiece;

providing a first and second temporally and spatially coherent beams for interrogating the first broadcast mask precisely along a path of image projection and the second desired working image mask opposite to incidence of light on a working image;

placing means for recording a holographic image at a common plane included in an optical path between the first broadcast mask and the second desired working image mask;

simultaneously scanning the first broadcast mask and the second desired working image mask to produce a phase only holographic image for correction at the means for recording a holographic image and recording the holographic image;

placing the recorded holographic image at the common plane; and,

projecting an image utilizing coherent light from the first broadcast image mask through the holographic image to a workpiece to produce a corrected image at the workpiece.

5,625,472

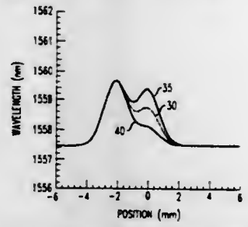
METHOD FOR FORMING DISTRIBUTED BRAGG REFLECTORS IN OPTICAL MEDIA

Victor Mizrahi, Bedminster, N.J., and John E. Sipe, Toronto, Canada, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 199,366, Feb. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 995,726, Dec. 23, 1992, Pat. No. 5,309,260. This application Jan. 26, 1996, Ser. No. 592,245

Int. Cl.[6] G02B 6/10;5/18; G03H 1/00

U.S. Cl. 359—34 12 Claims



1. Device for transmitting radiation comprising: a length of glass optical waveguide having a core and an axial coordinate z, said length comprising a portion having a core refractive index perturbation δ(z) that varies as a function of z, wherein δ(z) is effective for providing in said portion; a Bragg grating having a transmission spectrum that includes a wavelength band in which incident radiation is attenuated, with peak attenuation being at a wavelength λ;

said wavelength band having a full width at half maximum, measured in transmission, that is greater than or equal to (1.5 nm/1558.5 nm) λ, and peak attenuation within the wavelength band is greater than or equal to 90%;

wherein attenuation exceeds 50% of the peak attenuation everywhere within the full width at half maximum.

5,625,473

LIQUID CRYSTAL DISPLAY DEVICE WITH POLYMER WALLS AND METHOD FOR PRODUCING THE SAME

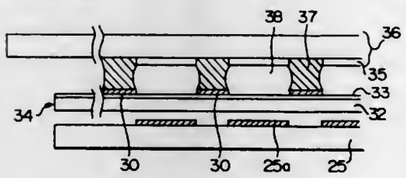
Masahiko Kondo, Kitakatsuragi-gun; Nobuaki Yamada, Higashiosaka; Shuichi Kohzaki, Nara, and Yasuhiro Yamamoto, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1994, Ser. No. 234,006

Claims priority, application Japan, May 6, 1993, 5-105744; Oct. 27, 1993, 5-269251

Int. Cl.[6] G02F 1/13;1/1339

U.S. Cl. 349—86 17 Claims



1. A method for producing a liquid crystal device, comprising the steps of:

attaching a first substrate having a counter electrode to a second substrate having a plurality of pixel electrodes provided in a matrix and active elements provided for the respective pixel electrodes so that there is a predetermined gap between the counter electrode and the pixel electrodes;

injecting a mixture including liquid crystal and photocurable resin into the gap;

irradiating light to the mixture with the pixel electrodes and the active elements as non-irradiation regions thereby forming a liquid crystal layer including crystal regions surrounded by polymer walls in the respective electrodes,

wherein one of the first substrate and the second substrate has a first light-shielding layer making the active elements non-irradiation regions and the pixel electrodes irradiation regions,

forming a second light-shielding layer on the other substrate having no first light-shielding layer, the second light-shielding layer making the pixel electrodes non-irradiation regions; and

irradiating light to the mixture through the second light-shielding layer.

5,625,474

FULL-COLOR LIQUID CRYSTAL DISPLAY DEVICE AND FABRICATION PROCESS THEREFOR

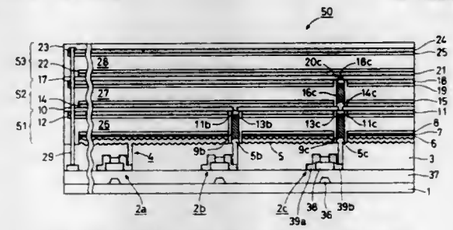
Shigeru Aomori; Atsushi Tanaka, and Seiichi Mitsui, all of Chiba-ken, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1996, Ser. No. 658,891

Claims priority, application Japan, Jun. 2, 1995, 7-136956

Int. Cl.[6] G02F 1/133;1/1343

U.S. Cl. 349—79 10 Claims



1. A full-color liquid crystal display device comprising:

a plurality of liquid crystal driving active elements formed on a first substrate; and

first, second and third liquid crystal cells stacked one on another on an inter-layer film formed on the first substrate;

the first liquid crystal cell including a first liquid crystal driving electrode connected to a first liquid crystal driving active element formed on the first substrate, a first counter electrode facing opposite the first liquid crystal driving electrode, a second substrate having the first counter electrode formed on an lower surface thereof, and a first liquid crystal layer sandwiched between the first liquid crystal driving electrode and the first counter electrode;

the second liquid crystal cell formed on the second substrate and including a second liquid crystal driving electrode connected to a second liquid crystal driving active element formed on the first substrate via a lower stereo-interconnection extending through the first liquid crystal cell, a second counter electrode facing opposite the second liquid crystal driving electrode, a third substrate having the second counter electrode formed on a lower surface thereof, and a second liquid crystal layer sandwiched between the second liquid crystal driving electrode and the second counter electrode;

the third liquid crystal cell formed on the third substrate and including a third liquid crystal driving electrode connected to a third liquid crystal driving active element formed on the first substrate via another lower stereo-interconnection extending through the first liquid crystal cell and an upper stereo-interconnection extending through the second liquid crystal cell, a third counter electrode facing opposite the third liquid crystal driving electrode, a fourth substrate having the third counter electrode formed on a lower surface thereof, and a third liquid crystal layer sandwiched between the third liquid crystal driving electrode and the third counter electrode.

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5,625,475

METHOD FOR TREATING AN ALIGNING FILM FOR A LIQUID CRYSTAL DISPLAY ELEMENT

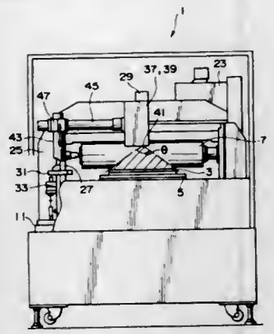
Satoshi Tanioka; Shizuo Murata, both of Ichiharashi; Makoto Kono, Chinoshi, and Masayuki Hirano, Hamamatsushi, all of Japan, assignors to Chisso Corporation, Osaka; Iinuma Gauge Mfg. Co., ltd, Naganoken, and Hamamatsu Photonics K.K., Shizuokaken, all of Japan

Filed Apr. 26, 1995, Ser. No. 429,102

Claims priority, application Japan, Apr. 28, 1994, 6-091783; Aug. 4, 1994, 6-183579; Aug. 5, 1994, 6-204631

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—123 5 Claims



1. A method for treating an aligning film for a liquid crystal display element wherein an aligning film consisting of an organic high molecular compound formed on a transparent substrate with a transparent electrode is subjected to a rubbing treatment and thereafter said aligning film is irradiated with soft X-rays in a gas.

5,625,476

METHOD FOR FORMING A COMMON TRANSFER CONTACT OF A THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY

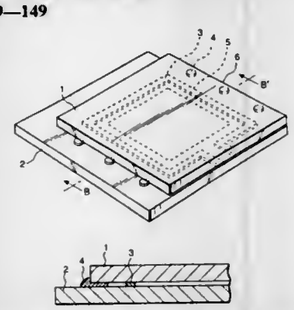
Dong-kyu Kim, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,703

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39685

Int. Cl.[6] G02F *1/1345;1/1339*

U.S. Cl. 349—149 11 Claims



1. A method for forming a common transfer contact of a liquid crystal display with a common electrode substrate and a thin film transistor substrate, the method comprising the steps of:

assembling said common electrode substrate and said thin film transistor substrate to form a gap therebetween,

dotting said gap between said common electrode substrate and said thin film transistor substrate with an electrically conductive liquid-phase substance which penetrates said gap to establish said common transfer contact.

5,625,477

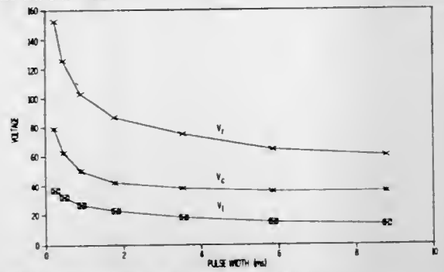
ZERO FIELD MULTISTABLE CHOLESTERIC LIQUID CRYSTAL DISPLAYS

Bao-Gang Wu; Jianmi Gao, both of Richardson; Hongxi Zhou, Dallas, and Yao-Dong Ma, Richardson, all of Tex., assignors to Advanced Display Systems, Inc., Richardson, Tex.

Filed Apr. 11, 1994, Ser. No. 225,836

Int. Cl.[6] G02F *1/137;1/13*

U.S. Cl. 349—35 15 Claims



10. A liquid crystal cell structure comprising:

a first solid substrate having a first inner surface coated with a first conductive layer, said first conductive layer being coated with an amorphous boundary layer comprising a silane;

a second solid substrate having a second inner surface coated with a second conductive layer; and

a substantially indefinite zero field multistable cholesteric liquid crystal mix located in a space between the first inner surface of the first solid substrate and the second inner surface of the second solid substrate, the liquid crystal mix comprising a plurality of liquid crystals and at least one twist agent forming multiple cholesteric domains, wherein each of the multiple cholesteric domains is a visible or near-visible reflective unit, wherein an orientation of each of the multiple cholesteric domains can be changed by application of a voltage pulse, and wherein the orientation of each of the multiple cholesteric domains is substantially free of interactions among the multiple cholesteric domains and also free of interaction among the multiple cholesteric domains and the first and second solid substrates to yield zero field multistability.

5,625,478

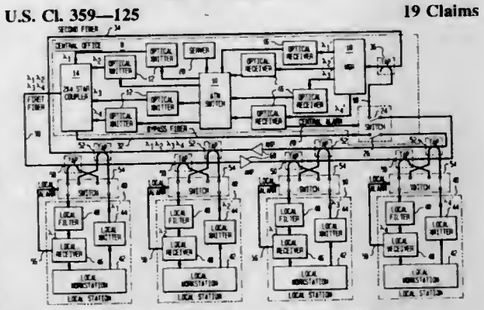
OPTICALLY RESTORABLE WDM RING NETWORK USING SIMPLE ADD/DROP CIRCUITRY

Christopher R. Doerr, Atlantic Highlands; Bernard Glance, Colts Neck, and Ivan P. Kaminow, Holmdel, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 14, 1995, Ser. No. 528,485

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 19 Claims



1. A restorable parallel ring network comprising:

a first transmission medium;

a central transmitter coupled to one end of said first transmission medium;

a second transmission medium;

a central receiver coupled to one end of said second transmission medium;

central sensing means for sensing a transmission medium failure centrally and providing a central alarm;

coupling means for coupling another end of said first transmission medium to said central receiver and coupling another end of said second transmission medium to said central transmitter in response to said central alarm;

at least one local station, said at least one local station comprising a local receiver, a local transmitter, local sensing means for sensing a transmission medium failure locally and providing a local alarm, and local switching means having a first position and a second position, said local switching means moving from said first position to said second position in response to said local alarm;

wherein said local transmitter is coupled to said second transmission medium and said local receiver is coupled to said first transmission medium when said local switching means is in said first position, said local transmitter is coupled to said first transmission medium and said local receiver is coupled to said second transmission medium when said local switching means is in said second position, and said central transmitter momentarily stops transmitting a signal to each of said at least one local station from which a signal has not been received by said central receiver.

5,625,479

SOLITON OPTICAL COMMUNICATION SYSTEM AND OPTICAL TRANSMITTER AND OPTICAL RECEIVER THEREFOR

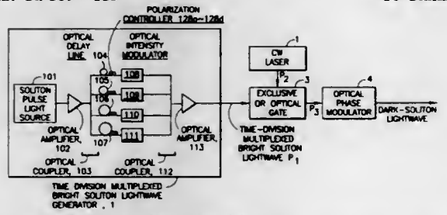
Masatoshi Suzuki, Kawashima-machi; Noboru Edagawa, Tokyo; Hidenori Taga, Sakado; Shu Yamamoto, Shiki, and Shigeyuki Akiba, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1995, Ser. No. 372,668

Claims priority, application Japan, Jan. 27, 1994, 6-023554

Int. Cl.[6] H04J *14/08*

U.S. Cl. 359—135 10 Claims



2. An optical transmitter comprising:

lightwave generation means for generating a lightwave carrying digital information added to return-to-zero optical pulses;

constant-amplitude lightwave generating means for generating a lightwave of a constant amplitude;

optical gate means for receiving the outputs from said lightwave generating means and from said constant-amplitude lightwave generating means and for converting said constant-amplitude lightwave to an ON-OFF reversed lightwave of said lightwave, said optical gate means having a function of outputting the exclusive OR of two inputs thereto; and

phase modulating means for receiving the output from said optical gate means and for applying, as a dark soliton condition, a phase shift smaller than π to the optical phase of said reversed lightwave at the time of its optical intensity becoming minimum.

5,625,480

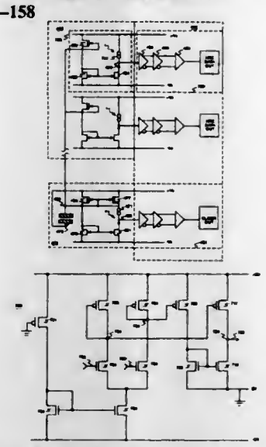
CONTROL CIRCUITS FOR PARALLEL OPTICAL INTERCONNECTS

Stanley E. Swirhun, 1471 Cassin Ct., Boulder, Colo. 80303, and Iain R. Mactaggart, 8579 Darnel Rd. South, Eden Prairie, Minn. 55347

Continuation of Ser. No. 302,313, Sep. 29, 1994, Pat. No. 5,521,736. This application May 24, 1996, Ser. No. 653,156

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—158 1 Claim



1. A method of retrieving a plurality of data signals and an independent clock signal at a receiver, said plurality of data signals and said clock signal being transmitted and received at said receiver as optical data signals and an optical clock signal respectively, said method comprising the steps of:

generating a reference current, said step of generating a reference current further comprising the steps of:

generating a clock photocurrent corresponding to said received optical clock signal; and

averaging said clock photocurrent to produce said reference current; and

retrieving said plurality of data signals and said clock signal from said received optical data signals and said received optical clock signal with reference to said reference current.

5,625,481

AUXILIARY-SIGNAL TRANSMISSION SYSTEM

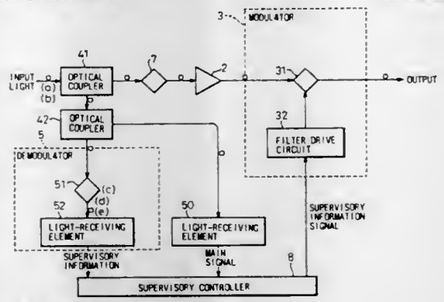
Yuji Tamura; Hiroyuki Itou; Tsukasa Takahashi, all of Sapporo; Michikazu Shima, Kawasaki; Yumiko Kawasaki, Kawasaki, and Kazuo Yamane, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 14, 1995, Ser. No. 388,357

Claims priority, application Japan, Jun. 21, 1994, 6-138479

Int. Cl.[6] H04B *10/16;10/02;* H01S *3/00*

U.S. Cl. 359—179 11 Claims



1. An optical repeater comprising:

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means for demodulating spontaneously emitted light that is modulated with an auxiliary signal, contained in a received optical signal, and thereby recovering said auxiliary signal;

an optical amplifier for amplifying a main optical signal contained in said received optical signal and thereby outputting a first optical signal containing an amplified main optical signal and spontaneously emitted light; and

modulating means for modulating said spontaneously emitted light contained in said first optical signal in accordance with an auxiliary signal, and outputting a second optical signal containing said amplified main optical signal and said modulated spontaneously emitted light as an auxiliary optical signal.

5,625,482

SCANNING OPTICAL APPARATUS

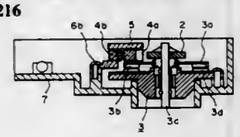
Yoshinori Sugiura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

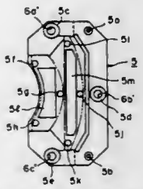
Division of Ser. No. 698,343, May 7, 1991, Pat. No. 5,280,379, which is a continuation of Ser. No. 290,638, Dec. 27, 1988, abandoned. This application Jul. 13, 1992, Ser. No. 912,185

Claims priority, application Japan, Dec. 28, 1987, 62-329663

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—216 **9 Claims**





1. A laser canning apparatus comprising:

deflecting means for deflecting a laser beam;

a housing for accommodating at least said deflecting means;

a plurality of lenses for transmitting the laser beam deflected by said deflecting means, said plurality of lenses being flat lenses having flat surfaces parallel with optical axes thereof; and

a lens holder mountable to said housing for integrally holding said plurality of lenses, said lens holder having a plurality of positioning portions entirely above said optical axes of said plurality of lenses, said plurality of positioning portions for positioning the flat surfaces parallel with said optical axes of said plurality of lenses;

wherein said lens holder is detachably mountable to said housing.

5,625,483

INTEGRATED LIGHT SOURCE AND SCANNING ELEMENT IMPLEMENTED ON A SEMICONDUCTOR OR ELECTRO-OPTICAL SUBSTRATE

Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation-in-part of Ser. No. 745,776, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 530,879, May 29, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 111,532

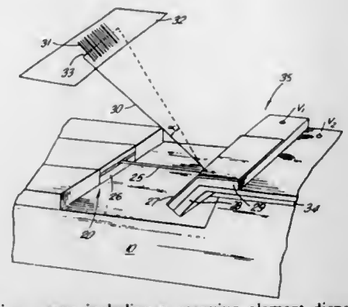
Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—224 **24 Claims**

1. An integrated scanning device comprising:

a substrate composed of a crystalline semiconductor material;

a semiconductor device for generating a light beam disposed on a first portion of said substrate; and



scanning means including a scanning element disposed on a second portion of said substrate in the path of said light beam, said scanning element including first and second layers of piezoelectric material and being capable of mechanical motion so that said beam is directed by said scanning element so as to form a scanning beam for repetitively scanning a target for reflection therefrom.

5,625,484

OPTICAL MODULATOR

Constantin Coutsomitros, Ranco, Italy, assignor to European Economic Community (CEE), Luxembourg, Luxembourg

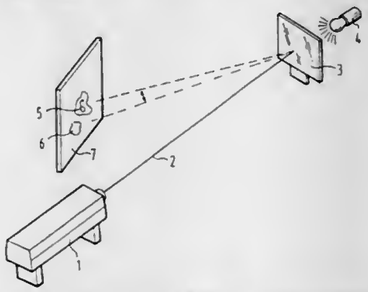
PCT No. PCT/EP93/02977, § 371 Date Aug. 9, 1995, § 102(e) Date Aug. 9, 1995, PCT Pub. No. WO94/10598, PCT Pub. Date May 11, 1994

PCT Filed Oct. 27, 1993, Ser. No. 433,422

Claims priority, application Luxembourg, Oct. 28, 1992, 88184

Int. Cl.[6] H01S *3/00*

U.S. Cl. 359—244 **4 Claims**



1. An optical modulator for modulating a coherent light beam by an optical signal comprising an optical cavity composed of two superposed glass substrates each carrying a three-dimensional interferometric lattice, said coherent light beam being susceptible to be directed onto a first surface of said cavity, whereas said optical modulation signal is directed against said first surface or the opposite surface of this cavity, the output signal of this modulator being constituted by said beam after reflection on said optical cavity.

5,625,485

RESONATE NOTCH FILTER ARRAY

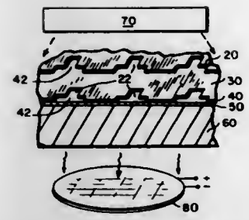
Stephen R. Bolger, 127 W. 79th St., Apartment 11J, New York, N.Y. 10024

Filed Aug. 2, 1995, Ser. No. 510,472

Int. Cl.[6] G02F *2/02;* **H02N** *6/00*

U.S. Cl. 359—326 **3 Claims**

1. A frequency doubling resonant array passband filter comprising:



two parallel superposed resonant aperture filter arrays spaced apart by one half wavelength of the designed input stage passband frequency, the output plane of resonant apertures being dimensioned to resonate at twice the frequency of the input plane of resonant apertures.

5,625,486

REAL IMAGE TYPE VIEWFINDER OPTICAL SYSTEM

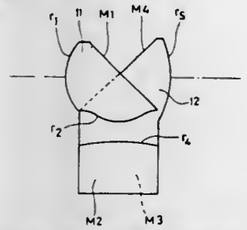
Akira Mori, Kawasaki, and Seiji Shimizu, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 8, 1995, Ser. No. 436,820

Claims priority, application Japan, May 10, 1994, 6-119662; Jul. 5, 1994, 6-153448

Int. Cl.[6] G03B *13/08*

U.S. Cl. 359—431 **17 Claims**



1. A real image type viewfinder optical system comprising:

an objective; and

an optical member which defines a plurality of reflecting surfaces for inverting an image of an object formed by said objective in a vertical direction and a horizontal direction,

wherein said optical member defines a surface of an eyepiece for allowing observation of the image of the object,

wherein said objective is formed as a member which is integrated with a prism including a first reflecting surface of said image inverting optical member, and

wherein said eyepiece is formed as a member which is integrated with a prism including a final reflecting surface of said image inverting optical member.

5,625,487

DEVICE FOR ADJUSTING THE DIOPTER SETTING OF A FINDER ASSEMBLY

Sachio Hasushita; Tetsuya Abe; Shuji Yoneyama; Hirofumi Matsuo; Ryota Ogawa; Ichiro Taguchi, and Hidetaka Yokota, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 882,958, May 14, 1992. This application Feb. 9, 1995, Ser. No. 385,986

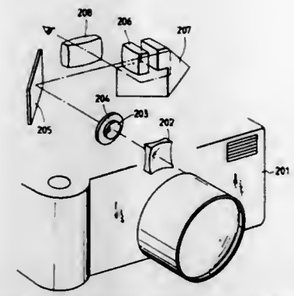
Claims priority, application Japan, May 17, 1991, 3-66601 U; May 17, 1991, 3-210534; Jul. 9, 1991, 3-61006 U

Int. Cl.[6] G02B *23/00*

U.S. Cl. 359—432 **5 Claims**

1. A diopter adjusting device for adjusting the diopter setting of a finder assembly, said finder assembly comprising an objective optical system having a positive power, having a plurality of lens groups and including at least one plastic lens, for forming an image of an object, and an eyepiece optical system for viewing therethrough the image formed by the objective optical system, said device comprising a field frame positioned in an image forming plane of said objective optical system, and further comprising:

an object side image forming position adjusting means for adjusting a position at which said image is formed by said objective optical system in order to compensate for a change in a focal length of said objective optical system caused by a change in power of said plastic lens due to changing ambient conditions, said object side image forming position adjusting means comprising an optical member which is situated in an optical path between the objective optical system and the field frame and which has a power which varies in in response to changes in at least one of temperature and humidity.



5,625,488

TELECENTRIC RELAY LENS SYSTEM

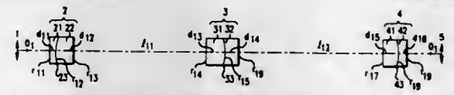
Christa Dietzsch, and Eberhard Dietzsch, both of Jena, Germany, assignors to ETB Endoskopische Technik GmbH Berlin, Berlin, Germany

Filed Aug. 17, 1995, Ser. No. 516,224

Claims priority, application Germany, Aug. 18, 1994, 44 29 194.9

Int. Cl.[6] G02B *9/34;21/02*

U.S. Cl. 359—435 **11 Claims**



1. A telecentric relay lens system comprising:

a centrally arranged asymmetric collective lens member and, on both sides of said collective lens member, field lenses in the vicinity of an object and of an image, respectively;

one of said field lenses including collective cemented surfaces: and

another of said field lenses, being oppositely arranged relative to said central lens member, including diverging cemented surfaces.

5,625,489

PROJECTION SCREEN FOR LARGE SCREEN PICTORIAL DISPLAY

William E. Glenn, Ft. Lauderdale, Fla., assignor to Florida Atlantic University, Boca Raton, Fla.

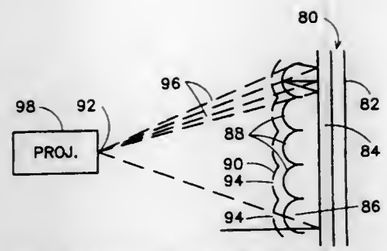
Filed Jan. 24, 1996, Ser. No. 590,916

Int. Cl.[6] G03B *21/60*

U.S. Cl. 359—455 **11 Claims**

1. A front projection screen for pictorially displaying upon a front face of the screen an image projected onto the front face from a projector comprising:

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a backing member having a front reflective surface;

a polarization rotation plate overlaying said reflective surface for rotating the plane of polarization of light reflected from said surface;

a sheet of lenticular lenses overlaying said polarization rotation plate; and

a polarizing film overlaying said sheet, said film having non-polarizing segments at a focal point of each of said lenticular lenses.

5,625,490

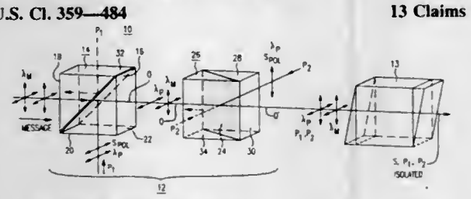
OPTICAL COUPLER

David G. Coult, Bechtelsville; William L. Emkey, Bethlehem; Curtis A. Jack, Rockland Township, Berks County, and Michele A. Milbrodt, Macungie, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 282,764, Jul. 29, 1994, abandoned, which is a continuation of Ser. No. 962,363, Oct. 16, 1992, abandoned. This application Jun. 22, 1995, Ser. No. 493,596

Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—484 **13 Claims**



1. An optical coupler comprising:

a first polarization selective filtering member comprising first and second input ports, said first input port receiving a message signal (M) at a predetermined wavelength λ_M and comprising an unknown polarization state, wherein said unknown polarization state can be random as a function of time, and said second input port receiving a first polarized signal (P_1) at a predetermined wavelength λ_P different from λ_M, said first polarization selective filtering member transmitting said message signal essentially unimpeded and reflecting said first polarized signal such that said message signal and said first polarized signal are provided on a common signal path; and

a second polarization selective filtering member for receiving the combined message signal and the first polarized signal such that the combined message signal and the first polarized signal are transmitted through the second polarization selective filtering member essentially unimpeded, the second polarization selective filtering member being responsive to a second polarized signal (P_2), said second polarization selective filtering member oriented with respect to said first polarization selective filtering member such that said second polarized signal is coupled onto said common signal path with said message signal and said first polarized signal.

5,625,491

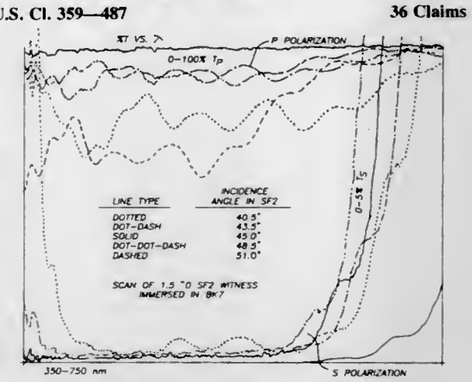
BROAD BAND POLARIZING BEAM SPLITTER

Marc K. von Gunten, Los Altos, and Ron P. Bevis, San Jose, both of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Mar. 15, 1995, Ser. No. 405,242

Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—487 **36 Claims**



1. A broad band polarizing beam splitter, comprising:

a first prism including an incident beam surface and an interface surface;

a second prism with an interface surface, the second prism being positioned adjacent to the first prism with the interface surfaces of the first and second prisms being adjacent to each other; and

a coating disposed between the two interface surfaces made of layers with alternating high and low refractive indices, the coating having a ratio of high refractive index to a low refractive index of 1.1 or greater with two of the layers having different thickness wherein the broad band polarizing beam splitter operates in a wavelength range of 250 to 1600 nm.

5,625,492

COLOR COMPENSATION FILTER

Claus Gunkel, Giessen, and Erwin Hisge, Ehringshausen, both of Germany, assignors to Leica Mikroskopie und Systeme GmbH, Wetzlar, Germany

PCT No. PCT/DE93/00867, § 371 Date May 13, 1994, § 102(e) Date May 13, 1994, PCT Pub. No. WO94/07159, PCT Pub. Date Mar. 31, 1994

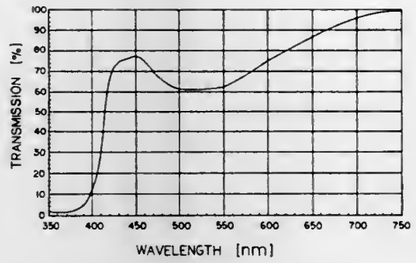
PCT Filed Sep. 15, 1993, Ser. No. 244,054

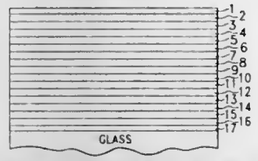
Claims priority, application Germany, Sep. 18, 1992, 42 31 269.8; Sep. 19, 1992, 42 31 437.2

Int. Cl.[6] G02B *5/28*

U.S. Cl. 359—586 **18 Claims**

1. A color compensation filter for an optical device having a light source, an illumination path, an observation path and a photo path, said color compensation filter consisting of an interference filter means positioned on said illumination path for providing correction for color distortion of green in the observation path and color distortion of blue in the photo path, said filter means consists of a glass plate having a surface and a plurality of seventeen alternating high and low index coatings supported by said surface,





said plurality beginning and ending with a coating having a high index, said high index is 2.00 to 2.10 and said low index is 1.38.

5,625,493

IMAGE DISPLAY APPARATUS HAVING A BEAM COMBINER FOR SUPERIMPOSING FIRST AND SECOND LIGHTS

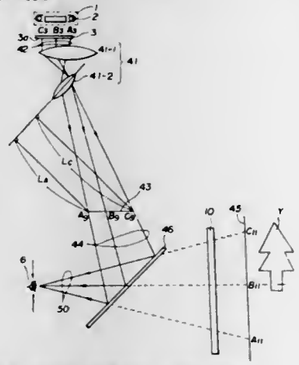
Susumu Matsumura, Kawaguchi; Naosato Taniguchi; Yoko Yoshinaga, both of Tokyo; Shin Kobayashi, Atsugi; Toshiyuki Sudo, Kawasaki; Hideki Morishima, Tokyo, and Tadashi Kaneko, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,756

Claims priority, application Japan, Dec. 8, 1992, 4-352013

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **10 Claims**



1. An image display apparatus, comprising:

a light source emitting light;

an image generator for generating image information in a first light supplied by said light source, wherein said image generator generates two kinds of light including image information having a parallax therebetween;

a beam combiner for superimposing the first light and a second light which is incident upon said beam combiner from a direction different from that of the first light, and for guiding the superimposed light to a pupil of an observer, wherein said beam combiner comprises an optical element functioning as a lens, and said beam combiner and said reflector guide the two kinds of light to the right eye and the left eye of the observer; and

a reflector positioned in a direction different from the incident direction of the second light on said beam combiner, receiving the first light via said beam combiner, and reflecting the first light back to said beam combiner.

5,625,494

OPTICAL BAND-PASS FILTER HAVING TWO PASS BANDS

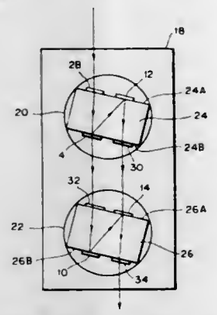
Nobuhiro Fukushima, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

Filed Jun. 21, 1995, Ser. No. 493,290

Claims priority, application Japan, Sep. 26, 1994, 6-229204

Int. Cl.[6] G02B *5/28;27/14*

U.S. Cl. 359—634 **4 Claims**



1. An optical band-pass filter comprising:

a first filter film transmitting there-through light of wavelengths within a predetermined first band and outputting a transmitted light to a first optical path, while reflecting light of any other wavelengths and outputting a reflected light to a second optical path;

a first reflective film disposed on said first optical path;

a second reflective film disposed on said second optical path;

a second filter film transmitting therethrough light of wavelengths within a predetermined band different from said first band while reflecting light of any other wavelengths, said second filter film being so positioned that a reflected component of the light reflected from said first reflective film and incident upon said second filter film and a transmitted component of the light reflected from said second reflective film and incident upon said second filter film are outputted to one and the same optical path; and

a first glass plate having a first plane and a second plane parallel to each other, and a second glass plate having a third plane and a fourth plane parallel to each other, said second plane being opposite to said third plane;

wherein said first filter film is disposed on said second plane; said second filter film is disposed on said third plane; said first reflective film is disposed on said fourth plane; and said second reflective film is disposed on said first plane.

5,625,495

TELECENTRIC LENS SYSTEMS FOR FORMING AN IMAGE OF AN OBJECT COMPOSED OF PIXELS

Jacob Moskovich, Cincinnati, Ohio, assignor to U.S. Precision Lens Inc., Cincinnati, Ohio

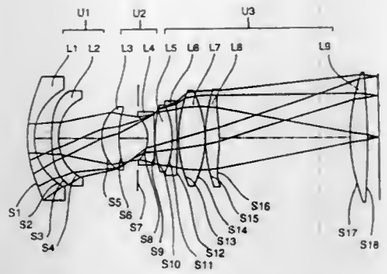
Filed Dec. 7, 1994, Ser. No. 350,652

Int. Cl.[6] G02B *13/22*

U.S. Cl. 359—663 **18 Claims**

1. A telecentric lens system having an aperture stop and a telecentric pupil, said system comprising in order from its long conjugate side to its short conjugate side:

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(a) a first lens unit which has a negative power and comprises a negative lens element whose strongest surface is convex to the long conjugate side of the system;

(b) a second lens unit which is of weak optical power and comprises two meniscus elements whose concave surfaces face each other, the system's aperture stop being located between the meniscus elements and each meniscus element having at least one aspheric surface; and

(c) a third lens unit which has a positive power and comprises means for correcting the chromatic aberrations of the system, said third lens unit forming the system's telecentric pupil by imaging the aperture stop.

5,625,496

LENS FOR PROJECTION TELEVISION

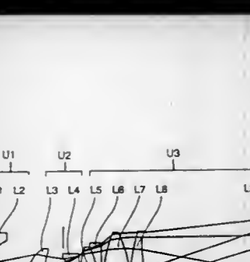
Kazuya Akiyama, and Yukio Ozaki, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 86,169, Jul. 6, 1993. This application May 12, 1995, Ser. No. 440,036

Claims priority, application Japan, Jul. 6, 1992, 4-178168

Int. Cl.[6] G02B *1/06*

U.S. Cl. 359—666 **11 Claims**



1. An adaptable lens system for use in projection televisions having screens of varying size, comprising:

a picture generating means for generating light representing an image to be displayed on a projection television,

a selected liquid lens disposed adjacent to said picture generating means for cooling said picture generating means and for altering said image so as to properly display said image on a desired specific screen size of the projection television, wherein said selected liquid lens comprises a selected mixture of liquid materials selected from a plurality of mixtures of liquid materials, each of said mixtures having a refractive index different from refractive indices of the other mixtures and corresponding to a specific screen size, said selected mixture selected to achieve a desired refractive index corresponding to the desired specific screen size of the projection television in which the adaptable lens system is to be installed:

a coupler for coupling said selected liquid lens adjacent to said picture generating means, and

a fixed lens means comprising a plurality of lenses unmovably attached in the adaptable lens system for focusing the altered image on the screen of the projection television.

5,625,497

RETROFOCUS TYPE STANDARD LENS AND WIDE ANGLE LENS

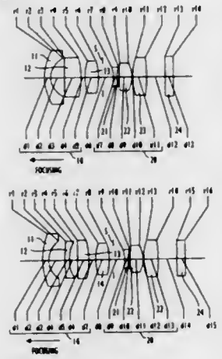
Takashi Emomoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,466

Claims priority, application Japan, Dec. 8, 1993, 5-307978; Dec. 8, 1993, 5-307979

Int. Cl.[6] G02B *13/04*

U.S. Cl. 359—751 **10 Claims**



1. A retrofocus type lens comprising:

a front lens group having a positive power, said front lens group comprising a negative subgroup and a positive subgroup arranged in this order from an object side;

a diaphragm; and

a rear lens group having a positive power, in this order from the object side;

wherein a lens positioned closest to the object side is a negative lens;

wherein focusing is carried out by moving said front lens group without moving said diaphragm and said rear lens group, and

wherein said retrofocus type lens satisfies the following relationships:

$$0.5<f/f_F<1.0;$$

$$-0.7<f/f_{FN}<-0.2,$$

wherein "f" designates a focal length of an entire lens system; "f_F" designates a focal length of said front lens group; and, "f_{FN}" designates a focal length of said negative subgroup.

5,625,498

LENS ASSEMBLY FOR OPTICAL SCANNERS

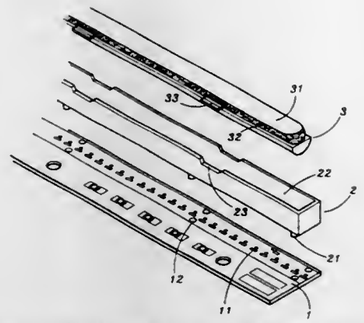
Wen-Ching Wu, 3F, No. 40, Alley 20, Lane 124, Chiao Chung 1st Street, Panchiao City, Taipei Hsien, and Wu-Chung Lin, 4F, No. 3i, Yung Chen Rd., Yung Ho City, Taipei Hsien, both of Taiwan

Filed Aug. 22, 1995, Ser. No. 517,966

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—811 **1 Claim**

1. A lens assembly comprising a printed circuit board having a longitudinal series of light emitting diodes, a casing mounted on said printed circuit board and covered over said light emitting diodes and having a glass cover, and a lens mounted on said glass cover for transmitting the light of said light emitting diodes onto an object wherein said lens has a plane top surface remote from said



glass cover of said casing, and a sand finished, figured peripheral surface.

5,625,499

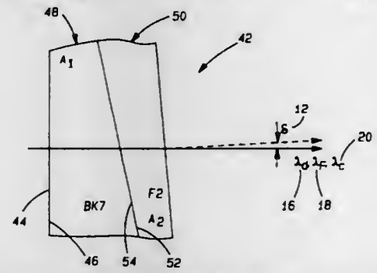
ACHROMATIC AND APOCHROMATIC PRISM ELEMENT EMPLOYING PRISMS AND GRATINGS

Chungte W. Chen, Irvine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 279,769, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 989,417, Dec. 11, 1992, abandoned. This application Jan. 24, 1996, Ser. No. 590,963

Int. Cl.[6] G02B *5/04*

U.S. Cl. 359—831 **10 Claims**



1. A grism system for performing apochromatic correction of at least three colors within a given spectral band, said band being defined by a long wavelength and a short wavelength and having a bandwidth-to-short wavelength ratio of at least 10%, the system comprising:

an achromatic prism assembly, said assembly further comprising a first prism that transmits energy over the entirety of said band, the first prism having first and second faces disposed at a first prism angle A1 and a second prism that transmits energy over the entirety of said band, the second prism having first and second faces disposed at a second prism angle A2;

a grating on either face of the first prism, the grating having a predetermined grating period, the first and second prisms and grating cooperating to change the angle of at least three colors within said band such that the primary and secondary angular spread for the given spectral band is approximately zero.

5,625,500

HITCHING MIRROR

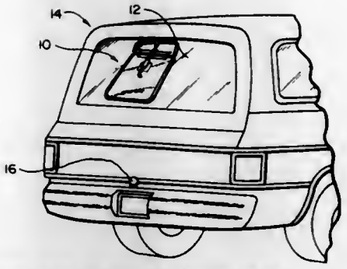
Bruce Ackerman, 160 Wildwood, Algonquin, Ill. 60102

Filed Dec. 27, 1994, Ser. No. 364,736

Int. Cl.[6] G02B *5/08;7/182;* **B60R** *1/06*

U.S. Cl. 359—841 **6 Claims**

1. A hitching mirror for use on a vehicle with a window and a hitch for viewing the hitch on the vehicle, the hitching mirror comprising:



an elongate panel including a reflective surface;

means for securing the elongate panel to the window of the vehicle with the reflective surface disposed toward said window, the securing means comprising a narrow panel affixed to the elongate panel at adjacent ends and at least one means for reversibly attaching the hitching mirror to the window, the reversibly attaching means being arranged on the narrow panel; and

a discrete means for incrementally adjusting the position of the reflective surface relative to the securing means, the incremental adjusting means being operably associated with the reflective surface and said narrow panel.

5,625,501

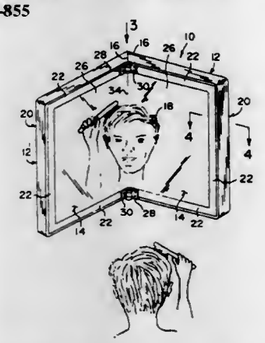
TRUE IMAGE MIRROR

Anthony J. Taggert, 435 E. 65th St., Apt. 8A, New York, N.Y. 10021

Continuation of Ser. No. 993,639, Dec. 21, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,557

Int. Cl.[6] G02B *5/08;7/182*

U.S. Cl. 359—855 **8 Claims**



1. A non-reversing image mirror device which comprises a pair of mirror units, each having a substantially reflective front surface and a mitered side edge, said mirror units being rotatably connected to each other at said mitered side edges to provide relative rotation of said mirror units between a closed position and an open position wherein said reflective surfaces define an angle of ninety degrees and act cooperatively to form a single substantially seamless reflective region when said side edges are rotated to abut each other and form rotatable ninety-degree stop members, so that a reflected image when viewed in the middle between said mirror units is a non-reversed image having a center split which is virtually invisible.

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5,625,502

MIRROR PIVOTING MECHANISM, AND VEHICLE COMPRISING SUCH MIRROR PIVOTING MECHANISM

Rudolf P. Hoogenboom, Montfoort; Stefan F. Brouwer, Den Haag; Adrianus J. M. Blom, Zelst, and Martinus A. B. Vernooij, Houten, all of Netherlands, assignors to Eaton Corporation, Cleveland, Ohio

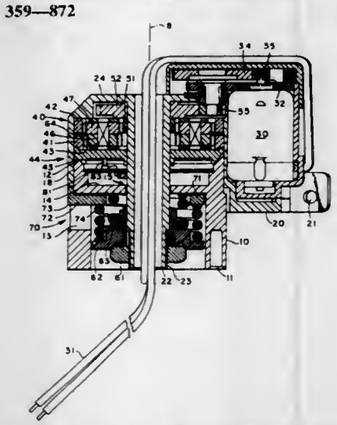
PCT No. PCT/NL93/00276, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/14633, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 23, 1993, Ser. No. 481,296

Claims priority, application Netherlands, Dec. 24, 1992, 9202266

Int. Cl.[6] G02B *5/08;7/182;7/18*

U.S. Cl. 359—872 15 Claims



1. A mirror pivoting system for pivotally connecting a mirror housing (**205**) of a rearview mirror relative to a vehicle (**1**), comprising:

a first carrier member (**203**; **10**) which is adapted to be fixedly connected relative to the vehicle;

a second carrier member (**204**; **20**) which is adapted to be connected to the pivotable mirror housing (**205**), and which is pivotally coupled with the first carrier member (**203**; **10**);

a movement actuator comprising an electric motor (**30**) and a transmission system (**40**) associated therewith, wherein the movement actuator has a first actuator part (**211**; **41**) coupled with the first carrier member (**203**; **10**) and a second actuator part (**212**; **42**) coupled with the second carrier member (**204**; **20**) and is designed to cause the second carrier member (**204**; **20**) to perform a pivotal movement relative to the first carrier member (**203**; **10**); and

a first clamping coupling (**213**; **44**) which is arranged between one of the first and second actuator parts (**211**; **41**), (**212**; **42**) and the respective one of the first and second carrier members (**203**; **10**);

characterized in that:

a second clamping coupling (**214**; **64**) is provided, which is arranged to be active in a service position of the system so as to clamp said one of the first and second actuator parts (**211**; **41**) (**212**; **42**) or said respective one of the first and second carrier members (**203**; **10**) relative to the other of the first and second carrier members (**204**; **20**);

that end position stops (**220**) fixedly connected relative to the first and second carrier members (**203**, **204**; **10**, **20**) are provided for defining at least a rearwardly folded position;

that a third clamping coupling (**215**; **70**) active between the first and second carrier members (**203**, **204**; **10**, **20**) is provided for defining the service position, the threshold value of said third clamping coupling (**215**; **70**) in a pivoting direction from the service position to the rearwardly folded position being smaller than in an opposite pivoting direction; and

that switching means (**217**; **82**) included in an exciting circuit for the motor (**30**) are provided, which are fixed relative to said respective one of the first and second carrier members (**203**; **10**), and switching operating means (**216**; **83**) coupled with said one of the first and second actuator parts are provided (**211**; **41**) for operating the switching means (**217**; **82**).

5,625,503

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING MEANS FOR DISCRIMINATING PERFORMANCE OF MAGNETIC RECORDING MEDIUM TO ACHIEVE OPTIMUM RECORDING AND REPRODUCTION

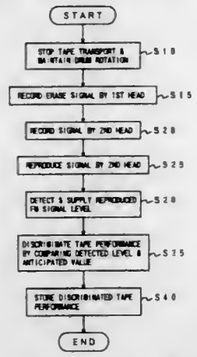
Yasutaka Sasajima, Kanagawa-ken, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Sep. 19, 1995, Ser. No. 530,696

Claims priority, application Japan, Sep. 20, 1994, 6-252931; Sep. 27, 1994, 6-257628

Int. Cl.[6] G11B *5/02*

U.S. Cl. 360—25 15 Claims



1. A magnetic recording and reproducing apparatus which records a signal on a recording track of a magnetic recording medium in a recording mode and reproduces the signal from the recording track of the magnetic recording medium in a reproducing mode, said magnetic recording and reproducing apparatus comprising:

a rotary drum having at least first and second magnetic heads having gaps with mutually different azimuth angles;

erasing means for erasing the signal recorded on the recording track of the magnetic recording medium by supplying a high-frequency current to the first magnetic head in a state where the magnetic recording medium which makes contact with said rotary drum is stationary;

recording means for supplying a predetermined signal to the second magnetic head so as to record the predetermined signal on the recording track which is erased by said erasing means;

detection means for detecting the predetermined signal by immediately reproducing by the second magnetic head the predetermined signal which is recorded on the recording track by said recording means; and

control means including discriminating means for discriminating a signal recording and reproducing characteristic of the magnetic recording medium based on the predetermined signal detected by said detection means.

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MAGNETIC RECORDING AND REPRODUCING SYSTEM

Yoshinori Okada, Yokohama; Mitsuhiko Watanabe, Fujisawa; Mitsuru Kudo; Tetsuo Sakae, both of Katsuta; Hiroyuki Kimura, Hiratsuka, and Hajime Takasugi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

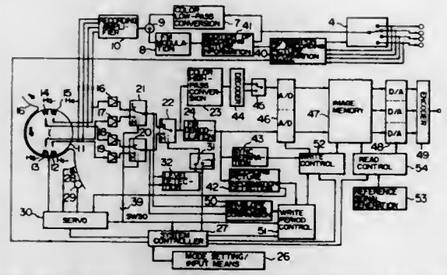
Filed Sep. 9, 1993, Ser. No. 118,463

Claims priority, application Japan, Sep. 10, 1992, 4-242162

Int. Cl.[6] G11B *5/02;* H04N *5/91*

U.S. Cl. 360—27 9 Claims

1. A magnetic recording/reproduction apparatus comprising:



recording means for recording input picture signals of a plurality of picture channels in a field or frame unit as a series of continuous picture signals and for recording the picture signals on oblique recording tracks on a tape by magnetic heads;

image memory means for storing picture signals reproduced by said magnetic heads;

reproduction track switch signal generation means for generating signals representing a shift point to each track to be reproduced at the time of search reproduction at which said magnetic heads transversely cross said recording tracks and trace said recording tracks; and

write control means for writing picture signals reproduced by said magnetic heads in said image memory means for each picture channel in accordance with the output from said reproduction track switch signal generation means.

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METHOD OF AND APPARATUS FOR REGENERATING PARTIAL-RESPONSE RECORD SIGNAL

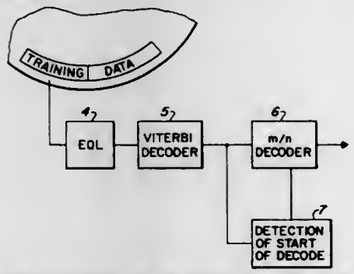
Hideki Ohmori, and Shuichi Hashimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Jan. 27, 1995, Ser. No. 379,866

Claims priority, application Japan, Feb. 3, 1994, 6-031836

Int. Cl.[6] G11B *5/09;5/035*

U.S. Cl. 360—46 9 Claims



1. A partial-response record signal regenerating method of regenerating a record signal of a data area which follows a training area containing a training signal for determining a circuit constant of an equalizing circuit in a disk apparatus, said method comprising the steps of:

Viterbi-decoding the training signal and the record signal being input through the equalizing circuit into a bit output;

converting consecutive m-bits of said Viterbi-decoded bit output into n-bits (m>n);

detecting the training signal from said Viterbi-decoded bit output, said step of detecting the training signal including:

a first step of taking a synchronism with the record signal by starting a count of a first counter by detecting a partial pattern of the training signal; and

a second step of retaking said synchronism with the record signal by detecting a plurality of continuous training signals and synchronizing a last training signal among said plurality of continuous training signals, said second step including a step of counting carry signals of said first counter using a third counter till the training signal is detected, a step of counting a carry signal of a second counter which starts counting in accordance with the detection of the training signal using said third counter when detecting the training signal, and a step of indicating the start of the decoding by the carry signal of said third counter in synchronism with said last training signal among said plurality of continuous training signals; and

indicating a start of said converting step for the record signal of the data area in response to said detecting of the training signal.

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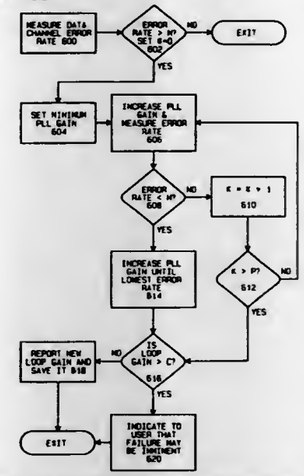
METHOD AND APPARATUS FOR REDUCING READBACK ERRORS BY CONTROLLING THE PHASE LOCKED LOOP

Moris M. Dovek, San Carlos, Calif.; Gordon J. Smith, Rochester, Minn., and Jaquelin K. Spong, San Jose, Calif., assignors to International Business Machines Corporation, Rochester, Mich.

Continuation of Ser. No. 261,437, Jun. 17, 1994, abandoned. This application May 1, 1996, Ser. No. 641,342

Int. Cl.[6] G11B *20/10*

U.S. Cl. 360—51 11 Claims



1. A method for maintaining file readback performance compensating for readback errors caused by head/disk interaction used with a data detection channel in a direct access storage device comprising the steps of:

sensing a readback signal from at least one disk surface;

measuring a data channel soft error rate responsive to said readback signal;

comparing said measured data channel soft error rate with a first predetermined threshold value; and

adjusting a gain of a phase lock loop (PLL) included in a data separator in the data detection channel responsive to an identified data channel soft error rate greater than said first predetermined threshold value, said PLL gain adjusting step including the steps of setting a first gain of said PLL, increasing said gain of said PLL and measuring said data channel soft error rate; and responsive to said increased gain and said measured data channel soft error rate, optimizing said gain of said PLL; wherein the steps of increasing said gain of said PLL and measuring said data channel soft error rate; and responsive to said increased gain and said measured data channel soft error rate, optimizing said gain of said PLL include the step of:

comparing said measured data channel soft error rate with a second predetermined threshold value, said second prede-

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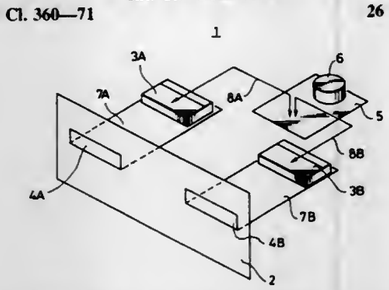
termined threshold value being less than said first predetermined threshold value.

5,625,507

RECORDING AND/OR REPRODUCING APPARATUS THAT LOADS A TAPE CASSETTE INTO STANDBY POSITION WHILE RECORDING AND/OR REPRODUCING WITH ANOTHER TAPE CASSETTE

Hideyuki Ota; Seiichi Sawakami, both of Kanagawa, and Susumu Konuta, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 968,540, Oct. 29, 1992, abandoned. This application Nov. 13, 1995, Ser. No. 558,932
Claims priority, application Japan, Nov. 6, 1991, 3-290112
Int. Cl.[6] G11B *15/68*
U.S. Cl. 360—71 **26 Claims**



1. An apparatus for recording and/or reproducing signals onto and/or from first and second recording media stored within first and second tape cassettes, respectively, said apparatus comprising:

a panel having first and second open portions through which said first and second tape cassettes are completely inserted therethrough;

first and second conveying means for respectively conveying the tape cassettes inserted through said first and second open portions to first and second standby positions;

selecting means for selecting one of the tape cassettes conveyed by said first and second conveying means; and

a common recording and/or reproducing device for receiving each tape cassette selected by said selecting means within a relatively small amount of time after being selected and for respectively recording and/or reproducing signals onto and/or from the recording medium stored therein;

said first and second conveying means being operative to convey either of said first and second tape cassettes to the respective one of said first and second standby positions even when a recording and/or reproducing operation is being performed involving the other of said first and second tape cassettes and said first and second standby positions being located in relatively close proximity to said common recording and/or reproducing device so as to minimize the time for the selected tape cassette to be supplied to said common recording and/or reproducing device.

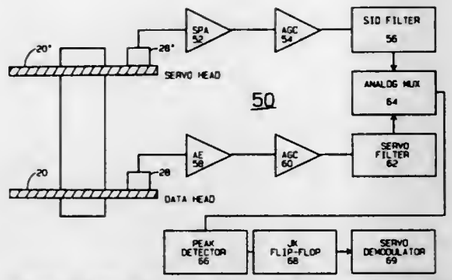
5,625,508

METHOD AND APPARATUS FOR SERVO DEMODULATION IN A DIRECT ACCESS STORAGE DEVICE

Dana H. Brown; Hal H. Ottesen, and Gordon J. Smith, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 112,496, Aug. 26, 1993, abandoned. This application Jun. 16, 1995, Ser. No. 491,103
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.02 **8 Claims**

1. A method for servo demodulation in a direct access storage device comprising the steps of:



sensing a phase modulated servo readback signal from a phase modulated servo pattern from at least one disk surface; said sensed phase modulated servo readback signal including alternating positive and negative servo pattern peaks;

directly detecting time locations of said positive and negative servo pattern peaks in said sensed phase modulated servo readback signal for providing a detected servo pattern peak position signal;

applying said detected servo pattern peak position signal to a phase modulated servo square wave generating circuit for generating a phase modulated servo square wave signal, said generated phase modulated servo square wave signal being a logic square wave having a period variable with distance between detected peak locations; said phase modulated servo square wave generating circuit comprising a first flip-flop block, a second flip-flop block, each flip-flop block having a set input and a reset input and a true output and an inverted output; a first pair of NOR gates respectively connected to the set input and the reset input of the first flip-flop block; and a second pair of NOR gates respectively connected to the set input and the reset input of the second flip-flop block; said first pair of NOR gates receiving said detected servo pattern peak position signal at a first input and the true output and the inverted output of the second flip-flop block respectively connected at a second input; said second pair of NOR gates receiving an inverted detected servo pattern peak position signal at a first and the true output and the inverted output of the first flip-flop block respectively connected at a second input; and

applying said generated phase modulated servo square wave logic signal to a servo demodulator.

5,625,509

RECORDING AND/OR REPRODUCING APPARATUS ACCOMMODATING DIFFERENT-SIZED CASSETTES AND INCLUDING A TENSION DETECTING MECHANISM ARRANGED IN ACCORDANCE WITH REEL BASE POSITIONS

Hidetoshi Matsuoka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1994, Ser. No. 280,505
Claims priority, application Japan, Jul. 30, 1993, 5-190234
Int. Cl.[6] G11B *15/32;15/43*
U.S. Cl. 360—94 **6 Claims**

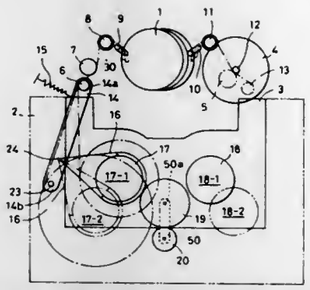
1. A recording and/or reproducing apparatus accommodating different-sized cassettes, each cassette having a tape-like recording medium affixed to a pair of reels therein, said recording and/or reproducing apparatus comprising:

a head for recording information on the recording medium and/or reproducing information from the recording medium:

a pair of reel bases to which the pair of reels are engageable;

a reel base moving mechanism for moving each of said pair of reel bases between a first operating position and a second operating position corresponding to the different-sized cassettes;

a tension detecting member, which makes contact with the recording medium so as to form a predetermined path



between one reel base of said pair of reel bases and said head, and detect a tension of the recording medium;

a pivot member having a pivotally supported end and an opposite end that is opposite said pivotally supported end, wherein said detecting member is provided on said opposite end;

a belt-like member, having two end portions, which is wound around said one reel base, wherein said two end portions of said belt-like member are mounted to said pivot member at a position substantially on a perpendicular bisector of a line connecting a center point of said one reel base at the first operating position to the center point of said one reel base at the second operating position, wherein said two end portions of said belt-like member are substantially symmetrical about the perpendicular bisector when the center point of said one reel base is on the perpendicular bisector; and

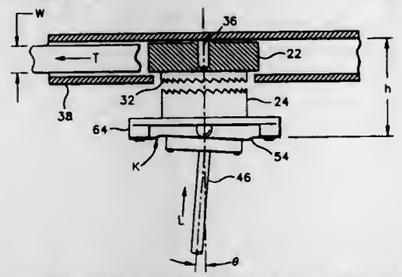
urging means for urging said pivot member in a direction that causes said belt-like member to exert a braking force to said one reel base.

5,625,510

HIGH TORSIONAL STIFFNESS LOW AXIAL DEFLECTION STIFFNESS DRIVE SHAFT

Thomas R. Albrecht, San Jose, and James H. Eaton, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 252,144, Jun. 1, 1994, Pat. No. 5,490,020, which is a continuation of Ser. No. 74,898, Jun. 10, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,646
Int. Cl.[6] G11B *15/32*
U.S. Cl. 360—96.5 **16 Claims**



1. A high torsional stiffness low axial deflection stiffness flexible drive shaft comprising:

at least one flexible diaphragm for transmitting torsional loads;

first and second elongated driving elements for transmitting axial and torsional loads along and about a common axis respectively, the common axis being common to a longitudinal axis of each of the first and second elongated driving elements;

the first driving element being fixedly connected to only an inner radial portion of the flexible diaphragm, which is defined by a first circle about the common axis, and the second driving element being fixedly connected to only an outer radial portion of the flexible diaphragm, which is defined by a second circle about the common axis wherein the second circle is larger than the first circle, so that the diaphragm has an annular band between said inner and outer radial portions without any connections; and

axial load transmitting means mounted to one of the first and second driving elements and having a rounded portion movably engaging the other of the first and second driving elements for transmitting axial loads therebetween,

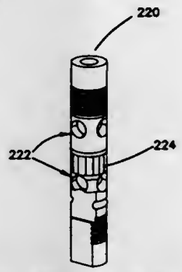
whereby, upon rotation of the drive shaft, the annular band transfers torsional force and adjusts for any misalignment of the longitudinal axes of the first and second driving elements.

5,625,511

STEPPED SPINDLE MOTOR SHAFT TO REDUCE DISK DRIVE ACOUSTIC NOISE

Peter E. Brooks, Rochester, Minn.; Gregory M. Frees, Sunnyvale, Calif., and Daniel R. Stacer, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1995, Ser. No. 371,356
Int. Cl.[6] G11B *17/02;* H02K *5/16;* F16C *3/02*
U.S. Cl. 360—99.08 **28 Claims**



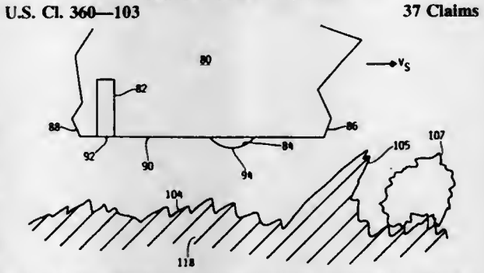
1. A spindle motor shaft for a disk drive system having a longitudinal axis, the shaft being coupled to a stator for generating motor drive forces at a driving force frequency, the shaft and stator further having a torsion mode frequency, the spindle motor shaft comprising at least one torsion mode frequency aperture formed in the spindle motor shaft, the torsion mode frequency aperture reducing the stiffness of the shaft and moving the torsion mode frequency away from the driving force frequency.

5,625,512

AIR BEARING SLIDER DEFLECTION APPARATUS AND METHOD FOR FABRICATING SAME

Gordon J. Smith, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1995, Ser. No. 407,780
Int. Cl.[6] G11B *5/60;17/32*
U.S. Cl. 360—103 **37 Claims**



1. An air bearing slider for supporting a transducer element proximate a rotating data storage medium of a data storage system, the data storage medium having a surface with an obstructed portion having an obstruction and an unobstructed portion free of obstructions, the slider comprising:

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an air bearing surface;

a transducer element mounting location provided on the air bearing surface and adapted for receiving the transducer element; and

a deflector for contacting the obstruction on the surface of the rotating data storage medium, the deflector being disposed on the air bearing surface proximate the transducer element mounting location;

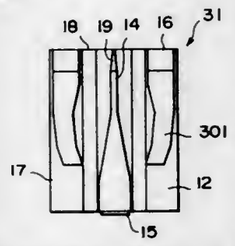
wherein the deflector displaces the transducer element mounting location upon contacting the obstruction so as to preclude contact between the transducer element mounting location and the obstruction.

5,625,513

FLOATING HEAD SLIDER HAVING UNIFORM SPACING FROM RECORDING MEDIUM SURFACE

Motoyasu Utsunomiya, and Hiroshi Kajitani, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Nov. 13, 1995, Ser. No. 557,740
Claims priority, application Japan, Nov. 14, 1994, 6-278832
Int. Cl.[6] G11B *21/21*
U.S. Cl. 360—103 **14 Claims**



1. A floating head slider for floating over the surface of a magnetic storage medium, said slider comprising an air bearing surface having a central longitudinal axis, said air bearing surface having a leading edge and a trailing edge extending perpendicular to said longitudinal axis, a pair of side rails disposed on said air bearing surface and in symmetry to each other with respect to said longitudinal axis, each of said side rails having a first region disposed adjacent to said leading edge and extending parallel to said longitudinal axis, a second region extending from said first region in a first direction at a first angle to the direction of said longitudinal axis toward said longitudinal axis, and a third region extending from said second region in a second direction at a second angle to the direction of said longitudinal axis toward said longitudinal axis, said second angle being larger than said first angle, each of said side rails also including a respective outer edge adjacent to a respective outer edge of said air bearing surface, the respective outer edges of said side rails each having at least two contiguous portions, one of said two contiguous portions extending to the other portion of said two contiguous portions at an angle to the direction of said longitudinal axis toward said longitudinal axis, said other portion extending at another and larger angle to the direction of said longitudinal axis than that of said one portion.

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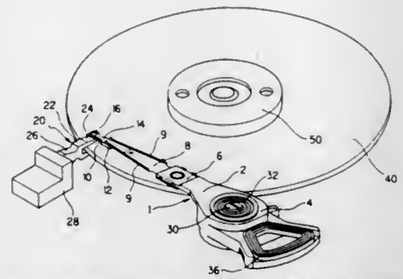
DISK DEVICE

Takeshi Kubo, Kanagawa, and Kenji Enomoto, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 165,884, Dec. 14, 1993, abandoned.
This application Jun. 8, 1995, Ser. No. 489,006
Int. Cl.[6] G11B *5/54*
U.S. Cl. 360—104 **26 Claims**

1. A disk device for moving an arm which supports a head slider and for positioning said head slider at a predetermined position of a disk, comprising:

a suspension having a longitudinal axis and being fixed at a first end to said arm along said longitudinal axis;



a flexure having a fastening portion fixed at a second end of said suspension, a tongue portion having a longitudinal axis aligned with the longitudinal axis of said suspension and having a mounting surface on which said head slider is mounted, and a pair of thin flexible outer fingers extending in parallel relation to said tongue portion from said fastening portion, wherein said tongue portion has a positive mount pitch angle relative to said fingers so that a spaced distance of a leading end of said head slider relative to said disk is greater than a spaced distance of a trailing end of said head slider relative to said disk;

a spherical projection provided to project toward said disk at the second end beyond the flexure mount position of said suspension;

a slant base on which said spherical projection directly rides which is provided with a slant surface which has an increasing slope from said disk in accordance with a radial outward distance of said disk, a flat surface which is parallel to the surface of the disk contiguous with said slant surface, and a recess portion which is contiguous with said flat surface and has an elongated portion thereof which is parallel to the surface of the disk for defining a lock position of said head slider;

drive means for moving said arm so that said projection is moved in engagement with said slant surface in loading and unloading operations of the arm; and

wherein a height of said elongated portion of said recess portion of said slant base is selected so that a height of said head slider when said spherical projection rides along said elongated portion of said recess portion is equal to a height of said head slider when said head slider effects a writing operation and a reading operation relative to said disk.

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COMPACT, HIGH-SPEED, ROTARY ACTUATOR AND TRANSDUCER ASSEMBLY WITH REDUCED MOMENT OF INERTIA AND MASS-BALANCED STRUCTURAL OVERLAP WITH DRIVE MOTOR, AND ORGANIZING METHOD FOR THE SAME

Stanley F. Brown, Saratoga, Calif., assignor to Censtor Corp., San Jose, Calif.

Continuation-in-part of Ser. No. 843,895, Feb. 27, 1992, Pat. No. 5,396,388. This application Jan. 20, 1995, Ser. No. 389,964
Int. Cl.[6] G11B *5/55;21/08*
U.S. Cl. 360—106 **3 Claims**

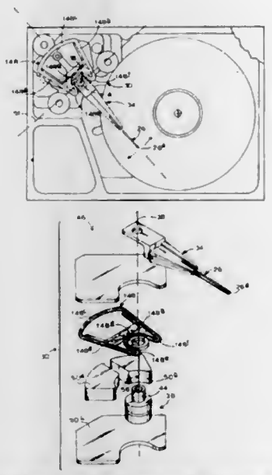
3. A combined reciprocating-motion rotary actuator structure and read/write-transducer substructure assembly for the positioning of a transducer in the assembly relative to a recording surface in a rotating recording medium in a disk-drive system which includes a main frame, said assembly comprising

an actuator frame component journaled effectively on the main frame in the system for rotation about a defined actuator journal axis,

elongate transducer substructure having one end joined to said component for movement as a unit therewith, and extending from said one end along its own longitudinal axis toward a free end which includes a read/write transducer, said longitudinal axis being disposed substantially normal to a defined plane containing said journal axis,

an actuator motor drivingly interposed between said main frame and said component for producing reciprocal rotary motion thereof, and hence also of said transducer substructure, about said journal axis, said motor including first and second, relatively rotatable, interactive reaction elements, said first reaction element having a configuration in which the mass of said element is distributed in a dynamically imbalanced manner relative to said journal axis, and is symmetrical relative to a single plane containing said journal axis and said longitudinal axis, and

wherein said first reaction element semi-circumbounds said journal axis, and said configuration, when viewed from the free end of said substructure along said longitudinal axis, is concave for at least a portion thereof passing behind said journal axis and extending through said defined plane on either side of said longitudinal axis so that the concave portion and a chord thereon define a segment which bounds said journal axis.

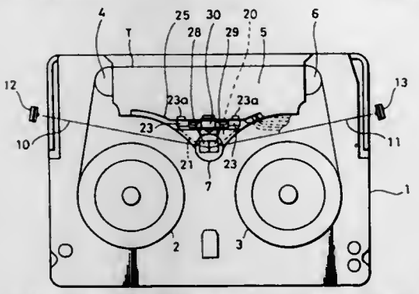


5,625,516

TAPE END DETECTION MECHANISM FOR TAPE CASSETTE

Sunao Kushiro. Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,954
Claims priority, application Japan, Jun. 17, 1994, 6-135985
Int. Cl.[6] G11B *23/08*
U.S. Cl. 360—132 **6 Claims**



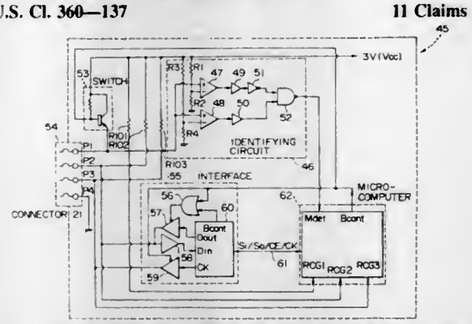
1. In an apparatus for recording and/or reproducing signals on a tape having a substantially opaque recording portion and leader portions of substantially transparent material extending from the ends of said recording portion and being wound on supply and takeup reels in a cassette housing which has a mouth extending across a forward portion of the housing and opening forwardly and downwardly therefrom, tape guides in said housing guiding said tape between the reels in a path having a laterally directed portion extending across said mouth and substantially parallel side portions extending between said reels and said guides, respectively, said housing further having a laterally centered hole in back of said mouth and which opens at a bottom surface of said housing and a recess in said bottom surface through which a lower portion of said, hole communicates with said mouth: the combination of a deck in the apparatus for operatively positioning said housing with said bottom surface upon said deck; and a tape end detecting device comprising a light-emitting element for emitting a beam of light, means mounting said light-emitting element on said deck so that, with said housing of the cassette operatively positioned upon said deck, said light-emitting element is situated in said mouth and said beam of light is directed from said element substantially parallel to said deck through said recess toward said hole, a prism having a lower portion extending through said recess and having an incident surface at one end positioned adjacent to said light-emitting element and at which said beam of light enters said prism, said lower portion of the prism having an inclined reflecting surface at an end of the lower portion remote from said incident surface and which is disposed within said hole of the operatively positioned cassette housing so that said beam of light, having entered the prism at said incident surface, is reflected from said reflecting surface so as to travel upwardly in said hole and an upper-light radiating portion of said prism extending in said hole of the operatively positioned cassette housing and splitting said beam of light from said reflecting surface into two light beams directed laterally in opposite directions, respectively, along paths intercepted by said side portions, respectively, of the tape path in the operatively positioned cassette housing, and light-receiving elements positioned at opposite sides of said cassette housing when the latter is operatively positioned on said deck to receive light of said two light beams, respectively, when one or the other of said leader portions extends in a respective one of said side portions of the tape path, whereby to detect an end of said recording portion of the tape.

5,625,517

APPARATUS FOR READING AND/OR DISPLAYING INFORMATION OBTAINED FROM A MEMORY DEVICE OR A TERMINAL BOARD DEVICE OF A RECORDING MEDIUM CASSETTE

Takashi Sawada; Hiroshi Okada, and Chiaki Sugai, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 103,558, Aug. 9, 1993, abandoned.
This application Feb. 17, 1995, Ser. No. 390,825
Claims priority, application Japan, Aug. 14, 1992, 4-237618
Int. Cl.[6] G11B *23/34*
U.S. Cl. 360—137 **11 Claims**



1. A display apparatus adapted for use with first and second types of recording medium cassettes each buying a recording medium, a cassette case for accommodating said recording medium, and a plurality of terminals, said first type of recording medium cassette further having storage means for storing cassette information and said second type of recording medium cassette

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further having terminal means having a respective conductor pattern which connects selected one or ones of the terminals of said second type of recording medium together so as to provide said cassette information without utilizing an integrated-circuit memory chip, said cassette information including at least one of information pertaining to information recorded on a respective recording medium and information about a respective recording medium cassette itself, said display apparatus comprising:

a loading portion for loading the respective recording medium cassette;

a connector provided on said-loading portion to be connected with a respective plurality of terminals;

reading means for reading the cassette information from said storage means through said connector when said first type of recording medium cassette is being-used with said display apparatus and for reading the cassette information from said terminal means through said connector based on a difference in electrical values associated with the respective conductor pattern when said second type of recording medium cassette is being used with said display apparatus; and

display means for displaying the cassette information read by the reading means.

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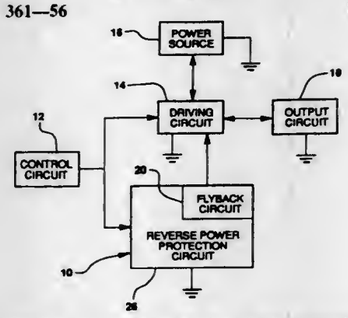
CLAMPING CIRCUIT WITH REVERSE POLARITY PROTECTION

Gregory D. Bober, St. Clair Shores, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1995, Ser. No. 567,396

Int. Cl.[6] H02H *3/14*

U.S. Cl. 361—56 **8 Claims**



1. A clamping circuit for protecting circuits operatively connected between a control circuit, a driving circuit, a power source and an output circuit, said clamping circuit comprising:

an inductive flyback circuit to add current to the output circuit through the driving circuit; and

a reverse power protection circuit operatively connected between said inductive flyback circuit and the control circuit, said reverse power protection circuit opening said inductive flyback circuit and providing an electrical connection between the power source and the output circuit allowing current to flow through the output circuit when the power source is connected to the driving circuit incorrectly.

5,625,519

CIRCUIT PROTECTION ARRANGEMENT

Ian P. Atkins, Swindon, England, assignor to Raychem Limited, Swindon, United Kingdom

Filed Apr. 8, 1993, Ser. No. 30,392

Claims priority, application United Kingdom, Oct. 12, 1990, 9022236; Oct. 12, 1990, 9022237

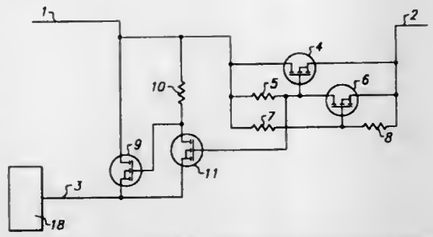
Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **20 Claims**

1. A circuit protection arrangement which comprises

(1) a series switching circuit which

(a) has an input and an output,



(b) is series connected in a line of a circuit to be protected,

(c) will allow normal circuit currents to pass under normal operating conditions, and

(d) will switch to produce an open state in the line when subjected to an overcurrent, and

(2) a shunt switching circuit which

(a) is connected to the input of the series switching circuit and to a return line of the circuit to be protected,

(b) is open under normal operating conditions, and

(c) will shunt the overcurrent to the return line of the circuit to be protected when the series switching circuit switches to produce the open state in the line of the circuit to be protected.

5,625,520

DEVICE FOR PREVENTING A HIGH VOLTAGE TRANSFORMER OF A MICROWAVE OVEN FROM BEING OVERHEATED

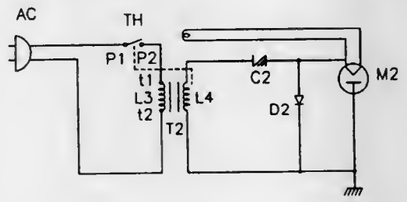
Byung Kap Lim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 15, 1994, Ser. No. 341,861

Claims priority, application Rep. of Korea, Nov. 19, 1993, 93-24724; Nov. 19, 1993, 93-24739

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **9 Claims**



8. A device for preventing a high voltage transformer of a microwave oven from being overheated, comprising:

a high voltage transformer having a first coil to which an alternating current having a first voltage is supplied, and a second coil at which a second voltage higher than the first voltage is induced;

a generator circuit for generating an ultra microwave by the second voltage applied thereto from the second coil, and for radiating the ultra microwave into a heating chamber of the microwave oven;

a thermostat connected to one of two terminals of the first coil and disposed on an outer surface of the second coil; and

a bracket that provides electric insulation of the thermostat from the second coil, having:

a main body having a recess formed at a central part thereof; and

a base plate attached on the second coil to support the main body and a means for fixing the thermostat in the recess, wherein the thermostat is installed on the second coil by being inserted in the bracket; and the fixing means comprises two elastic hooks disposed in the recess.

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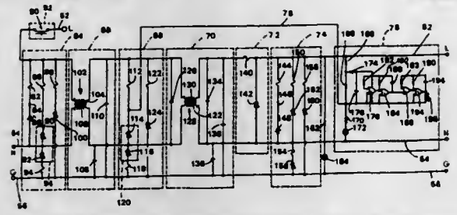
SURGE PROTECTION CIRCUITRY

Lionel T. V. Luu, Hong Kong, Hong Kong, assignor to Pacusma Co.,Ltd., Hong Kong

Filed Jul. 22, 1994, Ser. No. 279,154

Int. Cl.[6] H02H *3/20*

U.S. Cl. 361—111 **19 Claims**



1. A three-stage surge suppression circuit for a power supply system including a line conductor, a neutral conductor, and a ground conductor, the circuit including an input end for coupling to a power source and an output end for coupling to equipment to be protected, the circuit comprising:

a first surge suppression stage for suppressing voltage surges across the line and neutral conductors, said first surge suppression stage comprising a first Zener diode coupled across the line conductor and the neutral conductor, a first voltage surge absorption element coupled across the line conductor and the neutral conductor, in parallel with the first Zener diode, a second voltage surge absorption element coupled across the neutral conductor and the ground conductor, and a third voltage surge absorption element coupled across the line conductor and the ground conductor;

a second surge suppression stage coupled to an output from the first stage for suppressing voltage surges across the line and neutral conductors, said second surge suppression stage comprising a first voltage surge absorption element coupled across the line conductor and the neutral conductor, a second voltage surge absorption element coupled across the neutral conductor and the ground conductor, and a third voltage surge absorption element coupled across the line conductor and the ground conductor;

a third surge suppression stage coupled to an output from the second stage for suppressing voltage surges across the line and neutral conductors, said third surge suppression stage comprising a second Zener diode coupled across the line conductor and the neutral conductor, a first voltage surge absorption element coupled across the line conductor and the neutral conductor, in parallel with the second Zener diode, a second voltage surge absorption element coupled across the neutral conductor and the ground conductor, and a third voltage surge absorption element coupled across the line conductor and the ground conductor; and

a surge suppression circuit for protecting a signal conductor and a ground shield conductor of a low voltage coaxial signal line, comprising:

first surge suppression means for providing surge suppression for the signal conductor, the first surge suppression means being coupled across the signal conductor and the ground conductor; and

second surge suppression means for providing surge suppression for the ground shield conductor, the second surge suppression means being coupled across the ground shield conductor and the ground conductor.

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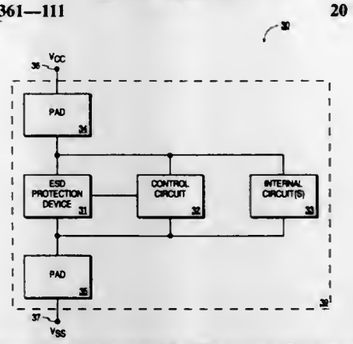
APPARATUS FOR SMART POWER SUPPLY ESD PROTECTION STRUCTURE

Jeffrey T. Watt, Mountain View, Calif., assignor to Cypress Semiconductor Corp., Sunnyvale, Calif.

Filed Aug. 29, 1994, Ser. No. 297,629

Int. Cl.[6] H02H *3/22*

U.S. Cl. 361—111 **20 Claims**



1. A protective circuit adapted for Electrostatic Discharge (ESD) protection of an internal circuit of an integrated circuit (IC), said protective circuit electrically connected to voltage conduits through contact pads present in said integrated circuit, said protective circuit comprising:

an ESD protection device having a first input and a second input and a third input, said first input being coupled to a first voltage conduit which is coupled to a first input of said internal circuit, said second input being coupled to a second voltage conduit which is coupled to a second input of said internal circuit, said ESD protection device channels said ESD discharge coming from said first voltage conduit through said ESD protection device to said second voltage conduit once said ESD protection device is turned "on", said ESD protection device is turned "on" when said ESD protection device is activated and said ESD discharge coming from one of said first voltage conduit and said second voltage conduit increases a voltage across said first and said second input of said ESD protection device above a trigger voltage;

a control circuit having a first input coupled to said first input of said internal circuit and a second input coupled to said second input of said internal circuit and an output coupled to said third input of said ESD protection device, said control circuit activates said ESD protection device in response to detecting said ESD discharge, said control circuit further activates said ESD protection device by modulating a voltage at said third input of said ESD protection device, said control circuit further including a second MOS transistor and a third MOS transistor and a fourth MOS transistor, and a MOS capacitor, said MOS capacitor having a first electrode coupled to said first voltage conduit and a second electrode coupled to a drain of said fourth MOS transistor and a source and a gate of said second MOS transistor and to said output of said control circuit, said second MOS transistor further having a drain coupled to said first voltage conduit, said third MOS transistor having a drain and a gate coupled to said first voltage conduit and a source coupled to a gate of said fourth MOS transistor, said fourth MOS transistor further having a source coupled to said second voltage conduit.

5,625,523

SURGE ARRESTER

Walter N. Nedriga, 1511 Brogdon St., Savannah, Ga. 31406

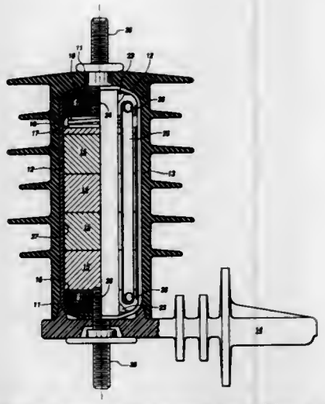
Filed Apr. 3, 1995, Ser. No. 415,855

Int. Cl.[6] H02H *1/00*

U.S. Cl. 361—127 **14 Claims**

1. A fragmentation resistant, reinforced core unit for a surge arrester comprising:

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a central core array of components comprising a plurality of non-linear resistor elements arranged in facing series along a longitudinally extending axis between respective inner end faces of a pair of end terminals,

means maintaining said core array components under an axially directed compressive force sufficient to establish contact between adjoining faces of said core components that said compressed core array is electrically conductive and

a plurality of untensioned annular bands of high tensile strength insulant each longitudinally circumscribing said compressed electrically conductive core array in mutually transverse planes coincident with said core array longitudinal axis with a portion of each band overlying an outer end face region of each one said end terminal pairs in a closely adjoining relationship.

5,625,524

REVERSIBLE THERMOSENSITIVE RECORDING MEDIUM AND METHOD OF PRODUCING THE SAME

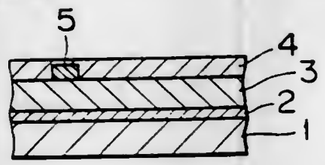
Yukio Konagaya, Shimizumachi; Takao Igawa, Numazu; Fumihito Masubuchi; Akihide Itoh, both of Mishima, and Tohru Nogiwa, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 508,204

Claims priority, application Japan, Jul. 28, 1994, 6-195909

Int. Cl.[6] G11C *11/46*

U.S. Cl. 365—127 **21 Claims**



1. A reversible thermosensitive recording medium comprising:

(a) a support

(b) a reversible thermosensitive recording layer formed on said support, comprising a matrix resin and an organic low-molecular-weight material dispersed in said matrix resin, capable of reversible assuming a transparent state and a white opaque state depending on the temperature thereof, and

(c) a magnetic recording layer which is integrally provided in a part of said reversible thermosensitive recording layer.

5,625,525

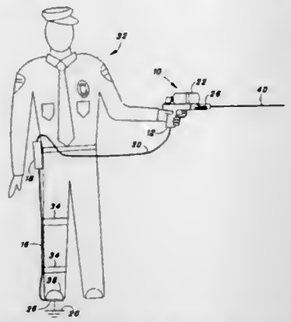
PORTABLE ELECTROMAGNETIC STUN DEVICE AND METHOD

Peter G. Coakley, Cardiff, and Norbert C. Wild, Jr., San Diego, both of Calif., assignors to Jaycor, San Diego, Calif.

Filed Jul. 11, 1994, Ser. No. 273,571

Int. Cl.[6] F41B *15/04*

U.S. Cl. 361—232 **10 Claims**



1. A method of stunning a living animal, including:

grounding a current supply to an earth ground, the grounding of the conductor including:

coupling a grounding plate to the earth ground; and

coupling the grounding plate to the current supply;

contacting the living animal with a conductive fluid stream, the conductive fluid stream being coupled to the current supply; and

passing a current from the current supply through the conductive fluid stream to the living animal, and from the living animal through the earth ground to the current supply.

5,625,526

ELECTROSTATIC CHUCK

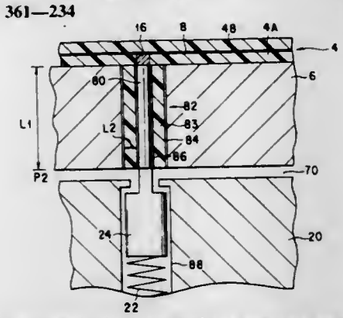
Masahide Watanabe; Masami Kubota, both of Yamanashi-ken; Shiro Koyama, Tokyo; Kenji Ishikawa, Sagamihara; Kouichi Kazama, Yamanashi-ken; Mitsuaki Komino, Tokyo, and Takanori Sakurai, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed Jun. 1, 1994, Ser. No. 252,213

Claims priority, application Japan, Jun. 1, 1993, 5-156284; Jun. 4, 1993, 5-160375; Jun. 24, 1993, 5-177360; Jun. 28, 1993, 5-181869; Jun. 28, 1993, 5-181870; Sep. 9, 1993, 5-249923; Dec. 8, 1993, 5-340795

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **9 Claims**



1. An electrostatic chuck attached to a susceptor assembly constituted by a combination of a plurality of susceptor members, for chucking/holding an object to be processed with an electrostatic attractive force, comprising:

a conductive film;

an insulating coat stuck on a surface of said susceptor assembly to cover said conductive film;

a feeder circuit for applying a voltage to said conductive film to cause said insulating coat to generate an electrostatic attractive force,

said feeder circuit including

a connecting conductor replacing a portion of said insulating coat to be electrically connected to said conductive film,

a first metallic feeder pin extending through said susceptor assembly from a front surface side to a rear surface side thereof and having one end portion electrically connected to said connecting conductor,

an insulating member for insulating said first metallic feeder pin from said susceptor assembly,

an adhesive member for bonding/fixing said insulating member to said first metallic feeder pin and said susceptor assembly,

a second metallic feeder pin having one end portion pressed against the other end portion of said first metallic feeder pin to be electrically connected to said first metallic feeder pin, and

a power supply electrically connected to said second metallic feeder pin,

said insulating member and said adhesive member each consisting of polybenzimidazole whose average molecular weight is in a range of 2,000 to 100,000.

5,625,527

METALLIZED FILMS AND CAPACITORS CONTAINING THE SAME

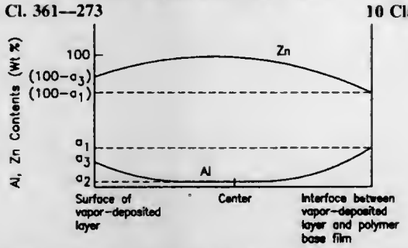
Kenji Hatada, Kuritagun Shiga, Japan, assignor to Toray Industries, Inc., Japan

Filed Apr. 14, 1995, Ser. No. 421,756

Claims priority, application Japan, Apr. 15, 1994, 6-077297

Int. Cl.[6] H01G *4/14;* **C23C** *14/20*

U.S. Cl. 361—273 **10 Claims**



1. A metallized film capable of being used in a capacitor comprising a polymer base film and a vapor-deposited layer consisting essentially of Al and Zn, said vapor-deposited layer being formed on said polymer base film to define an interface consisting of a first surface contacting said polymer base film, said vapor-deposited layer also having a second surface opposite to said interface, wherein Al content in said vapor-deposited layer is continuously varied along the direction of thickness thereof such that the Al content satisfies the equation of:

$$a_2<a_3<a_1$$

wherein a_1 represents Al content in terms of percent by weight based on the total weight of Al and Zn in said interface;

a_2 represents Al content in terms of percent by weight based on the total weight of Al and Zn at the center between said interface and said second surface of said vapor-deposited layer; and a_3 represents Al content in terms of percent by weight based on the total weight of Al and Zn in said second surface of said vapor-deposited layer.

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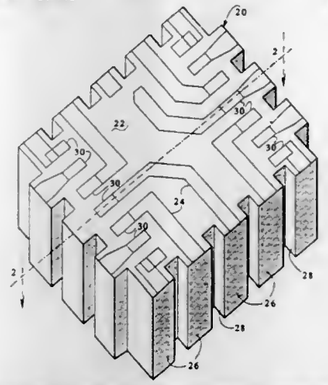
MONOLITHIC, BURIED-SUBSTRATE, CERAMIC MULTIPLE CAPACITORS ISOLATED, ONE TO THE NEXT, BY DUAL-DIELECTRIC-CONSTANT, THREE-LAYER-LAMINATE ISOLATION LAYERS

Daniel F. Devoe, 610 First St., Coronado, Calif. 92118, and Alan D. Devoe, 5715 Waverly Ave., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 342,595, Nov. 21, 1994, abandoned, Division of Ser. No. 964,150, Oct. 21, 1992, Pat. No. 5,367,430. This application Sep. 15, 1995, Ser. No. 528,855

Int. Cl.[6] H01G *4/00;4/06;4/12*

U.S. Cl. 361—321.1 **8 Claims**



1. A monolithic, buried-substrate, ceramic multiple capacitor having and containing multiple buried-substrate capacitors that themselves have and contain multiple layers of both high dielectric constant material and metallization, the ceramic multiple capacitor comprising:

a dual-dielectric-constant, three-layer-laminate, isolation layer between at least one of the multiple buried-substrate capacitors and at least one other of the multiple buried-substrate capacitors, the isolation layer serving to electrically isolate the least one of the multiple buried-substrate capacitors from the at least one other of the multiple buried-substrate capacitors, the isolation layer including

an innermost layer of a low dielectric constant material, located between

outer laminate layers of a high dielectric constant material, each outer laminate layer of high dielectric constant material bordering on a layer of high dielectric constant material within one of the buried-substrate capacitors that are electrically isolated.

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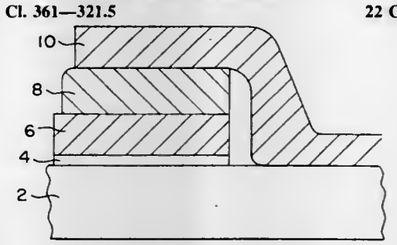
PZT THIN FILMS FOR FERROELECTRIC CAPACITOR AND METHOD FOR PREPARING THE SAME

Wan-in Lee; Jun-ki Lee; Il-sub Chung; Chi-won Chung, and In-kyung Yoo, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 28, 1995, Ser. No. 412,043

Int. Cl.[6] H01G *4/06*

U.S. Cl. 361—321.5 **22 Claims**



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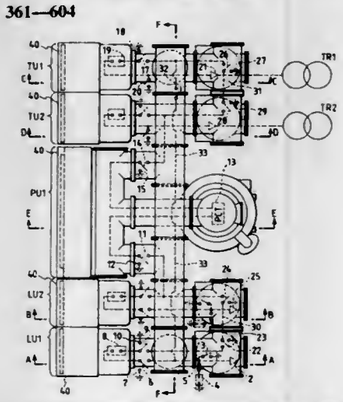
1. A ferroelectric thin film for a capacitor, comprising PZT doped with a combination of a donor element and art acceptor element in an amount of approximately 0.1 to approximately 8 mole percent of PZT.

5,625,530

GAS INSULATED SWITCHGEAR EQUIPMENT INCLUDING A BYPASS BUS AND BYPASS DISCONNECTING SWITCH

Yoshiaki Inami; Takahide Seki; Toyokazu Tanaka, and Masafumi Ooshima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 520,295
Claims priority, application Japan, Aug. 31, 1994, 6-206334
Int. Cl.[6] H02B *1/04*
U.S. Cl. 361—604 **5 Claims**



1. A gas insulated switchgear equipment having an instrument potential/current transformer unit, a plurality of power receiving units, a plurality of transformer-side units and buses connecting among said units, said units each constructed in a row of cubicles in front of said gas insulated switchgear equipment, wherein

at least two of said power receiving units are arranged on one side of said instrument potential/current transformer unit and at least two of said transformer-side units are arranged on the other side of said instrument potential/current transformer unit;

one of said at least two power receiving and one of said at least two transformer-side units being connected with a bypass bus arranged in parallel to said row of cubicles through a bypass disconnecting switch; and

the other of said at least two power receiving units and the other of said at least two transformer-side units being connected with said bypass bus through said instrument potential/current transformer unit.

5,625,531

MOTOR CONTROL CENTER PILOT DEVICES BRACKET

Valerie R. Padilla; Tomas B. R. Mendez, both of Durham; Jeremy A. Palmer, Chapel Hill, and Kevin F. Nolan, Hillsborough, all of N.C., assignors to General Electric Company, New York, N.Y.

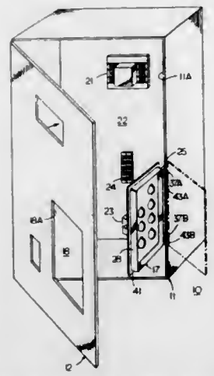
Filed Oct. 25, 1995, Ser. No. 548,031
Int. Cl.[6] H02B *1/26;1/01*
U.S. Cl. 361—623 **10 Claims**

1. A motor control center comprising:

a cabinet having an open front part containing a door;

motor control components within a first part of said cabinet;

auxiliary electrical components within a second part of said cabinet;



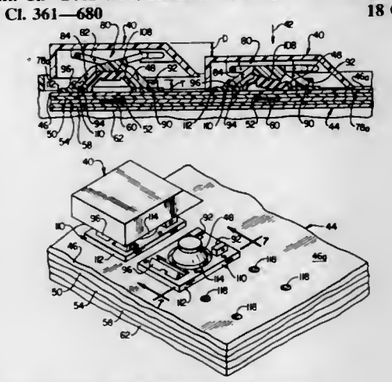
pilot components arranged on a pilot bracket in front of said auxiliary electrical components, said pilot components being arranged within a slot formed within said cabinet door, said pilot bracket comprising a plate having a plurality of thruholes for supporting said pilot components, said pilot bracket further includes a hinge extending from a first edge, said hinge being supported on a hinge support plate attached to said cabinet.

5,625,532

REDUCED HEIGHT KEYBOARD STRUCTURE FOR A NOTEBOOK COMPUTER

Charles A. Sellers, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 10, 1995, Ser. No. 541,460
Int. Cl.[6] G06F *1/16;* **H01H** *3/12;* **B41J** *11/56;* **H05K** *7/04*
U.S. Cl. 361—680 **18 Claims**



I. Computer keyboard apparatus comprising:

a key pad structure having top and bottom sides;

a series of key cap members positioned above said top side of said key pad structure and mutually spaced apart from one another in a direction parallel to said top side, each of said key cap members having a bottom side edge periphery facing said top side of said key pad structure, and an upwardly dished interior portion bounded by said bottom side edge periphery;

a spaced apart series of individual key support and guide members supported on said top side of said key pad structure in an aligned, underlying relationship with said series of key cap members, each of said key support and guide members having a base wall with a top side and further having a side edge periphery spaced inwardly of the bottom side edge periphery of its associated key cap member in a direction parallel to said top side of said key pad structure, said side edge peripheries

of said individual key support and guide members being spaced apart along, circumscribed by, and extending downwardly to top side areas of said key pad structure positioned lower than said top sides of said base walls of said individual key support and guide members;

linking means for securing each of said key cap members to its underlying key support and guide member for movement relative thereto, through a key stroke distance, between an upwardly extended position in which the key cap member is spaced upwardly apart from said top side of said key pad structure, and a downwardly retracted position in which the underlying key support and guide member is upwardly received in the interior of the key cap member with the bottom side edge periphery of the key cap member being adjacent its underlying top side area of said key pad structure and disposed lower than the top side of the base wall of the underlying key support and guide member; and

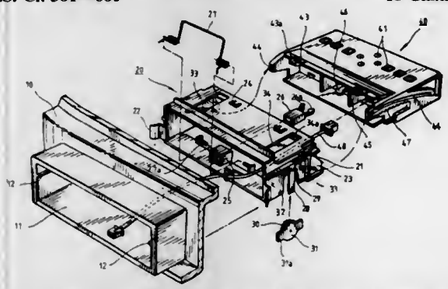
biasing means for resiliently biasing each of said key cap members toward said upwardly extended position thereof.

5,625,533

MONITOR CONTROL PANEL DRAWING APPARATUS

Young T. Kim, and Jong T. Cha, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1995, Ser. No. 489,565
Claims priority, application Rep. of Korea, Jun. 13, 1994, 94-13614; Sep. 6, 1994, 94-22878
Int. Cl.[6] G06F *1/16;* **H05K** *7/02;* **A47B** *88/16*
U.S. Cl. 361—681 **18 Claims**



1. A monitor control box drawing apparatus having a control box at the front case of a monitor, said monitor having main circuitry for effecting user generated commands from a control portion of said control box, said apparatus comprising:

a housing for said control box, said housing being secured to the monitor and including means for releasably securing said control box within said housing whereby to permit release of said control box from said housing upon application of a force;

drawing means for pulling out said control box from said housing in an exiting direction, said drawing means engaging said control box in a manner such that said control box is pulled out upon release from said housing;

means for preventing separation of said control box from said housing as said control box exits said housing by said drawing means;

guide means for guiding said control box in a downward direction as said control box is drawn in said exiting direction, said guide means including a guide protrusion provided on said housing and inserted in a complementary guide slot provided on said control box; and

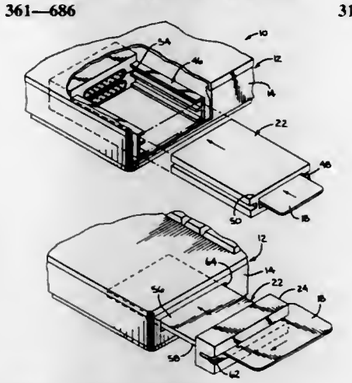
electrical signal transmission means for transmitting a signal generated from said control portion of said control box to said main circuitry located within said monitor.

5,625,534

PORTABLE COMPUTER HAVING A DATA CARD READER APPARATUS ASSOCIATED THEREWITH

Ken P. Okaya, and Bryan Howell, both of Austin, Tex., assignors to Dell Computer Corporation, Austin, Tex.

Filed May 12, 1995, Ser. No. 440,284
Int. Cl.[6] G06F *1/16;* **H05K** *5/00*
U.S. Cl. 361—686 **31 Claims**



1. A personal computer, comprising:

a main chassis having an exterior wall defining, in part, an interior portion of said personal computer, said exterior wall having a PCMCIA (Portable Computer Memory Card International Association) aperture formed therein and said interior portion containing data processing circuitry for and processing data recorded on a data card;

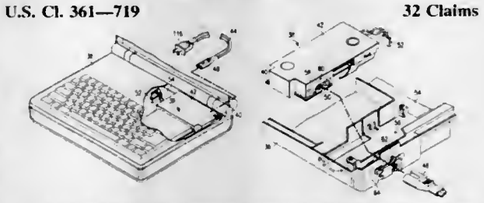
a PCMCIA structure having a first end with an opening therein configured to receive said data card therethrough and a second end having an electrical connector associated therewith for electrically connecting said PCMCIA structure to said personal computer, said PCMCIA structure receivable in said PCMCIA aperture and further having a data reader integrally formed therein, said data reader having a reading head configured to read said data card, said data reader thereby forming an integrated device for said personal computer to allow said data to be read into said data processing circuitry when received in said PCMCIA structure.

5,625,535

COMPACT CONSTRUCTION FOR PORTABLE COMPUTER POWER SUPPLY

David A. Hulsebosch, 8006 White Marsh Ct., Spring, Tex. 77379, and Richard A. Faulk, 12911 Forest Meadow, Cypress, Tex. 77429

Filed Jul. 13, 1995, Ser. No. 502,198
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—719 **32 Claims**



1. A switching power supply module for a portable personal computer (PC), comprising:

a circuit board having a plurality of power supply switching devices mounted thereon;

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a module electromagnetic shield at least partially surrounding said circuit board, said module electromagnetic shield electromagnetically shielding at least some of said plurality of power supply switching devices, said module electromagnetic shield having mounts integral therewith to allow said module electromagnetic shield to be secured within a main chassis of said portable PC;

metal-sleeved vias extending through said circuit board and substantially disposed within a footprint of selected ones of said plurality of power supply switching devices, for transferring heat from said selected ones of said plurality of power supply switching devices through said circuit board;

thermally transmissive foam, coupled between said circuit board and said module electromagnetic shield, for transferring said heat through said metal-sleeved vias to said module electromagnetic shield, said module electromagnetic shield dissipating said heat and thereby functioning as a heat sink; and

heat-conductive metallic pads coupled to said circuit board substantially within a footprint of said power supply switching devices and said thermally transmissive foam, said heat-conductive metallic pads in physical contact with said metal-sleeved vias, said heat-conductive metallic pads, metal-sleeved vias and thermally transmissive foam cooperating to form a compact structure for transferring heat from said selected ones of said plurality of power supply switching devices to thereby reduce a required volume of said power supply module.

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SEMICONDUCTOR DEVICE

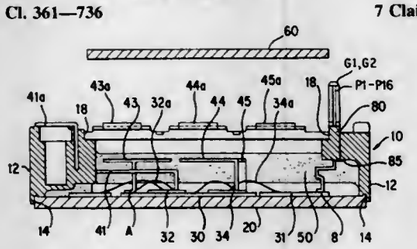
Shin Soyano, and Susumu Toba, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 4, 1995, Ser. No. 566,956

Claims priority, application Japan, Dec. 8, 1994, 6-304933

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—736 **7 Claims**



1. A semiconductor device comprising:

an insulative case frame having a frame portion, and first and second openings;

a lead pin block having a base and a plurality of lead pins with inner leads formed in the base, said lead pin block being installed inside the frame portion;

a base plate attached to the frame portion for covering the first opening;

a circuit board bonded to an inner face of the base plate and having semiconductor chips thereon connected to ends of the inner leads;

a gel resin sealant filling an inner space of the insulative case frame over the circuit board and the semiconductor chips;

an insulative cover plate placed on the insulative case frame for closing the second opening of the insulative case frame;

a sealing agent disposed between the lead pin block and the frame portion to seal a gap therebetween; and

an air vent formed in the base of the lead pin block to communicate between the inner space and atmosphere.

5,625,537

CARRIER ARRANGEMENT FOR MEDICAL APPARATUS

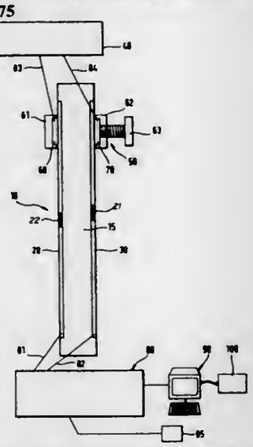
Klaus Neuder, Obertshausen, Germany, assignor to Fresenius AG, Homburg, Germany

Continuation of Ser. No. 158,074, Nov. 24, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,113

Claims priority, application Germany, Nov. 26, 1992, 42 39 625.5

Int. Cl.[6] H01R *9/16;* **H05K** *7/12;7/14*

U.S. Cl. 361—775 **11 Claims**



1. Medical device carrier arrangement for mechanically supporting medical devices comprising:

a longitudinal carrier having at least two bus contact rails electrically insulated from each other, said bus contact rails extending along an entire length of said carrier;

at least one medical device;

coupling means for releasably connecting said medical device to any location along the entire length of said bus contact rails of said longitudinal carrier, for supplying power to the medical device and for transmitting data to and from said medical device; and

a voltage and data transfer unit, connected to the bus contract rails and to at least one computer system and power supply, to supply all said at least one medical device with individual data and power supply along said bus contact rails.

5,625,538

HIGH POWER FACTOR POWER-SUPPLY SYSTEM

Youngsik Lee, Anyang, and Kyungha Jee, Bucheon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 13, 1994, Ser. No. 227,353

Claims priority, application Rep. of Korea, Apr. 13, 1993, 93-6147

Int. Cl.[6] H02M *5/458*

U.S. Cl. 363—15 **22 Claims**

1. A high power factor power supply system comprising:

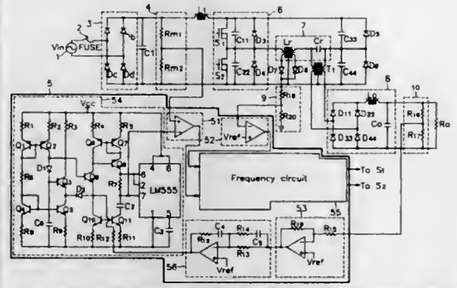
a full wave rectifying means for rectifying an alternating current signal;

a voltage dividing means for receiving the rectified signal from said full wave rectifying means and dividing the rectified signal;

an inductor connected to said full wave rectifying means;

switching means controlled by a switching controlling signal for controlling current flowing in said inductor;

a resonant circuit portion formed of a resonant circuit inductor and a resonant circuit capacitor and connected to said switching means;



an output circuit for receiving a signal from said resonant circuit portion, rectifying and then transmitting said signal to a load; and

a controlling circuit means for providing said switching controlling signal to said switching means, said controlling circuit means including:

a saw tooth wave signal generator which produces a saw tooth wave signal,

comparing means for comparing an output of said voltage dividing means with said saw tooth wave signal to obtain a series of switching pulses, and

a frequency divider for generating a switching controlling signal having a zero area to turn off said switching means during each of said switching pulses.

5,625,539

METHOD AND APPARATUS FOR CONTROLLING A DC TO AC INVERTER SYSTEM BY A PLURALITY OF PULSE-WIDTH MODULATED PULSE TRAINS

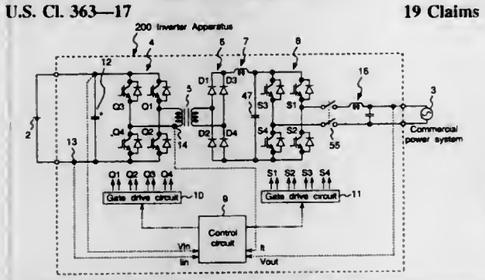
Hirofumi Nakata, Nara-ken; Hirokazu Kodama, Gose; Tsukasa Takebayashi, Yamatotakada; Satoru Fujii, Nara-ken, and Kozo Hiyoshi, Amagasaki, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 10, 1995, Ser. No. 438,551

Claims priority, application Japan, May 30, 1994, 6-116309; Jul. 4, 1994, 6-151996

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—17 **19 Claims**



1. A method for controlling an inverter apparatus which converts DC power generated by a DC power supply into AC power and then supplies the AC power to loads or an existing commercial power supply, the method comprising steps of:

alternately inverting positive/negative polarity of a pulse train pulse-width modulated by PWM (Pulse Width Modulation) control using a sine-wave signal of a first frequency and a carrier signal of a second frequency;

wherein said PWM control includes the steps of,

generating a first pulse train signal by comparing the sine-wave signal and the carrier signal with each other and by outputting a first level when the sine-wave signal is greater than the carrier signal;

outputting a second level when the sine-wave signal is less than the carrier signal;

generating a second pulse train signal by inverting the first pulse train signal;

generating a third pulse train signal by comparing an inverted carrier signal, which is an inversion of the carrier signal, and the sine-wave signal with each other and outputting the first level when the inverted carrier signal is greater than the sine-wave signal, or outputting the second level when the inverted carrier signal is smaller than the sine-wave signal;

generating a fourth pulse train signal by inverting the third pulse train signal;

generating a rectangular-wave signal equal in frequency to said second frequency of the carrier signal and shifted in phase by a ¼ period of the carrier signal;

generating four separate pulse train signals by exclusive-ORing the rectangular-wave signal with each of the first to fourth pulse train signals;

generating an AC signal also equal in frequency to that of the carrier signal by inputting the four pulse train signals to four switching devices of an inverter bridge and by performing on-off control on the switching devices, and

exciting a primary side of a transformer, insulating a DC power input from an AC power output, with said AC signal.

5,625,540

ELECTRONIC SWITCHED-MODE POWER SUPPLY

Günther Bergk, Niedernhausen, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

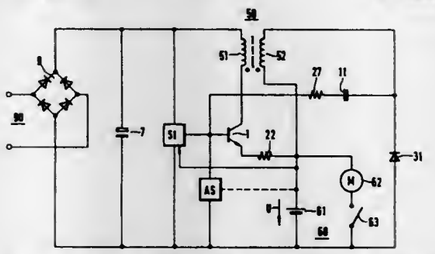
PCT No. PCT/DE93/00169, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO93/21679, PCT Pub. Date Oct. 28, 1993

PCT Filed Feb. 17, 1993, Ser. No. 307,816

Claims priority, application Germany, Apr. 10, 1992, 42 12 041.1

Int. Cl.[6] H02J *7/10*

U.S. Cl. 363—21 **11 Claims**



1. An electronic switched-mode power supply for supplying current from an input voltage source to an accumulator and to an electrical load adapted to be switched on, the power supply comprising:

a self-oscillating flyback converter having:

a first transistor with a base and a collector-emitter circuit;

a first diode;

a resistor;

a feedback circuit;

a control circuit;

a transformer having:

a primary winding connected in a series arrangement with the collector-emitter circuit of the first transistor, the resistor and the accumulator, the series arrangement connected in parallel with the input voltage source,

a secondary winding connected in series with the accumulator and the first diode, the base of the first transistor connected to the secondary winding through the feedback circuit, in addition to being coupled to the control circuit which inhibits conduction of the first transistor when a voltage at the accumulator has reached a predetermined upper turn-off value, and enables the first transistor to conduct after the

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voltage at the accumulator has dropped below said upper turn-off value or a predetermined lower turn-on value;

an interrupting device which turns the first transistor off for a prolonged period to discontinue flow of trickle charging current to said accumulator when, with the switched-mode power supply in a pulsating mode, the ratio of oscillation off-time to the duration of oscillation bursts exceeds a predetermined magnitude.

5,625,541

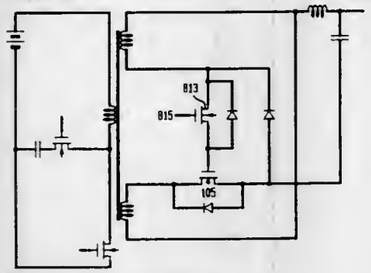
LOW LOSS SYNCHRONOUS RECTIFIER FOR APPLICATION TO CLAMPED-MODE POWER CONVERTERS

Allen F. Rozman, Richardson, Tex., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 225,027, Apr. 8, 1994, Pat. No. 5,528,482, which is a continuation-in-part of Ser. No. 54,918, Apr. 29, 1993, Pat. No. 5,303,138. This application Jul. 18, 1995, Ser. No. 503,684

Int. Cl.[6] H02M *7/217;3/335*

U.S. Cl. 363—21 **22 Claims**



1. A power converter, comprising:

an input for accepting a DC voltage;

an integrated magnetic device having a primary winding and a secondary winding;

a power switch for periodically connecting the input to the primary winding;

an output for accepting a load to be energized;

a clamping circuit for limiting a voltage across the secondary winding during a first interval of a cyclic period of the power converter; and

a rectifier circuit connecting the secondary winding to the output, the rectifier circuit, comprising:

a synchronous rectification device with a control terminal connected to be responsive to a signal across the secondary winding such that the synchronous rectification device conducts a load current during the first interval; and

a diode connected for enabling conduction of the load current during a second interval other than the first interval.

5,625,542

LOW-NOISE OPERATION OF A MACHINE FED BY A PULSE INVERTER

Herbert Stemmler, Kirchdorf, and Thomas Eilinger, Winterthur, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed May 24, 1995, Ser. No. 449,306

Claims priority, application European Pat. Off., Jun. 3, 1994, 94108512

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—41 **13 Claims**

1. An apparatus for the low-noise operation of an electrical machine connected to receive electrical power from a pulse inverter comprising:

an inverter having an input for connection to a direct current power source to receive direct current power, an output for connection to an electrical machine and switchable means, said switchable means being responsive to a plurality of switching pulses for generating output voltages from the direct current power at said output to power an electrical machine connected to said output;

a source of a carrier signal having a frequency F;

a source of modulation signals having a frequency f_1;

a source of a control signal; and

a modulator having a plurality of inputs each associated with one of said switchable means, a connection to said control signal source and a plurality of outputs each connected to an associated one of said switchable means, each said input being connected to said carrier signal source and said modulation signals source, said modulator being responsive to said modulation signals and said carrier signal for generating said switching pulses whereby said control signal reduces harmonic frequency components in and fans out a frequency spectrum of said output voltages by one of pulse frequency modulation of said carrier signal and space vector modulation of said modulation signals.

5,625,543

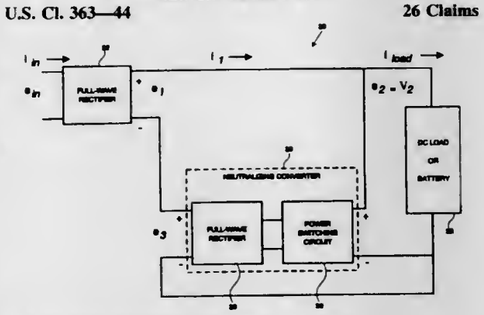
POWER CONVERTER WITH HARMONIC NEUTRALIZATION

Alfred H. Barrett, Carmel, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Oct. 4, 1994, Ser. No. 317,504

Int. Cl.[6] H02M *5/458*

U.S. Cl. 363—44 **26 Claims**



1. An AC to DC power converter comprising:

a first rectifier having an input to receive AC input power and having an output with an output voltage thereon;

load output terminals for delivering DC power to a load; and

a harmonic neutralizing converter comprising a power switching inverter having an input connected to the output of said first rectifier, said inverter including an LC resonant circuit and an output, said LC resonant circuit comprising a capacitor and an inductor connected in series,

said harmonic neutralizing converter further comprising a second rectifier having an input connected to the output of said inverter through a transformer and having an output with an output voltage thereon connected in a voltage additive relationship to the output of said first rectifier, the outputs of said first and second rectifiers forming added outputs, said added outputs connected to said load terminals whereby an output voltage on the load terminals substantially equals added output voltages of said first and second rectifiers.

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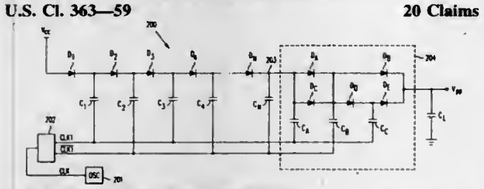
CHARGE PUMP

Vikram Kowshik, Fremont, and Andy Teng-Feng Yu, Palo Alto, both of Calif., assignors to Programmable Microelectronics Corp., San Jose, Calif.

Filed Apr. 25, 1996, Ser. No. 639,280

Int. Cl.[6] H02M *3/18;7/00*

U.S. Cl. 363—59 **20 Claims**



1. A charge pump circuit comprising:

a clock control circuit for providing a clock signal and an inverted clock signal, said inverted clock signal being approximately 180 degrees out-of-phase with respect to said clock signal;

a plurality of diode-capacitor voltage multipliers connected in a chain, wherein alternate ones of said voltage multipliers are coupled to said respective clock and inverted clock signals; and

an output stage for providing to an output terminal of said charge pump circuit current during both low and high transitions of said clock signal.

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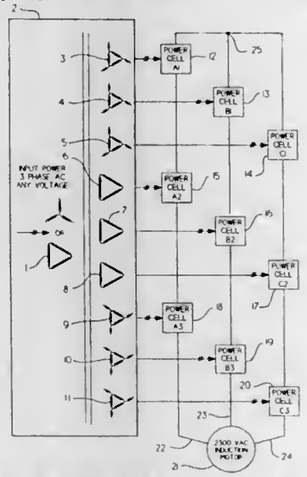
MEDIUM VOLTAGE PWM DRIVE AND METHOD

Peter W. Hammond, Greensburg, Pa., assignor to Halmar Robicon Group, New Kensington, Pa.

Filed Mar. 1, 1994, Ser. No. 203,803

Int. Cl.[6] H02M *7/515*

U.S. Cl. 363—71 **48 Claims**



1. An electric drive for use with a multi-phase AC load comprising:

(a) a multi-phase power transformer, said power transformer having at least one primary winding circuit and a plurality of secondary winding circuits, said primary winding circuit being electrically connectable to a source of multi-phase AC power;

(b) a plurality of power cells, each of said plurality of power cells having an Input connected with a respective one of said plurality of secondary winding circuits, each of said plurality of power cells having a single-phase controllable output to such multi-phase AC load, and said plurality of power cells being serially connected with respective others of said power cells in each phase output line to such multi-phase AC load;

(c) modulation control means connected to respective ones of said plurality of power cells, so that the output of said respective ones of said plurality of power cells is controlled;

(d) said plurality of power cells each having a rectifier electrically connected to a respective one of said plurality of secondary winding circuits and having an electrical output;

(e) said plurality of power cells includes a pre-selected number of power cells in series in each phase output line and said plurality of secondary winding circuits are spaced apart in electrical phase by a number of degrees equal to 60 divided by said pre-selected number thereby reducing harmonics in lines to said source; and

(f) said modulation control means further having means for selectively controlling a switching event of each of said plurality of power cells so that said switching event of respective one of said plurality of power cells in each phase output line is spaced in time from said switching event of respective others of said plurality of power cells in the respective phase output line thereby reducing harmonic components in such output lines to such load.

5,625,546

METHOD AND APPARATUS FOR THE VARIABLE ALLOCATION OF STATIC INVERTERS TO AT LEAST ONE LOAD

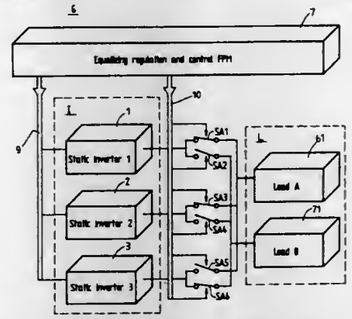
Christian Schaal, Dietlikon, Switzerland, assignor to Inventio AG, Hergiswil NW, Switzerland

Filed Sep. 13, 1995, Ser. No. 527,451

Claims priority, application Switzerland, Sep. 21, 1994, 02880/94

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—71 **15 Claims**



1. A method of allocating at least one static inverter to at least one load comprising the steps of:

a. connecting a plurality of static inverters to a load to be supplied with electrical current by the static inverters, each of the static inverters having a maximum current capability, setting a maximum current value for the load limited by a total of the maximum current capabilities of all the static inverters connected to the load and setting a target current value for the load no greater than the maximum current value;

b. setting a current share value for each of the static inverters connected to the load, each current share value limited by the maximum current capability of an associated one of the static inverters;

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c. comparing the target current value with an actual total current value for current supplied to the load by the static inverters connected to the load to obtain a total current difference;
d. regulating a drive for the static inverters connected to the load to reduce the total current difference to zero;
e. comparing the current share value for each static inverter connected to the load with an actual inverter current value for that static inverter to obtain an associated inverter current difference for each static inverter connected to the load; and
f. regulating each of the static inverters connected to the load separately to reduce the associated inverter current difference to zero.

5,625,547

Patent Not Issued For This Number

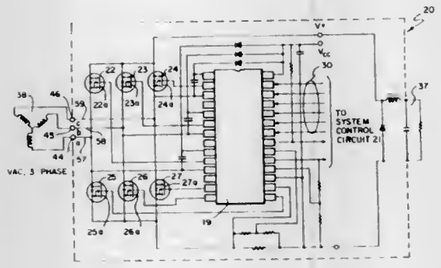
5,625,548

CONTROL CIRCUIT FOR CRYOGENICALLY-COOLED POWER ELECTRONICS EMPLOYED IN POWER CONVERSION SYSTEMS

Calman Gold, Londonderry, N.H.; Otward Mueller, Ballston Lake, N.Y., and Ellery F. Schempp, Medford, Mass., assignors to American Superconductor Corporation, Westborough, Mass.

Filed Aug. 10, 1994, Ser. No. 288,086
Int. Cl.[6] H02J *15/00*
U.S. Cl. 363—98 **15 Claims**

1. A power generation system comprising:
power generators, each generating alternating current input signals having a naturally occurring, fluctuating frequency characteristic.



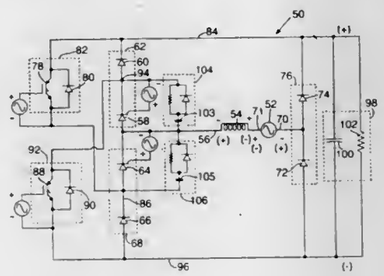
power conversion circuitry for converting the alternating current input signals into a direct current output signal, said power conversion circuitry including rectifier circuits, each rectifier circuit converting the alternating current input signals into direct current signals;
a combiner circuit for summing the direct current signals from each of said rectifiers to provide a total direct current signal; and
a superconducting energy storage device coupled to an output of said combiner circuit; and
a cryogenic cooling system for cooling said power conversion circuitry.

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BOOST-BUCK RECTIFIER BRIDGE CIRCUIT TOPOLOGY WITH DIODE DECOUPLED BOOST STAGE

Ivan Horvat, Marlboro, Mass., assignor to Kaman Electronics Corporation, Hudson, Mass., and Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Sep. 23, 1994, Ser. No. 310,946
Int. Cl.[6] H02M *7/525*
U.S. Cl. 363—132 **7 Claims**



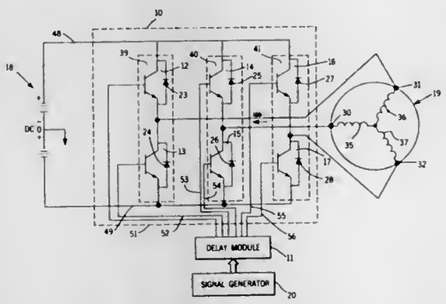
1. A boost-buck circuit, comprising:
means defining a source of alternating voltage and having an intrinsic inductance and forming a center leg of an H-shaped bridge;
means defining a positive polarity DC voltage bus;
means defining a negative polarity DC voltage bus;
means defining a first arm of said H-shaped bridge and comprising a first SCR having its anode connected to a first end of said center leg, a first bridge diode in series with said first SCR and having its anode connected to the cathode of said first SCR and having its cathode connected to said positive polarity DC voltage bus;
means defining a second arm of said H-shaped bridge and comprising a second SCR having its cathode connected to said first end of said center leg, a second bridge diode in series with said second SCR and having its cathode connected to the anode of said second SCR and having its anode connected to said negative polarity DC voltage bus;
means defining a third arm of said H-shaped bridge and comprising a third bridge diode having its anode connected to a second end of said center leg and having its cathode connected to said positive polarity DC voltage bus;
means defining a fourth arm of said H-shaped bridge and comprising a fourth bridge diode having its cathode connected to said second end of said center leg and having its anode connected to said negative polarity DC voltage bus;
a first boost stage switching device means coupled between the junction of said series connected first SCR and first bridge diode and said negative polarity DC voltage bus for generating boost current pulses during positive half cycles of said alternating voltage source means;
a second boost stage switching device means coupled between the junction of said series connected second SCR and said second bridge diode and said positive polarity DC voltage bus for generating boost current pulses during negative half cycles of said alternating voltage source means;
whereby said first boost stage switching device means is decoupled from said positive polarity DC voltage bus by said first bridge diode and said second boost stage switching device means is decoupled from said negative polarity DC voltage bus by said second bridge diode.

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APPARATUS USED WITH AC MOTORS FOR COMPENSATING FOR TURN ON DELAY ERRORS

David Leggate, New Berlin, and Russel J. Kerkman, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 27, 1994, Ser. No. 313,633
Int. Cl.[6] H02P *5/40*
U.S. Cl. 363—132 **24 Claims**



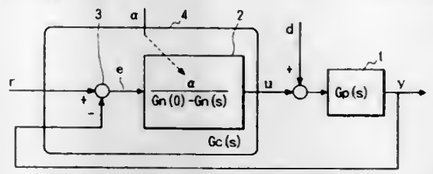
1. A method for providing an alternating current at a power lead for driving an AC induction motor, the method comprising the steps of:
a) switching the power lead at periodic switching times among a positive DC voltage and a negative DC voltage to produce the alternating current wherein the power lead is in a transition state just prior to each switching time;
b) controlling the switching times so that:
(i) if the alternating current is positive and the power lead is connected to the negative DC voltage, altering subsequent switching times including the next two switching times so that the power lead is connected to the positive DC voltage at an earlier point in time and the power lead is disconnected from the negative DC voltage at an earlier point in time; and
(ii) if the alternating current is negative and the power lead is connected to the negative DC voltage, changing subsequent switching times including the following two switching times so that the power lead is connected to the negative DC voltage at an earlier point in time and the power lead is disconnected from the positive DC voltage at an earlier point in time, wherein the following two switching times are the two switching times after the next two switching times.

5,625,551

FEEDBACK CONTROLLER

Reiji Mitarai, Hachioji; Hiroaki Takeishi, Yokohama, and Isao Iwai, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,956
Claims priority, application Japan, Dec. 28, 1993, 5-337246
Int. Cl.[6] G05B *13/04*
U.S. Cl. 364—149 **5 Claims**



1. A feedback controller which receives a target value r and a controlled variable y and supplies a manipulated variable u as a calculation output to a control object which has at least one input u as a manipulated variable and at least one output y as a controlled variable, and which has a transfer function $G_n(s)$, such as $y=G_n(s)u$, comprising:
(a) a compensator $G_c(s)$ whose calculation arrangement is given by the following formula:

$$u=G_c(s)(r-y)$$

where

$$G_c(s)=\alpha/(G_n(0)-G_n(s))$$

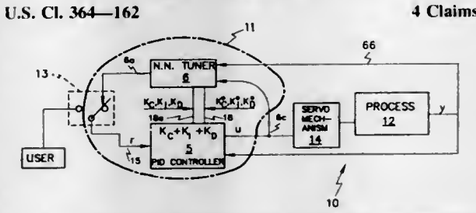
using a nominal model $G_n(s)$ as an approximate characteristic of the control object. $G_n(0)$ corresponding to predetermined value and an arbitrary parameter α, said compensator performing a compensation of a comparison deviation (e=r−y) between the target value r and the controlled variable y; and
means responsive to the calculated manipulated variable for controlling the control object.

5,625,552

CLOSED LOOP NEURAL NETWORK AUTOMATIC TUNER

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Continuation of Ser. No. 227,227, Apr. 13, 1994, abandoned, which is a continuation of Ser. No. 809,903, Dec. 18, 1991, abandoned. This application Jul. 13, 1995, Ser. No. 502,016
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—162 **4 Claims**



1. A neural network automatic tuner for tuning a PID controller which in turn controls a system in a closed loop control system configuration, comprising:
a neural network autotuner, wherein said neural network autotuner receives a y output, representing an existing value of

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output of a system under control, and produces a tuner output to the PID controller of optimized PID controller parameters made up of a combination of a set of parameters including K_I, K_D and K_C, wherein said set of parameters are consistent with a PID controller-based process model selected from a set of process models similar to the system under control and are also consistent with a predefined optimization criteria, or are consistent with a combination of the set of process models and the predefined optimization criteria, and wherein said PID controller parameters are applied to said PID controller to generate a new near-optimal controller output u and a new near-optimal system output y of the system, and wherein in order to initiate tuning of the set of parameters by the neural network autotuner said neural network autotuner provides a setpoint change output which adjusts a setpoint input to the system operating in closed loop configuration.

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MACHINE TRANSLATION SYSTEM GENERATING A DEFAULT TRANSLATION

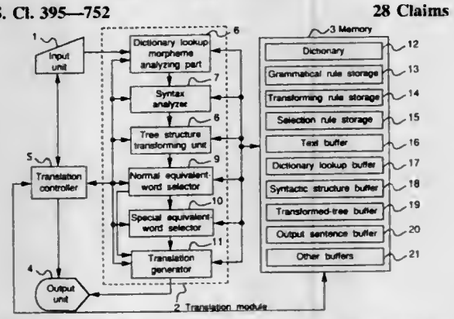
Takeshi Kutsumi, Yamatokooriyama; Chinami Hino, Sakai; Ichiko Sata, Nara, and Yoji Fukumochi, Kobe, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1994, Ser. No. 261,094

Claims priority, application Japan, Jun. 17, 1993, 5-146041

Int. Cl.[6] G06F *17/28;17/27*

U.S. Cl. 395—752 **28 Claims**



23. A machine translation system for generating a translation in a target language of an input text in a source language based on information stored in a dictionary, comprising:

morphological analyzer means for separating the input text into words;

structure analyzer for obtaining a syntactic structure representing relations among the words of the input text and for obtaining a case structure based on the syntactic structure;

semantic analyzer means for searching the dictionary for matching pieces of semantic information imparted to first and second words included in the input text having a dependency relation in the syntactic structure and the case structure;

an equivalent word selector for selecting, as optimum equivalent words in the target language for the first and second words, equivalent words that are stored in an equivalent word storage area of the dictionary in correspondence with the matching pieces of semantic information,

a default equivalent word being stored in said equivalent word storage area of the dictionary as part of the equivalent words of each word, the default equivalent word being a passable, generic equivalent word,

the dictionary having a further area for storing information indicating whether each equivalent word of each word is a default equivalent word or not; and

a default equivalent word selector for searching the further area of the dictionary and selecting the default equivalent word of the first word as the optimum equivalent word of the first word when said semantic analysis means finds no pieces of semantic information imparted to the first word that match a piece of semantic information imparted to the second word.

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FINITE-STATE TRANSDUCTION OF RELATED WORD FORMS FOR TEXT INDEXING AND RETRIEVAL

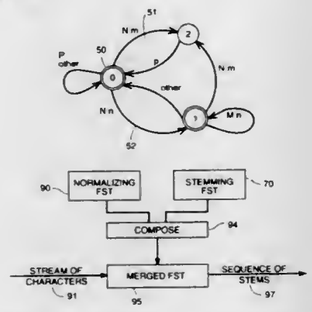
Douglass R. Cutting, Menlo Park; Per-Kristian G. Halvorsen, Los Altos; Ronald M. Kaplan, Palo Alto; Lauri Karttunen, Redwood City; Martin Kay, Menlo Park, and Jan O. Pedersen, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 20, 1992, Ser. No. 916,576

The portion of the term of this patent subsequent to May 2, 2012, has been disclaimed.

Int. Cl.[6] G06F *17/30*

U.S. Cl. 364—611 **24 Claims**



1. A computerized information retrieval or text indexing device, comprising:

(a) a database stored on a computer readable medium, said database comprising a data structure for representing stem-variant relations of a language, said data structure comprising a finite state transducer (FST) encoding along a plurality of branches sets of ordered-pairs of upper and lower strings wherein the upper string of each pair is a valid word stem and the lower string of each pair is a valid word variant, said data structure being constructed such that traversing a branch of the FST via the upper string of a pair will enable retrieval of the lower string of the pair, or traversing a branch of the FST via the lower string of a pair will enable retrieval of the upper string of the pair,

(b) processing means connected to the computer readable medium, in response to a user query inputting a word incorporating a stem or a variant, for traversing the data structure FST searching for a complete path through an FST branch having a lower string matching the query word, said processing means further comprising means in response to finding a complete path through a branch for outputting the upper string stem represented by that branch and corresponding to the query word or an identification of a document containing the same, or for outputting another word variant represented by that branch and having the same stem as the query word or an identification of a document containing the same.

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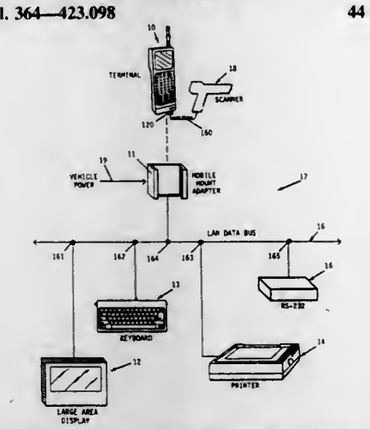
DATA COMMUNICATION SYSTEM WITH ADAPTER FOR REMOVABLE COUPLING OF PORTABLE DATA TERMINALS

Patrick H. Davis, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 25,308, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 305,302, Jan. 31, 1989, abandoned, and a continuation-in-part of Ser. No. 948,034, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 347,602, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 327,660, May 23, 1989, abandoned. This application Apr. 14, 1995, Ser. No. 423,385

Int. Cl.[6] G06F *13/00*

U.S. Cl. 364—423.098 **44 Claims**



1. A vehicle data system for a user manned transport vehicle, said vehicle data system comprising:

a) vehicle electric power means for supplying electric power for effecting data transmission during mobile use of such transport vehicle;

b) vehicle network means powered at least in part by said vehicle electric power means for conveying data in such transport vehicle;

c) portable data device means for data collection operation, said portable data device means having first and second ends, a first longitudinal axis intersecting and defining a first dimension between said first and second ends, an exterior surface, and first fixed contact means mounted on said exterior surface at said first end;

d) mobile mount adapter means defining a receptacle having an open top through which said portable data device means enters and exits said receptacle, a closed bottom, a second longitudinal axis intersecting and defining a second dimension between said open top and said closed bottom;

e) said receptacle having connection means coupled with said vehicle network means and arranged to removably receive said portable data device means in a connected position wherein data is interchanged via the vehicle network means and said first and second longitudinal axes are disposed in a parallel relationship with each other, said connection means comprises second contact means mounted on said closed bottom to engage said first contact means when said portable data device means is disposed within said receptacle in said connected position;

f) said mobile mount adapter means securely and frictionally retaining said portable data device means in said connected position during mobile use of the user manned transport vehicle and providing for quick removal of said portable data device means from said connected position for portable use;

g) said portable data device means having a frontal side with user interface means thereat for use in a generally upright orientation, said frontal side having lateral margins at respective lateral boundaries of said user interface means which lateral margins are covered without obstructing said user interface means when said portable data device means is disposed in said connected position;

h) said receptacle having a slotted frontal wall means for defining a frontal opening which renders accessible to the user a portion of said user interface means adjacent said second end when said portable data device means is disposed in said receptacle in said connected position; and

i) said first dimension being greater than said second dimension whereby when said portable data device means is disposed within said receptacle in said connected position, an exposed portion of said portable data device means is unobstructed by said mobile mount adapter means to facilitate the user to grasp said exposed portion and to quickly remove said portable data device means from said connected position in said receptacle along a path parallel to said second longitudinal axis.

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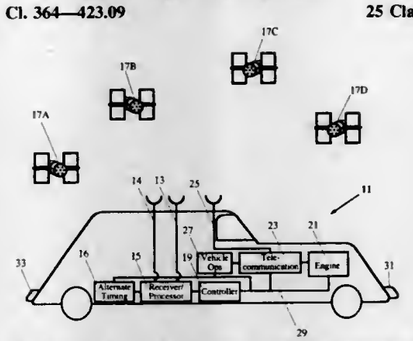
ACCURATE TIME STANDARD FOR VEHICLE OPERATION

James M. Janky, Los Altos, and John F. Schipper, Palo Alto, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Apr. 28, 1995, Ser. No. 430,495

Int. Cl.[6] G04C *11/00;* **G01S** *1/24*

U.S. Cl. 364—423.09 **25 Claims**



1. Apparatus for providing timing signals for operation of a vehicle, the apparatus comprising:

a Satellite Positioning System (SATPS) signal antenna and SATPS signal receiver/processor, connected together and positioned on a vehicle, to receive and process SATPS signals from at least three SATPS satellites and to determine and issue a first sequence of timing pulse signals and a second sequence of pulse time signals, where each pulse time signal in the second sequence indicates the time at which a timing pulse signal in the first sequence is issued;

timing pulse modification means for receiving the first sequence of timing pulse signals and the second sequence of pulse time signals and for generating and issuing a third sequence of timing pulse signals, where any two consecutive timing pulse signals in the third sequence are spaced apart by a time interval Δt_3 that is approximately equal to a selected time difference Δt_{incr}; and

timing pulse distribution means for receiving the third sequence of timing pulse signals and for delivering these signals to a timing-controlled instrument that is positioned on the vehicle, where the timing-controlled instrument is drawn from the class of such instruments consisting of: an engine to provide motional power for the vehicle; a telecommunications instrument to transmit a telecommunications signal from the vehicle to a telecommunications instrument that is spaced apart from the vehicle; a telecommunications instrument to receive a telecommunications signal at the vehicle from a telecommunications instrument that is spaced apart from the vehicle; a computer microprocessor that is positioned on and can be used on the vehicle; a computer clock that provides timing

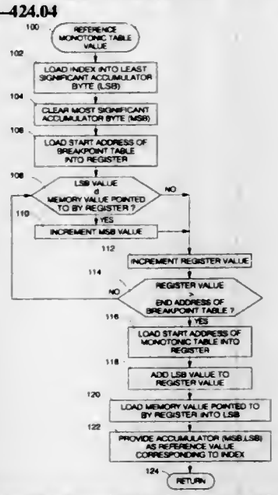
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signals for a computer that is positioned on the vehicle; a visually perceptible or audibly perceptible clock that is positioned on the vehicle.

5,625,557
AUTOMOTIVE CONTROLLER MEMORY ALLOCATION

Mark P. Colosky, Vassar, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 28, 1995, Ser. No. 431,924
Int. Cl.[6] G06F *7/70*
U.S. Cl. 364—424.04 **10 Claims**



1. An apparatus for retrieving a reference value from a plurality of stored, indexed reference values in a memory device, wherein a series of breakpoints are stored in the memory device identifying a number of standard magnitude reduction required to store each of the plurality of reference values into a predetermined storage unit in the memory device, comprising:

means for providing an index for identifying a reference value to be retrieved from the plurality of reference values;

means for retrieving the reference value identified by the provided index;

means for determining the stored breakpoints for the retrieved reference value to identify the number of stored magnitude reductions required to store the retrieved reference value into a predetermined storage unit in the memory device;

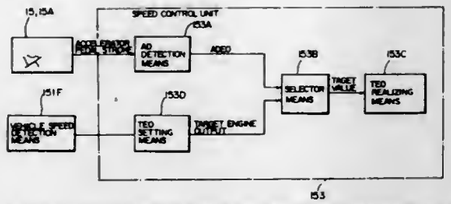
means for restoring the magnitude of the retrieved reference value by the identified number of standard magnitude reductions to provide the reference value from the plurality corresponding to the provided index.

5,625,558
DRIVE-BY-WIRE VEHICLE ENGINE OUTPUT CONTROL SYSTEM

Kazuhide Togai, Takatsuki; Yoshiaki Danno; Masato Yoshida, both of Kyoto; Makoto Shimada, Okazaki, and Katsunori Ueda, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 800,837, Nov. 29, 1991, abandoned.
This application Sep. 27, 1994, Ser. No. 313,390
Claims priority, application Japan, Nov. 29, 1990, 2-331942
Int. Cl.[6] B60K *31/00*
U.S. Cl. 364—426.041 **35 Claims**

1. A drive-by-wire vehicle engine output control system for controlling an output of an engine in accordance with a degree of depression of an accelerator pedal by a driver and a mode of operation of a vehicle, comprising:



a vehicle speed detection means for detecting a running speed of the vehicle;

Engine output adjusting means for adjusting the output of the engine;

target engine output setting means for setting, based on the running speed detected by said vehicle speed detection means, a first target value of engine output torque as a target being required to maintain the running speed of the vehicle at a predetermined speed irrespective of depression of said accelerator pedal;

acceleration demand engine output setting means for setting a second target value of engine output torque as an acceleration demand engine output torque, said second target value being required to accelerate the vehicle in accordance with the degree of depression of the accelerator pedal when the accelerator pedal is depressed;

selector means for comparing the target engine output torque set by said target engine output setting means with the acceleration demand engine output torque set by said acceleration demand engine output setting means obtain a greater engine output torque therefrom, and selecting said greater engine output torque as a target engine output torque;

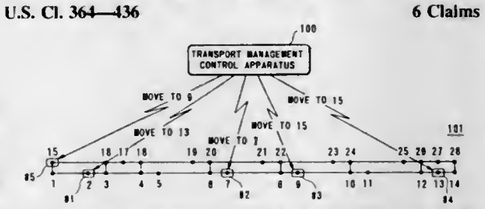
target control quantity setting means for setting a target control quantity for said engine output adjusting means, said target control quantity being required to bring the output torque of the engine close to the target engine output torque selected by said selector means; and

control means for controlling said engine output adjusting means in accordance with the target control quantity set by said target quantity setting means.

5,625,559
TRANSPORT MANAGEMENT CONTROL APPARATUS AND METHOD FOR UNMANNED VEHICLE SYSTEM

Takami Egawa, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 220,541, Mar. 30, 1994, abandoned.
This application Jun. 22, 1995, Ser. No. 493,783
Claims priority, application Japan, Apr. 2, 1993, 5-077244; Dec. 10, 1993, 5-310931; Dec. 10, 1993, 5-310932
Int. Cl.[6] B62D *6/04*
U.S. Cl. 364—436 **6 Claims**



1. A transport management control apparatus which controls the transport of a plurality of unmanned vehicles traveling along travel routes formed by a plurality of connecting routes which connect nodes constituted by stopping positions of vehicles, said transport management control apparatus comprising:

route search means which searches for an optimal travel route which connects a present node to a target node having minimum cost for each unmanned vehicle by calculating costs of travel for possible transport intervals connecting said present node and said target node based on the positions of said nodes and the connections between said nodes; and

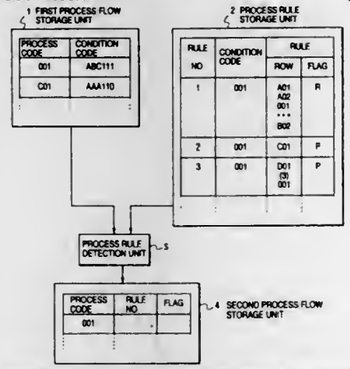
route arrangement means which, based on the results obtained by said route search means, for each unmanned vehicle, searches for opposite direction intervals which include the travel routes having mutually opposite directions from among said plurality of optimal travel routes, calculates the integral costs for each unmanned vehicle by totaling the costs of the opposite direction intervals of the travel routes of each unmanned vehicle, and then restricts the moving direction of the opposite direction intervals of the travel routes of the unmanned vehicles having the highest integral cost, making said intervals unidirectional;

wherein said route search means and said route arrangement means decide the optimal travel routes without conflicts for the unmanned vehicles by repeating the action of excluding said opposite direction intervals through the ordering of the integral costs of the opposite direction intervals until all of said opposite direction intervals are eliminated.

5,625,560
PRODUCTION CONTROL INFORMATION PROCESSING DEVICE

Ichiro Kikuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 361,216
Claims priority, application Japan, Dec. 24, 1993, 5-327059
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.09 **5 Claims**



1. A production control information processing device, comprising:

first process flow storage means for storing process codes and condition codes of a plurality of processes for a lot in a processing order;

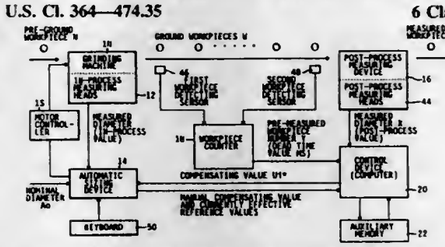
process rule storage means for storing at least one of three types of process rules, including a first process rule representative of a row of processes which must exist before and after each process stored in said first process flow storage means, a second process rule representative of a row of processes which must not exist before and after said process, and a third process rule representative of a row of processes which are allowed to exist before and after said process and require an operator's judgment; and

process rule detection means for retrieving said process rules from said process rule storage means, comparing each process code in a row of (1+N+M) processes {where N and M show the number of the process existing before and after a J th (j=1, 2, . . .) process stored in said first process flow storage means, respectively} in the process rule for the J th process, with (J–N) , (J–N+1) , (J–N+2) , . . . , (J–1) , J, (J+1) , . . . , (J+M–2), (J+M–1), (J+M) th process code in said first process flow storage means respectively to detect whether both process codes agree with each other.

5,625,561
APPARATUS AND METHOD FOR FEEDBACK ADJUSTING MACHINE WORKING CONDITION FOR IMPROVING DIMENSIONAL ACCURACY OF PROCESSED WORKPIECES

Chisato Kato, and Yoshihiko Yamakawa, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Toyotsu Engineering & Manufacturing Co., Ltd., both of Japan

Filed Jan. 27, 1995, Ser. No. 379,950
Claims priority, application Japan, Jan. 31, 1994, 6-009924
Int. Cl.[6] G06F *19/00*; G06G *7/64;7/66*
U.S. Cl. 364—474.35 **6 Claims**



1. A feedback compensating apparatus for a working system including (a) a working machine for performing successive working operations on a plurality of workpieces, (b) machine control means for determining a working condition of the working machine on the basis of an extraneous compensating signal and controlling the working machine according to the determined working condition, and (c) a measuring device for measuring dimensional values of the workpieces processed by the working machine, said measuring device being positioned relative to said working machine such that there exist pre-measured workpieces which have been processed by the machine and which have not been measured by the measuring device, said feedback compensating apparatus including compensating value determining means for determining an automatic compensating value as said extraneous compensating signal for the workpieces to be processed next, on the basis of a plurality of said dimensional values which have been measured by said measuring device and stored in memory means, and compensating value applying means for applying the determined automatic compensating value to said machine control means, wherein an improvement comprises:

said compensating value determining means being operable in an automatic compensation mode in which each automatic compensating cycle begins with commencement of the storing in said memory means of said dimensional values of the workpieces measured by said measuring device and ends with determination of a present automatic compensating value (Ui), and in a manual compensation mode in which a manual compensating value (U') is determined also as said extraneous compensating signal in response to and on the basis of a manual compensation command entered by an operator of said working system;

said compensating value determining means includes a first and a second operating state which are selectable in said automatic compensation mode, said compensating value determining means operating in said first operating state to determine said present automatic compensating value (Ui) on the basis of a plurality of first estimated dimensional values of the workpieces which are stored in said memory means in said automatic compensating cycle, each of said first estimated dimensional values being obtained by adding a last compensating value (U') to the dimensional value (X) of the corresponding workpiece which is measured by said measuring device, on an assumption that said corresponding workpiece is processed under the working condition influenced by said last compensating value, said compensating value determining means operating in said second operating state to determine said present automatic compensating value on the basis of a plurality of second estimated dimensional values of the workpieces which are stored in said memory means in said automatic compensating cycle, each of said second estimated

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dimensional values being obtained by adding a sum of said last compensating value (U') and a previous compensating value (Ui−2, Ui−1) immediately preceding said last compensating value, to the dimensional value (X) of the corresponding workpiece which is measured by said measuring device; and

said compensating value applying means (5) applying said present automatic compensating value and said manual compensating value to said machine control means.

5,625,562

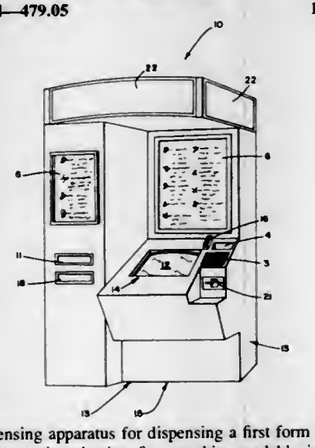
INTERNAL BAR CODE READING APPARATUS

William J. Veeneman, Minneapolis, and Phillip R. Brooks, Eagan, both of Minn., assignors to The Gift Certificate Center, Inc., Minneapolis, Minn.

Continuation of Ser. No. 210,145, Mar. 17, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,020

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—479.05 **14 Claims**



1. A dispensing apparatus for dispensing a first form negotiable for goods or services having first machine-readable indicia disposed thereon on validation of a second form having second machine-readable indicia disposed thereon, said second form providing at least partial payment for said first form, said apparatus comprising a housing, said apparatus also including means for accepting said second form when said second form is inserted from outside said housing into said housing and means from inside said housing for dispensing said first form, said dispensing means and said accepting means having a common machine-readable indicia scanner for reading said first and second indicia, said apparatus further including means for processing information from said first machine-readable indicia to identify a security problem and means for validating said second indica before allowing said accepting means to accept said second form in at least partial payment for said first form.

5,625,563

METHOD AND SYSTEM FOR REDUCING THE NUMBER OF CONNECTIONS BETWEEN A PLURALITY OF SEMICONDUCTOR DEVICES

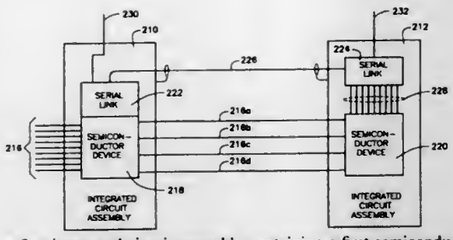
Michael D. Rostoker, Boulder Creek, and Scott A. Macomber, Los Altos Hills, both of Calif., assignors to LSI Logic Corporation, Milpitas

Filed Jan. 9, 1995, Ser. No. 370,210

Int. Cl.[6] H04L *29/08*

U.S. Cl. 364—488 **5 Claims**

1. A system for reducing the number of signal connections between a plurality of semiconductor device assemblies, comprising:



a first integrated circuit assembly containing a first semiconductor device and a plurality of first signal links, said first semiconductor device connected to said plurality of first signal links and said plurality of first signal links connected to a plurality of first signal connections on said first integrated circuit assembly;

a second integrated circuit assembly containing a second semiconductor device and a plurality of second signal links, said second semiconductor device connected to said plurality of second signal links and said plurality of second signal links connected to a plurality of second signal connections on said second integrated circuit assembly;

said plurality of first and second signal connections connected together by a plurality of signal interconnections, wherein digital data is transferred between said first and second integrated circuit assemblies over said plurality of signal interconnections; and

a plurality of first and second signal link enables, each of said plurality of first and second enables activates each of said plurality of first and second signal links, respectively, wherein the enabled ones of said first and second signal links transfer high speed serial data and the disabled other ones of said first and second signal links transfers parallel data at one bit per disabled signal link.

5,625,564

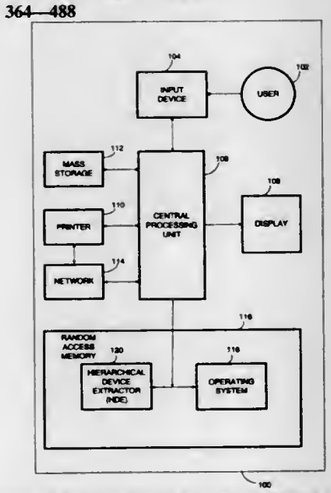
SYSTEM AND METHOD FOR HIERARCHICAL DEVICE EXTRACTION

Eric Rogoyski, Los Gatos, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Jan. 13, 1995, Ser. No. 372,316

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **15 Claims**



1. A method for extracting a first device having a recognition component and a terminal component from a first representation of an integrated circuit mask, the first representation including the recognition component and the terminal component located in two or more of a hierarchy of cells, a first rule defining the first device as a first relationship between the recognition component and the terminal component, the method comprising the steps of:

(1) selecting a first cell of the hierarchy of cells wherein all child cells of said first cell have been previously selected;

(2) identifying the recognition component if the recognition component is located in one of said first cell and a first child cell of said first cell, the recognition component is a shape on the integrated circuit mask;

(3) identifying the terminal component if the terminal component is located in one of the first cell and a second child cell of the first cell, if the recognition component is identified in step (2), the terminal component is a shape on the integrated circuit mask; and

(4) extracting the first device if a relationship between the recognition component and the terminal component satisfies the first rule.

5,625,565

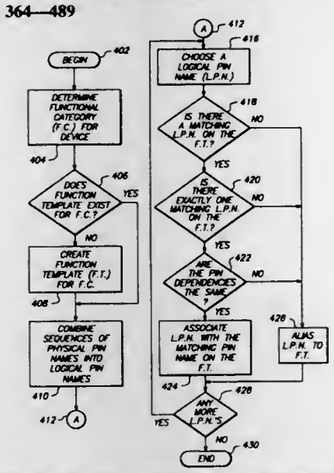
SYSTEM AND METHOD FOR GENERATING A TEMPLATE FOR FUNCTIONAL LOGIC SYMBOLS

Eric J. Van Dyke, Aromas, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Sep. 9, 1994, Ser. No. 303,393

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **19 Claims**



1. A computer based method for generating a first data structure within a storage device, the first data structure representing a plurality of pins on a functional class of electrical devices, comprising the steps of:

(1) receiving a first name for each of the plurality of pins associated with a first device of the electrical devices;

(2) associating two or more of said first names with a first common pin name including the steps of

(a) determining a sequence of said first names from said plurality of pins wherein said sequence of first names represents said first names that are related;

(b) generating said first common pin name; and

(c) associating said sequence of first names with said first common pin name; and

(3) correlating said first common pin name with a first template pin name if said first common pin name is uniquely present within the first data structure.

5,625,566

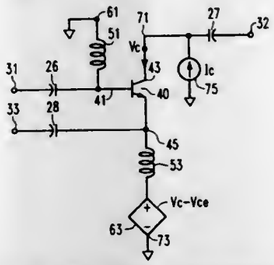
CONFIGURATION DEPENDENT AUTO-BIASING OF BIPOLAR TRANSISTOR

Mojy C. Chian, Satellite Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 1, 1995, Ser. No. 382,346

Int. Cl.[6] H02M *7/53*

U.S. Cl. 364—489 **2 Claims**



1. A method of providing DC bias to respective emitter, base and collector electrodes of a bipolar transistor, while simultaneously providing AC signal access to said emitter, base and collector electrodes of said bipolar transistor comprising the steps of:

(a) connecting a first AC signal coupling element between a first AC access terminal and said emitter electrode of said bipolar transistor, a second AC signal coupling element between a second AC access terminal and said base electrode of said bipolar transistor, and a third AC signal coupling element between a third AC access terminal and said collector electrode of said bipolar transistor;

(b) coupling a first DC voltage coupling element between a reference terminal and said base electrode of said bipolar transistor;

(c) applying a DC bias voltage through a second DC voltage coupling element to said emitter electrode of said bipolar transistor, wherein said DC bias voltage corresponds to the difference between a prescribed collector voltage and a volt across said collector and emitter electrodes of said bipolar transitor; and

(d) applying a DC bias current to said collector electrode of said bipolar transistor.

5,625,567

ELECTRONIC CIRCUIT DESIGN SYSTEM AND METHOD WITH PROGRAMMABLE ADDITION AND MANIPULATION OF LOGIC ELEMENTS SURROUNDING TERMINALS

Richard A. Mankin, Medway; David L. Allen, Maynard, and Prasanna P. Deshmukh, Northboro, all of Mass., assignors to Viewlogic Systems, Inc., Marlboro, Mass.

Filed Nov. 12, 1993, Ser. No. 151,565

Int. Cl.[6] G06F *17/50*

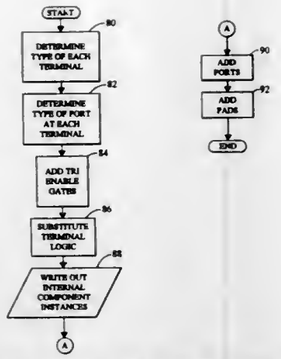
U.S. Cl. 364—490 **10 Claims**

1. A method of altering logic in a design of an electronic circuit generated through computerized circuit design tools, said electronic circuit having an inner array of logic surrounded by an outer ring of pads and ports, said method comprising the steps of:

recognizing a logic pattern comprised of one or more logic elements in said inner array of logic;

removing logic elements represented by said recognized logic pattern from said inner array of logic;

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replacing said removed logic elements with logic elements arranged in a pad located in said outer ring.

5,625,568

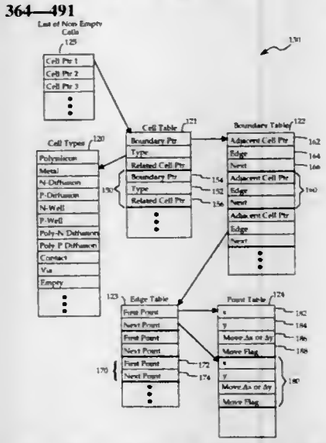
METHOD AND APPARATUS FOR COMPACTING INTEGRATED CIRCUITS WITH STANDARD CELL ARCHITECTURES

Lawrence B. Edwards, and Andy T. Ngo, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 171,575, Dec. 22, 1993, abandoned. This application Sep. 27, 1994, Ser. No. 313,706

Int. Cl.[6] H01L *21/98*

U.S. Cl. 364—491 **10 Claims**



1. A method for compacting an integrated circuit layout that includes a plurality of standard cells, the method being executed by a processor having a memory and controlled by a program stored in the memory, the method including the steps of:

(1) storing in said memory a connectivity data structure representing the integrated circuit layout as a set of cells, each said cell being defined as a given material or as empty, the data structure including data representing points defining edges and boundaries of said cells, the data structure further including connector cell data fields to identify whether each cell forms a portion of a connected group of cells;

(2) compacting said integrated circuit layout in accordance with a predetermined criteria to obtain a compacted integrated circuit layout; and

(3) re-organizing said compacted integrated circuit layout in accordance with predetermined standard cell design criteria.

5,625,569

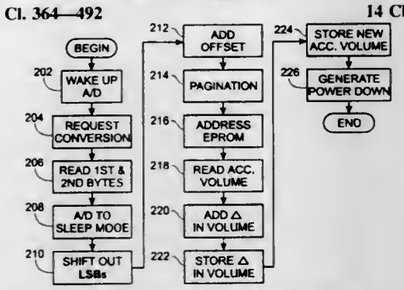
LOW POWER FLOW MEASURING DEVICE

Walter L. Trimmer, Corvallis, and Benjamin A. Flugstad, McMinnville, both of Oreg., assignors to Trimmer Engineering, Inc., Corvallis, Oreg.

Filed Jan. 23, 1995, Ser. No. 377,422

Int. Cl.[6] G06F *1/32*

U.S. Cl. 364—492 **14 Claims**



1. A low power flow measuring apparatus, comprising:

a housing;

battery means positioned within said housing for generating a supply signal;

power management means in communication with said battery means for producing from said supply signal a first voltage signal that is enabled during an OFF State and an ON State and second and third voltage signals that are enabled only during the ON State;

sensor means powered by said third voltage signal and adapted for generating a data signal representative of a magnitude of a predefined parameter;

control means in communication with memory means and said sensor means and powered by said second signal, for controlling a reading of said data signal from said sensor means and the storage of a data value corresponding to said data signal in said memory means;

interrupt means powered by said first voltage signal for activating said power management means, upon the occurrence of a predefined event, to enable said second and third voltage signals, thereby enabling said control means to take a reading from said sensor means, wherein after a reading is taken and said data value written to memory means, said power management means disables said second and third signals; and

Hall effect sensor means in communication with said control means and mounted inside said housing is such a manner as to permit magnetic access to said sensor means through said housing for setting a predefined parameter within said apparatus.

5,625,570

METHOD AND SYSTEM FOR INSERTING INDIVIDUALIZED AUDIO SEGMENTS INTO PRERECORDED VIDEO MEDIA

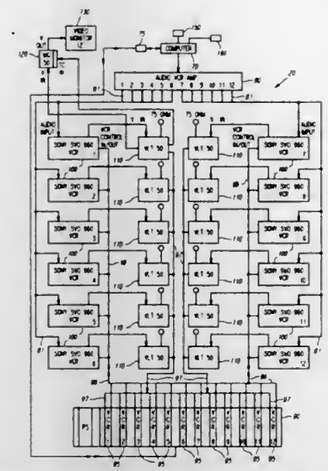
Ion Vizireanu, Thousand Oaks; Wyman G. Dunford, Camarillo; Michael A. Sterling, Woodland Hills; Alexander L. Meszaros, Tarzana; Miguel A. Abaunza, Moorpark, all of Calif.; Curtis Caloia, Redford, and James W. Hussey, Canton, both of Mich., assignors to Technicolor Videocassette, Inc., Camarillo, Calif.

Filed Jun. 7, 1994, Ser. No. 255,185

Int. Cl.[6] G11B *27/022*

U.S. Cl. 364—514 A **34 Claims**

1. A method for personalizing a plurality of prerecorded videotapes, each prerecorded videotape having an audio track, comprising the steps of:



accumulating a plurality of individualized audio segments; and,

simultaneously inserting each of said individualized audio segments into the audio track of respective prerecorded videotapes.

5,625,571

PREDICTION FILTER

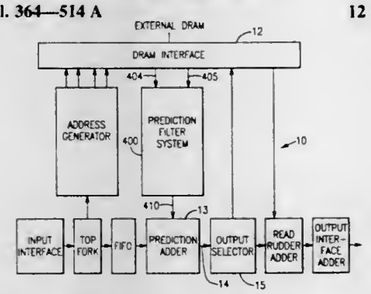
Anthony P. J. Claydon, Bath, United Kingdom, assignor to Discovision Associates, Irvine, Calif.

Filed Mar. 7, 1995, Ser. No. 399,810

Claims priority, application United Kingdom, Mar. 24, 1994, 9405914

Int. Cl.[6] H04N *9/79*

U.S. Cl. 364—514 A **12 Claims**



1. A circuit for processing video information, comprising:

a first and a second prediction filter circuit for parallel processing of video information, wherein the information is encoded according to a selected one of a plurality of compression standards, and wherein said prediction filter circuits are substantially identical and internally configurable according to requirements of said selected compression standard; and

a control signal having a state representative of said selected compression standard for configuring said first and second circuits to allow processing of video information encoded in accordance therewith.

5,625,572

MULTIMEDIA PROCESS MONITOR AND CONTROL SYSTEM

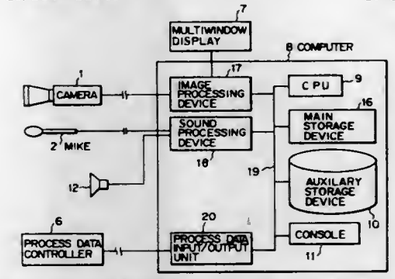
Toshiaki Yonekura, Hino; Toshio Maenosono, Kawasaki; Shiro Nakatao, Hino; Masahiro Fujiwara, Kawasaki; Yuji Katada, and Takashi Karasawa, both of Hino, all of Japan, assignors to Fuji Facom Corp., Tokyo, and Fuji Electric Co. Ltd., Kawasaki, both of Japan

Continuation of Ser. No. 286,552, Aug. 5, 1994, abandoned. This application Jul. 22, 1996, Ser. No. 681,064

Claims priority, application Japan, Feb. 4, 1994, 6-032897

Int. Cl.[6] G05B *15/00*

U.S. Cl. 364—514 A **17 Claims**



1. In a process on a plurality of objects, a multimedia process monitor and control system for displaying image data and process data on a display unit, the image data being obtained by capturing an image of a monitored object, and the process data including input data and output data relating to the process for the monitored object, and regenerating sound data through a speaker, the sound data being collected from the monitored object, comprising:

a main storage device;

means for cyclically storing one or more of said image data, said process data and said sound data in said main storage device in real time;

an auxiliary storage device;

means for saving one or more of said image data, said process data and said sound data in said auxiliary storage device from like data stored in said main storage device in a given time before and after an abnormal condition when the abnormal condition is detected;

means for reading said saved data in said auxiliary storage device, and synchronously regenerating said saved data through the display unit and/or the speaker;

storing means for storing reference dam at a plurality of levels from a normal state to an abnormal state for said image, sound, and/or process data;

means for calculating an abnormality level of said image, sound and/or process data based on weighted similarity with said reference data obtained by performing a relational operation on said image, sound and/or process data and said reference data;

means for comparing the abnormality level of said image, sound and/or process data with a predetermined threshold, determining whether said image, sound and/or process data are normal or abnormal, and outputting an abnormality detection signal when said image, sound and/or process data are determined to be abnormal;

storing means for preliminarily storing a voice pattern for notifying that an abnormal condition has occurred; and

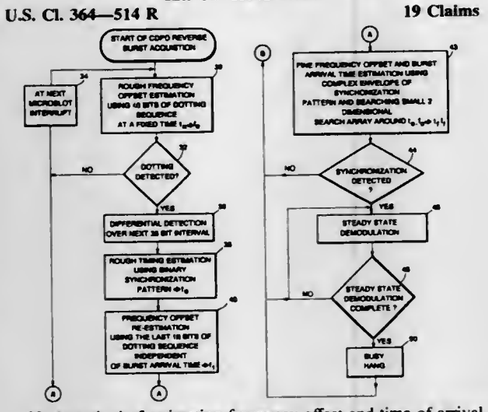
means for reading said voice pattern from said storing means when said abnormality detection signal is output, said voice pattern depending on the abnormality level of said image, sound and/or process data, and regenerating an original voice through said speaker.

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5,625,573
FAST ACQUISITION OF GMSK-MODULATED SIGNAL FOR CDPD APPLICATIONS

In-Kyung Kim, N. Potomac, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 1, 1995, Ser. No. 396,916
Int. Cl.[6] H04L *27/06*
U.S. Cl. 364—514 R **19 Claims**



12. A method of estimating frequency offset and time of arrival of a received modulated signal so that the modulated signal can be properly demodulated, the signal having a preamble including a dotting sequence and a synchronization pattern followed by a data sequence, the method comprising the steps of:

storing the preamble and data sequence;

determining a frequency offset f_0;

performing a differential detection on the received signal frequency to create a differential detection sequence;

determining a time of arrival t_a and selecting a maximum correlation value;

determining a new frequency offset f_1 and selecting a maximum correlation value;

determining a final frequency offset f_f and selecting maximum correlation values; and

demodulating the received signal using the frequency offset f_f and time of arrival t_f previously determined.

5,625,574
METHOD AND DATA PROCESSING SYSTEM FOR MONITORING OPERATING STATES OF A TECHNICAL PLANT

Antony Griffiths, Kleinsendelbach; Joerg Fandrich, Moehrendorf, and Helmut Müller, Nürnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 2, 1994, Ser. No. 300,434
Claims priority, application Germany, Sep. 2, 1993, 43 29 714.5
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—550 **2 Claims**

1. A data processing system for monitoring operating states of a technical plant, comprising:

a) a measuring level with means for obtaining measured values representative of operating states of a technical plant;

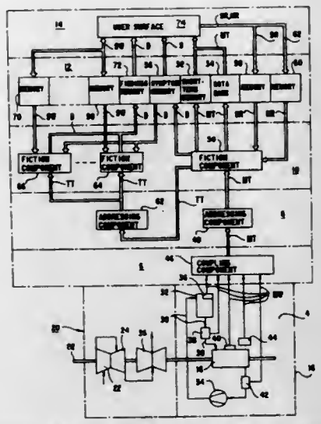
b) a coupling level receiving the measured values from said measuring level, said coupling level having means for processing the measured values and for associating measurement-point-specific identifiers with the measured values;

c) an administration level connected to said coupling level, said administration level including an identifier addressing block;

d) an action level connected to said administration level, said action level including an action block with means for carrying out at least one of logical and arithmetic operations for determining at least one of plant symptoms, diagnoses, and respectively associated significance values;

e) a data level communicating with said action level, said data level including data memory means for storing measured-value-specific rules, confidence rules, confidence thresholds, plant symptoms, diagnoses and measured values; and

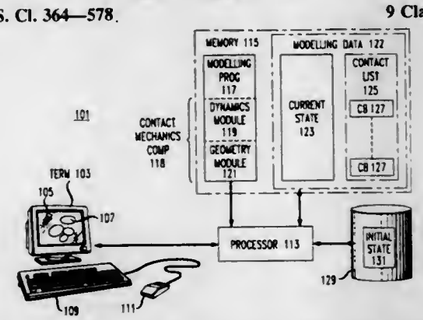
f) a display level with a user surface communicating with said data level and said action level.



5,625,575
APPARATUS FOR MODELLING INTERACTION OF RIGID BODIES

Suresh Goyal, Chatham; Elliot N. Pinson, Watchung, and Frank W. Sinden, Princeton, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 3, 1993, Ser. No. 100,906
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 **9 Claims**



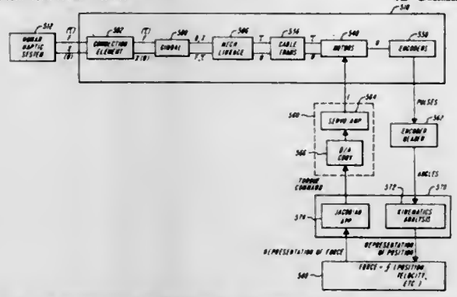
1. Improved simulation apparatus implemented in a computer system including a display for simulating an interaction of rigid bodies and displaying the simulated interaction in the display, the simulation apparatus being of the type which includes a contact mechanics component for modelling the mechanics of contacts between the rigid bodies and the improvement comprising:

a dynamics component in the contact mechanics component which models a deformation caused by a contact between one of the rigid bodies and another thereof by means of an ideal rigid massless layer covering each body at the point of contact and a viscous deformable layer between each body and its layer.

5,625,576
FORCE REFLECTING HAPTIC INTERFACE

Thomas H. Massie, Vanceburg, Ky., and J. Kenneth Salisbury, Jr., Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 1, 1993, Ser. No. 130,639
Int. Cl.[6] G05B *11/01*
U.S. Cl. 364—578 **42 Claims**



11. An apparatus for physically exchanging a force with a user in a first, user-local environment, said apparatus comprising:

a. a connection element for physically connecting to a body member of said user; and

b. means for physically linking said connection element to a reference, said linking means comprising:

i. means for powering at least three independent freedoms of said connection element relative to said reference:

ii. means for maintaining at least one independent freedom of said connection element relative to said reference free of power: and

iii. first and second linked orthogonal bearings and a third bearing, which is linked to and orthogonal to one of either the first or second linked bearings.

5,625,577
COMPUTER-IMPLEMENTED MOTION ANALYSIS METHOD USING DYNAMICS

Toslyasu Kunii, and Lining Sun, both of Tokyo, Japan, assignors to Shukyohojin, Kongo Zen Sohonzan Shorinji, Kagawaken, Japan

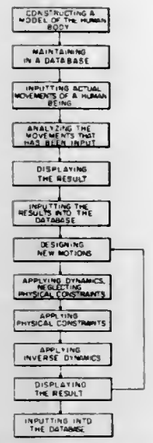
Continuation-in-part of Ser. No. 714,304, Jun. 12, 1991, abandoned, Ser. No. 139,703, Oct. 5, 1993, abandoned, Ser. No. 712,884, Jun. 12, 1991, abandoned, and Ser. No. 714,306, Jun. 12, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,545
Claims priority, application Japan, Dec. 25, 1990, 2-418249; Dec. 25, 1990, 2-418250; Dec. 25, 1990, 2-418251; Dec. 25, 1990, 2-418253
Int. Cl.[6] G06G *7/48*; G05B *19/04*
U.S. Cl. 364—578 **2 Claims**

1. A motion analyzing method using a computer, comprising the steps of:

a) maintaining, in a database, data for modeling a moving body, which body has been divided into a plurality of segments, each of said segments connected by joints and each of said segments acting as a minimal unit of motion, said data relating to an inherent nature of each of said segments and physical constraints including inter-relationship of each segment and range of movements of said joints;

b) observing actual movements of a moving body, including a position of each said segment at predetermined intervals in the course of such actual movement;

c) analyzing the data as to the position of each said segment as observed during actual movements and calculating by inverse dynamics centers of gravity of each said segments and of the whole body, force and torque exerted on each of said centers of gravity and force and torque exerted on each of said joints;



d) inputting the calculated results from said calculating step into said database;

e) determining a new motion to be designed;

f) calculating by dynamics, and neglecting physical constraints, motion of each body segment, independently of the remaining body segments, based on forces corresponding to the new motion selected in said determining step using the data maintained in said database for previously analyzed motions and dynamic equations governing movement of each segment;

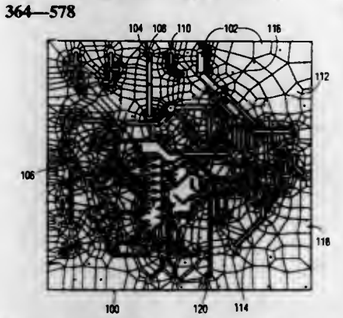
g) applying said physical constraints as stored in said database to check that each segment is articulated to the adjacent segment and that the movement of each joint does not exceed the range specified by said physical constraints, and adjusting the position of each segment until each of said physical constraints are met; and

h) displaying on a screen the resulting motion of the moving body as designed by said steps of calculating by dynamics and applying physical constraints.

5,625,578
PCB SIMULATION ON BASIS OF REDUCED EQUIVALENT CIRCUIT

René Du Cloux; Godefridus P. J. F. M. Maas; Arthur J. H. Wachters, all of Eindhoven, Netherlands; Robert F. Milsom, Redhill, and Kevin J. Scott, Horley, both of Great Britain, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1994, Ser. No. 207,531
Claims priority, application European Pat. Off., Mar. 8, 1993, 93200671
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **8 Claims**



1. A method of controlling a boundary element circuit simulator used for simulating an electromagnetic behaviour of a geometrically non-uniform electrically conductive pattern that is provided

VOL 1197 ISS 5 AP 29 1997 UMI

with input terminals for receiving input signals and output terminals for supplying output signals, the method comprising the steps of:

creating a geometric model of a surface of the patterns, the geometric model including a collection of contiguous geometrical elements;

forming a respective set of matrix equations, representing Maxwell's dynamic equations and involving field values associated with each respective one of the geometrical elements;

identifying a group of main elements in the collection of geometrical elements, the group including the main elements that in general lie at a distance, being larger than a prespecified lower bound representative of a minimum wavelength, from one another, and also including the main elements that correspond with said input terminals and said output terminals;

expressing the field values related to a complement of the group in the field values associated with the group;

associating values of matrix coefficients in the matrix equations to further coefficients of an admittance matrix representative of an equivalent circuit model for the pattern and of a rank no larger than a number of main elements contained in the group; and

operating on the equivalent model by the simulator.

5,625,579

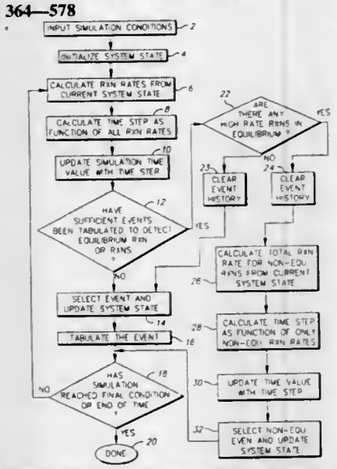
STOCHASTIC SIMULATION METHOD FOR PROCESSES CONTAINING EQUILIBRIUM STEPS

William D. Hinsberg, III, and Frances A. Houle, both of Fremont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1994, Ser. No. 241,316

Int. Cl.[6] G06G *7/48*

U.S. Cl. 364—578 **18 Claims**



1. A method for stochastic simulation of a process including a plurality of reactions having respective reaction rates, at least one of the reactions being reversible, the stochastic simulation proceeding by making a sequence of steps in which, for each step, one of the reactions takes place, each successive one of the steps being made from a current state of the simulation to a new state of the simulation, the new state being based on the current state of the stochastic simulation and the reaction which took place, the method comprising the steps of:

identifying a reversible reaction of the process which is in equilibrium; and

making a step of the simulation based on the reaction rates for the reactions of the process, but omitting the reaction rate for the reaction identified by the step of identifying.

5,625,580

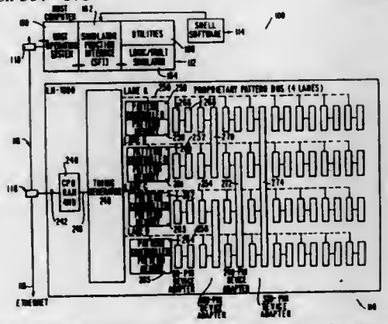
HARDWARE MODELING SYSTEM AND METHOD OF USE

Andrew J. Read, Sunnyvale; Mark S. Papamarcos; Wayne P. Heideman, both of San Jose; Robert K. Mardjuki, Peasanton; Robert K. Couch, Santa Cruz; Peter R. Jaeger; William F. Kappauf, both of San Jose; Lawrence C. Widdoes, Jr., and Louis K. Scheffer, both of Los Altos Hills, all of Calif., assignors to Synopsys, Inc., Mountain View, Calif.

Continuation of Ser. No. 939,393, Aug. 31, 1992, Pat. No. 5,353,243, and a continuation of Ser. No. 359,711, May 31, 1989, abandoned. This application Sep. 26, 1994, Ser. No. 313,529

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—578 **20 Claims**



1. A hardware modeling system adapted for coupling to one of a predetermined collection of host computers, the hardware modeling system for evaluating a response of an electronic device or circuitry to stimulation from the hardware modeling system, with pins of the electronic device or circuitry being electrically coupled to pin drivers of the hardware modeling system, comprising:

a. a host connection means configured for coupling a host computer for transmitting bi-directionally thereon communications between the hardware modeling system and a host computer;

b. microprocessor means coupled to the host connection means for controlling programmed operation of the hardware modeling system;

c. central timing control means for generating timing signals for controlling timing of operations of the hardware modeling system, the central timing control means coupled to the microprocessor means and a pattern bus means for generating sample strobes for sampling outputs of the pins of the electronic device or circuitry and edge strobes for formatting stimulation patterns;

d. pattern bus means coupled to the central timing control means and the microprocessor, the pattern bus means having a first mode of operation for the microprocessor means to access certain circuitry for conducting read and write operations and a second mode of operation for presenting the stimulation patterns to the pins of the electronic device or circuitry which is electrically coupled to the hardware modeling system;

e. pattern controller means coupled to the pattern bus means for controlling stimulation pattern sequencing and delivery of stimulation patterns to the pattern bus;

f. pattern memory means coupled to the pattern controller means for storing the stimulation patterns in the pattern memory means in a plurality of memory means bits;

g. pin electronics circuitry coupled to the pattern bus means for driving and sensing the pins of the electronic device or circuitry, and the pin electronics circuitry providing sensing of at least four states of the pins of electronic device or circuitry; and

h. adaptor means coupled to the pin electronics circuitry and the pins of the electronic device or circuitry, the adaptor means configured for electrically receiving the electronic device or circuitry wherein the adaptor means includes circuitry for supporting live-insertion into a powered hardware modeling system.

5,625,581

NON-INTEGRAL DELAY CIRCUIT

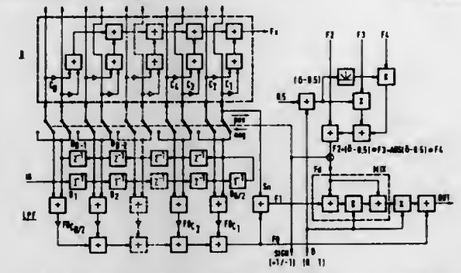
Antonius H. H. J. Nillesen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1994, Ser. No. 340,570

Claims priority, application Belgium, Dec. 24, 1993, 09301458

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.01 **7 Claims**



1. A non-integral delay circuit for delaying a time-discrete signal by a selectable fraction (δ) of a sampling period of said time-discrete signal, comprising:

first means for differentiating said time-discrete signal to obtain a first differential signal (F1) having a first phase characteristic with respect to said time-discrete signal;

second means for differentiating said time-discrete signal to obtain a second differential signal (F2) having a second phase characteristic with respect to said time-discrete signal; said first and second phase characteristics differing from each other;

means for combining said first (F1) and second (F2) differential signals in dependence on said selectable fraction (δ) to obtain a phase-adjusted correction signal;

means for adding a product of said selectable fraction (δ) and said phase-adjusted correction signal to said time-discrete signal, to obtain said time-discrete signal delayed by said selectable fraction (δ) of the sampling period of said time-discrete signal; wherein

said second differentiating means include a differentiator with asymmetric coefficients and a sequence of differentiator coefficients is selected based on the sign of said selectable fraction (δ).

5,625,582

APPARATUS AND METHOD FOR OPTIMIZING ADDRESS CALCULATIONS

Mark A. Timko, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

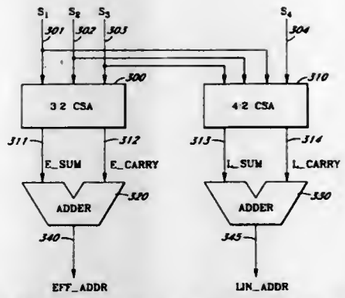
Filed Mar. 23, 1995, Ser. No. 409,502

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—786 **31 Claims**

1. An integrated circuit device performing arithmetic operations on a plurality of inputs including a base address, a scaled index, a displacement and a segment base to produce an effective address and a linear address, comprising:

a combined carry-save adder including a plurality of bit slice circuits oriented in parallel, each of the plurality of bit slice circuits produces (i) at least one output signal of a first group of output signals in order to calculate at least one bit of the effective address, and (ii) at least one output signal of a second group of output signals in order to calculate at least one bit of the linear address;



a first adder circuit coupled to the combined carry-save adder, said first adder circuit produces the effective address; and

a second adder circuit coupled to the combined carry-save adder, said second adder circuit produces the linear address.

5,625,583

ANALOG MEMORY SYSTEM HAVING AN INTEGRATED CIRCUIT FREQUENCY DOMAIN PROCESSOR

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180

Continuation of Ser. No. 254,818, Jun. 6, 1994, Ser. No. 283,374, Aug. 1, 1994, Ser. No. 285,669, Aug. 3, 1994, Ser. No. 286,620, Aug. 5, 1994, Ser. No. 493,061, Mar. 13, 1990, Ser. No. 495,808, Mar. 16, 1990, Ser. No. 520,277, Aug. 4, 1993, Ser. No. 160,871, Jun. 19, 1980, Ser. No. 889,301, Mar. 23, 1978, Ser. No. 884,765, Oct. 25, 1977, and Ser. No. 812,285, Jul. 1, 1977, said Ser. No. 254,818is a division of Ser. No. 495,808, Mar. 16, 1990, Pat. No. 5,339,275, said Ser. No. 283,374Ser. No. 285,669, and Ser. No. 286,620, , each is a continuation of Ser. No. 495,808, said Ser. No. 493,061and Ser. No. 495,808, , each is a continuation of Ser. No. 520,277, Aug. 4, 1983, Pat. No. 4,910,706, which is a division of Ser. No. 160,871, Jun. 19, 1990, Pat. No. 4,445,189, which is a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Jun. 6, 1995, Ser. No. 471,596

Int. Cl.[6] G11C *13/00*

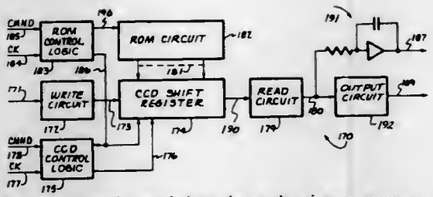
U.S. Cl. 365—45 **93 Claims**

1. An analog memory system comprising:

an optical lens projecting an illumination image;

an analog image memory storing analog image signals, the analog image memory being coupled to receive the illumination image projected by the optical lens and writing analog image signals into the analog image memory in response to the received illumination image;

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a shifting circuit coupled to the analog image memory, the shifting circuit shifting the analog image signals stored by the analog image memory;

an analog refreshing circuit coupled to the analog image memory, the analog refreshing circuit reducing degradation of the analog image signals stored by the analog image memory;

an analog to digital converter coupled to receive analog image signals stored by the analog image memory, the analog to digital converter generating digital image information in response to the received analog image signals;

an integrated circuit reference memory storing frequency domain reference information;

a single chip integrated circuit stored program digital computer implemented on a single integrated circuit chip comprising

a) an integrated circuit read only memory storing frequency domain transform instructions, the integrated circuit read only memory implemented on the single integrated circuit chip,

b) an integrated circuit operand memory storing frequency domain transform operands, the integrated circuit operand memory implemented on the single integrated circuit chip,

c) an integrated circuit frequency domain transform processor coupled to receive frequency domain transform instructions stored by the integrated circuit read only memory, coupled to receive frequency domain transform operands stored by the integrated circuit operand memory, coupled to receive frequency domain reference information stored by the integrated circuit reference memory, and coupled to receive digital image information generated by the analog to digital converter, the integrated circuit frequency domain transform processor generating frequency domain image information by processing the received digital image information in response to the received frequency domain reference information, in response to the received frequency domain transform operands, and in response to the received frequency domain transform instructions, the integrated circuit frequency domain transform processor implemented on the single integrated circuit chip, and

d) an integrated circuit output circuit coupled to receive the frequency domain image information generated by the integrated circuit frequency domain transform processor, the integrated circuit output circuit generating frequency domain output information in response to the received frequency domain image information, the integrated circuit output circuit implemented on the single integrated circuit chip;

a communication link coupled to receive frequency domain output information generated by the integrated circuit output circuit, the communication link communicating frequency domain information to a remote location in response to the received frequency domain output information;

a machine controller coupled to receive frequency domain output information generated by the integrated circuit output circuit, the machine controller controlling a machine in response to the received frequency domain output information;

an image output circuit coupled to receive frequency domain output information generated by the integrated circuit output circuit, the image output circuit generating an image output signal in response to the received frequency domain output information; and

an image output device coupled to receive the image output signal generated by the image output circuit, the image output device generating an output image in response to the received image output signal.

5,625,584

NON-VOLATILE MULTI-STATE MEMORY DEVICE WITH MEMORY CELL CAPABLE OF STORING MULTI-STATE DATA

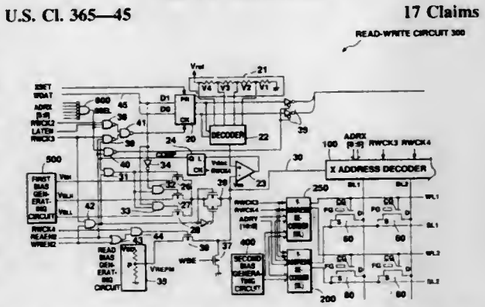
Takashi Uchino; Nozomu Nambu, both of Gunma, and Akio Hagiwara, Saitama, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 30, 1996, Ser. No. 697,903

Claims priority, application Japan, Aug. 31, 1995, 7-224382; Aug. 31, 1995, 7-224384; Aug. 31, 1995, 7-224385

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—45 **17 Claims**



1. A non-volatile multi-state memory device, wherein said memory device comprises

a data register for holding digital data to be inputted;

a voltage generating circuit for generating a plurality of analog voltages;

a decoder for decoding the data held in the digital register and selectively outputting one of the plurality of analog voltages in response to the data;

a non-volatile multi-state memory cell capable of storing multi-state analog amount;

a comparator for comparing a voltage corresponding to an analog amount read from the memory cell with an output voltage from the decoder; and

a writing circuit for writing an analog amount into the memory cell in response to the comparison result of the comparator.

5,625,585

BIT LINE STRUCTURE WITH BIT LINE PASS OVER CONFIGURATION

Jin-Hong Ahn, and Tae-Hyoung Kim, both of Kyungki-do, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheong-ju, Rep. of Korea

Continuation of Ser. No. 380,757, Jan. 31, 1995, Pat. No. 5,499,205. This application Dec. 28, 1995, Ser. No. 580,270

Int. Cl.[6] G11C *5/06*

U.S. Cl. 365—63 **3 Claims**

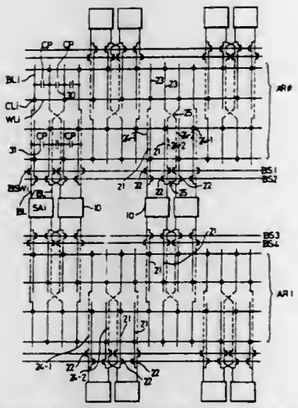
1. A bit line structure having sense amplifiers, each sense amplifier being connected to two pairs of bit lines BL and /BL through bit line selecting switches, and each bit line being connected to a plurality of cells, comprising:

a first bit line pair BL and /BL and a second bit line pair BL and /BL formed by dividing a bit line disposed within a same column respectively in a cell array;

a first connecting bit line for connecting the bit line BL of said second bit line pair to said sense amplifier;

a second connecting bit line for connecting the bit line /BL of said second bit line pair to said sense amplifier; and

bit line selecting switches for connecting said first bit line pair and said second bit line pair respectively to said sense amplifier, wherein the first connecting bit line and the second connecting bit line pass over the first bit lines.



5,625,586

SEMICONDUCTOR MEMORY HAVING A PLURALITY OF MEMORY BANKS AND SUB-BIT LINES WHICH ARE CONNECTED TO A MAIN BIT LINE VIA MOS TRANSISTORS WHOSE GATES ARE COMMONLY CONNECTED TO A SELECTION LINE

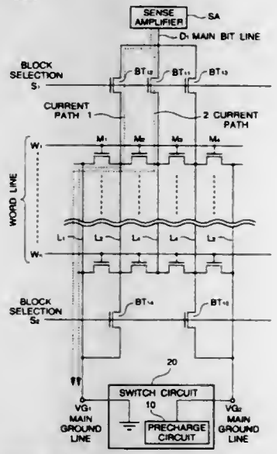
Kazuyuki Yamasaki; Teiichiro Nishizaka, and Kazutaka Otsuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 606,300

Claims priority, application Japan, Feb. 23, 1995, 7-035027

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—104 **11 Claims**



1. A semiconductor memory comprising:

a main bit line;

a plurality of word lines located in parallel to each other;

a plurality of wirings located in parallel to each other and extending to intersect said plurality of word lines, said plurality of wirings including a first wiring having one end thereof connected through a first switching transistor to said main bit line, a second wiring having one end thereof connected to a voltage supply terminal, and a third wiring located between said first wiring and said second wiring and having one end thereof connected through a second switching transistor to said main bit line and the other end thereof connected through a third switching transistor to said voltage supply terminal;

a plurality of memory cell transistors located at intersections between said plurality of word lines and said plurality of wirings to form a memory cell matrix, said plurality of memory cell transistors being connected in such a manner that, in each of rows of said memory cell matrix, a first memory cell transistor is connected between said first wiring and said third wiring and a second memory cell transistor is connected between said second wiring and said third wiring, and a gate of each of said first and second memory cell transistors is connected to one corresponding word line of said plurality of word lines; and

a first selection line connected to both a gate of said first switching transistor and a gate of said second switching transistor, a threshold of said first switching transistor being lower than that of said second switching transistor; and

a second selection line connected to a gate of said third switching transistor.

5,625,587

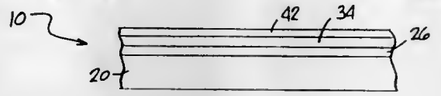
RARE EARTH MANGANATE FILMS MADE BY METALORGANIC DECOMPOSITION OR METALORGANIC CHEMICAL VAPOR DEPOSITION FOR NONVOLATILE MEMORY DEVICES

Chien-Hsiung Peng; Seshu B. Desu, and Jie Si, all of Blacksburg, Va., assignors to Virginia Polytechnic Institute and State University, Blacksburg, Va.

Filed Jul. 12, 1995, Ser. No. 501,283

Int. Cl.[6] H01L *29/78*

U.S. Cl. 365—145 **2 Claims**



1. A memory device, comprising:

a substrate;

a film of a rare earth manganate; and

at least one electrode on the film; wherein

said film is produced by a process of metalorganic chemical vapor deposition including as a precursor at least one of $(CH_3C_5H_4)Mn(CO)_3$;

$A(C_{11}H_{19}O_2)_3$, A being selected from the group consisting of Y, Ho, Er, Tm, Yb, and Lu;

an alkyl of an element selected from the group consisting of Mn, Y, Ho, Er, Tm, Yb, and Lu;

an alkoxide of an element selected from the group consisting of Mn, Y, Ho, Er, Tm, Yb, and Lu;

a beta-diketonate of an element selected from the group consisting of Mn, Y, Ho, Er, Tm, Yb, and Lu;

a metallocene of an element selected from the group consisting of Mn, Y, Ho, Er, Tm, Tb, and Lu; or

a combination of at least two of an alkyl, alkoxide, beta-diketonate and a metallocene of elements selected from the group consisting of Mn, Y, Ho, Er, Tm, Tb, and Lu.

5,625,588

SINGLE-ENDED SENSING USING GLOBAL BIT LINES FOR DRAM

Mirmajid Seyyedy, and Stephen L. Casper, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 6, 1995, Ser. No. 471,860

Int. Cl.[6] G11C *7/06*

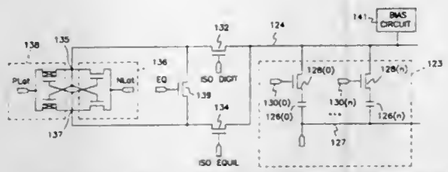
U.S. Cl. 365—149 **10 Claims**

1. An integrated circuit comprising:

a plurality of memory cell capacitors;

a plurality of access devices connected to the plurality of memory cell capacitors and a single digit line, each for

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selectively connecting one of the plurality of memory cell capacitors to the single digit line; and

a differential sense amplifier circuit having first and second nodes each selectively connected to the single digit line through first and second isolation transistors, the first isolation transistor having a drain connected to the first node and a source connected to the digit single line, the second isolation transistor having a drain connected to the second node and a source connected to the single digit line.

5,625,589

STATIC MEMORY CELL WITH SPACED APART CONDUCTING LAYERS

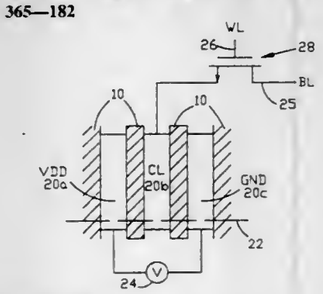
Yasunao Katayama, Sagamihara, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1996, Ser. No. 605,564

Claims priority, application Japan, Feb. 22, 1995, 7-033998

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—182 **14 Claims**



1. A memory cell comprising:

a plurality of insulating layers;

at least first, second and third conducting layers spaced apart by said insulating layers;

a first voltage application means for applying a predetermined voltage between first and third conducting layers of said at least three conducting layers, no tunneling current flowing directly between said first and third conducting layers; and

a second voltage application means connected to a second conducting layer of said at least three conducting layers, a tunneling current being able to flow between said first and second conducting layers and between said second and third conducting layers;

quantum-mechanical confinement of free electrons existing in each of said at least said first, second and third conducting layers.

5,625,590

NONVOLATILE SEMICONDUCTOR MEMORY

Beyng-Sun Choi, and Young-Ho Lim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

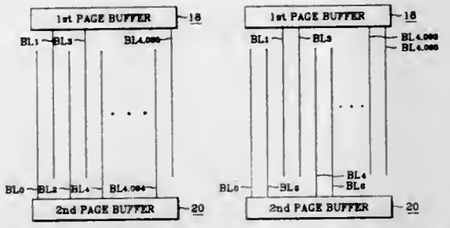
Filed Dec. 19, 1995, Ser. No. 574,970

Claims priority, application Rep. of Korea, Dec. 19, 1994, 35016/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.17 **4 Claims**

4. A nonvolatile semiconductor memory comprising:



a plurality of floating gate type memory cells arranged in rows and columns;

a plurality of word lines, each of said word lines being connected to the memory cells arranged in a given one of said rows;

a plurality of bit lines arranged in parallel to one another, each of said bit lines being connected to the memory cells arranged in a given one of said columns, said plurality of bit lines being divided into a plurality of bit line groups, each having a pair of adjacent bit lines; and

a page buffer circuit including a first page buffer portion connected to bit line groups extending in a first column direction and a second page buffer portion connected to bit line groups extending to a second column direction, each of said plurality of bit line groups alternately extending to either one of said first and second column directions, said first column direction being opposite to said second column direction.

5,625,591

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

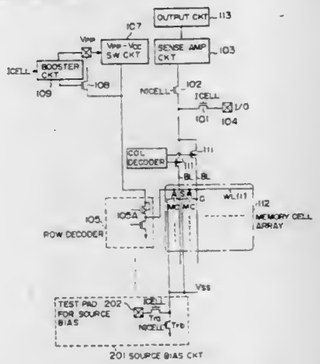
Hideo Kato, Kawasaki; Nobutake Sugiura; Kiyotaka Uchigane, both of Yokohama, and Masamichi Asano, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 218,629, Mar. 28, 1994, Pat. No. 5,420,822, which is a continuation of Ser. No. 41,240, Mar. 31, 1993, abandoned. This application May 22, 1995, Ser. No. 445,960

Claims priority, application Japan, Mar. 31, 1992, 4-77523; Mar. 31, 1992, 4-77775; Nov. 5, 1992, 4-295469

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—185.24 **13 Claims**



1. A non-volatile semiconductor memory device, comprising:

a memory cell array composed of a plurality of electrically data writable and erasable non-volatile memory cells arranged in a matrix pattern, each of the memory cells being a transistor having a source, a drain, a floating gate and a control gate; data being written in each memory cell by injecting electrons into the floating gate thereof and erased from each memory cell by extracting electrons from the floating gate thereof; a threshold value measuring test of each of the memory cells being achieved by checking whether the source-drain can be turned on or not when a predetermined voltage is kept applied to the control gate;

a source bias circuit for applying a positive bias voltage to the sources of the memory cells to be tested in the threshold value measuring test, to shift each threshold value of each memory cell in a forward direction thereof;

a row decoder circuit for selecting any of the word lines; and

a column decoder circuit for selecting any of the bit lines to connect the selected bit line to a signal line having a first terminal for applying a test voltage, the threshold value of the memory cells being tested by checking whether a potential on the signal line is lowered or not when the memory cells to be tested are turned on or off on condition the test voltage is applied to the first terminal to keep the signal line at a potential,

wherein the control gates of the memory cells arranged in a row are connected in common to a word line corresponding to the row, and the drains of the memory cells arranged in a column are connected in common to a bit line corresponding to the column.

5,625,592

METHOD AND CIRCUIT FOR SHORTCIRCUITING DATA TRANSFER LINES AND SEMICONDUCTOR MEMORY DEVICE HAVING THE CIRCUIT

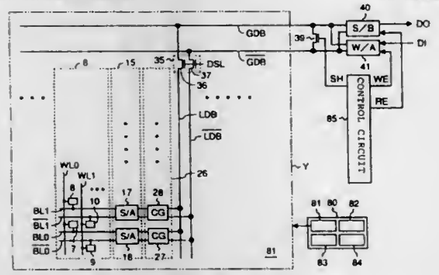
Naoharu Shinozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 23, 1996, Ser. No. 657,484

Claims priority, application Japan, Nov. 20, 1995, 7-301743

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.01 **22 Claims**



2. A semiconductor device comprising:

memory cells;

a sense amplifier;

a first pair of data transmission lines to which the sense amplifier and memory cells are connected;

a second pair of data transmission lines to which a read circuit and a write circuit are connected at an end of the second pair of the data transmission lines, which is connected to the first pair of data transmission lines via a column gate;

a shortcircuiting element which can shortcircuit the second pair of data transmission lines; and

a first control circuit which controls the shortcircuiting element so that the second pair of data transmission lines is shortcircuited for a first period when a read operation is carried out, and the second pair of data transmission lines is shortcircuited for a second period when a write operation is carried out, said second period being shorter than the first period.

5,625,593

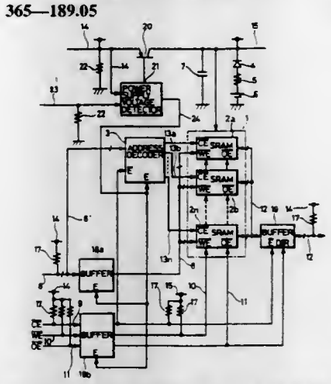
MEMORY CARD CIRCUIT WITH SEPARATE BUFFER CHIPS

Masatoshi Kimura, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 23,424, Feb. 23, 1993, abandoned, which is a continuation of Ser. No. 760,845, Sep. 17, 1991, Pat. No. 5,245,582, which is a continuation of Ser. No. 500,180, Mar. 28, 1990, abandoned. This application Feb. 22, 1995, Ser. No. 392,290

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **23 Claims**



1. A memory card circuit provided in a portable card medium and electrically connected with a terminal unit to process data when said card medium is inserted in said terminal unit and supplied with a power signal from said terminal unit, comprising:

a data storage chip to be accessed from said terminal unit when said card medium is inserted in said terminal unit, said storage chip having data storage devices data input and output buffer, and control buffer for receiving write and read control signals from said terminal unit,

external buffers between said terminal unit and said storage chip to isolate said data storage devices, said input and output buffer and said control buffer from said terminal unit; and

said external buffers being operable for being activated into a conductive state when a voltage inputted from said terminal unit is equal to or higher than a prescribed voltage value, to enable the transmission of data and said control signals between said terminal unit and said storage chip and deactivated into a non-conductive state when the voltage signal inputted from said terminal unit is lower than the prescribed voltage value, to cut off said storage chip from external signals.

5,625,594

DIGITAL VIDEO MEMORY

Go-Hee Chol, Seoul, and Young-Ho Kim, Kyungki-do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Apr. 12, 1995, Ser. No. 420,544

Claims priority, application Rep. of Korea, Apr. 15, 1994, 94-7882

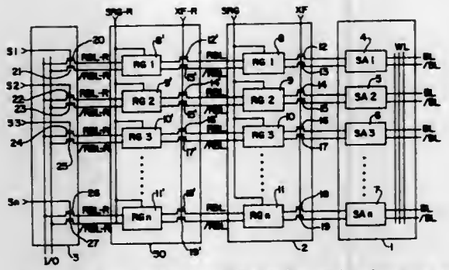
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.12 **8 Claims**

1. A digital memory comprising a DRAM for storing and reading data, a register group for holding data to be written to and read from the DRAM, a selector for connecting registers of the register group to a data bus, wherein:

the register group comprises a first register set having a plurality of first registers and a second register set having a plurality of

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second registers, wherein the first and second register sets are connected serially between the DRAM and the selector, wherein the second register set transfers data on the data bus to the first register set, and the first register set transfers data from the second register set to the DRAM; and

wherein the second register set receives data from the data bus while the first register set writes data to the DRAM.

5,625,595

SEMICONDUCTOR MEMORY DEVICE ALLOWING SELECTION OF THE NUMBER OF SENSE AMPLIFIERS TO BE ACTIVATED SIMULTANEOUSLY

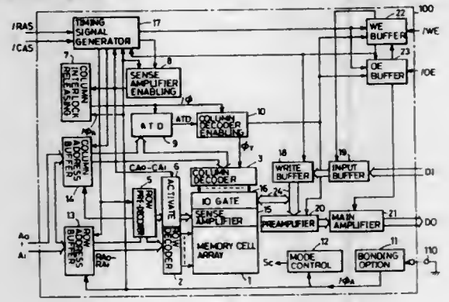
Yutaka Ikeda, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 390,261, Feb. 15, 1995, which is a continuation of Ser. No. 903,400, Jun. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,213

Claims priority, application Japan, Jan. 24, 1992, 4-10924

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—194 **2 Claims**



1. A semiconductor memory device, comprising:

a plurality of bit lines;

a plurality of sense amplifiers connected to respective bit lines;

sense amplifier activating signal generating means for generating a signal activating said sense amplifiers;

delaying means for delaying said sense amplifier activating signal to provide a delayed signal;

column decoder means;

column decoder enabling signal generating means responsive to an externally applied column address signal and said delayed signal of said sense amplifier activating signal for generating a signal enabling said column decoder means;

a circuit for providing determination signal designating which of a first number or a second, greater number of sense amplifiers are to be activated simultaneously; and control means responsive to said determination signal for controlling the delay time delayed by said delaying means.

5,625,596

SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED OPERATING SPEED

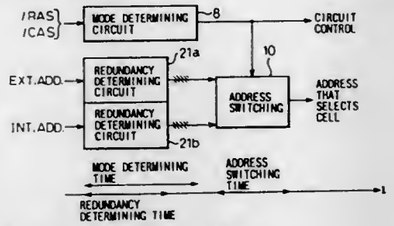
Toshiya Uchida, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 23, 1995, Ser. No. 493,452

Claims priority, application Japan, Sep. 9, 1994, 6-215917

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **7 Claims**



1. A semiconductor device, comprising:

a normal memory cell army;

a redundancy memory cell for exchanging with defective cells in said normal memory cell army in the prescribed exchange units;

a mode determining circuit which determines a kind of modes based on an externally applied signal, said modes having a mode in which an address position specified by said external address signal is accessed and at least one mode in which an address position specified by an internal address signal generated internally in accordance with prescribed data;

an address switching circuit which switches the actually accessed address position between said address position specified by an external address signal and said address position specified by said internal address signal according to a determination result of said mode determining circuit; and

a redundancy determining circuit which determines whether or not the actually accessed position is an exchanged position, and which, in the case of access of an exchanged memory cell, performs control so that the exchanged memory cell of the redundancy memory cell array is accessed, and which in other cases performs control so that said normal memory cell array is accessed,

wherein at least part of said mode determination made by said mode determining circuit and the determination made by said redundancy determining circuit are performed in parallel.

5,625,597

DRAM HAVING TEST CIRCUIT CAPABLE OF PERFORMING FUNCTION TEST OF REFRESH COUNTER AND MEASUREMENT OF REFRESH CYCLE SIMULTANEOUSLY

Yoshihiko Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1996, Ser. No. 627,126

Claims priority, application Japan, Apr. 4, 1995, 7-078826

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **9 Claims**

1. A dynamic semiconductor memory device comprising:

a counter for generating a row address for carrying out a refresh operation in accordance with an auto-refresh mode and a self-refresh mode;

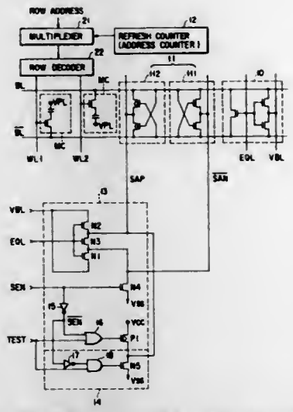
memory cells arranged in matrix;

word lines connected to memory cells located in a same column;

bit lines connected to memory cells in a same row, said bit lines being provided in pair to be complimentary to each other;

a precharge equalizing circuit connected to the complimentary bit line pair;

a bit line sense amplifying circuit including a first conductivity type sense amplifier and a second conductivity type sense amplifier, connected to the bit line pair;



a sense amplifier driving circuit for supplying respective driving signals of the first conductivity type sense amplifier and the second conductivity type sense amplifier; and

a test control circuit for controlling an operation of the sense amplifier driving circuit, in order to carry out the function test of the counter and the measurement of the counter cycle at the time of the refresh operation, the test control circuit controlling the driving signals so as to set one of the first conductivity type sense amplifier and the second conductivity type sense amplifier in a non-active state at the time of a test mode.

5,625,598

SEMICONDUCTOR MEMORY DEVICE HAVING PRECHARGE CIRCUIT

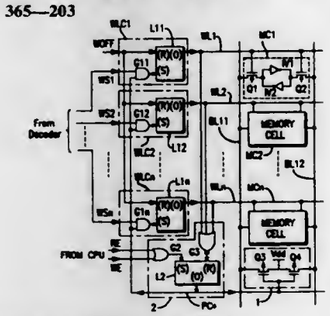
Kaori Oba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,474

Claims priority, application Japan, Dec. 21, 1994, 6-318807

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **13 Claims**



1. A semiconductor device comprising:

a plurality of word lines;

a plurality of memory cells connected to corresponding word lines, each of said memory cells being connected to at least one bit line;

a precharge circuit for precharging said at least one bit line to a predetermined voltage corresponding to an active level of a precharge control signal;

a precharge control circuit for generating said precharge control signal, said precharge control signal being at said active level when all of said plurality of word lines are at a non-selective level and said precharge control signal being at an inactive level when an access control signal is input to said precharge control circuit; and

a word line control circuit for controlling a level of a corresponding one of said plurality of word lines, said word line control circuit receiving a word line selective signal and said precharge control signal, said word line control circuit activating one of said plurality of word lines corresponding to said word line selective signal when said precharge control signal is said inactive level.

5,625,599

SEMICONDUCTOR MEMORY HAVING DECODED SENSE AMPLIFIER DRIVE LINES

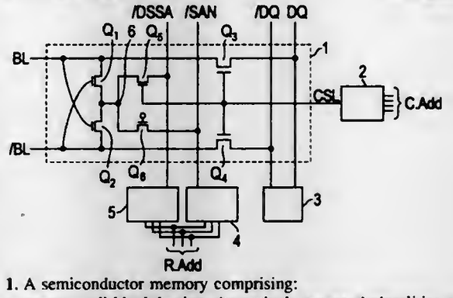
Junichi Okamura, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,386

Claims priority, application Japan, Nov. 10, 1994, 6-276260

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—205 **31 Claims**



1. A semiconductor memory comprising:

a memory cell block having alternatively arranged pluralities of memory cell arrays and pluralities of peripheral circuit sections, each of the memory cell arrays having a plurality of memory cells arranged in a matrix, the memory cells of one column being connected to one pair of bit lines, each of the peripheral circuit sections having a plurality of data lines for transferring data from and to the memory cells, a plurality of column select transistors for selectively connecting the pair of bit lines to the data lines, and a plurality of sense amplifier circuits for amplifying data read out from the memory cells;

a plurality of column select lines each extending over the memory cell arrays for selectively controlling the column select transistors, the plurality of column select lines arranged parallel to the pair of bit lines;

a column select circuit for selecting and during the column select line in response to a first address signal;

a plurality of first and second sense amplifier drive lines arranged along the peripheral circuit sections;

a sense amplifier drive line selecting circuit for selecting and driving the first and the second sense amplifier drive line in response to a second address signal;

a plurality of resistor elements respectively arranged between the sense amplifier circuits and the first sense amplifier drive lines; and

a plurality of sense amplifier activating transistors respectively connected between the sense amplifier circuits and the second sense amplifier drive lines and controlled by the column select lines.

5,625,600

FLASH MEMORY ARRAY WITH SELF-LIMITING ERASE

Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 5, 1995, Ser. No. 435,326

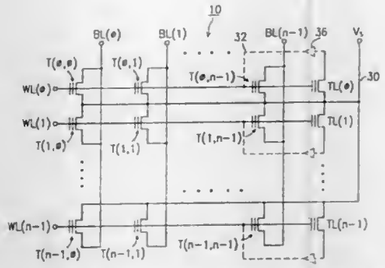
Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—218 **13 Claims**

1. A non-volatile memory array comprising:

a plurality of memory cells arranged in rows and columns, each memory cell having a source, a drain, a floating gate and a

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control gate, the control gates of all memory cells in each row being interconnected by a word line, the drains of all memory cells in each column being interconnected by a bit line, and the sources of said memory cells being interconnected by a source line;

a plurality of self-limiting-erase floating gate transistors, one associated with each row of said memory cells, each of said self-limiting-erase floating gate transistors having a control gate coupled to the word line of its corresponding row, and a source coupled to said source line; and

feedback means for connecting the drain of each of said self-limiting-erase floating gate transistors to its corresponding word line in order to limit the erase operation when its associated row of memory cells is erased.

5,625,601

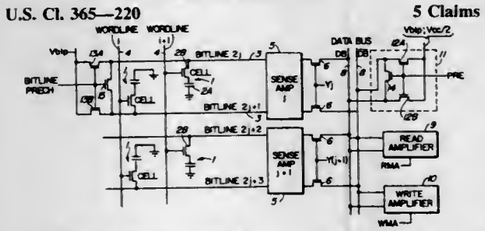
DRAM PAGE COPY METHOD

Peter B. Gillingham, Kanata, and Randy Torrance, Ottawa, both of Canada, assignors to Mosaid Technologies Incorporated, Kanata, Canada

Filed Apr. 11, 1994, Ser. No. 226,033

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—220 **5 Claims**



1. A method of transferring data into or out of plural memory cells of a dynamic random access memory (DRAM) comprising:

(a) precharging bitlines of the DRAM for a predetermined interval,

(b) addressing a first group of wordlines for a first period of time,

(c) after said first period of time, addressing a second group of wordlines for a second period of time, said first and second periods of time being contained within said predetermined interval,

(d) addressing and sensing a first group of memory cells from said first group of wordlines for an interval within said first period of time,

(e) addressing a second group of memory cells from said second group of wordlines within said second period of time, and

(f) transferring sensed bits from the first group of memory cells to said second group of memory cells at the same time directly via the bitlines while the second group of memory cells is being addressed.

5,625,602

NAND-TYPE DYNAMIC RAM HAVING TEMPORARY STORAGE REGISTER AND SENSE AMPLIFIER COUPLED TO MULTI-OPEN BIT LINES

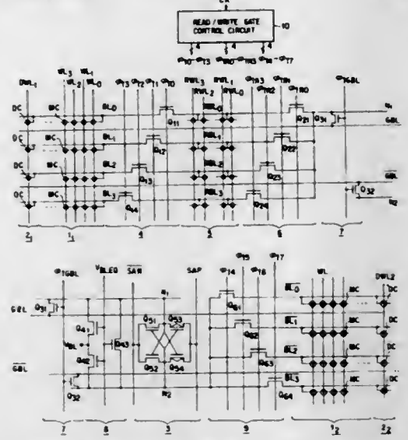
Takehiro Hasegawa; Yukihito Oowaki; Fujio Masuoka, all of Yokohama; Ryu Ogiwara, Kawasaki; Shinichiro Shiratake, Tokyo, and Shigeyoshi Watanabe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 154,124, Nov. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 978,508, Nov. 18, 1992, abandoned. This application May 22, 1995, Ser. No. 446,291

Claims priority, application Japan, Nov. 18, 1991, 3-329474; Mar. 23, 1992, 4-065122; Nov. 10, 1992, 4-299867; Nov. 18, 1992, 4-331238

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **6 Claims**



1. A dynamic semiconductor memory device comprising:

a first bit line;

a plurality of memory cell arrays each constructed by a plurality of memory cells which are connected to said first bit line;

a first transfer gate connected to said first bit line;

at least one sense amplifier arranged between adjacent memory cell arrays and having a first data node and a second data node, said first data node being connected selectively to at least two bit lines in one memory cell array of said adjacent memory cell arrays;

at least one register arranged between said sense amplifier and said memory cell arrays and connected to at least one of said first data node and said second data node directly or via the second transfer gate, for temporarily storing memory cell data read out from a memory cell; and

gate control means for controlling said first transfer gate to selectively connect to said first data node of said sense amplifier with said first bit line after activation of said sense amplifier, for writing the data from said register to said memory cell.

5,625,603

INTEGRATED CIRCUIT WITH UNEQUALLY-SIZED, PAIRED MEMORY COUPLED TO ODD NUMBER OF INPUT/OUTPUT PADS

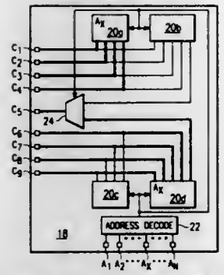
David C. McClure, Carrollton, and Thomas A. Teel, Austin, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 7, 1995, Ser. No. 477,244

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **23 Claims**

1. An integrated circuit, comprising:



an integer odd number C of electrical contacts, wherein each of said electrical contacts is for communicating a data value;

a first memory array for storing data values, wherein said first memory array is operable to simultaneously output an integer even number E of data values;

a second memory array for storing data values, wherein said second memory arrays is operable to simultaneously output an integer odd number D of data values;

a third memory array for storing data values, wherein said third memory array is operable to simultaneously output said integer E of data values;

a fourth memory array for storing data values, wherein said fourth memory array is operable to simultaneously output said integer D of data values; and

circuitry for selectively coupling said first, second, third, and fourth memory arrays to said electrical contacts;

wherein said circuitry for selectively coupling is operable to couple said first and fourth memory arrays to said electrical contacts in a first state so that said first memory array outputs the E data values and said fourth memory array outputs the D data values in said first state; and

wherein said circuitry for selectively coupling is operable to couple said second and third memory arrays to said electrical contacts in a second state so that said third memory array outputs the E data values and said second memory array outputs the D data values in said second state.

5,625,604

ADDRESS TRANSITION DETECTION CIRCUIT FOR A MEMORY DEVICE HAVING SIGNAL DELAY CIRCUITRY

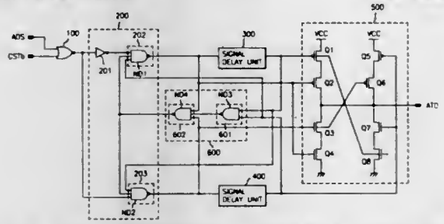
Yong S. Kim, Kyungki-Do, and Yong W. Jeon, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 5, 1996, Ser. No. 583,392

Claims priority, application Rep. of Korea, Oct. 12, 1995, 35146/1995

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233.5 **26 Claims**



1. An address transition detection circuit for a memory device comprising:

a NOR gate NORing an inputted address signal and an inputted chip select signal;

latch means for latching an output signal of the NOR gate in response to first through third delay signals to output first and second latch signals;

first and second signal delay means for respectively delaying the first and second latch signals provided from the latch means for a predetermined time to respectively output the first and second delay signals;

signal output means for outputting an address transition detect signal in response to the first and second latch signals respectively provided from the latch means and the first and second delay signals respectively provided from the first and second signal delay means; and

third signal delay means for logically operating the first and second latch signals and the first and the second delay signals provided to the signal output means and outputting the third delay signal to the latch means.

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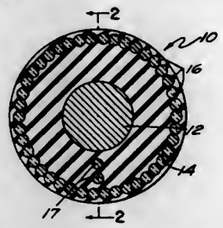
OPTIC BUNDLE TOWED ARRAY

Edmund J. Sullivan, Portsmouth; Frank W. Cuomo, East Providence, and James G. Kelly, Newport, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 13, 1983, Ser. No. 531,794

Int. Cl.[6] H04R *1/02*; G02B *6/02*

U.S. Cl. 367—149 **10 Claims**



1. A towed acoustic line array consisting essentially of:

a central strength member extending along the longitudinal axis of said line array, the proximal end of which is adapted to attach to a tow vessel;

a plurality of intensity modulating fiber optic sensing means, extending essentially parallel to said strength member, for receiving impinging acoustic signals, converting said acoustic signals to proportionally modulated light signals within said sensing means and transmitting said modulated light signals back to said tow vessel for processing, each of said plurality of intensity modulating fiber optic sensing means further comprising a relatively long optical fiber having formed as an integral part thereof at a preselected location therealong at least one in-line intensity modulated optical hydrophone, said hydrophone being capable of receiving said impinging acoustic signals and modulating said light beam passing therethrough in proportion thereto;

potting material, molded around and embedding said plurality of sensing means and said strength member in such a way as to form a neutrally buoyant line array of circular cross section centered around said strength member, the outer surface of said potting material forming the outer surface of said line array while said plurality of sensing means are spaced evenly around the periphery of said strength member just under said outer surface of said potting material, said potting material further comprising a compliant silicone rubber base having preselected fillers distributed therethrough, such that the resulting material is neutrally buoyant and acoustically transparent at preselected acoustic frequencies; and

light source means, attached to said plurality of sensing means, for providing a plurality of light beams, one said beam for each of said plurality of sensing means;

whereby an acoustic line array is formed having a diameter of not more than one half of an inch and therefore a corresponding, substantially reduced turbulent flow-noise profile.

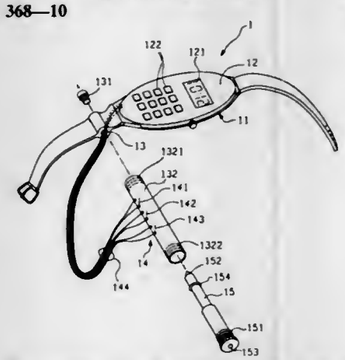
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5,625,606

WRISTWATCH AND STRAP ENCLOSING A REMOVABLE PEN AND/OR PROBE, AND ALARMING THE REMOVAL OF SAME AFTER A PRESET INTERVAL

Renato M. Openiano, 934 Fuchsia La., San Diego, Calif. 92154

Filed Mar. 14, 1995, Ser. No. 403,297
Int. Cl.[6] G04B *37/00*
U.S. Cl. 368—10 **9 Claims**



1. A device suitable to be worn upon the wrist of a user comprising:
- a housing having and defining two cavities a first one of which cavities is suitable to house works of a watch and the other, second, one of which cavities is suitable to house an elongate instrument suitable for one or more of writing, probing or pointing;
- a watch works for timekeeping housed within the first cavity of the housing, the watch works including a time interval counter responsive to an electrical signal for marking a time interval;
- an elongate instrument removably housed within the second cavity of the housing, the elongate instrument capable of being selectively withdrawn from and inserted into the second cavity by action of the user's fingers;
- a sensor, housed within the second cavity of the housing, for producing an electrical signal in response to sensing whether the instrument is present in the second cavity or not; and
- a wire for electrically connecting the electrical signal produced by the sensor to the watch works;
- wherein the time interval counter is responsive to the sensor to mark a time interval.

5,625,607

MAGNETO-OPTICAL DISK APPARATUS INCLUDING TWO MAGNETIC FIELD APPLYING DEVICES, ONE OF WHICH HAS A SUBSTANTIAL RING-SHAPED CORE MEMBER WITH A GAP IN A PORTION THEREOF

Masashiko Chaya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 15,432, Feb. 9, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,902
Claims priority, application Japan, Feb. 13, 1992, 4-058816; Feb. 24, 1992, 4-072118; May 13, 1992, 4-146959
Int. Cl.[6] G11B *11/10;5/02*
U.S. Cl. 369—13 **12 Claims**

1. A magneto-optical disk apparatus which performs at least one of recording and reproduction of information with a magneto-optical recording medium having a disk shape, said apparatus comprising:
- optical means for irradiating with a light beam a portion of a magneto-optical recording medium from one side of the medium;
- first magnetic field applying means for applying a magnetic field, modulated according to information, from a side opposite to the one side of the medium, to the portion of the medium which is irradiated with the light beam, said first magnetic field applying means comprising a magnetic head for generating the magnetic field and supporting means extending in a radial direction with respect to the medium for supporting said magnetic head;
- second magnetic field applying means for applying a constant magnetic field to the portion of the medium which is irradiated with the light beam, said second magnetic field applying means comprising (i) a core member of a substantial ring shape having a gap in a portion thereof, which includes a first core member arranged on the one side of the medium and a second core member arranged on the side opposite to the one side of the medium, substantially parallel to said supporting means along a surface of the medium, said core member having two ends located on either side of the medium such that the gap is positioned at the portion of the medium which is irradiated with the light beam, and (ii) a coil wound around a portion of said core member;
- moving means for moving said first and second magnetic field applying means and said optical means together in the radial direction with respect to the medium;
- step-back means for making said first and second magnetic field applying means, which are mounted on said moving means, independently step back from near the medium, said step-back means comprising (i) a first step-back mechanism for making said second magnetic field applying means step back from near the medium in mechanical synchronism with a carrying operation of the medium in the apparatus, (ii) judging means for judging a type of the medium and (iii) a second step-back mechanism for making said first magnetic field applying means step back from near the medium in accordance with a judgment result of said judging means.
- wherein the medium is accommodated in a cartridge case having an identifier and said judging means judges whether the medium is a recording medium for optical modulation or a recording medium for magnetic field modulation, on the basis of the identifier provided on the cartridge case.

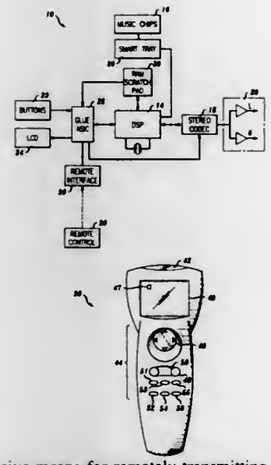
5,625,608

REMOTE CONTROL DEVICE CAPABLE OF DOWNLOADING CONTENT INFORMATION FROM AN AUDIO SYSTEM

Anthony J. Grewe, Holmdel; Kevin A. Shelby, Red Bank, and Howard M. Singer, Marlboro, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 22, 1995, Ser. No. 447,336
Int. Cl.[6] G11B *19/00;* G08C *19/00*
U.S. Cl. 369—24 **20 Claims**

1. In an audio system wherein pre-recorded music is digitally encoded in addressable memory of integrated circuit music chips and music from said chips is played on an associated solid state audio player, and wherein general description information regarding individual track selections of said music chips is downloaded to said audio player to assist in making music selections, a remote control apparatus for making remote music selections at said solid state audio player, said remote control apparatus comprising:



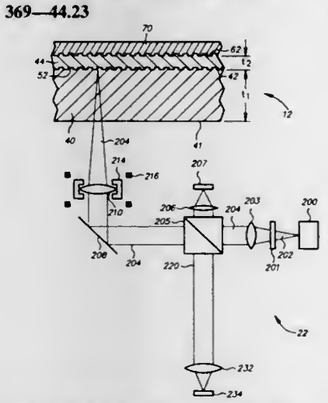
- transmit/receive means for remotely transmitting to and receiving information from said audio player, said transmit/receive means being adapted to mate with a corresponding transmit/receive means on said audio player, wherein said general description information is downloaded and stored in memory of said remote control apparatus;
- selection means for enabling a user to enter commands at said remote control apparatus pertaining to said music selections to be made; and
- processing means coupled to said transmit/receive means, said selection means and said memory, said processing means being operative to process said user commands and generate a corresponding output signal to said transmit/receive means.

5,625,609

MULTIPLE DATA LAYER OPTICAL DISK DRIVE SYSTEM WITH FIXED ABERRATION CORRECTION AND OPTIMUM INTERLAYER SPACING

Milton R. Latta, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Wade Wai-Chung Tang, San Jose, all of Calif., assignors to International Busines Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1995, Ser. No. 403,166
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.23 **14 Claims**



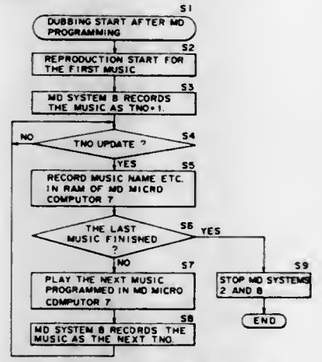
1. An optical data storage system comprising:
- a laser light source for generating a laser light beam;
- an optical data medium comprising a partially light-transmissive first data layer, a light-reflective second data layer, and a light-transmissive spacer layer located between and separating the first and second data layers by the thickness of said spacer layer; and
- a lens located between the laser light source and the first data layer of the medium for focusing the laser light beam to a spot, the lens having correction for spherical aberration so that the focused spot has approximately minimum spherical aberration when located between the first and second data layers.

5,625,610

OPTICAL DISC DUBBING APPARATUS

Satoshi Hiranuma, Urawa, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Nov. 17, 1993, Ser. No. 153,903
Claims priority, application Japan, Nov. 19, 1992, 4-333571
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—47 **5 Claims**



1. An optical disc dubbing apparatus wherein:
- a voice signal output terminal of an optical disc reproduction apparatus for transmitting a musical program signal reproduced from a source optical disc in the optical disc reproduction apparatus, the source optical disc having a TOC area storing the start address, end address, and additional information of musical program name for each musical program is, connected to a voice signal input terminal of an optical disc record apparatus for receiving each musical program signal transmitted from the optical disc reproduction apparatus which records the received musical program in a target optical disc, the target optical disc having a TOC area storing the start address, end address, and additional information of musical program name for each musical program;
- a first microcomputer for controlling said optical disc reproduction apparatus is connected via a single communication line of serially transmitting a sequence of bits in data output from the first microcomputer to a second microcomputer for controlling said optical disc record apparatus;
- said second microcomputer in response to a detection of change in a track number (TNO) during the reproduction of the source optical disc receives the additional information of musical program name for the last recorded musical program as a serial bit sequence through the single communication line from said first microcomputer and stores the received additional information of musical program name in a RAM as a program name for the last recorded musical program, and records the start address and end address for recording each musical program, together with the additional information of musical program name for each musical program stored in said RAM on the TOC area of said target optical disc before said target optical disc is dismounted from said optical disc record apparatus.

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5,625,611

METHOD OF RECORDING ON A RECORDING MEDIUM EMPLOYING AN AUTOMATIC UPDATING OF MANAGEMENT DATA BY MONITORING THE SIGNAL BEING RECORDED

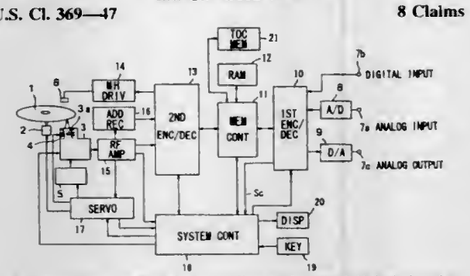
Teppei Yokota; Junichi Aramaki, both of Chiba, and Nobuyuki Kihara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 465,363, Jun. 5, 1995, abandoned, which is a division of Ser. No. 178,105, Jan. 6, 1994, abandoned, which is a continuation of Ser. No. 536,075, Sep. 29, 1995, Pat. No. 5,619,485. This application Aug. 16, 1996, Ser. No. 698,771

Claims priority, application Japan, Jan. 6, 1993, 5-015887; Jan. 6, 1993, 5-015888; Feb. 16, 1993, 5-050188

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **8 Claims**



1. A recording method for recording an inputted digital signal on a recording medium in which management data corresponding to said recorded digital signal is recorded, comprising the steps of:

recording said inputted digital signal on said recording medium and detecting an information changing point in the inputted digital signal by detecting at least three of a change of track number in said inputted digital signal, a change of index information which is present a silence portion, a continuity of reproduction time information in the inputted digital signal, and an existence of silence data in said inputted digital signal; and

updating said management data corresponding to the digital signal recorded on said recording medium after said information changing point is detected.

5,625,612

DISC CARTRIDGE LOADING APPARATUS

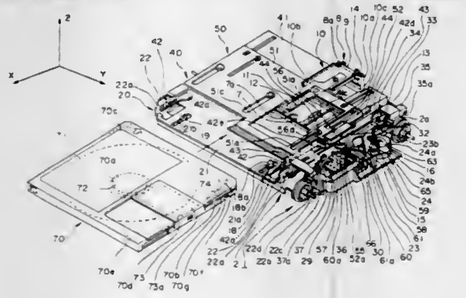
Toshimasa Tozune, Saitama, and Koichi Numata, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 417,439, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 64,552, May 19, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 618,035

Claims priority, application Japan, May 22, 1992, 4-130252; May 22, 1992, 4-130253; May 22, 1992, 4-130254; Oct. 6, 1992, 4-292138; Oct. 8, 1992, 4-296455

Int. Cl.[6] G11B *33/02;17/04*

U.S. Cl. 369—77.2 **19 Claims**



1. A disc cartridge loading apparatus including optical and magnetic heads for reproducing and/or recording data on a magneto-optical disc comprising:

a chassis;

a main slider slidably coupled to the chassis for slidable movement in a rearward direction and a forward direction, the main slider having side members;

a cartridge holder movably coupled to the main slider for movement in an upward direction and a downward direction relative to said main slider, said cartridge holder being configured to receive a disc cartridge between side portions thereof;

a loading slider slidably coupled to said cartridge holder and having a hook portion configured to engage an engaging groove on a side of said disc cartridge for sliding said disc cartridge in the forward and rearward directions relative to said cartridge holder, the loading slider being slidably coupled to the cartridge holder for slidable movement in the forward and rearward directions relative to the cartridge holder;

drive means for selectively moving said loading slider so that said hook portion moves in a loading direction and an unloading direction;

means for raising and lowering said cartridge holder and said loading slider, said raising and lowering means being operatively coupled to slidable movement of said main slider;

a rack arranged on an outer side of said main slider and a drive gear engaged to said rack and driven by said drive means, said loading slider being operatively coupled to said drive gear, wherein said disc cartridge engaged with said hook portion of said loading slider is selectively drawn in and ejected from said loading apparatus; said cartridge holder and said loading slider being coupled to said main slider so that the cartridge holder and loading slider move in said upward direction and said downward direction when the main slider moves in the forward and rearward directions, respectively; and

a supporting arm having a magnetic head mounted thereto for recording data on the disc contained in said disc cartridge, said supporting arm being supported in a manner that is movable in a vertical direction with respect to said chassis via a cam engaged with a cam groove formed in said rack of said main slider.

5,625,613

SUPER-RESOLUTION SCANNING OPTICAL SYSTEM BY INCOHERENTLY SUPERIMPOSING TWO BEAMS

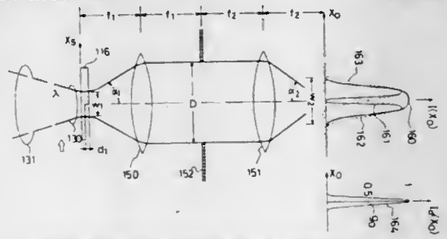
Makoto Kato, Hyogo, and Kenichi Kasazumi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 24, 1995, Ser. No. 394,273

Claims priority, application Japan, Feb. 24, 1994, 6-026586

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **19 Claims**



1. A super-resolution scanning optical apparatus comprising:

a first coherent light source for emitting a first coherent beam serving as a primary beam;

a second coherent light source for emitting a second coherent beam which has either a plane of polarization perpendicular to the plane of polarization of said first coherent beam or a wavelength different from the wavelength of said first coherent beam;

a phase plate for receiving said second coherent beam and emitting a subsidiary beam which has an intensity distribution in which peak values are placed at least on both sides of the center of the subsidiary beam on a plane perpendicular to an optical axis and the principal portion of the subsidiary beam is equal in size to the principal portion of the primary beam;

a focusing means for superimposing the primary beam emitted from said first coherent light source and the subsidiary beam emitted from said phase plate upon each other and focusing, as a minute size light beam, each of the primary beam and the subsidiary beam onto a plane to be scanned;

a scanning means for scanning said plane to be scanned with a light beam composed of the primary beam and the subsidiary beam being superimposed upon each other;

a light separating means for receiving the light beam transmitted or reflected by said plane to be scanned, separating said light beam into the primary beam and the subsidiary beam through polarization separation or wavelength separation, and emitting them;

an optical detecting means for individually detecting the intensity of the primary beam and the intensity of the subsidiary beam and outputting a light intensity signal; and

a calculating means for calculating, based on the light intensity signal outputted from said optical detecting means, a super-resolution scanning signal and outputting it.

5,625,614

OPTICAL DISC DATA RECORDING APPARATUS AND METHOD USING MODIFIED PIT LENGTHS

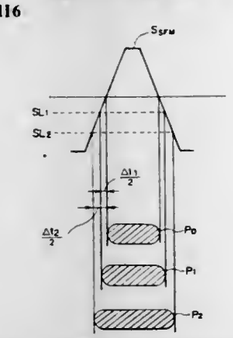
Shoji Taniguchi, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Mar. 8, 1995, Ser. No. 400,565

Claims priority, application Japan, Mar. 11, 1994, 6-041586

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **14 Claims**



1. An information recording apparatus for recording at least a variable video signal and a digital audio signal onto an optical record medium, comprising:

a pulse signal generation means for generating a pulse signal having pulse widths corresponding to the video signal and the digital audio signal to be recorded;

a first pulse signal adjustment means coupled to said pulse signal generation means, for decreasing the width of each pulse of said pulse signal by an amount proportional to the width of each said pulse, to output a firstly adjusted signal having firstly adjusted pulse widths;

a second pulse signal adjustment means coupled to said first pulse signal adjustment means, for increasing the firstly adjusted pulse widths of the firstly adjusted signal by a predetermined amount to output a secondly adjusted signal having secondly adjusted pulse widths; and

a light emission means for emitting a recording light corresponding to the secondly adjusted signal onto said optical record medium to form record pits having pit lengths corresponding to the secondly adjusted pulse widths of the secondly adjusted signal.

5,625,615

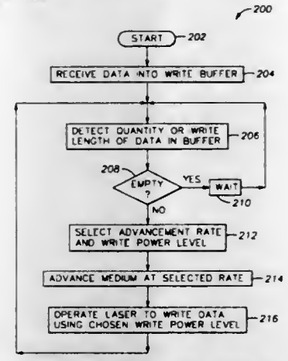
OPTICAL STORAGE DRIVE EMPLOYING VARIABLE WRITE SPEED FOR REDUCED LASER WRITE POWER

James J. Dente, Longmont, Colo.; Blair I. Finkelstein, Tucson, Ariz.; Marc E. Goldfeder, Tucson, Ariz.; Michael T. Solan, Tucson, Ariz., and Daniel J. Winarski, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,646

Int. Cl.[6] G11B *7/00;15/46*

U.S. Cl. 369—116 **50 Claims**



1. A process for storing digital data signals to a optical data storage medium with a laser, said data storage medium having a physical composition, comprising the steps of:

receiving and storing digital data into a buffer;

detecting a quantity of digital data stored in the buffer;

selecting a rate for advancing the optical data storage medium, said rate being proportional to the quantity of digital data stored in the buffer;

in accordance with the selected rate and the data storage medium's physical composition, identifying a minimum write power level at which the laser is capable of a predetermined level of effectiveness in writing data to the optical data storage medium being advanced at the selected rate;

advancing the optical data storage medium at the selected rate; and

operating the laser, at the identified minimum write power level, to write at least some of the digital data to the medium while advancing the medium at the selected rate.

5,625,616

DETERIORATION ESTIMATING METHOD FOR A LIGHT EMITTING DEVICE AND A LIGHT EMISSION DRIVING APPARATUS USING THE METHOD

Shigeaki Koike; Masaru Tezuka; Shinji Kaneko, and Yoshizo Mihara, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 627,122

Claims priority, application Japan, Apr. 5, 1995, 7-080460

Int. Cl.[6] G01B *7/125*

U.S. Cl. 369—116 **22 Claims**

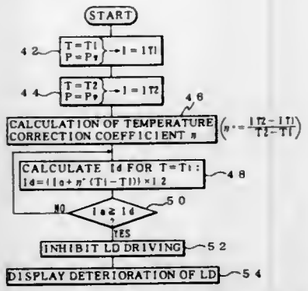
1. A deterioration estimating method for estimating a state of deterioration of a light emitting device based on a driving current of the light emitting device, comprising the steps of:

supplying a first driving current such that the light emitting device provides a predetermined light output, and setting the value of the first driving current as a reference value;

setting a driving current value which is n times the reference value as a deterioration threshold current for determining the state of deterioration of the light emitting device;

supplying a second driving current such that the light emitting device provides the predetermined light output, and comparing the value of the second driving current with the deterioration threshold current; and

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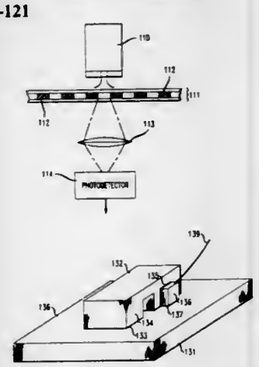
determining deterioration of the light emitting device in accordance with the result of the comparison.

5,625,617

NEAR-FIELD OPTICAL APPARATUS WITH A LASER HAVING A NON-UNIFORM EMISSION FACE

Leslie C. Hopkins, Flemington; Cherry A. Murray, Murray Hill, both of N.J.; Afshin Partovi, New York, N.Y.; David R. Peale; Hsi-jen J. Yeh, both of Chatham, N.J., and George J. Zydzik, Columbia, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 6, 1995, Ser. No. 523,884
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—121 **13 Claims**



13. Method of making near-field optical apparatus, the method comprising

a) providing a slider having a reference surface and a further surface substantially at 90° to the reference surface, with a quantity of conductive adhesive means disposed on said further surface;

b) providing a semiconductor laser having an emission face;

c) providing a body having an essentially optically flat surface;

d) placing said slider onto said optically flat surface such that said reference surface is in contact with the optically flat surface;

e) placing the semiconductor laser onto said optically flat surface such that the emission face is in contact with the optically flat surface;

f) urging the laser towards the further surface and towards the optically flat surface, with at least some of the conductive adhesive means disposed between the semiconductor laser and the further surface; and

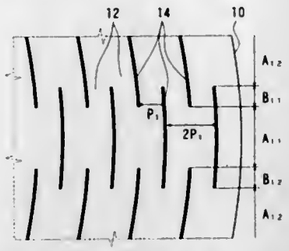
g) causing the conductive adhesive to solidify such that the semiconductor laser adheres to the further surface of the slider.

5,625,618

OPTICAL RECORDING MEDIUM EMPLOYING AN INTERMITTENT PATTERN FOR GUIDING TRACKS AND TRACKING APPARATUS FOR THE SAME

Hiroshi Oki, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,264
Claims priority, application Japan, Jul. 30, 1993, 5-206858
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.1 **13 Claims**



1. An optical recording medium having concentric or spiral tracks to be traced by a light spot, said optical recording medium comprising:

a plurality of concentric or spiral guide lines each thereof being arranged along one of said tracks for each circle of a plurality of circles defining a track format so as to define a track width and provide a diffracted light upon irradiation of said light spot for the purpose of tracking by said light spot,

each of said guide lines having, for one of said circles, a periodic intermittent pattern in which guide line existing portions and guide line nonexistent portions appear periodically with respect to a circumferential direction in which said one of said tracks extends,

a phase of said periodic intermittent pattern being shifted from that of an adjoining one of said guide lines which adjoins said one of said circles in a radial direction of said optical recording medium so as to form a first radial spacing between said guide line existing portions adjoining said one of said circles in the radial direction to define, in at least a part of a track-formed area of said optical recording medium, said track width which is less than a diffraction limit determined by a wavelength of light producing said light spot and a second radial spacing in which each of said guide line nonexistent portions is integral with an adjacent one of said tracks at sides thereof to form a wide region having a width no less than said diffraction limit.

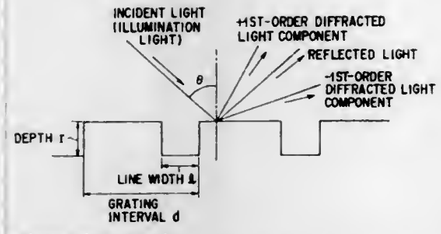
5,625,619

OPTICAL RECORDING MEDIUM HAVING A PLURALITY OF DIFFERENT DIFFRACTION GRATING CELLS

Toshiki Toda, Satte; Susumu Takahashi, Matsudo, and Fujio Iwata, Chiba, all of Japan, assignors to Toppan Printiog Co., Ltd., Tokyo, Japan

Division of Ser. No. 232,072, Apr. 28, 1994, Pat. No. 5,570,338. This application Jun. 7, 1995, Ser. No. 475,814
Claims priority, application Japan, Aug. 28, 1992, 4-230535
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.1 **21 Claims**

1. An optical information recording medium for recording data, the medium comprising:



a planar substrate; and

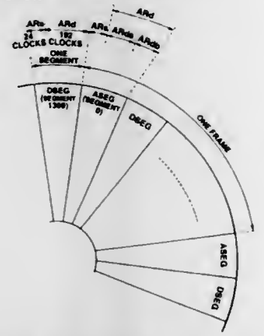
at least one cell comprising small diffraction gratings on a surface of the planar substrate, a ratio of a line width of said diffraction gratings to a grating pitch of said diffraction gratings being changed based on the data.

5,625,620

OPTICAL DISC

Yoshihito Fukushima, Miyagi, and Goro Fujita, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP95/01697, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO96/06432, PCT Pub. Date Feb. 29, 1996
PCT Filed Aug. 25, 1995, Ser. No. 624,646
Claims priority, application Japan, Aug. 25, 1994, 6-200874
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—275.3 **4 Claims**



1. An optical disc for use with an optical disc drive comprising,

a base formed of resin;

a reflection layer formed on the base;

a plurality of servo areas on the base where a plurality of servo pits for providing servo information for a sample servo system are formed at predetermined angular positions in a plurality of respective tracks;

a plurality of data areas where a plurality of data pits for providing data information accessed by the optical disc drive operative on the basis of the servo pits are formed between the respective servo areas, and

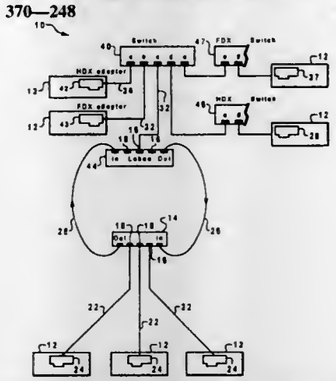
wherein the servo area and the data area are adjacent to each other and include a plurality of anchor pits neglected by the optical disc drive between the servo pit disposed at the position closest to the data area and the data pit disposed closest to the servo area.

5,625,621

METHOD AND SYSTEM OF AUTOMATICALLY CONFIGURING A LAN SWITCH PORTOF A MULTI-PORT LAN SWITCH BASED ON AN ATTACHED DEVICE TYPE

Kenneth J. Christensen, Apex; Jack S. Chorpenning, Cary; Michael S. Siegel, Raleigh; Thomas E. Stammely, Cary; Norman C. Strole, Raleigh; Max R. Povse, Apex, and Raymond L. Zeisz, Jr., Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1995, Ser. No. 403,144
Int. Cl.[6] H04L *12/40*
U.S. Cl. 370—248 **30 Claims**



1. A method of configuring a port of a multi-port LAN switch based on an attached device type for a multi-port LAN switch having one or more attached devices, the method comprising the steps of:

setting a port of the multi-port LAN switch to operate as a concentrator, and determining, during a first period of time, whether an attached device is attempting to insert into a network at the multi-port LAN switch port;

if the attached device is attempting to insert during the first period of time, configuring the port of the multi-port LAN switch to operate as a concentrator;

if the attached device is not attempting to insert during the first period of time, setting the port of the multi-port LAN switch to operate as a network adapter, transmitting an insert signal to the attached device, and determining, during a second period of time, whether a response signal is received from the attached device; and

if a response signal is received during the second period of time, configuring the port of the multi-port LAN switch to operate as a network adapter.

5,625,622

APPARATUS AND METHOD FOR A GENERALIZED LEAKY BUCKET

Pravin K. Johri, Aberdeen, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1995, Ser. No. 579,526
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—232 **23 Claims**

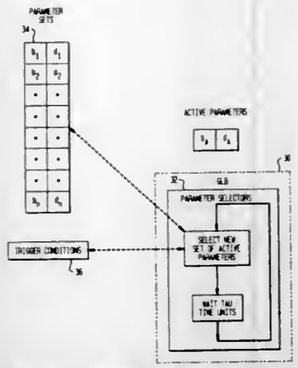
1. A leaky bucket apparatus for monitoring the transmission of cells at a node within a communications network, said apparatus comprising:

token counter for tracking the number of tokens presently available at said leaky bucket apparatus;

controller for controlling access of said cells to said leaky bucket apparatus, wherein a cell is accepted into said leaky bucket for transmission as long as corresponding ones of said tokens are available in said token counter; and

parameter selector for selecting an active parameter set from a group of multiple parameter sets, said group of multiple parameter sets including varying drain rates and token pools

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sizes to accommodate varying bursts of cells entering said controller, wherein a single one of said parameter sets includes at least a drain rate and token pool size parameter, said parameter selector operable to alter said active parameter set in accordance with predefined trigger conditions input thereto.

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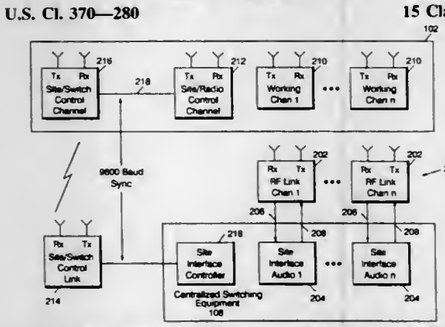
RF SITE COMMUNICATION LINK

James S. Kent; Houston H. Hughes, III, and Kenneth W. Morris, all of Lynchburg, Va., assignors to Erilsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Oct. 14, 1994, Ser. No. 321,342

Int. Cl.[6] H04J *4/00*

U.S. Cl. 370—280 **15 Claims**



1. In a radio frequency (RF) communications system, a RF site communications link for transmitting and receiving signals between centralized switching equipment and at least one of a plurality of remote mobile communications RF base stations, said RF site link comprising:

a plurality of RF link devices connected to the centralized switching equipment, each for transmitting and receiving signals on a different one of a plurality of working channels associated with each of the base stations and said plurality of working channels at each base station also transmitting signals to and receiving signals from at least one radio, said radio and one of said RF link devices transmitting on a first frequency of one of said working channels; and receiving on a second frequency of said one of said working channels and said base station receiving on said first frequency and transmitting on said second frequency during duplex communication; and

a RF control link to control assignment of said RF link devices in coordination with assignment of the working channels for communications between the centralized switching equipment and each base station.

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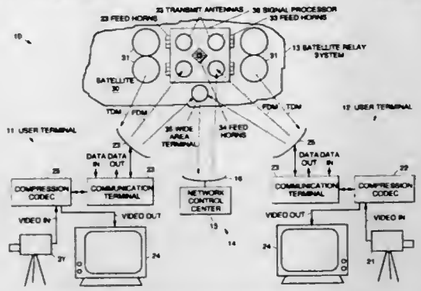
HIGH DATA RATE SATELLITE COMMUNICATION SYSTEM

Harold A. Rosen, Washington, D.C.; Victor S. Reinhardt, Rancho Palos Verdes, Calif.; Parthasarathy Ramanujam, Redondo Beach, Calif.; Gregory C. Busche, Manhattan Beach, Calif.; Andrew L. Strodtbeck, El Segundo, Calif., and Jennifer L. Vollbrecht, Hermosa Beach, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 21, 1993, Ser. No. 142,524

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—307 **9 Claims**



1. A high data rate satellite communication system comprising:

a plurality of user terminals that each comprises:

a transceiver for receiving input data and outputting output data, for encoding the input data to provide frequency division multiplexed data, for decoding received encoded data comprising time division multiplexed data to produce the output data, and for generating terminal control signals that identify source and destination user terminals that are to communicate with each other; and

an antenna coupled to the transceiver for transmitting and receiving the multiplexed data and the terminal control signals;

a satellite relay system comprising:

a satellite;

a wide area antenna disposed on the satellite for communicating satellite configuration and control signals between a network control center and the satellite relay system, and for communicating the terminal control signals between the user terminals and the satellite relay system;

a plurality of receive antennas disposed on the satellite that operate in a first frequency band that comprises a first plurality of subbands, the receive antennas operating on different subbands and producing a first plurality of beams that cover a predefined area for receiving the frequency division multiplexed data from the user terminals;

a signal processor coupled to the plurality of receive antennas for demodulating the frequency division mulitiplexd data received from a source user terminal, for routing the demodulated data so that it is transmitted to a desired destination user terminal, for remodulating the demodulated data to provide remodulated time division multiplexed data, and for transmitting the remodulated time division multiplexed data to the desired destination user terminal;

a plurality of feed horns that couple the signal processor to the receive antennas, each receive antenna producing a seperate beam from each feed horn to which it is coupled, the feed horns being oriented towards their respective receive antennas such that each receive antenna produces beams that do not overlap with each other within the predefined area, the beams from the receive antennas facilitating geographic frequency reuse by creating an interlaced pattern of beams that covers the predefined area;

a plurality of transmit antennas disposed on the satellite and coupled to the signal processor that operate in a second frequency band that comprises a second plurality of subbands, the transmit antennas operating on different subbands and producing a second plurality of beams that cover the predefined area for transmitting the remodulated time division mulitiplexed data to the desired destination user terminal; and

a plurality of feed horns that couple the signal processor to the transmit antennas, each transmit antenna producing a seperate beam for each feed horn to which it is coupled, the feed horns being oriented towards their respective transmit antennas such that each transmit antenna produces beams that do not overlap with each other within the predefined area, the beams from the transmit antennas facilitating geographic frequency reuse by creating an interlaced pattern of beams that cover the predefined area;

and wherein the network control center comprises:

a control processor for processing the terminal control signals that link the source and destination user terminals by way of the satellite relay system, and for generating the satellite configuration and control signals that configure and control the satellite relay system and route encoded video and audio data between source and destination user terminals; and

an antenna coupled to the control processor for transmitting and receiving the satellite configuration and control signals and the terminal control signals.

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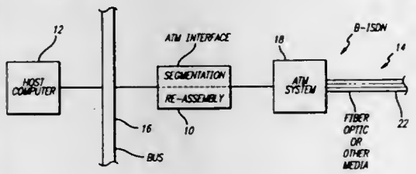
METHOD AND APPARATUS FOR PARTITIONING DATA LOAD AND UNLOAD FUNCTIONS WITHIN AN INTERFACE SYSTEM FOR USE WITH AN ASYNCHRONOUS TRANSFER MODE SYSTEM

Rasoul M. Oskouy, Fremont, and Denny E. Gentry, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,573

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—395 **18 Claims**



1. An interface system for connecting a host computer system to an asynchronous transfer mode (ATM) system, said interface system comprising:

a buffer memory for buffering data;

a host computer interface element for controlling the transference of data between the buffer memory and the host computer;

an ATM system interface element for controlling transference of data between the ATM system and the buffer memory; and

a scheduling element, connected to the host computer interface element and the ATM system interface element, for controlling said host computer interface element to transfer data between the host computer system and the buffer memory responsive to transference of data between the buffer memory and the ATM system by the ATM system interface element.

5,625,626

METHOD OF AUTOMATICALLY DETERMINING A TRANSMISSION ORDER OF PACKET IN A LOCAL AREA NETWORK AND APPARATUS FOR SAME

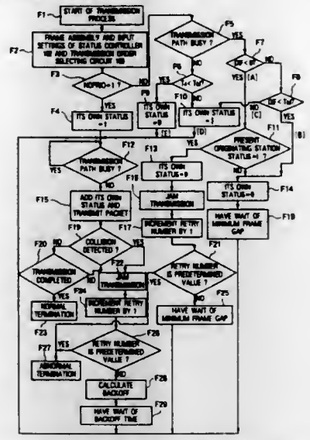
Kazuhiro Umekita, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 409,076

Claims priority, application Japan, Mar. 25, 1994, 6-056300

Int. Cl.[6] H04L *12/413*

U.S. Cl. 370—448 **32 Claims**



16. A method of transmitting a packet in a local area network using the CSMA/CD protocol, comprising the steps of:

in transmitting a first packet from an arbitrary station P connected to the local area network, adding a code to the first packet and transmitting the first packet, the code indicating an importance degree of the first packet concerning whether transmission of the first packet is permitted to be intercepted;

in transmitting a second packet from an arbitrary station I connected to the local area network during transmission of the first packet, performing the steps of:

determining a transmission timing in accordance with an important degree of the second packet and a transmission end time required for the second packet, and

when it is determined according to the determining step that it is necessary to intercept the transmission of said first packet and transmit said second packet, if said code indicating the importance degree of said first packet represents "not important", the transmission of said first packet is intercepted and said second packet is transmitted, and if said code indicating the importance degree of said first packet represents "important", said second packet is transmitted after a time corresponding to a minimum frame gap after the transmission of said first packet has been completed.

5,625,627

MOBILE STATION APPARATUS AND BASE STATION APPARATUS

Haruhiko Ishi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 26, 1994, Ser. No. 329,247

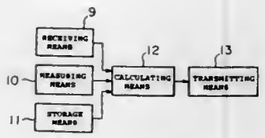
Claims priority, application Japan, Apr. 6, 1994, 6-068248

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—347 **19 Claims**

1. A mobile station apparatus for carrying out mobile communications with a base station according to TDMA technique, comprising:

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ELECTRIC FIELD STRENGTH RECEIVED BY MOBILE STATION	TIME ALIGNMENT VALUE
~34	0
33~24	1
23~18	2
17~14	3
13~11	4
10~8	5
7~4	8

storage means for storing a correlation table indicating correlation between received electric field strength and time alignment value;

measuring means for measuring a received electric field strength of a radio wave from the base station;

readout means for reading a time alignment value from the correlation table stored in said storage means, based on the received electric field strength measured by said measuring means; and

transmitting means for transmitting data to the base station according to transmission timing adjusted based on the time alignment value read by said readout means.

5,625,628

ALOHA OPTIMIZATION

Robert G. Heath, San Diego, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 15, 1995, Ser. No. 404,707
Int. Cl.[6] H04B *7/212;* **H04J** *3/17*
U.S. Cl. 370—321 **5 Claims**



1. A method of Aloha optimization in an integrated satellite network comprising the steps of:

designating a time period as an inroute frame during which information can be communicated via an earth orbit satellite from one or more of a plurality of remote terminals to a host terminal, the designating step further comprising the steps of:

designating a first portion of the inroute frame as a Transaction Reservation portion; and

designating a second portion of the inroute frame as an Aloha portion;

requesting, in the event a Transaction Reservation portion is to be communicated from a first of the plurality of remote terminals, that the host terminal allocate one or more slots of the Transaction Reservation portion to the first of the plurality of remote terminals;

redesignating one or more unallocated slots within the Transaction Reservation portion as extra Aloha slots; and

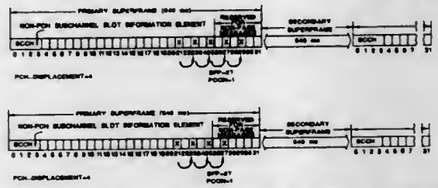
selecting at least one target slot, in the event an Aloha packet is to be communicated from a second of the plurality of remote terminals, from a group of slots comprising slots within the Aloha portion and the extra Aloha slots.

5,625,629

METHOD OF ENSURING BANDWIDTH AVAILABILITY FOR NON-PAGE TRAFFIC IN A COMMUNICATIONS SYSTEMS

Richard D. Wenk, San Diego, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Aug. 7, 1995, Ser. No. 511,676
Int. Cl.[6] H04J *3/12;* **H04B** *7/212;* **H04Q** *7/00*
U.S. Cl. 370—347 **14 Claims**



1. In a communications system, a method of ensuring bandwidth availability for non-page messages, the method comprising:

assembling a superframe within a base station, the superframe comprising a plurality of slots, the assembling including:

defining a broadcast control channel comprising a first portion of the plurality of slots, the broadcast control channel comprising a Non-PCH Subchannel slot information element,

defining a point-to-point control channel comprising a second portion of the plurality of slots, the point-to-point control channel slots comprising Non-PCH Subchannel slots, wherein the Non-PCH Subchannel slot information element specifying a number of the Non-PCH Subchannel slots to be reserved within the point-to-point control channel, and

reserving said specified Non-PCH Subchannel slots; and

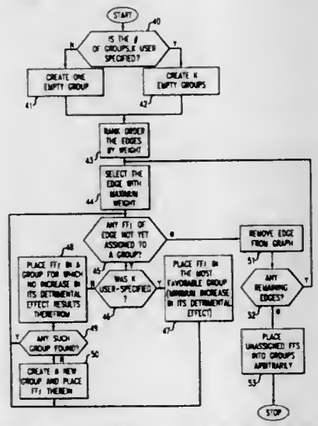
transmitting the superframe from the base station to a radio unit.

5,625,630

INCREASING TESTABILITY BY CLOCK TRANSFORMATION

Miron Abramovici, Murray Hill, N.J., and Krishna B. Rajan, Chicago, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 24, 1996, Ser. No. 637,026
Int. Cl.[6] G06T *11/00*
U.S. Cl. 371—22.1 **10 Claims**



1. An automated method of increasing the testability of a sequential circuit design, the sequential circuit design comprising a plurality of clocked flip-flops, the sequential circuit design having a plurality of possible circuit states thereof, each of said circuit states being defined by a set of one or more of said flip-flops having a particular set of logic values assigned thereto, the method comprising the steps of:

identifying a difficult-to-reach circuit state based on a measure of difficulty of achieving said circuit state, the difficult-to-reach circuit state being defined by a set of two or more of said flip-flops and corresponding values assigned thereto, at least two of the two or more flip-flops being clocked by a common clock line;

partitioning the set of at least two of the two or more flip-flops into a plurality of flip-flop groups; and

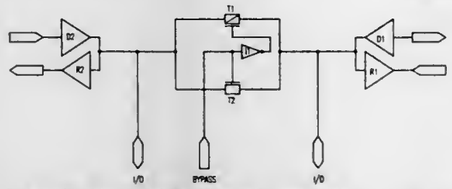
modifying the sequential circuit design to produce a modified design comprising a plurality of clock lines, each of which is capable of being activated independently of one or more of the other clock lines, and wherein flip-flops which have been partitioned into different flip-flop groups are clocked by different clock lines.

5,625,631

PASS THROUGH MODE FOR MULTI-CHIP-MODULE DIE

Jeffrey S. Zimmerman, and George W. Rohrbaugh, III, both of Chittenden County, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1996, Ser. No. 638,414
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—22.1 **11 Claims**



1. A multi-chip-module architecture, comprising:

a first integrated circuit chip and a second integrated circuit chip mounted on a common carrier, said first integrated circuit chip having first and second input/output circuit means and said second integrated circuit chip having an input/output circuit means coupled to said second input/output means of said first integrated circuit chip; and

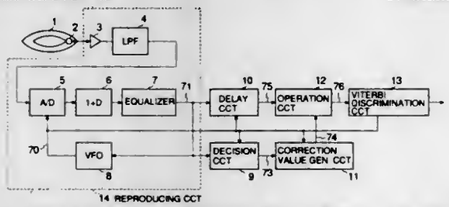
circuit means for coupling said first and second input/output circuit means of said first integrated circuit chip to each other in response to a control signal.

5,625,632

MAGNETIC DISK DRIVE INCLUDING A DATA DISCRIMINATION APPARATUS CAPABLE OF CORRECTING SIGNAL WAVEFORM DISTORTION DUE TO INTERSYMBOL INTERFERENCE

Yoshiteru Ishida, Chigasaki; Kazunori Iwabuchi, Yokohama; Hideyuki Yamakawa, Fujisawa, and Hiromi Matsushige, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,725
Claims priority, application Japan, Oct. 8, 1993, 5-253336
Int. Cl.[6] G06F *11/10;* **H03M** *13/00*
U.S. Cl. 371—43 **17 Claims**



1. A data discrimination apparatus for outputting a bit stream including logical "1" and "0" in response to an input signal representative of bi-level data, said data discrimination apparatus comprising:

a decision circuit for detecting an amplitude of the input signal at regular sampling intervals so as to preliminarily classify, based on the detected amplitude, each of sampled parts of the input signal into one of a symbol "1", indicative of a large amplitude part, and a symbol "0", indicative of a small amplitude part for deciding, for a pertinent sampled part being symbol "1", whether each of a predetermined sampled part is symbol "1" or "0";

a correction value generation circuit responsive to an output of the decision circuit for generating one of a number of correction values of an amplitude of the input signal, the correction values being predetermined corresponding to different combinations of the symbols of the predetermined number of sampled parts;

a delay circuit for delaying the input signal by a predetermined time;

an operation circuit for adding, to the input signal delayed by the delay circuit, a signal indicative of one of the correction values generated from the correction value generating circuit; and

a discrimination circuit responsive to an output of the operation circuit for discriminating the input signal so as to output the bit stream including logical "1" and "0";

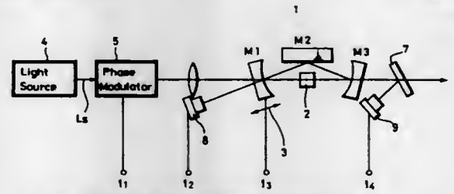
wherein said decision circuit includes an amplitude detecting circuit for detecting an amplitude of the input signal so as to output a train of the symbols "1" and "0", and a counter circuit for counting, as a run length, the number of consecutive symbol "0"s which precedes in time each symbol "1" contained in the train of the symbols, and wherein said correction value generating circuit includes a memory device for storing the correction values in correspondence with possible different values of the run length obtained by the counter circuit.

5,625,633

LASER LIGHT GENERATING APPARATUS

Isao Ichimura, and Atsushi Fukumoto, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,693
Claims priority, application Japan, Mar. 15, 1994, 6-044218
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—32 **9 Claims**



1. A laser light generating apparatus comprising:

A light source generating a light beam of a fundamental wave length;

a resonator comprising a pair of reflection devices reflecting said light beam of said fundamental wave length;

a non-linear optical crystal device located between said reflection devices and generating a light beam of harmonic wave length when said light beam of said fundamental wave length is input thereto;

a driving device for moving at least one of said reflection devices to control a resonator length of said resonator so that said resonator resonates in said fundamental wave length;

a first detection device for detecting said light beam of said fundamental wave length output and generating a detection signal; and

control means for deriving a plurality of control signals, including a resonator length error signal and a resonator reflected light intensity signal from said detection signal, and for setting said driving device in its locked state, wherein said

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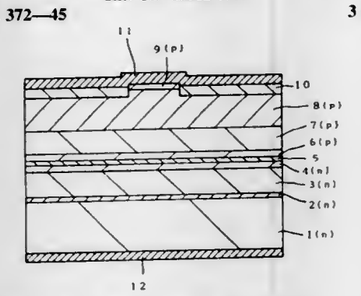
resonator length error signal is sample-held, and said driving device is actuated in response to said sample-held resonator length error signal.

5,625,634

SEMICONDUCTOR LASER

Masakazu Ukita, and Akira Ishibashi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 15, 1994, Ser. No. 275,374
Claims priority, application Japan, Jul. 28, 1993, 5-205919
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **3 Claims**



1. A semiconductor laser comprising:
a first cladding layer of a first conduction type;
an active layer stacked on said first cladding layer; and
a second cladding layer of a second conduction type stacked on said active layer, wherein:
said first cladding layer, said active layer and said second cladding layer are made of II–VI compound semiconductors, and
pulse oscillation occurs with characteristics of a threshold current I_{th}(A), a threshold voltage V_{th}(V) of a diode composed of said first cladding layer, said active layer and said second cladding layer, a differential resistance $R_S(\Omega)$ of said diode after the rising, a thermal resistance R_t(K/W) and a characteristic temperature T_O(K), and wherein:
when two amounts α and β are defined by:

$$\alpha \equiv (R_t/T_O) I_{th} V_{th}$$

$$\beta \equiv (R_t/T_O) R_S I_{th}^2$$

continuous oscillation occurs at room temperature when the operating point (α, β) exists in an area on the α-β plane surrounded by the straight line α=0, and the curve ((2ln t−1)/, (1−ln t)/t^2) having t as a parameter.

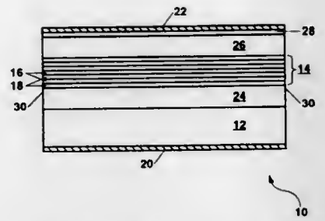
5,625,635

INFRARED EMITTING DEVICE AND METHOD

Steven R. Kurtz; Robert M. Biefeld; L. Ralph Dawson; Arnold J. Howard, and Kevin C. Baucom, all of Albuquerque, N.M., assignors to Sandia Corporation

Filed Nov. 28, 1994, Ser. No. 345,160
Int. Cl.[6] H01S *3/19*
U.S. Cl. 392—45 **8 Claims**

3. An infrared emitting device comprising:
(a) a compound semiconductor substrate having a lattice constant of at least 6.0 angstroms; and
(b) a semiconductor active region grown above the substrate and comprising a plurality of quantum-well layers separated by barrier layers, each quantum-well layer being formed of a ternary alloy of InAsSb and having a thickness, d_w, satisfying an equation of the form $d_w \leqq d_{1.e.ff} < d/2$ for substantially reducing an Auger recombination process in the active region, and each barrier layer being formed of a compound semiconductor alloy having a smaller lattice constant and a larger energy bandgap than the quantum-well layers.

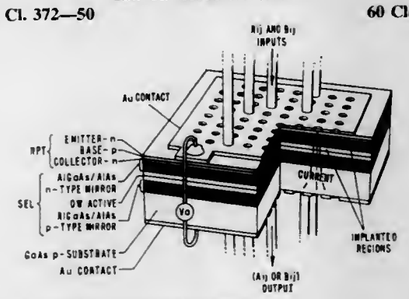


5,625,636

INTEGRATION OF PHOTOACTIVE AND ELECTROACTIVE COMPONENTS WITH VERTICAL CAVITY SURFACE EMITTING LASERS

Robert P. Bryan, 12700 Indian School Rd. NE., Apt. 604, Albuquerque, N.M. 87112; Peter Esherick, 1105 Sagebrush Trail SE., Albuquerque, N.M. 87123; Jack L. Jewell, 12 Timberline Dr., Bridgewater, N.J. 08807; Kevin L. Lear, 13713 Vic Rd. NE., Albuquerque, N.M. 87112, and Gregory R. Olbright, 3875 Orange Ct., Boulder, Colo. 80304

Filed Oct. 11, 1991, Ser. No. 774,915
Int. Cl.[6] H01S *3/19;3/10*
U.S. Cl. 372—50 **60 Claims**



1. An optoelectronic device, comprising:
(a) a vertical cavity surface emitting laser comprising a first mirror, a second mirror, both of said mirrors defining the extent of said laser; and a laser cavity interposed between said mirrors; and
(b) an opto- and/or electronic interactive component, said interactive component and said laser monolithically integrated and electrically connected in parallel, wherein said interactive component provides an electronic output which serves as an input into said vertical cavity surface emitting laser.

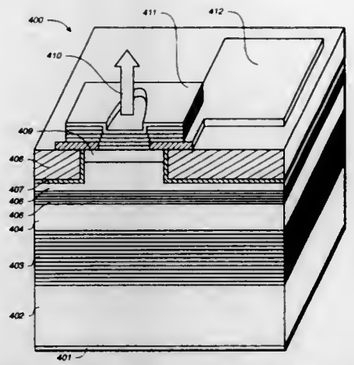
5,625,637

SURFACE EMITTING SEMICONDUCTOR LASER AND ITS MANUFACTURING PROCESS

Katsumi Mori; Tatsuya Asaka, and Hideaki Iwano, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 206,104, Mar. 3, 1994, Pat. No. 5,375,133, which is a continuation of Ser. No. 952,492, Jan. 19, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 359,964
Claims priority, application Japan, Mar. 28, 1991, 3-64872; Mar. 11, 1992, 4-52642
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—96 **31 Claims**

1. A surface emitting semiconductor laser formed on a semiconductor substrate for emitting a beam in a direction perpendicular to the substrate, comprising:



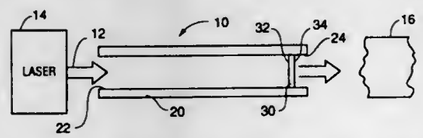
optical resonator means comprising a pair of spatially disposed reflecting mirrors with a plurality of semiconductor layers between said reflecting mirrors, said semiconductor layers including at least one cladding layer and an active region, a region of said cladding layer formed into at least one column-like portion forming a part of said resonator means,
a buried region surrounding said at least one column-like portion, said buried region comprising a first barrier layer and a second flattening layer,
an electrode formed in contact with a surface region of said column-like portion and having a light emitting port formed therein, one of said reflecting mirrors comprising a plurality of layers and formed on a portion of said electrode and in said light emitting port.

5,625,638

SEALED CRYSTALLINE WINDOWS FOR HOLLOW LASER FIBERS

David Trost, San Francisco, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Continuation of Ser. No. 69,299, May 28, 1993, abandoned.
This application Oct. 24, 1994, Ser. No. 327,886
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—103 **14 Claims**



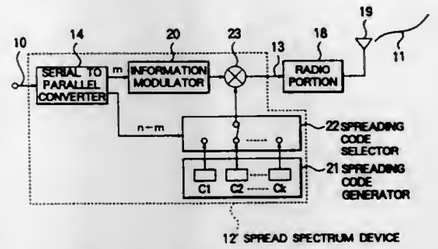
1. A device for channeling a laser beam having a wavelength comprising:
an elongated tubular member having an input end and a delivery end, said tubular member being configured to channel a laser beam from the input end to the delivery end; and
a window mounted within the tubular member near the delivery end thereof, said window forming a seal preventing fluids from entering the tubular member from the delivery end, with the thickness of said window being selected to reduce reflection losses at the wavelength of the laser beam thereby increasing the transmission of the laser beam through the window.

5,625,639

SPREAD SPECTRUM METHOD FOR TRANSMITTING AN INFORMATION SIGNAL AS A RADIO SIGNAL AT A HIGH SPEED

Hideho Tomita; Masahiro Ooki, and Yukitsuna Furuya, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Oct. 19, 1994, Ser. No. 325,701
Claims priority, application Japan, Oct. 22, 1993, 5-265109
Int. Cl.[6] H04H *1/00*
U.S. Cl. 375—200 **6 Claims**



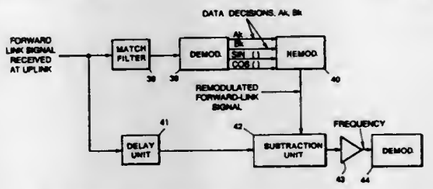
1. A spread spectrum device for spectrum spreading a serial information signal into a spectrum spread signal, said spread spectrum device comprising:
a serial to parallel converter for converting said serial information signal into a parallel signal of n bits, where n represents an integer not smaller than two;
an information modulator connected to said serial to parallel converter for carrying out information modulation on m bits among the n bits of said parallel signal to produce a modulated information signal, where m represents a positive integer smaller than n;
selective spreading code producing means having spectrum spreading codes which are equal in number to $2^{(n-m)}$ and are different from one another, said selective spreading code producing means being connected to said serial to parallel converter for selectively producing, as a selected spreading code, one of said spectrum spreading codes that is specified by remaining (n−m) bits among the n bits of said parallel signal; and
spectrum spreading means connected to said information modulator and said selective spreading code producing means for carrying out spectrum spreading on said modulated information signal on the basis of said selected spreading code to produce the spectrum spread signal.

5,625,640

APPARATUS FOR AND METHOD OF BROADCAST SATELLITE NETWORK RETURN-LINK SIGNAL TRANSMISSION

Larry C. Palmer, and Leonard S. Golding, both of Potomac, Md., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 16, 1994, Ser. No. 308,003
Int. Cl.[6] H04B *1/713;7/19*
U.S. Cl. 375—202 **15 Claims**



1. An apparatus for return-link signal transmission in direct broadcasting satellite networks having a hub earth station and a

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plurality of remote terminal earth stations communicating with said hub station via a satellite, said hub station transmitting forward-link signals to said remote terminal stations, and said remote terminal stations transmitting return-link signals to said hub station, comprising:

means at said hub station for receiving from said satellite composite signals containing said forward-link signals interfered with said return-link signals and for regenerating said received forward-link signals from said composite signals; and

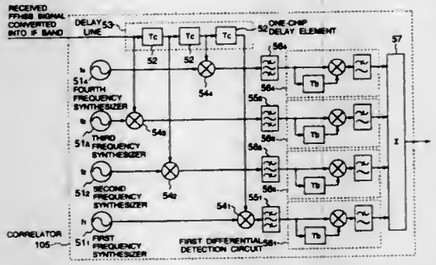
means for subtracting said regenerated forward-link signals from said composite signals, thereby enabling said return-link signals from said remote terminal stations to operate at a higher data rate.

5,625,641

CORRELATOR, SYNCHRONIZER PROVIDED WITH THE CORRELATOR, AND FAST FREQUENCY HOPPING SPREAD SPECTRUM RECEIVER PROVIDED WITH THE SYNCHRONIZER

Keiji Takakusaki, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1995, Ser. No. 579,426
Claims priority, application Japan, Jan. 9, 1995, 7-016391
Int. Cl.[6] H04L *27/30;7/00*
U.S. Cl. 375—202 **6 Claims**



1. A correlator for a fast frequency hopping spread spectrum receiver used in a fast frequency hopping spread spectrum communication system in which a narrow-band modulated signal to be transmitted is cut and divided into M pieces per one bit (M is an integer) of chip signals at equal intervals time-wise and the respective chip signals are transmitted on M pieces of carriers having different frequencies, respectively, and in which an interval between said chip signals is defined as a chip period, comprising:

M pieces of frequency synthesizers for outputting M pieces of sinusoidal wave signals having the same frequencies as the frequencies of said M pieces of carriers;

delay means including a plurality of delay elements connected with one another in a cascade for delaying input signals of said correlator by each of said delay elements so as to convert the signals into M pieces of parallel input signals having different delay time, respectively, said respective delay elements having said chip period as the delay time;

M pieces of multiplying means, said respective multiplying means multiplying one of said M pieces of parallel signals by one of said M pieces of sinusoidal wave signals which has been made in advance to correspond to said one parallel signal;

M pieces of detection means for detecting output signals of said M pieces of multiplying means, respectively; and

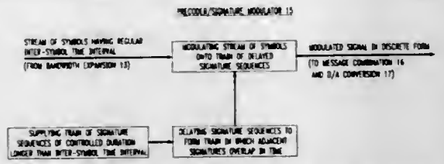
adding means for adding up output signals of said M pieces of detection means.

5,625,642

SPREAD-RESPONSE PRECODING SYSTEM HAVING SIGNATURE SEQUENCES LONGER THAN THE INTER-SYMBOL TIME INTERVAL

Gregory W. Wornell, Wellesley, Mass., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 11, 1994, Ser. No. 321,292
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—206 **25 Claims**



1. A method of preparing for transmission at least one stream of symbols characterized by a regular inter-symbol time interval, said method comprising the steps of:

(a) supplying a train of signature sequences each of which has a controllable duration longer than said inter-symbol time interval,

(b) delaying signature sequences of said train to form a train of delayed signature sequences in which adjacent signature sequences overlap in time, and

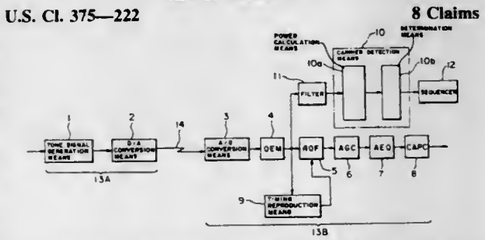
(c) modulating said stream of symbols onto said train of delayed signature sequences, said modulating step including periodically determining instantaneous products of said symbols with corresponding values of said train of overlapping delayed signature sequences and summing said instantaneous products to develop a modulated signal in discrete form.

5,625,643

MODULATOR AND DEMODULATOR APPARATUS

Takashi Kaku, and Noboru Kawada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 19, 1993, Ser. No. 108,547
Claims priority, application Japan, Feb. 18, 1993, 5-029369
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 **8 Claims**



1. A demodulator apparatus connectable via a transmission line to receive a modulated signal from a modulator apparatus, said demodulator apparatus comprising:

a demodulation section, coupled via the transmission line to the modulator apparatus, for applying demodulation processing to the modulated signal received from the modulator apparatus to produce a demodulation signal;

a roll-off filter, coupled to said demodulation section, to apply band separation processing to the processed demodulation signal with a first filter waveform response having a first time width, to obtain a processed demodulation signal;

a filter, coupled to said demodulation section, having a second filter waveform response with a second time width shorter than the first time width of the first filter waveform response

of said roll-off filter, for producing a filtered demodulation signal;

carrier detection means, in a stage following said filter, for detecting a carrier from the filtered demodulation signal and generating a result of detection; and

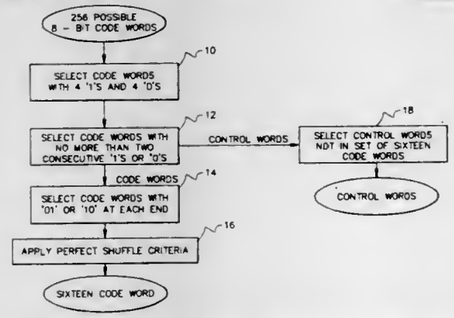
means for performing a data processing sequence for the processed demodulation signal in accordance with the result generated by said carrier detection means.

5,625,644

DC BALANCED 4B/8B BINARY BLOCK CODE FOR DIGITAL DATA COMMUNICATIONS

David J. Myers, 8700 E. Mountain View, Unit 1082, Scottsdale, Ariz. 85258

Filed Dec. 20, 1991, Ser. No. 811,772
Int. Cl.[6] H04B *14/04*
U.S. Cl. 375—242 **47 Claims**



1. A code for transmitting binary information for digital serial data communications which includes a plurality of code words, each code word comprising:

eight binary bits made up of four binary ones and four binary zeros, wherein each of said code words is inherently DC balanced;

consecutive identical bits in strings which are less than or equal to two, wherein the run-length limit within each of said code words is (0,1); and

a first bit and a last bit which differ from adjacent bits within said word, wherein the run-length limit between two consecutive code words is (0,1);

further comprising, a plurality of control words, each of said control words comprising:

eight binary bits made up of four binary ones and four binary zeros, wherein each of said control words is inherently DC balanced; and

consecutive identical bits in strings which are less than or equal to two, wherein the run-length limit within each of said control words is (0,1), wherein each code word in said plurality of code words is mapped to one and only one data word having four binary bits such that said data word may be generated by the steps of:

generating a masked code word by performing a logical AND operation between said code word and a mask word having eight binary bits;

generating a first bit group-made up of a first four binary bits of said masked code word and a second bit group made up a second of four binary bits of said masked code word; and

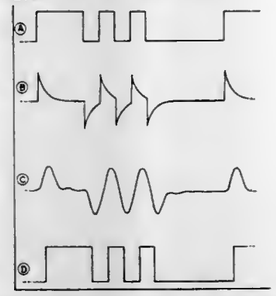
generating said data word by performing a logical OR operation between said first bit group and said second bit group.

5,625,645

DIFFERENTIAL PULSE ENCODING AND DECODING FOR BINARY DATA TRANSMISSIONS

Paul F. Greier, Carmel, and Lawrence S. Mok, Brewster, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1995, Ser. No. 506,625
Int. Cl.[6] H04B *4/06*
U.S. Cl. 375—276 **21 Claims**



1. A method for transmitting a binary data stream signal containing a stream of binary data having a first high value and a second low value from a transmitter to a receiver, comprising the steps of:

a. transforming the binary data stream directly to a differential pulse stream signal having information only about when the binary data stream changes from a high value to a low value and changes from a low value to a high value, comprised of a stream of one half cycle pulses wherein a one half cycle pulse above a given high threshold represents a transition in a first direction between a low value and a high value, and a one half cycle pulse below a given low threshold represents a transition in a second direction, opposite to the first direction, between a low value and a high value;

b. transmitting the differential pulse stream signal as a transmitted signal;

c. receiving the transmitted differential pulse stream signal; and

d. reconstructing the binary data stream signal from the transmitted and received differential pulse stream signal.

5,625,646

METHOD, DEVICE, DSP AND MODEM FOR EFFICIENT ECHO CANCELER PHASE ROLL TRACKING

Richard L. Goodson, Huntsville, and Mickey C. Rushing, Harvest, both of Ala., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26. 1995, Ser. No. 494,914
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—285 **33 Claims**

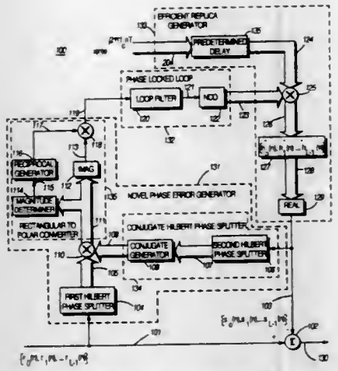
1. A device for efficiently determining and tracking phase roll of a far end echo in a communication system comprising:

A) a novel phase error generator, coupled to receive the far end echo, for utilizing at least one Hilbert phase splitter to generate a phase error;

B) a phase locked loop, coupled to the novel phase error generator, for utilizing the phase error to generate an estimated phase of the far end echo;

C) an efficient replica generator having a uniquely positioned phase rotator, coupled to the phase locked loop, for utilizing the estimated phase of the far end echo to generate a replica of the far end echo; and

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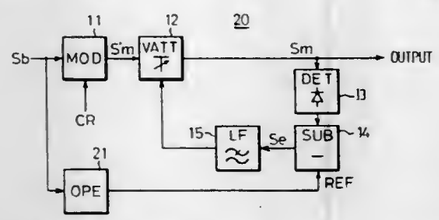
D) a combiner, coupled to receive the far end echo and to the efficient replica generator, for combining the far end echo and a real component of the replica of the far end echo to provide a residual far end echo.

5,625,647

TRANSMITTER HAVING AUTOMATIC LEVEL CONTROL FUNCTION

Toshio Kawasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 28, 1994, Ser. No. 189,166
Claims priority, application Japan, Jul. 8, 1993, 5-169137
Int. Cl.[6] H04L *27/08*
U.S. Cl. 375—295 **8 Claims**



1. A transmitter comprising:

a modulator for modulating a carrier by a baseband signal and providing a modulated wave output,

a variable attenuator for performing level control on the modulated wave output from said modulator and outputting a controlled modulated wave output, that is controlled to a certain level by a certain transmission power,

a detector for detecting the level of the controlled modulated wave output from said variable attenuator, and

a subtractor for receiving as input a detected level output from said detector and a reference level corresponding to said certain transmission power and outputting an error signal between these levels, and

a loop filter for feeding back said error signal to said variable attenuator with a predetermined loop characteristic; and

an operating unit for receiving as input said baseband signal and performing on the thus received baseband signal an operation for matching with the detection characteristic of said detector, the detection characteristic of said detector being known and incorporated beforehand into said operating unit,

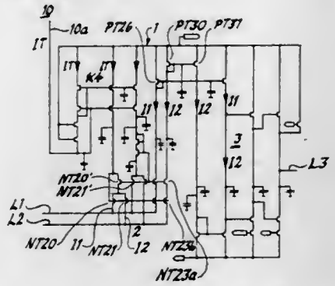
said reference level being a signal output from the operating unit to the subtractor.

5,625,648

SIGNAL RECEIVING AND SIGNAL PROCESSING UNIT

Mats O. J. Hedberg, Haninge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 21, 1995, Ser. No. 407,626
Claims priority, application Sweden, Mar. 23, 1994, 94 00971
Int. Cl.[6] H03K *9/00;17/687;17/60*
U.S. Cl. 375—316 **6 Claims**



1. A signal receiving and signal processing unit connected to at least one conductor adapted to transmit information-carrying signals in the form of voltage pulses, the unit comprising:

a signal receiving circuit including a transistor connected to the conductor to have an effect upon a current by using variations in the voltage pulses and a voltage value of a pulse, where the current is in the form of pulses that are passing through the transistor and the current is generated by the voltage pulse variations and a voltage level; and

a signal processing circuit for adapting the current to information carrying form;

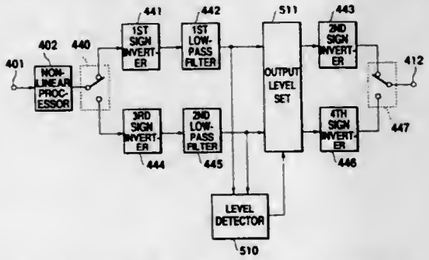
wherein the transistor is connected with at least one other transistor to form a current mirror, and the ability of the signal receiving circuit to receive, detect, and process the signals is adjustable through a current generating circuit in a way so that an increasing current value provides a detection of a voltage pulse at an increased rate and vice versa.

5,625,649

CLOCK RECOVERY CIRCUIT OF DEMODULATOR

Fumio Ishizu, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 163,312, Dec. 8, 1993, Pat. No. 5,541,958. This application Jun. 7, 1995, Ser. No. 487,333
Claims priority, application Japan, Dec. 11, 1992, 4-331682; Jul. 8, 1993, 5-168832
Int. Cl.[6] H03D *3/18;* **H04L** *27/22*
U.S. Cl. 375—328 **6 Claims**



1. A clock recovery circuit for a demodulator, comprising:

non-linear processing means for carrying out a non-linear processing of analog-digital-converted quasi-coherent detection received signals;

first selecting means for alternately separating the non-linearly processed signals into first and second groups by a frequency of 4 times a symbol rate of the received signals;

first sign inversion means for selectively inverting the first group of received signals separated by the first selecting means by a frequency of 2 times the symbol rate of the received signals;

first averaging means for averaging the received signals after processing by the first sign inversion means;

second sign inversion means for inverting the received signals obtained after processing by the first averaging means;

third sign inversion means for selectively inverting the second group of received signals separated by the first selecting means by a frequency of 2 times the symbol rate of the received signals;

second averaging means for averaging the received signals after processing by the third sign inversion means; fourth sign inversion means for inverting the received signals obtained after processing by the second averaging means; and

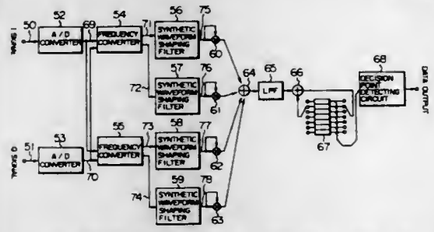
second selecting means for alternately selecting output signals of the second and fourth sign inversion means by the frequency of 4 times the symbol rate of the received signals.

5,625,650

SYNCHRONOUS ADDER DEVICE

Katsuhiko Hiramatsu; Kazunori Inogai, both of Yokohama, and Kimihiko Ishikawa, Funabashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1994, Ser. No. 313,614
Claims priority, application Japan, Nov. 16, 1993, 5-308582
Int. Cl.[6] H04L *27/14*
U.S. Cl. 375—335 **8 Claims**



1. A synchronous adder device for detecting a total level of a plurality of subcarriers of an input signal, said synchronous adder device comprising:

a plurality of filter means each for extracting from the input signal at least two of said plurality of subcarriers which are adjacent to another of said plurality of subcarriers;

a plurality of squaring means for squaring outputs of said plurality of filter means respectively to obtain outputs comprising desired components, each of said desired components having an amplitude corresponding to a sum of squared levels of said at least two of said plurality of subcarriers;

adding means for adding said outputs of said plurality of squaring means; and

a low pass filter for removing harmonic components other than said desired components from an output of said adding means.

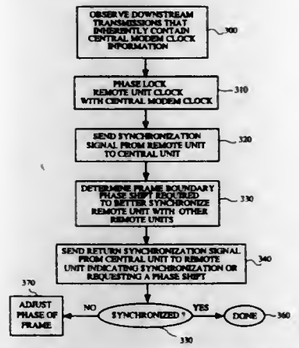
5,625,651

DISCRETE MULTI-TONE DATA TRANSMISSION SYSTEM USING AN OVERHEAD BUS FOR SYNCHRONIZING MULTIPLE REMOTE UNITS

John M. Cioffi, Cupertino, Calif., assignor to Amati Communications, Inc., Mountain View, Calif.

Filed Jun. 2, 1994, Ser. No. 252,829
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—354 **15 Claims**

1. In a bi-directional data transmission system that facilitates communications between a central unit and a plurality of remote units using a frame based discrete multi-tone transmission scheme that has a multiplicity of discrete subchannels, a method of synchronizing frames transmitted from a selected first remote unit to the central unit, the method comprising the steps of:



(a) when the selected first remote unit desires to establish communications with the central unit, receiving a first signal from the central unit and loop timing a clock at the selected first remote unit with a clock signal carried in the first signal;

(b) transmitting a remote initiated synchronization signal from the loop timed selected first remote unit to the central unit over an overhead subchannel when the selected first remote unit desires to establish communications with the central unit;

(c) transmitting a centrally initiated synchronization signal from the central unit to the selected first remote unit when the central unit receives the remote initiated synchronization signal, wherein the centrally initiated synchronization signal contains information indicative of a frame boundary phase shift required to better synchronize the selected first remote unit with other remote units that are currently communicatiog with the central unit: and

(d) shifting the phase of the frames outputted by the selected first remote unit in response to the centrally initiated synchronization signal to adjust the frame boundaries of the frames outputted by the selected first remote unit relative to the frame boundaries of frames output by the other remote units that are currently communicating with the central unit;

whereby the synchronization is arranged such that when fully synchronized, the frame boundaries from the various remotes will substantially coincide when they are received at the central unit.

5,625,652

TIMING RECOVERY CONTROLLER AND METHOD FOR ADJUSTING THE TIMING OF SYNCHRONIZING WINDOWS IN A PSK DEMODULATOR

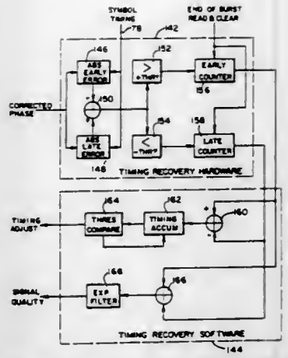
James E. Petranovich, Encinitas, Calif., assignor to Pacific Communication Sciences, Inc., San Diego, Calif.

Division of Ser. No. 289,061, Aug. 11, 1994, which is a continuation of Ser. No. 999,210, Dec. 31, 1992, Pat. No. 5,376,894. This application Jun. 7, 1995, Ser. No. 472,125
Int. Cl.[6] H04L *7/00;27/22*
U.S. Cl. 375—355 **8 Claims**

1. In a communication system in which a PSK signal having a unique word is transmitted, said communication system having a receiver capable of receiving said PSK signal in a plurality of window sets, said window sets being offset in time, said receiver generating phase estimates of the PSK signal so received and detecting said unique word in one of said window sets based on said phase estimates and defining the said window set as synchronizing windows, said receiver having a timing recovery controller for adjusting the timing of said synchronization windows to improve the reception of the PSK signal, said timing recovery controller comprising:

an early error detector for receiving an input of phase estimates corresponding to a window set being offset in time prior to

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said synchronizing windows and defining said phase estimates so received as early phase estimates, said early error detector determining an early phase error of said early phase estimates based on a known set of phases of the PSK signal;

a late error detector for receiving an input of phase estimates corresponding to a window set following the synchronizing windows in time and defining the phase estimates as late phase estimates, said late error detector determining a late phase error of said late phase estimates based on the known set of phases of the PSK signal;

a first comparison means coupled to said early and late error detectors for receiving an input of said early and late phase errors, respectively, said first comparison means comparing said early and late phase errors and providing an output indicative of the comparison and defining said output as a window offset error; and

a timing recovery processor interfaced with said first comparison means for generating based on said window offset error a timing adjust signal used to adjust the timing of the synchronizing windows.

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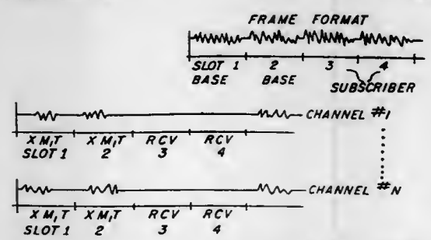
BASE STATION EMULATOR

John D. Kaewell, Jr., Philadelphia, Pa., and Scott D. Kurtz, Mount Laurel, N.J., assignors to InterDigital Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 347,835, Dec. 1, 1994, Pat. No. 5,495,508, which is a continuation of Ser. No. 104,322, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 438,618, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 123,395, Nov. 20, 1987, Pat. No. 4,935,927. This application Jan. 17, 1996, Ser. No. 588,073

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—356 **5 Claims**



1. In a telecommunication system for conducting a plurality of telephonic communications which comprise transmitted (TX) and received (RX) speech information using wireless transmissions between a primary station and one or more secondary stations over one of a plurality of available frequencies, a primary station comprising:

(i) means for transmitting synchronization information including the assignment of time slots, each time slot having the same fixed duration, on a selected frequency; and

(ii) means for transceiving said plurality of telephonic communications on the selected frequency including:

(a) means for transmitting in a first fixed time slot a signal carrying said TX speech information of a first telephonic communication on the selected frequency;

(b) means for transmitting in a second fixed time slot a signal carrying said TX speech information of a second telephonic communication on the selected frequency;

(c) means for receiving in a third fixed time slot a signal carrying said RX speech information of said first telephonic communication transmitted from a secondary station on the selected frequency; and

(d) means for receiving in a fourth fixed time slot a signal carrying said RX speech information of said second telephonic communication transmitted from a secondary station on the selected frequency.

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METHOD AND DEVICE FOR FINDING A CHARACTERISTIC DATA GROUP PERIODICALLY INSERTED INTO A DATA STREAM

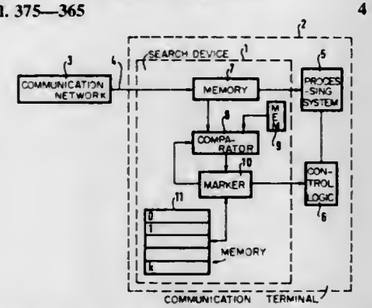
François Pinier, Strasbourg, and Claude Schmitt, Illkirch, both of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Nov. 8, 1994, Ser. No. 337,506

Claims priority, application France, Nov. 9, 1993, 93 13344

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—365 **4 Claims**



1. Method of searching for a digital data group inserted periodically into a data stream transmitted at a given clock rate, said method being characterized in that it includes the following steps:

temporary modular storage of a volume of data successively received corresponding to a minimal subset necessarily containing at least one characteristic part of the group looked for;

initial searching, by comparison, for a reference element corresponding at least to said characteristic group part in one selected module of the stored subset and continued searching, module by module in the subset, until identification of at least one data group identical to the reference element in one of the modules of said stored subset;

memorizing the position of any data group found identical to the reference element in the first module in which any such group has been identified in the stored subset;

confirmation searching, by comparison, for all memorized group positions of a module in the module of the next stored subset having the same numerical position;

maintained memorizing for all memorized group positions found identically in the module of the next subset having the same numerical position;

memorizing, as the actual reference position, of the position of the group identical to the reference element which alone remains memorized in a module following an initial search for one subset and at least one confirmation search effected for the next subset.

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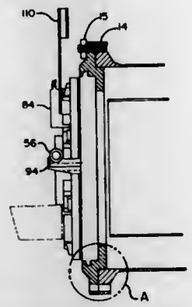
FUEL TRANSFER TUBE QUICK OPERATING REMOTE CLOSURE DEVICE

Francis X. McDonald, Enfield; Scott A. Kendrick, Colchester, both of Conn.; Edward F. Lamoureux, Hampden, Mass.; Peter Leombruni, Wethersfield, Conn.; Edward G. Sirica, East Hartford, Conn., and Frank J. Formanek, W. Suffield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 29, 1994, Ser. No. 282,895

Int. Cl.[6] G21C *13/073*

U.S. Cl. 376—203 **25 Claims**



1. A quick operating remote closure device for a fuel transfer tube having a mounting surface and a plurality of threaded mounting studs projecting therefrom, said device comprising:

ring means mounted on the fuel transfer tube, said ring means comprising a structural member having first and second concentric annular front surfaces, a third, back surface which abuts the fuel transfer tube mounting surface and a plurality of orifices for receiving the transfer tube studs, said first surface comprising an annular groove having a bevelled surface;

a plurality of nut means mounted on the transfer tube studs for securing said ring means to the transfer tube whereby said third surface sealingly abuts said mounting surface; and

cover means mountable on said ring means, said cover means comprising a cover having front and back surfaces, wherein said cover back surface sealingly abuts said ring means second surface when said cover means is mounted on said ring means, and said cover means has latch means mounted thereon and latch actuator means for moving said latch means from an unlatched position to a latched position, said latch means engaging said groove of the ring means first surface when said latch means is in said latched position.

5,625,656

METHOD FOR MONITORING NOBLE METAL DISTRIBUTION IN REACTOR CIRCUIT DURING PLANT APPLICATION

Samson Hettiarachchi, Menlo Park; Robert L. Cowan, II; Robert J. Law, both of Livermore, and Thomas P. Diaz, San Martin, all of Calif., assignors to General Electric Company, San Jose, Calif.

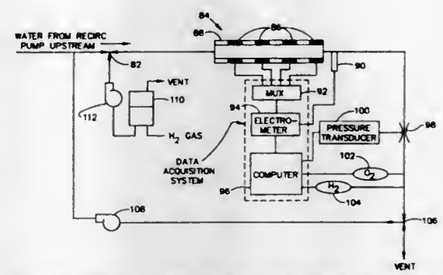
Continuation-in-part of Ser. No. 209,572, Mar. 10, 1994, Pat. No. 5,600,691, which is a continuation-in-part of Ser. No. 143,513, Oct. 29, 1993, abandoned, and Ser. No. 143,514, Oct. 29, 1993, Pat. No. 5,448,605. This application Jun. 7, 1995, Ser. No. 482,243

Int. Cl.[6] G21C *17/022*

U.S. Cl. 376—245 **9 Claims**

1. A method for monitoring the distribution of a metal in a reactor water circuit, comprising the steps of:

injecting a compound containing a metal into the reactor water circuit;



diverting a sample of reactor water from the reactor water circuit and into contact with a test specimen, said sample being diverted at a point downstream of the point of metal compound injection;

injecting a volume of water with excess dissolved hydrogen into said sample; and

measuring the electrochemical corrosion potential of the test specimen in the presence of excess dissolved hydrogen.

5,625,657

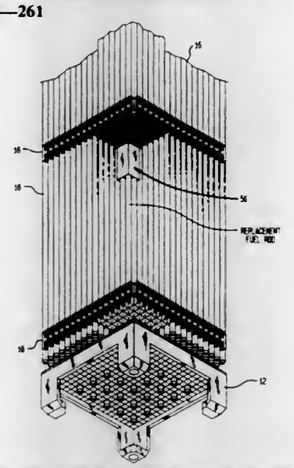
METHOD OF REPAIRING A NUCLEAR FUEL ROD ASSEMBLY WITH DAMAGED FUEL ROD AND A DAMAGED SPACER

Vincent N. Gallacher, Kennewick, Wash., assignor to Siemens Power Corporation, Richland, Wash.

Filed Mar. 31, 1995, Ser. No. 414,065

Int. Cl.[6] G21C *19/02*

U.S. Cl. 376—261 **12 Claims**



1. In a nuclear fuel rod assembly including a plurality of spaced apart grid spacers comprising an arrangement of a first plurality of grid strips intersecting each other to form a first plurality of spacer cells through which fuel rods extend and for maintaining the fuel rods in a predetermined position within said assembly, and an upper tie plate located at the top of said assembly, a method of repairing a nuclear fuel rod assembly having a grid spacer having a damaged spacer cell, by inserting a repair grid into the fuel rod assembly at an underside of the damaged grid spacer, comprising the steps of:

(a) removing the upper tie plate from said nuclear fuel rod assembly;

(b) pulling a fuel rod passing through the damaged spacer cell upward to slide it through the grid spacer having the damaged spacer cell to expose an underside of the damaged grid spacer;

(c) pulling a plurality of fuel rods at least some of which are adjacent to the fuel rod formerly passing through the damaged

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spacer cell upward to slide them through the grid spacer having the damaged spacer cell to further expose the underside of the damaged grid spacer;

(d) positioning a repair grid into the fuel rod assembly and holding said repair grid against the underside of the damaged grid spacer at the damaged spacer cell, said repair grid comprising a second plurality of grid strips intersecting each other to form a second plurality of spacer cells for maintaining the fuel rod which passes through the damaged spacer cell and at least some of the fuel rods adjacent to the fuel rod which passes through the damaged spacer cell in the predetermined position within said assembly, said repair grid substantially duplicating a portion of the arrangement of the first plurality of grid strips intersecting each other to form the first plurality of spacer cells of the grid spacer having the damaged spacer cell;

(e) sliding the fuel rod formerly passing through the damaged spacer cell back into the damaged spacer cell and grid spacer cells formerly occupied by it and into a corresponding one of the second plurality of spacer cells of the repair grid to support in the repair grid said fuel rod passing through the damaged spacer cell;

(f) sliding the plurality of fuel rods at least some of which are adjacent to the fuel rod passing through the damaged spacer cell back into the spaces and grid spacer locations formerly occupied by them and into respective corresponding ones of the second plurality of spacer cells of the repair grid to support the plurality of fuel rods at least some of which are adjacent to the fuel rod passing through the damaged spacer cell; and

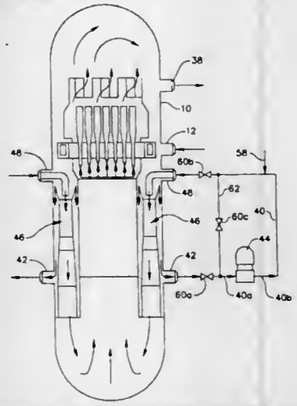
(g) replacing the upper tie plate to said fuel rod assembly.

5,625,658

PRE-OXIDATION OF OXIDE FILM FOR CHEMICAL DECONTAMINATION OF RECIRCULATION PIPING

Chien-Chang Lin, Fremont, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Aug. 29, 1995, Ser. No. 520,454
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—306 **14 Claims**



12. A method for treating recirculation piping of a nuclear reactor having a reactor vessel connected to the recirculation piping by connections, comprising the steps of:

shutting down the reactor;

closing the connections between the reactor vessel and a section of recirculation piping to be treated

connecting one junction of the section of recirculation piping to be treated with another junction of the section of recirculation piping to be treated to form a closed recirculation loop comprising said section of recirculation piping to be treated and excluding the reactor vessel;

circulating water through said closed recirculation loop;

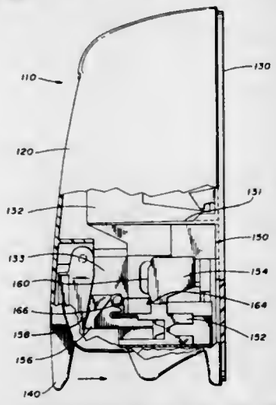
injecting oxidizing agent and dilute acid into the water circulating in said closed recirculation loop, wherein the amount of dilute acid injected produces a pH in the range of 5 to 6.

5,625,659

METHOD AND APPARATUS FOR ELECTRONICALLY MEASURING DISPENSER USAGE

Lawrence M. Sears, Hunting Valley, Ohio, assignor to GOJO Industries, Inc., Cuyahoga Falls, Ohio

Filed May 19, 1995, Ser. No. 446,026
Int. Cl.[6] G01F *15/00*
U.S. Cl. 377—21 **13 Claims**



1. Apparatus for electronically measuring the usage of a fluid dispenser which is actuated by pressure on an activating member which, in turn, triggers the discharge of material from the dispenser upon movement of the activating member from a starting position to a dispensing position, comprising:

a) a counting apparatus carried by the dispenser;

b) a numerical display electrically connected to said counting apparatus;

c) a moveable switch actuator operative with a switch receptacle communicative with said counting apparatus;

d) said counting apparatus counting one cycle of use upon the activating member moving into a dispensing position so as to move said switch activator into a closed position with said switch receptacle and wherein said counting apparatus is precluded from counting an additional cycle of use until a predetermined period of time has elapsed from when said moveable switch activator has returned to an open position.

5,625,660

IMAGE RECONSTRUCTION FROM HELICAL PARTIAL CONE-BEAM DATA

Heang K. Tuy, Chesterland, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio

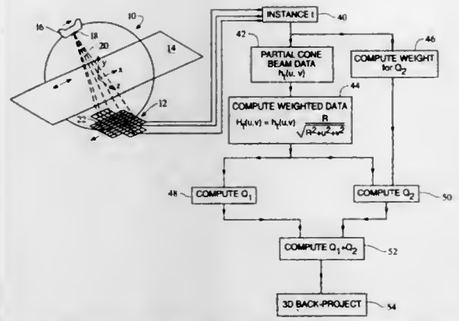
Filed Jun. 30, 1995, Ser. No. 497,296
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—15 **15 Claims**

1. A radiographic diagnostic apparatus comprising:

a source of penetrating radiation;

a two-dimensional radiation detector for receiving partial cone-beam radiation along a plurality of divergent rays, the rays being focused at a common origin vertex and diverging in two dimensions; the radiation detector, the source, and a subject support being disposed to irradiate a subject on the support along at least a helical arc segment of a helical path;

a means for sampling the radiation detector at a plurality of angular increments along the helical arc segment to generate a plurality of two-dimensional views, each view including a



two-dimensional array of data values, each data value corresponding to one of the divergent rays, data along rows parallel to a tangent to the helical arc segment at the vertex being untruncated and data in at least one-direction not parallel to the tangent being truncated;

a weighting processor for weighting the data values of each two-dimensional array in accordance with a cosine of an angle between a ray corresponding to the data value and a ray normal to a local coordinate plane at the radiation detector;

a first component processor for convolving a first component of the weighted data values one-dimensionally parallel to the tangent to create a convolved first two-dimensional data component array;

a second component processor for processing a second two-dimensional component array of the weighted data values, the second processor weights each second component value in accordance with characteristics of the helical arc segment and position along the helical arc segment, for taking a partial derivative of the data values of the second component, and for multiplying each data value in accordance with a square of a distance from the vertex of the divergent rays to the radiation detector corresponding to each data value;

an adder for combining the first and second processed components from the first and second component processors; and,

a backprojector for three-dimensionally backprojecting the sum from the adder into a volumetric image memory.

13. In a method of diagnostic imaging in which a vertex of a cone-beam of radiation moves along a helical trajectory, which cone-beam of radiation passes through a subject and is converted to a plurality of two-dimensional views of data values, the improvement comprising:

collecting partial cone beam views which are untruncated in a direction which is parallel to a tangent to the trajectory at the vertex and which are truncated in another direction;

reconstructing the views into a volumetric image representation using an exact reconstruction algorithm.

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X-RAY CT APPARATUS

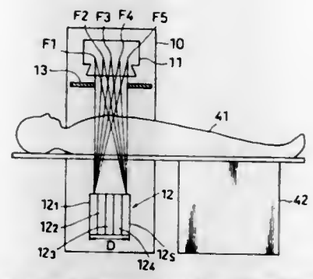
Shirou Oikawa, Shiga, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Continuation of Ser. No. 429,299, Apr. 24, 1995, abandoned. This application Aug. 12, 1996, Ser. No. 695,523
Claims priority, application Japan, Apr. 30, 1994, 6-114765
Int. Cl.[6] G01N *23/00*
U.S. Cl. 378—15 **9 Claims**

1. An X-ray CT apparatus for scanning an object with X-ray beams to obtain three-dimensional images of the interior of the object, said apparatus comprising:

X-ray generating means revolvable to describe a circular path on a plane of revolution, and including means for generating a plurality of X-ray focal spots at a plurality of positions arranged in a direction perpendicular to said plane of revolution;

X-ray detecting means opposed to said X-ray generating means, and having a plurality of detecting elements arranged in a



direction along a circumferential edge of said plane of revolution and in a plurality of rows perpendicular to said plane of revolution, opposite to, and corresponding in number, to the number of said focal positions of said X-ray generating means;

revolution control means for revolving said X-ray generating means and said X-ray detecting means through plural revolutions in a plurality of angular increments without varying a positional relationship therebetween, and outputting angle information at each angular increment;

moving means for moving said object introduced into a space between said X-ray generating means and said X-ray detecting means, relative to said X-ray generating means and said X-ray detecting means, during each revolution of said X-ray generating means, in said direction perpendicular to said plane of revolution, by a distance exceeding a width of at least one of said detecting elements per revolution of said X-ray generating means, said moving means outputting moving amount information indicative of said distance;

X-ray focal position control means for successively switching said plurality of focal positions of said X-ray generating means at each angular increment of each revolution of said revolution control means and movement of said object by said moving means, and outputting focal position information for each focal position at each angular increment; and

image reconstructing means operable in response to data from said X-ray detecting means, said angle information from said revolution control means, said moving amount information from said moving means, and said focal position information from said X-ray focal position control means, for reconstructing a three-dimensional image relating to said object by reversely projecting said data in helical form wherein the total number of focal positions from which data is collected is equal to the number of focal positions per angular increment times the number of angular increments.

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MODULATING X-RAY TUBE CURRENT IN A CT SYSTEM

Thomas L. Toth, Brookfield, and Mark K. Limkeman, New Berlin, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

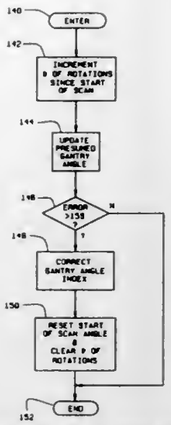
Filed Nov. 20, 1995, Ser. No. 560,672
Int. Cl.[6] H05G *1/60*
U.S. Cl. 378—16 **17 Claims**

1. A method for modulating x-ray tube current supplied to an x-ray source of a computed tomography system, the system using attenuation data to reconstruct an image of an object scanned by the system, the image reconstruction process assigning weights to at least some of the data, said method comprising the steps of:

determining a gantry angle;

identifying an x-ray tube current modulating factor based on the determined gantry angle and the weighting to be assigned to the data collected at that gantry angle; and

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modulating the x-ray tube current using the identified x-ray tube current modulating factor.

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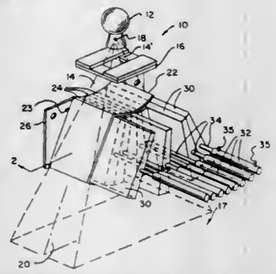
DYNAMIC BEAM FLATTENING APPARATUS FOR RADIATION THERAPY

Stuart Swerdloff; Thomas R. Mackie, and Timothy Holmes, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 353,749, Feb. 9, 1995, abandoned, which is a continuation of Ser. No. 74,192, Jun. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,521, Mar. 19, 1992, Pat. No. 5,317,616. This application Aug. 11, 1995, Ser. No. 514,366

Int. Cl.[6] A61N *5/10*

U.S. Cl. 378—65 **5 Claims**



1. In a radiation therapy machine having a radiation source for producing a radiation beam directed toward a patient at a plurality of treatment angles, the beam including a plurality of adjacent rays spaced about one central ray, each ray having an energy fluence, the energy fluences together forming a non-uniform source fluence profile, an attenuation apparatus comprising:

a detector positioned within the beam for receiving the beam and determining the non-uniform source fluence profile;

a dose calculator for receiving a desired fluence profile for the patient and the non-uniform source fluence profile and for producing duty cycles indicative of how the non-uniform source profile must be altered to produce the desired fluence profile;

a controller for receiving the duty cycles from the dose calculator and producing an attenuation profile corresponding to each desired fluence profile; and

a compensator receiving the attenuation profiles for attenuating rays of the radiation beam to correct the non-uniform source fluence profile of the radiation beam to produce the desired fluence profile.

5,625,664

METHODS FOR THE DESIGN, QUALITY CONTROL, AND MANAGEMENT OF FATIGUE-LIMITED METAL COMPONENTS

Stanley G. Berkley, Jupiter, Fla., assignor to Fatigue Management Associates LLC, Palos Verdes, Calif.

Continuation-in-part of Ser. No. 245,011, May 18, 1994, Pat. No. 5,490,195. This application Oct. 11, 1995, Ser. No. 540,876

Int. Cl.[6] G01N *23/20*

U.S. Cl. 378—72 **27 Claims**

1. A method for designing a fatigue-limited metal part whereby a selected performance criterion for the metal part is improved while maintaining sufficient residual compressive stress to achieve an acceptable service life for the metal part, said method comprising:

(1) providing a prototype of the metal part;

(2) measuring the residual compressive stress in one or more critical surface areas of the prototype during the course of design of the metal part;

(3) modifying the prototype using the difference between the measured residual compressive stress and a predetermined residual compressive stress design level as a guide to improve the selected performance criterion;

(4) remeasuring the residual compressive stress in the one or more critical surface areas of the modified prototype to determine the remeasured residual compressive stress in comparison to the predetermined residual compressive stress design level in order to gauge the effect of the modification; and

(5) repeating steps (2) through (4) for the one or more critical surface areas until an acceptable and functional metal part is obtained, wherein the acceptable and functional metal part has its selected performance criterion improved and has sufficient residual compressive stress in the one or more critical surface areas for its intended use.

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X-RAY APPARATUS COMPRISING A FILTER

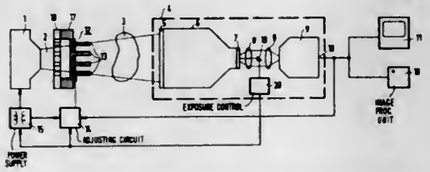
Lambertus G. J. Fokkink; Petrus W. J. Linders; Johanna A. M. Sondag-Huet-Horst; André R. De Wit; Rudolf Kemner, all of Eindhoven, and Frans J. A. Berkers, Vessem, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1995, Ser. No. 546,027

Claims priority, application European Pat. Off., Oct. 25, 1994, 94203094

Int. Cl.[6] G21K *3/00*

U.S. Cl. 378—156 **19 Claims**



1. An X-ray examination apparatus, comprising an X-ray source, an X-ray detector, a filter arranged therebetween which comprises a plurality of filter elements having an X-ray absorptivity which can be adjusted by controlling a quantity of X-ray absorbing liquid within individual ones of the filter elements, and

an adjusting circuit for applying electric voltages to the individual ones of the filter elements, the quantity of X-ray absorbing liquid in the individual ones of the filter elements being controllable in response to said electric voltages.

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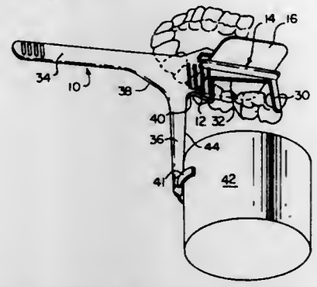
RADIOGRAPHIC FILM RETAINING DEVICE

Timothy G. Willis, 310 Evergreen, Yreka, Calif. 96097

Filed Nov. 29, 1995, Ser. No. 563,992

Int. Cl.[6] G03B *42/02*

U.S. Cl. 378—167 **6 Claims**



1. An integral, rigid radiographic film retaining device for holding a film packet for use with x-ray equipment having a cylindrical tip while producing a radiographic image of selected teeth of a patient's mouth, said film packet comprising a substantially rectangular piece of radiographic film enclosed within a protective envelope, said retaining device comprising:

(a) a bite portion configured for placement between upper and lower teeth of a patient's mouth;

(b) retaining means positioned distally of said bite portion having a U-shaped film packet gripping means for retaining a portion of said film packet such that when said bite portion is gripped between said upper and lower teeth, said retaining means holds said film packet lingually adjacent said selected teeth, said retaining means comprising a distal extension of said bite portion; and

(c) an integral arm extending outwardly of the patient's mouth perpendicular to said film packet and an arcuate x-ray machine tip locator on said arm shaped complementary to said cylindrical tip to engage said tip to direct x-rays toward said film packet, said bite location, said retaining means and said arm being substantially co-planar, said arm having an edge against which said tip may be positioned, said arm and said tip locator cooperating to locate said tip perpendicular to said film packet.

5,625,667

METHOD OF PREDICTING VOLTAGES IN TELEPHONE LINE MEASUREMENT

John V. Vogt, III, Norcross, and Charles E. Summers, Canton, both of Ga., assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 123,085, Sep. 20, 1993, Pat. No. 5,625,667. This application Jun. 2, 1995, Ser. No. 460,126

Int. Cl.[6] H04M *3/08;3/27;1/24*

U.S. Cl. 379—30 **12 Claims**

1. A method of monitoring an electrical circuit including resistive and capacitive characteristics, comprising the steps of:

applying a d.c. voltage via a source resistance to a terminal of the circuit, whereby a transient dependent upon said capacitive characteristics is produced at said terminal;

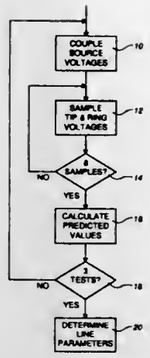
taking three sets each of three consecutive samples of voltage at said terminal during the transient; and

calculating a steady state voltage, dependent upon said resistive characteristics and the source resistance, at said terminal as being equal to

$$b2/(1+a1+a2)$$

where **a1**, **a2**, and **b2** are determined by linear independent equations:

$$Y3=b2-a1\ Y2-a2\ Y1$$



$$Y6=b2-a1\ Y5-a2\ Y4$$

$$Y9=b2-a1\ Y8-a2\ Y7$$

where Y1 to Y3, Y4 to Y6, and Y7 to Y9 are the three consecutively sampled voltages in the three sets, respectively.

5,625,668

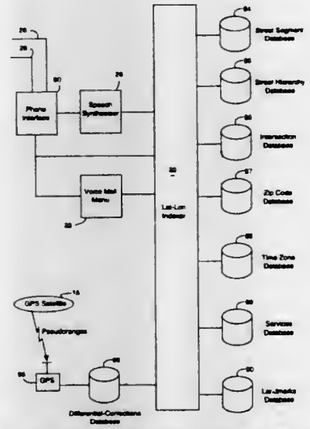
POSITION REPORTING CELLULAR TELEPHONE

Peter V. W. Loomis, Sunnyvale, and Peter L. Froeberg, Cupertino, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Apr. 12, 1994, Ser. No. 226,773

Int. Cl.[6] H04Q *7/20;7/30*

U.S. Cl. 379—58 **1 Claim**



1. An improved cellular locating system (**10**) comprising a remote unit (**12**) for receiving transmissions from orbiting overhead navigation satellites (**18**), a cell station (**20**) for receiving satellite range information from the remote unit (**12**) over a cellular-radio-telephone-network signal, and a clock (**30**) for displaying local time, the improvement comprising:

a database processing facility (**22**) connected (**26**, **80**) to receive a plurality of latitude, longitude and bearing information from the cell station (**20**);

an indexer (**82**) connected to index into a plurality of databases (**84**–**90**) according to said plurality of latitude, longitude and bearing information;

a speech synthesizer (**94**) provides to an output a spoken voice phrase information about the location of the remote unit (**12**);

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a street segment database (**84**) wherein the latitudes and longitudes of various continuous streets within a region are related to street names, block addresses and bearings and latitude, longitude and bearing information is provided in real-time for remote unit (**12**) are used relationally to obtain the name of the street, the block address and bearings of streets in the area of remote unit (**12**) and each such candidate is test-fit to find a best fit, and wherein if a bearing constraint is sensible in a particular application the bearing is used to constrain which street solution is ultimately decided upon, and wherein further constraints include regional constraints, where street segments far removed from an estimated immediate area of remote unit (**12**) are removed from the relational access and search;

a street hierarchy database (**85**) wherein the latitudes and longitudes of various continuous streets within a region are related to classes of streets, and latitude, longitude and bearing information is provided in real-time for the remote unit (**12**) and used relationally to obtain the name of a street at an appropriate classification level;

a street intersection database (**86**) that includes relational data for each intersection of a street with another street in a regional geographic area and the earth navigation locations of such intersections and their corresponding common street names;

a zip code database (**87**) that includes relational data for each mailing code in a regional geographic area and the earth navigation locations of such areas and their corresponding numbers;

a time zone database (**88**) that includes relational data for each time zone in a regional geographic area, and alternatively including the whole earth, and the earth navigation locations of such time zones together with their corresponding offsets from Universal Standard Time, wherein the time zone database (**88**) is used to convert incoming latitude and longitude information into earth time zone data and such converted data is transmitted back to the remote unit (**12**) and used by an update device (**32**) to periodically correct a local time display of said clock (**30**);

a road services database (**89**) that includes relational data for each roadside service in a regional geographic area and the earth navigation locations of such businesses and their corresponding common street names and addresses; and

a landmarks database (**90**) that includes relational data for each landmark in a regional geographic area and the earth navigation locations of such landmarks and their corresponding common street addresses or common location descriptions;

wherein, the indexer (**82**) is configured to express through the speech synthesizer (**94**) a route necessary to take to get from a current position to another location verbally described in terms of one of the intersections, landmarks or road side businesses or other points stored in said databases (**84–90**).

5,625,669

MOBILE PHONE WITH INTERNAL CALL ACCOUNTING CONTROLS

Donald S. McGregor, and Gregory M. McGregor, both of Danville, Calif., assignors to Telemac Cellular Corporation, Danville, Calif.

Continuation-in-part of Ser. No. 767,231, Sep. 27, 1991, Pat. No. 5,325,418. This application Jun. 23, 1994, Ser. No. 265,373

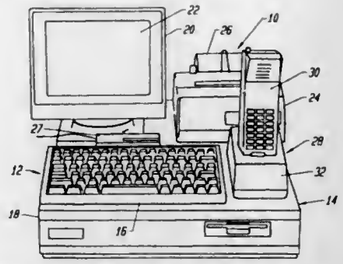
Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **20 Claims**

1. A mobile telephone with internal call accounting controls, the telephone comprising:

a unitary hand-held telephone unit, the telephone unit having:

transceiver means for communicating to a communication network of discrete mobile phone service areas, each mobile phone service area having a corresponding area identification code, said mobile telephone unit being moveable from one service area to another when communicating to the network, and at least one of the network and said telephone unit being



capable of establishing a call communication session between the communication network and said mobile telephone unit;

an internal microprocessor with a process control program;

a read/write memory;

an electronic time clock having a clock output which is representative of the time of said clock; and,

memory output means for transferring the contents of said read/write memory to an external device;

wherein the transceiver means includes receiver means responsive to a call communication session being established between the network and said mobile telephone for receiving the area identification code of the service area in which said mobile telephone in the session is located; wherein the process control program includes process control means for automatic storing in said read/write memory the received area identification code and the clock output of said time clock representative of the timing of the call communication session and wherein on transferring the contents of said read/write memory, the stored area identification codes and the clock outputs are transferred to the external device.

5,625,670

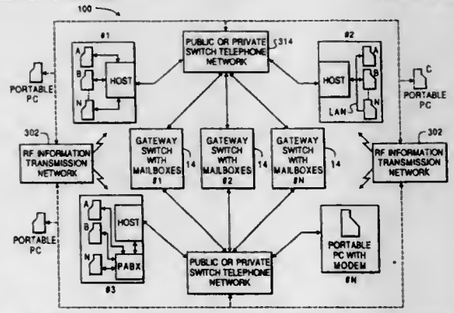
ELECTRONIC MAIL SYSTEM WITH RF COMMUNICATIONS TO MOBILE PROCESSORS

Thomas J. Campana, Jr., Chicago; Michael P. Ponschke, Lockport, and Gary F. Thelen, Palos Park, all of Ill., assignors to NTP Incorporated, Annandale, Va.

Continuation of Ser. No. 702,939, May 20, 1991, Pat. No. 5,436,960, Ser. No. 702,938, May 20, 1991, Pat. No. 5,479,472, and Ser. No. 247,466, May 23, 1994, Pat. No. 5,438,611, which is a continuation of Ser. No. 702,319, May 20, 1991, abandoned. This application May 18, 1995, Ser. No. 443,430

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—58 **276 Claims**



1. A system for transmitting information from one of a plurality of originating processors contained in an electronic mail system to at least one of a plurality of destination processors contained in an electronic mail system with the information including originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to at least one of the plurality of destination processors and other originated information originating from one of the

originating processors is transmitted with the electronic mail system without using the RF information transmission network to at least one of the destination processors comprising:

at least one interface, one of the at least one interface connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network; and wherein

the originated information is transmitted in association with an address of the one interface from the one of the plurality of originating processors to the one interface with the electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

the originated information is transmitted from the one of the at least one interface to the RF information transmission network with an address of the at least one of the plurality of destination processors to receive the originated information being added at the originating processor originating the originated information, or by either the electronic mail system that contains the plurality of originating processors or the one interface.

5,625,671

METHOD OF CHECKING THE IDENTITY OF A SUBSCRIBER EQUIPMENT

Hannu-Pekka Salin, Vantaa, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI93/00515, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/13115, PCT Pub. Date Jun. 9, 1994

PCT Filed Dec. 1, 1993, Ser. No. 446,842

Claims priority, application Finland, Dec. 1, 1992, 925470

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—58 **3 Claims**

LIST IDENTITY	OPERATION
YELLOW	
RED	
GREEN	
BLUE	

1. A method of checking a subscriber equipment identity in a subscriber Equipment Identity Register of a mobile telephone exchange, comprising:

providing the mobile telephone exchange with an interface block, for connecting the mobile telephone exchange to the subscriber Equipment Identity Register, which is arranged in connection with the mobile telephone exchange, which subscriber Equipment Identity Register comprises lists containing subscriber equipment identities, which lists have list identities,

requesting by the mobile telephone exchange the subscriber for the subscriber equipment identity,

sending by the subscriber the subscriber equipment identity to the mobile telephone exchange,

sending by the mobile telephone exchange said subscriber equipment identity to the subscriber Equipment Identity Register,

searching by the subscriber Equipment Identity Register for the subscriber equipment identity corresponding to said subscriber equipment identity in the lists,

sending by the subscriber Equipment Identity Register the list identity of that list in which said subscriber equipment identity is found to the mobile telephone exchange,

performing by the mobile telephone exchange a predetermined function corresponding to the list identity,

maintaining a message delivery list of the equipment identities of the subscribers to which a predetermined short message shall be sent,

detecting that the identity of the subscriber to be checked is in said message delivery list,

sending the identity of said message delivery list from the equipment identity register to the mobile telephone exchange, and

sending from the mobile telephone exchange to the subscriber said predetermined short message corresponding to the identity of said message delivery list.

5,625,672

APPARATUS AND METHOD FOR PROVIDING A MICROZONE MOBILE COMMUNICATION SYSTEM WITHIN A CELLULAR TELEPHONE SYSTEM

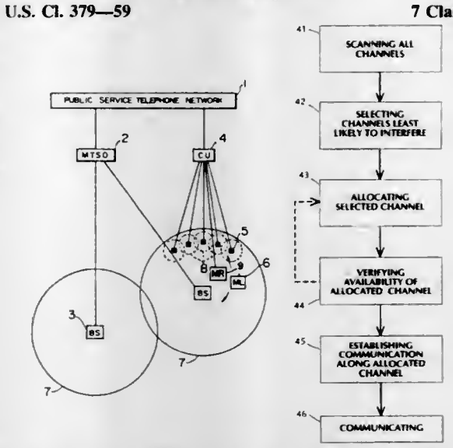
Jun Yamada, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 796,808, Nov. 25, 1991, abandoned. This application Mar. 10, 1994, Ser. No. 209,594

Claims priority, application Japan, Nov. 29, 1990, 2-333843

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 379—59 **7 Claims**



1. A microzone mobile communication system which operates in local areas on cellular channels in the same frequency band as a cellular telephone system which is available in said local areas, said microzone mobile communication system comprising:

a plurality of fixed stations for providing communications links for said microzone system;

a cellular monitoring receiver located within one of said local areas for scanning channels of said cellular telephone system, and for monitoring the interference potential of each of said scanned channels;

a control unit for coupling at least one of said fixed stations to a public service telephone network, said control unit being responsive to said monitoring for allocating cellular channels prior to a communication request to said microzone mobile communication system based on said monitoring of said interference potential; and

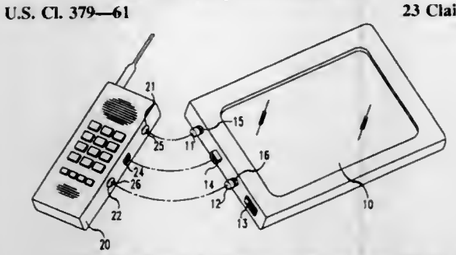
a portable terminal which accesses said microzone mobile communication system on one of said allocated cellular channels in response to a communication request when said portable terminal is within said local area.

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5,625,673
MODULAR COMMUNICATION APPARATUS

Anthony J. Grewe, Holmdel; Michael Kerwin, West Orange; Carl S. Ledbetter, Jr., Summit, and B. Waring Partridge, III, Far Hills, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 22, 1994, Ser. No. 310,297
Int. Cl.[6] H04Q 7/32; H04M 1/00
U.S. Cl. 379—61 **23 Claims**



1. Apparatus including a personal digital assistant (PDA) that contains a housing, a processor in said housing and an input/output device arrangement in said housing coupled to said processor for inputting data to, and outputting from, said processor, the improvement comprising:

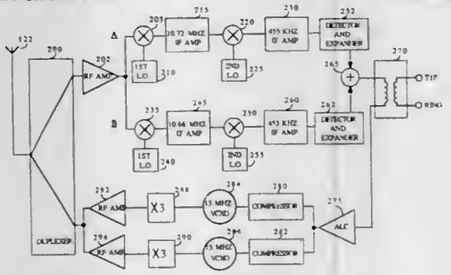
a first connector on a first side of the perimeter of said housing, coupled to said processor, for cordless physical coupling to a mating connector of an external telephone to enable a communication connection to be established between the PDA and said telephone; and

first means, located on said first side of the perimeter of said housing and integral to said housing, for physically mounting said housing to said telephone so as to support said telephone by said housing and to effectively form a single, substantially rectangular, substantially flat, physical unit that comprises said housing and said telephone to maintain said first connector connection to said telephone connector.

5,625,674
USE OF A VCXO IN THE BASE UNIT OF A TWO-HANDSET CORDLESS TELEPHONE SYSTEM

Samuel R. Paniccia, Jr., Liverpool, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 514,338, Aug. 11, 1995, abandoned, which is a continuation of Ser. No. 397,680, Jan. 4, 1995, abandoned, which is a continuation of Ser. No. 817,933, Jan. 8, 1992, abandoned. This application Jul. 22, 1996, Ser. No. 681,132
Int. Cl.[6] H04M 11/00
U.S. Cl. 379—61 **2 Claims**



1. A cordless telephone set, comprising:

a first handunit for producing a first audio signal;

a second handunit for producing a second audio signal; and

a base unit for simultaneously receiving signals of said handunits, and coupling said signals of said handunits to a telephone system;

said base unit including means for combining said received signals of said handunits to form a single output signal for transmission via said telephone system;

said handunits and said base unit communicating via a single antenna mounted on said base unit;

said first handunit transmitting said first audio signal on a first frequency and receiving on a second frequency;

said second handunit transmitting said second audio signal on a third frequency and receiving on a fourth frequency;

said first and third frequencies being near a nominal handunit transmitting frequency, said second and fourth frequencies being near a nominal handunit receiving frequency; and

said base unit including a duplexing unit for coupling said audio signals at said first and third frequencies from said antenna to first and second base unit receiver channels, and for coupling said audio signals at said second and fourth frequencies from first and second base Unit transmitter channels to said antenna, said duplexing unit being tuned to pass signals at said nominal handunit transmitting frequency and at said nominal handunit receiving frequency, said duplexing unit having a single input for receiving signals to be transmitted, and for conveying said signals received at said input to said antenna; and

said base unit including first and second transmitter channels transmitting at said second and fourth frequencies respectively, said transmitter channels having respective output terminals coupled to said single input of said duplexer unit;

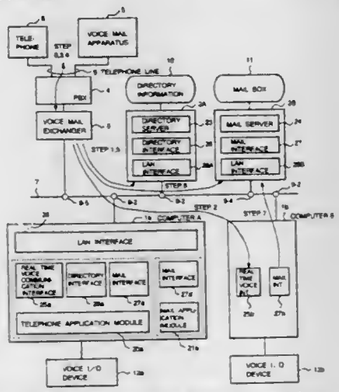
each of said first and second transmitting channels including a voltage controlled crystal oscillator for producing an RF signal modulated in frequency by an audio signal, and a frequency tripler circuit for producing a higher frequency modulated RF Output signal for simultaneous transmission at said second and fourth frequencies, respectively;

each of said frequency tripler circuits having a filter circuit for selecting a third harmonic signal of said modulated RF output signal of its respective voltage controlled crystal oscillator, each of said third harmonic signals being one of said second and fourth frequencies, respectively.

5,625,675
VOICE MAIL COMMUNICATION SYSTEM

Ikuko Katsumaru, Machida; Junji Fukuzawa, Sagamihara; Masato Terada, Sagamihara, and Osamu Takada, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,690
Claims priority, application Japan, Jul. 14, 1994, 6-161811
Int. Cl.[6] H04M 1/64
U.S. Cl. 379—67 **11 Claims**



1. A voice mail communication system comprising:

a signal transmission line;

a plurality of terminal devices having a voice mail communication function, connected to said signal transmission line;

mail server means connected to said transmission line for storing a plurality of voice mail messages and managing the addresses of said voice mail messages;

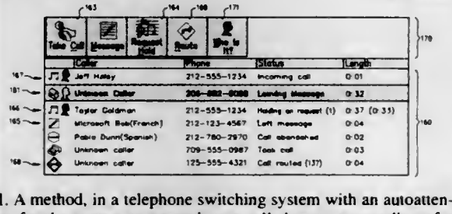
a switch for exchanging voice signals of at least a plurality of telephones connected through a telephone network; and

voice mail exchanger means connected to said switch and said transmission line for converting at least a voice data communication protocol of said telephone network to a voice data communication protocol of said transmission line between said telephone network and at least said mail server and one of said terminal devices and for converting at least said voice data communication protocol of said transmission line to said voice data communication protocol of said telephone network.

5,625,676
METHOD AND APPARATUS FOR MONITORING A CALLER'S NAME WHILE USING A TELEPHONE

Robert C. Greco; Michael J. Robinson, both of Seattle, and Paul M. Dunn, Bainbridge Island, all of Wash., assignors to Active Voice Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 119,380, Sep. 13, 1993, Pat. No. 5,434,906, and Ser. No. 125,606, Sep. 22, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,335
Int. Cl.[6] H04M 1/64
U.S. Cl. 379—88 **10 Claims**



1. A method, in a telephone switching system with an autoattendant, for the system to transmit to a called party a recording of a caller's name stated by a caller while the called party is using a first communication channel for a call with a third party and allow the called party to hear the recording of the caller's stated name, comprising:

(a) receiving voice sounds from the caller,

(b) recording the voice sounds,

(c) notifying the called party with a visual notification on a display that the system is receiving and recording voice sounds from the caller,

(d) awaiting a responsive command from the called party, and,

(e) upon receipt from the called party of a command to do so, transmitting the voice sounds to the called party via a second communication channel and playing the voice sounds on a speaker coupled to the second channel.

5,625,677
SIMULTANEOUS VOICE AND DATA COMMUNICATIONS

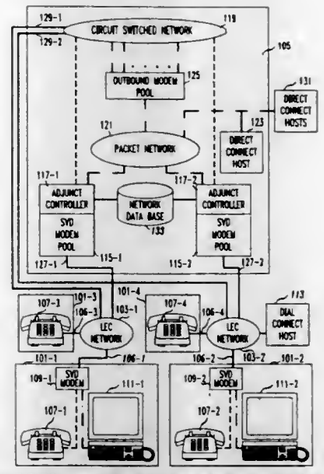
Alan I. Felertag, Old Bridge; Brian D. Freeman, Howell; Bruce L. Hanson, Little Silver, all of N.J.; Mark M. Rochkind, Greenwich, Conn., and Lee B. Strahs, Oceanport, N.J., assignors to AT&T, Middletown, N.J.

Filed Dec. 30, 1993, Ser. No. 176,002
Int. Cl.[6] H04M 11/00
U.S. Cl. 379—93 **30 Claims**

14. A system for routing voice and data calls through a public switched network comprising

means in said public switched network for receiving separate voice and data channels originating from distinct originating points; and

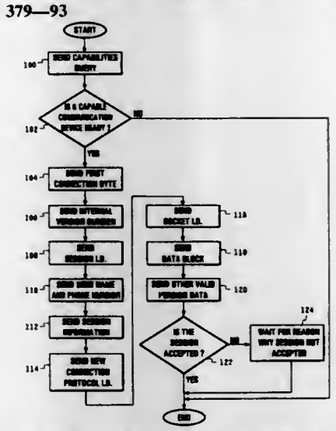
means in said public switched network for combining said separate voice and data channels for transmission over a single POTS channel in a format recognized by an SVD modem.



5,625,678
METHOD AND SYSTEM FOR ALLOWING SWITCHED VOICE AND DATA COMMUNICATION AMONG MULTIPLE APPLICATION PROGRAMS

Christopher Blomfield-Brown, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 24, 1995, Ser. No. 448,815
Int. Cl.[6] H04M 11/00
U.S. Cl. 379—93 **16 Claims**



11. A computer implemented method for enabling plural application programs executing in a first computer to communicate with corresponding versions of the plural application programs executing in a second computer during a switched voice and data communication over a telephone line, the method comprising:

issuing a first command to a modem supporting switched voice and data communication to switch the modem into a voice mode so that voice data is transferred over the telephone line during a telephone call;

issuing a second command to the modem supporting switched voice and data communication to switch the modem into a data mode such that the transfer of voice data over the telephone line during the telephone call is temporarily blocked;

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while the modem is in data mode, performing the following steps:

sending a first unique protocol ID assigned to a first application program executing in the first computer and a corresponding first application program executing in the second computer to the modem for transfer to the second computer;

sending a first block of data associated with the first application program to the modem for transfer to the second computer, wherein the first block of data is identified with the first unique protocol ID;

sending a second unique protocol ID assigned to a second application program executing in the first computer and a corresponding second application program executing in the second computer; and

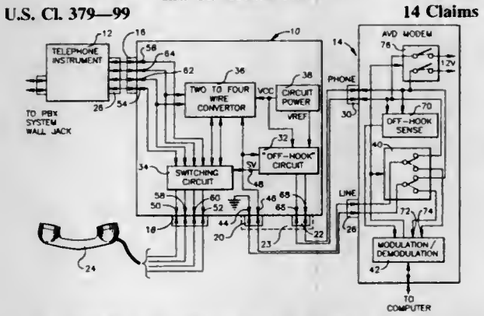
sending a second block of data associated with the second application program to the modem for transfer to the second computer, wherein the second block of data is identified with the second unique protocol ID.

5,625,679

TELEPHONE HANDSET INTERFACE FOR ALTERNATING VOICE-DATA (AVD) MODEM

Alan A. Gutzmer, Poway, Calif., assignor to Gutzmer Enterprises, Ltd., San Diego, Calif.

Filed Apr. 23, 1996, Ser. No. 636,393
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—99 **14 Claims**



1. An interface for connecting an AVD modem having an AVD modem "Phone" connection and an AVD modem "Line" connection to a telephone instrument, the AVD modem having modulation/demodulation circuitry and having relay means for connecting the AVD modem "Phone" connection to the AVD modem "Line" connection when the modulation/demodulation circuitry is in an on-hook state and for connecting the modulation/demodulation circuitry to the AVD modem "Line" connection when the modulation/demodulation circuitry is in an off-hook state, the interface comprising:

a telephone base input connection for receiving signals from said telephone instrument;

a telephone base output connection for providing signals to said telephone instrument;

an audio input connection for receiving signals from a microphone;

an audio output connection for providing signals to a speaker;

an interface "Phone" connection connectable to said AVD modem "Phone" connection;

an interface "Line" connection connectable to said AVD modem "Line" connection;

an off-hook circuit for detecting whether signals received at said AVD modem "Line" connection indicate an off-hook state or an on-hook state and for coupling a load resistor to said interface "Phone" connection;

a two-to-four-wire converter circuit between said AVD modem "Line" connection and said telephone base input and output connections;

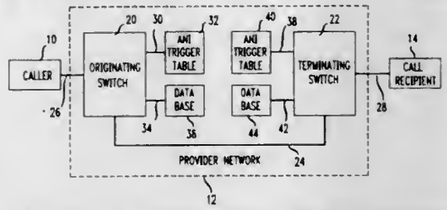
a switching circuit for coupling signals received at said audio input connection to said telephone base output connection when said signals received at said interface "Line" connection indicate an on-hook state, for coupling signals received at said telephone base input connection to said audio output connection when said signals received at said interface "Line" connection indicate an on-hook state, for coupling signals received at said audio input connection to said telephone base output connection when said signals received at said interface "Line" connection indicate an off-hook state, and for coupling signals received at said telephone base input connection to said interface "Line" connection when said signals received at said interface "Line" connection indicate an off-hook state.

5,625,680

METHOD AND APPARATUS FOR PRIORITIZING TELEPHONE CALLS

Mark J. Foladare, Kendall Park; Shelley B. Goldman, East Brunswick; Nancy S. Murray, Morris Township, Morris County; David P. Silverman, Somerville, and Roy P. Weber, Bridgewater, all of N.J., assignors to AT&T, Middletown, N.J.

Filed Feb. 7, 1995, Ser. No. 385,004
Int. Cl.[6] H04M *15/06*
U.S. Cl. 379—199 **4 Claims**



1. A method of processing telephone calls in a telephone network, comprising the steps of:

receiving from a caller priority criteria and storing said caller priority criteria in a database;

receiving from a call recipient priority criteria and storing said call recipient priority criteria in a database;

assigning to a telephone call from said caller to said call recipient said previously stored caller priority criteria; and

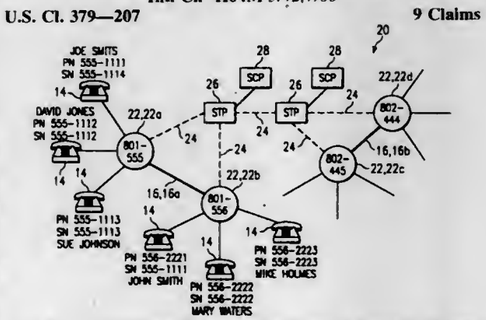
directing said telephone call based on a comparison of said previously stored caller priority criteria and said previously stored call recipient priority criteria.

5,625,681

METHOD AND APPARATUS FOR TELEPHONE NUMBER PORTABILITY

George D. Butler, II, Fort Worth, Tex., assignor to Stratus Computer, Inc., Marlboro, Mass.

Filed Aug. 11, 1995, Ser. No. 514,196
Int. Cl.[6] H04M *3/42;7/00*
U.S. Cl. 379—207 **9 Claims**



1. In a communication system comprising a plurality of interconnected switches, a method of forming a connection from a calling party to a called party, comprising the steps of:

dialing a subscriber number assigned to the called party;

if a switch receiving said subscriber number is of a first type, routing the call responsive to the subscriber number of the called party;

if a switch receiving said subscriber number is of a second type, determining a provider number of the called party based on said subscriber number, wherein the provider number of the called party identifies a particular switch associated with the called party, and routing the call responsive to the provider number of the called party;

identifying a provider number of said calling party, wherein said provider number of the calling party indicates the switch that initially received the subscriber number of the called party; and

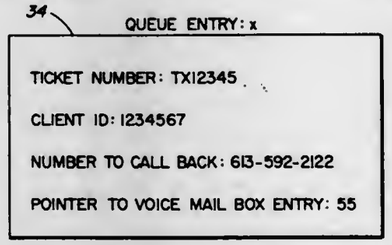
translating the provider number of the calling party to a subscriber number associated with the calling party upon receiving a provider number of the calling party in a switch of said second type.

5,625,682

HELP DESK IMPROVEMENT

Thomas A. Gray, Carp, and Deborah L. Pinard, Kanata, both of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Jan. 5, 1995, Ser. No. 369,179
Claims priority, application Canada, Mar. 15, 1994, 2119086
Int. Cl.[6] H04M *3/46;3/50*
U.S. Cl. 379—266 **12 Claims**



1. A method of informing an agent of a follow-up call to the agent from a telephone subscriber comprising:

(a) receiving said follow-up call from the telephone subscriber, and detecting that the agent is busy,

(b) storing a callback number of the telephone subscriber,

(c) storing at least part of a message provided by the telephone subscriber in association with the callback number,

(d) determining from information conveyed in the follow-up call the identity of a specific agent to which the course of the follow-up call is to be directed, and

(e) routing the message and the callback number to the specific agent when the specific agent becomes free.

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METHOD OF AND TELEPHONE WITH CALL-REMINDING AND AUTO-DIALING

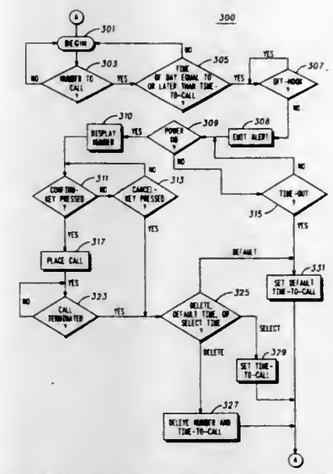
Victor Nazanin, Skokie; John A. Kalenowsky, Palatine, and Donald C. Kordich, Grayslake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1996, Ser. No. 621,851
Int. Cl.[6] H04M *1/26*
U.S. Cl. 379—355 **13 Claims**

1. A method of resetting a stored time-to-call a corresponding telephone number, the method, performed by a telephone, comprising the steps of:

determining if a time-of-the-day is equal to or later than the stored time-to-call;

determining if the telephone is powered on when the time-of-the-day is equal to or later than the stored time-to-call;



determining if a time duration has elapsed while the telephone is not powered on; and

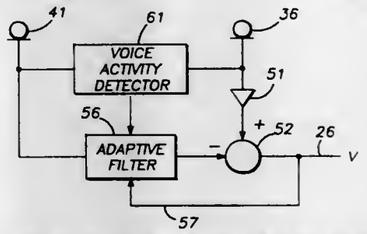
automatically changing the stored time-to-call to a predetermined later time-to-call after the time duration has elapsed.

5,625,684

ACTIVE NOISE SUPPRESSION SYSTEM FOR TELEPHONE HANDSETS AND METHOD

Anthony F. Matouk, Los Altos; Dieter Enzmann, Menlo Park, and Ahmet Karakasoglu, Palo Alto, all of Calif., assignors to Local Silence, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 38,336, Feb. 4, 1993, abandoned. This application Mar. 4, 1994, Ser. No. 206,462
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—387 **6 Claims**



1. A system for use by a caller at one location and a recipient at a remote location of a telephone call from the caller for suppressing actual environmental noise in the vicinity of a telephone being used by the caller comprising a telephone handset forming a part of the telephone being used by the caller, the telephone handset having a first audible sound sensor facing in one direction for picking up human voice sounds emanating from a first direction and creating a first electrical signal and a speaker for producing substantially directional human voice sounds, a second audible sound sensor carried by the telephone handset and facing in direction opposite to said one direction and having sound pick-up capabilities from a direction which is generally opposite said first direction for picking up actual environmental noise in the vicinity of the handset and producing a second electrical signal having a frequency and phase, means including an adaptive filter for processing and performing adaptive filtering of the second electrical

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signal to provide a third electrical signal of the same frequency as the second electrical signal but 180° out of phase and combining means for combining the third electrical signal with the first electrical signal to provide an output to suppress the actual environmental noise present in the first electrical signal so that the recipient of the telephone call from the caller will receive an electrical signal from the telephone being used by the caller in which the actual environmental noise in the vicinity of the telephone handset of the telephone being used by the caller has been suppressed, said means for processing the second electrical signal including voice activity detector means coupled to the first and second audible sound sensors and to the adaptive filter for sensing when the voice sounds are being picked up by the first audible sound sensor, said voice activity detector means including means for controlling the adaptive filter so that the adaptive filtering does not change when the voice activity detector senses that the voice sounds are being picked up by the first audible sound sensor.

5,625,685

NETWORK TERMINATION UNIT

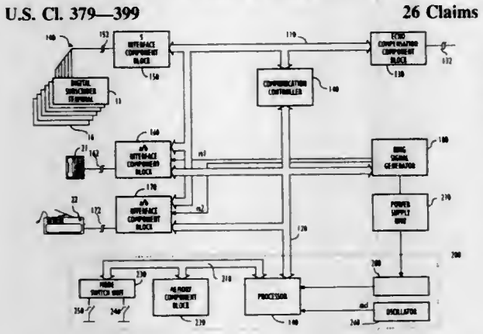
Patrick Allegranza, Zurich; Stephan Burgin, Rheinau, and Peter Kopp, Widen, all of Switzerland, assignors to Siemens Schweiz AG, Zurich, Switzerland

Filed Jan. 26, 1995, Ser. No. 378,275

Claims priority, application Switzerland, Jan. 27, 1994, 247/94

Int. Cl.[6] H04M *3/00*; H04J *3/12*

U.S. Cl. 379—399 **26 Claims**



1. A network termination unit for connecting a terminal device to a U interface of an ISDN telecommunications network, comprising:

a processor system;

an echo compensator connected to the U interface of the ISDN telecommunications network;

a communication controller;

an a/b interface component block connected to an a/b interface of the ISDN telecommunications network, said a/b interface component block comprising:

a subscriber line interface; and

a converter component block;

an S interface component block connected to an S interface of the ISDN telecommunications network; and

a first bus that inter-connects said echo compensator, said communication controller, said a/b interface component block, and said S interface component block, said processor system having access to said first bus via a second bus that interconnects said processor system, said communications network and said a/b interface component block to enable the terminal device to transmit and receive data over the ISDN telecommunications network.

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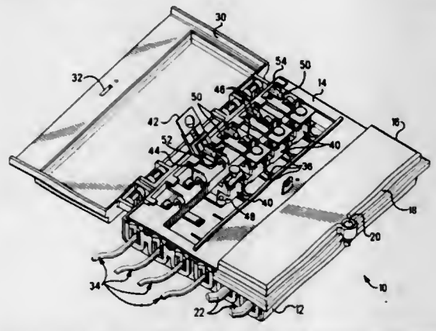
CUSTOMER-ACCESSIBLE TEST PORT FOR NETWORK INTERFACE DEVICE

Harry M. Capper; James S. Hower, both of Harrisburg, and James W. Robertson, Oberlin, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 442,032, May 16, 1995, which is a continuation-in-part of Ser. No. 213,137, Mar. 15, 1994, Pat. No. 5,420,920. This application Jan. 17, 1996, Ser. No. 587,690

Int. Cl.[6] H04M *1/24*

U.S. Cl. 379—399 **3 Claims**



1. A test port of a subscriber module of a network interface device wherein conductors of distribution cable are connected to conductors of premise wiring of a subscriber of telephone service, comprising:

a jack including a plug-receiving cavity and an array of contact members exposed for engagement at a mating interface within said plug-receiving cavity;

a plug member insertable into and removable from said plug-receiving cavity and including an array of interconnecting contact members exposed to be engageable with said jack contact members, with said plug member removable from said jack to permit insertion of another plug member for testing;

said contact members of said jack are arranged in associated pairs of first and second contact members adjacent said mating interface and having respective contact sections exposed along said mating interface in said plug-receiving cavity, and said first and second contact members being electrically unconnected to each other when said plug member is unmated from said jack, one of said first and contact members of each said pair being connected to a circuit extending to a distribution cable and the other thereof being connected to a circuit extending to premise wiring of a subscriber of telephone service; and

said contact members of said plug member being unconnected to any circuit when said plug member is unmated from said jack, each said contact member including a contact section associated with a respective said pair of said contact members of said jack, defining interconnecting contacts adapted to interconnect said ones and others of said pairs of contact members of said jack when said plug member is fully inserted into said jack, thus interconnecting otherwise unconnected ones of said conductors of said distribution cable and associated conductors of said premise wiring.

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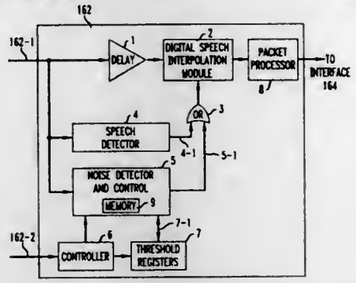
ARRANGEMENT FOR ENHANCING THE PROCESSING OF SPEECH SIGNALS IN DIGITAL SPEECH INTERPOLATION EQUIPMENT

Clifford L. Sayre, III, Freehold, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1995, Ser. No. 521,940

Int. Cl.[6] H04B *1/62*; H04M *7/00*; H04J *3/18*;7/00

U.S. Cl. 379—416 **8 Claims**



8. A method for use in a telecommunications system comprising receiving via a communication path speech signals associated with a telephone call, said communication path also transporting noise signals at least during pauses in the receipt of said speech signals,

discriminating said speech signals from said noise signals and forwarding said speech signals when they are present on said communications path to a predetermined destination switch via another communication path such that said speech signals are compressed in accordance with a predetermined compression scheme and then forwarded to said destination, and

discriminating said noise signals from said speech signals and, responsive to the presence of said noise signals on said communications path, comparing the level of said noise signals with a predetermined threshold value and selectively causing said noise signals to be compressed and forwarded to said destination switch if said level at least equals said predetermined threshold value, in which said predetermined threshold value is selected as a function of a type of telephone service associated with said telephone call.

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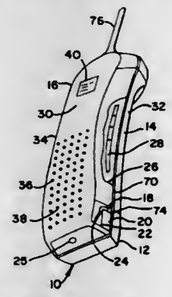
SHOWER TELEPHONE

Joseph E. Ford, Cary; Donald N. Jursich, Chicago, both of Ill., and Raymond Chan, Vancouver, Canada, assignors to Jing Mei Industrial Holdings, Ltd., Cook Islands

Filed Jun. 15, 1995, Ser. No. 490,786

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **10 Claims**



1. A telephone system, comprising:

a shower telephone comprising a handset for use in a shower, said handset comprising

a water-impervious shower-resistant housing providing a shower useable handset body of sufficient strength for withstanding water pressure from the shower, said handset body having a front section and a back section;

said shower-resistant housing comprising impact-resistant electrically insulating material;

said front section having a mouthpiece and an earpiece;

said housing defining a hollow interior compartment for housing receiving circuitry connected to said earpiece and transmitting circuitry connected to said mouthpiece;

said housing comprising a shower impermeable assembly providing a water-impervious barrier for preventing water from the shower from entering into said compartment and shorting said circuitry; and

said shower-impermeable assembly including a shampoo-resistant rib and a soap-resistant seal.

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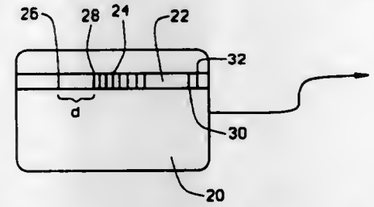
METHOD AND APPARATUS FOR SECURE DATA STORAGE AND MANIPULATION USING MAGNETIC MEDIA

Ronald S. Indeck, Olivette, and Marcel W. Muller, St. Louis, both of Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 208,997, Mar. 10, 1994, and Ser. No. 222,693, Apr. 19, 1994, Pat. No. 5,428,683, which is a continuation-in-part of Ser. No. 46,071, Apr. 9, 1993, Pat. No. 5,365,586. This application Apr. 5, 1995, Ser. No. 417,666

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—3 **22 Claims**



1. A method for recording verifiable data on a magnetic medium, said method comprising the steps of:

writing data onto a magnetic medium,

determining a relative position of said data on said medium with respect to a benchmark on said magnetic medium, and

storing said relative position for later use in verifying said stored data.

5,625,690

SOFTWARE PAY PER USE SYSTEM

Alan D. Michel, Fishers, and Robert E. Reinke, Indianapolis, both of Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 15, 1993, Ser. No. 152,769

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **25 Claims**

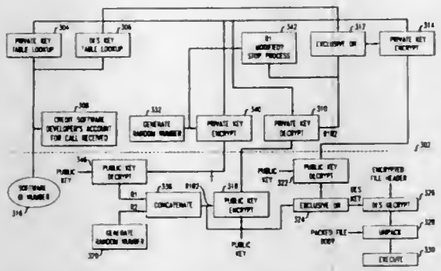
1. A system for the validation and use of secured computer software, said secured computer software including encrypted computer program code and user validation program code, said system comprising:

a software validation system;

a software user system;

a communications network connected to the software validation system and the software user system for the transmission of data between the systems;

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said software validation system comprising:

means for storing at least one decryption key,

means for receiving from said software user system over said communications network an identification of secured software,

means for recording the receipt of said identification of secured software, and

means for transmitting to said software user system over said communications network a decryption key chosen from said at least one stored decryption key;

said software user system further comprising:

means for transmitting said secured software identification to the software validation system over said communications network,

means for receiving said decryption key from said software validation system over said communications network,

means for decrypting said encrypted computer program code using said chosen decryption key;

processor means for executing said decrypted computer program code; and

means for preventing the decryption of said encrypted computer program code and execution of said decrypted computer program code unless said secured software identification is transmitted to the validation system over the communications network prior to each and every execution of said decrypted computer program code.

5,625,691

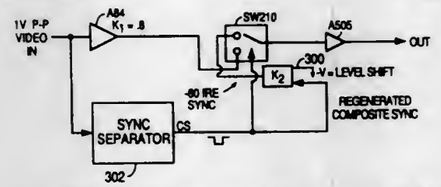
METHOD AND APPARATUS TO DEFEAT CERTAIN COPY PROTECTION PULSES WITHIN A VIDEO SIGNAL

Ronald Quan, Cupertino, Calif., assignor to Macrovision Corporation, Sunnyvale, Calif.

Division of Ser. No. 62,866, May 17, 1993. This application May 2, 1995, Ser. No. 433,283

Int. Cl.[6] H04N *7/16;9/80*

U.S. Cl. 380—5 **4 Claims**



1. A method of defeating a copy protection process that adds pseudo sync and AGC pulses to a video signal, the method comprising the steps of:

reducing an amplitude of at least a portion of an active video part of the video signal; and

increasing at least an amplitude of a synchronization pulse of the video signal.

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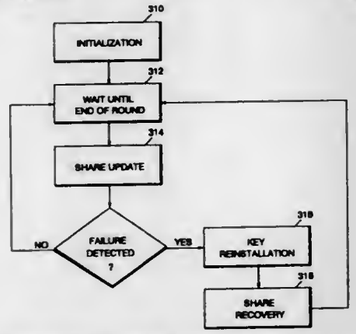
METHOD AND SYSTEM FOR A PUBLIC KEY CRYPTOSYSTEM HAVING PROACTIVE, ROBUST, AND RECOVERABLE DISTRIBUTED THRESHOLD SECRET SHARING

Amir Herzberg, Bronx, N.Y.; Stanislaw M. Jarecki, Cambridge, Mass.; Hugo M. Krawczyk, Riverdale, and Marcel M. Yung, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,580

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—21 **16 Claims**



9. A data processing system for processing a public key cryptography scheme having proactive, robust and recoverable distributed threshold secret sharing, comprising:

servers linked by a communications network;

initialization means for initializing said servers to form keys associated with said servers;

timing means for synchronizing operation of said servers into discrete rounds having ends;

updating means for updating said keys at the end of each round of said discrete rounds to produce updated keys;

verification means for verifying said updated keys to form a set of compromised servers;

recovery means for recovering said set of compromised servers; and

wherein said updating means for updating said keys at the end of each round of said discrete rounds to produce updated keys comprises:

random number generating means for generating a set of random numbers, said set of random numbers with each said server;

key generating means for generating a new key for each said server from said set of random numbers; and

broadcasting means for broadcasting a message on said communications network derived from said set of random numbers.

5,625,693

APPARATUS AND METHOD FOR AUTHENTICATING TRANSMITTING APPLICATIONS IN AN INTERACTIVE TV SYSTEM

Pankaj Rohatgi, Sunnyvale, and Vincent Dureau, Vemas, both of Calif., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

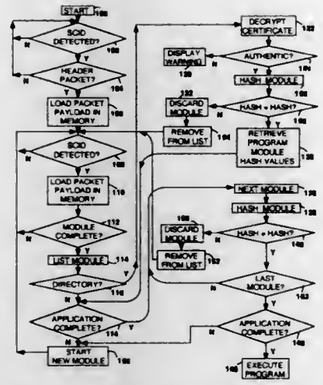
Filed Jul. 7, 1995, Ser. No. 499,280

Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—23 **23 Claims**

1. Apparatus for receiving an executable application transmitted in modules including a Directory Module containing information about further modules, said Directory Module having at least an encrypted hash value over the Directory Module and an encrypted certificate appended, which certificate includes an identity of the application provider, said apparatus comprising:

a memory



a detector for detecting said transmitted modules and storing detected modules in memory;

means for separating said certificate from a detected Directory Module;

a decryptor for decrypting said certificate and said encrypted hash value;

a hash function element for hashing said detected Directory Modules to produce a further hash value;

a processor programmed for authenticating decrypted said certificate, and comparing decrypted said hash value with said further hash value, and if decrypted said hash value and said further hash value are equal and said certificate is authentic, permitting execution of said program.

5,625,694

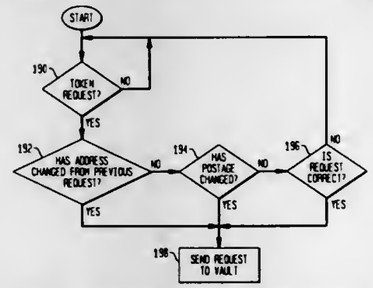
METHOD OF INHIBITING TOKEN GENERATION IN AN OPEN METERING SYSTEM

David K. Lee, Monroe; David W. Riley, Easton, and Frederick W. Ryan, Jr., Oxford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1995, Ser. No. 575,106

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—23 **10 Claims**



1. A method of inhibiting issuance of digital tokens in an open metering system comprising a host processor and a vault, the method comprising the steps of:

requesting indicia through user interface means operatively coupled to the host processor, said request for indicia including a first destination identifier and a first postage amount;

generating in the host processor a first digital token request, said first digital token request corresponding to the first destination identifier and the first postage amount;

determining in the host processor if one of the first destination identifier and the first postage amount is different than a prior destination identifier and a prior postage amount, respectively, that correspond to an immediately preceding digital token request;

sending the first digital token request to the vault when the first destination identifier and the first postage amount are different than the prior destination identifier and the prior postage amount, respectively; and

rejecting in the host processor the first digital token request when the first destination identifier and the first postage amount are the same as the prior destination identifier and the prior postage amount, respectively, whereby the transmission of the first digital token request from the host processor to the vault and the generation of the first digital token are inhibited.

5,625,695

PROCESS FOR GENERATING DSA SIGNATURES WITH LOW-COST PORTABLE APPARATUSES

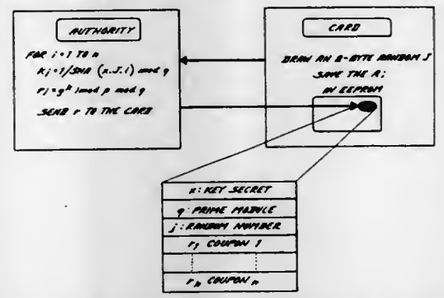
David M'Raihi, Paris, and David Naccache, Maisons-Alfort, both of France, assignors to Gemplus Card International, Gemenos, France

Filed Nov. 30, 1994, Ser. No. 347,570

Claims priority, application France, Dec. 2, 1993, 93 14466; Mar. 29, 1994, 94 03697

Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—28 **18 Claims**



1. Process for generating digital signatures with a portable apparatus of the microprocessor-based integrated-circuit card type, the portable apparatus including a microprocessor, a communication device, and an electrically programmable non-volatile memory, the method comprising the steps of

preparing a plurality of original coupons, the plurality of original coupons being prepared externally to the portable apparatus, the plurality of original coupons being formed of precomputed data useful in the generation of the digital signatures, wherein different coupons correspond to different individual signatures such that the generation of an individual signature involves the use of only a single coupon, and wherein the plurality of original coupons each correspond to an intermediate step in the calculation of the different individual signatures;

loading the plurality of original coupons into the portable apparatus after the plurality of original coupons have been prepared;

using the plurality of original coupons to generate the digital signatures; and

periodically reloading the apparatus with pluralities of additional coupons after the apparatus has been issued to an end user and after the plurality of original coupons has been substantially exhausted, each performance of the reloading step comprising the steps of

establishing a connection between a signature verification device and the apparatus, the signature verification device being formed of one of a verifier and a certified central authority,

preparing a plurality of additional coupons,

enciphering the plurality of additional coupons, and

sending the plurality of additional coupons from the signature verification device to the apparatus in enciphered format,

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the plurality of additional coupons enabling the apparatus to generate a plurality of additional digital signatures.

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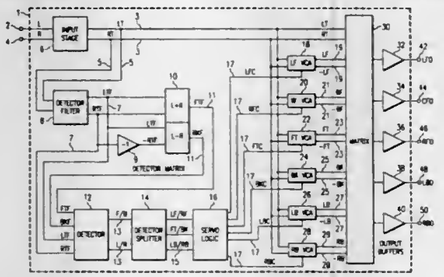
SIX-AXIS SURROUND SOUND PROCESSOR WITH IMPROVED MATRIX AND CANCELLATION CONTROL

James W. Fosgate, Heber City, Utah, assignor to Harman International Industries, Inc., Northbridge, Calif.

Continuation-in-part of Ser. No. 624,907, Mar. 27, 1996, which is a continuation of Ser. No. 276,901, Jul. 18, 1994, Pat. No. 5,504,819, which is a continuation-in-part of Ser. No. 990,660, Dec. 14, 1992, Pat. No. 5,428,687, which is a continuation-in-part of Ser. No. 533,091, Jun. 8, 1990, Pat. No. 5,172,415. This application Apr. 2, 1996, Ser. No. 631,603

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—18 **8 Claims**



1. A surround sound processor comprising:

audio input terminals for receiving a left and a right audio input signal forming a conventional stereophonic audio signal pair;

an input stage for buffering and balancing said left and right audio input signals and providing output left and right audio signals;

a detector filter circuit receiving the output left and right audio signals and having a band pass characteristic, followed by an inverter circuit and a detector matrix circuit to provide left and right audio signal currents;

a direction detector circuit receiving said left and right audio signal currents and providing therefrom left-right and front-back directional signals, and including peak hold circuitry;

a detector splitter circuit providing left front-right front, left back-right back, and front-back output signals derived from the outputs of said direction detector circuit, and incorporating linearity correction circuitry;

a servologic circuit providing variable time constant smoothing of the output signals from said detector splitter circuit, and producing six output control signals;

voltage controlled amplifier circuits, each controlled by a different one of said six output control signals of said servologic circuit, and each provided with input audio signals that are a combination of said left and right output audio signals from said input stage, each said voltage controlled amplifier circuits being provided with an inverter circuit so as to produce controlled audio signals of both normal and inverted polarity;

a separation matrix circuit for combining the said output left and right audio signals from said input stage with one or more of said output signals from said voltage controlled amplifier circuits in various appropriate proportions so as to provide a plurality of matrix output signals; and

a like plurality of output buffer amplifiers for buffering and level control of said matrix output signals to produce at a like plurality of output terminals a set of loudspeaker feed signals for amplification and application to loudspeakers placed in a listening area so as to surround a listener.

5,625,697

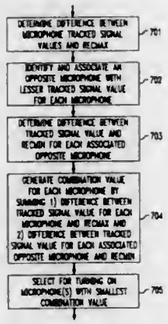
MICROPHONE SELECTION PROCESS FOR USE IN A MULTIPLE MICROPHONE VOICE ACTUATED SWITCHING SYSTEM

Donald J. Bowen, Madison, and Gregory Ciurpita, Jr., Somerset, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 8, 1995, Ser. No. 436,671

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—92 **32 Claims**



1. A method of selecting a microphone from a plurality of microphones for transmitting speech signals from said microphone to an output line, the method comprising the steps of:

measuring a level of speech signals appearing in each of the plurality of microphones responsive to speech sounds, the level of said speech signals in each of the plurality of microphones being determined by a direction of origin for said source of speech sounds;

arranging the plurality of microphones in microphone pairs, a first microphone in each microphone pair having a main beam sensitivity pattern extending in a first direction and a second microphone in each microphone pair having a null pattern extending generally in said first direction;

combining the level of speech signals appearing in said first and second microphones in each one of said microphone pairs for obtaining microphone-pair combination values; and

comparing each microphone-pair combination value for identifying a microphone pair in which said first microphone best receives said speech sounds.

5,625,698

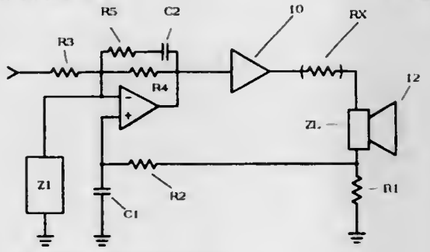
LOUDSPEAKER AND DESIGN METHODOLOGY

Anthony T. Barbetta, 5301 Commerce Ave. #4, Moorpark, Calif. 93021

Continuation of Ser. No. 954,303, Sep. 29, 1992, abandoned. This application Aug. 14, 1995, Ser. No. 514,980

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—96 **9 Claims**



1. A speaker system comprising:

a speaker having first and second terminals:

an audio amplifier having an output terminal connected to said first speaker terminal;

current sensing means connected between the second terminal of said speaker and ground;

a differential input operational amplifier having a first inverting input terminal and a second non-innverting input terminal and an output terminal, said first inverting input terminal being an input terminal of said speaker system and said output terminal being connected to an input terminal of said audio amplifier, said differential input operational amplifier providing a first gain to a signal applied to said first inverting input terminal and a second gain to a second signal applied to said second non-inverting input terminal;

a first feedback path defining a voltage loop, including a first resistor, being connected between the output terminal of said operational amplifier and the first inverting input terminal thereof;

a second feedback path being connected between the second terminal of said speaker and the second non-inverting terminal of said operational amplifier; and

load means of selected value connected between said first inverting input terminal of said operational amplifier and ground.

5,625,699

SPEAKER DEVICE

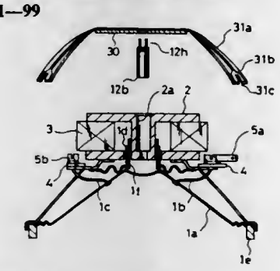
Teruho Yamada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hyogo, Japan

Filed Dec. 28, 1993, Ser. No. 174,021

Claims priority, application Japan, Aug. 5, 1993, 5-194998

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—99 **6 Claims**



1. A speaker device comprising:

a pole piece having a magnet attached thereto;

a voice coil disposed so as to undergo a predetermined electromagnetic force in a magnetic field induced by said pole piece;

a diaphragm connected to said voice coil and adapted to oscillate together with the voice coil under the action of said electromagnetic force, thereby producing a sound;

a capacitor for a crossover network inserted to form a high-pass filter or a low-pass filter on an input signal line which inputs an audio signal to said voice coil; and

a protective cover covering an end portion of said pole piece,

said speaker device mainly reproducing only a high or low frequency range of said audio signal,

wherein a printed circuit board having a shape similar to said protective cover and having a conductive pattern serving as a part of said input signal line formed on an inner surface thereof, is disposed on an end face of said pole piece, said capacitor is surface-mounted on the inner-surface of said printed circuit board, and an electrical connection of said capacitor to said input signal line is formed on the conductive pattern of said printed circuit board.

5,625,700

METHOD OF FARBICATING AN ELECTROACOUSTIC TRANSDUCER

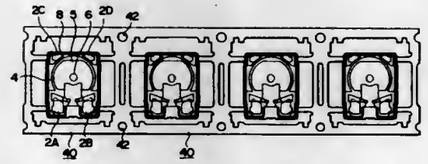
Takahiro Sone, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka-ken, Japan

Filed May 25, 1995, Ser. No. 450,350

Claims priority, application Japan, Jun. 16, 1994, 6-158027

Int. Cl.[6] H04R *25/00*; **G08B** *3/00*

U.S. Cl. 381—192 **5 Claims**



1. A method of fabricating an electroacoustic transducer for converting electric input signals into sound, said method comprising steps of:

forming pole piece portions;

forming a lead frame having a plurality of base forming areas thereon, each of said areas having lead terminals formed therein;

forming bases of a synthetic resin on said lead frame by molding so that said pole piece portions are embedded in said bases;

mounting a coil on each of said pole piece portions embedded in said bases, surrounding said coil with support ring and magnet sections, and placing a diaphragm on said support ring section to be held thereby;

connecting opposite ends of said coil to said lead terminals;

cutting off said lead terminals from said lead frame;

putting cases on and fixedly joining the same to said bases; and

subjecting said cut lead terminals to a forming process.

5,625,701

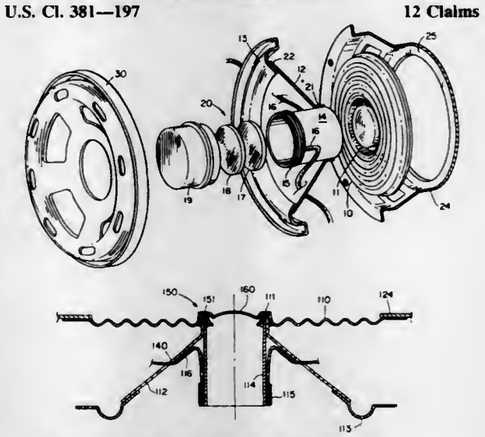
LOUDSPEAKER DIAPHRAGM ATTACHING

James M. Scanlan, Mariborough, Mass., assignor to Bose Corporation, Framingham, Mass.

Continuation-in-part of Ser. No. 102,378, Aug. 5, 1993, abandoned. This application Sep. 15, 1994, Ser. No. 306,703

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—197 **12 Claims**



1. A loudspeaker having a central axis comprising,

a diaphragm symmetrical about said central axis having neck with an annular edge parallel to said central axis,

a voice-coil former surrounded by said diaphragm along significant portion of the length of said voice-coil former having an annular edge parallel to said central axis,

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structure formed with an annular groove,

the annular edge of said neck and the annular edge of said voice-coil former connected together in said annular groove in fixed relationship to said structure and parallel to said central axis.

5,625,702

MOVING BODY RECOGNITION APPARATUS

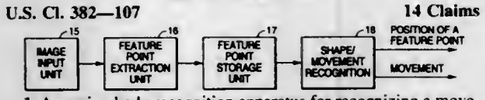
Hiroshi Kamada; Takashi Kubota, and Morito Shiohara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 946,540, Sep. 17, 1992, Pat. No. 5,444,791. This application Apr. 25, 1995, Ser. No. 428,651

Claims priority, application Japan, Sep. 17, 1991, 3-236464; Sep. 17, 1991, 3-236465; Sep. 17, 1991, 3-236466; Sep. 17, 1991, 3-236467; Nov. 15, 1991, 3-300591

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—107 **14 Claims**



1. A moving body recognition apparatus for recognizing a movement of a moving object by positions of feature points in an image corresponding to said moving object, comprising:

image input means for capturing images of said moving object;

feature point extraction means for extracting feature points in said images captured by said image input means;

feature point position storage means for storing known position data corresponding to said extracted feature points; and

shape/movement recognition means for calculating actual positions of said extracted feature points and a movement of said object from said known position data of four of said extracted feature points, said four extracted feature points each being in three of said images captured at any three instances in time, under a condition indicating that said four feature points do not exist on a single plane, that an axis of rotation of said object is not parallel to a direction of an orthogonal projection of said object, said rotation representing said movement between any two of said three instances in time for observation, and that said rotation is not a rotation by an angle of one hundred and eight degrees around an axis parallel to a plane on which said orthogonal projection is made.

5,625,703

METHOD AND APPARATUS FOR DETECTING DEFECTIVE PRINTED MATTER PRINTING PRESS

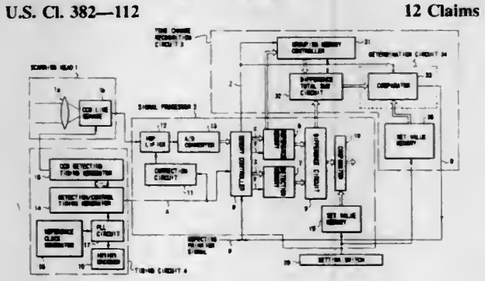
Tetsuya Okuda, and Shinichi Kojima, both of Ibaraki, Japan, assignors to Komori Corporation, Japan

Continuation of Ser. No. 301,673, Sep. 4, 1994, abandoned, which is a continuation of Ser. No. 945,691, Sep. 16, 1992, abandoned. This application Jun. 19, 1996, Ser. No. 668,002

Claims priority, application Japan, Sep. 18, 1991, 3-265548; Nov. 5, 1991, 3-315291

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—112 **12 Claims**



1. A method of detecting a defective printed matter in a printing press, comprising the steps of:

storing all pixel data of a printed matter serving as a reference as reference image data:

inputting each pixel data of a printed matter serving as a test object as test image data;

respectively comparing the test image data with the reference image data on the basis of addresses of the pixel data of the reference to detect a defective printed matter;

grouping a plurality of pixel data of intermediate level existing between predetermined high and low levels of the reference image data into groups of predetermined areas, the high and low levels respectively corresponding to a substantially white portion of the printed matter serving as the reference and a substantially solid portion of the printed matter serving as the reference, the predetermined areas being obtained by dividing the printed matter serving as the reference in a direction parallel to the direction of printing in the printing press, said grouping to exclude all pixels except those of intermediate level,

wherein the stem of grouping includes the step of obtaining the group by dividing an entire portion of the printed matter serving as the reference into predetermined shapes, and combining adjacent predetermined shapes in the entire portion with one another in turn to make one group of predetermined areas, said combining to continue until the combined number of pixels of intermediate level in the group reaches a predetermined number;

calculating differences between the reference image data and the test image data designated only by the addresses of the pixel data of intermediate level;

accumulating absolute values of the differences calculated and dividing the accumulated absolute values by the number of the pixel data of intermediate level in units of the groups of the predetermined areas to respectively obtain group average values; and

recognizing a change in tone of the printed matter which occurs based on changes in printing condition as the test object when at least one of the group average values is not less than a predetermined value; and

newly storing the test image data upon recognition of the change in tone as the reference image data in order to automatically update the reference image data.

5,625,704

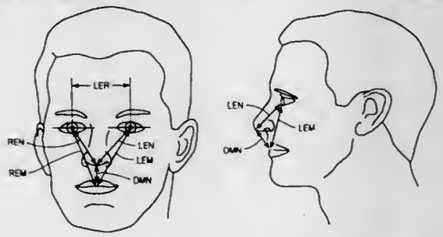
SPEAKER RECOGNITION USING SPATIOTEMPORAL CUES

K. Venkatesh Prasad, Cupertino, Calif., assignor to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company Ltd., Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 336,974

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—118 **28 Claims**



1. A computer-implemented method for generating a feature vector for use in a person recognition system, the feature vector based on visual observations of a spoken utterance, the computer-implemented method comprising the computer-implemented steps of:

(a) observing a spoken utterance by a person that is to be recognized; and

(b) representing the person's mouth action by a cue that includes a lip separation distance function of time that is associated with the spoken utterance;

(c) extracting a set of feature vector components from the cue including,

(i) duration of visual utterance beginning at the lip separation onset and ending at the lip separation closure;

(ii) maximum lip separation distance and time of occurrence, and

(iii) location of a mouth opening centroid between the mouth's upper and lower lip.

5,625,705

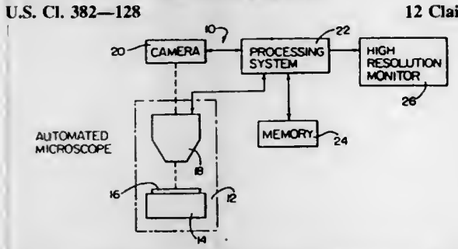
INTENSITY TEXTURE BASED CLASSIFICATION SYSTEM AND METHOD

Joel M. Recht, Monsey, N.Y., assignor to Neuromedical Systems, Inc., Suffern, N.Y.

Filed Jun. 3, 1994, Ser. No. 253,713

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **12 Claims**



1. A method for classifying objects within a specimen as likely to be premalignant or malignant cells, comprising the steps of:

a) forming an intensity image of at least part of a specimen using a microscope;

b) using a processing element to find and store the maximum and minimum grey scale values at plural distances from a pixel in said intensity image;

c) finding the difference between the maximum and minimum grey scale values at the respective distances from said pixel using an algorithmic logic unit;

d) determining the slope of the log of said differences as a function of the log of said distances to provide a measure of intensity texture; and

e) classifying objects in said intensity image as likely to be malignant or premalignant based on the value of said slope.

5,625,706

METHOD AND APPARATUS FOR CONTINOUSLY MONITORING AND FORECASTING SLIDE AND SPECIMEN PREPARATION FOR A BIOLOGICAL SPECIMEN POPULATION

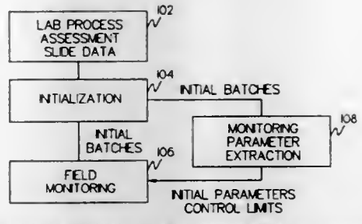
Shih-Jong J. Lee, Bellevue; Dayle G. Ellison, Redmond, and Paul S. Wilhelm, Kirkland, all of Wash., assignors to Neo-Path, Inc., Redmond, Wash.

Filed May 31, 1995, Ser. No. 455,296

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **33 Claims**

1. A laboratory process monitoring method for a laboratory that prepares slides said method comprising the steps of:



(a) acquiring an initial set of laboratory slides so as to select an initial batch of slides for initialization;

(b) extracting an initial monitor parameter with an automated cytology system from said initial batch of slides so as to determine a control limit;

(c) monitoring field data by extracting said monitor parameter from said field data with said automated cytology system; and

(d) comparing said monitor parameter from said field data to said control limit to monitor a slide preparation.

5,625,707

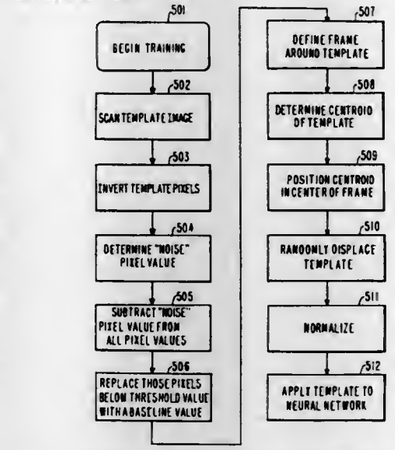
TRAINING A NEURAL NETWORK USING CENTROID DITHERING BY RANDOMLY DISPLACING A TEMPLATE

Thanh A. Diep, Stanford; Hadar I. Avi-Itzhak, Mountain View, and Harry T. Garland, Los Altos Hills, all of Calif., assignors to Canon Inc., Tokyo, Japan

Division of Ser. No. 55,523, Apr. 29, 1993, Pat. No. 5,475,768. This application May 22, 1995, Ser. No. 445,470

Int. Cl.[6] G06T *1/40*

U.S. Cl. 382—157 **9 Claims**



1. A computer-implemented process of training a neural network, said process comprising:

a) providing a plurality of templates, each template corresponding to a distinct image; and

b) for each of the plurality of templates:

defining a frame around the template;

determining a centroid of the template;

positioning the template within the frame such that the centroid is centrally located with respect to the frame;

randomly displacing the template horizontally and vertically within the frame; and

training the neural network by applying the randomly displaced template to the neural network.

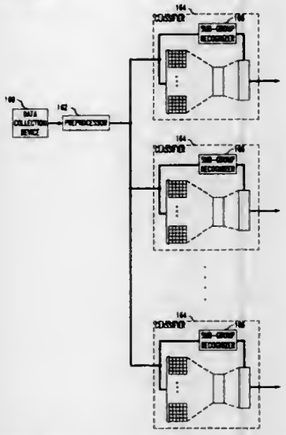
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5,625,708

METHOD AND APPARATUS FOR SYMBOL RECOGNITION USING MULTIDIMENSIONAL PREPROCESSING

Yaun A. LeCun, Lincroft, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Oct. 13, 1992, Ser. No. 959,846
Int. Cl.[6] G06K 9/46
U.S. Cl. 382—202 **27 Claims**



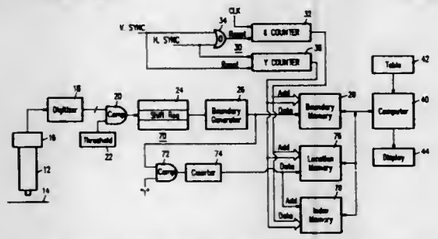
1. An apparatus for recognizing symbols, comprising:
means for collecting data that describes a symbol comprising a plurality of micro-segments;
means for associating a micro-segment with at least one cell in a plurality of cells that quantize micro-segment features, where each of said cells has an associated feature label;
means for assigning a cell value to a cell, using a micro-segment value that is related to how well a feature of said micro-segment associated with said cell corresponds to said cell's feature label; and
a classifier that receives cell values assigned to said plurality of cells for recognizing said symbol.

5,625,709

METHOD AND APPARATUS FOR IDENTIFYING CHARACTERISTICS OF AN OBJECT IN A FIELD OF VIEW

Harvey L. Kasdan, Van Nuys, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Dec. 23, 1994, Ser. No. 363,380
Int. Cl.[6] G06K 9/46
U.S. Cl. 382—203 **14 Claims**



1. A method of identifying the characteristics of an object in a field of view; said method comprising:
forming an electrical image of said field of view in a device;
reading out said electrical image from said device to produce an electrical waveform;
segmenting and digitizing said waveform into a plurality of digitized electrical signals, each of said plurality of digitized electrical signals corresponding to a pixel of said electrical image;
processing said plurality of digitized signals to form an array of pixels wherein each pixel having the characteristic of interest has a non-zero value and is linked to another pixel also having the characteristic of interest;
storing said array in a first memory means, addressable by an address signal of the form (X,Y) where X is a column address signal and Y is a row address signal;
storing in an addressable index memory means a plurality of values, each value being an address to said first memory means where a pixel having the characteristic of interest is located; and
storing in a second memory means, having the same addressable dimensions as said first memory means, in address locations corresponding to address locations in said first memory means where pixels having characteristics of interest are located, values which are addresses to said addressable index memory means where the content is the address of said first memory means of pixels having the characteristic of interest.

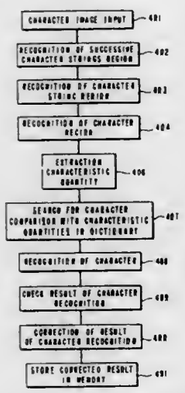
5,625,710

CHARACTER RECOGNITION APPARATUS USING MODIFICATION OF A CHARACTERISTIC QUANTITY

Yutaka Katsuyama, Machida; Hiroshi Iwaki; Takafumi Edanami, both of Yokohama, and Noriyuki Fukuyama, Hachiojl, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 924,637, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 474,767, Mar. 20, 1990, Pat. No. 5,197,107. This application Aug. 23, 1994, Ser. No. 294,784
Claims priority, application Japan, Jul. 20, 1988, 63-179157; Jul. 20, 1988, 63-179158; Jul. 26, 1988, 63-186048; Nov. 8, 1988, 63-283379; Dec. 28, 1988, 63-332393; Apr. 20, 1989, 1-100844
Int. Cl.[6] G06K 9/62
U.S. Cl. 382—209 **5 Claims**

PRIOR ART



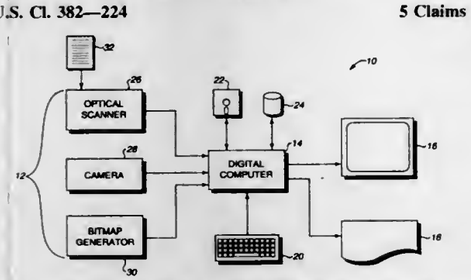
1. A character recognition apparatus supplied with image data, comprising:
a dictionary memory for memorizing sets of characteristic quantity elements, each set corresponding to one of a plurality of characters; and
a recognition processor including
characteristic quantity extracting means for extracting a set of characteristic quantity elements representing directional line segments extracted from a contour image of a character image included within the image data and varying with changes in dimensions of the character image;
character search means for determining a character corresponding to the character image included within the image data by comparing the set of characteristic quantity elements extracted from the image data with the sets of characteristic quantity elements of the characters memorized in said dictionary memory; and
characteristic quantity magnification/reduction means for modifying the set of characteristic quantity elements output from said characteristic quantity extracting means, by multiplying each element in the set of characteristic quantity elements by a scalar quantity to equalize the scale of the character image included within the image data with the scale of at least one of the characters for which the sets of characteristic quantity elements are memorized in said dictionary memory, before said character search means performs the comparing.

5,625,711

METHOD AND APPARATUS FOR PRODUCING A HYBRID DATA STRUCTURE FOR DISPLAYING A RASTER IMAGE

Dennis G. Nicholson, Atherton, and James C. King, San Jose, both of Calif., assignors to Adobe Systems Incorporated, San Jose, Calif.

Filed Aug. 31, 1994, Ser. No. 298,655
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—224 **5 Claims**



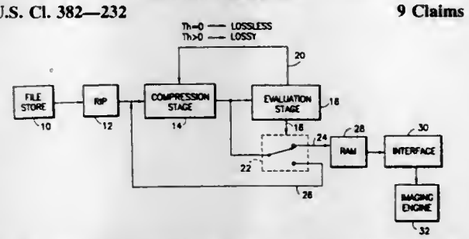
1. A system for producing a raster image derived from a hybrid data structure including coded and non-coded portions from an input bitmap, the system comprising:
(a) a data processing apparatus;
(b) means for performing recognition on an input bitmap that has been entered into said data processing apparatus to detect identifiable objects within said input bitmap, said means for performing recognition including:
(i) means for comparing each of said identifiable objects with a portion of said input bitmap corresponding to said identifiable object; and
(ii) means for adjusting the size of said identifiable object if said identifiable object is within a threshold size of said corresponding input bitmap portion;
(c) means for creating a hybrid data structure including coded portions corresponding to said identifiable objects and non-coded portions derived from portions of said input bitmap which do not correspond to said identifiable objects; and
(d) an output device for developing a visually perceptible raster image from said hybrid data structure that includes coded images of said identifiable objects and non-coded images of said non-identifiable portions of said input bitmap.

5,625,712

ITERATIVE COMPRESSION OF DIGITAL IMAGES

Loren Schoenzeit, Orono; Richard A. Keeney, Eagan, and Philip A. Lodwick, Richfield, all of Minn., assignors to Management Graphics, Inc., Minneapolis, Minn.

Filed Dec. 14, 1994, Ser. No. 355,594
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—232 **9 Claims**



1. A method for compressing image data to enable the storage thereof in a limited amount of memory available in an imaging system, comprising the steps of:
(a) rasterizing said image data into a plurality of scan lines representing at least a portion of an image, each scan line comprising a sequence of pixels;
(b) compressing said scan lines in a first coding step which run length codes the data in each scan line to represent, in an abbreviated form, runs of colored pixel components which are grouped according to a group of pixels color proximity threshold;
(c) determining whether the amount of data contained in the compressed plurality of scan lines exceeds the available storage capacity of said memory, and if so,
further compressing said compressed plurality of scan lines in a lossy second coding step to reduce the amount of data therein;
(d) ascertaining whether the amount of data remaining after said second coding step still exceeds the available storage capacity of said memory, and if so,
successively repeating said second coding step such that said further compressed plurality of scan lines and, if necessary, subsequent generations of compressed data derived therefrom, are compressed until the amount of data remaining no longer exceeds the available storage capacity of said memory; wherein:
said second coding step comprises the steps of:
(i) increasing said proximity threshold to encompass an increased range of colors;
(ii) evaluating said runs of colored pixel components to locate any instances of two adjacent runs having respective different colors that fall within the increased proximity threshold; and
(iii) upon finding such an instance, run length coding said two adjacent runs as a single run having a single color.

5,625,713

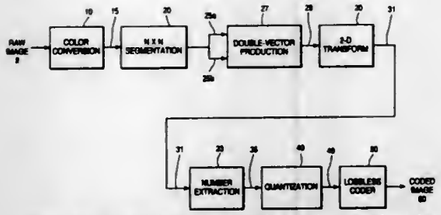
APPARATUS AND METHOD FOR INCREASING THE THROUGHPUT OF AN ACOUSTIC OR IMAGE COMPRESSION SYSTEM

James D. Allen, Santa Cruz, and Martin P. Boliek, Palto Alto, both of Calif., assignors to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 4,904, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 743,474, Aug. 9, 1991, abandoned. This application Dec. 28, 1994, Ser. No. 365,990
Int. Cl.[6] G06K 9/36;9/46
U.S. Cl. 382—232 **29 Claims**

1. An arithmetic processor comprising:
a first data register means having a bit length of R1 bits;
means for combining first and second multi-bit data numbers into a first packed word having a first high-order portion and a first low-order portion and being stored in said first register

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means and combining third and fourth data numbers into a second packed word having a second high-order portion and a second low-order portion, said first and second multi-bit data numbers having bit lengths of N1 and N2, said first packed word having a bit length of P1 such that P1≧N1+N2, said third and fourth multi-bit data numbers having bit lengths of N3 and N4, said second packed word having a bit length of P2 such that P2≧N3 N4, said first data number being directed to said first low-order portion of said first packed word, said second data number being directed to said first high-order portion of said first packed word, said third data number being directed to said second low-order portion of said second packed word, and said fourth data number being directed to said second high-order portion of said second packed word;

a single-instruction single-data arithmetic logic unit of bit length L1 for additions and subtractions with an unbroken carry chain of contents of said first packed word in said first multi-bit register means with said second packed word to produce a third packed word of bit length P3, where L1≧P1, L1≧P2, and L1≧P3;

means for directing said first packed word stored in said first register means and said second packed word to said single-instruction single-data arithmetic logic unit to produce said third packed word; and

means for extracting a first output number of bit length N5 from a third low-order portion of said third packed word and extracting a second output number of bit length N6 from a third high-order portion of said third packed word where P3≧N5+N6.

5,625,714

IMAGE SIGNAL DECODING DEVICE CAPABLE OF REMOVING BLOCK DISTORTION WITH SIMPLE STRUCTURE

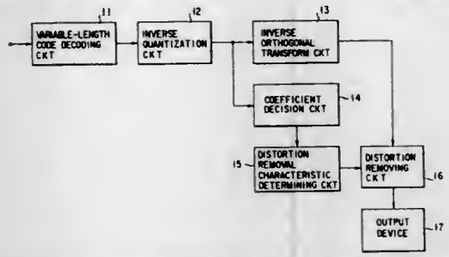
Hiroyuki Fukuda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 813,798, Dec. 26, 1991, abandoned. This application May 6, 1994, Ser. No. 238,983

Claims priority, application Japan, Jan. 10, 1991, 3-001497; Jan. 10, 1991, 3-001499; Mar. 19, 1991, 3-054935; Jul. 15, 1991, 3-173726

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—233 **36 Claims**



1. An image signal decoding device for decoding coded image data by dividing image data into blocks and performing an orthogonal transformation on the image data of each of the blocks, comprising:

inverse orthogonal transforming means for performing an inverse orthogonal transformation on the coded image data;

band detecting means for detecting a band of each of the coded image data, said band detecting means including coefficient decision means for dividing transform coefficients of each of the blocks, obtained via a decoding operation and an inverse orthogonal transformation operation for the coded image data, into significant coefficients and non-significant coefficients, said coefficient decision means including absolute value means for obtaining absolute values of the transform coefficients of each block and comparison means for comparing the absolute values of the transform coefficients with a threshold value, with transform coefficients larger than the threshold value being the significant coefficients; and

distortion removing means for removing distortion of the coded image data subjected to the inverse orthogonal transformation operation via said inverse orthogonal transforming means while varying distortion removal characteristics according to the band detected by said band detecting means.

5,625,715

METHOD AND APPARATUS FOR ENCODING PICTURES INCLUDING A MOVING OBJECT

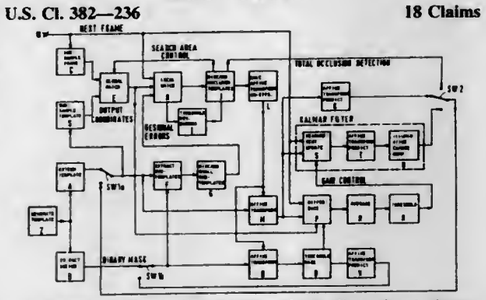
Timothy I. P. Trew, Horley, England, and Gabriele C. Seeling, Berlin, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 755,384, Sep. 5, 1991, Pat. No. 5,280,530. This application Oct. 21, 1993, Ser. No. 141,146

Claims priority, application United Kingdom, Sep. 7, 1990, 9019538

Int. Cl.[6] G06T *9/00*

U.S. Cl. 382—236 **18 Claims**



1. A method of encoding a series of two dimensional pictures frames representing a scene including a moving three dimensional object, the method comprising the steps of:

a) generating a video signal representing the series of two dimensional pictures frames;

b) forming an initial outline of the moving object in an initial frame of the series;

c) tracking the movement of the moving object over the series of two dimensional picture frames, said tracking step comprising the steps of:

1) forming an initial template in the initial frame of the series, the initial template including the moving object;

2) dividing the initial template into a plurality of sub-templates which are not associated with specific features of the moving object;

3) searching a subsequent frame of the series to locate a first region of the subsequent frame which matches the initial template and determining a first displacement in position between the initial template and the first region of the subsequent frame;

4) searching the subsequent frame of the series to locate respective sub-regions of the subsequent frame of the series which match respective sub-templates of the initial template and determining respective additional displacements in position between each sub-template and its respective matched sub-region of the subsequent frame;

5) determining from the first displacement and the additional displacements, respective relative displacements in position between the first region of the subsequent frame and the respective sub-regions of the subsequent frames;

6) using said relative displacements to determine coefficients for a bivariate transform capable of mapping said first and additional displacements in position; and

7) performing said bivariate transform to produce an updated initial outline and an updated initial template; and

e) encoding the video signal at a higher resolution when representing portions of the picture within the outline than when representing portions of the picture outside the outline.

5,625,716

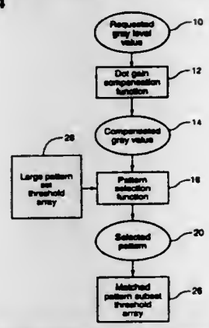
METHOD FOR COMPENSATING FOR TRANSFER CHARACTERISTICS OF A PRINTING SYSTEM IN A HALFTONE SCREENING PROCESS

Lars Borg, Los Altos, Calif., assignor to Adobe Systems Incorporated, San Jose, Calif.

Filed Mar. 15, 1994, Ser. No. 213,443

Int. Cl.[6] G06K *9/40;9/38*

U.S. Cl. 382—254 **13 Claims**



1. A method of compensating for a predetermined transfer characteristic of a printing device in a halftoning process for screening an area of an image having a particular gray level value selected from a plurality of gray level values, comprising:

applying a compensation function corresponding to the predetermined transfer characteristic to the particular gray level value to enable the selection of a bit pattern from a plurality of bit patterns represented in a first threshold array, the selected bit pattern being represented in a second threshold array, the number of bit patterns in the plurality of bit patterns being greater than the number of gray level values in the plurality of gray level values, wherein the elements of the first threshold array have a depth of between 9 and 16 bits and the elements of the second threshold array have a depth of between 8 and 12 bits, the depth of the first threshold array being greater than the depth of the second threshold array; and

screening the area of the image using the selected bit pattern.

5,625,717

IMAGE PROCESSING DEVICE FOR PROCESSING GREY LEVEL IMAGES

Manabu Hashimoto, and Kazuhiko Sumi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 81,463

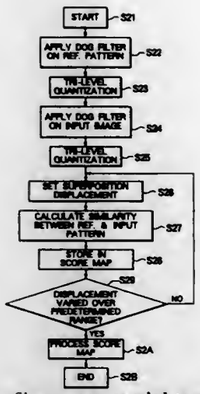
Claims priority, application Japan, Jun. 24, 1992, 4-165967; Sep. 16, 1992, 4-246319

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—260 **24 Claims**

1. An image processing device comprising:

original image input means for inputting a grey level signal representing a grey level image of an object;



spatial band-pass filter means, coupled to said original image input means for producing a filtered signal in which substantially uniform regions of the grey level image are made substantially zero in first corresponding portions of the filtered signal, and transitions between substantially uniform regions are preserved second corresponding portions of the filtered signal; and

tri-level thresholding means, coupled to said spatial band-pass filter means, for thresholding said filtered signal at two distinct threshold levels to generate a tri-level image signal identifying substantially uniform regions of the grey level signal as those regions of the grey level signal corresponding to regions of the filtered signal lying between the threshold levels and transitions as regions of the grey level signal corresponding to a pair of adjacent excursions of the filtered signal away from substantially zero, a first excursion passing beyond one of the two distinct thresholds, and a second excursion passing beyond another of the two distinct thresholds.

5,625,718

WHITE LEVEL SETTING SYSTEM FOR AN IMAGE SCANNER

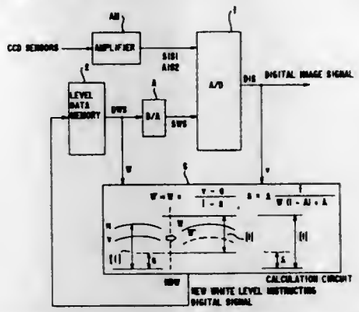
Yukio Kaji, Kanazawa, and Toshiki Nakajima, Hakui-gun, both of Japan, assignors to PFU Limited, Ishikawa, and Fujitsu Limited, Kawasaki, both of Japan

Continuation of Ser. No. 133,147, Oct. 20, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,743

Claims priority, application Japan, Feb. 25, 1992, 4-037835; May 13, 1992, 4-120826

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—274 **1 Claim**



1. A white level setting system for an image scanner for scanning an original document and reading characters and images recorded thereon, said system comprising:

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an analog-to-digital converter for receiving a first analog image signal obtained by scanning a predetermined white reference and a second analog image signal obtained by scanning the original document, said analog-to-digital converter also for receiving an analog white level representing a required white level, said analog-to-digital converter providing a digital image signal representing a gray level corresponding to the first and second analog image signals according to the analog white level signal serving as a white level of 1;

a level data memory for providing a digital white level signal representing the required white level in response to a new digital white level signal input thereto;

a digital-to-analog converter for converting the digital white level signal representing the required white level from the level data memory into the analog white level signal representing the required white level, said analog white level signal being input to said analog-to-digital converter; and

a calculation circuit coupled to the analog-to-digital converter and the level data memory for receiving the digital image signal representing the first analog image signal and the second analog image signal from the analog-to-digital converter, and for receiving the digital white level signal from the level data memory, said calculation circuit providing the new digital white level signal to the level data memory, wherein the digital white level signal from the level data memory corresponds to the digital image signal when there is a difference between the white levels represented thereby, thereby setting a white level in response to a change in the gray level of a ground color of the original, and

wherein, when the white level represented with the digital image signal is "v" and the white level represented with the digital white level signal is "W", the calculation circuit carries out the following calculation to enable the level data memory to provide the digital white level signal representing a new white level W':

$$W'=W\times(v-a)/(1-a)$$

$$a=A\times 1/(W\times(1-A)+A)$$

where A is a correction value, and according to a result of the calculation, the calculation circuit provides a new digital white level signal, wherein the new digital white level signal is provided to the level data memory.

5,625,719

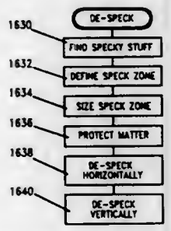
OCR IMAGE PREPROCESSING METHOD FOR IMAGE ENHANCEMENT OF SCANNED DOCUMENTS

Bruce B. Fast, 2600 Prindle Rd., Belmont, Calif. 94402, and Dana R. Allen, 1745 Hunt Dr., Burlingame, Calif. 94010

Division of Ser. No. 963,051, Oct. 19, 1992, abandoned. This application May 22, 1995, Ser. No. 445,663

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—275 **1 Claim**



1. A scanned document image enhancement process for unshading dot-shaded information contained in said image, said process including:

steps of scanning said image and detecting an area containing a number of dots exceeding a predetermined set limit,

a step for determining dot sizes in said area,

a step for determining a size limit for dots to be deleted,

a step for deleting dots falling within said size limit;

wherein said dots are represented by black run-length values,

wherein said step for determining dot sizes registers said dots in said area in accordance with said black run-length values, and

wherein said step for determining said size limit determines the most often occurring one of said black run-length values and the next larger one of the most often occurring one of said black run-length values, and defines the size limit to be said most often occurring one of said black run-length values unless the occurrences of said next larger one of the most often occurring one of said black run-length values is at least 10% of the most often occurring one of said black run-length values.

5,625,720

JOINT-PORTION PROCESSING DEVICE FOR IMAGE DATA IN AN IMAGE-FORMING APPARATUS

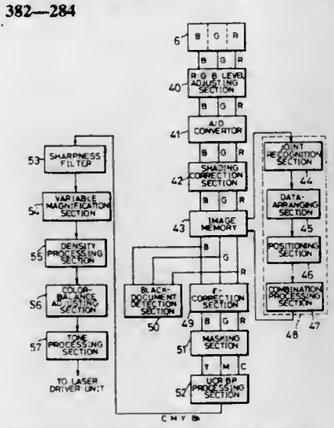
Masao Miyaza, Osaka; Kazuyuki Ohnishi, Yamatokoriyama, and Akira Tamagaki, Soraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 132,274, Oct. 6, 1993, Pat. No. 5,481,375. This application Sep. 29, 1995, Ser. No. 536,531

Claims priority, application Japan, Oct. 8, 1992, 4-270269; Oct. 12, 1992, 4-273039; Oct. 12, 1992, 4-273050; Nov. 27, 1992, 4-318975; Jan. 26, 1993, 5-10807; Mar. 25, 1993, 5-66889; Apr. 19, 1993, 5-91562; Jun. 16, 1993, 5-145240

Int. Cl.[6] H04N *1/387*

U.S. Cl. 382—284 **19 Claims**



1. An image processing apparatus comprising:

input means for reading an image of an original document;

storage means, responsive to the input means, for storing a plurality of partial images as partial document data upon the image being read by the input means in a divided manner, the plurality of partial images being individually stored as the partial document data;

recognition means, operatively connected to the storage means, for recognizing a joint between partial document data stored in the storage means by determining the existence of a shadow, and for performing, on at least one side of the joint, shadow elimination; and

joining means, responsive to the recognition means, for joining the partial document data in accordance with the joints that have been recognized, subsequent to the shadow elimination.

5,625,721

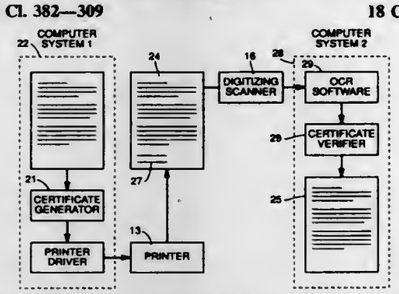
CERTIFIABLE OPTICAL CHARACTER RECOGNITION

Daniel P. Lopresti, Hopewell, N.J.; Henry F. Korth, Ambler, Pa.; Jonathan S. Sandberg, New York, N.Y., and Richard J. Lipton, Cranbury, N.J., assignors to Matsushita Information Technology Laboratory, Princeton, N.J.

Continuation of Ser. No. 958,938, Oct. 9, 1992, abandoned. This application Apr. 6, 1994, Ser. No. 223,830

Int. Cl.[6] G06K *9/03*

U.S. Cl. 382—309 **18 Claims**



1. A method for ensuring the accuracy of lines of reproduced data electronically reproduced from lines of original data comprising:

first deriving one or more data-dependent first values from said original data;

second deriving one or more data-dependent second values from said reproduced data;

comparing said first and second values and identifying errors and error locations within said lines of reproduced data based on the difference between said first and second values; and

effecting one or more methods of automatic correction of said identified errors on said reproduced data.

5,625,722

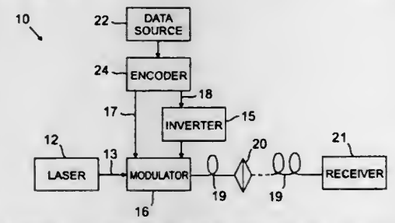
METHOD AND APPARATUS FOR GENERATING DATA ENCODED PULSES IN RETURN-TO-ZERO FORMAT

Nan M. Froberg, Lowell, Mass.; Alan H. Gnauck, Middletown, N.J.; Gregory Raybon, Leonardo, N.J., and John J. Veselka, Freehold, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 21, 1994, Ser. No. 360,893

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—1 **42 Claims**



1. A method of converting a non-return-to-zero (NRZ) voltage data stream into a return-to-zero (RZ) optical data stream comprising:

supplying a continuous optical signal to a modulator, wherein the modulator has a minimum optical output at a first voltage driving level, a minimum optical output at a second voltage level, and a maximum optical output at a voltage level between the first and second voltage levels;

encoding an NRZ voltage data stream; and

driving the modulator with the encoded NRZ voltage data stream to generate an RZ optical data stream such that there will be a maximum optical output when the encoded NRZ voltage data stream transitions from the first to the second or from the second to the first voltage level.

5,625,723

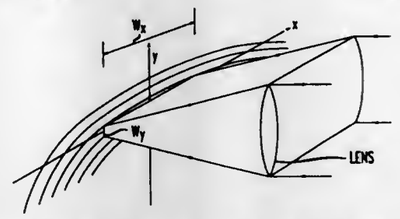
METHOD FOR REDUCING BIREFRINGENCE IN OPTICAL GRATINGS

Corrado Dragone, Little Silver; Benjamin I. Greene, Westfield; Thomas A. Strasser, Chatham, and Cynthia A. Volkert, Murray Hill, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1995, Ser. No. 396,031

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—11 **22 Claims**



1. A method for reducing the inherent polarization shift caused by birefringence between the TE and TM modes of an optical signal propagating in an optical grating having a plurality of waveguides, said method comprising the steps of:

irradiating the waveguides of the optical grating at a specifiable wavelength and intensity for different periods of time to induce a compensating polarization shift that substantially reduces the inherent polarization shift, wherein said compensating polarization shift results from differential phase shifts induced in the waveguides; and

selecting the different periods of time so that differences in said differential phase shifts between pairs of adjacent waveguides are substantially equal.

5,625,724

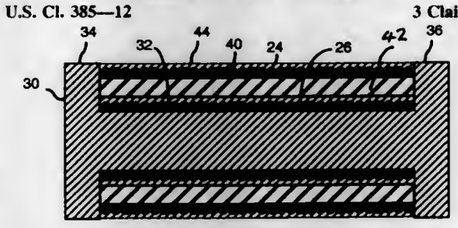
FIBER OPTIC HYDROPHONE HAVING RIGID MANDREL

Donald A. Frederick, Woodland Hills, and John F. Cappi, Reseda, both of Calif., assignors to Litton Systems, Inc, Woodland Hills, Calif.

Filed Mar. 6, 1996, Ser. No. 611,803

Int. Cl.[6] G02B *6/00;* **G01B** *9/02;* **H04B** *13/00*

U.S. Cl. 385—12 **3 Claims**



1. An interferometric fiber optic hydrophone, comprising:

a rigid mandrel;

a fiber optic interferometer having a sensing arm, a reference arm and apparatus for processing optical signals output from the fiber optic interferometer to measure acoustic pressure,

the reference arm comprising a length of optical fiber wound around the rigid mandrel and arranged to have a substantially constant optical path length when the fiber optic hydrophone is exposed to an acoustic field;

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the sensing arm comprising a length of optical fiber formed as a coil and arranged to undergo an optical path length change when the fiber optic hydrophone is exposed to an acoustic field, and

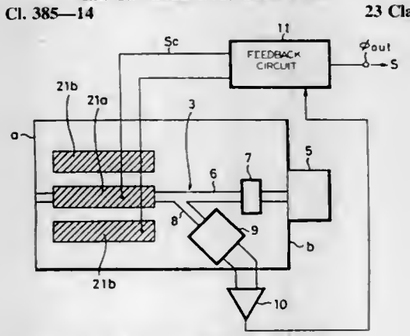
an elastic material placed over the reference arm and wherein the sensing arm is coil wound over the elastic material such that the sensing arm and reference arm are concentric.

5,625,725

MAGNETO-OPTICAL PICKUP DEVICE HAVING PHASE COMPENSATING CIRCUITRY

Satoshi Nakano; Teiichi Miyauchi; Takeshi Yamasaki, all of Kanagawa, and Satoshi Sasaki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,653
Claims priority, application Japan, Dec. 28, 1993, 5-337673
Int. Cl.[6] G02B *6/12*; G11B *11/00*
U.S. Cl. 385—14 **23 Claims**



1. A magneto-optical pickup device, comprising:

a) a substrate;

b) a light emitting device;

c) a filter polarizing light emitted by said light emitting device to generate a first polarized component of light;

d) a differential photo-detecting unit which separates light into first and second polarized components of light;

e) an optical waveguide operatively configured and disposed on said substrate to guide said first polarized component of light from said filter onto a magneto-optical recording medium, and to guide light reflected back from said medium to said differential photo-detecting unit;

f) a differential amplifying circuit coupled to an output of said differential photo-detecting unit, said differential amplifying circuit providing an output signal which varies according to a magnetization direction of magnetization information recorded on the magneto-optical recording medium;

g) a feedback circuit coupled to said differential amplifying circuit, which feedback circuit is configured to generate a phase compensating signal that correlates to a phase difference between said first and second polarized components of light in said light reflected from said magneto-optical recording medium; and

h) phase compensating means for receiving said phase compensating signal and minimizing said phase difference.

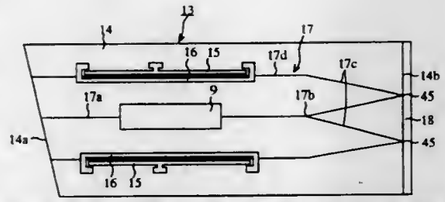
5,625,726

OPTICAL WAVEGUIDE SUBSTRATE, AN ARTICLE COMPRISING THE SAME AND A SUBSTRATE COUPLED THERETO FOR HOLDING OPTICAL FIBERS

Takenori Ichigi, Santa Clara, Calif., assignor to NGK Insulators, Ltd., Japan

Filed Feb. 10, 1995, Ser. No. 388,056
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—14 **15 Claims**

1. An optical waveguide assembly, comprising:



an optical waveguide substrate including a branch-type optical waveguide extending between first and second opposing end faces of the optical waveguide substrate, the optical waveguide including a stem portion extending from the first end face toward the second end face, a dividing point at which light propagating through said stem portion is divided, first and second dividing portions extending from said dividing point and through which divided light propagates from said stem portion toward said second opposing end face, and first and second branch portions extending to the first end face and parallel to the stem portion, such that the stem portion and first and second branch portions are exposed at said first end face;

a reflecting means for reflecting light propagating through said first and second dividing portions respectively to said first and second branch portions; and

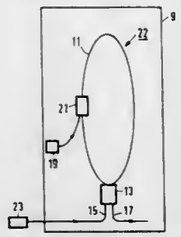
an optical fiber holding substrate supporting optical fibers respectively in alignment with said stem portion and first and second branch portions along said first end face.

5,625,727

UNIT FOR MODULATING AN OPTICAL PULSE SERIES IN CONFORMITY WITH A DATA SIGNAL

Coen T. H. F. Liedenbaum, and John J. E. Reid, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1996, Ser. No. 611,156
Claims priority, application European Pat. Off., Mar. 15, 1995, 95200620
Int. Cl.[6] G02B *6/35*
U.S. Cl. 385—16 **16 Claims**



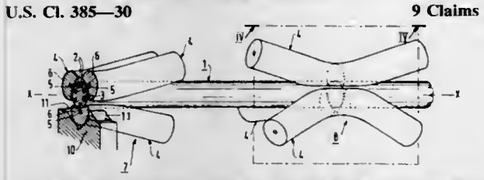
1. An optical unit for generating an optical data signal in conformity with a data pattern, said unit having an input for receiving the data pattern with a modulation period T, a pulsed laser for supplying an optical pulse series having a pulse period n.T and a pulse duration τ, in which n is an integer, and means for converting said pulse series into an optical data signal in conformity with the data pattern, characterized in that the means are constituted by a radiation-controlled optical switch having a first input for receiving the data pattern in the form of an optical pulse series whose pulses have a pulse width b, a second input for receiving the optical pulse series from the pulsed laser for sampling the data pattern during periods when the switch is open, and an output for supplying a data pulse series having a pulse width ϵ.b, in which $0 < \epsilon < 1$.

5,625,728

METHOD OF COUPLING A MULTI-CORE OPTICAL FIBER TO A PLURALITY OF SINGLE-CORE OPTICAL FIBERS

André Tardy, Egly, and Michel Jurczyszyn, Ivry sur Seine, both of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 1, 1995, Ser. No. 565,836
Claims priority, application France, Dec. 2, 1994, 94 14527
Int. Cl.[6] G02B *6/245;6/255*
U.S. Cl. 385—30 **9 Claims**



1. A method of coupling a multi-core optical fiber to a plurality of single-core optical fibers, the multi-core optical fiber comprising N mutually parallel optical cores, where N is not less than 4, embedded in common optical cladding, and each of the single-core optical fibers comprising one optical core surrounded by optical cladding;

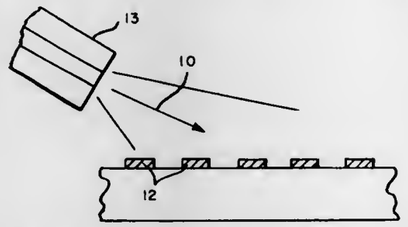
wherein said coupling is distributed over P coupling levels, where P is less than N and not less than 2, each coupling level including at least two single-core optical fibers, the coupling levels being offset longitudinally relative to one another along said multi-core optical fiber, and being such that each of said fibers belonging to the coupling levels is disposed parallel to and facing one of said cores of said multi-core fiber, and is secured to the optical cladding of said multi-core fiber over a "coupling" length, so as to obtain lateral evanescent-wave coupling between said cores of said single-core fibers and the cores of said multi-core fiber.

5,625,729

OPTOELECTRONIC DEVICE FOR COUPLING BETWEEN AN EXTERNAL OPTICAL WAVE AND A LOCAL OPTICAL WAVE FOR OPTICAL MODULATORS AND DETECTORS

Thomas G. Brown, 205 Doncaster Rd., Rochester, N.Y. 14623

Filed Aug. 12, 1994, Ser. No. 289,936
Int. Cl.[6] G02B *5/18;6/34*
U.S. Cl. 385—31 **57 Claims**



1. An optoelectronic device for coupling between an external optical wave and a local optical wave comprising:

a multiplicity of electrodes spaced in a substantially regular pattern, the multiplicity of electrodes adapted to resonantly couple between the external wave and the local wave, the multiplicity of electrodes having a potential difference between adjacent electrodes; and

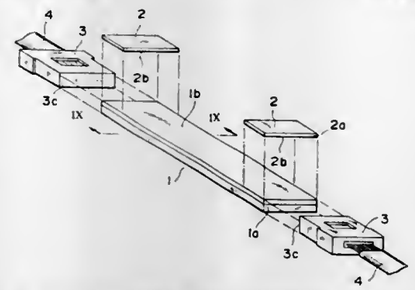
a structure associated with the multiplicity of electrodes wherein the structure and the multiplicity of electrodes support the local wave.

5,625,730

OPTICAL WAVEGUIDE MODULE HAVING WAVEGUIDE SUBSTRATE MADE OF PREDETERMINED MATERIAL AND FERRULE MADE OF MATERIAL DIFFERENT FROM THAT OF WAVEGUIDE SUBSTRATE

Shinji Ishikawa; Masahide Saito, and Shigeru Semura, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 21, 1995, Ser. No. 505,674
Claims priority, application Japan, Jul. 21, 1994, 6-169496
Int. Cl.[6] G02B *6/30*
U.S. Cl. 385—49 **27 Claims**



1. An optical waveguide module comprising:

a waveguide component having a waveguide substrate made of a first material and at least one optical waveguide for propagating light having a predetermined wavelength, said at least one optical waveguide provided on said waveguide substrate;

a ferrule serving as a holder for holding one end of at least one optical fiber so as to optically couple said one end of said at least one optical fiber and one end of said at least one optical waveguide of said waveguide component, said ferrule being made of a second material and having at least one through hole having a continuous inner wall that defines a position where an end portion of said at least one optical fiber is to be placed, and said ferrule being fixed with an adhesive having a predetermined strength such that an end face thereof opposes an end face of said waveguide component while holding said one end of said at least one optical fiber,

said first material being a different material than said second material, and said second material satisfying a relation $|\Delta L/(E_1/E_2)| < 3.0 \times 10^{-6}$ ($°C.^{-1}$) with respect to said first material forming said waveguide substrate, where ΔL is a difference in thermal expansion coefficient between said first material and said second material, E_1 is a modulus of elasticity of said first material, and E_2 is a modulus of elasticity of said second material.

5,625,731

PROCESS FOR ASSEMBLING AN OPTICAL FIBER CONNECTOR

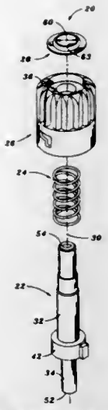
Richard D. Turgeon, Dracut, Mass.; Joseph L. Kaminski, III, Harrisburg, Pa., and Kenneth N. Saliba, Tewksbury, Mass., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 6, 1994, Ser. No. 350,446
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—53 **6 Claims**

1. A method of assembling an optical fiber connector including an elongated body having a longitudinal axis and opposed free ends, a coupling nut operatively associated with said elongated body, biasing means positioned between said elongated body and said coupling nut, and retaining means being attachable to said elongated body abutting said coupling nut for retaining said biasing means in compression between said coupling nut and said elongated body, said method comprising the steps of:

positioning said elongated body with one free end being exposed;

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positioning said biasing means over said exposed free end of said elongated body for placing said biasing means on said elongated body;

positioning said coupling nut over said exposed free end of said elongated body for placing said coupling nut on said elongated body, said coupling nut abutting said biasing means;

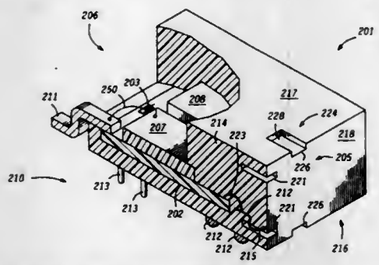
moving said coupling nut relative to said elongated body for compressing said biasing means between said coupling nut and said elongated body; and

generally simultaneously with the step of moving said coupling nut, applying said retaining means for engaging an outside surface of said elongated body to retain said biasing means in a compressed state.

5,625,732
OPTICAL INTERFACE UNIT WITH DETACHABLE PHOTONIC DEVICE

Christopher K. Y. Chun, Gilbert; Shun-Meen Kuo, and Gary F. Witting, both of Chandler, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Nov. 5, 1993, Ser. No. 147,510
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—88 **6 Claims**



6. An optical interconnect system comprising:

an optical interconnect module including an interconnect substrate having a plurality of electrical traces, an electrical circuit for electrical signal manipulation operably connected to the interconnect substrate by the plurality of electrical traces, a means for inputting and outputting electrical signals from the interconnect substrate operably connected to the interconnect substrate, a molded portion having a first surface and an end surface that encapsulates the interconnect substrate, the electrical circuit, and a portion of the means for outputting electrical signals, the end surface having a portion removed to expose an electrical contact with the electrical contact being operably connected to the interconnect substrate;

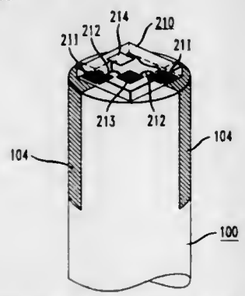
a detachable optical interface unit including a substrate, an optoelectronic device having a first surface and a second surface with the first surface having a working portion of the optoelectronic device and the second surface mounted to the substrate, a first electrical lead and a second electrical lead operable connected to the optoelectronic device, the first electrical lead and the second electrical lead extend away from the substrate, the first electrical lead frictionally detachably affixed to the electrical contact; and

an optical connector having a plurality of optical fibers, an alignment guide, and a coupling surface, wherein the plurality of optical fiber are cross-sectionally exposed on the coupling surface of the optical connector, and wherein the coupling surface of the optical connector is operably coupled to the detachable optical interface unit.

5,625,733
ARRANGEMENT FOR INTERCONNECTING AN OPTICAL FIBER TO AN OPTICAL COMPONENT

Nicholas J. Frigo, Atlantic Highlands; Keith W. Goossen, Aberdeen; David A. B. Miller, Fair Haven, and James A. Walker, Howell, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 9, 1995, Ser. No. 385,946
Int. Cl.[6] G02B 6/42
U.S. Cl. 385—88 **21 Claims**



1. An arrangement for interconnecting a ferrule including an optical fiber to an optical component, comprising

at least two electrically isolated contacts deposited on an end-face of a non-conductive ferrule so as not to substantially affect light being coupled to or from the optical fiber and

the optical component having at least two contacts thereon which are bonded to said at least two contacts on the end-face so as to enable light to be coupled between the optical component and the optical fiber.

5,625,734
OPTOELECTRONIC INTERCONNECT DEVICE AND METHOD OF MAKING

Ronald E. Thomas, Tempe; Michael S. Lebby, Apache Junction; Davis H. Hartman, Phoenix, and David Galloway, Tempe, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed May 31, 1995, Ser. No. 455,873
Int. Cl.[6] G02B 6/36; H01L 21/70
U.S. Cl. 385—88 **3 Claims**

1. An optoelectronic interconnecting device comprising:

an interconnect substrate having alignment features positioned thereon;

a waveguide having a core region and a cladding region, wherein a portion of the cladding region forms a first surface and a portion of both the core region and the cladding region form an end surface, the waveguide including alignment features, and the waveguide being positioned on the interconnect substrate with the alignment features of the waveguide positioned relative to the alignment features of the interconnect substrate;

an insulative flexible substrate defining a first portion and a second portion and an optically transparent window extending therethrough in the first portion, the flexible substrate further including alignment means matching the alignment features of the waveguide and the alignment features of the interconnect substrate, the flexible substrate further having an electrically conductive tracing extending from the first portion to the second portion with bonding pads defined in the first portion and in the second portion, and the window and the bonding pads in the first and the second portion being positioned relative to the alignment means;

a photonic device having a working portion, the photonic device being mounted on the bonding pads of the flexible substrate with the working portion aligned with the window through the flexible substrate; and

the first portion of the insulative flexible substrate being mounted on the end surface of the waveguide with the alignment features of the waveguide and the interconnect substrate and the alignment means locating the window centrally about the core region on the end surface so as to align the working portion of the photonic device with the core region of the waveguide, and the second portion of the flexible substrate being mounted on the interconnect substrate.

3. A method of making an optoelectronic interconnecting device comprising the steps of:

providing an interconnect substrate and positioning alignment features thereon;

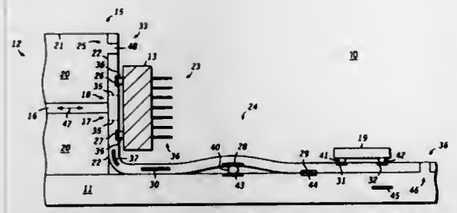
forming a waveguide with a core region and a cladding region, a portion of the cladding region defining a first surface and a portion of both the core region and the cladding region defining an end surface, and providing alignment features on the waveguide;

mounting the waveguide on the interconnect substrate and positioning the alignment features of the waveguide relative to the alignment features of the interconnect substrate;

providing an insulative flexible substrate and defining a first portion and a second portion and an optically transparent window extending through the flexible substrate in the first portion, providing alignment means on the flexible substrate matching the alignment features of the waveguide, the substrate being formed with an electrically conductive tracing extending from the first portion to the second portion with bonding pads defined in the first portion, and positioning the window and the bonding pads relative to the alignment means;

providing a photonic device having a working portion and mounting the photonic device on the bonding pads of the flexible substrate with the working portion aligned with the window through the flexible substrate; and

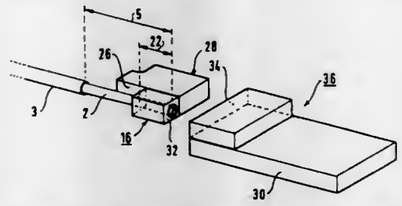
mounting the first portion of the insulative flexible substrate on the end surface of the waveguide, and locating the window centrally about the core region on the end surface using the alignment features and the alignment means so as to align the working portion of the photonic device with the core region of the waveguide, and mounting the second portion Of the flexible substrate on the interconnect substrate using the alignment means of the flexible substrate and the alignment features of the interconnect substrate to position the flexible substrate.



5,625,735
METHOD OF FIXING A POLARIZATION-PRESERVING OPTICAL FIBER AND FERRULE FOR A FIBER OF THIS KIND

Michel Di Maggio, Bonnelles; Christian Brot, Leuville sur Orge, and Christian Duchet, Marcoussis, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Oct. 13, 1995, Ser. No. 542,726
Claims priority, application France, Oct. 14, 1994, 94 12292
Int. Cl.[6] G02B 6/27;6/42
U.S. Cl. 385—91 **3 Claims**



1. A method of fixing a polarization-preserving optical fiber wherein said fiber is illuminated transversely and orientation of the polarization-preserving plane of said fiber is monitored by direct visual examination of internal components of said fiber rendered visible by said illumination which is effected through the wall of a transparent ferrule holding said fiber, said method comprising the steps of:

inserting an optical fiber into a capillary passage in a transparent ferrule for holding the fiber, said fiber having an axis, being made of transparent glass and including internal components that are also transparent and define a polarization-preserving plane passing through said axis, said passage being surrounded by a wall of said ferrule and also having an axis, the axes of said fiber and said passage coinciding and constituting a common axis,

axially displacing said fiber in said passage, after its insertion therein, so that a section of said fiber in said passage constitutes a fixing section,

fixing said fixing section to said ferrule after the above axial displacement, and

fixing said ferrule to a ferrule support relative to which said fiber must be fixed to enable it to be coupled to an optical component fixed to or to be fixed to said support, said polarization-preserving plane of said fiber having to be fixed so as to coincide with a polarization plane imposed by said component and defined relative to said support, said two planes being rendered coincident by means of an operation to orient the polarization-preserving plane including rotation of said fiber relative to said support and/or to said ferrule about said common axis, this operation to orient said polarization-preserving plane having to be effected after said fiber is inserted into said ferrule and before said fiber is fixed to said component by means of said ferrule and said ferrule support,

wherein said operation of orienting said polarization-preserving plane further entails illuminating said fixing section of said fiber through the wall of said ferrule, said rotation of said fiber being monitored by visual examination of said internal components of said fiber.

5,625,736
BLACK OPTIC DISPLAY

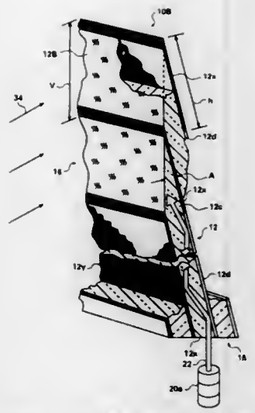
James T. Veligdan, Manorville, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Jan. 11, 1996, Ser. No. 584,046
Int. Cl.[6] G02B 6/04
U.S. Cl. 385—120 **13 Claims**

1. An optical display **10B** comprising:

a plurality of stacked together optical waveguides **12** having first and second opposite ends **12***a*,*b* defining an image input face

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16 and an image screen 18, respectively, with said screen 18 being oblique to said input face 16;

each of said waveguides 12 including a transparent core 12c bound by a cladding layer 12d having a lower index of refraction for effecting internal reflection of image light 22 transmitted into said input face 16 to project an image 24 on said screen 18, with each of said cladding layers 12d including a cladding cap 12x integrally joined thereto at said waveguide second ends 12b;

each of said cores 12c being beveled at said waveguide second end 12b so that said cladding cap 12x is viewable through said transparent core 12c; and

each of said cladding caps 12x being black for absorbing external ambient light 34 incident upon said screen 18 for improving contrast of said image 24 projected internally on said screen 18.

5,625,737

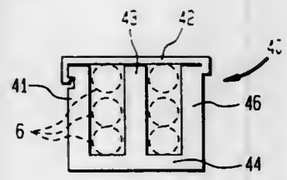
OPTICAL FIBER HOLDER AND METHOD USING SAME

Masami Saito, Carrollton, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 11, 1995, Ser. No. 570,143

Int. Cl.[6] G02B *6/00*; B65H *23/00*

U.S. Cl. 385—137 **14 Claims**



1. A holder for use with one or more filaments of filamentary communication media, wherein the individual filaments of the media can range in diameter from a minimum diameter D' to a maximum diameter D, said holder comprising:

first and second side walls approximately parallel to each other and spaced apart from each other a predetermined distance;

a bottom wall interconnecting said first and second side walls at a first end of each of said first and second side walls; and

a top wall interconnecting said first and second side walls at a second end of each of said first and second side walls, approximately parallel to said bottom wall and spaced a fixed distance from said bottom wall;

said fixed distance between said top and bottom walls being greater than a sum of all outer diameters of the one or more filaments whereby all of the filaments may be placed in the space defined by said fixed distance between said top and bottom walls, regardless of their diameter;

wherein said predetermined distance between said first and second side walls is greater than the maximum diameter D of an individual filament and less than twice the minimum diameter D' of an individual filament of the one or more filaments whereby the one or more filaments in the space defined by the predetermined distance from said first side wall to said second side wall are fixed in order.

11. A method of unraveling a plurality of filaments of filamentary communication media in a raveled region wherein the filament diameters may range from a maximum diameter D to a minimum diameter D', with a holder having the capability of maintaining the filaments beld therein in substantially the same position relative to each other regardless of their outer diameters and their number, said method comprising the steps of:

positioning the filaments within the holder in the desired order at a point along the lengths of the filaments where they are not raveled;

placing the filaments in the raveled region in the desired order by sliding the holder into the raveled region towards a first end of the filaments; and

returning the holder to its original position by sliding it toward a second end of the filaments.

5,625,738

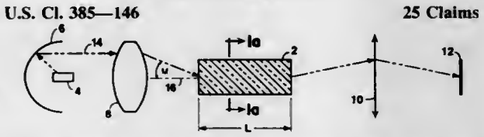
APPARATUS FOR UNIFORMLY ILLUMINATING A LIGHT VALVE

Simon Magarill, Cincinnati, Ohio, assignor to Corning Incorporated, Corning, N.Y.

Filed Jun. 28, 1994, Ser. No. 267,125

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—146 **25 Claims**



1. An apparatus for uniformly illuminating a light valve comprising:

a light source;

a light transmitting tunnel, said tunnel having reflective walls and a rectangular cross section of smaller inside dimension N, a length L, an entrance end and an exit end;

means for focusing the light from said source into a light spot directed into said entrance end, wherein the angular aperture of said focusing means is the angle u and the largest cross sectional dimension of said light spot is D, and D is less than or equal to said smaller dimension N, and wherein L, N and u are related by the equation,

$$L=k*N/\tan(u),$$

wherein k is a constant in the range of about 1.5 to 3; and,

a light valve having an active area, said valve disposed at said exit end to receive, on said active area, light transmitted by said light tunnel.

5,625,739

EDITING APPARATUS USING DELAY MEANS FOR INSERTING A DESIRED SIGNAL INTO A DESIRED PORTION OF A PRERECORDED SIGNAL AND FOR ERASING SEGMENTS OF A PRERECORDED SIGNAL WITHOUT CREATING A BLANK PORTION IN THE PRERECORDED SIGNAL

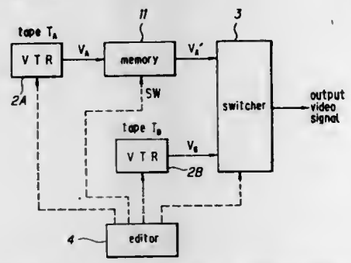
Hiroki Kotani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 230,700, Apr. 21, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,403

Claims priority, application Japan, Apr. 26, 1993, 5-099296

Int. Cl.[6] H04N *5/93*

U.S. Cl. 386—52 **4 Claims**



1. An editing machine for enabling a desired number (D) of frames of data of one signal to be inserted into another signal, said editing machine comprising:

an editor;

a first playback machine, in communication with said editor, acting to reproduce a first signal representing data from a plurality of frames from a recording medium in the form of tape;

a delay circuit for receiving the reproduced first signal from said first playback machine, said delay circuit having a plurality of serially connected frame memories for providing delayed output signals and means receiving said reproduced first signal and a delayed output signal from each of said plurality of serially connected frame memories for selecting two signals therefrom and for combining the selected two signals so as to form a combined signal representing a sequence of frames in which the data corresponding to (D) number of frames are repeated in response to an output signal supplied from said editor;

a second playback machine, in communication with said editor, for producing a second reproduced signal; and

a switcher circuit, in communication with said editor, for switching among said combined signal and said second reproduced signal so as to produce an output edited signal in which at least a portion of said second reproduced signal corresponding to said desired number (D) of frames has been inserted into said combined signal.

5,625,740

RECORDING AND REPRODUCING SYSTEM IN WHICH AUDIO AND VIDEO SIGNALS ARE RECORDED IN A PLURALITY OF SETS

Yoshiaki Sato, and Nobuya Sakai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

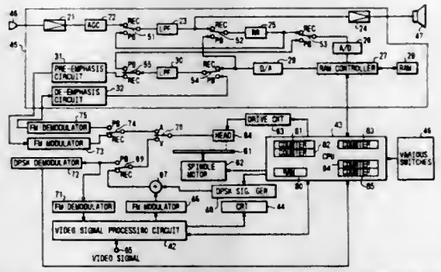
Continuation of Ser. No. 11,821, Jan. 29, 1993, abandoned, which is a continuation of Ser. No. 658,472, Feb. 20, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 231,910

Claims priority, application Japan, Feb. 22, 1990, 2-42188

Int. Cl.[6] H04N *5/781*

U.S. Cl. 386—106 **18 Claims**

9. A disk recording device including recording means for recording audio and video signals on respective audio and video tracks of a disk with a plurality of tracks, said device being operable in an AV mode in which audio and video signals are recorded in a plurality of sets with each set consisting of a combination of at least one audio signal and a video signal associated with said at least one audio signal, said device comprising:



means for generating a discriminating information uniquely identifying each of said plurality of sets;

memory means for storing said discriminating information; and

control means for controlling said recording means to record said discriminating information on each of said video and audio tracks, said discriminating information identifying each set being included with all of said audio and video signals in said each set, and said discriminating information recorded with said audio and video signals being the same for all audio and video signals in a given set of said plurality of sets.

5,625,741

VIDEO SIGNAL RECORDING APPARATUS

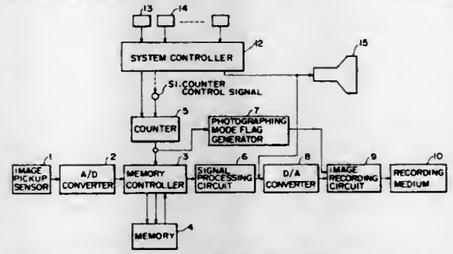
Saburo Nakazato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 877,977, May 4, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 289,223

Claims priority, application Japan, May 10, 1991, 3-133242

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—120 **5 Claims**



1. A video signal recording apparatus comprising:

image pickup means for outputting an image pickup signal, said image pickup means having a plurality of pixels arranged two-dimensionally at a predetermined interval in horizontal and vertical directions, the pixels being arranged so that each group of pixels forming a horizontal line is offset in the horizontal direction from each group of pixels forming an adjacent horizontal line;

recording means for recording a signal output from said image pickup means;

a memory;

instructing means for outputting an instruction indicating which one of a moving image signal and a still image signal is to be generated from the image pickup signal and;

controlling means for controlling generation of one of the moving image signal and the still image signal in accordance with the instruction from said instructing means, said controlling means controls signal generation so that

(i) when said instructing means instructs generation of the moving image signal, pixel signals on a first pair of adjacent horizontal lines of said image pickup means are read in

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a zigzag manner as first field signals and pixel signals on a second pair of adjacent horizontal lines, the second pair including one line from the first pair of lines, are read in the zigzag manner as second field signals, the first and second field signals being recorded by said recording means, and

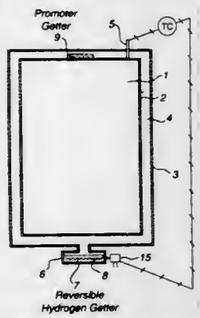
(ii) when said instructing means instructs generation of the still image signal, the first field signals are read and recorded by said recording means and are temporarily stored in said memory, and after recording the first field signals, the first field signals stored in the memory are read out of the memory, in a manner that is different from the manner used to read the pixel signals to generate the first field signals, as said second field signals and are recorded by said recording means.

5,625,742

THERMALLY INSULATING JACKET UNDER REVERSIBLE VACUUM UTILIZING HYDROGEN GETTER IN COMBINATION WITH NON-EVAPORABLE PROMOTER GETTER

Claudio Boffito; Andrea Conte; Bruno Ferrario, and Paolo della Porta, all of Milan, Italy, assignors to SAES Getters S.p.A., Italy

Filed Jul. 6, 1994, Ser. No. 268,536
Claims priority, application Italy, Jul. 8, 1993, MI93A1481
Int. Cl.[6] F24H *7/04*
U.S. Cl. 392—345 **29 Claims**



1. A thermally insulating jacket under reversible vacuum, having an inner wall, an outer wall and an hollow space between said walls in fluid communication with an outer housing containing a reversible non-evaporable hydrogen getter loaded with hydrogen before use, wherein:

a) said reversible hydrogen getter has hydrogen equilibrium pressure px_1 lower than 100 mbar at 500° C., when the hydrogen concentration in the getter is 0.1% by weight, and is kept at a variable or constant temperature Ti different from the temperature Tc of the hotter wall of the jacket;

b) said hollow space contains a non-evaporable promoter getter having a hydrogen equilibrium pressure Px_2 higher than 100 mbar at 500° C., when the hydrogen concentration in the getter is 0.1% by weight, which is exposed to a temperature Tc different from Ti.

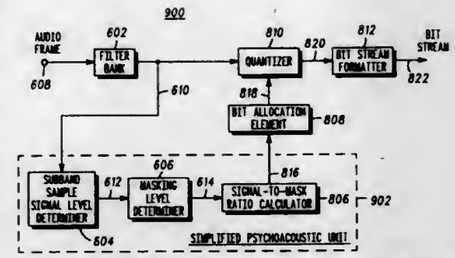
5,625,743

DETERMINING A MASKING LEVEL FOR A SUBBAND IN A SUBBAND AUDIO ENCODER

James L. Fiocca, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 7, 1994, Ser. No. 320,625
Int. Cl.[6] G10L *7/02*
U.S. Cl. 395—2.14 **18 Claims**

1. A method for determining a masking level for a particular subband in a subband audio encoder, wherein the subband audio



encoder divides an audio frame into a plurality of subbands, the method comprising the steps of:

A) receiving the audio frame and determining, by a signal level determiner, a signal level for each subband to produce a plurality of signal levels; and

B) calculating, by a masking level determiner, the masking level for the particular subband, based on the plurality of signal levels, an offset function, and a weighting function,

wherein the offset function for each subband is a function of a threshold in quiet for the subband and a bark value for the subband.

wherein the offset function is determined utilizing an equation of a form:

$$of(sb)=0.5*LTq(sb)-0.225*z(sb)+C$$

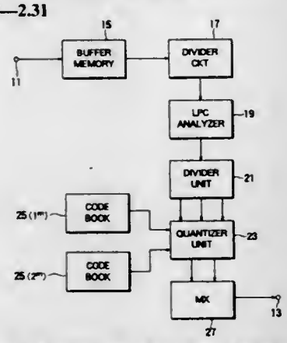
where C is a constant, LTq(sb) is the threshold in quiet of subband sb, and z(sb) is the bark value of subband sb.

5,625,744

SPEECH PARAMETER ENCODING DEVICE WHICH INCLUDES A DIVIDING CIRCUIT FOR DIVIDING A FRAME SIGNAL OF AN INPUT SPEECH SIGNAL INTO SUBFRAME SIGNALS AND FOR OUTPUTTING A LOW RATE OUTPUT CODE SIGNAL

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 9, 1994, Ser. No. 193,596
Claims priority, application Japan, Feb. 9, 1993, 5-021026
Int. Cl.[6] G10L *9/14;9/02;9/18*
U.S. Cl. 395—2.31 **8 Claims**



1. A speech parameter encoding device including a dividing circuit for dividing each frame signal of an input speech signal into a plurality of subframe signals, said speech parameter encoding device comprising:

a spectrum parameter calculating unit for calculating spectrum parameters for at least one of said subframe signals up to a predetermined spectrum parameter degree;

a dividing unit for dividing said spectrum parameters into sets of sub-parameters, with the sub-parameters of each set assigned sub-parameter degrees which are less in number than said predetermined spectrum parameter degree;

vector code books, a plurality of stages in number, each code book defining a plurality of code vectors for each set of said sub-parameters;

a quantizing unit for quantizing said sub-parameters into quantized codes by selecting vectors from said code books with each of said quantized codes calculated from a linear combination of said selected code vectors; and

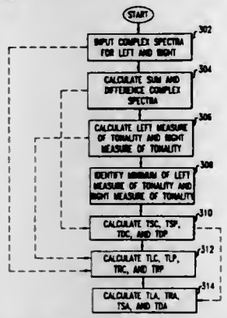
an output unit for producing said quantized codes as an output code signal.

5,625,745

NOISE IMAGING PROTECTION FOR MULTI-CHANNEL AUDIO SIGNALS

Sean M. Dorward, Somerville, and James D. Johnston, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 31, 1995, Ser. No. 381,056
Int. Cl.[6] H04H *5/00*
U.S. Cl. 395—2.36 **6 Claims**



6. A method of encoding a time block from a set of ordered time blocks of an audio signal, the time block of the audio signal being represented by a left channel signal and a right channel signal, the left channel signal and the right channel signal being represented by a first plurality of frequency partitions and a second plurality of frequency partitions, respectively, the method comprising, for a frequency partition from the first plurality of frequency partitions and a corresponding frequency partition from the second plurality of frequency partitions, the steps of:

(a) calculating a set of masking thresholds comprising a left channel masking threshold and a right channel masking threshold;

(b) calculating a second set of masking thresholds comprising a sum channel masking threshold and a difference channel masking threshold

(c) based upon the set of masking thresholds and the second set of masking thresholds, calculating an adjusted sum channel masking threshold and an adjusted difference channel masking threshold wherein the adjusted sum channel masking threshold and the adjusted difference channel masking threshold are adjusted to help protect the left channel signal and right channel signal from noise unmasking; and

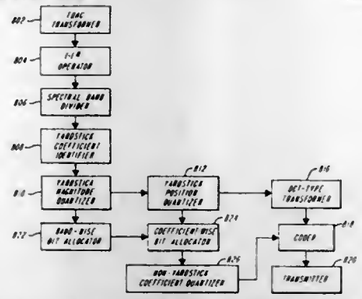
(d) based upon the adjusted left channel masking threshold and the adjusted right channel masking threshold, encoding the frequency partition and the corresponding frequency partition to generate an encoded signal.

5,625,746

METHOD AND APPARATUS FOR ENCODING, DECODING AND COMPRESSION OF AUDIO-TYPE DATA

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 822,247, Jan. 17, 1992, Pat. No. 5,394,508. This application Feb. 23, 1995, Ser. No. 392,573
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.38 **28 Claims**



1. A method for encoding a selected signal element of a signal that is defined by signal elements that are discrete in at least one dimension, said method comprising the steps of:

a. dividing the signal into a plurality of bands, at least one band having a plurality of adjacent signal elements;

b. in each band, identifying a signal element having the greatest magnitude of any signal element in said band, and designating said signal element as a "yardstick" signal element for said band;

c. quantizing the magnitude of each yardstick signal element to a first degree of accuracy;

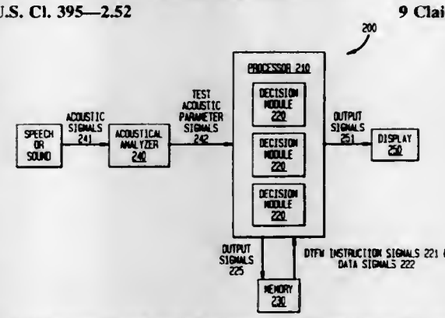
d. allocating to said selected signal element a signal element bit allocation that is a function of the quantized magnitudes of said yardstick signal elements, said signal element bit allocation chosen such that quantization of said selected signal element using said signal element bit allocation is to a second degree of accuracy, which is less accurate than said first degree of accuracy.

5,625,747

SPEAKER VERIFICATION, SPEECH RECOGNITION AND CHANNEL NORMALIZATION THROUGH DYNAMIC TIME/FREQUENCY WARPING

Randy G. Goldberg, Princeton; Gerard P. Lynch, Wall, and Richard R. Rosinski, Middletown, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 21, 1994, Ser. No. 310,116
Int. Cl.[6] G01L *5/06*
U.S. Cl. 395—2.52 **9 Claims**



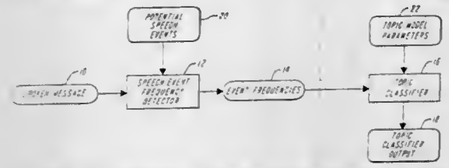
1. A method of analyzing acoustic signals, comprising the steps of:

receiving acoustic signals;

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generating test acoustic parameter signals from said acoustic signals;
comparing said test acoustic parameters signals with reference acoustic parameter signals; generating warped test acoustic parameter signals in the time and frequency domains;
comparing said warped test acoustic parameter signals to said reference acoustic parameter signals;
determining a difference between said warped test acoustic parameter signals and said reference acoustic parameter signals;
generating a difference signal corresponding to said determined difference;
generating a model path signal;
comparing said model path signal with said difference signal; and
verifying a source of said test acoustic parameter signals from said comparison of said model path signal with said difference signal.

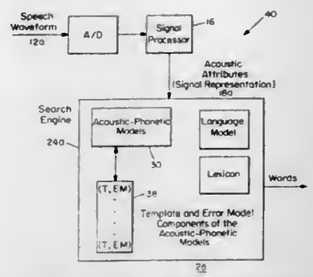
5,625,748
TOPIC DISCRIMINATOR USING POSTERIOR PROBABILITY OR CONFIDENCE SCORES
John W. McDonough, Brighton; Herbert Gish, Newton; Jan R. Rohlicek, Watertown; Kenney Ng, Boston, and Phillippe Jeanrenaud, Arlington, all of Mass., assignors to BBN Corporation, Cambridge, Mass.
Filed Apr. 18, 1994, Ser. No. 228,755
Int. Cl.[6] G10L *5/06;9/00*
U.S. Cl. 395—2.6 **22 Claims**



1. A method of selecting a vocabulary of important keywords or speech events, the presence or absence of which in a hypothesis string associated with a speech message serves to indicate the topic membership of the message, said method comprising the steps of:
generating hypothesis strings in response to and as a function of a plurality of training messages produced from the output of an event detector, each of said training messages being known to be about one of a finite set of topics;
deriving word or event frequency statistics from said hypothesis strings;
assigning topic-conditional significance or association scores to all possible words or events as a function of the word or event frequency statistics; and
selecting those words or events having topic-conditional significance or association scores above a predetermined threshold.

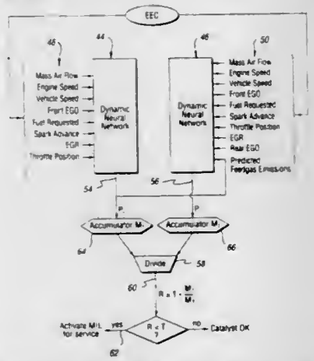
5,625,749
SEGMENT-BASED APPARATUS AND METHOD FOR SPEECH RECOGNITION BY ANALYZING MULTIPLE SPEECH UNIT FRAMES AND MODELING BOTH TEMPORAL AND SPATIAL CORRELATION
William D. Goldenthal, Cambridge, and James R. Glass, Arlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Aug. 22, 1994, Ser. No. 293,584
Int. Cl.[6] G10L *5/00;5/06*
U.S. Cl. 395—2.63 **26 Claims**

1. In a digital processor, speech recognition apparatus for decoding an input speech signal to a corresponding speech unit, the apparatus comprising:
a source providing an input speech signal formed of multiple observation frames;



a plurality of unit templates, each unit template for representing acoustic attributes of a respective speech unit and each unit template generating a respective synthetic segment indicative of the respective speech unit;
a plurality of error models associated with the unit templates, each unit template having an error model for explicitly measuring and quantitatively representing temporal and spatial correlations between the synthetic segments and a subject speech signal, the temporal and spatial correlations being between acoustic attributes in the observation frames of the subject speech signal; and
processor means coupled to the unit templates and error models and coupled to the source to receive the input speech signal, the processor means comparing the synthetic segments to different plural observation frames of the input speech signal to define a set of error sequences and based on the error models, the processor means analyzing the error sequences and determining the corresponding speech unit of the input speech signal.

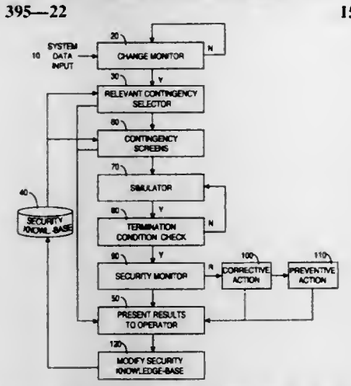
5,625,750
CATALYST MONITOR WITH DIRECT PREDICTION OF HYDROCARBON CONVERSION EFFICIENCY BY DYNAMIC NEURAL NETWORKS
Gintaras V. Puskorius, Redford, and Lee A. Feldkamp, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jun. 29, 1994, Ser. No. 267,736
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*
U.S. Cl. 395—22 **15 Claims**



11. A monitor for monitoring compliance with hydrocarbon conversion activity levels of an internal combustion engine having an electronic engine control with a plurality of engine operating condition signals, comprising:
a first plurality of said engine operating condition signals;
a second plurality of said engine operating condition signals;
a first trained neural network predictor generating a feedgas emission constituent prediction signal in sensed response to said first plurality of engine operating condition signals;

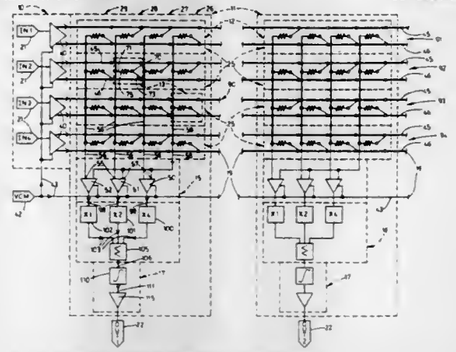
a second trained neural network predictor generating a tailpipe emission constituent prediction signal in sensed response to said second plurality of engine operating condition signals;
a comparator for determining compliance of a ratio of said feedgas emission prediction to said tailpipe emission prediction with a predetermined ratio standard for said predictions; and
an indicator for advising of a failure to detect compliance in response to said ratio comparator.

5,625,751
NEURAL NETWORK FOR CONTINGENCY RANKING DYNAMIC SECURITY INDICES FOR USE UNDER FAULT CONDITIONS IN A POWER DISTRIBUTION SYSTEM
Vladimir Brandwajn, San Jose; Ali Ipakchi, San Carlos; A. B. Ranjit Kumar, Cupertino, and Gerald W. Cauley, San Jose, all of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.
Filed Aug. 30, 1994, Ser. No. 297,987
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*
U.S. Cl. 395—22 **15 Claims**



1. A method for real-time evaluation of fault contingencies upon the dynamic security of a power system that includes power generators and power-carrying lines, the method comprising the following steps:
(a) defining a set of indices describing a fault-induced deviation from a pre-fault steady state condition of said power system;
(b) forming from said set of indices a subset of composite indices for each fault contingency of interest, wherein a fault contingency of interest includes a fault experienced by said power system, for which fault contingency real-time evaluation is desired, wherein said subset of composite indices is formed as follows:
(b-1) calculating a change from pre-fault steady-state condition of said power system for each system variable defined by an index in a said set of indices;
(b-2) segregating changes calculated at step (b-1) into positive-signed values and negative-signed values;
(b-3) normalizing said positive-signed values and said negative-signed values so segregated at step (b-2);
(b-4) raising to a power n, n≧4, values normalized at step b-3);
(b-5) combine values so power-raised in step (b-4) to yield at least one composite index selected from the group consisting of (a) terms corresponding to at least some of said positive-signed values, (b) terms corresponding to at least some of said negative-signed values, (c) terms corresponding to at least some of said positive-signed values and corresponding to at least some of said negative-signed values, and (d) terms corresponding to a difference between at least some of said positive-signed values and some of said negative-signed values;
(c) providing a computer system including a neural network to classify in terms of at least stability and instability each of said composite indices, said neural network receiving said composite indices as input; and
(d) providing from an output of said neural network at least one indication of relative stability of said power system in response to a said fault contingency of interest.

5,625,752
ARTIFICIAL NEURAL SYSTEM WITH BINARY WEIGHTING BY EQUAL RESISTOR NETWORK
Richard M. Swenson, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 17, 1994, Ser. No. 266,813
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*
U.S. Cl. 395—24 **11 Claims**



1. An artificial neural network comprising:
input operational amplifier means for receiving a plurality of input signals and for generating therefrom a plurality of voltage signals, said voltage signals individually representing the input signals and being maintained substantially constant for each value of the corresponding input signal; and
a neuron providing an output signal by weighting each of said voltage signals by binary weight bits in a predetermined number of bit positions, said neuron having
a plurality of synapses corresponding individually to said voltage signals, each of said synapses having a plurality of synapse bit resistor means, which have substantially equal resistances and correspond individually to said bit positions, for connection to the corresponding voltage signals so as to provide synapse bit position signals corresponding individually to the values of said input signals when a weight bit at
a corresponding bit position is "one", and for disconnection from the corresponding voltage signals when said weight bit is "zero",
bit summing means for receiving said synapse bit position signals and for generating therefrom bit position sum signals representing the sums of the synapse bit position signals corresponding to each of said bit positions, and
bit position weighting means for receiving said bit position sum signals and for generating said output signal therefrom so that said output signal corresponds to the sum of the products of each of said bit position sum signals and the positional values of the bit positions corresponding to the bit position sum signals,
whereby said output signal corresponds to the sum of the products of the values of each of said input signals and weights represented by the weight bits of the synapses receiving the input signals.

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5,625,753

NEURAL PROCESSOR COMPRISING MEANS FOR NORMALIZING DATA

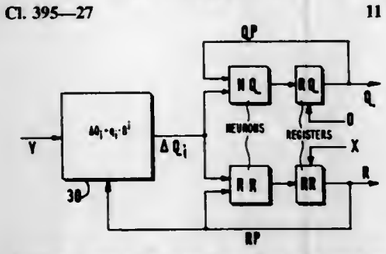
Yannick Deville, Villecresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1993, Ser. No. 55,431

Claims priority, application France, Apr. 29, 1992, 92 05282

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **11 Claims**



1. A neural processor comprising neural calculation means (**11–15**) for normalizing first input data X with respect to second input data Y by calculating a quotient q of a division of X by Y, said neural calculation means including:

at least one first neuron for recursively calculating a series of contributions $\Delta Q_i=q_i\cdot B^i$ which together form the quotient Q on an arbitrary arithmetic base B, where q and i are integers; and

at least one second neuron fed by said at least one first neuron for recursively updating a partial quotient QP by summing said contributions ΔQ_i in order to produce the quotient Q.

5,625,754

METHOD OF EVALUATING A SET OF LINGUISTIC RULES

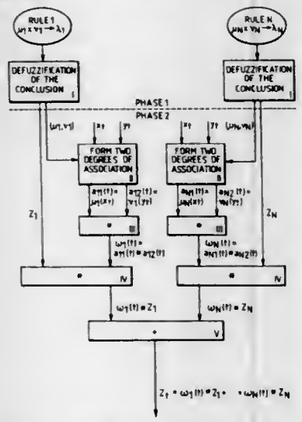
Ernst-Werner Jüngst, and Klaus-Dieter Meyer-Gramann, both of Berlin, Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Continuation of Ser. No. 151,388, Nov. 12, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,526

Claims priority, application Germany, Nov. 12, 1992, 42 38 772.8

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—51 **12 Claims**



1. A device for creating an output signal for controlling an external object in accordance with input signals using a plurality of fuzzy rules wherein each of the fuzzy rules of said plurality of fuzzy rules includes a premise with one or more linguistic statements about the input signals and a conclusion with one linguistic statement about the output signal, said device comprising:

a) at least one storage unit for storing a plurality of fuzzy rules;

b) a plurality of generating units for generating amplitude signals by defuzzifying said linguistic statements about said output signals;

c) a plurality of first processing units for receiving said input signals and generating membership signals by fuzzification;

d) a plurality of second processing units for receiving said membership signals and generating intermediate signals;

e) a plurality of multiplier units for receiving said intermediate signals and said amplitude signals and generating product signals;

f) an adder unit for receiving the said product signals and generating the output signal by adding said product signals; and

g) an actuator for controlling said external object in accordance with said output signal;

wherein a linguistic hedge of each input signal forms a fuzzy information system, such that, for each possible input signal the sum of membership signals for all membership functions associated with the linguistic statements about the input signal always equals 1;

wherein, the linguistic statements in a premise of each fuzzy rule are always linked in an AND relationship;

wherein, the linguistic statements in the premise of each fuzzy rule refer to pairwise different input signals;

wherein, the plurality of rules is complete, such that, for each possible combination (statement$_1$, . . . , statement$_n$)n of linguistic statements, where n is the number of input signals, such that for each i out of the set {1, . . . , n} statement$_i$ refers to the ith input signal, there exists one rule R_k among said fuzzy rules whose premise is composed exclusively of linguistic statements from the set (statement$_1$, . . . , statement$_n$); and

wherein, the plurality of rules is consistent, such that, for each possible combination (statement$_1$, . . . , statement$_n$) of linguistic statements, there is at most one rule R_k among said fuzzy rules whose premise is composed exclusively of linguistic statements from the set (statement$_1$, . . . , statement$_n$).

5,625,755

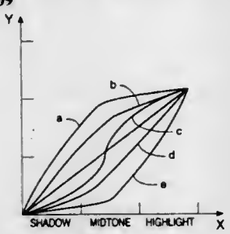
METHOD AND APPARATUS FOR TONAL CORRECTION IN BINARY PRINTING DEVICES BY PREDISTORTION OF IMAGE DATA UTILIZING INK REDUCTION PROCESSING

Joseph S. Shu, San Jose, Calif., assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 269,601, Jul. 1, 1994, Pat. No. 5,568,572. This application Oct. 11, 1994, Ser. No. 320,542

Int. Cl.[6] H04N *1/405*

U.S. Cl. 395—109 **27 Claims**



1. A method of printing comprising:

a. obtaining a series of pixel data corresponding to a linear segment of source image;

b. selecting every other one of the pixel data obtained in step a;

c. filtering the pixel data selected in step b in accordance with a filter function;

d. processing the pixel data filtered in step c into a halftone pattern which, when printed, exhibits a density pattern lighter than that of the source image in highlight and upper midtone regions and darker than that of the source image in shadow and lower midtone regions; and

e. printing a series of dots in accordance with the halftone pattern onto a recording medium,

wherein the filter function is defined such when the halftone pattern is printed, the printed pattern exhibits a density pattern lighter than that of the source image in highlight and upper midtone regions and darker than that of the source image in shadow and lower midtone regions.

5,625,756

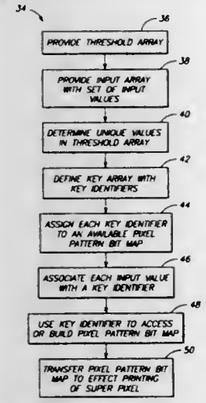
EFFICIENT USE OF DITHER MATRIX BASED GRAY LEVEL PATTERNS

Russell Campbell, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 23, 1996, Ser. No. 636,492

Int. Cl.[6] G06K *15/00;* **H04N** *1/40*

U.S. Cl. 395—109 **20 Claims**



1. A method for operating a digital printer which utilizes a super-pixel bit map set containing a plurality of pixel pattern bit maps, each pixel pattern bit map defining the on or off condition for a plurality of individual pixels which make up a super-pixel which forms a part of a printed area, such as for gray or color shading; the method comprising:

accepting an input value for a particular super-pixel to be printed; said input value being from one of a set of available input values defined by an input array;

providing a threshold array which defines available pixel pattern bit maps which can be used in printing super-pixels for a particular print job;

producing a key array which assigns a different key identifier to each of the available pixel pattern bit maps defined by the threshold array;

associating an input value with a key identifier; and

using the key identifier to access a suitable pixel pattern bit map for a particular super-pixel to be printed.

5,625,757

PRINTING SYSTEM

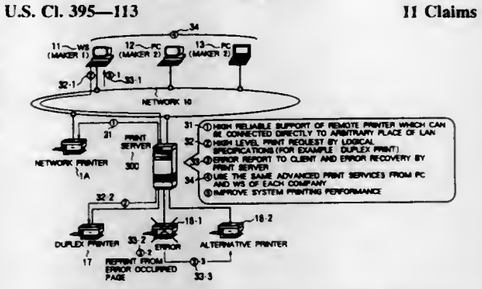
Seiji Kageyama; Satoru Matsumoto, both of Yokohama; Makoto Kitagawa, Fujisawa; Takuya Shimakawa; Junichi Kazama, both of Yokohama, and Tadashi Okada, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 361,226

Claims priority, application Japan, Dec. 24, 1993, 5-326808; Mar. 17, 1994, 6-046283

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—113 **11 Claims**



7. A printing system which comprises a terminal equipment, at least two print servers connected to said terminal equipment through a network, and printers which are controlled by said print servers and in which said terminal equipment instructs a print job as a unit of a print request to either of said print servers, wherein:

printer error detecting means and printer error recovery wait/release control means are provided for said print servers;

means for instructing an error recovery using an alternative printer to said print servers is provided for said terminal equipment; and

a respective one of said print servers includes means for stopping inputting and outputting to or from a spooler corresponding to one of said printers in which a fatal error occurred in the case where the occurrence of the fatal error in said one of said printers is detected by said printer error detecting means and control means for shifting said one of said print servers to a printer error recovery waiting status by using said printer error recovery wait/release control means and for moving said print job to the spooler corresponding to a name of an alternative printer instructed by said terminal equipment in accordance with an error recovery instruction that is inputted from said terminal equipment, thereby printing the print job by said alternative printer,

a distributed printing management server for managing configurations of all of said printers on the network is added to said printing system and alternative candidate printer detecting means is provided for said terminal equipment; and

said terminal equipment includes means which is constructed in a manner such that after said print job was instructed by using arbitrary logical specifications, in the case where the occurrence of said fatal error in said one of said printers to execute said print job is known, said alternative candidate printer detecting means receives the logical specifications regarding said print job and a retrieval of said printers adequate to said logical specifications which were managed is requested to the distributed printing management server and means which is constructed in a manner such that in the case where said distributed printing management server returned alternative candidate printers adequate to the logical specifications to said terminal equipment, the alternative candidate printer is determined on the basis of said returned alternative candidate printers.

VOL 1197 ISS 5 AP 29 1997 UMI

5,625,758

COMMUNICATION PROCESS AND COMMUNICATION SYSTEM FOR COMPUTER-ASSISTED PRINTING

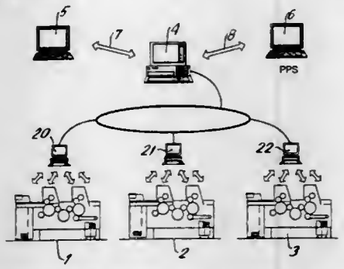
Josef Schneider, Diedorf, and Armin Weichmann, Kissing, both of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Aug. 18, 1994, Ser. No. 292,434

Claims priority, application Germany, Aug. 20, 1993, 43 28 026.9

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—114 **12 Claims**



1. A communication process in a communication system with computer-controlled data transmission for controlling the printing process of a printing press, the printing process including digitally operating zones which work independently of the printing press, one of the operating zones being a preliminary printing stage including a data processing substation, the communication process comprising the steps of:

linking the digitally operating zones of the printing process which work independently from the printing press;

controlling the independently operating zones of the press with electronic control units; and

exchanging data between the independently operating zones and the printing press so that type-neutral data inquiries in both directions are possible, the data exchange including exchanging device-independent digital data and data relating to a specific printing press between the data processing substation of the preliminary printing stage and a main data processing station connected to the electric control units of the printing press in the form of a pre-setting and characteristic line data communication in both directions between the preliminary printing stage and the printing press, and exchanging operating data of the printing press and data relating to a specific job in both directions between the main data processing station and a data processing substation of a production planning system (PPS), so that data for regulating the priming press can be obtained from data from the preliminary printing stage which does not depend on the type of printing press, and so that data to be printed received from the preliminary printing stage can be influenced by the printing press itself, the process further including filling the main data processing station with data collected from the preliminary printing stage for presetting the printing press, influencing essential features of the data, depending on characteristic lines, and controlling the data output of the preliminary printing stage with the main data processing station, and delivering the operating data of the printing press from the main data processing station to the PPS and retrieving job data which have been collected in the PPS with the main data processing station for preparing the printing press.

5,625,759

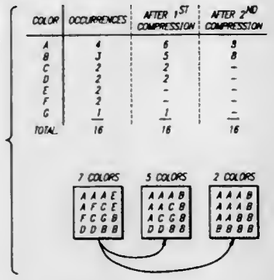
REAL-TIME VIDEO AND ANIMATION PLAYBACK PROCESS

Kyle G. Freeman, Woodland Hills, Calif., assignor to Nova-Logic, Inc., Calabasas, Calif.

Filed May 8, 1995, Ser. No. 436,592

Int. Cl.[6] H04N *1/41*

U.S. Cl. 395—114 **17 Claims**



1. A method of compressing color video data defining color video frames on a display device, the method comprising the steps of:

providing a color video frame comprising a plurality of pixels, each pixel having an associated color;

dividing the color video frame into blocks of pixels;

determining the colors present in one of the blocks;

calculating a number of colors for the block according to a color threshold, the number of colors being no greater than a predetermined number by

sorting the determined colors present in the block by frequency of occurrence of each color,

comparing each of the determined colors to each other determined color,

ascertaining comparatively close colors from the comparison of each determined color according to the color threshold, and

substituting the more frequently occurring color for the less frequently occurring color of two comparatively close colors; and

storing color video data representative of each pixel in the block in accordance with the number of colors for the block.

5,625,760

IMAGE PROCESSOR FOR PERFORMING VOLUME RENDERING FROM VOXEL DATA BY A DEPTH QUEUING METHOD

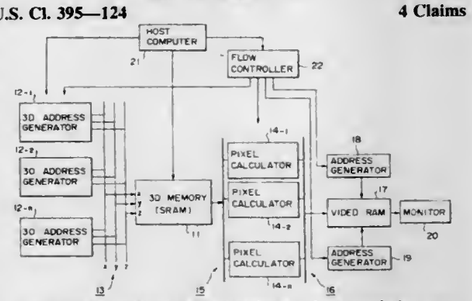
Hiroyuki Fujita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 8, 1994, Ser. No. 255,432

Claims priority, application Japan, Jun. 25, 1993, 5-179765

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—124 **4 Claims**



1. An image processor for performing a volume rendering operation from voxel data by a depth queuing method, comprising:

a three-dimensional memory for storing the vowel data therein;

a plurality of three-dimensional address generators for generating addresses to read out the data from said three-dimensional memory; and

a plurality of pixel calculators for processing the read-out data from said three-dimensional memory by the depth queuing method.

5,625,761

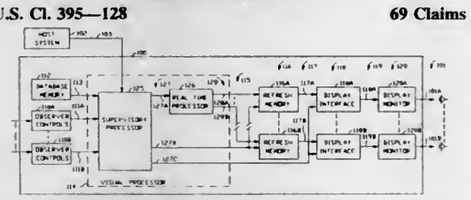
TRANSFORM PROCESSOR SYSTEM HAVING A LOWER RESOLUTION HIGHER SPEED TRANSFORM PROCESSOR IN COMBINATION WITH A HIGHER RESOLUTION LOWER SPEED TRANSFORM PROCESSOR

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180

Continuation of Ser. No. 504,691, Jun. 15, 1983, Pat. No. 5,487,172, which is a continuation-in-part of Ser. No. 879,293, Nov. 24, 1969, abandoned, Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, abandoned, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,209,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 801,879, May 31, 1977, Pat. No. 4,144,583, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,733, Nov. 9, 1977, abandoned, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,277, Dec. 13, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 860,253, Dec. 14, 1977, abandoned, Ser. No. 860,252, Dec. 14, 1977, abandoned, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, Ser. No. 874,446, Feb. 2, 1978, Pat. No. 4,342,906, Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 948,378, Oct. 4, 1978, abandoned, Ser. No. 160,871, Jun. 19, 1980, Pat. No. 4,445,189, Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 169,257, Jul. 16, 1980, Pat. No. 4,435,732, Ser. No. 223,959, Jan. 12, 1981, abandoned, Ser. No. 332,501, Jan. 22, 1981, abandoned, Ser. No. 425,136, Sep. 27, 1982, Pat. No. 4,739,396, Ser. No. 425,135, Sep. 27, 1982, Pat. No. 4,551,816, and Ser. No. 425,131, Sep. 27, 1982, Pat. No. 4,686,655. This application Sep. 20, 1991, Ser. No. 763,395

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—128 **69 Claims**



1. A transform processor system comprising:

a first transform processor generating first transforms having a first resolution;

a second transform processor generating second transforms having a second resolution that is better than the first resolution; and

a third processor coupled to the first transform processor and to the second transform processor and improving the resolution of the first transforms in response to the second transforms.

5,625,762

METHOD FOR EXTRACTING THREE-DIMENSIONAL COLOR VECTOR

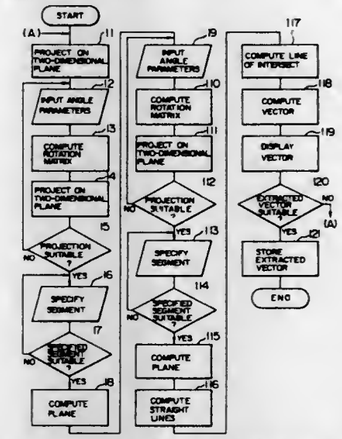
Yuri Takizawa, Machida; Shinichiro Miyaoka, Kawasaki; Makoto Kato, Yokohama, and Makoto Nohmi, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,122

Claims priority, application Japan, May 11, 1990, 2-119827

Int. Cl.[6] G06T *7/00*

U.S. Cl. 395—131 **9 Claims**



1. A method for extracting a three-dimensional color vector approximately representing a cluster of plotted points in a three-dimensional RGB primary color space, said plotted points indicating the distribution of the R, G, B components of color pixels of a specific object in a color image, the method comprising the steps of:

designating a direction of a first projection plane;

in response to said step of designating the direction of said first projection plane, projecting said plotted points in said three-dimensional RGB color space on said first projection plane;

displaying a first projection image of said first projection plane on a display;

designating a first line segment on said display, said first line segment expressing the feature of a distribution of said plotted points projected on said first projection image;

in response to said step of designating a first line segment on said display, determining a first equation expressing a first designated plane in said three-dimensional RGB primary color space, said first designated plane being perpendicular to said first projection plane, wherein the projection of said first designated plane on said first projection plane is said first line segment;

designating the direction of a second projection plane;

in response to said step of designating the direction of a second projection plane, projecting said plotted points in said three-dimensional RGB primary color space onto said second projection plane;

displaying a second projection image of said second projection plane on said display;

designating a second line segment on said display, said second line segment expressing the feature of the distribution of said plotted points projected on said second projection image;

in response to said step of designating a second line segment on said display, calculating a second equation expressing a second designated plane in said three-dimensional RGB primary color space, said second designated plane being perpendicular to said second projection plane, wherein the projection of said second designated plane on said second projection plane is said second line segment; and

extracting said three-dimensional color vector by extracting a line of intersection of said first designated plane and said second designated plane from said first equation and said

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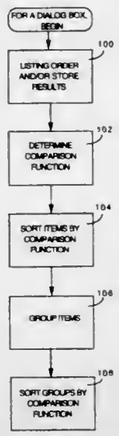
second equation, wherein said line of intersection includes said three-dimensional color vector.

5,625,763

METHOD AND APPARATUS FOR AUTOMATICALLY GENERATING FOCUS ORDERING IN A DIALOG ON A COMPUTER SYSTEM

Lewis K. Cirne, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 435,776
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—133 **24 Claims**



1. A method for automatically generating a focus order for items in a dialog on a computer system, the computer system having a processor, storage and a display device having a display screen, said method comprising the steps of:

sorting said items of said dialog by means of a spatial comparison function;

grouping said items of said dialog into one or more groups, an item being assigned to a group according to the item's location on the display screen, each item being in a single group, each group containing one or more items;

sorting said groups by said comparison function; and

listing said focus ordering of said items to form a focus order list by iterating through said groups in sorted order, for each group iterating through the items of the group in sorted order.

5,625,764

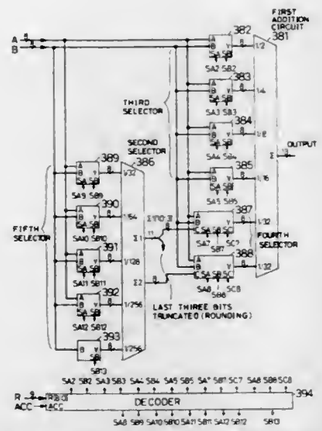
WEIGHTED AVERAGE CIRCUIT USING DIGIT SHIFTING

Taizou Tsujimoto, and Masaru Uya, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 70,681, Jun. 2, 1993, abandoned. This application Mar. 15, 1994, Ser. No. 213,445
Claims priority, application Japan, Mar. 16, 1993, 5-054484; May 26, 1993, 5-123731; Aug. 24, 1993, 5-209314; Jan. 31, 1994, 6-008960
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—135 **27 Claims**

1. An image blend circuit that displays a translucently synthesized image at an overlapping field between windows opened on a display screen in a multi-window information processor, said image blend circuit comprising:

(a) pixel location information supply means which outputs pixel location information containing a synchronous pixel clock signal so as to display an image on said display screen by means of a raster scan technique.



(b) a plurality of image output means each of which sequentially outputs pixel information about an image whose dimensions are the same as those of said display screen according to said pixel location information,

(c) blend ratio buffer means which stores blend ratio information corresponding to pixels of said display screen and sequentially outputs said stored blend ratio information according to said pixel location information,

(d) blend ratio hold means which stores a blend ratio having a single value and repeatedly outputs said stored blend ratio according to said pixel location information,

(e) attribute buffer means which stores selection information corresponding to said pixels of said display screen and sequentially outputs said stored selection information according to said pixel location information,

(f) data selection means which selects between said blend ratio information from said blend ratio buffer means and said stored blend ratio from said blend ratio hold means and outputs a selected blend ratio according to said selection information from said attribute buffer means,

(g) pixel blend means which synchronously receives said image information items from said plural image output means and said blend ratio information from said data selection means according to said pixel location information, blends said input image information items according to said input blend ratio information, and outputs blended image information, and

(h) window control means which, in order to display a target image in a window opened on said display screen, stores window locations, window shapes, window dimensions, and display objects as control information, updates said control information at an operator's request, and forms and updates data held by said blend ratio buffer means and said attribute buffer means depending on said stored control information.

5,625,765

VISION SYSTEMS INCLUDING DEVICES AND METHODS FOR COMBINING IMAGES FOR EXTENDED MAGNIFICATION SCHEMES

John Ellenby; Thomas Ellenby, and Peter Ellenby, all of La Jolla, Calif., assignors to Criticom Corp., San Francisco, Calif.

Continuation-in-part of Ser. No. 116,360, Sep. 3, 1993, Pat. No. 5,444,678. This application Nov. 8, 1994, Ser. No. 335,940
Int. Cl.[6] G06T *3/00*
U.S. Cl. 395—135 **16 Claims**

1. An imaging apparatus having variable magnification selectable by a user, the apparatus comprising:

a position determining means;



an attitude determining means;

a camera having a position and pointing direction associated therewith;

a computer; and

a display,

said position determining means being operable for determining the position of the camera;

said attitude determining means being operable for determining the pointing direction of the camera;

said camera being operable for producing an electronic image of a scene;

said computer being in communication with said position and attitude determining means and responsive to the determinations made therein, being operable for generating image information relating to the scene, and operable for combining the information with features of the electronic image produced by said camera to form an augmented image, and operable for presenting the augmented image at;

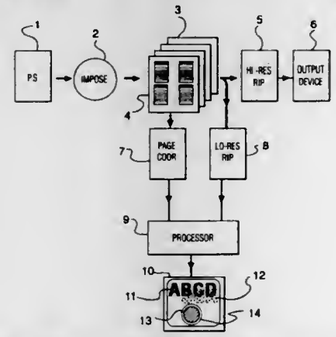
said display.

5,625,766

SOFTWARE BASED PROOFING METHOD FOR DOUBLE SIDED PRINTING

David S. Kauffman, Vancouver, Canada, assignor to Creo Products Inc., Burnaby, Canada

Filed May 11, 1995, Ser. No. 439,473
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **4 Claims**



1. A method for proofing the front-to-back registration of a sheet printed on both sides from plates generated by an output device, comprising of the following steps:

generating an imposition from all the pages to be printed on the front of said printed sheet;

generating and imposition from all the pages to be printed on the back side of said printed sheet;

generating a raster file of the imposed data to be printed at the full resolution of the output device used to image said data;

generating a second raster file of said data at a lower resolution than said first raster file and storing at least one of said second raster files for each side of said printed sheet;

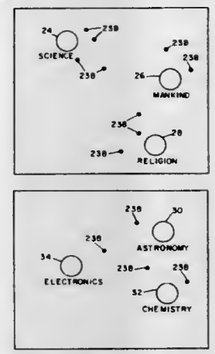
displaying the image of said second raster file of front side of said printed sheet on a display device simultaneously with the image of said second raster file of back side of said sheet, image of back side of said sheet being mirror imaged but in correct spatial registration to image of front side, said simultaneous display creating the appearance of a said sheet being printed on transparent material.

5,625,767

METHOD AND SYSTEM FOR TWO-DIMENSIONAL VISUALIZATION OF AN INFORMATION TAXONOMY AND OF TEXT DOCUMENTS BASED ON TOPICAL CONTENT OF THE DOCUMENTS

Brian Bartell, 4449 Via Precipicio, San Diego, Calif. 92122, and Robert Clarke, 8246 Caminito Modena, La Jolla, Calif. 92037

Filed Mar. 13, 1995, Ser. No. 402,839
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—140 **22 Claims**



1. A method for visually representing the semantic relatedness between a predetermined plurality of classes and a plurality of documents, each document stored in a computer document retrieval system, said plurality of documents collectively comprising a plurality of terms in computer-readable format, each document having a tag representing the topical relatedness of said document to each said class, said method comprising the steps of:

generating a semantic space map in response to said terms and said tag of each document of said plurality of documents, said semantic space map representing the position in a plurality of dimensions of each class relative to every other said class, the spatial distance between said position of said each class and said every other class corresponding to the semantic relatedness of said each class to said every other class;

populating said semantic space map in response to said plurality of documents, said populated semantic space map representing the position in a plurality of dimensions of each class relative to every other class and of each document relative to each class, the spatial distance between said position of said each document relative to said each class corresponding to the semantic relatedness of said each document to said each class; and

displaying a visual representation of at least a portion of said populated semantic space map.

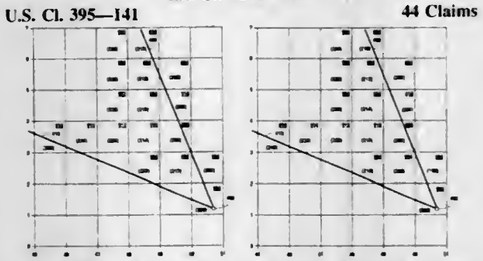
VOL 1197 ISS 5 AP 29 1997 UMI

5,625,768

METHOD AND APPARATUS FOR CORRECTING ERRORS IN PIXEL CHARACTERISTICS WHEN INTERPOLATING POLYGONS INTO A PIXEL GRID

Thomas A. Dye, Austin, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 247,657, May 23, 1994. This application Sep. 1, 1994, Ser. No. 299,739
Int. Cl.[6] G06T *5/00*
U.S. Cl. 395—141 **44 Claims**



10. A method of correcting errors in pixel characteristics when interpolating a coplanar polygon into a pixel grid having a reference dimension and an orthogonal dimension and corresponding coordinates, the polygon being interpolated with orthogonal scan lines of pixels from a main slope of the polygon, comprising the steps of:

receiving an initial characteristic value of a base point at one end of the main slope, a main slope characteristic slope value, a characteristic orthogonal slope value and a characteristic error value;

accumulating an orthogonal coordinate beginning with an initial orthogonal coordinate of the base point and adding an orthogonal component of the main slope;

accumulating a main slope characteristic value by starting with the initial characteristic value and adding the main slope characteristic slope value for each pixel along the main slope;

accumulating an error value by adding characteristic error values for each pixel along the main slope;

adding the accumulated error value to the main slope characteristic value for each pixel along the main slope;

indicating a fractional overflow when a fractional portion of the orthogonal coordinate overflows to an integer portion; and

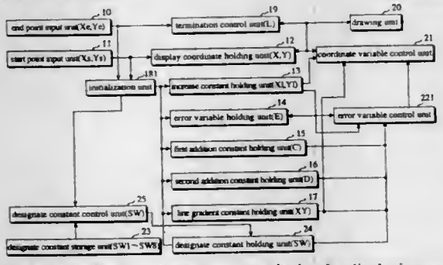
adding the characteristic orthogonal slope value to reduce the magnitude of the accumulated error value when fractional overflow is indicated.

5,625,769

APPARATUS FOR AND METHOD OF GENERATING A STRAIGHT LINE AND SELECTING LATTICE POINTS FOR DISPLAY

Shuichi Takada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1994, Ser. No. 253,402
Claims priority, application Japan, Jun. 24, 1993, 5-153843
Int. Cl.[6] G06T *11/20*
U.S. Cl. 395—143 **19 Claims**



1. A straight line coordinate generator device for displaying on a display device a lattice point of a line according to a Bresenham line drawing algorithm when XY coordinates of a start point and an end point of the line are given, the straight line coordinate generator comprising:

a reference coordinate determination means for determining a reference coordinate and a judge coordinate by calculating a difference in absolute value between the X coordinate of the start point and the X coordinate of the end point, and a difference in absolute value between the Y coordinate of the start point and the Y coordinate of the end point, wherein the differences in absolute values are compared to determine which coordinate has a largest difference in absolute value and which coordinate has a smallest difference in absolute value, the coordinate with the largest difference in absolute value being designated a reference coordinate and the coordinate with the smallest difference in absolute value being designated a judge coordinate, if the differences in absolute values are equal, a predetermined coordinate is designated a reference coordinate;

a constant input means for inputting a constant, the constant indicating which one of two lattice points to display when the reference coordinate is an integer and the judge coordinate is a sum of the integer and ½, the two lattice points being located in a direction of a judge coordinate axis and are equally distant from the line, such that the line passes at a midpoint of the two lattice points;

a constant holding means for holding the constant which is inputted by the constant input means;

a value computation means for applying the XY coordinates of the start point and the end point to the Bresenham line drawing algorithm to compute each value of the Bresenham line drawing algorithm;

a variable computation means for computing an error variable when the reference coordinate of a point is an integer, the error variable corresponding to a distance between the point and a lattice point which is placed near to the point by computing an error variable of a lattice point to be displayed first as indicated by the constant held by the constant holding means, and computing the error variable of a lattice point to be displayed next as indicated by the constant held by the constant holding means and the error variable of a preceding lattice point;

a variable holding means for holding the error variable which is computed by the variable computation means; and

a lattice point display means for displaying a lattice point which is designated to be displayed by the constant when the error variable which is held by the error variable holding means indicates that the line passes at a midpoint of the two lattice points.

5,625,770

FILE SYSTEM FOR FILING DOCUMENTS, USING A CATALOG CARD HAVING A PLURALITY OF MARKS THEREON

Keiichi Nomura, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

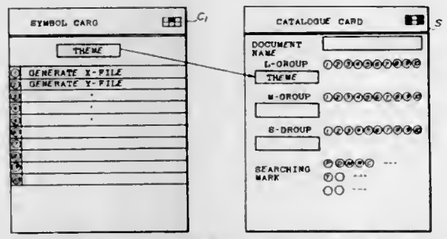
Continuation of Ser. No. 851,875, Mar. 16, 1992, abandoned. This application Dec. 9, 1994, Ser. No. 352,435
Claims priority, application Japan, Apr. 20, 1991, 3-116821
Int. Cl.[6] G06F *15/76*
U.S. Cl. 395—761 **11 Claims**

1. An electronic file system for filing a document on a document card by using a catalog card mark sheet including a plurality of graphical marks having predetermined geometric shape which define a catalog of the document, said electronic file system comprising:

a) image reading means for scanning the catalog card mark sheet and the document card to generate image data including:

1) first image data corresponding to the catalog card mark sheet and including title image data representing either or both of (i) a document name and (ii) information related to the document name; and

2) second image data corresponding to the document card;



b) processing means, coupled to said image reading means and including:

1) means for detecting a graphical mark having a predetermined geometric shape drawn on the catalog card mark sheet, the detecting being based on the first image data generated by said image reading means,

2) means for generating code data corresponding to the first image data representing the graphical mark drawn on the catalog card mark sheet;

c) indicator means, coupled to said image reading means and processing means, for indicating the image data and the code data so as to correlate the document with the catalog thereof and for performing file management on the basis of said code data corresponding to the first image data representing the graphical mark drawn on the catalog card mark sheet; and

d) memory means, coupled to said image reading means, processing means and indicator means, for storing:

1) the image data including the first image data corresponding to the catalog card; and

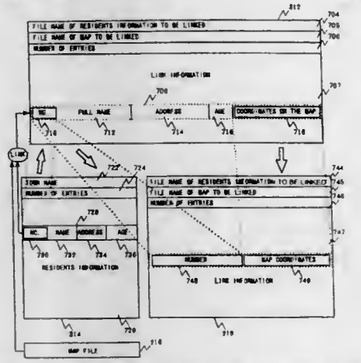
2) the code data which was generated in correspondence to the first image data representing the graphical mark drawn on the catalog card mark sheet.

5,625,771

METHOD FOR MAKING CURSOR FORM

Toshiaki Sakaguchi, Yao, and Hiroyuki Okuda, Ikeda, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1993, Ser. No. 144,838
Claims priority, application Japan, Nov. 4, 1992, 4-319454
Int. Cl.[6] G09G *5/08*
U.S. Cl. 395—762 **6 Claims**



1. A method for making a cursor form, by using a processor connected with an input device, a display device and a storage device, for linking a part of an image displayed on said display device with one of a plurality of entries of table data stored in said storage device, the method comprising the steps of:

a) displaying on said display device said image and said table data including a plurality of entries;

b) reading from said storage device data of a selected entry, said selected entry being selected from said table data by using said input device;

c) generating said cursor form by converting a character string included in a predetermined item of said selected entry to cursor form data;

d) obtaining location information for a part of said image including a same mark as that of said character string by designating a location including said same mark with said cursor form displayed on said display device, said location being previously undetermined; and

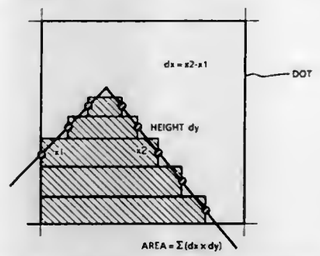
e) setting a link between said selected entry and said obtained location information.

5,625,772

GRAY-SCALE FONT GENERATING APPARATUS UTILIZING A BLEND RATIO

Naomi Yamazaki, Takahagi, and Atsushi Kawabata, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,653
Claims priority, application Japan, Aug. 8, 1991, 3-199154
Int. Cl.[6] G06F *15/00;* **G09G** *5/24*
U.S. Cl. 395—167 **13 Claims**



1. A gray-scale font generating apparatus, comprising:

input means for inputting information representative of a font code;

means for generating horizontal lines for each dot of a font; and

means for calculating a gray scale value of the dots and a background region for a contour of shape data of a font corresponding to a character code and for performing gradation display of the font in the calculated gray scale value,

wherein said gray scale value is calculated by multiplying vector data corresponding to said input information representative of a character code by the number of gradations, the multiplication being a bit-shift operation generating strips covering a region of the character code based on intersections between a font contour line and a respective one of said scan lines, calculating the total area of said generated strips which is equal to the sum of widths of all of the respective strips and calculating said gray scale value by dividing the total area of said strips by the number of gradations, the division being a bit-shift operation.

5,625,773

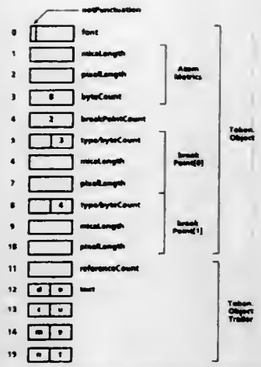
METHOD OF ENCODING AND LINE BREAKING TEXT

Stephen J. Bespalko, Escondido, and John Monahan, Los Angeles, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 150,329, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 702,349, May 15, 1991, abandoned, which is a continuation of Ser. No. 333,504, Apr. 5, 1989, abandoned. This application Oct. 21, 1994, Ser. No. 327,344
Int. Cl.[6] G06F *15/00;12/00*
U.S. Cl. 395—167 **5 Claims**

1. An iterative method of encoding and line breaking text comprising a string of atoms being received by a memory, each atom comprising one or more character codes, said string of atoms at any one point in time comprising a plurality of previous atoms, a current atom and a next atom, said string of atoms comprising

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words which comprise strings of characters, numerals, punctuation marks and spaces, into a list of tokens and a corresponding array of data blocks stored in said memory, said method comprising the steps of

initializing the memory by starting with a list of zero tokens and zero data blocks and proceeding to create the entire list and array solely with iterations of the method, each iteration comprising the steps of:

determining whether the current atom in said string of atoms is identical to a previous atom in said string,

if so, adding an additional token equal to the token of said previous identical atom to the end of said list of tokens in said memory, and proceeding to the determining step for the next atom,

if not, adding a new and unique token to the end of said list of tokens in said memory, creating an additional data block in said memory corresponding to said new token comprising the string of characters in said current atom and the width of said current atom, and proceeding to the determining step for the next atom, and

further comprising breaking said string of atoms into a sequence of lines of a predetermined length suitable for printing on a printer comprising a current line which is being broken, a next line and previous lines, said method further comprising the steps of:

using the token of the current atom to access the corresponding data block,

adding the width in the data block of the current atom to a running sum of atom widths on the current line to determine a total width of all atoms of the current line,

if the sum of atom widths is not greater than a predetermined value, proceeding to the token of the next atom, and

if the sum of widths is greater than said predetermined value, breaking the line at the end of the current atom and proceeding to the next line.

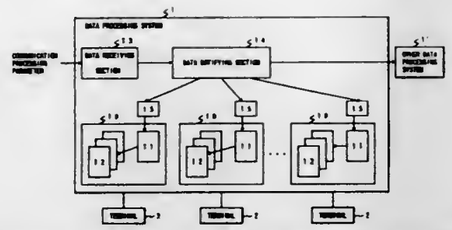
5,625,774

DATA PROCESSING SYSTEM CAPABLE OF DYNAMICALLY CHANGING THE DEFINITION PARAMETERS OF SOFTWARE IN RESPONSE TO CHANGES IN THE NUMBER OF CONNECTED TERMINALS

Haruo Makimoto, Kobe, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 1, 1994, Ser. No. 252,324
Claims priority, application Japan, Sep. 6, 1993, 5-220790
Int. Cl.[6] G06F *15/16;15/163*
U.S. Cl. 395—200.1 **16 Claims**

1. A data processing system for implementing service processing while executing communication processing for communication with a terminal connected to the data processing system, said system comprising:



means for expanding a service processing parameter needed by software for executing the service processing while relating the service processing parameter to the software;

means for receiving, when an additional terminal is connected to said system, a communication processing parameter required for communication processing with the additional terminal, and data for specifying the service processing to be executed with respect to the additional terminal; and

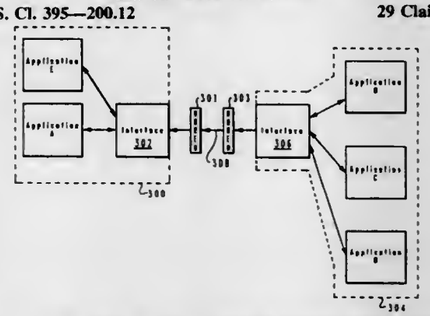
means for registering the communication processing parameter received by said receiving means and linking the communication processing parameter to the service processing parameter corresponding to the service processing specified by the service specification data received by said receiving means, said service processing parameter being expanded by said expanding means.

5,625,775

MODEM COMMUNICATION INTERFACE IN A DATA PROCESSING SYSTEM

Robert A. Davis, Boca Raton, and Steven A. Keller, Coral Springs, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1994, Ser. No. 259,208
Int. Cl.[6] G06F *13/14;13/38*
U.S. Cl. 395—200.12 **29 Claims**



1. A method for providing communications between applications, wherein a calling application is located on a first data processing system and a plurality of applications are located on a second data processing system, the method comprising:

receiving a request from the calling application to communicate with each of the plurality of applications, which are executing concurrently on the second data processing system;

establishing a connection over a communications line between the first and second data processing systems;

establishing a session between the calling application and each application within the plurality of applications, wherein multiple sessions are concurrently established;

providing communication between the calling application and each of the plurality of applications utilizing the communications line without requiring termination of a session;

terminating said connection between said first and said second data processing systems: and

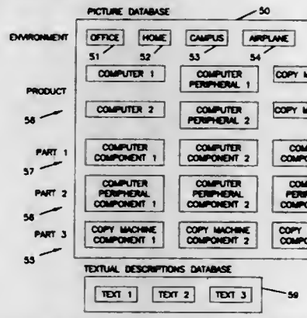
maintaining each of said established sessions, wherein said termination of said connection does not terminate any of said established sessions.

5,625,776

ELECTRONIC PROPOSAL PREPARATION SYSTEM FOR SELLING COMPUTER EQUIPMENT AND COPY MACHINES

Jerome D. Johnson, North Mankato, Minn., assignor to Clear With Computers, Inc., Mankato, Minn.

Continuation-in-part of Ser. No. 878,602, May 5, 1992, Pat. No. 5,493,490. This application Jun. 29, 1994, Ser. No. 268,166
Int. Cl.[6] G06F *17/30;17/60*
U.S. Cl. 395—227 **63 Claims**



1. A computer-based system for generating a customized proposal for selling computer equipment to particular customers, the system comprising:

a) input means for receiving information identifying a customer's desired features and uses of the computer equipment, the input means including

i) means for presenting the customer with a plurality of questions relating to features and uses of the computer equipment, and

ii) means for receiving a plurality of answers to the questions, the answers specifying the customer's desired computer equipment features and uses;

b) receive means for electronically receiving computer equipment pictures, computer equipment environment pictures, and text segments;

c) processing means for gathering computer equipment information for use in generating the customized proposal, the processing means including

i) means for electronically selecting a particular computer equipment picture in response to at least one of the answers,

ii) means for electronically selecting a particular computer equipment environment picture in response to at least one of the answers, and

iii) means for electronically selecting a particular text segment in response to at least one of the answers; and

d) output means, coupled to the receive means and the processing means, for receiving the gathered computer equipment information and for compiling the gathered computer equipment information into the customized proposal.

5,625,777

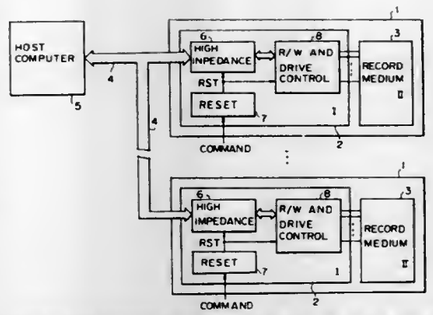
DATA STORAGE SYSTEM HAVING PLURAL EXTERNAL STORAGE UNITS CAPABLE OF DISCONNECTION WHILE KEEPING SYSTEM POWER ENERGIZED

Tsuyoshi Takahashi, Higashine, and Isamu Tomita, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 798,969, Nov. 27, 1991, abandoned. This application Feb. 17, 1995, Ser. No. 388,620
Claims priority, application Japan, Nov. 29, 1990, 2-332920
Int. Cl.[6] G06F *13/00;* **H05K** *7/00;* **H01R** *13/642;9/09*
U.S. Cl. 395—283 **26 Claims**

1. A data storage system, coupled to receive an external command, comprising:

an interface bus;



a plurality of external storage units each having a first sub-unit and a second sub-unit formed integrally as one body,

wherein:

the second sub-unit includes a record medium and a motor driving the record medium,

the first sub-unit includes control circuitry controlling the second sub-unit,

each of said first sub-units includes first means and second means, said second means for producing a reset signal according to the external command which the external storage unit is to be disconnected from said interface bus and for transmitting the reset signal to the first means, and said first means for selectivity creating a high-impedance state with respect to said interface bus and a reset which the motor in said second sub-unit stops, in accordance with the reset signal,

said each of said first sub-units further includes a read/write and drive controller connected to said first means and said second sub-unit, the read/write and drive controller being initialized by receiving said reset signal from said second means, and

said plurality of external storage units are commonly connected to said interface bus at respective first sub-units;

a plurality of connectors for connecting and disconnecting said interface bus with respective external storage unit, any sub-unit placed in the high-impedance state with respect to said interface bus capable of being removed by disconnecting the respective connector from said interface bus without disconnecting power to the data storage system; and

a host computer connected to said interface bus performing read/write operations with each of said plurality of external storage units.

5,625,778

METHOD AND APPARATUS FOR PRESENTING AN ACCESS REQUEST FROM A COMPUTER SYSTEM BUS TO A SYSTEM RESOURCE WITH REDUCED LATENCY

Brian A. Childers, Santa Clara, and Eric A. Baden, Saratoga, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 3, 1995, Ser. No. 434,193
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—287 **8 Claims**

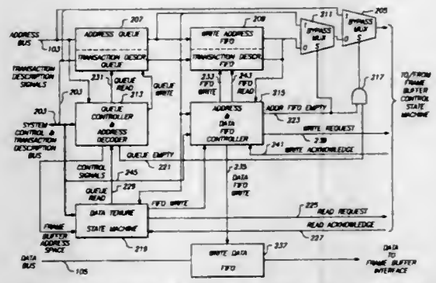
3. In a system comprising a memory resource coupled to a system bus, the system bus conveying a request for access to the system memory resource from another system element connected to the system bus, an apparatus for presenting the access request to the system memory resource from the system bus, the apparatus comprising:

first queuing means comprising:

an input for receiving access request information from the system bus;

one or more storage means, each for storing access request information, wherein the one or more storage means are connected to form a first queue having a head and a tail; and

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a first queue output for supplying data stored in the head of the first queue;

first multiplexing means having a first input for receiving the access request information from the system bus, a second input coupled to a second multiplexing means output, and a first multiplexing means output for supplying the access request information to the system resource;

a second queuing means comprising:

an input for receiving access request information from the first queue output;

one or more storage means, each for storing access request information, wherein the one or more storage means are connected to form a second queue having a head and a tail; and

a second queue output for supplying data stored in the head of the second queue;

the second multiplexing means having a first input for receiving the access request information from the first queue output, a second input coupled to the second queue output, and a second multiplexing means output for supplying the access request information to the second input of the first multiplexing means;

first control means, coupled to the first queuing means and to the first multiplexing means, for initiating the loading of the access request information into the first queuing means, and for initially causing the first multiplexing means to supply, at the first multiplexing means output, the access request information from the first input of the first multiplexing means, and for subsequently causing, after the access request information becomes available at the first queue output, the first multiplexing means to supply, at the first multiplexing means output, the access request information from the second input of the first multiplexing means; and

second control means, coupled to the second queuing means and to the second multiplexing means, for initiating the loading of the access request information into the second queuing means, and for initially causing the second multiplexing means to supply, at the second multiplexing means output, the access request information from the first input of the second multiplexing means, and for subsequently causing, after the access request information becomes available at the second queue output, the second multiplexing means to supply, at the second multiplexing means output, the access request information from the second input of the second multiplexing means.

5,625,779

ARBITRATION SIGNALING MECHANISM TO PREVENT DEADLOCK GUARANTEE ACCESS LATENCY, AND GUARANTEE ACQUISITION LATENCY FOR AN EXPANSION BRIDGE

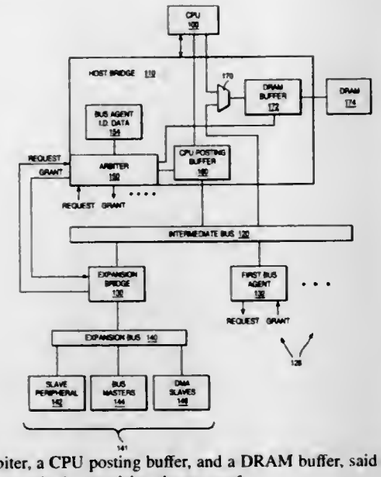
Gary A. Solomon, Hillsboro; Peter D. MacWilliams, Aloha, both of Oreg.; George R. Hayek; Nicholas D. Wade, both of Cameron Park, Calif., and Abid Asghar, Sacramento, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1994, Ser. No. 366,964

Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—293 **8 Claims**

1. A passive release method for an expansion bridge and a host bridge coupled to an intermediate bus, said host bridge including



an arbiter, a CPU posting buffer, and a DRAM buffer, said passive release method comprising the steps of:

said expansion bridge asserting an intermediate bus request to said arbiter;

said arbiter arbitrating said intermediate bus request;

said expansion bridge winning said arbitration; emptying said CPU posting buffer after said expansion bridge has won arbitration;

after emptying said CPU posting buffer, asserting a grant signal to said expansion bridge to allow said expansion bridge use of said intermediate bus for a transaction;

said expansion bridge determining whether it can relinquish control of said intermediate bus before said transaction is complete;

said expansion bridge signaling a release signal to relinquish control of said intermediate bus before said transaction is complete;

said expansion bridge then immediately re-asserting said intermediate bus request to said arbiter; and

said arbiter granting control of said expansion bridge to an agent coupled to said intermediate bus if said agent has higher priority than said expansion bridge, otherwise said arbiter returning control of said intermediate bridge to said expansion bridge, allowing said expansion bridge to continue with said transaction.

5,625,780

PROGRAMMABLE BACKPLANE FOR BUFFERING AND ROUTING BI-DIRECTIONAL SIGNALS BETWEEN TERMINALS OF PRINTED CIRCUIT BOARDS

Wen-Jai Hsieh; Chi-Song Horng, and Chun C. D. Wong, all of Palo Alto, Calif., assignors to I-Cube, Inc., Campbell, Calif.

Continuation-in-part of Ser. No. 171,752, Dec. 21, 1993, Pat. No. 5,426,738, which is a continuation of Ser. No. 785,082, Oct. 30, 1991, abandoned. This application Nov. 2, 1994, Ser. No. 333,484

Int. Cl.[6] G06F *13/00;13/36*

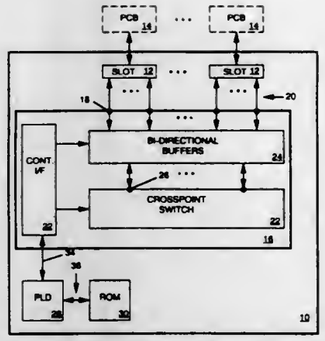
U.S. Cl. 395—311 **32 Claims**

1. A programmable backplane for buffering and routing bi-directional signals between terminals of printed circuit boards (PCBs) in accordance with a signal routing pattern indicated by a set of input data bits, the backplane comprising:

a motherboard having means for mounting said PCBs;

a plurality of ports mounted on said motherboard, each of said ports corresponding to a separate one of the PCB terminals;

buffer means mounted on said motherboard for providing a separate bi-directional signal path between each of said ports and its corresponding PCB terminal, wherein said buffer



means senses directions of signals flowing through said signal path and amplifies said signals in the sensed directions; and

routing means mounted on said motherboard for receiving and storing said data bits and for routing said bi-directional signals between selected pairs of said ports in accordance with said routing pattern indicated by the stored data bits.

5,625,781

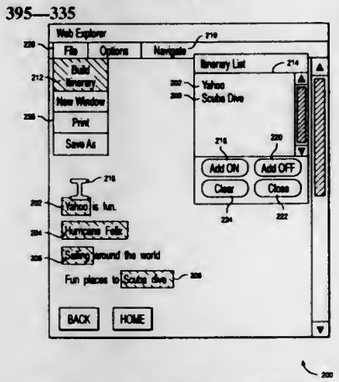
ITINERARY LIST FOR INTERFACES

Troy L. Cline, Cedar Park; Ricky L. Poston, Austin, both of Tex., and Jon H. Werner, Oceanside, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1995, Ser. No. 551,016

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—335 **11 Claims**



11. A computer system for creating an itinerary list, the computer system having at least a display for displaying links thereon, each link of a particular site having an original function of opening and displaying a corresponding new site when selected, comprising the steps of:

(a) means for placing the computer system in an itinerary mode, wherein the links displayed on the display do not have the original function of opening the new corresponding site when selected;

(b) in response to placing the computer system in the itinerary mode, means for displaying an itinerary list on a first portion of the display; and

(c) in response to a selection from a second portion of the display of at least one link, means for copying the selected link in the itinerary list, whereby the link copied in the itinerary list regains the original function, while the links in the second portion do not have the original function as long as the computer system is in the itinerary mode.

5,625,782

DIFFERENTLY MAGNIFIED INTERLOCKED WINDOWS WITH AUTOMATIC SCROLLING

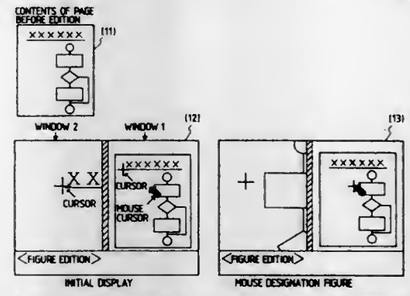
Hiroshi Soutome; Youichi Kawakami, and Hiroshi Kato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Taga Engineering Ltd., Ibaraki, both of Japan

Filed Nov. 23, 1994, Ser. No. 347,094

Claims priority, application Japan, Nov. 25, 1993, 5-294923

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—341 **12 Claims**



1. A method for displaying information in which same display data are displayed on at least two windows having different display magnification rates on display pictures, and said display pictures of said at least two windows are interlockingly displayed, the method comprising the steps of:

when a predetermined pointing device operated cursor position of a first window having a smaller display magnification rate is indicated by a pointing device, displaying a first pointing device operated cursor of said first window having said smaller display magnification rate at said predetermined pointing device operated cursor position from a first original pointing device cursor position in said first window;

in order for said predetermined pointing device operated cursor position indicated by said first pointing device operated cursor to appear in a second window having a larger display magnification rate, automatically scrolling said display picture of said second window having said larger display magnification rate;

said first pointing device operated cursor of said first window and a second pointing device operated cursor of said second window are worked together by said pointing device; and

on said second window having said larger display magnification rate, displaying said second pointing device operated cursor at a position which coincides to said first pointing device operated cursor displayed on said first window having said smaller display magnification rate from a second original pointing device cursor position in said second window.

5,625,783

AUTOMATED SYSTEM AND METHOD FOR DYNAMIC MENU CONSTRUCTION IN A GRAPHICAL USER INTERFACE

Alan W. Ezekiel, Bellevue, and Bradford A. Christian, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1994, Ser. No. 354,923

Int. Cl.[6] G06F *15/00*

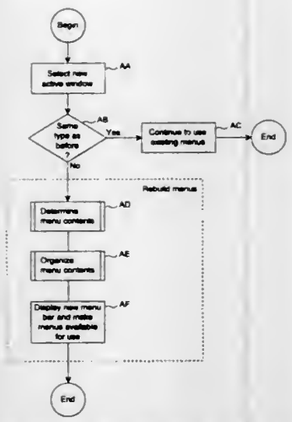
U.S. Cl. 395—352 **25 Claims**

1. In a computer system comprising a processor, a method comprising the steps of:

executing an application program with the processor, the application program comprising a plurality of components, each component being associated with a set of commands;

while executing the application program, selecting a current operating mode from among a plurality of possible operating modes of the application program; and

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constructing automatically with the processor a menu for the selected current operating mode, the menu comprising an organized structure of commands pertinent to the current operating mode, by

determining from among the plurality of components of the application program a collection of active components for the current operating mode,

merging the command sets of the active components to determine an active set of commands for the current operating mode, and

organizing the commands of the active set into a menu structure,

wherein the computer system further comprises a graphical user interface (GUI) providing a windowing capability for the application program that enables the application program to display an application window and two or more subwindows, and wherein each subwindow displayed by the application program corresponds to one of the possible operating modes, and wherein:

the step of selecting a current operating mode selects the operating mode to which a subwindow displayed by the application program designating as active in the graphical user interface corresponds.

5,625,784

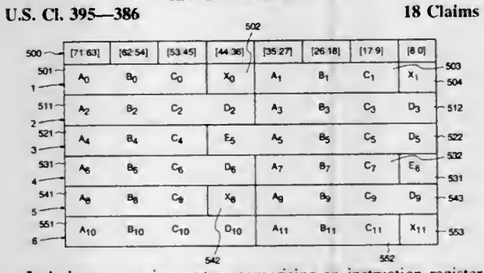
VARIABLE LENGTH INSTRUCTIONS PACKED IN A FIXED LENGTH DOUBLE INSTRUCTION

Stephen C. Purcell, Mountain View, Calif., assignor to Chromatic Research, Inc., Mountain View, Calif.

Filed Jul. 27, 1994, Ser. No. 281,334

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—386 **18 Claims**



1. A data processing system comprising an instruction register having a fixed word boundary which accommodates a first word and a second word, wherein said first word comprises

a first fixed length base instruction aligned with a first predetermined position in said instruction register, and

a first fixed length flexible instruction aligned with a second predetermined position in said instruction register,

and said second word comprises

a second fixed length base instruction aligned with a third predetermined position in said instruction register, and

a second fixed length flexible instruction aligned with a fourth predetermined position in said instruction register,

wherein said first base instruction contains information which indicates whether said first base instruction stands alone as an independent instruction, said first base instruction is combined with said first flexible instruction to form a once-extended instruction, or said first base instruction is combined with said first and second flexible instructions to form a twice-extended instruction.

5,625,785

INFORMATION PROCESSING APPARATUS HAVING DUAL BUFFERS FOR TRANSMITTING DEBUG DATA TO AN EXTERNAL DEBUG UNIT

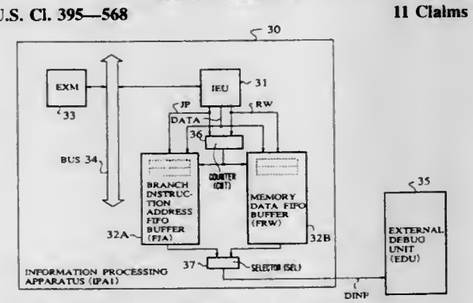
Takashi Miura, Yokohama, and Katsuhito Fukuoka, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 12, 1995, Ser. No. 371,692

Claims priority, application Japan, Jan. 13, 1994, 6-1953

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—568 **11 Claims**



1. An information processing apparatus comprising:

memory means including an application program section for storing an application program, a stack section for storing a stack push instruction, and a data section for storing a plurality of data items used for a memory access instruction;

instruction execution means for executing instructions in the application program,

the instruction execution means transmitting an activated branch instruction execution signal and a branch source address data related to an execution of a branch instruction when the instruction execution means executes the branch instruction, and

the instruction execution means transmitting an activated memory access signal and a content of a memory accessed by the memory access instruction when the instruction execution means executes the memory access instruction;

counter means for tracing an order of instructions executed by said instruction execution means and for transmitting a content of the counter means as an order data when the counter means receives the activated branch instruction execution signal and the activated memory access signal transmitted from the instruction execution means;

a plurality of First In First Out (FIFO) buffer means including a branch instruction address FIFO buffer and a memory data FIFO buffer,

the branch instruction address FIFO buffer storing the branch source address data transmitted from the instruction execution means together with the order data from the counter means when the branch instruction address FIFO buffer receives the activated branch instruction execution signal, and

the memory data FIFO buffer storing the content of the memory accessed by the memory access instruction transmitted from the instruction execution means together with the order data from the counter means when the memory data FIFO buffer receives the activated memory access execution signal; and

selection means connected to the plurality of FIFO buffer means for selecting one of the plurality of FIFO buffer means and transmitting a content of the selected one of the plurality of FIFO buffer means,

wherein the selection means selects the branch instruction address FIFO buffer prior to the memory data FIFO buffer as long as the branch instruction address FIFO buffer has the branch source address data stored therein.

5,625,786

MICROPROGRAM MEMORY OUTPUT CIRCUIT FOR SELECTIVELY OUTPUTTING FIELDS OF MICROINSTRUCTION WORD TO A PLURALITY OF DATA TERMINALS

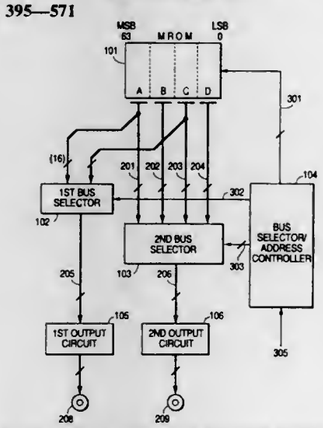
Junichi Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 19,275, Feb. 18, 1993, abandoned. This application Feb. 5, 1996, Ser. No. 596,700

Claims priority, application Japan, Feb. 18, 1992, 4-029821

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—571 **16 Claims**



10. A microprogram memory output circuit, comprising:

a microprogram memory which divides an n-bit microinstruction word into four separate m-bit fields, with bit positions 0 through m−1 of said microinstruction word being a first microinstruction field, bit positions m through 2m−1 of said microinstruction word being a second microinstruction field, bit positions 2m through 3m−1 of said microinstruction word being a third microinstruction field, and bit positions 3m through 4m−1 of said microinstruction word being a fourth microinstruction field, n and m being integers, said microinstruction word being designated by a respective microaddress;

a first bus selector for selecting one of said fourth microinstruction field and said second microinstruction field in accordance with a first control signal;

a first output buffer for latching and transferring an output of said first bus selector to a first external data bus, said first external data bus being m bits in width;

a second bus selector for selecting one of said first microinstruction field, said second microinstruction field, said third microinstruction field and said fourth microinstruction field in accordance with a second control signal;

a second output buffer for latching and transferring an output of said second bus selector to a second external data bus, said second external data bus being m bits in width;

a microaddress generator for generating a microaddress, said microaddress generator being responsive to a reset signal and configured to produce a carry signal from said microaddress and a most significant bit of said microaddress; and

a control signal generating unit for generating said first and second control signals, said control signal generating unit being responsive to said reset signal and said carry signal.

5,625,787

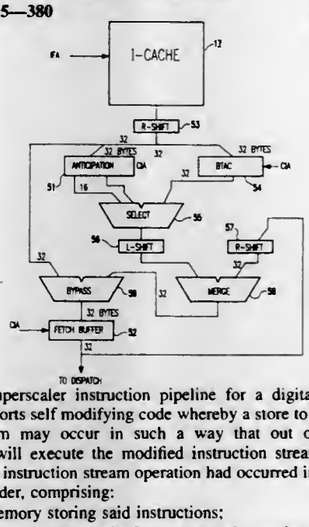
SUPERSCALAR INSTRUCTION PIPELINE USING ALIGNMENT LOGIC RESPONSIVE TO BOUNDARY IDENTIFICATION LOGIC FOR ALIGNING AND APPENDING VARIABLE LENGTH INSTRUCTIONS TO INSTRUCTIONS STORED IN CACHE

Stephen W. Mahin, Underhill; Stephen M. Conor, Essex Junction; Stephen J. Ciavaglia, Williston, all of Vt.; Lyman H. Moulton, III, Phoenix, Ariz.; Stephen E. Rich, Essex Junction, and Paul D. Kartschoke, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 360,520, Dec. 21, 1994. This application May 12, 1995, Ser. No. 440,034

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—380 **20 Claims**



10. A superscaler instruction pipeline for a digital computer which supports self modifying code whereby a store to the instructions stream may occur in such a way that out of sequence execution will execute the modified instruction stream as if the store to the instruction stream operation had occurred in sequential program order, comprising:

a first memory storing said instructions;

a cache connected to said first memory for storing a subset of said instructions;

an instruction fecth unit connected to said cache for fetching instructions to be executed, said instruction fetch unit including an anticipation buffer loaded with sequentially anticipated prefetched instructions from said cache and a branch target instruction;

a second memory for storing a plurality of instruction addresses, each corresponding to one of said instructions to be executed;

boundary identification logic operatively connected to said cache for identifying instruction boundries for each of said instructions held in said cache, a next instruction in said anticipation buffer located and identified by said boundary identification logic using said second memory, said instruction fetch unit further including alignment logic connected to said anticipation buffer and responsive to said boundaries of instructions read from said cache for aligning and appending said anticipated prefetched instructions to said instructions held in said cache without first sequentially decoding said instructions;

means, operatively connected to said instruction fetch unit, for simultaneously executing at least two of said instructions to be executed;

a writeback unit, connected to said means for simultaneously executing, for writing back results of said executing means to said cache in said sequential program order;

means, operatively connected to said second memory, for detecting an occurrence of a store to memory request to a first memory location associated with said instruction addresses and for controlling said writeback unit to delay the store to memory request until previous instructions are executed, said detecting means then refetching instructions that follow the store to memory request in sequential program order.

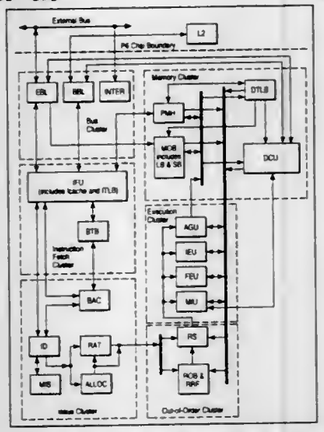
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5,625,788

MICROPROCESSOR WITH NOVEL INSTRUCTION FOR SIGNALING EVENT OCCURRENCE AND FOR PROVIDING EVENT HANDLING INFORMATION IN RESPONSE THERETO

Darrell D. Boggs, Aloha, and Scott D. Rodgers, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 203,790
Int. Cl.[6] G06F *9/38;9/00*
U.S. Cl. 395—390 **16 Claims**



1. In a processor which executes a flow of instructions, the processor including an execution unit, a buffer which holds results produced by the execution unit, and logic for handling events that occur in the processor, wherein events comprise conditions that cause either a change in the flow of instructions or an update of an architectural state of the processor, a method for signaling an event comprising the steps of:

(a) detecting a condition that gives rise to a particular event;

(b) writing information associated to the particular event to one or more registers;

(c) issuing a special instruction into the flow of instructions, the special instruction having as source inputs the information in the one or more registers;

(d) executing the special instruction in the execution unit by writing the information specified by the source inputs into the buffer; and

(e) posting the information associated with the particular event to at least one register.

5,625,789

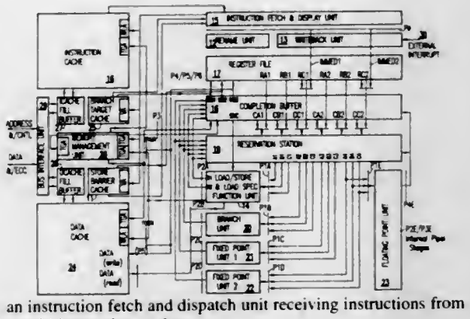
APPARATUS FOR SOURCE OPERAND DEPENDENDENCY ANALYSES REGISTER RENAMING AND RAPID PIPELINE RECOVERY IN A MICROPROCESSOR THAT ISSUES AND EXECUTES MULTIPLE INSTRUCTIONS OUT-OF-ORDER IN A SINGLE CYCLE

James H. Hesson; Jay LeBlanc; Stephen J. Ciavaglia; Walter T. Esling, and Pamela A. Wilcox, all of Chittenden County, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 328,184, Oct. 24, 1994, Pat. No. 5,625,789. This application Oct. 24, 1994, Ser. No. 328,184
Int. Cl.[6] G06F *9/34*
U.S. Cl. 395—393 **5 Claims**

1. A pipelined microprocessor capable of issuing and executing instructions out-of-order in a single processor cycle comprising:

an instruction cache for temporarily storing instructions to be executed and a data cache for temporarily storing program data;



an instruction fetch and dispatch unit receiving instructions from said instruction cache;

a plurality of execution units receiving operands from said data cache and operating on said operands according to instructions issued to the execution units,

a register file, a completion buffer and a writeback unit, the completion buffer receiving operand results from the execution units and supplying the register file with operand results during a last stage of a pipeline stage, and the writeback unit receiving operand results from the completion buffer for writing data to memory; and

a rename unit controlling dispatch of instructions from the instruction fetch and dispatch unit, issuing instructions to the execution units, and writeback of instructions from the completion buffer, said rename unit performing source operand and dependency analysis, providing instruction scheduling wherein oldest instructions are executed first, enabling any execution or memory access instruction to execute out-of-order, and rapid pipeline recovery due to a mispredicted branch or a store load conflict, said rename unit comprising

a rotating stack which maintains a record of program order;

means for allocating rename tags from a list of rename tags in circular order and storing the rename tags in the rotating stack;

source dependency logic for performing source operand dependency analysis and assigning rename tags from said rotating stack to source operands which are yet to be calculated by prior instructions; and

priority encode and state transition logic for accepting retiring tagged data in place of matching tags and recalculating executability status of instructions, dispatching executable instructions, and performing instruction writeback operations and rapid pipeline recovery, pipeline recovery being performed by a partial flush of contents of the rename unit.

5,625,790

METHOD AND APPARATUS FOR REDUCING THE ACCESS TIME OF A MEMORY DEVICE BY DECODING A ROW ADDRESS DURING A PRECHARGE PERIOD OF THE MEMORY DEVICE

Douglas J. Cutter, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 14, 1995, Ser. No. 528,021
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—431 **9 Claims**

7. A computer system, comprising:

an input device;

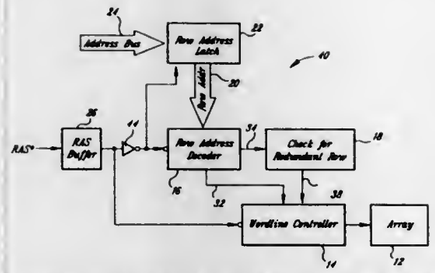
an output device;

an address bus:

a data bus;

a memory controller having an address bus, a data bus, and a set of control lines, including a row-address strobe line;

a processor coupled to said input device and said output devices, said processor being coupled to said memory controller through at least one of a data bus, on address bus, and control lines;



a memory device coupled to said memory controller through at least one of said data bus, said address bus, and said control lines of said memory controller, said memory device comprising:

an array of memory cells arranged in rows and columns, said array having a data output coupled to said data bus;

a row decoder coupled to said address bus of said memory controller operable to receive a row address from said memory controller, said row decoder being coupled to said row address strobe line to receive a row address strobe from said memory controller, said row decoder decoding a row address on said address bus of said memory controller responsive to a transition of said row address strobe from an active state to an inactive state; and

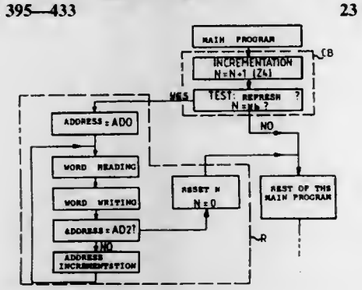
a wordline control circuit coupled to said row decoder, said array of memory cells, and said row address strobe line, said wordline control firing a row of said memory cells identified by said decoded row address responsive to a transition of said row address strobe from said inactive to said active state whereby said wordline control can fire said row of said memory cells relatively soon after the transition of said row address strobe to said active state without waiting to decode said row address.

5,625,791

CHIP CARD WITH DATA AND PROGRAMS PROTECTED AGAINST AGEING

Augustin Farrugia, La Ciotat, and François Geronimi, Aix en Provence, both of France, assignors to Gemplus Card International, Gemenos, France

Filed Dec. 20, 1993, Ser. No. 170,516
Claims priority, application France, Dec. 31, 1992, 92 15992
Int. Cl.[6] G06F *12/16*
U.S. Cl. 395—433 **23 Claims**



1. A chip card comprising:

a segregated EEPROM, wherein data elements stored in the segregated EEPROM are segregated according to the frequency with which the data elements are modified, the segregated EEPROM including

a permanent memory zone, the permanent memory zone comprising a first continuous sequence of addresses, the first continuous sequence of addresses comprising a substantial number of a total number of EEPROM addresses, each address of the first continuous sequence of addresses storing a data element that generally remains unmodified after each use of the chip card, and

a variable memory zone, the variable memory zone comprising a second continuous sequence of addresses, each address of the second continuous sequence of addresses storing a data element that is generally modified with each use of the chip card; and

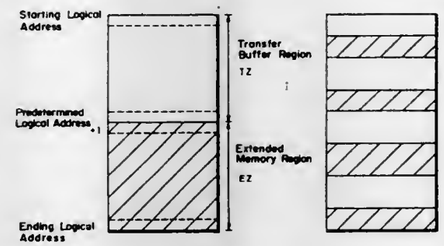
means for automatically refreshing the contents of the permanent memory zone, including means for storing information which indicates the location in the segregated EEPROM of the permanent memory zone so that the automatic refresh means can refresh the permanent memory zone without having to refresh the variable memory zone.

5,625,792

REPRODUCING APPARATUS WITH TRANSFER BUFFER AND SHARED EXTENDED MEMORY

Satoshi Kitani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 548,273
Claims priority, application Japan, Oct. 27, 1994, 6-264202
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—440 **7 Claims**



1. A reproducing apparatus comprising:

rotating means operative to set a disk-like recording medium thereon and rotating said disk-like recording medium;

reproducing means for reproducing information data from said disk-like recording medium;

control means for controlling at least said rotating means and said reproducing means;

memory means for temporarily storing information data reproduced by said reproducing means; and

interface means for transferring information data stored in said memory means to an external device in accordance with a read request supplied thereto from said control means, wherein a memory region of said memory means is assigned to a transfer buffer region whose data transfer destination is said disk-like recording medium and an extended memory region from which data is transferred to an arbitrary destination and in which data is inhibited from being replaced to a region in which data is recorded.

5,625,793

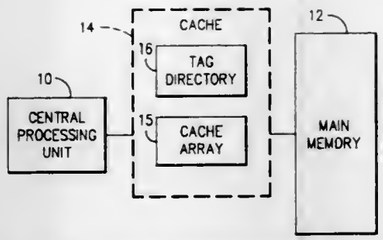
AUTOMATIC CACHE BYPASS FOR INSTRUCTIONS EXHIBITING POOR CACHE HIT RATIO

Jamshed H. Mirza, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1991, Ser. No. 685,583
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—465 **11 Claims**

1. In a computer system including a main memory, a processor requesting data from said main memory, and a cache interposed between said processor and said main memory and storing a subset of data in said main memory, an automatic cache bypass mechanism for instructions exhibiting poor cache hit ratio comprising:

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cache control means for determining if requested data is in the cache thereby signifying a cache hit, and if so, retrieving the requested data from the cache, but otherwise, retrieving the requested data from said main memory;

table means addressed by an instruction address from said processor for keeping a record of last referenced line addresses and a status of cacheable or noncacheable based on a history of cache hits or misses and for storing a bonus value for cache hits, said bonus value being related to a number of cache hits of said last referenced line addresses and providing a threshold for determining when to switch said last referenced line addresses from a status of cacheable to noncacheable;

means responsive to said cache control means and said table means for storing data retrieved from said main memory into said cache when a current status for the data as recorded in said table means is cacheable and for bypassing said cache when said current status is noncacheable, said cache being bypassed when a number of cache misses for the requested data exceeds the bonus value; and

means for changing the status of data as recorded in said table means as a function of cache hits and said bonus value.

5,625,794

CACHE MODE SELECTION METHOD FOR DYNAMICALLY SELECTING A CACHE MODE

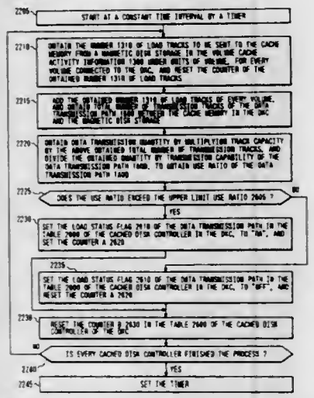
Taro Inoue, Sagamihara; Hidenori Umeno, Tsukui-gun; Sadasaburo Kanai, Kawasaki; Kazuo Imai, Higashikurume, and Yoshiaki Shinmura, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,664

Claims priority, application Japan, Feb. 24, 1992, 4-035987

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—465 **1 Claim**



1. A cache mode selection method in a computer system having a storage device, a cache memory, a storage device controller and a data transmission path between said storage device and said controller, comprising:

a use rate monitoring step of obtaining a rate of use of said data transmission path for an access to a dataset stored in said storage device;

a hit ratio monitoring step for obtaining a cache access hit ratio of a dataset, when an access is made, for each access to said dataset which is stored in said storage device;

a cache load inhibit step of setting a cache load inhibit mode for said dataset, when said rate of use obtained through said use rate monitoring step is higher than a second limit, and said cache access hit ratio obtained through said hit ratio monitoring step is lower than a first limit;

a continuous time length monitoring step of obtaining a continuous time length in which said use rate is continuously higher than said second limit; and

a lower hit ratio setting step of making said first limit high in proportion to said continuous time length obtained through said continuous time length monitoring step.

5,625,795

EXCLUSIVE CONTROL UNIT FOR A RESOURCE SHARED AMONG COMPUTERS

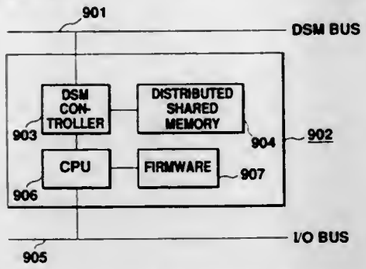
Takashi Sakakura, and Jose Uemura, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1995, Ser. No. 433,145

Claims priority, application Japan, May 13, 1994, 6-099746

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—475 **12 Claims**



1. An exclusive control unit for performing an exclusive control for a shared resource shared among a plurality of computers, the plurality of computers being connected with one another through a network bus, comprising:

a plurality of distributed shared memories corresponding to the plurality of computers which share the shared resource with one another, each of the distributed shared memories being mounted on one of the computers,

a distributed shared memory bus, separate from the network bus, connecting the distributed shared memories with one another so that they may exchange data among them, and

a plurality of controllers, each controller being connected to one of the distributed shared memories and to the distributed shared memory bus, for controlling the distributed shared memories and the distributed shared memory bus so that data changes in any one of the distributed shared memories are reflected in each of the distributed shared memories.

5,625,796

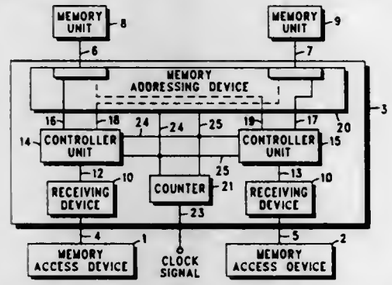
METHOD AND APPARATUS FOR CONCURRENTLY ACCESSING MULTIPLE MEMORIES WITH DIFFERENT TIMING REQUIREMENTS

John M. Kaczmarczyk, Niles; Dale R. Buchholz, Palatine, and Jeffrey A. Slawecki, Oak Lawn, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 242,684, May 12, 1994, abandoned, which is a continuation of Ser. No. 1,424, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 415,828, Oct. 2, 1989, abandoned. This application Jan. 11, 1996, Ser. No. 584,725

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—495 **18 Claims**



1. A data processing system for concurrently accessing a plurality of memory units, wherein an address location in more than one of said plurality of memory units is addressable at the same time, said system comprising:

first and second memory units having different access times;

a memory interface device connected to said first and second memory units via first and second information buses respectively, for concurrently addressing said plurality of memories; and

first and second memory access devices connected to said memory interface device via third and fourth information buses, respectively, said plurality of memory access devices exhibiting memory access characteristics such as:

operating time cycles, and

synchronous or asynchronous operation with the memory interface device,

wherein said memory interface device being connected to said first and second memory access devices and said first and second memory units via respective information buses, provides alternatively (a) concurrent data transfer to and from said first and second memory units and said first and second memory access devices, respectively, and (b) concurrent data transfer to and from said first and second memory units and said second and first memo access devices, respectively.

5,625,797

AUTOMATIC OPTIMIZATION OF A COMPILED MEMORY STRUCTURE BASED ON USER SELECTED CRITERIA

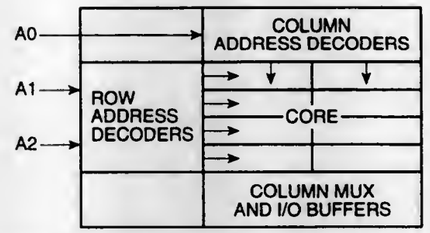
Thomas V. Ferry, San Jose; Russell L. Steinweg, Santa Clara; Michael A. Zampaglione, and Pei H. Lin, both of San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 626,078, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 566,684, Aug. 10, 1990, abandoned. This application Nov. 3, 1993, Ser. No. 148,420

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—497.04 **7 Claims**

1. A compiler system for allowing a user to specify the total number of words and bits per word in a memory structure and to choose among alternative structures for the specified memory structure according to a selected criterion, comprising:



means for selectively varying the partitioning of memory address lines in a memory structure among column address lines and row address lines;

means for selectively varying a memory structure in terms of the number of rows and columns according to the selected partitioning of memory address lines among column address lines and row address lines; and

means for optimizing the memory structure during compilation thereof by automatically selecting an optimal structure based upon at least one higher-level user-selectable criterion which defines a user-specified constraint of the compiled memory structure, wherein the at least one higher-level user-selectable criterion includes at least one of a selected area, a total number of gate sites occupied by the memory structure, an aspect ratio, and a minimum access time of the overall compiled memory.

5,625,798

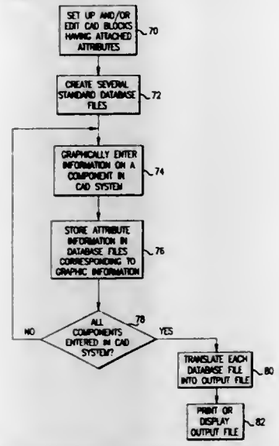
METHOD AND SYSTEM EXTRACTING ATTRIBUTE INFORMATION CORRESPONDING TO COMPONENTS INCLUDED IN A COMPUTER AIDED DESIGN SYSTEM DRAWING SUCH AS A PROCESS AND INSTRUMENTATION DIAGRAM

Richard A. Badders, Washington, and O. Michael Maide, Pittsburgh, both of Pa., assignors to KNC, Inc., Pittsburgh, Pa.

Filed Feb. 24, 1994, Ser. No. 201,510

Int. Cl.[6] G06F *9/455;17/50*

U.S. Cl. 395—500 **18 Claims**



1. A computer implemented method of providing process database attribute information corresponding to components included in a computer aided design system drawing in a Process & Instrumentation Diagram format, comprising steps of:

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storing data in a storage device corresponding to attributes of components which may be used in said computer aided design system drawing in said Process & Instrumentation Diagram format;

receiving graphically entered information relating to one or more components added to the computer aided design system drawing in said Process & Instrumentation Diagram format;

storing in a database file attribute information corresponding to the received graphically entered information in response to the stored data in the storage device; and

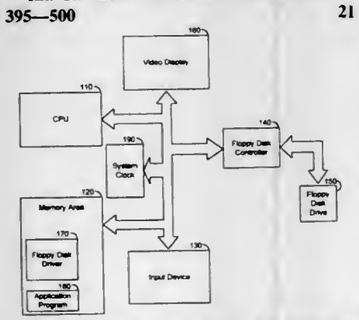
outputting in a user readable format information corresponding to said attribute information stored in the database file.

5,625,799

METHOD AND APPARATUS FOR DETERMINING THE LOGIC AND FUNCTIONALITY OF A CHANGELINE

Ron Radko, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 29, 1994, Ser. No. 268,015
Int. Cl.[6] G06F *13/12;9/445;* **G11B** *19/10*
U.S. Cl. 395—500 **21 Claims**



1. In a computer system having a floppy disk drive with a floppy disk drive door, a floppy disk controller for controlling the floppy disk drive and for providing a changeline having an active state and an inactive state, wherein the active state indicates that the floppy disk drive door has been opened and the inactive state indicates that the floppy disk drive door has not been opened, a method for determining a logic of the changeline, the method comprising the steps of:

programming the floppy disk controller to reset the changeline;

after programming the floppy disk controller to reset the changeline, programming the floppy disk controller to access the floppy disk drive in order to determine whether a disk is in the floppy disk drive;

when it is determined that the disk is in the floppy disk drive, reading a first value of the changeline, and identifying the first value as a disk present value;

when it is determined that the disk is not in the floppy disk drive, reading a second value of the changeline, and identifying the second value as a disk not present value;

determining whether the disk not present reading is equivalent to an active state of a machine using an inverted logic;

when the disk not present reading is equivalent to the active state of the machine using the inverted logic, comparing the disk present reading with the disk not present reading, determining that the changeline is functional and that it employs the inverted logic when the disk present reading differs from the disk not present reading, and determining that the changeline is not functional when the disk present reading is equivalent to the disk not present reading; and

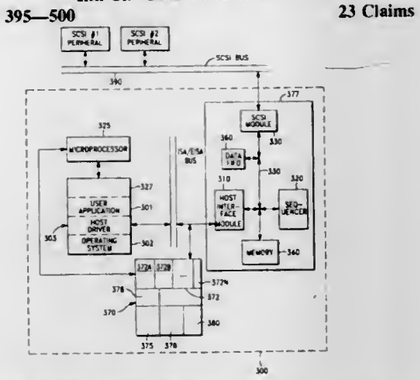
when the disk not present reading is not equivalent to the active state of a machine using the inverted logic, determining that the changeline is functional and that it employs the non-inverted logic.

5,625,800

SCB ARRAY EXTERNAL TO A HOST ADAPTER INTEGRATED CIRCUIT

Michael D. Brayton, Fremont; Charles S. Fannin, San Jose, and B. Arlen Young, Palo Alto, all of Calif., assignors to Adaptec, Inc., Milpitas, Calif.

Filed Jun. 30, 1994, Ser. No. 269,491
Int. Cl.[6] G06F *13/12;13/14*
U.S. Cl. 395—500 **23 Claims**



1. A host adapter system comprising:

a host computer including (i) a host computer processor and (ii) a host computer bus;

a host adapter integrated circuit mounted in said host computer and coupled to said host computer bus and another bus;

a hardware request block array in a memory external to said host adapter integrated circuit, and coupled to both said host computer processor and said host adapter integrated circuit wherein said hardware request block array stores hardware request blocks; and

a host adapter integrated circuit driver in said host computer wherein said host adapter integrated circuit driver writes a hardware request block to said hardware request block array;

wherein said host adapter integrated circuit reads said hardware request block from said hardware request block array and executes operations specified in said hardware request block; and

said host adapter integrated circuit, prior to suspension of execution of operations specified in said hardware request block, writes said hardware request block back to said hardware request block array.

5,625,801

METHOD AND APPARATUS FOR PRODUCING STANDARDIZED SOFTWARE SPECIFICATIONS AND SOFTWARE PRODUCTS

Akiko Fukuya, Dazaifu, Japan, assignor to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Filed Jul. 28, 1994, Ser. No. 281,566
Claims priority, application Japan, Aug. 5, 1993, 5-194553
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **10 Claims**

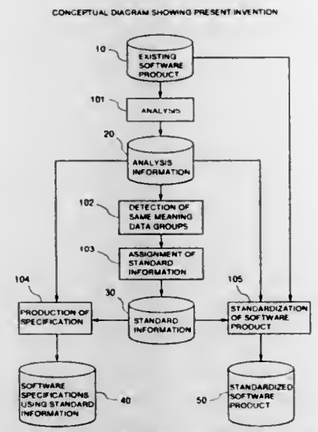
1. A method of producing software specifications, comprising the steps of:

analyzing an existing software product;

detecting groups of data which mutually have like contents to identify said groups as same meaning data groups;

determining a standard data name for each of said same meaning data groups;

extracting information as to software specifications of said existing software product from analysis information of said software product, by replacing names of data belonging to said groups of same meaning data in said software product with said determined standard data names; and



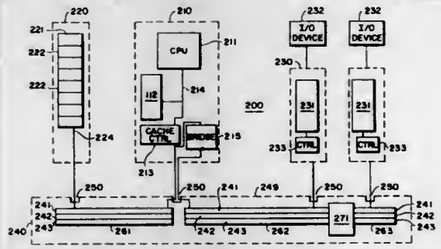
producing standardized software specifications of said existing software product from said extracted information.

5,625,802

APPARATUS AND METHOD FOR ADAPTING A COMPUTER SYSTEM TO DIFFERENT ARCHITECTURES

Hoe T. Cho, Hsing Chung; Maw Z. Jau, Panchiao, both of Taiwan, and W. Hugh Durdan, Waban, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 12, 1994, Ser. No. 353,754
Int. Cl.[6] G06F *13/40*
U.S. Cl. 395—500 **4 Claims**



1. A computer system mounted on a motherboard, comprising:

a first bus mounted on the motherboard, the first bus for communicating processor address, data, and control signals according to any one of a plurality of different processor architectures;

a second bus mounted on the motherboard, the second bus for communicating input/output address, data, and control signals for a peripheral device, the first bus and the second bus decoupled from communicating with each other;

a memory module mounted on the first bus, the memory module for storing data;

an input/output module mounted on the second bus, the input/output module for connecting to the peripheral device;

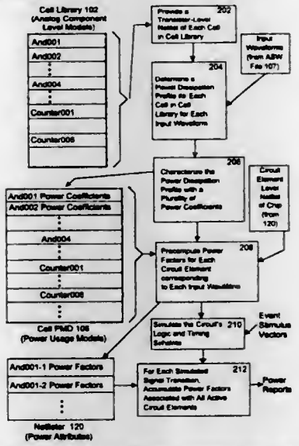
a processor module mounted on the first and second bus, the processor module for processing the processor and input/output signals, the processor module including a central processing unit, the central processing unit defining the processor address, data, and control signals of the first bus according to one of the plurality of different processor architectures, the processor module including a bridge to interface the processor address, data, and control signals with the input/output address, data, and control signals.

5,625,803

SLEW RATE BASED POWER USAGE SIMULATION AND METHOD

Andrew J. McNelly, San Jose; Michael R. Grossman, Mountain View; Harish K. Sarin; Bruce S. Seiler, both of Fremont, and Michael N. Misheloff, Dublin, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 14, 1994, Ser. No. 357,843
Int. Cl.[6] G06F *19/00*
U.S. Cl. 395—500 **13 Claims**



1. A method for simulating power consumption of an electronic circuit having a plurality of circuit elements, where each said circuit element is an instance of a library cell selected from a predefined set of library cells, said method comprising the steps of:

(a) providing a transistor-level netlist of a cell to be characterized, said cell having an input and an output, said cell comprising one of said set of library cells;

(b) determining a power dissipation profile for said cell by modelling at said transistor-level power dissipated by said cell in response to input waveforms applied to said input of said cell for a plurality of input slew rate and output load combinations, wherein said input slew rate is a signal transition rate associated with said input waveforms and said output load is a capacitive load driven from said output; said determining step including, when said cell is capable of assuming more than one internal logic state, a plurality of power dissipation profiles corresponding to a plurality of internal logic states for said cell;

(c) characterizing each said power dissipation profile for said cell with a plurality of power coefficients representing power dissipation for said cell as function of said slew rate and said output load;

(d) executing steps (a)–(c) for each of said cells comprising said circuit;

(e) precomputing for each circuit element an input slew rate and an output load;

(f) precomputing for each circuit element a power factor corresponding to each of said power dissipation profiles for the library cell corresponding to said each circuit element, each said power factor being computed as a function of said power coefficients for the corresponding power dissipation profile, said precomputed input slew rate and said precomputed output load;

(g) simulating the logic and timing behavior of said circuit for a specified time period so as to generate data representing simulated signal transitions at computed times in said circuit;

(h) for each said simulated signal transition, storing a power factor for each circuit element, if any, that receives said simulated signal transition, wherein the power factor stored is the one of said precomputed power factors for said circuit element corresponding to said circuit element's simulated state, if any, just prior to said simulated signal transition;

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wherein said characterization of said cell constituted as a single-stage device further comprises the steps of:

(i) measuring a first power (P1) corresponding to a first input ramp (IR1) in a fast ramp region and a first output load (LOAD1) in a low load region, wherein said fast ramp region defines a part of said power dissipation profile where, for a constant output load, power dissipated by said cell is relatively independent of input ramp;

(j) measuring a second power (P2) corresponding to a second input ramp (IR2) in said fast ramp region and said first output load (LOAD1);

(k) measuring a third power (P3) corresponding to said first input ramp (IR1) and a second output load (LOAD2) in a high load region;

(l) measuring a fourth power (P4) corresponding to a fourth input ramp (IR4) from a slow ramp region and an output load in said low load region, wherein said slow ramp region defines a part of said power dissipation profile where, for a constant output load, power dissipated by said cell increases as said input ramp increases;

(m) determining a critical input ramp (CIR) for said power dissipation profile, where said CIR is a curve separating said fast ramp and said slow ramp regions of said power dissipation probe;

(n) computing a first coefficient (D) as follows:

D=(P2–P1)/(IR2–IR1);

(o) computing a second coefficient (B) as follows:

B=(P3–P1)/(LOAD3–LOAD1):

(p) computing a third coefficient (A) as follows:

A=P3–B*LOAD3–D*IR1: and

(q) computing a fourth coefficient (E) as follows:

E=((P4–P1)–D*CIR)/(IR4–CIR)

such that, given an input ramp, an output load: and a state of said cell, a measure of dynamic and static power dissipated by said cell as a result of a pin-pair transition on said input and said output of said cell can be determined according to the following formula:

$$P=A+B*LOAD+D*min(IR, CIR)+E*max(0,IR-CIR),$$

which approximates said power dissipation profile in a piece-wise linear fashion, said approximation consisting of a first line segment having a first slope defining said fast ramp region and a second line segment having a second slope defining said slow ramp region, said first line segment and said second line segment intersecting at a single point located on said CIR.

5,625,804

DATA CONVERSION IN A MULTIPROCESSING SYSTEM USABLE WHILE MAINTAINING SYSTEM OPERATIONS

Ronald C. Cooper, New Fairfield, Conn.; Bryan A. Foley, Hopewell Junction, N.Y.; George E. Graffius, III, Beacon, N.Y., and Leslie F. Sutton, LaGrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

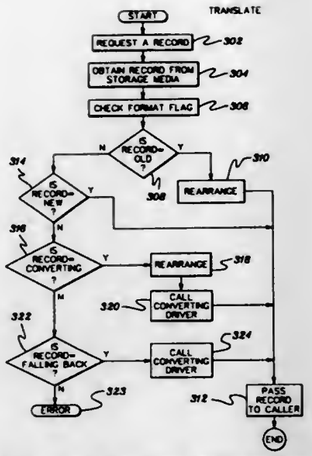
Filed Apr. 17, 1995, Ser. No. 422,974

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—500 **20 Claims**

1. A data conversion method in a multiprocessing system comprising a first processor, a second processor, and an external storage media coupled to said first processor and said second processor, said external storage media comprising a datum having a first format, said datum sharable by said first processor and said second processor, said data conversion method comprising a method for converting said datum from said first format common to the first processor and the second processor to a new, second format common to the first processor and the second processor without bringing the multiprocessing system down, said method comprising:

retrieving by said first processor said datum from said external storage media in said first format and using said retrieved datum in the second format, wherein said datum in said first format is usable by said second processor;



retrieving by said second processor said datum from said external storage media in said first format and using said retrieved datum in said second format, wherein said datum is usable by said first processor and said second processor in said second format; and

converting said datum on said external storage media from said first format to said second format after said datum is usable by said first processor and said second processor in said second format such that said datum in said second format is common to the first processor and the second processor, said converting allowing said first processor and said second processor to remain activated.

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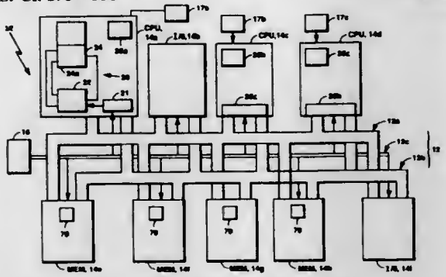
CLOCK ARCHITECTURE FOR SYNCHRONOUS SYSTEM BUS WHICH REGULATES AND ADJUSTS CLOCK SKEW

David M. Fenwick, Chelmsford; Daniel Wissell, Acton; Richard Watson, Harvard, and Denis Foley, Shrewsbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1994, Ser. No. 269,223

Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—558 **7 Claims**



1. A synchronous computer system comprising:

a synchronous computer system bus;

a plurality of modules coupled to the synchronous bus, comprising:

at least two processor modules, said processor modules having processors which run asynchronously to each other but with said processor modules running synchronous to the bus;

clock generator means for providing a corresponding plurality of clock signals;

a plurality of conductors coupled between said clock generating means and said plurality of modules, each of said conductors having electrical paths with substantially the same electrical path length, with each one of said modules further comprising:

means, coupled to a corresponding one of said conductors and disposed on said module, for regulating and adjusting skew between clock signals on said module with said processors disposed to run asychronous to each other but run synchronous to the synchronous system bus with said means for adjusting clock skew providing mutually low skew amongst clock signals on each of said modules and whereas the skew between one module and another module is not affected by said means for adjusting.

5,625,806

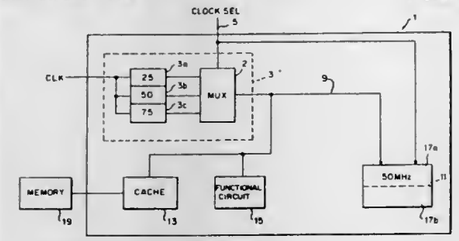
SELF CONFIGURING SPEED PATH IN A MICROPROCESSOR WITH MULTIPLE CLOCK OPTION

Stephen C. Kromer, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 355,302, Dec. 12, 1994, abandoned. This application Aug. 8, 1996, Ser. No. 693,505

Int. Cl.[6] G06F *7/52*

U.S. Cl. 395—556 **8 Claims**



1. A microprocessor, comprising:

a clock input configured to receive a clock signal having a clock frequency associated therewith;

a multiple clock circuit connected to said clock input and having an output providing an internal clock at selected multiples of said clock frequency applied to said clock input in response to a clock selection signal, each of said selected multiples of said clock frequency having an associated internal clock period defined as an inverse of said corresponding selected multiple of said clock frequency; and

an internal circuit configured to receive said internal clock signal from said multiple clock circuit and said clock selection signal, said internal circuit configured to perform a function in a time period longer than said associated internal clock period corresponding to one of said selected multiples of said clock frequency of said internal clock when at least one of said selected multiples is selected,

said internal circuit being responsive to said clock selection signal to operate through a number of states corresponding to said one of said selected multiples.

5,625,807

SYSTEM AND METHOD FOR ENABLING AND DISABLING A CLOCK RUN FUNCTION TO CONTROL A PERIPHERAL BUS CLOCK SIGNAL

Sherman Lee, Rancho Palos Verdes, Calif., and Michael T. Wisor, Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

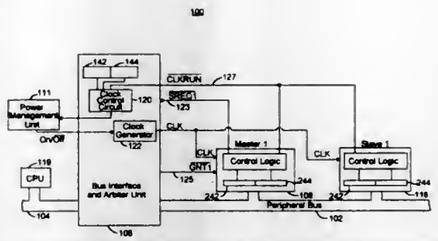
Filed Sep. 19, 1994, Ser. No. 308,596

Int. Cl.[6] G06F *1/08*

U.S. Cl. 395—560 **27 Claims**

1. A computer system, comprising:

a central processing unit connected to a local bus;



a peripheral bus including one or more peripheral bus components resident on said peripheral bus;

a bus interface unit coupled to said local bus and to said peripheral bus for orchestrating the transfer of data and address signals between said local bus and said peripheral bus;

a clock generator providing a peripheral bus clock signal on said peripheral bus, wherein said peripheral bus clock signal is capable of being selectively stopped and restarted;

a clock controller operatively coupled to said clock generator for deactivating and reactivating said clock generator to stop and restart said peripheral bus clock signal; and

a command register associated with said lock controller, said command register including a dedicated bit to enable or disable said clock controller.

5,625,808

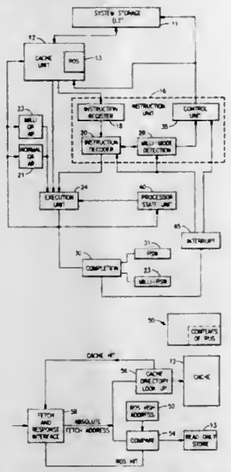
READ ONLY STORE AS PART OF CACHE STORE FOR STORING FREQUENTLY USED MILLICODE INSTRUCTIONS

Charles F. Webb, Poughkeepsie; Mark S. Farrell, Pleasant Valley; Barry W. Krumm, Poughkeepsie; John S. Liptay, Rhinebeck; Jennifer S. A. Navarro; Steven B. Risch, both of Poughkeepsie, and Mark A. Check, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 414,821, Mar. 31, 1995. This application May 31, 1995, Ser. No. 455,820

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—598 **6 Claims**



1. A millicode addressing method for a pipelined computer processor, which executes a relatively simple instruction set in a

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hardware controlled execution unit and executes a relatively complex instruction set in a milli-mode architected state with a millicode sequence of simple instructions in said hardware controlled execution unit, comprising the steps of:

storing in a millicode read only memory a plurality of millicode instruction sequences in an address space;

fetching millicode instruction sequences from a cache memory by means of a cache memory address lookup directory, a register in which are stored addresses of said address space, and a comparator for comparing an instruction fetch address with a address space address stored in said register;

processing an instruction fetch at a millicode instruction address by performing a lookup operation in said cache memory address lookup directory and contemporaneously comparing said millicode instruction address to said stored addresses of said address space which are stored in said register and said cache control means fetching an addressed millicode sequence from said millicode read only store when said instruction fetch address matches said stored addresses of said address space which are stored in said register.

5,625,809

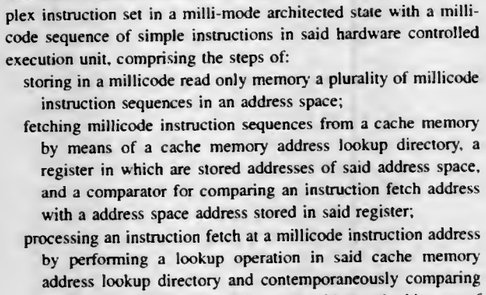
METHOD FOR CONSTRUCTING A DATA STRUCTURE WHICH ALLOWS DATA TO BE SHARED BETWEEN PROGRAMS

John A. Dysart, Santa Clara; Peter S. Showman, Cupertino; William M. Crow, San Jose, all of Calif.; Peter M. Williams, Gloucestershire, England; Brian W. McBride, Wokingham, England; John R. F. Senior, Thornbury, England; Charles H. Whelan, Placerville, Calif., and Brian Murdoch, Berkshire, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 905,172, Jun. 24, 1992, abandoned, which is a continuation of Ser. No. 521,856, May 7, 1990, abandoned, which is a division of Ser. No. 186,516, Apr. 25, 1988, Pat. No. 4,953,080. This application Apr. 22, 1994, Ser. No. 231,861

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **46 Claims**



1. In a computer system, a method for establishing a link between two documents wherein the link specifies shared data, the method comprising the steps of:

(a) constructing, in response to a first user command which specifies the shared data and which specifies a first document as source of the shared data, a portion of a link which includes a reference to the shared data and a reference to the first document; and

(b) completing construction of the link, in response to a second user command which specifies a second document with which the shared data will be shared, by adding to the link a reference to the second document.

5,625,810

DATA FILE APPARATUS FOR REGISTERING AND RETRIEVING DATA FILES IN ACCORDANCE WITH ATTRIBUTE INFORMATION THEREOF

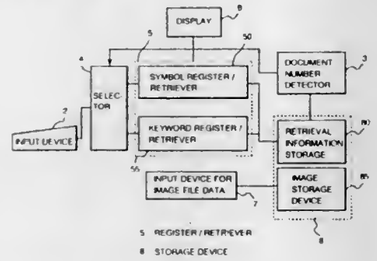
Yasuo Kurosu, Yokosuka; Yoshihiro Yokoyama, Yokohama, and Hidefumi Masuzaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,725

Claims priority, application Japan, May 21, 1993, 5-120006

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **13 Claims**



1. A data file apparatus comprising:

data file input means for inputting data files;

data file storage means for storing data files inputted by said data input means by assigning attribute information to each of the data files, said attribute information being a clue for retrieving information;

symbol based retrieving means for retrieving at least one of said data files based upon a symbolic image as said attribute information, said symbolic image being displayed by said display means;

keyword based retrieving means for retrieving at least one of said data files based upon at least one keyword; and

selecting means for switching between the symbol based retrieving means and the keyword based retrieving means based on a number of data files stored in said storage means so that said symbol based retrieving means is selected when the number of said data files stored in said storage means is less than a predetermined value and said keyword based retrieving means is selected when the number of data files stored in said storage means is greater than the predetermined value; and

means for changing the symbolic image attribute information to the corresponding keyword when a number of stored data files is greater than a predetermined value.

5,625,811

METHOD AND SYSTEM FOR DATABASE LOAD BALANCING

Anupam K. Bhide, Foster City, Calif.; Daniel M. Dias, Mahopac, N.Y.; Ambuj Goyal, Amawalk, N.Y.; Francis N. Parr, Croton-On-Hudson, N.Y., and Joel L. Wolf, Goldens Bridge, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1994, Ser. No. 332,323

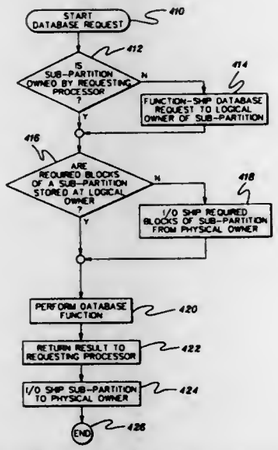
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **26 Claims**

1. A method for partitioning a database in a data processing system, said method comprising the steps of:

dividing the database into a plurality of data partitions, each of said plurality of data partitions having a physical owner associated therewith; and

assigning to each of said plurality of data partitions a logical owner wherein said logical owner provides access to its corresponding data partition, wherein one or more physical owners corresponds to said plurality of data partitions, wherein one or more logical owners corresponds to said plurality of data partitions, and wherein said step of assigning



comprises the step of reassigning to one or more of the plurality of data partitions one or more next logical owners, the step of reassigning comprising the steps of:

defining a neighborhood of solutions about said one or more logical owners according to at least one definition constraint; and

searching said neighborhood of solutions for a proposed one or more next logical owners according to at least one search constraint.

5,625,812

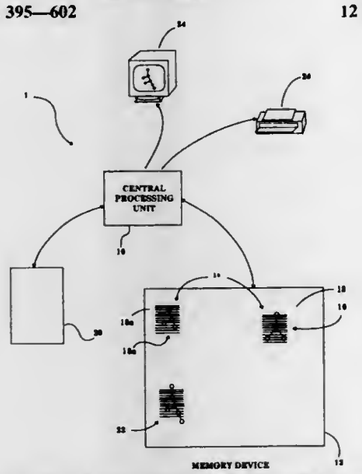
METHOD OF DATA STRUCTURE EXTRACTION FOR COMPUTER SYSTEMS OPERATING UNDER THE ANSI-92 SQL2 OUTER JOIN PROTOCOL

Michael M. David, 2118 Wilshire Blvd., Suite 167, Santa Monica, Calif. 90403

Filed Nov. 14, 1994, Ser. No. 339,454

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **12 Claims**



1. A computer system using the ANSI-92 SQL2 outer join protocol for manipulating data contained in the computer system to create and store a resultant database having a known hierarchial data structure represented by an outer join protocol statement, the computer system comprising:

a) a central processing unit coupled with a first memory storage means containing at least a first normalized, relational database, each database in said first storage means including a plurality of data having a known hierarchial data structure capable of being represented in a protocol equivalent to ANSI-92 SQL2 outer join grammar, said central processing unit operating in accord with a programmed set of instructions having a protocol equivalent to ANSI-92 SQL2 outer join grammar;

b) second memory means coupled to said central processing unit having a push-pop stack area and a storage area for nodes;

c) said first memory means further containing a set of instructions for controlling said central processing unit to execute the following steps:

(i) parsing the outer join protocol statement into a plurality of tokens for execution by said central processing unit in accord with the grammar, syntax and semantics, of ANSI-92 SQL2 outer join protocol for controlling the actions of said central processing unit;

(ii) parsing sequentially said tokens from the outer join statement to identify if the token being parsed is a table name, join type (left or right), or a join condition;

(iii) pushing a new root structural node datum with table name onto said push-pop stack in said second memory means as a data item if the token being parsed is identified as a table name;

(iv) pushing a join type datum representative of a left or right join type token onto said push-pop stack in said second memory means as a data item, if the token being parsed is identified as a left or right join type token respectively;

(v) repeating steps (ii) to (iv) until the token being parsed is identified as a join condition token;

(vi) popping the top three data items from said push-pop stack in said second memory means representing a right database root structural node token, a join type token (left or right), and a left database structural root node token;

(vii) linking the right and left node structures represented by the popped root node data into one structure at the structural node points specified by the current join condition token where the lowest level table referenced from said join condition in left and right structures are the link node points and the popped join type (right or left) specifies which substructure assumes the higher level position of the combined structure;

(viii) pushing a root node datum representative of the resulting node structure back onto said push-pop stack in the second memory means;

(ix) repeating steps (ii) through (viii) until all tokens from the outer join statement have been processed; and,

(x) ordering the node data represented by the resulting root node on said push-pop stack in the second memory means in accordance with the hierarchial data structure and storing the ordered node data in said first memory means.

5,625,813

METHOD FOR PERFORMING JOINS BETWEEN DIFFERENT RECORD TYPES IN A DATABASE SYSTEM

John L. Venn, New Barnet, England, assignor to International Computers Limited, London, England

Filed Jun. 27, 1995, Ser. No. 495,353

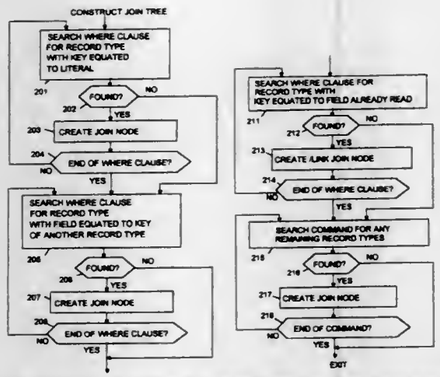
Claims priority, application United Kingdom, Aug. 27, 1994, 9417314

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **7 Claims**

1. In a database system comprising a database storing a plurality of records of a plurality of different record types, a method of executing a database query involving a join between a plurality of said record types, the method comprising the steps:

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(a) processing the query to create a data structure comprising a plurality of nodes, linked together to form a plurality of chains, each of said nodes representing one of said data types, said processing comprising:

(i) identifying a starting set of record types each of which contains a key that is equated to a literal in said query, or contains a field that is equated to a key of another record type in said query;

(ii) creating a node in said data structure for each of said starting set of record types;

(iii) identifying a further set of record types each of which can be accessed from a record type represented by an existing node; and

(iv) creating a new node in said data structure for each of said further set of record types, and linking said new node to said existing node;

(b) constructing a virtual row of said join by accessing said nodes in sequence and, for each of said nodes, reading a record of the record type represented by that node; and

(c) testing said virtual row to determine whether it satisfies said database query.

5,625,814

METHOD AND APPARATUS FOR PROCESSING NATURAL LANGUAGE WITH A HIERARCHY OF MAPPING ROUTINES

William W. Luciw, Morgan Hill, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Division of Ser. No. 215,064, Mar. 18, 1994, Pat. No. 5,434,777, which is a continuation-in-part of Ser. No. 99,861, Jul. 30, 1993, Pat. No. 5,477,447, and a continuation-in-part of Ser. No. 889,225, May 27, 1992, Pat. No. 5,390,281. This application May 15, 1995, Ser. No. 441,225

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—605 **20 Claims**

1. A computer system having the ability to process natural language, the system comprising:

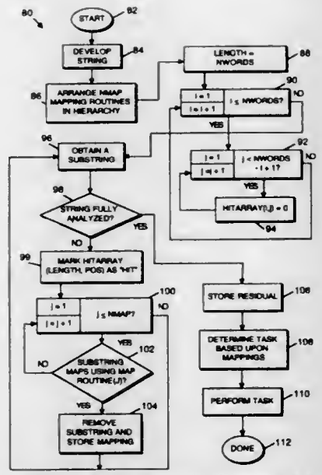
a processor;

memory for maintaining a database of task-pertinent events, said memory being coupled to said processor;

an input device coupled to said processor for receiving natural language from a user;

means for developing a string from said natural language coupled to said input device;

means for mapping a portion of said string into said database using a plurality of different mapping routines arranged in a hierarchy, wherein a successive mapping routine in said hierarchy is used when a previous different mapping routine in said hierarchy does not map said portion of said string; and



means for performing a computer-implemented task based upon said mapped portion of said string.

5,625,815

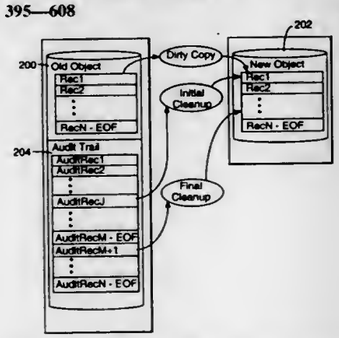
RELATIONAL DATABASE SYSTEM AND METHOD WITH HIGH DATA AVAILABILITY DURING TABLE DATA RESTRUCTURING

Donald S. Maier, Campbell; Roberta S. Marton, Fremont; James H. Troisi, Sunnyvale, all of Calif., and Pedro Celis, Austin, Tex., assignors to Tandem Computers, Incorporated, Cupertino, Calif.

Continuation of Ser. No. 377,758, Jan. 23, 1995, abandoned. This application Apr. 12, 1996, Ser. No. 629,000

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—608 **12 Claims**



1. A computer system for storing and providing user access to data in stored database objects, comprising:

memory for storing said database objects, wherein said memory resides in a plurality of interconnected computer nodes;

a transaction manager, coupled to said memory, for managing computational transactions that add, delete and alter data stored in said database objects; said transaction manager including audit trail generation instructions for generating an audit trail and storing said audit trail in said memory, said audit trail including audit records, at least a subset of said audit records each denoting an event selected from the set consisting essentially of addition, deletion and alteration of specified data in a specified one of said database objects;

a restructuring procedure, coupled to said memory, for restructuring a specified one of said database objects, said restructuring procedure, including:

first phase instructions for accessing data in said first object and storing corresponding data in a second object while allowing continued performance of computational transactions against said first object;

second phase instructions, for execution after said first phase instructions, for accessing said audit records in said audit trail created by said transaction manager during execution of said first phase instructions and thereafter until execution of said second phase instructions is completed; said second phase instructions updating said data stored in said second object by redoing with respect to said second object each event denoted by said accessed audit trail records; and

third phase instructions, for execution after said second phase instructions, for obtaining a lock on said first object so as to prevent continued performance of computational transactions against said first object, and for then accessing audit records in said audit trail created by said transaction manager after execution of said second phase instructions; said third phase instructions updating said data in said second object by redoing with respect to said second object each event denoted by said accessed audit trail records.

5,625,816

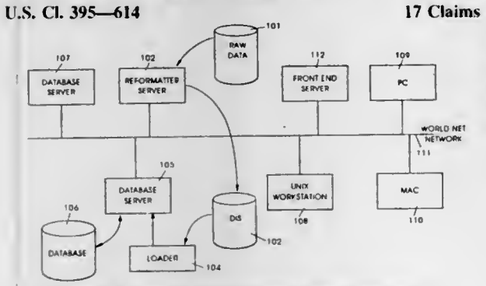
METHOD AND SYSTEM FOR GENERATING PRODUCT PERFORMANCE HISTORY

Randy Burdick, Austin, Tex.; Richard Kittler, Sunnyvale, Calif., and F. Walter Smith, Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 5, 1994, Ser. No. 223,348

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **17 Claims**



1. A system for storing and retrieving data, comprising:

a network for transmitting and receiving data;

at least one input system, coupled to said network, for inputting data in at least a first format;

a reformatter, coupled to said network, for receiving said data and reformatting said data into a predetermined format to produce reformatted data;

a database, coupled to said network, for storing said reformatted data;

a loader, coupled to said database, for loading said reformatted data into said database;

at least one client workstation, coupled to said network, for receiving database search requests;

a front end server, coupled to said network, for receiving said database search requests and processing said search requests, querying said database, receiving reformatted data from said database, and outputting said reformatted data, and

at least one data archiver, coupled to said database, for archiving at least a portion of the data stored in said database according to a predetermined archiving algorithm, and for transferring archived data to an archive storage media.

5,625,817

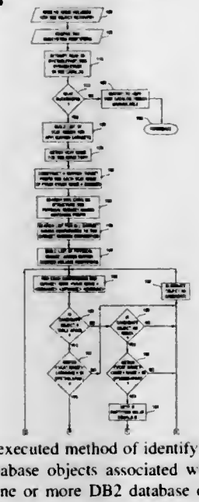
METHOD OF IDENTIFYING DB2 OBJECTS TO BE RECOVERED FROM AN UNAVAILABLE DASD VOLUME WITHOUT NEED TO ACCESS THE DASD VOLUME ITSELF AND WITHOUT NEED FOR PRE-FAILURE PREPARATION

Greg D. Wood, Cedar Park, and Carla C. Birk, Austin, both of Tex., assignors to BMC Software, Inc., Houston, Tex.

Filed Feb. 28, 1995, Ser. No. 395,992

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **14 Claims**



11. A machine-executed method of identifying for recovery one or more DB2 database objects associated with a specified DB2 subsystem, said one or more DB2 database objects stored on an unavailable DASD volume specified for recovery, wherein information pertaining to said one or more DB2 database objects is stored and accessible in an MVS catalog structure storage and in a DB2 catalog structure storage, said method comprising:

(a) searching said MVS catalog structure storage for all physical dataset names matching a search-target prefix;

(b) building a list of all physical dataset names having a volume identifier matching the volume identifier for said unavailable DASD volume;

(c) filtering said list of all physical dataset names to include only those dataset names conforming to a standard DB2 dataset naming convention, each said physical dataset name contained in said list being referred to as a candidate object;

(d) searching said DB2 catalog structure storage to identify the DB2 subsystem owning each said candidate object;

(e) eliminating from said list of all physical dataset names each said candidate object that is not a table space and not an index;

(f) eliminating from said list of all physical dataset names each said candidate object that is determined to be a table space that does not have a corresponding match in the SYSIBM.SYSTABLEPART table;

(g) eliminating from said list of all physical dataset names each said candidate object that is determined to be an index that does not have a corresponding match in the SYSIBM.SYSINDEXPART table; and

(h) eliminating from said list of all physical dataset names any duplicates of each said candidate object that is determined to be an index, the existence of said duplicates indicated by the unavailability of dataset-level recovery of said index.

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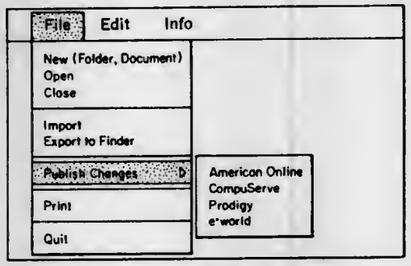
5,625,818

SYSTEM FOR MANAGING LOCAL DATABASE UPDATES PUBLISHED TO DIFFERENT ONLINE INFORMATION SERVICES IN DIFFERENT FORMATS FROM A CENTRAL PLATFORM

Craig Zarmer, Mountain View; Anne Jones, Redwood City; Kevin M. Arnold, Cupertino; Paul S. Chambers, San Jose; Tom Eastwood, Menlo Park; Ruth A. Helfinstein, Sunnyvale; Jason E. Rusoff, Palo Alto, and Hai Wine, Oakland, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 315,915, Sep. 30, 1994, abandoned.
This application Sep. 3, 1996, Ser. No. 706,956
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—615 **15 Claims**



1. A method of electronically publishing information to a plurality of on-line information services from a plurality of geographically remote sites by way of a central location, comprising the steps of, for each of said plurality of sites:

establishing a first database portion at the central location and a second database portion at the site, where the second database portion is a substantial replica of the first database portion;

changing the second database portion at the site;

reporting changes in the second database portion to the central location;

updating the first database portion to reflect changes to the second database portion reported to the central location; and

from the central location, publishing at least a part of the first database portion to plurality of on-line information service, each on-line service providing for the electronic retrieval of information in a predetermined on-line format by any of a large number of geographically remote service users;

wherein the first database portion of a site is published to one on-line information service in one-line format and the first database portion of a site is published to another different on-line information service in a different on-line format.

5,625,819

METHODS AND APPARATUS FOR PERFORMING HEAP MANAGEMENT AND PROTECTING DATA STRUCTURE INTEGRITY IN NON-VOLATILE MEMORY

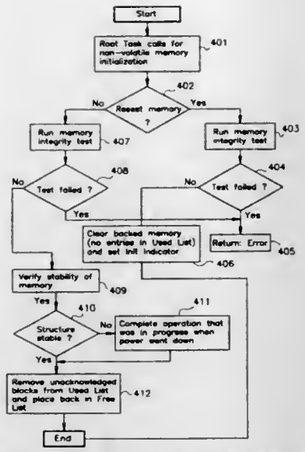
John M. Hoffer, Jr., Quakertown, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 26, 1995, Ser. No. 429,346
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **21 Claims**

1. A method for performing heap management and protecting the integrity of data structures created and stored in non-volatile memory included in a programmable recording instrument used for recording process data, comprising the steps of:

(a) defining a memory header data structure used for managing run time recorder operations and aiding in the recovery of any data structures being modified when and if power to the memory is lost, wherein said memory header includes a first pointer to a list of free memory blocks and a second pointer to a list of allocated memory blocks;



(b) defining an allocated memory block header, stored within each allocated memory block, used for determining block attributes, including an indicator to signal when a given memory block has been locked into said list of allocated memory blocks, a block ownership indicator and a pointer to the next allocated memory block, if any;

(c) initializing said non-volatile memory whenever the recording instrument is powered up, including the steps of determining if said non-volatile memory is to be reset and the step of verifying the stability of non-volatile memory whenever non-volatile memory is not reset;

(d) allocating memory from one of the memory blocks included in said list of free memory blocks, in response to a user request for memory allocation, utilizing only atomic instructions to modify said memory header and said allocated memory block header; and

(e) locking an allocated memory block into said list of allocated memory blocks in response to a user request for the lock.

5,625,820

SYSTEM MANAGED LOGGING OF OBJECTS TO SPEED RECOVERY PROCESSING

David L. Hermsmeier, Oronoco; Gary R. Ricard, Rochester; John J. Vriezen, Rochester, and Larry W. Youngren, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

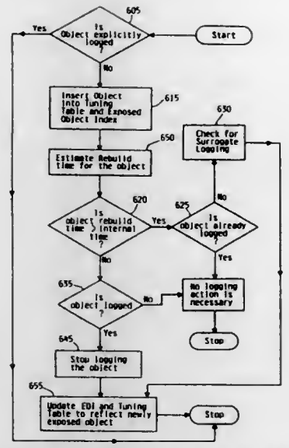
Division of Ser. No. 954,641, Sep. 30, 1992, Pat. No. 5,574,897.
This application Jul. 3, 1996, Ser. No. 674,941
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **3 Claims**

1. An object recovery mechanism in a computer system, comprising:

means for determining and maintaining rebuild information representative of an amount of time associated with each respective object in a plurality of objects that would be required to rebuild said respective object in the event data contained in said object becomes lost;

mean for selectively logging changes to a subset of said plurality of objects in a non-volatile log, wherein said subject of said plurality of objects is selected for logging based on said rebuild information; and



means for recovering said subset of said plurality of objects from said logged changes recorded in said non-volatile log in the event data contained in said object becomes lost.

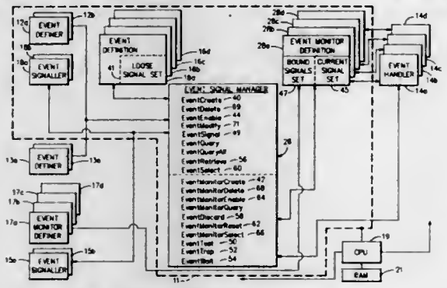
5,625,821

ASYNCHRONOUS OR SYNCHRONOUS OPERATION OF EVENT SIGNALLER BY EVENT MANAGEMENT SERVICES IN A COMPUTER SYSTEM

Stephen E. Record, Ridgefield, Conn.; Ann M. Shepherd, Endwell, and Steven S. Shultz, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1991, Ser. No. 744,064
Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—670 **20 Claims**



1. A computer system comprising:

means for receiving and storing definitions of different types of events, each of said definitions specifying a mode of operating a signaller of the event while the event is being handled, the operating modes including a synchronous mode in which the event signaller suspends processing until the event is handled, and an asynchronous mode in which the event signaller continues processing while the event is handled; and

event manager means, coupled to the event signallers and storing means, for receiving event signals for the events, and advising the event signaller of each event whether to proceed synchronously or asynchronously according to the corresponding event definition.

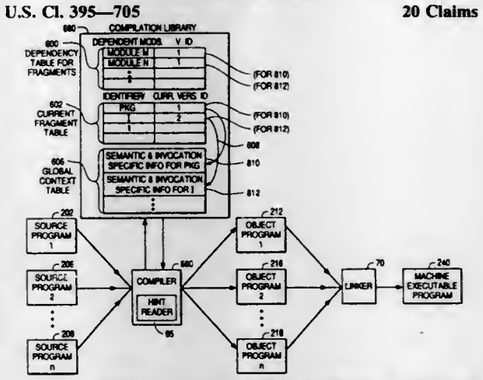
5,625,822

USING SORTING TO DO MATCHUP IN SMART RECOMPILATION

Bevin R. Brett, Merrimack, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 905,930, Jun. 26, 1992, abandoned.
This application Oct. 6, 1994, Ser. No. 319,334
Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—705 **20 Claims**



1. In a computer system, including a memory, a method of compiling source programs comprising the steps of:

compiling a first source program to produce a first compiled program and first information characterizing said first compiled program, the first information including information from the first source program which is referenced by another source program other than the first program;

compiling a second source program to produce a second compiled program and second information characterizing said second compiled program, the second information including information from the second source program which is referenced by another source program other than the second program;

sorting said first information to produce sorted information;

determining portions of said sorted information and said second information which do not have equivalent portions by comparing parameters representing portions of said sorted information to other parameters representing portions of said second information; and

compiling, in response to said determining step, a third source program which is dependent on a portion which does not have an equivalent portion.

5,625,823

METHOD AND APPARATUS FOR CONTROLLING CONNECTED COMPUTERS WITHOUT PROGRAMMING

Erik P. Debenedictis, 204 Canoe Ct., Redwood City, Calif. 94065, and Stephen C. Johnson, 144 Melvike Ave., Palo Alto, Calif. 94301

Continuation of Ser. No. 278,846, Jul. 22, 1994, abandoned.
This application Oct. 18, 1996, Ser. No. 730,894
Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—706 **13 Claims**

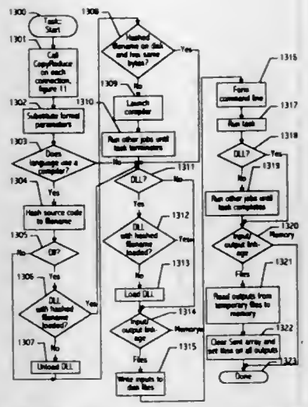
1. For an application in an Intertask representation, said representation including

a plurality of tasks each including a Widget on an interactive display and a computer program in a general-purpose instruction-set-independent form and

a plurality of other tasks each including a Widget on said interactive display, a network address, and an identifier of a second application,

a recursive process for running said application on a plurality of networked computers, the network including a host computer and a target computer, comprising:

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loading said application from said host computer onto said target computer;

executing said tasks on said target computer;

linking by selecting one of said plurality of tasks on said interactive display and recursively invoking said recursive process with said second application being the application and the computer addressed by said network address being the host computer; and

repeating the previous two steps indefinitely.

5,625,824

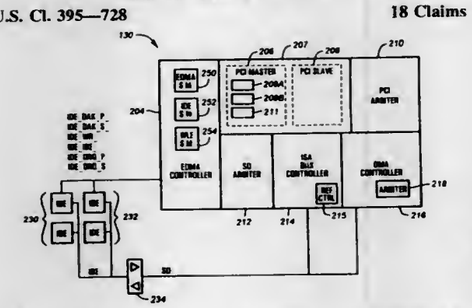
CIRCUIT FOR SELECTIVELY PREVENTING A MICROPROCESSOR FROM POSTING WRITE CYCLES

Maria L. Melo, Houston, Tex.; Brian B. Tucker, Cardiff, Calif., and Randy M. Bonella, Portland, Oreg., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 3, 1995, Ser. No. 398,436

Int. Cl.[6] G06F *13/16;13/36*

U.S. Cl. 395—728 **18 Claims**



8. A circuit for improving bus performance by preventing posting of a write cycle to a computer system bus by a microprocessor subsystem if another one of a plurality of bus devices that are coupled to the bus is requesting the bus, the microprocessor subsystem including a processor and memory, the microprocessor subsystem responding to requests for access to the memory provided over the bus, the plurality of bus devices providing access requests to the memory and providing a corresponding plurality of bus device request signals and the microprocessor subsystem providing a processor bus request signal to indicate requests for the bus when a cycle is directed to the bus by the processor, the computer system further including an arbiter responsive to said processor bus request signal and said plurality of bus device request signals for granting bus ownership to the microprocessor system or to one of said bus devices, the computer system further including a minimum grant timer coupled to the arbiter for indicating a minimum grant time, the microprocessor subsystem posting a processor write cycle directed to the bus if one of the plurality of bus devices is controlling the bus, except that posting is disabled when a flush request signal is received, wherein the arbiter grants the bus to the bus owner for the minimum grant time, wherein the posting of a microprocessor write cycle causes the microprocessor subsystem to retry any cycle on the bus that is targeted to the microprocessor system, the circuit comprising:

means coupled to the plurality of bus devices for monitoring the plurality of bus device request signals; and

means coupled to said monitoring means for providing a flush request signal to the microprocessor system, and wherein said flush request signal is asserted if one of said plurality of bus device request signals is asserted.

5,625,825

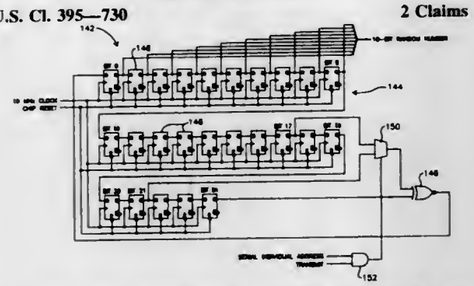
RANDOM NUMBER GENERATING APPARATUS FOR AN INTERFACE UNIT OF A CARRIER SENSE WITH MULTIPLE ACCESS AND COLLISION DETECT (CSMA/CD) ETHERNET DATA NETWORK

Michael D. Rostoker, Boulder Creek; D. Tony Stelliga, Pleasanton, both of Calif.; Dave Paolino, Andover, and Willem A. H. Engelse, Townsend, both of Mass., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 21, 1993, Ser. No. 141,194

Int. Cl.[6] G06F *7/58*

U.S. Cl. 395—730 **2 Claims**



1. A random number generating apparatus for an interface unit of a Carrier Sense with Multiple Access and Collision Detect (CSMA/CD) data network, said interface unit including a transmit backoff unit for implementing a backoff algorithm in response to a network collision signal ann a random number, said apparatus comprising:

a dual mode random number generator; and

a multiplexer for switching the random number generator between modes in accordance with an address of a data packet being processed by the interface unit, in which:

the random number generator comprises a linear feedback shift register;

the shift register has a plurality of stages;

the multiplexer has two signal inputs connected to outputs of two of said stages respectively, a switch input connected to receive said address and an output connected in circuit to an input of the shift register;

the shift register has 25 stages; and

said signal inputs of the multiplexer are connected to stages **18** and **22** of the shift register respectively.

5,625,826

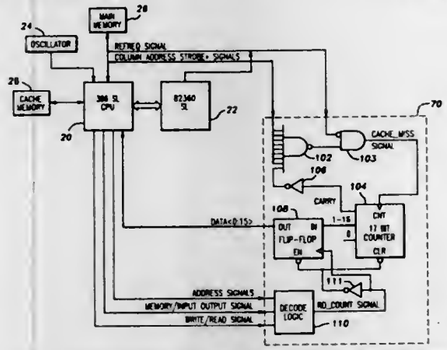
APPARATUS FOR REDUCING COMPUTER SYSTEM POWER CONSUMPTION

Lee W. Atkinson, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 166,609, Dec. 13, 1993, which is a continuation of Ser. No. 809,301, Dec. 17, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,655

Int. Cl.[6] G06F *15/00;11/30*

U.S. Cl. 395—750 **21 Claims**



1. A computer system having a capability for reducing its power consumption by adjusting an operating frequency of the computer system, comprising:

a processor having a clocking input;

memory coupled to said processor;

a clock for producing a processor clocking signal at an operating frequency for said processor;

a counter between said processor and said memory for counting memory access requests during a preset period of activity of said processor;

a count latch coupled to said counter, said count latch for periodically receiving the memory access requests counted by said counter;

said processor including a frequency adjuster coupled to said count latch and said clock, said frequency adjuster for adjusting the operating frequency of the processor clocking signal based on the counted memory access requests; and

said clock further for providing the adjusted operating frequency of the processor clocking signal to said processor clocking input in response to said frequency adjuster.

5,625,827

METHOD AND SYSTEM OF BLUEPRINT DOCUMENT MANIPULATION

Gary M. Krause, 4429 Orion Rd., Lake Orion, Mich. 48035, and Brent E. Marrow, Upland, Ind., assignors to Gary M. Krause, Lake Orion, Mich.

Filed Dec. 23, 1994, Ser. No. 363,689

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—763 **9 Claims**

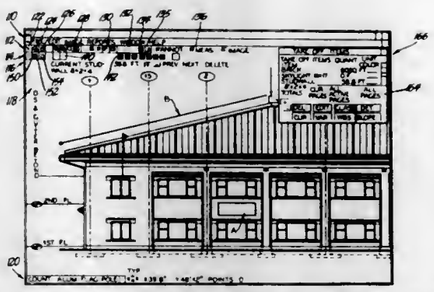
1. A method for manipulating a construction drawing comprising the steps of:

a. storing in electronic form in a memory means an image of a construction drawing in a file, the construction drawing having a full scale dimension associated therewith;

b. displaying the image of the construction drawing in the file on a video display means;

c. storing in the file a scale quantity representing the full scale dimension between two selected scale points on the image of the construction drawing;

d. storing in the file a scale line extending between the two scale points on the image of the construction drawing, the scale line representing a distance expressed as a predetermined number of image units;



e. selecting any two measuring points on the image of the construction drawing; and

f. automatically determining a full scale dimension between the selected two measuring points from the scale quantity, the scale line and a number of the image units between the two measuring points.

5,625,828

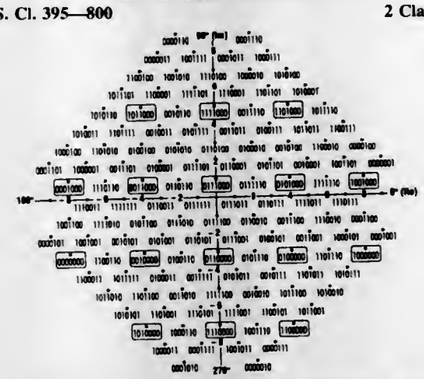
PARALLEL OPERATING CPU CORE AND DSP MODULE FOR EXECUTING SEQUENCE OF VECTOR DSP CODE INSTRUCTIONS TO GENERATE DECODED CONSTELLATION POINTS IN QAM/TCM MODEM APPLICATION

Iddo Carmon, Kfar Saba; Itael Fraenkel, Petah Tikvah; Omri Viner, Hod Hasharon, and Ronny Cohen, Ramat-Hasharon, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 60,611, May 12, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Jul. 1, 1994, Ser. No. 271,204

Int. Cl.[6] G06F *13/00;15/16*

U.S. Cl. 395—800 **2 Claims**



1. A method of implementing a decision algorithm for a Quadrature Amplitude Modulation/Trellis Code Modulation (QAM/TCM) software modem using vector DSP command-list code instructions, wherein the QAM/TCM software modem includes an internal bus for transferring both data and instructions, a general purpose (GP) central processing unit (CPU) connected to the internal bus for retrieving GP instructions from a storage element associated with the GP CPU, the GP CPU including means for executing GP instructions to process data retrieved by the GP CPU from the internal bus, and a digital signal processor (DSP) module connected to the internal bus, the DSP module including means for processing an externally-provided digital signal received by the DSP module by executing DSP command-list code instructions, the method comprising:

utilizing the DSP module to implement a QAM modem command-list code instruction subroutine that obtains digitized samples of the digital signals and extracts corresponding

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data bits from the digitized samples, the data bits being separated into data bit group symbols, each data bit group symbol being represented by a point in a complex plane of a set of constellation points;

utilizing the DSP module to execute a first vector DSP command-list code instruction to calculate a square euclidean distance between an input point and each of the constellation points;

utilizing the DSP module to execute a second vector DSP command-list code instruction to identify a decoded constellation point having a minimal square euclidean distance from the input point;

utilizing the DSP module to execute a third vector DSP command-list code instruction to define an offset of the decoded constellation point using a constellation points table; and

utilizing the DSP module to execute a fourth vector DSP command-list code instruction to retrieve the decoded constellation point from the constellation points table.

5,625,829

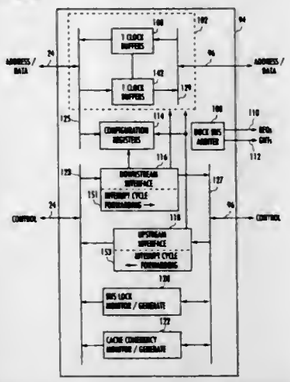
DOCKABLE COMPUTER SYSTEM CAPABLE OF SYMMETRIC MULTI-PROCESSING OPERATIONS

Douglas D. Gephardt, Austin; Steven L. Belt, Plugerville, and Drew J. Dutton, Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Tex.

Continuation-in-part of Ser. No. 255,663, Jun. 9, 1994, which is a continuation-in-part of Ser. No. 217,951, Mar. 25, 1994. This application Jul. 18, 1994, Ser. No. 276,250

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—800 **32 Claims**



1. A dockable computer system capable of assuming at least two states, a docked state and an undocked state, said dockable computer system comprising:

a host station including a host bus and a general purpose host CPU coupled with said host bus, said host CPU having a host cache;

a portable computer including a computer bus, said host bus capable of electrical communication with said computer bus when said dockable computer system is in said docked state, said host bus being physically separate from said computer bus when said dockable computer system is in said undocked state, said portable computer having a general purpose portable CPU, said portable CPU having a portable cache coupled with said portable bus;

a main memory, said host CPU capable of directly communicating first data to and from said main memory and said host cache when said dockable computer system is in said docked state, and said portable CPU capable of directly communicating second data between said main memory and said portable cache when said dockable computer system is in said docked state, whereby said host CPU and said portable CPU are capable of symmetrical multi-processing operations when said dockable computer system is in said docked state;

a docking bridge; and

a connector bus, said docking bridge being coupled between said connector bus and said portable bus, said docking bridge being intermediate said host bus and said portable bus when said dockable computer system is in said docked state, wherein said docking bridge includes a multi-processing bus for communicating multi-processing support signals between said portable bus and said host bus.

5,625,830

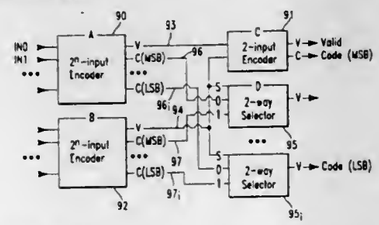
REDUCED CIRCUIT, HIGH PERFORMANCE, BINARY SELECT ENCODER NETWORK

Kenneth S. Gray, Jericho, and Steven F. Oakland, Colchester, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 12, 1994, Ser. No. 289,826

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800 **7 Claims**



1. An encoder comprising:

a plurality of parallel encoders, each of said parallel encoders having N inputs coupled to a source of signals to be encoded, said N being an integer bigger than one, and each of said parallel encoders having N number of outputs, one of said outputs being a VALID output and remainder of said outputs being CODE outputs,

a plurality of selector circuits, each having a number of inputs equal to the number of said CODE outputs ot one of said plurality of parallel encoders, and

an other encoder, having a number of input equal to the number of said plurality of said parallel encoders,

each of said plurality of parallel encoders having a VALID output selectively coupled to an input of the other encoder, and each of said CODE outputs respectively connected to a respective input on each of said plurality of selector circuits.

5,625,831

EXTENDIBLE CLOCK MECHANISM

Edward C. Priest, and John M. Wastlick, both of Eau Claire, Wis., assignors to Cray Research, Inc., Eagan, Minn.

Division of Ser. No. 912,964, Jul. 10, 1992, Pat. No. 5,428,803. This application Oct. 31, 1994, Ser. No. 331,730

Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—800 **2 Claims**

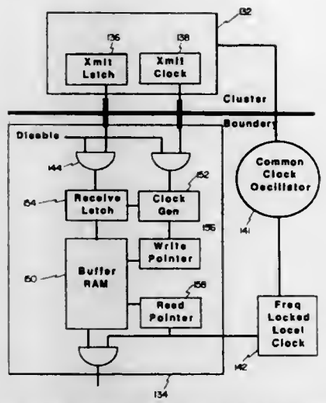
1. An extendible clock mechanism for providing a frequency locked, phase-independent clock signal to a plurality of physically separable computer processor system components comprising:

a common clock oscillator for generating the frequency locked clock signal; and

in each of the computer processor system components:

clock means for receiving the frequency locked clock signal and producing a frequency locked, phase-independent local clock signal;

transmitter means operably connected to the clock means for transmitting an inter-component data signal and clock signal that are clocked by the local clock signal; and



receiver means operably connected to the clock means and the transmitter means of an other component for receiving the inter-component data signal and clock signal from the transmitter means in the other component, the receiver means including:

a receiver latch means for latching the data signal from the transmitter means that is clocked by the clock signal recieved from the transmitter means;

a buffer means operably connected to the receiver latch means for storing a plurality of latched data signals;

a write pointer means that is also clocked by the clock signal received from the transmitter means for determining where the data signal in the receiver latch means will be written into the buffer means;

buffer output means for providing a selected latched data signal from the buffer means to the component; and

a read pointer means that is clocked by the local clock signal for determining where in the buffer means the selected latched data signal will be read.

5,625,832

DISTRIBUTED PROCESSING CONTROL METHOD AND DISTRIBUTED PROCESSING SYSTEM

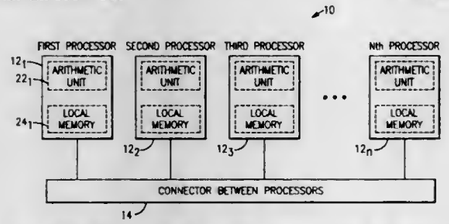
Gyo Ohsawa, and Hideaki Komatsu, both of Yokohama, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1995, Ser. No. 388,534

Claims priority, application Japan, Feb. 16, 1994, 6-019177

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **14 Claims**



9. A distributed processing system equipped with a plurality of processors, said system comprising:

a designation means for designating a group of processors at which a program for effecting distributed parallel processing of calculation is to be loaded, among said plurality of processors which each have an ID for identification and in a predetermined number of processors of which array data is distributed and held, said array data belonging to one or a plurality of arrays distributed and held in said predetermined number of processors included in said plurality of processors;

an allocation means for allocating partial arrays, which are to be managed, to each of said processors included in said group, for arrays which are defined or declared in said program;

an instruction means for instructing the preparation of a table in each of said processors included in said group, for calculation using said arrays in said program, based on said partial arrays managed by each of said processors included in said group, said table including a column for listing said IDs of said processors to which information including said array data should be sent from each of said processors included in said group and for listing said IDs of said processors from which each of said processors included in said group should receive information including said array data, in order to effect calculation; and

a calculation instruction means for executing, in each of said processors included in said group, calculation using said arrays by effecting sending or receiving processing of said information between respective processors included in said group.

5,625,833

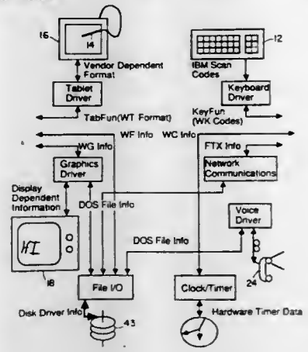
DOCUMENT ANNOTATION & MANIPULATION IN A DATA PROCESSING SYSTEM

Stephen R. Levine, North Andover, Mass.; Alex J. Harui, Derry, N.H.; Chia-Chuan Hsiao, Brookline, Mass.; Karen Donoghue, Melrose, Mass., and Michael W. Schirpke, Bedford, Mass., assignors to Wang Laboratories, Inc., Billerica, Mass.

Continuation of Ser. No. 305,909, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 46,374, Apr. 7, 1993, abandoned, which is a contiuuation of Ser. No. 396,739, Aug. 18, 1989, abandoned, which is a continuation of Ser. No. 200,091, May 27, 1988, abandoned. This application Mar. 20, 1995, Ser. No. 406,818

Int. Cl.[6] G06F *15/00;3/14*

U.S. Cl. 395—800 **11 Claims**



1. A data processing system comprising:

a processor programmed with an annotation program;

a memory including annotation files and image files;

a display coupled to said processor displaying views generated during execution of said annotation program; and

a keystroke annotation input device coupled to said processor, said processor:

displaying an annotatable image;

accepting keystroke annotation input from said annotation input device, each input of said sequence which is subsequent to a first input being entered in a sequential relationship to a prior input, and displaying a composite image comprising said annotatable image and the corresponding keystroke annotations; and

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storing said composite image, said annotatable image and said annotations along with said sequential relationships between said annotation inputs.

5,625,834

INFORMATION PROCESSING SECTION AND SYSTEM FOR OPERATING A PLURALITY OF VECTOR PIPELINE SETS IN TWO DIFFERENT MODES

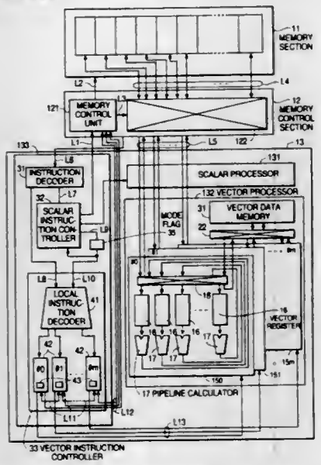
Takeshi Nishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 883,011, May 14, 1992, abandoned. This application Mar. 27, 1995, Ser. No. 411,076

Claims priority, application Japan, May 14, 1991, 3-107721

Int. Cl.[6] G06F *15/76*

U.S. Cl. 395—800 **1 Claim**



1. An information processing system, comprising:

a memory section for storing data signals and a sequence of instructions, a processing section for processing said data signals in accordance with said instructions, and a memory control section for controlling said data signals and said instructions to deliver said data signals and said instructions between said processing section and said memory section; and

wherein said data signals are classified into scalar and vector data signals and said instructions are classified into scalar and vector instructions;

said processing section comprising:

an instruction controller supplied with said instruction sequence through said memory control section for producing scalar and vector instruction information signals in response to said scalar and said vector instructions, respectively;

a vector data memory;

a scalar processor for processing the scalar data signals when said scalar instruction information signals are produced from said instruction controller; and

a vector processor for processing the vector data signals to produce a result signal representative of a result of processing when said vector instruction information signals are produced from said instruction controller;

said vector processor comprising a plurality of vector pipeline sets for processing the vector data signals in a pipeline fashion in response to said vector information signals in cooperation with said memory control section;

said instructions including a mode instruction for selectively operating said vector pipeline sets in a first mode wherein said plurality of vector pipeline sets execute an operation in parallel with one another and a second mode which is different from said first mode wherein said plurality of vector pipeline sets execute different operations independently of one another;

said instruction controller including,

mode indication means for selectively operating said plurality of vector pipeline sets in parallel with and independently of one another when said first and said second modes are indicated by said mode instruction, respectively;

a vector instruction controller producing vector control signals according to said vector instruction information signals received from said instruction decoder, said vector instruction controller including,

a local instruction decoder configured to provide said vector instruction information signals to said vector processor; and

a plurality of vector instruction control units each connected to said local instruction decoder and to a corresponding one of said vector pipeline sets, wherein in said first mode, said local instruction decoder supplies all of said vector instruction control units with said vector instruction information signals, and in the second mode, a selected one of said vector instruction control units is supplied with said vector information signals, and wherein each of said vector instruction control units includes a vector length register used to define an operation to be performed by a corresponding one of said vector pipeline sets,

wherein each of said scalar instructions and vector instructions comprises:

an op code field for specifying an operation code of said vector instructions and scalar instructions; and

an address field including a first, second and third field, said first field including a vector pipeline set indication field and an operation result storage register indication field, said second field including a calculation data register field, and said third field including a vector data memory control field and a vector data register indication field,

wherein said vector pipeline set indication field indicates which of said vector pipeline sets are to be used when executing said vector instructions in the first mode, said operation result storage register indication field indicating which of said vector registers of a selected one of said vector pipeline sets are to be used for storing an operation result when executing said vector instructions, and said vector data memory control field indicating whether said vector data memory is to be used when executing said vector instructions.

5,625,835

METHOD AND APPARATUS FOR REORDERING MEMORY OPERATIONS IN A SUPERSCALAR OR VERY LONG INSTRUCTION WORD PROCESSOR

Mahmut K. Ebcioglu, Somers, N.Y.; David A. Luick, Rochester, Minn.; Jaime H. Moreno, Hartsdale; Gabriel M. Silberman, Millwood, both of N.Y., and Philip B. Winterfield, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1995, Ser. No. 435,411

Int. Cl.[6] G06F *9/38*

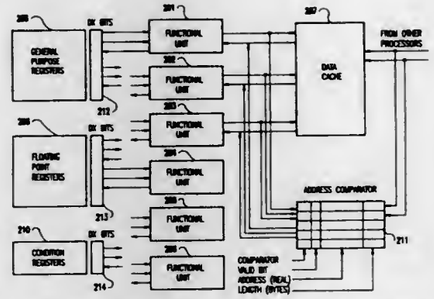
U.S. Cl. 395—800 **3 Claims**

1. A method of reordering memory operations in superscalar or very long instruction word (VLIW) processors even for arbitrarily separated and ambiguous memory references comprising the steps of:

decoding instructions issued by a processor;

determining if a decoded instruction is an out-of-order load instruction and, if so, determining if the out-of-order load instruction generates an exception;

setting a delayed exception bit associated with a target register of the load instruction for an out-of-order load instruction which generates an exception;



saving a memory address of an out-of-order load instruction which does not generate an exception in an address comparator and setting a valid bit for the saved memory address in the address comparator;

determining if a decoded instruction is a store operation;

comparing a range of memory addresses referenced by a decoded store instruction with all entries in the address comparator;

for each match of an entry in the address comparator, setting the valid bit of the corresponding entry to invalid;

determining if a decoded instruction is a commit operation;

checking the valid bit of the address comparator entry associated with a target register of the decoded commit operation and generating a delayed exception if the valid bit is set to invalid and, at the same time, checking the delayed exception bit of a source register of the commit operation and, if the delayed exception bit is set, generating a delayed exception; and

aborting an excepting instruction and transferring control to an exception handler.

5,625,836

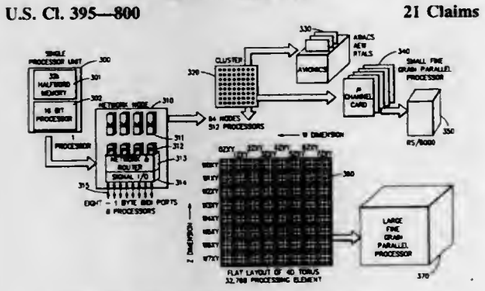
SIMD/MIMD PROCESSING MEMORY ELEMENT (PME)

Thomas N. Barker, Vestal; Clive A. Collins, Poughkeepsie; Michael C. Dapp, Endwell; James W. Dieffenderfer, Owego; Donald M. Lesmeister, Vestal; Richard E. Nier, Apalachin, all of N.Y.; Eric E. Retter, Warren Center, Pa.; Robert R. Richardson, Vestal, and Vincent J. Smoral, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 888,000, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned, and Ser. No. 798,788, Nov. 27, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,374

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—800 **21 Claims**



1. A multi-processor memory system, comprising:

a PME architecture multi-processor memory element on a single semiconductor substrate which functions as a system node, said multi-processor memory element including a plurality of processing memory elements, each of said processing memory elements having a processor coupled with a dedicated local memory;

means on said substrate for distributing interconnection and controls within the multi-processor memory system node enabling the system to perform SIMD/MIMD functions as a multi-processor memory system, wherein each dedicated local memory is independently accessible by the respectively coupled processor in both SIMD and MIMD modes exclusive of access by another processor.

5,625,837

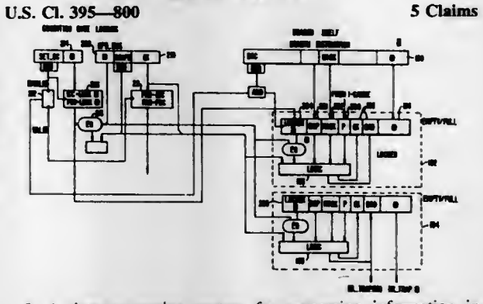
PROCESSOR ARCHITECTURE HAVING OUT-OF-ORDER EXECUTION, SPECULATIVE BRANCHING, AND GIVING PRIORITY TO INSTRUCTIONS WHICH AFFECT A CONDITION CODE

Valeri Popescu, San Diego; Merle A. Schultz, Escondido; Gary A. Gibson, Carlsbad; John E. Spracklen, and Bruce D. Lightner, both of San Diego, all of Calif., assignors to Hyundai Electronics America, San Jose, Calif.

Division of Ser. No. 622,893, Dec. 5, 1990, which is a continuation-in-part of Ser. No. 451,403, Dec. 15, 1989, Pat. No. 5,487,156. This application Jun. 6, 1995, Ser. No. 471,651

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—800 **5 Claims**



1. A data processing system for processing information in response to an ordered series of instructions including instructions that control arithmetic operations on the information and a plurality of branch instructions, each branch instruction accepting input from a stored condition code, the data processing system comprising:

a register unit that stores information;

a fetch unit that continuously fetches instructions from the series of instructions;

a shelver coupled to the fetch unit to receive fetched instructions and to store multiple such instructions, wherein each instruction stored within the shelver is assigned a priority, and wherein such instruction stored within the shelver is stored with a sequential instruction identifier assigned in the order fetched, the sequential instruction identifier being an indicator of seniority within the shelver;

a scheduler coupled to the shelver that continuously selects instructions in the shelver for which all information required for execution is available in the register unit or the shelver for execution and that issues those instructions for execution in an order in accordance with the priority of each instruction and a seniority of each instruction within the shelver as indicated by said sequential instruction identifier;

an arithmetic unit coupled to the scheduler that perform operations on information in the register unit or shelver in response to instructions supplied from the shelver to generate execution results;

a branch predictor that predicts a speculative sequence of instructions following each branch instruction, wherein the fetch unit fetches instructions in accordance with the speculative sequence;

an evaluator that evaluates each branch instruction subsequent to the execution of a last instruction that affects the stored condition code that is the input to the branch instruction;

an incorrect branch repairer that, upon detection of an incorrectly predicted branch instruction by the evaluator, repairs

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effects of the incorrectly predicted branch instruction and all instructions of the speculative sequence following the branch instruction;

and wherein

the shelver assigns a higher priority to instructions that affect the stored condition code,

whereby the assignment of high priority to instructions that affect the stored condition code accelerates detection and repair of effects of incorrectly predicted branches.

5,625,838

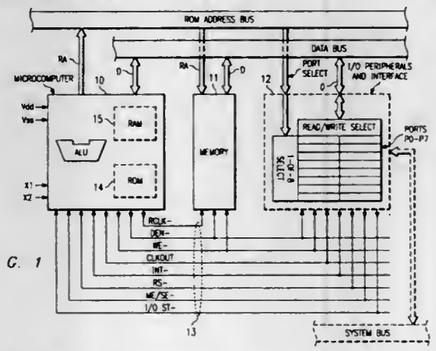
MICROCOMPUTER SYSTEM FOR DIGITAL SIGNAL PROCESSING

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 434,173, May 1, 1995, which is a continuation of Ser. No. 837,787, Feb. 18, 1992, abandoned, which is a division of Ser. No. 468,423, Jan. 22, 1990, abandoned, which is a division of Ser. No. 841,123, Mar. 18, 1986, abandoned, which is a division of Ser. No. 350,852, Feb. 22, 1982, Pat. No. 4,577,282. This application Jun. 7, 1995, Ser. No. 482,474

Int. Cl.[6] G06F *13/10;9/302;9/38*

U.S. Cl. 395—800 **1 Claim**



C. 1

1. A disk drive, comprising:

1) a disk drive assembly including an electrical motor;

a) a disk drive motor control connected to said electrical motor and including:

i) a microcomputer device for digital signal processing including:

aa) a semiconductor substrate;

bb) a bus extending across a portion of said semiconductor substrate and including plural conductors capable of carrying data bits in parallel;

cc) a memory connected to said bus and located on said semiconductor substrate;

dd) a hardware multiplier and an arithmetic logic unit, both located on said semiconductor substrate, interconnected with each other and the bus; and

ee) a control circuit, located on said semiconductor substrate and interconnected with said memory, said hardware multiplier and said arithmetic logic unit, for executing different instructions in instruction cycles, each instruction involving a sequence of different operations, by simultaneously performing as many as three or more different operations so that execution of instructions is completed in successive intervals of as few as one instruction cycle; and

2) a memory external to and connected to said microcomputer device for storing instructions for controlling said disk drive assembly.

5,625,839

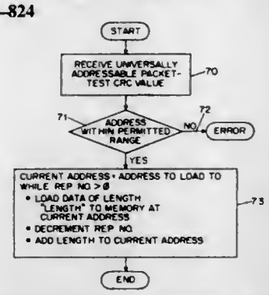
SYSTEM FOR TESTING IF DESTINATION ADDRESS TRANSMITTED WITH DATA PACKET IS A VALID ADDRESS BEFORE STORAGE OF DATA INTO MEMORY OF ELECTRONIC POSTAGE METER

Armin Kobler, Eichholzstrasse, and Philippe Wicht, Rue St. Joseph, both of Switzerland, assignors to Ascom Autelca AG, Berne, Switzerland

Continuation of Ser. No. 176,331, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 738,477, Jul. 31, 1991, abandoned. This application Feb. 3, 1995, Ser. No. 384,392

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—824 **15 Claims**



6. An electronic postage meter comprising a processor having an address space, memory in the address space of the processor, a receiver for receiving a data packet from an external servicing device said data packet comprising address information indicative of an address within the address space of the processor and at least one byte for loading thereto, and storing means comprising:

receiving means for receiving the data packet into a memory of the postage meter;

loading means for loading the data in the data packet to the address indicated by the address information in the data packet;

wherein the receiving means further comprises means for testing to determine whether the address indicated by the address information in the data packet is within a predetermined range of addresses within the address space, and wherein the loading means loads the data only in the event of the test being satisfied.

5,625,840

PROGRAMMABLE EXTERNAL STORAGE CONTROL APPARATUS

Tsutomu Numata; Yuji Kigami; Tatsuya Sakai, all of Sagamihara, and Kenji Shimizu, Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 154,248, Nov. 18, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 421,713

Claims priority, application Japan, Nov. 18, 1992, 4-308353

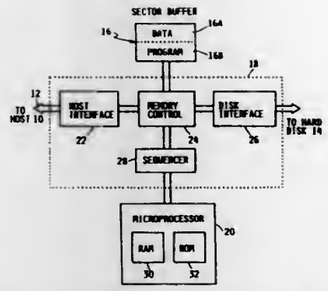
Int. Cl.[6] G06F *13/12*

U.S. Cl. 395—825 **19 Claims**

1. A programmable external storage control apparatus for controlling an external storage in response to a command from a host, comprising:

a buffer temporarily storing data to be transferred between said host and said external storage and further storing a program for controlling data transfer between said host, said buffer, and said external storage;

control means for controlling said data transfer by reading from said buffer and executing said program, which controls said data transfer between said host, said buffer, and said external storage; and



a microprocessor starting said control means in reading said program in response to said command from said host.

5,625,841

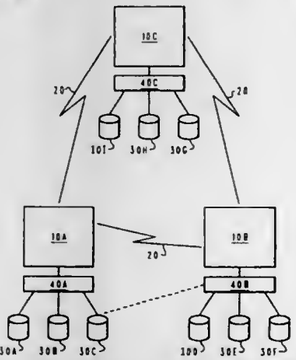
DATA PROCESSING SYSTEM

John Dawkins, Long Itchington; Gary G. Wooding, Leamington Spa, both of England; Robert W. Baird, Calgary, Canada, and Richard A. Moore, Emsworth Portsmouth, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1994, Ser. No. 230,192

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—835 **10 Claims**



1. A method for managing a data processing system including determining the topology of a storage subsystem of the data processing system, the method comprising the steps of:

reading identification data representing a processor of the data processing system;

reading identification data representing an I/O controller associated with the processor;

reading identification data representing a storage element of the storage subsystem associated with the I/O controller and processor;

storing the identification data in a database; and

repeating each of the reading steps and storing step for each storage element of the storage subsystem of the data processing system, wherein a topology database is produced from which the data processing system may identify the physical connections of a storage element of the storage subsystem;

creating a plurality of status fields in the topology database, wherein a status field from the plurality of status fields is associated with each storage element;

storing desired operating characteristics into the plurality of status fields, wherein the desired operating characteristics includes desired operating characteristics for a storage element;

monitoring the actual operating characteristics of the storage element;

comparing the actual operating characteristics with the desired characteristics from the topology database; and

signaling the data processing. System if any discrepancies exist between the desired operating characteristics and the actual operating characteristics of the storage element.

5,625,842

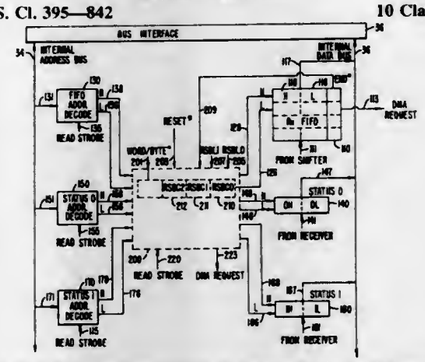
SYSTEM FOR THE AUTOMATIC TRANSFER OF MESSAGE STATUS IN DIGITAL DATA COMMUNICATION

Monte J. Dalrymple, Fremont, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 625,648, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 195,215, May 18, 1988, abandoned. This application Mar. 15, 1994, Ser. No. 214,019

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—842 **10 Claims**



1. In a microcomputer system in communication with a peripheral, said microcomputer system including a microprocessor, a DMA controller, a main memory, and a bus, an interfacing device coupled to the bus for interfacing between the microcomputer system and the peripheral comprising:

a first storing means for buffering a data block being transferred between the microcomputer system and the peripheral;

a second storing means for buffering the associated status information between the microcomputer system and the peripheral;

transfer control means for combining both the data block buffered through the first storage means and the associated status information buffered through the second storing means to be transferred as a block to or from the main memory in a predetermined sequence by the DMA controller within one DMA transfer cycle;

a first generating means for generating a first DMA request for the DMA controller to transfer the data block; and

a second generating means for generating a second DMA request for the DMA controller to transfer the associated status information.

5,625,843

AUDIO DATA INPUT DEVICE FOR MULTI-MEDIA COMPUTER

Chang-ho Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,725

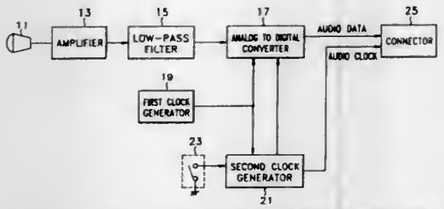
Claims priority, application Rep. of Korea, May 6, 1994, 94-9937

Int. Cl.[6] G06F *3/00;* **G10L** *3/00*

U.S. Cl. 395—842 **7 Claims**

1. An audio data input device for a multi-media computer system having a memory and a keyboard or a mouse as data input means, the audio data input device comprising:

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a microphone for converting input sound into an audio signal;

an audio data transmitting portion for converting the audio signal into digital audio data and for transmitting the digital audio data together with an audio clock signal via a connector of the keyboard or mouse; and

an audio data receiving portion for converting the digital audio data into parallel digital audio data and for transmitting the parallel digital audio data and the audio clock signal to the memory employing a direct memory access (DMA) function

wherein the audio data transmitting portion comprises

an analog-to-digital converter for converting the audio signal into the digital audio data;

a first clock generator for generating a converting clock signal for the analog-to-digital converter;

a second clock generator for generating an audio clock signal from the converting clock signal; and

a connector for transmitting the digital audio data and the audio clock signal.

5,625,844

PROGRAM SPECIFICATION DATA TRANSFER SYSTEM FOR PROGRAM DEVELOPMENT SUPPORT SYSTEM

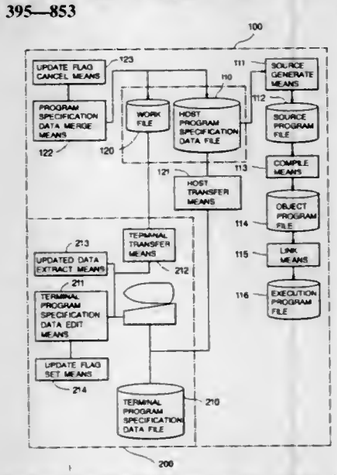
Masahiro Takaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 57,783, May 6, 1993, abandoned. This application Feb. 22, 1996, Ser. No. 605,586

Claims priority, application Japan, May 8, 1992, 4-141940

Int. Cl.[6] G06F *9/00;7/00*

U.S. Cl. 395—853 **4 Claims**



1. A program specification data transfer system for program development support system comprising a host computer and a terminal,

the host computer including:

a host program specification data file to store the program specification data for program generation,

a work file to temporarily store an updated data transferred from the terminal,

host transfer means for transferring the program specification data in said host program specification data file to the terminal, and

specification data merge means for merging the updated data stored in said work file with the program specification data in said host program specification data file and storing a merged program specification data in said host program specification data file, and

the terminal including:

a terminal program specification data file to store the program specification data transferred from said host computer,

edit means for editing the program specification data in said terminal program specification data file,

updated data extract means for extracting only the updated data from said program specification data after editing, and

terminal transfer means for transferring only the updated data extracted by said updated data extract means to said work file at said host computer,

said program specification data has an update flag for judging whether the data is updated or not, and said terminal has an update flag set means for setting an update information at the update flag in said program specification data updated during editing by said edit means,

said updated data extract means judges whether said program specification data after being edited was updated or not by checking the update flag in said program specification data and extracts only the updated data.

5,625,845

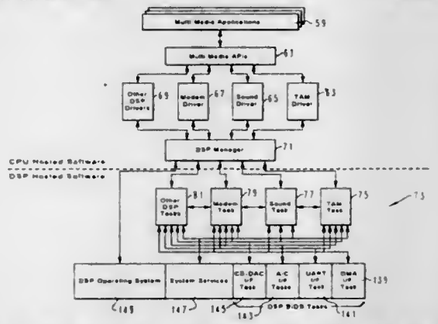
SYSTEM FOR FACILITATING CONTINUOUS, REAL-TIME, UNIDIRECTIONAL, AND ASYNCHRONOUS INTERTASK AND END-DEVICE COMMUNICATION IN A MULTIMEDIA DATA PROCESSING SYSTEM USING OPEN ARCHITECTURE DATA COMMUNICATION MODULES

Gary G. Allran, Boca Raton, Fla.; Donald E. Carmon, Durham, N.C.; Fetchi Chen, Boca Raton; Jose A. Eduartez, Miami Beach, both of Fla.; Charles R. Knox, Raleigh, N.C.; William W. Lawton, Boca Raton, Fla.; Llewellyn B. Marshall, Cary, N.C.; Nathan A. Mitchell; Malcolm S. Ware, both of Raleigh, N.C.; Raymond W. Weeks, Apex, N.C.; Yoav Medan, Haifa, and Uzi Shvadron, Misgav, both of Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1992, Ser. No. 960,976

Int. Cl.[6] G06F *13/14;13/20*

U.S. Cl. 395—856 **34 Claims**



1. A data processing system for executing multimedia applications which interface with multimedia end devices that consume or produce at least one of (a) real-time and (b) asynchronous streamed data, comprising;

a central processing unit for data processing operations including execution of said multimedia application;

a digital signal processor for processing data including said streamed data;

a plurality of modular multimedia software tasks which are executable by said digital signal processor and which may be called by said multimedia application for execution in said digital signal processor;

a plurality of data communication modules for:

(a) dynamically linking selected ones of said plurality of modular multimedia software tasks with selected others of said plurality of modular multimedia software tasks, and

(b) dynamically linking selected multimedia end devices with selected ones of said plurality of modular multimedia software tasks;

each of said plurality of data communication modules allowing continuous, real-time, and unidirectional communication of said streamed data under selected ones of a plurality of standardized streamed data communication protocols;

wherein said standardized streamed data communication protocols include

an owner data driven protocol, wherein said particular one of said plurality of modular multimedia software tasks or particular multimedia end device writes data to said selected one of said plurality of communication modules at a particular production rate, and said particular one of said plurality of modular multimedia software tasks or particular multimedia end device reads data from said selected one of said plurality of communication modules at a consumption rate which is adequate to consume all data written to said selected one of said plurality of data communication modules;

thus defining an open architecture for real-time processing which allows additional modular multimedia software tasks to be added to said plurality of modular multimedia software tasks and selectively linked to at least on of (a) selected ones of said plurality of modular multimedia software tasks, and (b) selected ones of said multimedia end devices.

5,625,846

TRANSFER REQUEST QUEUE CONTROL SYSTEM USING FLAGS TO INDICATE TRANSFER REQUEST QUEUE VALIDITY AND WHETHER TO USE ROUND-ROBIN SYSTEM FOR DEQUEUING THE CORRESPONDING QUEUES

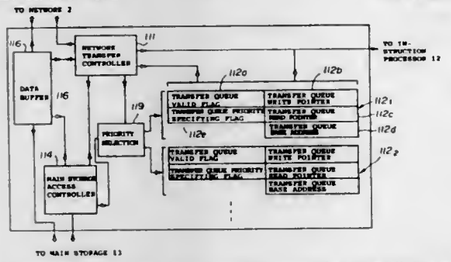
Kazushige Kobayakawa; Shigeru Nagasawa; Masayuki Ikeda; Haruhiko Ueno; Naoki Shinjo; Teruo Utsumi; Masami Dewa, and Kenichi Ishizaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 14, 1993, Ser. No. 166,100

Claims priority, application Japan, Dec. 18, 1992, 4-339094

Int. Cl.[6] G06F *13/00;13/14*

U.S. Cl. 395—872 **16 Claims**



1. A transfer request queue control system for a parallel computer system, said transfer request queue control system comprising:

a plurality of processing units each having a main storage storing instructions and data, an instruction processor reading the instructions from the main storage and executing the instructions, and a transfer processor performing data transfers in units of a packet, each packet comprising a header and body data and each data transfer comprising one or more packets;

a network coupling a transmitting processing unit and a receiving processing unit which .are to perform a data transfer in accordance with a packet thereof and based on information included in them header of the packet, said header including information related to at least a destination of the data, an attribute of a memory access to the main storage and a length of the data, said transfer processor carrying out a parallel process by making a data transfer between the main storage and the network in successive packets depending on the attribute of the memory access; and

said transfer processor of said transmitting processing unit comprising:

a transfer request queue comprising a list of headers of respective packets corresponding to each of plural requested data transfers,

managing means for managing a transfer queue valid flag, which is associated with the transfer request queue and indicates validity of the transfer request queue and thereby whether or not to transfer the packet enqueued in the transfer request queue, for managing respective, plural transfer queue priority specifying flags for a plurality of transfer revest queues, each said transfer queue priority specifying flag indicating a corresponding priority with which the respective transfer request queue is to be executed, and for dequeuing two or more transfer request queues according to a round-robin system if the respective transfer queue priority specifying flags of said two or more transfer request queues indicate a common priority, and

control means for performing a data transfer in response to a data transfer request based on the transfer queue valid flag.

5,625,847

HIGH-SPEED ISA BUS CONTROL SYSTEM FOR CHANGING COMMAND CYCLE EXECUTION SPEED BY SELECTIVELY USING ISA BUS CONTROLLER AND HIGH-SPEED BUS CONTROLLER

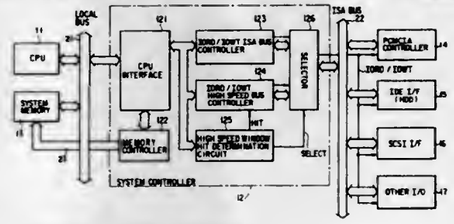
Makoto Ando, and Akihito Nagae, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1995, Ser. No. 429,646

Claims priority, application Japan, Dec. 26, 1994, 6-321865; Apr. 17, 1995, 7-090903

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—880 **12 Claims**



1. A computer system comprising;

a bus master;

a system memory;

a system bus to which a plurality of I/O devices are connected; and

an I/O controller which executes, in accordance with at least one predetermined fixed clock signal, a bus cycle for controlling the plurality of I/O devices on said system bus in response to an I/O access request from said bus master, wherein said I/O controller comprises:

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address storage means for storing information indicating an address space in which, among the plurality of I/O devices on said system bus, said I/O devices that can operate at high speeds are placed,

first command cycle execution means for executing a command cycle that issues a read/write command to the plurality of I/O devices on said system bus at a first cycle speed without changing the at least one predetermined fixed clock signals,

second command cycle execution means for executing a command cycle that issues a read/write command to the plurality of I/O devices on said system bus at a second cycle speed faster than said first cycle speed without changing the at least one predetermined fixed clock signal,

hit determination means for determining whether or not a value of an I/O address from said bus master belongs to the address space for the I/O devices that can operate at high speeds which is stored in said address storage means, and

command cycle switching means for changing the command cycle execution speed for an I/O device to be accessed by selectively using said first and second command cycle execution means according to the determination result of said hit determination means.

5,625,848

MULTIPLE POINT DISTANCE MEASUREMENT CAMERA WITH CORRECTION FOR ORIENTATION

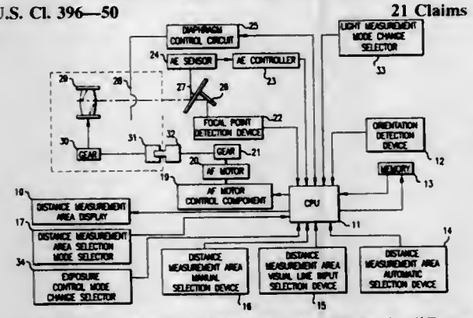
Hitoshi Imanari, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,567

Claims priority, application Japan, Dec. 13, 1993, 5-341994

Int. Cl.[6] G03B *7/00;7/08;13/02;13/36*

U.S. Cl. 396—50 **21 Claims**



1. A camera capable of performing photography in different orientations comprising:

an establishment device that establishes at least one photographic setting used to perform photography for each orientation, wherein the at least one photographic setting includes a distance measurement area selection mode and the establishment device includes a setting device that sets a set distance measurement area selection mode from a plurality of available distance measurement area selection modes that includes an automatic distance measurement area selection mode, a manual distance measurement area selection mode and a visual line input distance measurement area selection mode;

an orientation detection device that detects the orientation of the camera; and

a controller connected to the establishment device and the orientation detection device that controls the camera according to the at least one established setting corresponding to the detected orientation.

5,625,849

FOCUS STATE DETECTION DEVICE AND METHOD

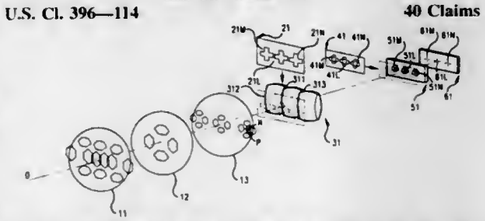
Masamitsu Ozawa, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,175

Claims priority, application Japan, Feb. 21, 1994, 6-022746

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—114 **40 Claims**



1. A focus state detection device having an object lens, an object lens exit pupil and an optical axis extending through a center of the object lens and the exit pupil, the focus state detection device comprising:

at least first and second focus state detection optical systems, each of said first and second focus state detection optical systems comprising a diaphragm mask having a pair of apertures that divide the object lens exit pupil into two regions, the first and second focus state detection optical systems further including first and second focus state detection regions positioned off the optical axis of the object lens, wherein a distance between outer edges of the pair of apertures corresponding to the second focus state detection region is smaller than a distance between outer edges of the pair of apertures of the diaphragm mask corresponding to the first focus state detection region, and wherein a line extending between and terminating at a center of each of the pair of apertures corresponding to the first focus state detection region intersects a line extending between and terminating at a center of each of the pair of apertures corresponding to the second focus state detection region.

5,625,850

METHOD OF CONTROLLING FILM ADVANCE

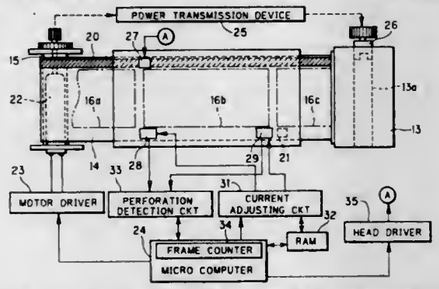
Naoyuki Nishinou, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 262,319, Jun. 17, 1994, abandoned. This application Apr. 25, 1996, Ser. No. 637,561

Claims priority, application Japan, Jun. 18, 1993, 5-148014

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—269 **6 Claims**



1. A method of controlling film advance in a camera having a rectangular exposure opening, a cassette chamber and a film take-up chamber disposed on opposite sides of the exposure opening, and a first photosensor disposed in proximity to the exposure opening, the cassette chamber being loaded with a photographic film cassette which is constituted of a photographic film with perforations formed along a longitudinal direction thereof, a spool and a cassette shell holding the spool rotatably therein, the photographic film being secured at its trailing end to the spool and being wound about the spool into a roll to be contained in the cassette shell in a light-tight fashion, the first photo-sensor being adapted to detect perforations of the photographic film and constituted of a light emitting element and a light receiving element, the method comprising the steps of:

A. rotating the spool by a motor for a constant time in a direction to tighten the photographic film on the spool;

B. driving the light emitting element with a drive current while increasing the value of the drive current in a stepwise manner;

C. comparing a maximum value of an output signal from the light receiving element with a predetermined maximum level;

D. determining the last value of the drive current at which a maximum value of the output signal reaches the predetermined maximum level, as an optimum current value;

E. storing the optimum current value in a memory;

F. driving the light emitting element at the optimum current value;

G. rotating the spool by the motor in a second direction opposite to the first direction to advance a leading end of the photographic film out of the cassette shell toward the take-up chamber;

H. generating a detection signal when the output signal from the light receiving element reaches a predetermined detection level which is lower than the predetermined maximum level;

I. stopping rotating the motor when a predetermined number of detection signals are generated, thereby to position an exposure frame of the photographic film behind the exposure opening;

J. exposing the photographic film to form an image on the exposure frame; and

K. repeating steps F to I after step J.

5,625,851

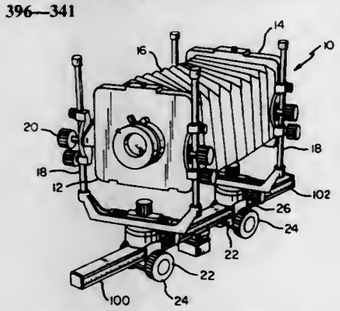
EXTENDABLE GUIDE RAIL FOR A BELLOWS TYPE CAMERA

William M. Boxer, 29 W. Governor Dr., Newport News, Va. 23602

Filed Mar. 8, 1996, Ser. No. 611,326

Int. Cl.[6] G03B *17/04;* **F16B** *2/00;7/04*

U.S. Cl. 396—341 **16 Claims**



1. For a photographic bellows type camera having an image carrier standard and a lens carrier standard which are movable with respect to one another, a composite guide rail to which the image carrier standard and lens carrier standard are slidably mounted, the composite guide rail comprising:

a main section of a desired length having inner walls forming a cavity at a connecting end of the main section length;

a separate extension section of a desired length having a cavity at the connecting end of the extension section length;

an expansion fork including a body and at least two fingers, the body fitting into the cavity in the connecting end of the extension section length, and connected to the extension section, and the at least two fingers slidably fitting into the main section cavity; and

means for releasably separating from one another the at least two fingers,

whereby, when the at least two fingers of the expansion fork are inserted in the main section cavity, with separation of the at least two fingers from one another, the at least two fingers engage the inner walls of the main section cavity locking the main section and the extension section to one another and, with release of separation of the at least two fingers from one another, the at least two fingers disengage from the inner walls of the main section cavity, unlocking the main section and the extension section from one another and allowing the extension section, with the connected expansion fork, to be removed from the main section.

5,625,852

CAMERA PROVIDED WITH A BARRIER

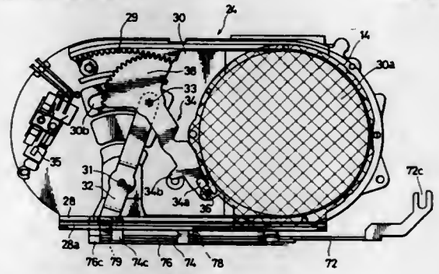
Shigeru Wada, Kishiwada, and Ikushi Nakamura, Sakai, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 23, 1996, Ser. No. 590,112

Claims priority, application Japan, Jan. 27, 1995, 7-011879

Int. Cl.[6] G03B *17/04*

U.S. Cl. 396—349 **10 Claims**



1. A camera comprising:

a driving source which generates a driving force;

a film driving mechanism which uses the driving force to drive a loaded film;

a barrier which is movable between a closed position for covering a lens and an open position for exposing the lens;

a barrier driving mechanism which uses the driving force to move the barrier between the closed position and the open position;

a lens barrel which is movable between a projection position in which it projects from a main body of the camera and a retraction position in which it is retracted in the camera main body; and

a path changeable transmission device which changeably transmits the driving force from the driving source to the film driving mechanism and to the barrier driving mechanism, said path changeable transmission device including a changing member operatively connected with the barrel, the changing member being moved to a first position when the barrel is moved to the projection position of the barrel and to a second position when the barrel is moved to the retraction position of the barrel, the path changeable transmission device having a first state when the changing member is in the first position for transmitting the driving force to the film driving mechanism and a second state when the changing member is in the second position for transmitting the driving force to the barrier driving mechanism.

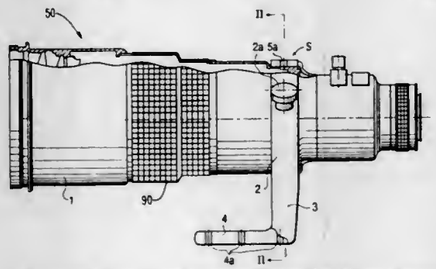
VOL 1197 ISS 5 AP 29 1997 UMI

5,625,853

MOUNTING DEVICE FOR MOUNTING A LENS BARREL TO A SUPPORT STRUCTURE AND HAVING MULTIPLE POSITIONS FOR CONNECTING TO THE SUPPORT STRUCTURE

Yuji Ihara, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,615
Claims priority, application Japan, Oct. 24, 1994, 6-257773
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—419 1 Claim



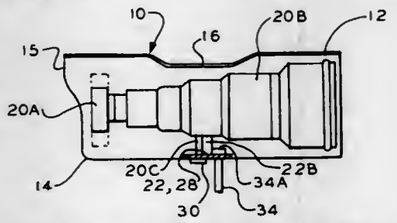
1. A mounting device for mounting a lens barrel on a support structure, comprising:
a rotatable ring unit having a center position and attached to the lens barrel, the ring unit including
a flat portion, and
a support member mounting device positioned in the flat portion so that the flat portion contacts the support structure and provides a flat surface for connecting the ring unit to the support structure when the ring unit is connected to the support structure, the ring unit being rotatable to align the support member mounting device for connection to the support structure;
a mounting seat having at least one support member mounting device arranged thereon for connecting the mounting seat to the support structure; and
an arm which connects the mounting seat to the ring unit, where the arm, the mounting unit and the ring unit are integrally formed as a single component, and the flat portion of the ring unit, the center position of the ring unit and the arm lie on the same line with the center position between the flat portion and the arm, thereby allowing either the ring unit or the mounting seat to be connected to a support structure to mount the lens barrel on the support structure.

5,625,854

SHIELD FOR PROTECTING CAMERA EQUIPMENT

Samuel White, 27 Arthur Ter., Hackettstown, N.J. 07840

Filed Oct. 30, 1995, Ser. No. 549,956
Int. Cl.[6] G03B *29/00;17/02*
U.S. Cl. 396—429 17 Claims



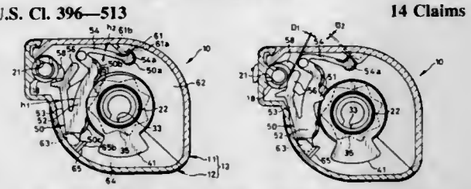
1. A shield for protecting camera equipment comprising:
a hood open at a forward end and an aft end and having a self-supporting shape; and
a support means adapted to be attached to said camera equipment for supporting said hood, said hood extending from said support means to shield said camera equipment fore and aft of said support means.

5,625,855

PHOTOGRAPHIC FILM CASSETTE WITH LOCK BIASING LIGHT SHIELD CLOSED

Tetsuya Takatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 19, 1995, Ser. No. 575,031
Claims priority, application Japan, Dec. 26, 1994, 6-323169
Int. Cl.[6] G03B *17/26*
U.S. Cl. 396—513 14 Claims



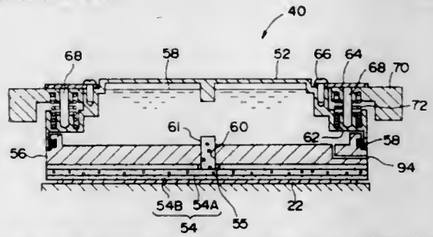
1. In a photographic film cassette comprising a rotatable spool, light-shielding means mounted behind a film passage mouth so as to be rotatable between a closed position for preventing ambient light from entering said photographic film cassette and an open position for allowing a filmstrip to pass through said film passage mouth, locking means movable into engagement with said spool to inhibit rotation of said spool and out of engagement with said spool to release said spool, and a cam rotatable together with said light-shielding means, said cam pushing said locking means into engagement with said spool responsive to said light-shielding means being rotated into said closed position, said cam allowing said locking means to move out of engagement with said spool responsive to said light-shielding means being rotated into said open position, the improvement wherein
said locking means has a cam follower surface at which said cam pushes said locking means, and said cam follower surface is adapted to apply an amount of force to said cam in a direction to bias said light-shielding means toward said closed position while said light-shielding means is in said closed position.

5,625,856

IMAGE FORMING SOLUTION APPLICATOR, IMAGE FORMING SOLUTION APPLICATION UNIT, AND METHOD OF MANUFACTURING APPLICATOR

Hiroyuki Kobda; Kobji Uchida, and Atsuhiro Doi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 30, 1996, Ser. No. 681,992
Claims priority, application Japan, Aug. 4, 1995, 7-200014
Int. Cl.[6] G03D *5/06*
U.S. Cl. 396—604 21 Claims



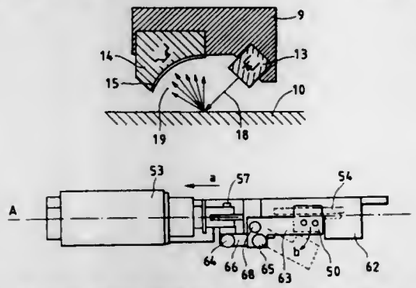
1. An image forming solution applicator which is formed of a flexible, porous material, and which can absorb and hold an image forming solution supplied from an external portion, and from which the absorbed and held image forming solution flows out due to said applicator contacting an image recording material, and which applies the image forming solution to the image recording material by moving relatively to the image recording material while contacting the image recording material,
wherein an average porosity of a first region of said applicator, to which first region the image forming solution is supplied, is greater than an average porosity of a second region of said applicator, which second region contacts the image recording material.

5,625,857

IMAGE FORMING APPARATUS WHICH MEASURES DEPOSIT AMOUNTS OF TONER

Akira Shimada; Toru Miyasaka; Nobuo Tokoro, and Shin-ya Sato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1995, Ser. No. 369,216
Claims priority, application Japan, Jan. 18, 1994, 6-003413; Feb. 3, 1994, 6-011462; Feb. 10, 1994, 6-016078
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—49 19 Claims



15. An image forming apparatus by electro-photographic process using a plurality of colors of toner and black toner, having an image forming base medium for electro-photography, a measurement means for measuring deposit amounts of a plurality of colors of toner and black toner of images formed on said base medium and a control means for controlling a concentration of each toner image on the basis of said measured deposit amounts of said plurality of colors of toner and black toner, said apparatus being characterized in:
that said measurement means comprises a container with a cover plate for storing a toner deposit amount sensor therein, and a moving means for shifting said toner deposit amount sensor between a measurement position, said toner deposit amounts being measured at said measurement position, and a containment position, said toner deposit amount sensor being shifted to and stored in said container by closing said cover plate, and measurement characteristics of said toner deposit amount sensor being corrected by using a correction plate provided in said container, except the time of measuring said deposit amount of toner formed on said base medium.

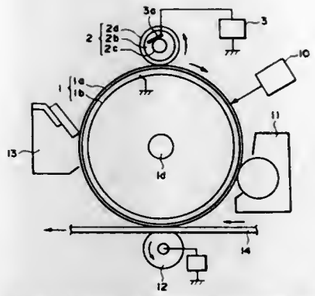
5,625,858

CONTACT CHARGING MEMBER, PROCESS FOR PRODUCING SAME AND ELECTROPHOTOGRAPHIC APPARATUS USING SAME

Yoshihiro Hirai, Ibaraki-ken; Takashi Yamashita, Nagareyama, and Masaaki Takenaka, Kashiwa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, and Canon Kasei Kabushiki Kaisha, Ibaraki-ken, both of Japan

Filed Jan. 16, 1996, Ser. No. 586,091
Claims priority, application Japan, Jan. 18, 1995, 7-005729
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—176 16 Claims

1. A contact charging member to be abutted against a charge-receiving member and supplied with a voltage for charging the charge-receiving member, comprising an electroconductive substrate, an elastic layer and a surface layer disposed in lamination; said surface layer comprising a crosslinked polymer crosslinked by irradiation with an electron beam.

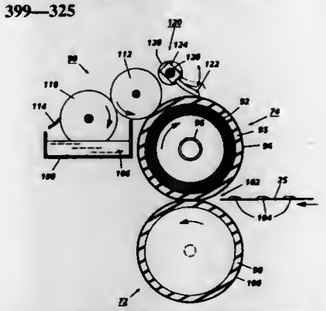


5,625,859

COLOR TRANSPARENCY FUSER WITH STREAK ELIMINATION PROCESS AND STRUCTURE

Rabin Moser, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1995, Ser. No. 369,431
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—325 12 Claims



1. A method of fusing toner images to substrates such as plain paper, said method including the steps of:
supporting a heated fuser member for rotation;
contacting said heated fuser member with a pressure member;
applying release agent material to one of said members;
in a first mode of operation, passing a substrate containing images between said two members and contacting said one of said members with a metering structure for uniformly distributing said release agent material on said one of said members; and
in a second mode of operation, passing a substrate containing images between said two members with said metering structure being out of contact with said one of said members.

5,625,860

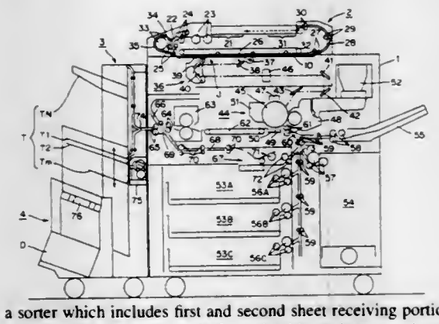
IMAGE FORMING APPARATUS WITH CONTROL MEANS FOR COORDINATING IMAGE FORMATION AND PROCESSING OPERATIONS SO AS TO PROVIDE FOR MORE EFFICIENT OVERALL OPERATION

Koji Maeda; Yoshiki Yoshioka; Junichi Oura, and Hidehiro Tabuchi, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1996, Ser. No. 603,864
Claims priority, application Japan, Mar. 6, 1995, 7-045989; Mar. 6, 1995, 7-045990
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—403 37 Claims

1. An image forming apparatus comprising:
image forming means for forming an image on a sheet;

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a sorter which includes first and second sheet receiving portions for receiving sheets each formed with an image and post-processing means for performing a post-process on a sheet received by the second sheet receiving portion;

interruption mode setting means for designating an interruption mode; and

control means for, when the interruption mode is designated by the interruption mode setting means during the post-process performed by the post-processing means, permitting the image forming means to perform image formation and controlling the sorter so that sheets each formed with an image are received by the first sheet receiving portion, while permitting the post-processing means to continuously perform the post-process, and

the first sheet receiving portion includes a non-sort bin which is used when sheets each formed with an image are not to be sorted; and

the second sheet receiving portion includes a plurality of sort bins which are used When sheets each formed with an image are to be sorted.

5,625,861

POROUS METAL BODY AND PROCESS FOR PRODUCING SAME

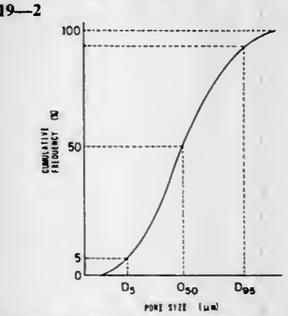
Takashi Nishi, Hirakata; Akira Kosaka, Neyagawa; Jun Funakoshi, Suita, and Ryutaro Motoki, Hirakata, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Oct. 18, 1995, Ser. No. 544,891

Claims priority, application Japan, Oct. 20, 1994, 6-255228; Dec. 12, 1994, 6-307327; Dec. 12, 1994, 6-307328

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—2 **8 Claims**



1. A process for producing a porous metal body having a porosity of 7 to 50%, pore sizes of 1 to 500 μm and a pore distribution satisfying the relationship of:

$$(D_{95}-D_5)/D_{50} \leqq 2.5$$

wherein D_5 is the pore size on the cumulative distribution curve of the pore sizes at a cumulative frequency of 5%, D_{50} is the pore size on the curve at a cumulative frequency of 50% and D_{95} is the pore size on the curve at a cumulative frequency of 95%, the process comprising:

(a) the step of pressing a metal powder into a shaped body, the metal powder, when having its particle sizes represented by a cumulative distribution curve, satisfying the relationship of:

$$(R_{95}-R_5)/R_{50} \leqq 2.5$$

wherein R_5 is the particle size at a cumulative frequency of 5%, R_{50} is the particle size at a cumulative frequency of 50% and R_{95} is the particle size at a cumulative frequency of 95%, R_{50} being in the range of 10 to 1000 μm, and

(b) the step of sintering the shaped body by hot isostatic pressing to obtain the porous metal body.

5,625,862

AQUEOUS BIPHASIC PLUTONIUM OXIDE EXTRACTION PROCESS WITH PH AND PARTICLE CONTROL

David J. Chaiko, Woodridge, and R. Mensah-Biney, Downers Grove, both of Ill., assignors to ARCH Development Corporation, Chicago, Ill.

Division of Ser. No. 928,790, Aug. 11, 1992, Pat. No. 5,411,149. This application May 1, 1995, Ser. No. 431,733

Int. Cl.[6] C01G *57/00*

U.S. Cl. 423—3 **6 Claims**

1. A method of beneficiating a plutonium oxide in a silica-containing material, the material interacted with a biphasic aqueous medium without use of a surface active agent, said medium having immiscible salt and polymer phases, such that greater than 99% of the plutonium oxide is partitioned to one of said phases, said method comprising:

controlling the pH of said medium to direct partitioning of the plutonium oxide to one of said phases.

5,625,863

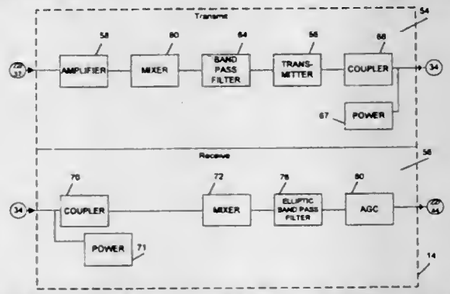
VIDEO DISTRIBUTION SYSTEM USING IN-WALL WIRING

Charles Abraham, Wayne, Pa., assignor to VideoCom, Inc., Wayne, Pa.

Continuation-in-part of Ser. No. 304,495, Sep. 12, 1994, Pat. No. 5,592,482, which is a continuation-in-part of Ser. No. 180,421, Jan. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 822,329, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 515,578, Apr. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,208, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 344,907, Apr. 28, 1989, abandoned. This application Sep. 12, 1995, Ser. No. 526,871

Int. Cl.[6] H04N *7/10*

U.S. Cl. 455—3.3 **14 Claims**



1. A video distribution system for selectively distributing video signals originating from at least one video signal source having a plurality of independent video signals comprising:

a) a display monitor;

b) AC electrical wiring;

c) a remote device connected to said display monitor and to said AC electrical wiring comprising:

1) a first video signal selector device for generating a selection signal corresponding to one of said plurality of independent video signals,

2) a first transmitter/receiver tuned to a first frequency band for:

I) matching the characteristic impedance of said AC electrical wiring,

ii) transmitting said selection signal over said AC electrical line, and

iii) receiving said one of said plurality of independent video signals;

d) a distribution device connected to said AC electrical wiring and to said at least one video signal source comprising:

1) a second transmitter/receiver tuned to said first frequency band for:

I) matching the characteristic impedance of said AC electrical wiring,

ii) receiving said selection signal, and

iii) transmitting said one of said plurality of independent video signals corresponding to said selection signal over said AC electrical line to said first power line coupler;

2) a second video signal selector for tuning said one of said plurality of independent video signals from said video signal source for transmission to said display monitor.

5,625,864

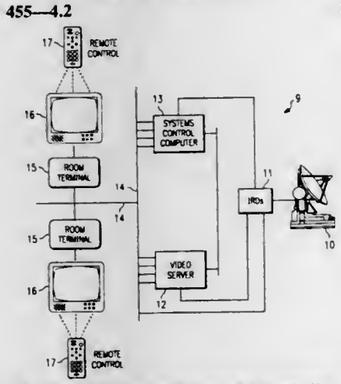
INTERACTIVE DIGITAL VIDEO SERVICES SYSTEM WITH STORE AND FORWARD CAPABILITIES

Harry S. Budow, 5904 Kensington Dr., Plano, Tex. 75093, and Glen E. Alcorn, 2509 Deep Valley Trail, Plano, Tex. 75023

Continuation of Ser. No. 248,890, May 25, 1994, Pat. No. 5,521,631. This application Jun. 30, 1995, Ser. No. 497,728

Int. Cl.[6] H04N *7/173*

U.S. Cl. 455—4.2 **16 Claims**



1. An interactive video services system for enabling a user at a hospitality establishment to access and control presentation of digitized video programs on a television, the system comprising:

a control unit associated with said television for generating user command signals;

a room terminal electrically connected to said television for formatting and storing said user command signals;

means connected to said room terminal for entering billing information;

a systems control computer (SCS) electrically connected to said room terminal for processing said user command signals;

a property management system connected to said SCS for processing said entered billing information;

a digital video server computer (DVSC) electrically connected to said SCS and to said television for storing a plurality of digitized video programs for presentation on said television;

means connected to said SCS for storing a plurality of advertisements, said SCS further comprising:

means for automatically selecting one of said plurality of advertisements based on historical viewing habits of said user and without additional user input; and

means for initiating presentation of said selected one of said plurality of advertisements on said television on a predetermined channel at a predetermined time or responsive to a queue tone;

wherein said user command signals generated using said control unit comprise select command signals for selecting one of said stored digitized video programs and control command signals for controlling presentation of said selected video program on said television by said DVSC; and

wherein said SCS causes said DVSC to initiate presentation of said selected video program on said television in response to said select signals and controls said presentation of said selected video program on said television by said DVSC in response to said control signals.

5,625,865

CIRCUIT ARRANGEMENT FOR CONTROLLING THE TRANSMISSION OF INFORMATION FOR INTERACTIVE SERVICES

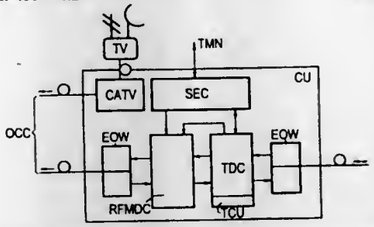
Karl-Heinz Moehrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 20, 1995, Ser. No. 531,277

Claims priority, application Germany, Sep. 29, 1994, 44 34 918.1

Int. Cl.[6] H04N *7/173*

U.S. Cl. 455—4.2 **9 Claims**



1. Circuit arrangement for controlling the transmission of information for interactive services, comprising:

a network structure having a network control center and into which at least one network node, at least one server means, at least one connection unit connected to a plurality of network termination means and to subscriber devices allocated thereto are inserted, wherein information between the at least one server means and at least one of the plurality of subscriber devices is transmitted at least in sections in a uniform channel grid; and

first peripheral control means provided in the at least one connection unit and second peripheral control means provided in the network termination means allocated to the respective subscriber device for controlling transmission of the information between a respective server means and a respective subscriber device, wherein depending on transmission direction, the first peripheral control means of the at least one connection unit or, respectively, the second peripheral control means of the respective network termination means allocates the information to be transmitted to free transmission channels and is inserted thereinto, and that the allocated information is deposited in tables provided therefor in the first peripheral control means; and

wherein the second peripheral control means is constructed and arranged such that the allocated information is provided

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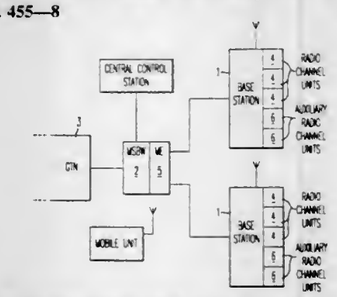
thereto via internal channels, whereupon the second peripheral control means sets an appertaining, internal transmission means or, respectively, reception means to these transmission channels.

5,625,866

MOBILE TELECOMMUNICATION SYSTEM HAVING AN AUXILIARY ROUTING ARRANGEMENT

Stefan Lidbrink, and Henrik Rosenlund, both of Haninge, Sweden, assignors to Televerket, Farsta, Sweden

Continuation of Ser. No. 221,458, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 989,547, Dec. 11, 1992, abandoned. This application Apr. 14, 1995, Ser. No. 422,773
Claims priority, application Sweden, Dec. 12, 1991, 9103681
Int. Cl.[6] H04B *17/00;* **H04Q** *07/30*
U.S. Cl. 455—8 **18 Claims**



1. A mobile telecommunication system comprising:
at least one base station comprising:
plural radio channel units, each adapted to operate at a respective unique frequency, and
at least one auxiliary radio channel unit adapted to operate at each of the respective unique frequencies;
at least one mobile telephone unit adapted for radio communication on at least one of the respective unique frequencies; and
at least one mobile telephone switch connected to said at least one base station, said at least one mobile telephone switch comprising:
means for monitoring a traffic handling capacity of said plural radio channel units,
means for deactivating one of said plural radio channel units when the traffic handling capacity of the deactivated one of said plural radio channel units ceases or falls below a predetermined level for a given period of time, and
means for activating said at least one auxiliary radio channel unit to replace the deactivated one of said plural radio channel units and to operate at a frequency of operation of the deactivated one of said plural radio channel units.

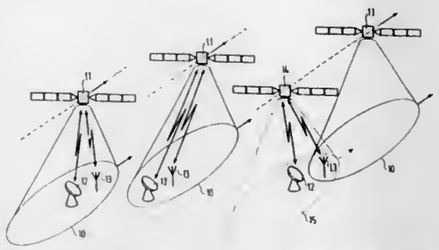
5,625,867

METHOD OF HANDING OFF TRAFFIC IN A LOW ORBIT SATELLITE COMMUNICATION SYSTEM SERVING TERMINALS AND COMMUNICATION SYSTEM USING A METHOD OF THIS KIND

Denis Rouffet, Boulogne Billancourt; Frédéric Berthault, Paris; Michel Mazzella, St Germain en Laye, and Yannick Tanguy, Paris, all of France, assignors to Alcatel Espace, Courbevoie, France

Filed Sep. 30, 1992, Ser. No. 953,228
Claims priority, application France, Oct. 1, 1991, 91 12048
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—13.1 **8 Claims**

1. A communication system, comprising:
low orbiting satellites free of intersatellite links, including a first and a second satellite;



a plurality of connection stations, each of which defines a respective fixed cell, and each of which provides a terrestrial communications network interface;
a plurality of terminals, including (1) active terminals involved in a call, and (2) terminals on standby; and
signal processing units, contained respectively in each of said satellites, in each of said plurality of terminals, and in each of said plurality of connection stations;
wherein a respective position of each of said first and said second satellite is known at each of said plurality of said connection stations from respective satellite ephemerides of said first and said second satellite;
wherein each of said plurality of terminals in a respective fixed cell communicates with a corresponding one of said plurality of connection stations via a respective satellite-terminal link with said first satellite, and further via a corresponding respective satellite-connection station link between said first satellite and said corresponding one of said plurality of connection stations;
wherein each said respective satellite-terminal link and each said corresponding respective satellite-connection station link define a respective pair of links; and
wherein said respective pair of links is handed off simultaneously and in real time from said first satellite to said second satellite after a handing-off decision by said corresponding one of said plurality of connection stations.

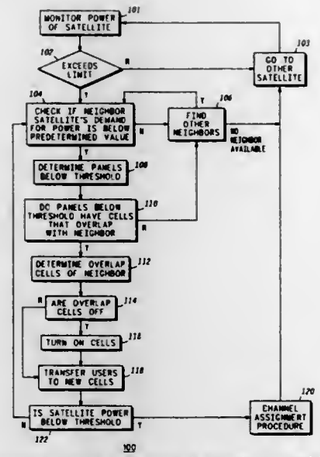
5,625,868

METHOD AND APPARATUS FOR LOAD SHARING IN A SATELLITE COMMUNICATION SYSTEM

Yih G. Jan, and Kenneth M. Peterson, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 220,423, Mar. 30, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 553,083
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—13.4 **11 Claims**

1. A method of dynamically distributing traffic load among satellite nodes in a communication system comprising the steps of:
monitoring a power consumption level of a first satellite node having a first antenna coverage pattern comprised of a first plurality of antenna beams, said first plurality of antenna beams having a first antenna beam; and
communicating with a subscriber unit over a first communication channel within said first antenna beam, the communicating step contributing to said power consumption level,
when the monitoring step determines that said power consumption level exceeds a predetermined level, the method further comprises the steps of:
identifying a second satellite node having a second antenna coverage pattern comprised of a second plurality of antenna beams which at least partially overlaps said first antenna coverage pattern creating an overlap region, said second plurality having a second antenna beam that at least partially overlaps said first antenna beam;
transferring communications with said subscriber unit from said first satellite node to said second satellite by switching off said first communication channel within said first antenna beam, and switching on said first communication channel in said second antenna beam; and



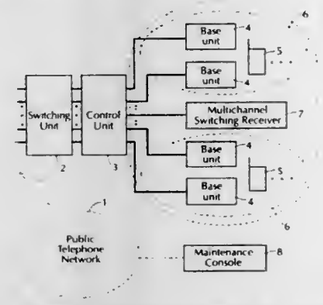
communicating with said subscriber unit over said first communication channel within said second antenna beam after the transferring step, the communicating step contributing to a power consumption level of said second satellite node.

5,625,869

SYSTEM FOR PREVENTING UNAUTHORIZED USE OF A MICRO CELLULAR SYSTEM OPERATING IN COEXISTENCE WITH A CELLULAR SYSTEM

Jun Nagamatsu, Kawasaki; Masaki Terashima, and Jun Yamada, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 25, 1994, Ser. No. 218,750
Claims priority, application Japan, Mar. 26, 1993, 5-068660
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—33.1 **14 Claims**



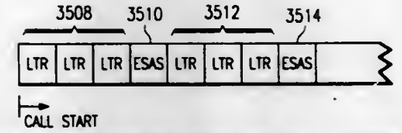
1. A micro cellular communication system authorized to operate on communication frequencies independently allocated by a control unit of said micro cellular system from a frequency band shared with a cellular system, said cellular system transmitting an identifier to said micro cellular system and periodically transmitting a timer reset signal thereto, comprising:
a control unit for receiving and comparing said transmitted identifier to a value stored in said micro cellular system and for permitting said micro cellular system to operate only if there is a match; and
timer means associated with said control unit for permitting said micro cellular system to operate only so long as said periodic timer reset signal is received prior to a predetermined time limit being reached.

5,625,870

FRAUD CONTROL FOR RADIO FLEETS IN A LAND MOBILE RADIO SYSTEM

Billy G. Moon, Southlake, Tex., assignor to Uniden America Corporation, Ft. Worth, Tex.

Filed Jun. 10, 1994, Ser. No. 258,237
Int. Cl.[6] H04B *7/00*
U.S. Cl. 455—33.1 **2 Claims**



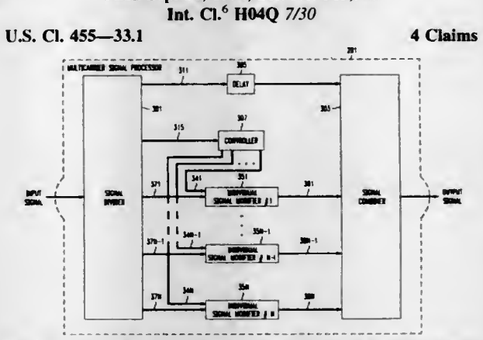
1. A method for preventing unauthorized use of communication equipment in a land mobile radio system which has a cell with a plurality of repeaters, each repeater having a transmitter and a receiver, the method comprising the steps of:
receiving at a repeater receiver in the cell a first identification code transmitted by a first radio,
after receipt of said first identification code from said first radio, establishing a link between said repeater receiver and its corresponding transmitter to set up a retransmission channel,
starting a timer following receipt of said first identification code from said first radio, said timer having a predetermined time-out period, and
terminating said link if a second identification code is not received from said first radio before said timer completes said predetermined time-out period.

5,625,871

CELLULAR COMMUNICATIONS SYSTEM WITH MULTICARRIER SIGNAL PROCESSING

Robert E. Myer, Denville, and Jack C.-C. Wen, Parsippany, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 30, 1994, Ser. No. 315,383
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 455—33.1 **4 Claims**



4. A method for processing a multicarrier signal, said method comprising:
creating at least a first signal, a second signal, and a third signal based on said multicarrier signal;
receiving said second signal in a controller;
analyzing said second signal in said controller to identify at least one carrier signal;
receiving said third signal in a signal modifier;
isolating said at least one carrier signal from said third signal to create an isolated carrier signal;
modifying a phase of said isolated carrier signal to create a modified carrier signal; and
injecting said modified carrier signal into said first signal in accordance with a feedforward architecture.

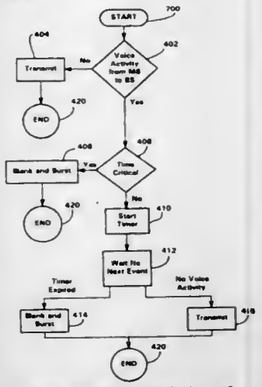
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5,625,872

METHOD AND SYSTEM FOR DELAYED TRANSMISSION OF FAST ASSOCIATED CONTROL CHANNEL MESSAGES ON A VOICE CHANNEL

Francois Sawyer, St. Hubert, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 22, 1994, Ser. No. 362,260
Int. Cl.[6] H04Q 7/20
U.S. Cl. 455—33.1 12 Claims



1. A method of delaying the transmission of a non-time-critical Fast Access Control Channel (FACCH) message from a mobile station to a base station on an established voice channel between said mobile station and said base station, said method comprising the steps of:

starting a timer that specifies a maximum period of time that said FACCH message can be delayed before being transmitted;

monitoring the speech pattern of a user of said mobile station to determine a break in said speech pattern; and

transmitting said FACCH message to said base station on said voice channel during said determined break or upon the expiration of said timer, whichever occurs first.

5,625,873

Patent Not Issued For This Number

5,625,874

TERMINAL STATION WHICH DOES NOT CAUSE AN INTERRUPTION OF COMMUNICATION ON CHANGING OF A COMMUNICATION SYSTEM

Wataru Uchida, and Shigeru Kimura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

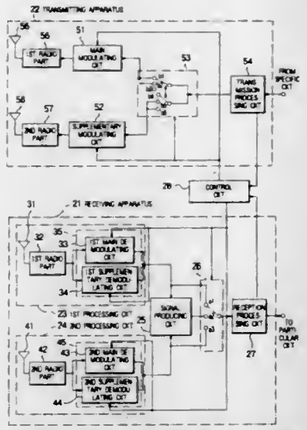
Filed Dec. 21, 1994, Ser. No. 361,215
Claims priority, application Japan, Dec. 24, 1993, 5-327057
Int. Cl.[6] H04B 7/02;7/26
U.S. Cl. 455—33.2 9 Claims

1. A receiving apparatus movable between a main and a supplemental service area for receiving at least one of a main and a supplementary modulated signal to produce a received signal, said main and said supplementary modulated signals being modulated in a main and a supplementary modulation system and then directed to said main and said supplemental service areas, respectively, said receiving apparatus comprising:

first processing means for processing each of said main and said supplementary modulated signals into a first processed signal;

second processing means for processing each of said main and said supplementary modulated signals into a second processed signal;

signal producing means connected to said first and said second processing means for producing a local signal in accordance with said first and said second processed signals;



selecting means connected to said first processing means, said second processing means, and said signal producing means for selecting, as said received signal, one of said first processed, said second processed, and said local signals; and

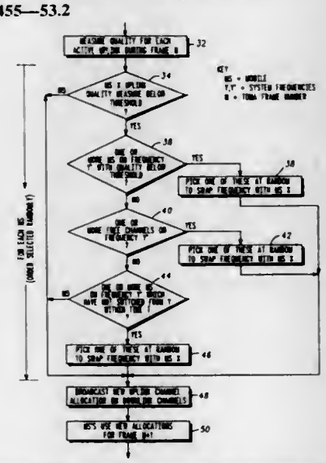
control means connected to said first processing means, said second processing means, and said selecting means for controlling operation of each of said first processing means, said second processing means, and said selecting means in accordance with said received signal to make said receiving apparatus continuously produce said received signal even when said receiving apparatus is moved from one of said main and said supplementary service areas to the other of said main and said supplementary service areas.

5,625,875

METHOD FOR ALLOCATING COMMUNICATIONS RESOURCES IN A RADIO COMMUNICATIONS SYSTEM

Nicholas Whinnett, London; William N. Robinson, Weybourne; Jonathan A. Gibbs, Southampton, and Anthony P. Van Den Heuvel, Windlesham, all of United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1995, Ser. No. 417,567
Claims priority, application United Kingdom, Apr. 22, 1994, 9408007
Int. Cl.[6] H04Q 7/00;9/00
U.S. Cl. 455—53.2 9 Claims



1. A method for allocating communications resources in a radio communications system having a plurality of communications resources for at least one receiver and transmitter to communicate over where the communications resources have signal levels which vary due to a multipath environment resulting in periods of poor communication quality over at least one particular communications resource, the method for allocating communications resources comprising the steps of:

measuring at a first receiver a parameter indicative of a quality of communications between the first receiver and a first transmitter over a first communications resource;

determining whether to allocate a second communications resource to the first receiver and the first transmitter based on the measured parameter;

upon determining that a second communications resource should be allocated to the first receiver and the first transmitter,

allocating the first communications resource to a second receiver and a second transmitter; and

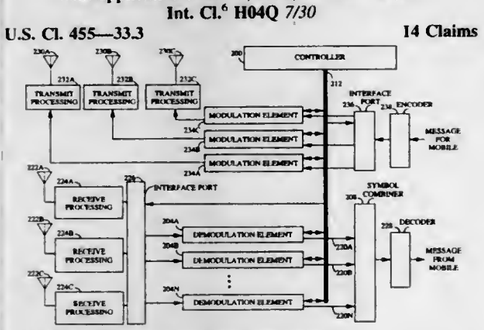
allocating a communications resource that was being used by the second receiver and second transmitter to the first receiver and the first transmitter as the second communications resource, thereby effectively exchanging communications resources of at least two receiver and transmitter pairs in order to effectively reduce periods of poor communications quality due to multipath fading between the first receiver and the first transmitter.

5,625,876

METHOD AND APPARATUS FOR PERFORMING HANDOFF BETWEEN SECTORS OF A COMMON BASE STATION

Klein S. Gilhousen, Bozeman, Mont.; Roberto Padovani, San Diego, Calif., and Lindsay A. Weaver, Jr., Boulder, Colo., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 144,903, Oct. 28, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 405,611
Int. Cl.[6] H04Q 7/30
U.S. Cl. 455—33.3 14 Claims



6. A cellular telephone system comprising:

a mobile unit for generating a reverse link signal and receiving a forward link signal;

a first set of mobile units for generating a first set of other reverse link signals;

a second set of mobile units for generating a second set of other reverse link signals;

a first base station transceiver system having a first radio frequency signal processing system for receiving a first instance of said reverse link signal, a second radio frequency processing system for receiving a second instance of said reverse link signal, and a signal processing system for combining said first and second instances to generate a first digital signal;

a second base station transceiver system for receiving a third instance of said reverse link signal and for generating a second digital signal in response;

a base station controller system combining said first digital signal and said second digital signal into a third digital signal, wherein

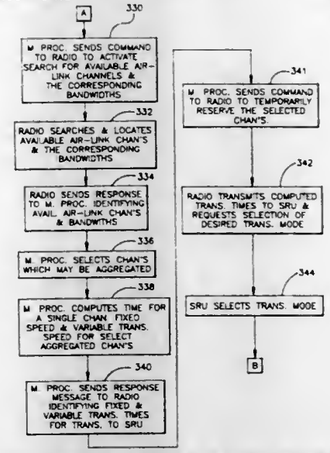
said first instance is received along with said first set of other reverse link signals, and said second instance is received along with said second set of other reverse link signals.

5,625,877

WIRELESS VARIABLE BANDWIDTH AIR-LINK SYSTEM

James M. Dunn, Ocean Ridge, and Edith H. Stern, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1995, Ser. No. 404,505
Int. Cl.[6] H04Q 7/38
U.S. Cl. 455—34.1 20 Claims



1. A wireless bandwidth air-link system for varying the overall bandwidth of air-link communication channels to increase the speed of wireless message transmission, said system comprising:

means for locating and aggregating available air-link communication channels so as to increase the air-link bandwidth for wireless transmission of messages to and from a mobile communication subscriber unit;

means for controlling said locating and aggregating means in communication with said locating and aggregating means, said controlling means enabling and regulating said locating and aggregating means in searching and combining available air-link communication channels, said controlling means receiving request to aggregate air-link communication channels; and

means for communicating with the mobile communication subscriber unit, said communicating means providing a communication link between the mobile communication subscriber unit and said locating and aggregating means for receiving and transmitting messages across the air-link channels to and from the mobile communication subscriber unit.

5,625,878

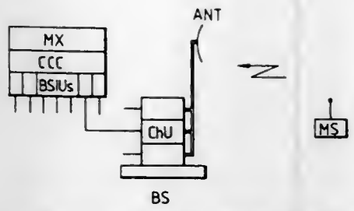
METHOD OF ALLOCATING RADIO CHANNELS

Jussi Löppönen, Helsinki, and Markku Rautiola, Tampere, both of Finland, assignors to Nokia Telecommunications OY, Espoo, Finland

Continuation of Ser. No. 232,216, Aug. 8, 1994, abandoned.
This application Feb. 28, 1996, Ser. No. 608,034
Claims priority, application Finland, Nov. 11, 1991, 915309
Int. Cl.[6] H04Q 9/00
U.S. Cl. 455—34.1 2 Claims

1. A method of allocating radio channels in a radio system, comprising mobile radio stations and several fixed radio stations located separate from one another within a geographical area covered by the radio system, traffic channels and one control channel being allocated to each fixed radio station, and each mobile station having, permanently stored in its memory, a first group of channels of the radio system assigned primarily as control channels, the mobile station searching for a control channel in the first group in a normal hunt sequence, and each mobile station further having, temporarily stored in its memory and updated

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through control channels by the fixed radio stations, a second group of radio channels assigned primarily as traffic channels but also useable as control channels, the mobile station searching for a control channel in the second group in a comprehensive hunt sequence if the normal hunt sequence is unsuccessful, in which method changing of a control channel of a fixed station comprises the steps of:

a) allocating a radio channel permanently belonging to the first group as a new control channel to the fixed base station whenever such a channel is available,

b) allocating a radio channel belonging to the second group as a new control channel if a radio channel permanently belonging to the first group is not available, transferring said radio channel belonging to the second group temporarily to the first group and announcing the change of group through control channels to the mobile stations,

c) assigning a radio channel permanently belonging to the first group, as a control channel of the fixed radio station as soon as it becomes available, and

d) returning a radio channel temporarily transferred to the first group back to the second group, when said channel is freed from use as a control channel, and announcing the change of group through control channels to the mobile station;

the radio channels assigned only as traffic channels being in third and fourth groups of radio channels, and selection of traffic channels for a call comprises the steps of:

e) making a first search for a traffic channel among the channels belonging to the third group,

f) making a further search for a traffic channel among the channels belonging to the second group, if there are no free channels available in the third group,

g) making a still further search for a traffic channel among the channels belonging to the first group, if there are no free channels available in the second group, and

h) making a still further search for a traffic channel among the channels belonging to the fourth group, if there are no free channels available in the first group.

5,625,879

CHANNEL WAITING METHOD FOR A RADIO SYSTEM

Martti Tuulos, Tampere, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

Continuation of Ser. No. 193,049, Jun. 9, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,204

Claims priority, application Finland, Aug. 8, 1991, 913772

Int. Cl.[6] H04G *7/22;7/38*

U.S. Cl. 455—34.1 **6 Claims**

1. A channel waiting method for a radio system which includes a plurality of fixed radio stations positioned apart from one another in a geographical area covered by the radio system, a plurality of mobile radio stations, and a mobile services switching centre which allocates radio channels to all calls in which one or more of said mobile stations participate and places a given call in wait mode if radio channel capacity required by said call is not available, said method comprising the steps carried out at said mobile services switching centre, of:

keeping all calls waiting in a common waiting pool;

calculating a suitability value for each of the waiting calls each time new channel capacity becomes available, the calculated suitability value of each waiting call indicating the lowest suitability when all the radio channel capacity required by said call is not available.

allocating, at most, partly dependent on the waiting order of the waiting calls, the new available channel capacity to a one of said waiting calls for which the available channel capacity is most suitable on the basis of the calculated suitability values of the waiting calls, and when all the radio channel capacity required by said one waiting call is available.

5,625,880

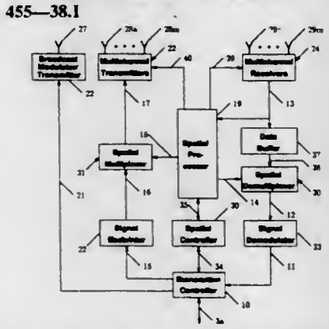
SPECTRALLY EFFICIENT AND HIGH CAPACITY ACKNOWLEDGEMENT RADIO PAGING SYSTEM

Marc H. Goldburg, Redwood City; Richard H. Roy, III, Cupertino; Martin Cooper, and Arlene J. Harris, both of Del Mar, all of Calif., assignors to Arraycomm, Incorporated, Santa Clara, Calif.

Continuation-in-part of Ser. No. 806,695, Dec. 12, 1991, Pat. No. 5,515,378. This application Aug. 1, 1994, Ser. No. 283,470

Int. Cl.[6] H04B *7/00;* **H04Q** *3/02*

U.S. Cl. 455—38.1 **10 Claims**



1. A base station for use in communicating with a pager unit comprising:

a) transmitting means for transmitting broadcast data and message data to said pager unit;

b) receiving means including a plurality of phase-coherent receivers and reception antennas for receiving transmissions from said pager unit;

c) spatial processor means comprising a central processing unit for generating estimates of the direction of said pager unit and demultiplexing weights for use in a spatial demultiplexer from data produced by said receiving means;

d) a received data buffer including parallel arrangements of digital memory, whereby data produced by said receiving means is aligned in time with said spatial demultiplexing weights employed in said spatial demultiplexer; and

e) a base station controller including a central processing unit for controlling the functioning of equipment at said base station, facilitating communications with equipment outside of said base station, and implementing a radio protocol providing for the transmission of channel assignments to said pager unit and for exchanging message and acknowledgment data with said pager unit.

5,625,881

TIME AND FREQUENCY DIVERISTY IN A RADIO SYSTEM HAVING INTERMITTENT OPERATION RECEIVERS

Howard M. Sandler; Leo Strawczynski, both of Ottawa, Canada, and Shirish A. Altekar, La Jolla, Calif., assignors to Bell-Northern Research Ltd., Ottawa, Canada

Filed Apr. 28, 1994, Ser. No. 234,361

Int. Cl.[6] H04B *7/02*

U.S. Cl. 455—38.3 **2 Claims**

1. A method for sending a message from a radio transmitter to a radio receiver in a multipath environment, the method comprising:

encoding the message for error detection and for error correction before transmission;

transmitting the message from the radio transmitter to the radio receiver n times in n sequentially distinct radio transmissions, where n is an integer greater than one, each of the n sequentially distinct radio transmissions being transmitted on a respective radio channel, fading characteristics of each respective radio channel being statistically independent;

alternating the radio receiver between a reception mode in which the radio receiver is enabled to receive radio transmissions and a power-saving mode in which the radio receiver is disabled to reduce power consumption;

receiving the n sequentially distinct radio transmissions;

testing the n sequentially distinct radio transmissions for errors, including subjecting the n sequentially distinct received radio transmissions to error detection;

reconstructing the message from the n distinct radio transmissions, wherein the reconstructing comprises selecting an error-free one of the n sequentially distinct received radio transmissions; and

applying error correction to reconstruct the message at the radio receiver when none of the distinct radio transmissions is error-free.

5,625,882

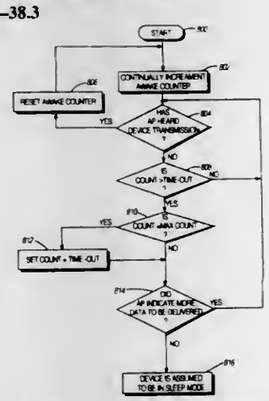
POWER MANAGEMENT TECHNIQUE FOR DETERMINING A DEVICE MODE OF OPERATION

Frederick W. Vook; Mark Demange, both of Schaumburg; Hungkun Chang, Hoffman Estates, and William K. Doss, Lake In The Hills, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 204,034, Mar. 1, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,168

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—38.3 **12 Claims**



1. In a wireless communication system having a service access point and a plurality of mobile battery powered user devices, said user devices being in communication with each other and/or the access point via communication channels, a power management technique for determining when a user device may transfer from an active mode of operation to a sleep mode of operation, said technique comprising the steps, at the user device, of:

initializing a first awake counter, said first awake counter having a maximum count value;

determining a counter time-out value;

incrementing the first awake counter during the user device's active mode of operation;

upon counter time-out, determining whether sleep mode conditions are satisfied; and

when true, entering the sleep mode and

said technique comprising the steps, at the service access point, of:

maintaining a second awake counter for each device and selectively resetting and incrementing the second awake counter for a given device in response to respectively receiving a transmission and receiving no transmission from the given device.

5,625,883

SYSTEM FOR WIRELESS INFORMATION TRANSMISSION BETWEEN TWO DIFFERENT ROOMS

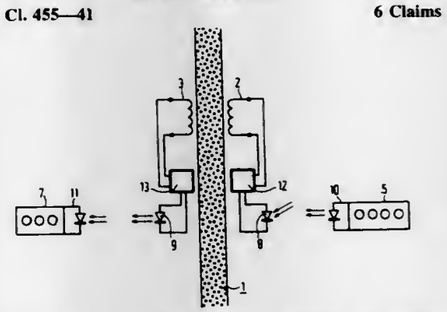
Lukas Leyten, and Mario J. De Bijl, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 359,366, Dec. 20, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 661,835

Claims priority, application Belgium, Dec. 24, 1993, 09301460

Int. Cl.[6] H04B *5/02*

U.S. Cl. 455—41 **6 Claims**



1. System for transmitting information between two different rooms, comprising signal transmitting means installed in one room and signal receiving means installed in the other room, characterized in that said system further comprises:

a single coupling means for effecting simultaneously both inductive and capacitive coupling between the two rooms for unmodulated signal transmission of an information signal, said coupling means having a first part located in said one room and a second part located in said other room, said first and second parts being located substantially opposite each other on opposing sides of a partition or wall that separates the two rooms;

first means for connecting said signal transmitting means to said first part of said coupling means thereby enabling applying said information from said signal transmitting means to said first part of said coupling means; and

second means for connecting said second part of said coupling means to said signal receiving means thereby enabling tapping said information from said second part of said coupling means to said signal receiving means.

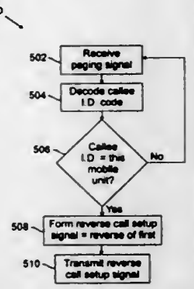
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5,625,884

GLOBAL PAGING WITH REVERSE VIRTUAL CALL SETUP IN WIRELESS PERSONAL COMMUNICATIONS

Richard D. Gitlin, Little Silver, and Chih-Lin I, Manalapan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 8, 1994, Ser. No. 255,684
Int. Cl.[6] H04B 7/00
U.S. Cl. 455—54.1 **18 Claims**



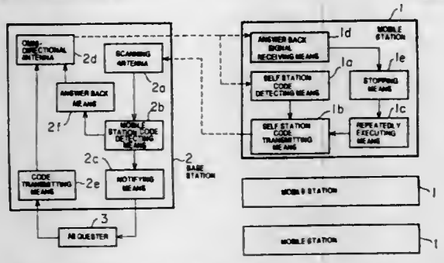
1. A method of paging to initiate a call setup between an originating communications device and a mobile unit, comprising:
receiving a request to call the mobile unit from the originating communications device;
forming a paging signal comprised of a caller identification code and a callee identification code;
storing the paging signal in memory;
continuously transmitting the paging signal;
receiving a paging response signal from the mobile unit, the paging response signal being comprised of a caller identification code and a callee identification code;
comparing the paging signal with the paging response signal; and
terminating the transmitting of the paging signal if a correspondence condition is satisfied such that the caller and the callee identification codes of the paging signal correspond to the callee and the caller identification codes of the paging response signal, respectively.

5,625,885

MOBILE COMMUNICATION SYSTEM HAVING PAGERS FOR PROVIDING TWO-WAY DATA COMMUNICATION BETWEEN A BASE STATION AND MOBILE STATIONS

Isao Nakazawa, and Osamu Morita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 18, 1994, Ser. No. 277,417
Claims priority, application Japan, Dec. 15, 1993, 5-314202
Int. Cl.[6] H04B 7/04
U.S. Cl. 455—54.1 **9 Claims**



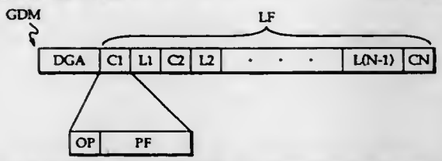
9. A mobile communication system having a base station and a plurality of mobile stations, comprising:
self station code detecting means, which is installed in each mobile station, for detecting transmission of a self station code from said base station;
self station code transmitting means, which is installed in said mobile station, for transmitting the self station code to said base station when said self station code detecting means detects the transmission of the self station code from said base station;
a scanning antenna, which is installed on said base station, a directivity, for scanning directivity directions;
mobile station code detecting means, which is installed in said base station, for detecting a mobile station code included in reception signals received by said scanning antenna;
scanning antenna transmission control means, which is installed in said base station, for transmitting the mobile station code from said scanning antenna;
operation control means, which is installed in said base station, for operating said scanning antenna transmission control means for each of a plurality of divided directivity directions of said scanning antenna for the first half period of one unit scanning period of said scanning antenna; and
transmission control means, which is installed in said mobile station, for operating said self station code transmitting means for each of the plurality of divided directive directions of said scanning antenna for the second half period of said unit scanning period.

5,625,886

METHOD FOR FORMING GROUPS OF COMMUNICATION TERMINALS AND USE OF SAME

Serge C. C. Raes, Lodelinsart, Belgium, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 22, 1995, Ser. No. 408,628
Claims priority, application European Pat. Off., Mar. 22, 1994, 94200739
Int. Cl.[6] H04B 7/26
U.S. Cl. 455—54.1 **12 Claims**



1. Method for forming a group of communication terminals out of a plurality of communication terminals (MS1-N) through allocating to each of said terminals of said group a dynamic group address (DGA) associated with said group, comprising the steps of:
broadcasting to said plurality of terminals (MS1-N) a group definition message (GDM) in which said dynamic group address (DGA) is derivable from one or more conditions (C1-N) regarding one or more classification parameters of said terminals;
checking in each of said terminals (MS1-N) whether its said classification parameters satisfy said conditions; and,
allocating in each terminal of said terminals in which said conditions are thus satisfied said dynamic group address to said terminal.

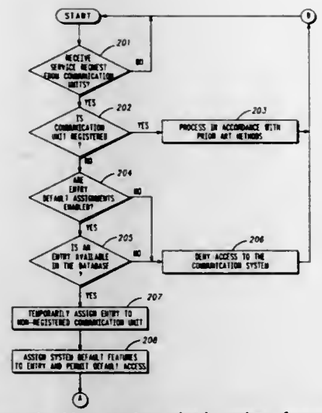
5,625,887

METHOD FOR NON-REGISTERED COMMUNICATION UNITS TO ACCESS A COMMUNICATION SYSTEM

Lizabeth A. Cassidy, Fox River Grove; Daniel J. McDonald, Cary, and Herbert R. Wolf, Elk Grove Village, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 983,198, Nov. 30, 1992, abandoned.
This application May 1, 1995, Ser. No. 434,172
Int. Cl.[6] H04Q 7/38
U.S. Cl. 455—54.2 **3 Claims**

1. In a communication system that includes a plurality of communication units, a limited number of communication resources



that are transceived by a predetermined number of repeaters, and a communication resource allocator, a method for selectively allowing a non-registered communication unit default access to the communication system, the method comprising the steps of:
a) transmitting, by the non-registered communication unit, a service request;
b) upon receiving the service request, accessing by the communication resource allocator a user database to determine whether the non-registered communication unit is registered;
c) identifying, responsive to the step of accessing, whether an entry is available in the user database;
d) when there is an available entry in the user data base, temporarily assigning, by the communication resource allocator, the available entry to the non-registered communication unit to produce a temporary entry in the user data base;
e) when default entry assignments have been enabled, automatically assigning, by the communication resource al locator, temporary default system features to the non-registered communication unit such that the non-registered communication unit has default access to the communication system;
f) identifying, by the communication resource allocator, whether the non-registered communication unit has system access privileges; and
g) when, the non-registered communication unit does not have system access privileges, denying future, default access to the communication system for the non-registered communication unit.

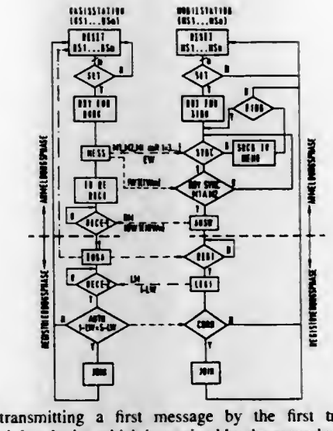
5,625,888

PROCESS FOR COMBINING TRANSMITTING/RECEIVING DEVICES OF A CORDLESS COMMUNICATION SYSTEM TO FORM A COMMUNICATING UNIT

Ralf Rüther; Ulrich Bartsch, and Josef Baumeister, all of Deutschland, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00978, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/10785, PCT Pub. Date May 11, 1994
PCT Flled Oct. 13, 1993, Ser. No. 424,303
Claims priority, application Germany, Oct. 30, 1992, 42 36 778.6
Int. Cl.[6] H04B 7/00
U.S. Cl. 455—56.1 **9 Claims**

1. A process for combining transmitting/receiving devices of a cordless communication system to form a communicating unit, comprising the steps of:
(a) at a request stage
(a1) bringing at least one first transmitting/receiving device and at least one second transmitting/receiving device into a combining-specific transmitting/receiving state,
(a2) transmitting a first message by the first transmitting/receiving device which is received by the second transmitting/receiving device and acknowledged in the form of a return message, the first message and the return message being request-stage-specific messages,
(b) mutually exchanging and storing device-individual identification words, in the transmitting/receiving devices, due to request-stage-specific messages at a registration stage,
(c) transmitting, in addition to the first message and the return message mutually transmitted by the first and second transmitting/receiving devices, at least one further message, at least one of which is generated by control procedures at a user interface of a respective transmitting/receiving device,
(d) acknowledging the further message transmitted by a transmitting/receiving device of the first and second transmitting/receiving devices by a receiving transmitting/receiving device of the first and second transmitting/receiving devices due to a correspondence found within each case reference information corresponding to the further message and stored in the receiving transmitting/receiving device, before the device-individual identification words are stored.

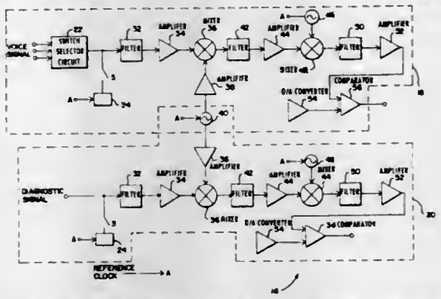


5,625,889

RF SNIFFER MODULE AND METHOD WITH A SELF-TEST CIRCUIT

Keerthilatha Chikkaswamy, Gaithersburg, Md., and Harry Johnson, Springfield, Va., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 13, 1995, Ser. No. 372,510
Int. Cl.[6] H04B 17/02
U.S. Cl. 455—67.1 **16 Claims**



13. A voice and diagnostic signal detection circuit comprising:
a first sniffer circuit for detecting voice signals on a communication channel of a cellular network circuit, the first sniffer circuit having a self test circuit for testing the operation of the first sniffer circuit; and

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a second sniffer circuit for detecting diagnostic signals on a communication channel of a cellular network circuit, the second sniffer circuit having a self test circuit for testing the operation of the second sniffer circuit.

5,625,890

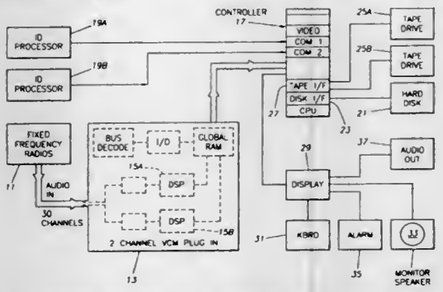
LOGGING RECORDER SYSTEM FOR TRUNKING RADIO

Carl J. Swift, Houston, Tex., assignor to Swift Computers, Inc., Houston, Tex.

Continuation of Ser. No. 85,124, Jun. 29, 1993, abandoned. This application Nov. 27, 1995, Ser. No. 562,643

Int. Cl.[6] H04B *17/00;* **H04Q** *7/28*

U.S. Cl. 455—67.1 **22 Claims**



1. A logging recorder for a trunking radio system having a plurality of channels, wherein one of said channels carries channel assignment information and each of the others of said channels for carrying streams of segments from unrelated conversations, comprising:

a plurality of fixed frequency radios each of which monitors a selected one of said plurality of channels;

a controller which monitors said fixed frequency radios and generates identification information corresponding to said segments for each particular conversation based upon said channel assignment information; and

means for storing said segments and said identification information on a mass storage device.

5,625,891

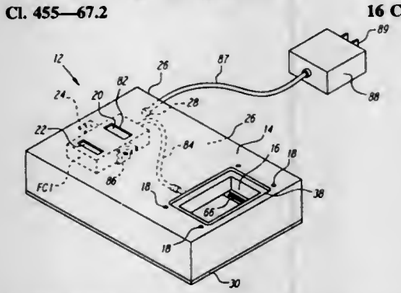
ENCLOSURE FOR TUNING PAGING RECEIVERS

Dominic Tucker, and Ferdinand Aguinaldo, both of P.O. Box 4601, Inglewood, Calif. 90309

Filed Nov. 28, 1994, Ser. No. 345,851

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.2 **16 Claims**



1. A pager tuning system comprising:

a) an electronic pager that includes a receiving antenna and a frequency adjust control,

b) a system enclosure having a cavity structure that includes a bottom surface that further has a rear surface and that is located at a sufficient depth to contain and secure said pager, with said cavity structure having an antenna coupler that interfaces with the receiving antenna on said pager when said pager is inserted into said cavity structure,

c) an electronics circuit comprising:

(1) a first 70 MHz band-pass filter F1 having an input that is connected to the antenna coupler on said cavity structure and that is designed to pass a 70 MHz signal provided by said electronic pager,

(2) an R.F. amplifier U1 that amplifies the 70 MHz signal received from said band-pass filter F1,

(3) a second 70 MHz band-pass filter F2 that receives and further refines the amplified 70 MHz signal from said R.F. amplifier U1,

(4) a frequency counting unit FC1 having circuit means for receiving and processing the 70 MHz signal from said second 70 MHz band-pass filter F2 and producing an output signal that drives an LCD display that displays the pager's operating frequency as set by the frequency adjust control located on said electronic pager, and

(5) a power supply that supplies the required power to said electronics circuit.

5,625,892

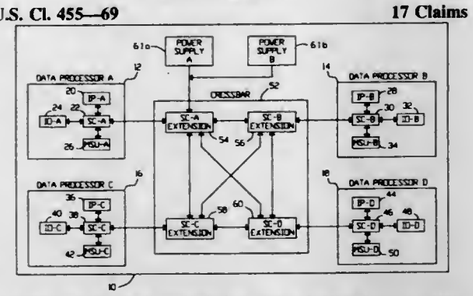
DYNAMIC POWER REGULATOR FOR CONTROLLING MEMORY POWER CONSUMPTION

Mitchell A. Bauman, 48 Indian Hills Dr., Circle Pines, Minn. 55014, and Michael L. Haupt, 3091 Evelyn St., Roseville, Minn. 55113

Filed Dec. 22, 1994, Ser. No. 363,446

Int. Cl.[6] H04B *7/005*

U.S. Cl. 455—69 **17 Claims**



1. For use in a data transmission system having a power source capable of sufficiently providing power up to a predetermined limit, a low power data transmission system comprising:

a plurality of data-transmission means for generating and transmitting a like number of data-write request signals, and for transmitting data signals;

power-limit-evaluation means, coupled to said plurality of data-transmission means, for predicting whether the predetermined limit of the power source has been exceeded, and for generating a power-limit-violation signal when the predetermined limit is exceeded;

a plurality of data-receiving means, for receiving said data and said data-write request signals, and for generating in response thereto data-acknowledge signals; and

delay means, coupled to said plurality of data-receiving means and further coupled to said power-limit-evaluation means, for delaying said data-acknowledge signals upon receiving said power-limit-violation signal.

5,625,893

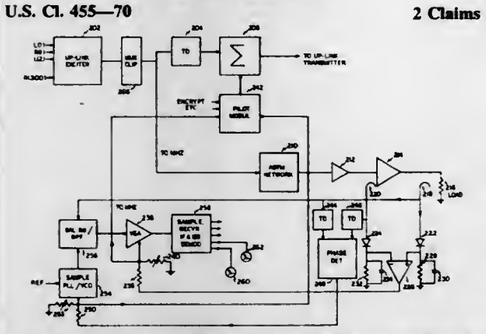
SATELLITE COMMUNICATIONS SYSTEM WITH RECEIVER DISTORTION CORRECTION WHICH IS CONTROLLED BY UP-LINK TRANSMISSION EQUIPMENT

Leonard R. Kahn, 137 E. 36th St., New York, N.Y. 10016

Filed Jul. 26, 1993, Ser. No. 98,560

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—70 **2 Claims**



1. A satellite communications system for transmitting hybrid modulated waves consisting of amplitude, envelope, modulation and phase, angular, modulation components, and wherein linear r.f. power amplifiers are located aboard a satellite, said amplifiers being permitted to operate beyond their linear amplitude operating range, thus creating distortion, comprising the following devices arranged to substantially reduce the created distortion:

a generator for producing a hybrid modulated wave fed by one or more sources of intelligence,

the output of said generator being connected to a nonlinear circuit that limits, flattens, the envelope modulation component of the hybrid modulated wave,

circuitry for detecting the difference between the flattened wave output of the nonlinear circuit and its input,

uplink transmission equipment, that transmits both the hybrid modulated wave and the output of the difference detection circuitry to a communications satellite incorporating the linear rf power amplifiers which are operated beyond their linear ranges, and which transmit the signals received by the satellite to the ground or other satellite based receivers, one or more receivers that receive signals from the satellite where said linear amplifiers are located, the receivers including circuitry for using the signal representing the output of the difference detection circuit to restore the flattened hybrid modulated wave to substantially its original unflattened condition thereby substantially reducing distortion.

5,625,894

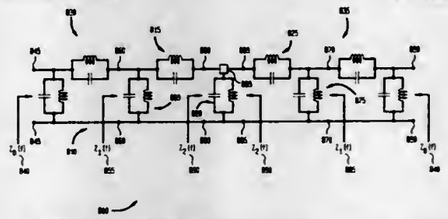
SWITCH FILTER HAVING SELECTIVELY INTERCONNECTED FILTER STAGES AND PORTS

Chewnpu Jou, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Mar. 21, 1995, Ser. No. 407,897

Int. Cl.[6] H04B *1/44*

U.S. Cl. 455—78 **20 Claims**



1. A switch filter comprising:

a plurality of filter stages connected between a plurality of ports of said switch filter, and

a plurality of switches configured to selectively interconnect said plurality of filter stages, wherein said plurality of switches are connected internally to said plurality of filter stages and are configured to selectively interconnect said plurality of ports of said switch filter.

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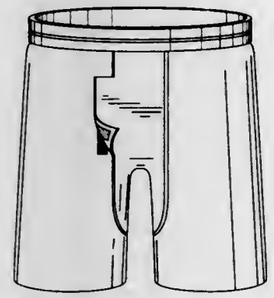
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378,947
ATHLETIC GIRDLE
Mildred Desmond, 2426 San Luis Rd., Holiday, Fla. 34691
Filed Jul. 17, 1995, Ser. No. 41,538
Term of patent 14 years
U.S. Cl. D2—738



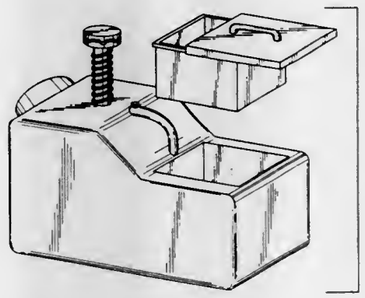
378,948
HEAD COVERING
Martha R. Ragus, Biloxi, Miss., assignor to Martha Ragus, Biloxi, Miss.
Filed Dec. 20, 1994, Ser. No. 32,518
Term of patent 14 years
U.S. Cl. D2—866



378,949
SOCK WITH LOOP AND PILE FASTENER AND FOLD OVER TOP
Glenn Lindaman, 690 S. 10th St., Allentown, Pa. 18103
Continuation-in-part of Ser. No. 45,130, Oct. 10, 1995, which is a continuation-in-part of Ser. No. 17,056, Jan. 5, 1994, Pat. No. Des. 362,957. This application Dec. 18, 1995, Ser. No. 47,988
Term of patent 14 years
U.S. Cl. D2—993

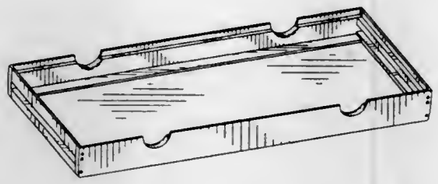


378,950
LIQUID STORAGE TANK WITH TOOL COMPARTMENT
Scott B. McKee, 2854 Shirley St., Eugene, Oreg. 97404
Filed Feb. 1, 1996, Ser. No. 49,858
Term of patent 14 years
U.S. Cl. D3—201

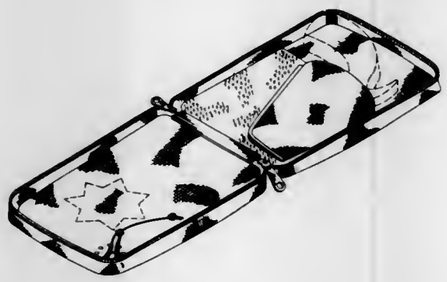


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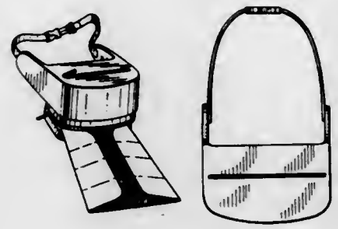
378,951
SUPINE X-RAY CASSETTE HOLDER
Jacquin C. Youngblood, 2535 Agnes Ave., Kansas City, Mo. 64127
Filed Nov. 9, 1995, Ser. No. 46,256
Term of patent 14 years
U.S. Cl. D3—203



378,952
DISGUISED WEAPON HOLDER
Scott H. Stava, 340 W. Fallbrook, No. 104, Fresno, Calif. 93711
Filed Jun. 23, 1995, Ser. No. 40,699
Term of patent 14 years
U.S. Cl. D3—222



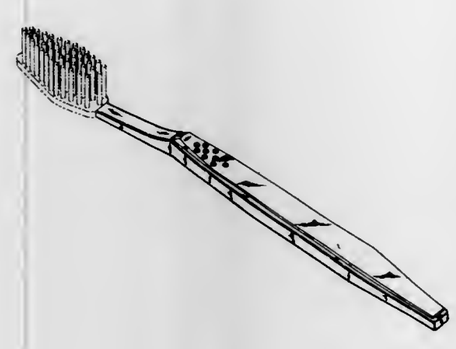
378,953
COMBINED BAG AND MAT
Rostislav F. V. Pavlik, Schouwweg 1A, NL-2243 BA Wassenaar, Netherlands
Filed Jul. 22, 1993, Ser. No. 10,972
Term of patent 14 years
U.S. Cl. D3—233



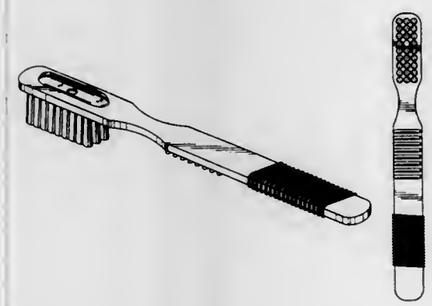
378,954
HUNTER'S RIFLE SLING
Bernard Daigle, P.O. Box 244, Newton, Mass. 02164
Filed Jan. 16, 1996, Ser. No. 49,027
Term of patent 14 years
U.S. Cl. D3—262



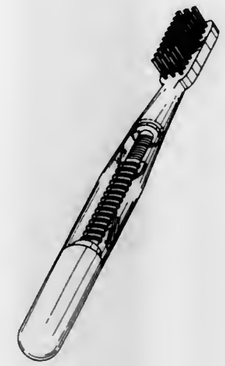
378,955
TOOTHBRUSH HANDLE
Adam Sherman, Brooklyn, N.Y.; Robert Moskovich, East Brunswick, N.J., and James Petronio, New York, N.Y., assignors to Colgate-Palmolive Co., New York, N.Y.
Divison of Ser. No. 0,041, Oct. 5, 1992, Pat. No. Des. 358,711.
This application May 4, 1995, Ser. No. 38,351
Term of patent 14 years
U.S. Cl. D4—104



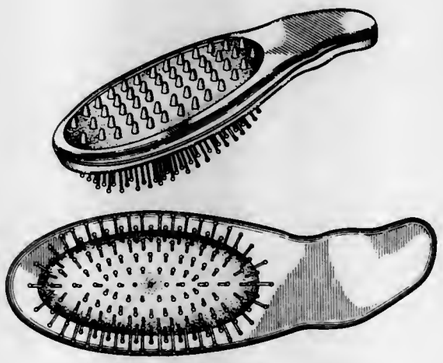
378,956
DISPOSABLE TOOTHBRUSH
Allen Haba, 11150 Keeler Rd., Concord, Mich. 49237
Filed Nov. 27, 1995, Ser. No. 47,022
Term of patent 14 years
U.S. Cl. D4—108



378,957
TOOTHPASTE DISPENSING TOOTHBRUSH
Jody L. Turner, and Karla P. Turner, both of 331 N. Mulberry St., Statesville, N.C. 28677
Filed Nov. 27, 1995, Ser. No. 47,037
Term of patent 14 years
U.S. Cl. D4—108

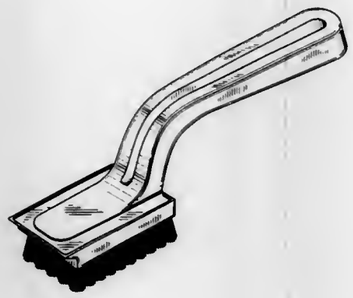


378,958
PET BRUSH
Jackie Yu, Los Angeles, Calif., assignor to Hairart Inc., Los Angeles, Calif.
Filed Mar. 18, 1996, Ser. No. 51,785
Term of patent 14 years
U.S. Cl. D4—120

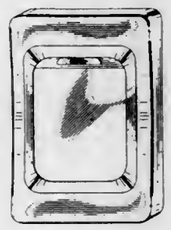


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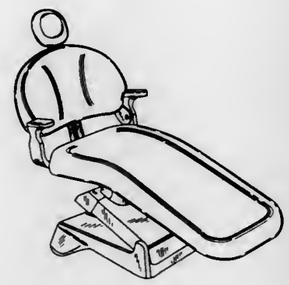
378,959
LARGE GROUT BRUSH
Donald Gringer, New York, N.Y., assignor to Allway Tools Inc., Bronx, N.Y.
Filed Jun. 14, 1995, Ser. No. 40,269
Term of patent 14 years
U.S. Cl. D4—132



378,960
PHOTOGRAPHIC DISPLAY
Robert P. Milford, and Donna Verret, both of 405 Wood Hollow Dr., Wylie, Tex. 75098
Filed May 2, 1996, Ser. No. 53,948
Term of patent 14 years
U.S. Cl. D6—300



378,961
CHAIR FOR DENTAL PATIENTS
Carl G. Nordstrom, Lake Oswego; William R. Stewart, Tigard; Victor D. Rogers, Portland, and Brad A. Rice, Keizer, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Sep. 27, 1995, Ser. No. 44,745
Term of patent 14 years
U.S. Cl. D6—361



378,962
CHAIR
Michael W. Greene, Incline Village, Nev., assignor to Resinform, Incline Village, Nev.
Continuation-in-part of Ser. No. 31,454, Nov. 28, 1994. This application Nov. 22, 1995, Ser. No. 46,975
Term of patent 14 years
U.S. Cl. D6—369



378,963
BED
Pascal Mourgue, Paris, France, assignor to Cinna, Briord, France
Filed May 3, 1995, Ser. No. 38,394
Claims priority, application Hague Agreement, Dec. 15, 1994, DM1031-560
Term of patent 14 years
U.S. Cl. D6—383



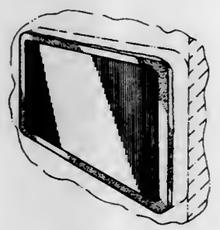
378,964
NIGHT TABLE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Feb. 2, 1996, Ser. No. 49,886
Term of patent 14 years
U.S. Cl. D6—487



378,965
BENCH
Arno R. Yurk, Kalamazoo, Mich., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Division of Ser. No. 36,916, Mar. 30, 1995, Pat. No. Des. 366,773. This application Feb. 5, 1996, Ser. No. 49,934
Term of patent 14 years
U.S. Cl. D6—500

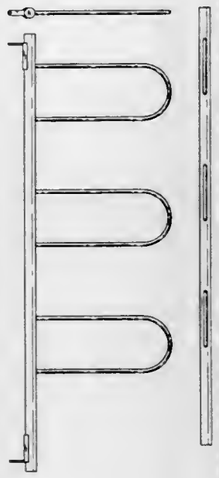


378,966
PLATFORM FOR A BABY DIAPER CHANGING STATION
John A. Helmsderfer, 1033 Windsor Ct., Cincinnati, Ohio 45206
Continuation of Ser. No. 478,951, Jun. 7, 1995. This application Jul. 24, 1995, Ser. No. 41,804
Term of patent 14 years
U.S. Cl. D6—555

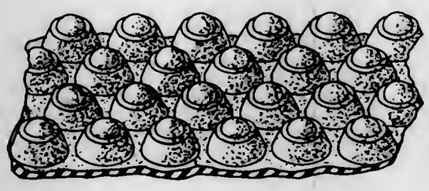


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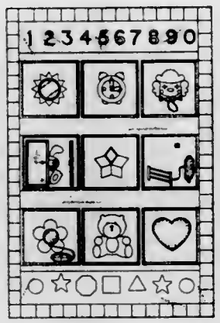
378,967
HINGE MOUNTABLE RACK
Richard B. Lowe, 9135 W. 52nd St., Indianapolis, Ind. 76234
Filed Sep. 19, 1994, Ser. No. 28,653
Term of patent 14 years
U.S. Cl. D6—566



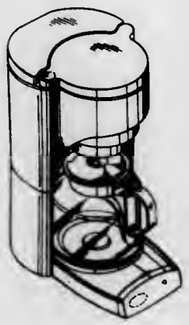
378,968
SHOCKING ABSORBING CONE CUSHION MATERIAL
Jack L. Martin, Libertyville, Ill., and Charles Lee, Busan, Rep. of Korea, assignors to Libertyville Saddle Shop, Inc., Libertyville, Ill.
Filed Mar. 24, 1994, Ser. No. 20,330
Term of patent 14 years
U.S. Cl. D6—596



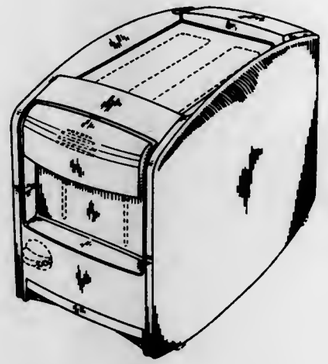
378,969
INFANT ACTIVITY QUILT
Tracy C. Roan, Springfield, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 13, 1995, Ser. No. 46,355
Term of patent 14 years
U.S. Cl. D6—603



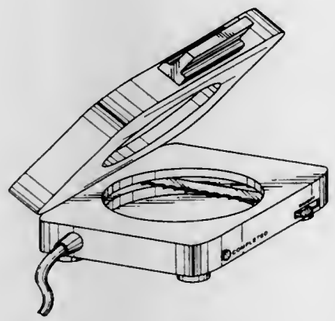
378,970
COFFEE MAKER
Martin Brady, Chesterfield, and Michael J. Morecraft, Glen Allen, both of Va., assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Aug. 1, 1995, Ser. No. 42,725
Term of patent 14 years
U.S. Cl. D7—309



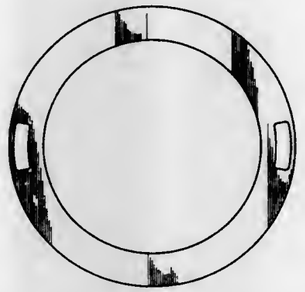
378,971
TOASTER
Anthony V. Cruz, Richmond, Va., assignor to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Jan. 17, 1995, Ser. No. 33,642
Term of patent 14 years
U.S. Cl. D7—330



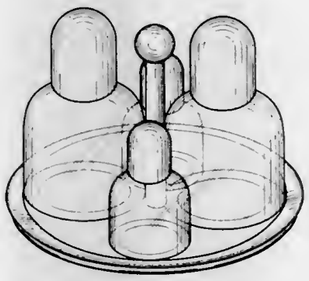
378,972
BAGEL CUTTER
Dave E. Hug, and Tonia Sullivan, both of 1980 Walker Rd., NE, Salem, Oreg. 97305
Filed Dec. 8, 1995, Ser. No. 47,613
Term of patent 14 years
U.S. Cl. D7—381



378,973
BARBEQUE GRILL RING SHELF
Kathy L. Bradley, Mt. Washington; Richard H. Bird; Olden A. Dockery, both of Louisville, all of Ky.; Randy A. Smitley, Corydon; Calvin F. Sprinkle, Borden, both of Ind., and Donald T. Payne, Louisville, Ky., assignors to Porcelain Metals Corporation, Louisville, Ky.
Filed Aug. 11, 1995, Ser. No. 42,484
The portion of the term of this patent subsequent to Oct. 22, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—406



378,974
CRUET SET
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Feb. 24, 1995, Ser. No. 35,359
Claims priority, application Denmark, Aug. 26, 1994, 749/94
Term of patent 14 years
U.S. Cl. D7—505



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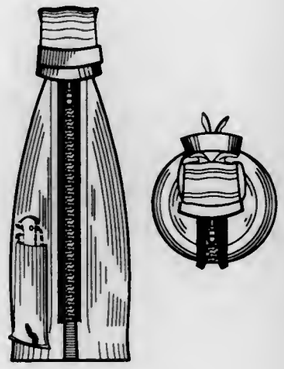
378,975
BOTTLE FOR FEEDING HANDICAPPED PERSONS
James M. Reid, HC4 Box 150, Thomasville, Ala. 36784
Filed Jun. 9, 1995, Ser. No. 40,103
Term of patent 14 years
U.S. Cl. D7—510



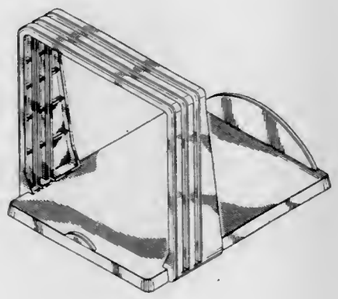
378,976
GLASS CANISTER WITH LID
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design Ag, Triengen, Switzerland
Filed Feb. 24, 1995, Ser. No. 35,357
Claims priority, application Denmark, Aug. 26, 1994, 741/94
Term of patent 14 years
U.S. Cl. D7—612



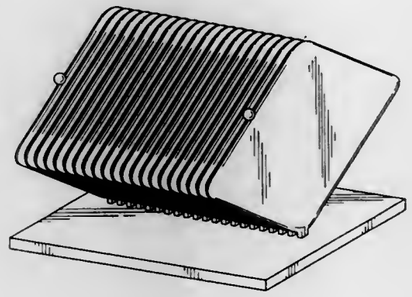
378,977
WINE BOTTLE HOLDER
Eon C. Lewis, Impact Industries, P.O. Box 45, Victoria Park 6100, Australia
Filed Mar. 18, 1996, Ser. No. 51,808
Term of patent 14 years
U.S. Cl. D7—624



378,978
CUTTER GUIDE
Elam C. Frye, Jr., Gregg, and Fred M. Gore, Dallas, both of Tex., assignors to Frye International Corporation, Longview, Tex.
Filed Mar. 1, 1996, Ser. No. 50,974
Term of patent 14 years
U.S. Cl. D7—673



378,979
BREAD SLICING RACK
James M. Clubb, P.O. Box 1491, Post Falls, Id. 83854
Filed Mar. 1, 1996, Ser. No. 51,073
Term of patent 14 years
U.S. Cl. D7—673



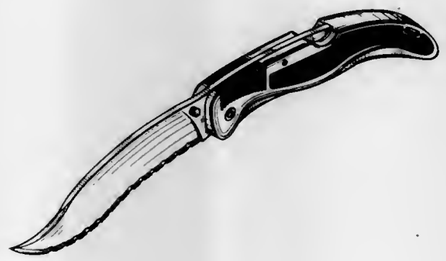
378,980
TIE-DOWN STAKE
Susan S. Thayer, Winter Haven, and Timothy D. Wert, Lakeland, both of Fla., assignors to Thayer Industries, Inc., Dundee, Fla.
Filed Dec. 8, 1995, Ser. No. 48,762
Term of patent 14 years
U.S. Cl. D8—1



378,981
MAGNETIC NAIL DRIVER
Kent Alexander, 30420 Romero Canyon Rd., Castaic, Calif. 91384
Filed Feb. 21, 1995, Ser. No. 35,111
Term of patent 14 years
U.S. Cl. D8—51

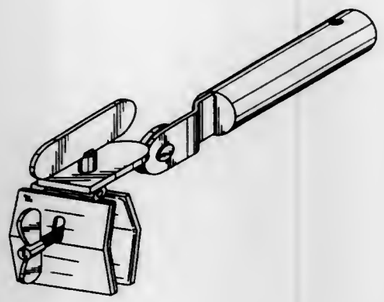


378,982
FOLDING KNIFE
Lynn C. Thompson, 2747 Seahorse, Ventura, Calif. 93001
Filed Feb. 1, 1996, Ser. No. 49,837
Term of patent 14 years
U.S. Cl. D8—99

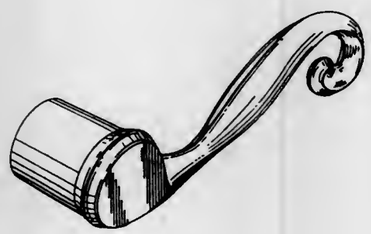


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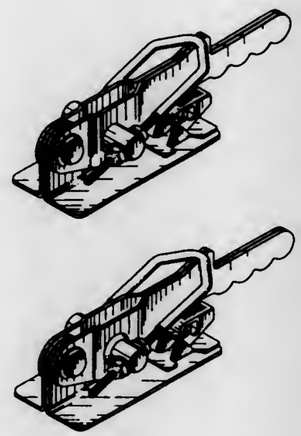
378,983
EXTENSION ATTACHMENT FOR HAND TOOLS
Ernest R. Nall, 7917 E. St., Scott Mills, Oreg. 97375
Filed Dec. 8, 1995, Ser. No. 47,611
Term of patent 14 years
U.S. Cl. D8—107



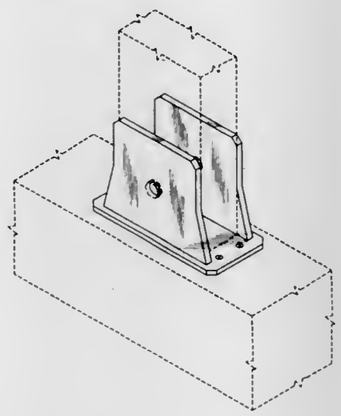
378,984
DOOR LEVER
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 31, 1992, Ser. No. 922,082
Term of patent 14 years
U.S. Cl. D8—308



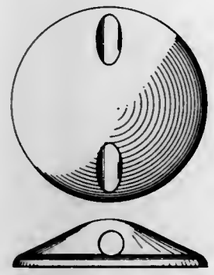
378,985
HANDLE OPERATED DRAW LATCH ASSEMBLY WITH LOCKABLE SAFETY CATCH
Lee S. Weinerman, Medina, and Arthur J. Kuminski, Parma, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio
Division of Ser. No. 37,952, Apr. 25, 1995, Pat. No. Des. 366,204, which is a division of Ser. No. 26,147, Jul. 20, 1994, Pat. No. Des. 364,082, which is a continuation-in-part of Ser. No. 65,283, May 21, 1993, abandoned, and a continuation-in-part of Ser. No. 8,629, May 21, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 43,660
Term of patent 14 years
U.S. Cl. D8—338



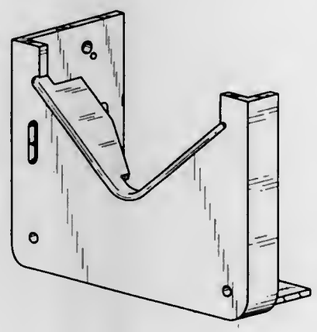
378,986
FENCE BRACKET
Calvin Darula, 36 Angelus Dr., Greenwich, Conn. 06831
Filed Mar. 19, 1996, Ser. No. 51,833
Term of patent 14 years
U.S. Cl. D8—354



378,987
LEASH ATTACHMENT CLEAT
Melvin C. Ross, 34822 Camino Capistrano, Capistrano Beach, Calif. 92624
Filed Dec. 4, 1995, Ser. No. 47,453
Term of patent 14 years
U.S. Cl. D8—356



378,988
PIPE HANGING BRACKET
Larry D. Brown, San Diego, and Kirt Hubbard, Escondido, both of Calif., assignors to Securus, Inc., San Marcos, Calif.
Filed Apr. 2, 1996, Ser. No. 52,327
Term of patent 14 years
U.S. Cl. D8—380



378,989
CLOCK
Seiji Odaka, Tokyo, Japan, assignor to Seiko Clock Inc., Japan
Filed Feb. 13, 1996, Ser. No. 50,603
Term of patent 14 years
U.S. Cl. D10—26

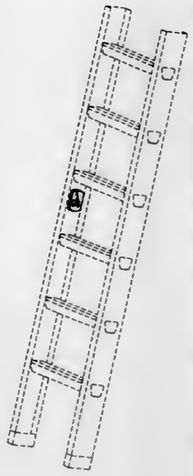


378,990
COLLAPSIBLE PLUMB BOB
Sean Mills, P.O. Box 384311, Waikoloa, Hi. 96738
Filed Feb. 6, 1996, Ser. No. 50,021
Term of patent 14 years
U.S. Cl. D10—65

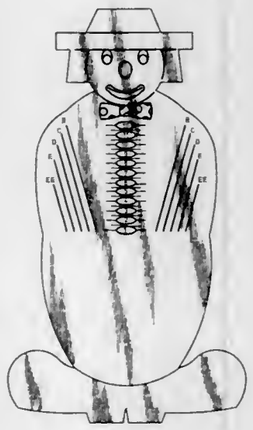


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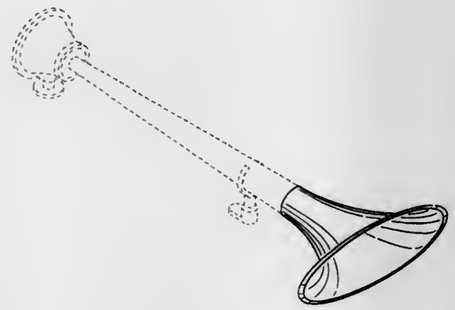
378,991
LADDER INCLINOMETER
James E. Boelling, Des Moines, Iowa, assignor to Wytech, Inc., Des Moines, Iowa
Filed Jan. 5, 1996, Ser. No. 48,632
Term of patent 14 years
U.S. Cl. D10—66



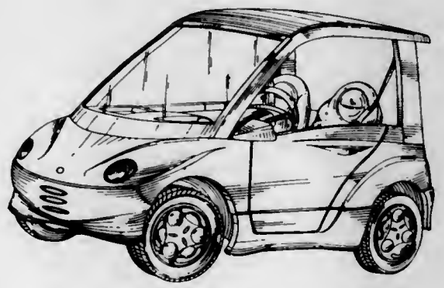
378,992
THREE-DIMENSIONAL CHILDREN'S SHOE SIZER
Denise Dachille, 761 W. Fingerboard Rd., Staten Island, N.Y. 10305
Filed Dec. 22, 1995, Ser. No. 48,212
Term of patent 14 years
U.S. Cl. D10—70



378,993
ELLIPTICAL AIR HORN BELL
Timothy S. Norwood, Denton, Tex., assignor to Paccar Inc., Bellevue, Wash.
Filed Feb. 13, 1995, Ser. No. 34,750
Term of patent 14 years
U.S. Cl. D10—120



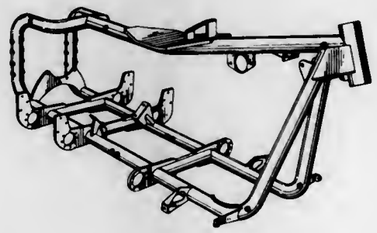
378,994
NEIGHBORHOOD ELECTRIC VEHICLE
Claude Picard; Francois Trepanier; Mario Coulombe, all of Rock-Forest, and Sylvain Poulin, Valcourt, all of Canada, assignors to Bombardier Inc., Montreal, Canada
Filed Jul. 17, 1995, Ser. No. 41,524
Term of patent 14 years
U.S. Cl. D12—90



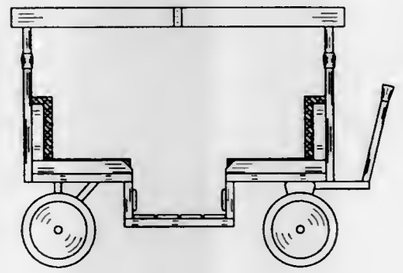
378,995
AUTOMOBILE
Erwin K. Lui, Trabuco Canyon, Calif., assignor to Toyota Jidosha K.K., Japan
Filed Feb. 22, 1995, Ser. No. 35,210
Term of patent 14 years
U.S. Cl. D12—91



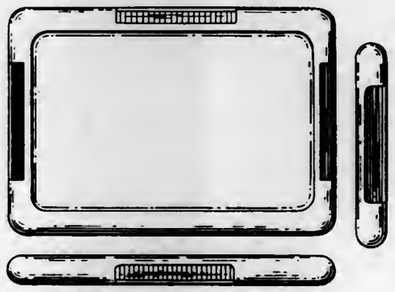
378,996
MOTORCYCLE FRAME
John A. Ysker, Minneapolis, Minn., assignor to Thunderbolt Enterprises, Inc., Minneapolis, Minn.
Filed Apr. 3, 1996, Ser. No. 52,319
Term of patent 14 years
U.S. Cl. D12—110



378,997
WAGON CONVERTED TO A STROLLER AND HAVING A CANOPY
Anthony Marozza, and Sharon L. Marozza, both of 237 N. Wisconsin Ave., Villa Park, Ill. 60181
Filed Aug. 18, 1995, Ser. No. 42,837
Term of patent 14 years
U.S. Cl. D12—129



378,998
LICENSE PLATE HOLDER
Robert Lake, 43 Hillcrest, Wakefield, Mass. 01800
Filed Feb. 27, 1996, Ser. No. 50,820
Term of patent 14 years
U.S. Cl. D12—193



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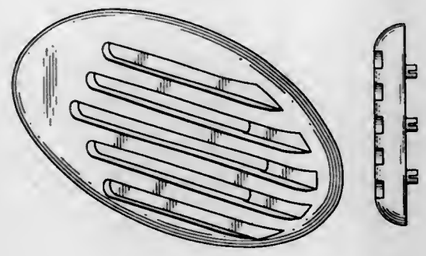
378,999
SPINNER FOR ATTACHMENT TO THE CENTER OF A WHEEL COVER FOR MOTOR VEHICLES
Clifton M. Thomas, Long Beach, Calif., assignor to L.A. Wire Wheel, Inc., Paramount, Calif.
Filed Jan. 23, 1996, Ser. No. 49,337
Term of patent 14 years
U.S. Cl. D12—213



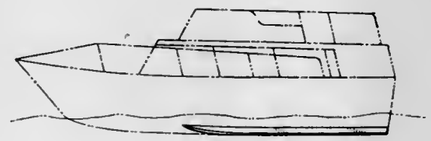
379,000
EAGLE WHEEL SPINNER
James H. Choi, 2157 E. Del Amo Blvd., Rancho Dominguez, Calif. 90220
Filed Apr. 9, 1996, Ser. No. 52,722
Term of patent 14 years
U.S. Cl. D12—213



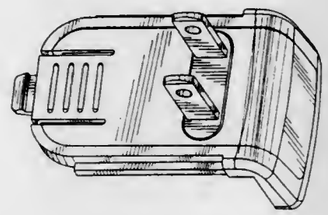
379,001
COVER FOR HORN
Peter K. Deutsch, Novato, Calif., assignor to Marinco, Napa, Calif.
Filed Jan. 23, 1996, Ser. No. 49,330
Term of patent 14 years
U.S. Cl. D12—317



379,002
MOLDED BOAT HULL PLANING COMPONENT
John I. Ripley, 4310 85th Ave. SE., Mercer Island, Wash. 98040
Filed Jan. 31, 1996, Ser. No. 49,777
Term of patent 14 years
U.S. Cl. D12—317



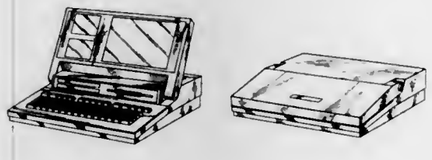
379,003
INTERCHANGEABLE PLUG DEVICE
Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.
Division of Ser. No. 44,048, Sep. 15, 1995. This application Jun. 14, 1996, Ser. No. 55,859
Term of patent 14 years
U.S. Cl. D13—138



379,004
CABINET FOR ELECTRONIC EQUIPMENT
Johannes W. M. Keijser, Helmond, and Jacobus J. Crebolder meergenaamd Krijbolder, Erp, both of Netherlands, assignors to Minkels Products B.V., Netherlands
Filed Jun. 20, 1995, Ser. No. 42,804
Claims priority, application Hague Agreement, Dec. 20, 1994, DM/031583
Term of patent 14 years
U.S. Cl. D13—184



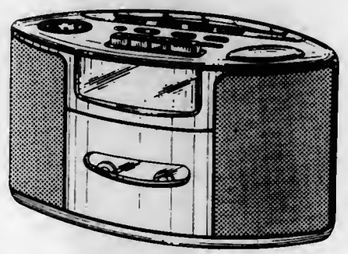
379,005
VIDEO EDITOR WITH LIQUID CRYSTAL MONITOR
Hiroyuki Matsumoto; Takashi Hiraoka, both of Osaka; Sadayoshi Azuma, Kyoto, and Akio Ohno, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 21, 1996, Ser. No. 50,498
Claims priority, application Japan, Aug. 22, 1995, 7-24486
Term of patent 14 years
U.S. Cl. D14—106



379,006
SMART CARD WITH M-SHAPED ISOLATION REGION
Michel Gaumet, Saint Denis En Val, France, assignor to Solaic (Societe Anonyme), France
Filed May 30, 1995, Ser. No. 39,506
Term of patent 14 years
U.S. Cl. D14—117



379,007
AUDIO CASSETTE TAPE PLAYER COMBINED WITH CLOCK AND RADIO RECEIVER
Shinichi Obata, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 6, 1995, Ser. No. 47,516
Term of patent 14 years
U.S. Cl. D14—162

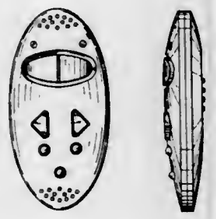


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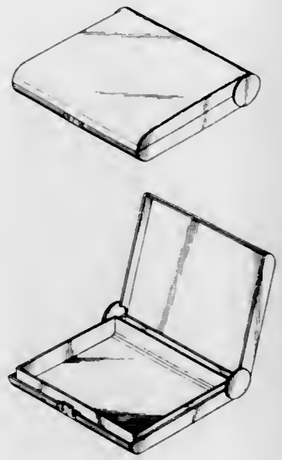
379,008
ELECTRONIC MESSAGE RECORDER
Richard Constantine, Niantic, and James M. Rittenhouse, Jr., Cos Cob, both of Conn., assignors to Cooair Corporation, Stamford, Conn.
Filed Aug. 25, 1995, Ser. No. 43,124
Term of patent 14 years
U.S. Cl. D14—167



379,009
HAND-HELD ANALOG RECORDER
Scott W. Osiecki, Skaneateles, N.Y., assignor to Olympus America Inc., Melville, N.Y.
Filed Nov. 22, 1995, Ser. No. 46,986
Term of patent 14 years
U.S. Cl. D14—167



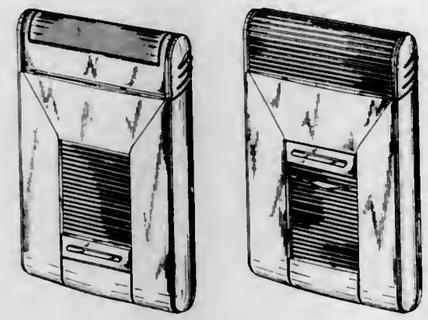
379,010
CONTAINER FOR SMOKING ARTICLES
John A. Digianni, New York, N.Y., assignor to British-American Tobacco Company Limited, Middlesex, England
Filed Apr. 17, 1996, Ser. No. 53,221
Claims priority, application United Kingdom, Dec. 1, 1995, 2052403
Term of patent 14 years
U.S. Cl. D27—189



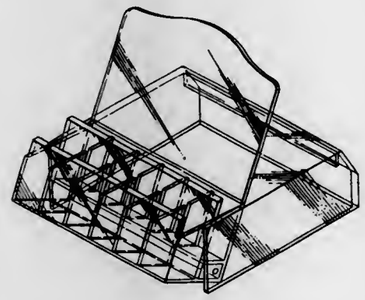
379,011
COMBINED COMB
Brian Q. Young, PO Box 862469, Los Angeles, Calif. 90086-2469
Filed Jan. 31, 1994, Ser. No. 18,147
Term of patent 14 years
U.S. Cl. D28—30



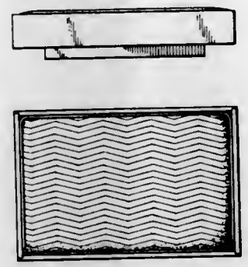
379,012
DRY SHAVER
Jan F. van Asten, Wölfnitz-Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 17, 1995, Ser. No. 37,586
Claims priority, application WIPO, Nov. 7, 1994, DMA/002695
Term of patent 14 years
U.S. Cl. D28—51



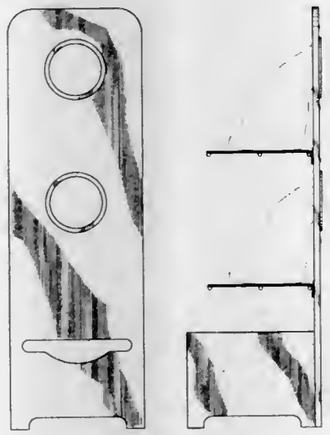
379,013
MAKE-UP EXHIBITING CASE
Yu-Ching Shih, Tainan Hsien, Taiwan, assignor to Hawthorn Enterprise Co., Ltd., Tainan Hsien, Taiwan
Filed May 31, 1995, Ser. No. 39,442
Term of patent 14 years
U.S. Cl. D28—73



379,014
WATERBED FOR A PET
John H. Woods, II, 1662 Mountain Rd., West Suffield, Conn. 06093
Filed Jan. 4, 1996, Ser. No. 48,581
Term of patent 14 years
U.S. Cl. D30—118



379,015
RECYCLING SORTING RECEPTACLE
Karen P. Mayhew, Rte. 1 Box 77B, Stony Point, N.C. 28678
Filed Nov. 24, 1995, Ser. No. 47,009
Term of patent 14 years
U.S. Cl. D34—1



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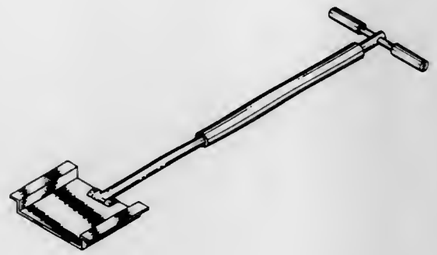
379,016
WHEELED CART
Alan E. Wilson, 2562 Meinert Rd., Wexford, Pa. 15090
Filed Jan. 26, 1996, Ser. No. 49,487
Term of patent 14 years
U.S. Cl. D34—24



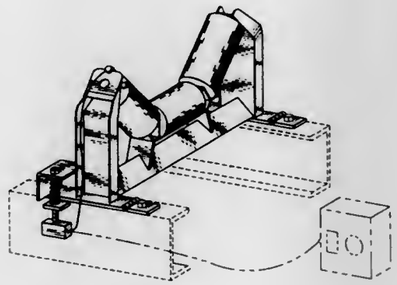
379,017
CAMERA CRANE ARM BASE
Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, Inc., North Hollywood, Calif.
Filed Aug. 1, 1995, Ser. No. 42,114
Term of patent 14 years
U.S. Cl. D34—28



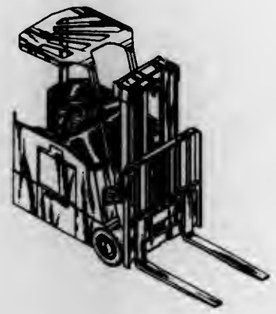
379,018
SEMI-TRAILER LIFT
Bert Miller, P.O. Box 744, Golden, British Columbia, Canada
Filed Nov. 7, 1995, Ser. No. 46,081
Term of patent 14 years
U.S. Cl. D34—28



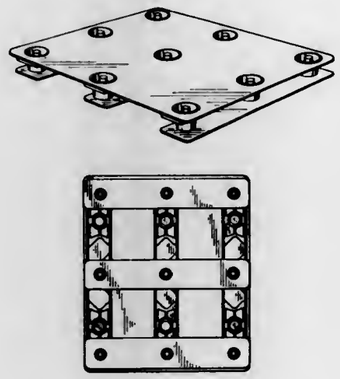
379,019
COMBINED BELT CONVEYOR MOTION DETECTOR AND MATERIAL FLOW INDICATOR SWITCH
Brent F. Hubbard, Sacramento, Calif., assignor to A. Teichert & SOn, Inc., Sacramento, Calif.
Filed Nov. 28, 1994, Ser. No. 31,423
The portion of the term of this patent subsequent to Jan. 24, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D34—29



379,020
FORK LIFT TRUCK
Isaac Avitan, Sioux City, Iowa, assignor to Schaeff, Incorporated, Sioux City, Iowa
Filed May 5, 1995, Ser. No. 38,413
Term of patent 14 years
U.S. Cl. D34—34



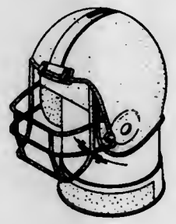
379,021
PALLET WITH DECK SUPPORT
Jack E. Wies, 8431 Scandia Trail North, Forest Lake, Minn. 55025
Filed Dec. 19, 1994, Ser. No. 32,442
Term of patent 14 years
U.S. Cl. D34—38



379,022
CONTAINER MOVER
Jack C. Cuthbertson, 5306 Satsuma Dr., Zephyrhills, Fla. 33540
Filed Jun. 21, 1995, Ser. No. 40,559
Term of patent 14 years
U.S. Cl. D34—38



379,023
COMBINED FOOTBALL HELMET CONTAINER AND BANK
Mitchell August, West Bloomfield, Mich., assignor to David Drew, Glenview, Ill.
Filed Sep. 20, 1995, Ser. No. 44,186
Term of patent 14 years
U.S. Cl. D99—37



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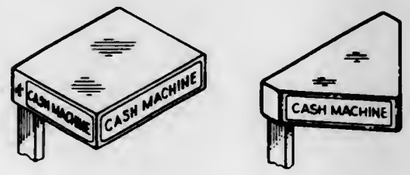
379,024
PARKING METER BANK
Joel S. Nulman, 71 S. Main St., Belchertown, Mass. 01007
Filed Nov. 13, 1995, Ser. No. 46,329
Term of patent 14 years
U.S. Cl. D99—37



379,025
BANK
Ronald M. Paoek, 1524 Eton La., Naperville, Ill. 60565
Filed Nov. 4, 1994, Ser. No. 30,678
Term of patent 14 years
U.S. Cl. D99—39



379,026
LIGHTED SIGN ASSEMBLY FOR AN AUTOMATIC TELLER MACHINE
Daniel R. Bauer, 498 Stage Line Rd., Hudson, Wis. 54016, and Kristofer G. Kosmider, 1717 Century Clr., #320, Woodbury, Minn. 55125
Division of Ser. No. 11,045, Jul. 26, 1993, Pat. No. Des. 362,535. This application Jun. 7, 1995, Ser. No. 39,967
Term of patent 14 years
U.S. Cl. D99—43



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A. Raymond GmbH & Co. KG: *See—*
Golczyk, Ralph; and Hullmann, Klaus, 5,624,319, Cl. 470-21.000.
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Virgilio, Larry A., 5,625,285, Cl. 324-133.000.
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Buhl, Steven N.; Bogart, Terri; Burd, Tammy; Bhayani, Bhaskar; Skieller, Christian; Yu, Chi-Sou; Tang, Thuy N.; Ostoich, Vladimir E.; Huč, Branko; and Schembri, Carol T., 5,624,597, Cl. 252-182.110.
ABB Flakt AB: *See—*
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ABB Industrial Systems, Inc.: *See—*
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ABB Power T&D Company Inc.: *See—*
Khan, Aftab H.; Wong, Willie K.; Timko, Kevin J.; and Reckleff, John G., 5,625,277, Cl. 322-58.000.
Abbey, Edward F., to Greenspike, Inc. Stud for sport shoes. 5,623,774, Cl. 36-134.000.
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Bridon, Dominique P.; Sze, Isaac S.-Y., deceased; Daghfal, David J.; Jaffe, Keeve D.; and Colpitts, Tracey L., 5,624,797, Cl. 435-5.000.
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Abe, Takashi: *See—*
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Hasushita, Sachio; Abe, Tetsuya; Yoneyama, Shuji; Matsuo, Hirofumi; Ogawa, Ryota; Taguchi, Ichiro; and Yokota, Hidetaka, 5,625,487, Cl. 359-432.000.
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Oku, Teruo; Kawai, Yoshio; Marusawa, Hiroshi; Yamazaki, Hitoshi; and Abe, Yoshito, 5,624,931, Cl. 514-258.000.
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Park, Dae C.; and Ahn, Pyung K., 5,625,107, Cl. 585-514.000.
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Shimoda, Minoru; and Kokue, Ei-ichi, 5,624,686, Cl. 424-489.000.
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Chau, Robert S.; Fraser, David B.; Cadien, Kenneth C.; Raghavan, Gopal; and Yau, Leopoldo D., 5,625,217, Cl. 257-412.000.

Yazaki Corporation: *See*—
Fukuda, Masaru, 5,624,275, Cl. 439-489.000.
Kanamori, Hiroyasu, 5,624,269, Cl. 439-83.000.
Ohsumi, Hideki, 5,624,272, Cl. 439-353.000.
Tsuzaki, Yoshinobu; Kato, Tetsuo; Ohota, Yukio; and Kakuta, Naoki, 5,624,506, Cl. 148-433.000.

Yeh, Hsi-jen J.: *See*—
Hopkins, Leslie C.; Murray, Cherry A.; Partovi, Afshin; Peale, David R.; Yeh, Hsi-jen J.; and Zydzik, George J., 5,625,617, Cl. 369-121.000.

Yeh, Kent, to Prince Sports Group, Inc. Grip for sports racquet. 5,624,116, Cl. 473-538.000.

Yehl, Patrick J.; and Damick, Mark W., to Zexel Torsen Inc. Lubrication system for a parallel-axis differential. 5,624,344, Cl. 475-160.000.

Yin, Aiguo: *See*—
Fonash, Stephen J.; and Yin, Aiguo, 5,624,873, Cl. 438-487.000.

Yoda, Masami: *See*—
Iji, Masahiro; Yoda, Masami; Suzuki, Shin; Ishizuka, Kaoru; Kubo, Sotoo; Yamaki, Isao; and Hashimoto, Toshikuni, 5,624,550, Cl. 210-104.000.

Yokono, Tomohiko: *See*—
Kawaguchi, Masahiro; Kanzaki, Shigeki; Suitou, Ken; Fujii, Toshiro; Yokono, Tomohiko; and Sonobe, Masanori, 5,624,240, Cl. 417-222.200.

Yokonuma, Norikazu: *See*—
Kazami, Kazuyuki; Yokonuma, Norikazu; Hibino, Hideo; and Yamazaki, Youichi, 5,625,429, Cl. 396-300.000.

Yokota, Hidetaka: *See*—
Hasushita, Sachio; Abe, Tetsuya; Yoneyama, Shuji; Matsuo, Hirofumi; Ogawa, Ryota; Taguchi, Ichiro; and Yokota, Hidetaka, 5,625,487, Cl. 359-432.000.

Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, to Sony Corporation. Method of recording on a recording medium employing an automatic updating of management data by monitoring the signal being recorded. 5,625,611, Cl. 369-47.000.

Yokoya, Hisao; and Takahashi, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Humidifier. 5,624,610, Cl. 261-104.000.

Yokoyama, Yasuo: *See*—
Kobayashi, Hideo; Kosuge, Norio; Yokoyama, Yasuo; Komori, Yuka; and Mohri, Taizo, 5,624,749, Cl. 428-341.000.

Yokoyama, Yoshihiro: *See*—
Kurosu, Yasuo; Yokoyama, Yoshihiro; and Masuzaki, Hidefumi, 5,625,810, Cl. 395-601.000.

Yoneda, Yoshiyuki; and Tsuji, Kazuto, to Fujitsu Limited. Semiconductor device in a resin package housed in a frame having high thermal conductivity. 5,625,222, Cl. 257-687.000.

Yonekura, Toshiaki; Maenosono, Toshio; Nakatao, Shiro; Fujiwara, Masahiro; Katada, Yuji; and Karasawa, Takashi, to Fuji Facom Corp.; and Fuji Electric Co. Ltd. Multimedia process monitor and control system. 5,625,572, Cl. 364-514.00A.

Yoneyama, Shuji: *See*—
Hasushita, Sachio; Abe, Tetsuya; Yoneyama, Shuji; Matsuo, Hirofumi; Ogawa, Ryota; Taguchi, Ichiro; and Yokota, Hidetaka, 5,625,487, Cl. 359-432.000.

Yoo, In-kyung: *See*—
Lee, Wan-in; Lee, Jun-ki; Chung, Il-sub; Chung, Chi-won; and Yoo, In-kyung, 5,625,529, Cl. 361-321.500.

Yoo, Tae W. Needle for acupuncture. 5,624,460, Cl. 606-189.000.

Yoon, Sung-jung, to Samsung Aerospace Industries, Ltd. System for controlling a brushless DC motor. 5,625,264, Cl. 318-254.000.

Yorihiro, Kunihiko: *See*—
Morinaga, Akio; Kigami, Takeo; Yorihiro, Kunihiko; and Okada, Toshihiko, 5,624,996, Cl. 524-556.000.

Yoshida, Hiroyuki: *See*—
Suzuki, Yukihide; and Yoshida, Hiroyuki, 5,625,234, Cl. 257-773.000.

Yoshida, Masato: *See*—
Togai, Kazuhide; Danno, Yoshiaki; Yoshida, Masato; Shimada, Makoto; and Ueda, Katsunori, 5,625,558, Cl. 364-426.041.

Yoshida, Tatsuro: *See*—
Bitensky, Mark W.; and Yoshida, Tatsuro, 5,624,794, Cl. 435-2.000.

Yoshida, Toshiko: *See*—
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Yoshida, Yutaka, to Aichi Tokei Denki Co., Ltd. Electromagnetic flowmeter. 5,625,155, Cl. 73-861.110.

Yoshie, Toshiro; Nagai, Tsutomu; Matsuda, Hiroaki; and Nakamura, Hitoshi, to Combi Corporation. Sun-shading hood height adjusting device for stroller. 5,624,152, Cl. 297-184.130.

Yoshihara, Makoto: *See*—
Ito, Hideki; and Yoshihara, Makoto, 5,625,174, Cl. 187-289.000.

Yoshimoto, Hiroshi: *See*—
Yamashita, Hiroshi; Yoshimoto, Hiroshi; and Takemura, Koji, 5,624,793, Cl. 430-458.000.

Yoshinaga, Yoko: *See*—
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Yoshino, Takehito: *See*—
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Yoshino, Yasushi: *See*—
Sorimachi, Yuuichi; Itou, Wataru; Yoshino, Yasushi; and Yamamoto, Teruhiko, 5,624,161, Cl. 297-452.520.

Yoshioka, Takao: *See*—
Fujita, Takashi; Yoshioka, Takao; Fujiwara, Toshihiko; Oguchi, Minoru; Yanagisawa, Hiroaki; Horikoshi, Hiroyoshi; Wada, Kunio; and Fujimoto, Koichi, 5,624,935, Cl. 514-303.000.

Yoshioka, Yoshiki: *See*—
Maeda, Koji; Yoshioka, Yoshiki; Oura, Junichi; and Tabuchi, Hidehiro, 5,625,860, Cl. 399-403.000.

Yoshitake, Noriaki; Murasawa, Yoshiyuki; and Tsuda, Shotaro, to Henkel Corporation. Composition and process for substitutionally plating zinciferous surfaces. 5,624,480, Cl. 106-1.220.

You, Hong K., to Micontech, Inc. Complex superconducting quantum interference device and circuit. 5,625,290, Cl. 324-248.000.

Youn, Jong S.: *See*—
Lee, Sang H.; and Youn, Jong S., 5,625,356, Cl. 341-67.000.

Young, B. Arlen: *See*—
Brayton, Michael D.; Fannin, Charles S.; and Young, B. Arlen, 5,625,800, Cl. 395-500.000.

Young, Chung I.: *See*—
Lu, Ying-Yuh; and Young, Chung I., 5,624,973, Cl. 522-40.000.

Young, Jack D.; and Biondo, James R., to Creative Extruded Products, Inc. Window trim molding. 5,624,148, Cl. 296-93.000.

Younger, Gilbert W. Method for modifying an original automatic transmission. 5,624,342, Cl. 475-127.000.

Youngren, Larry W.: *See*—
Hermsmeier, David L.; Ricard, Gary R.; Vriezen, John J.; and Youngren, Larry W., 5,625,820, Cl. 395-618.000.

Yu, Andy Teng-Feng: *See*—
Kowshik, Vikram; and Yu, Andy Teng-Feng, 5,625,544, Cl. 363-59.000.

Yu, Chi-Sou: *See*—
Buhl, Steven N.; Bogart, Terri; Burd, Tammy; Bhayani, Bhaskar; Skieller, Christian; Yu, Chi-Sou; Tang, Thuy N.; Ostoich, Vladimir E.; Huč, Branko; and Schembri, Carol T., 5,624,597, Cl. 252-182.110.

Yu, Stanley C.: *See*—
Shim, Hyo; Hariram, Sham S.; Wong, Wai-Pak; Blumke, Ronald; and Yu, Stanley C., 5,625,346, Cl. 340-628.000.

Yuan, Han-Tzong: *See*—
Plumton, Donald L.; and Yuan, Han-Tzong, 5,624,860, Cl. 438-193.000.

Yuan, Yan; Guerrier-Takada, Cecilia; Altman, Sidney; and Liu, Fenyong, to Yale University. Targeted cleavage of RNA using eukaryotic ribonuclease P and external guide sequence. 5,624,824, Cl. 435-91.200.

Yuasa, Kazuhiro: *See*—

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Matsumae, Iwao; Yuasa, Kazuhiro; Endoh, Shuichi; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,625,440, Cl. 399-272.000.

Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,625,438, Cl. 399-272.000.

Sugiyama, Toshihiro; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Takenaka, Eiji; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,625,441, Cl. 399-272.000.

Yucknut, Stephen M.; and Winters, Nicholas H., to Kraft Foods, Inc. Packaging system with product collar support. 5,624,032, Cl. 206-433.000.

Yugengaisya Towa: *See—*
Nakata, Akira, 5,624,740, Cl. 428-204.000.

Yukawa, Fumio; and Kikuchi, Tsutomu, to Nissan Motor Co., Ltd. Air-fuel ratio control system for internal combustion engine. 5,623,824, Cl. 60-276.000.

Yukinori, Miyake; Mitsunori, Kaneko; Yasuhiro, Masuzaki; and Tetsuya, Ozaki, to Hirose Electric Co., Ltd. High frequency switch and method of testing H-F apparatus. 5,625,177, Cl. 200-1.00R.

Yumoto, Kenji, to TDK Corporation. Jig for headpiece aggregate machining and method for manufacturing a thin film magnetic head. 5,624,298, Cl. 451-28.000.

Yung, Marcel M.: *See—*
Herzberg, Amir; Jarecki, Stanislaw M.; Krawczyk, Hugo M.; and Yung, Marcel M., 5,625,692, Cl. 380-21.000.

Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Bulky, stable nonwoven fabric. 5,623,888, Cl. 112-414.000.

Zalutsky, Michael R.: *See—*
Bigner, Darell D.; and Zalutsky, Michael R., 5,624,659, Cl. 424-1.490.

Zampaglione, Michael A.: *See—*
Ferry, Thomas V.; Steinweg, Russell L.; Zampaglione, Michael A.; and Lin, Pei H., 5,625,797, Cl. 395-497.040.

Zanibelli, Laura: *See—*
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Zardoz LLC: *See—*
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Zarembo, Peter J.; Edstrom, Philip E.; Belka, Anthony M.; Sando, Dennis L.; Weber, William R., III; and Crellin, Mark R., to Minnesota Mining and Manufacturing Company. Apparatus for changing the status of magnetic markers in an electronic article surveillance system. 5,625,339, Cl. 340-551.000.

Zarmer, Craig; Jones, Anne; Arnold, Kevin M.; Chambers, Paul S.; Eastwood, Tom; Helfinstein, Ruth A.; Rusoff, Jason E.; and Wine, Hal, to Apple Computer, Inc. System for managing local database updates published to different online information services in different formats from a central platform. 5,625,818, Cl. 395-615.000.

Zborovsky, Ilya: *See—*
Sulzhik, Nikolai; Timoshchenko, Pavel; and Trotsenko, Vitaly, 5,624,253, Cl. 431-116.000.

Zeisz, Raymond L., Jr.: *See—*
Christensen, Kenneth J.; Chorpenning, Jack S.; Siegel, Michael S.; Stammely, Thomas E.; Strole, Norman C.; Povse, Max R.; and Zeisz, Raymond L., Jr., 5,625,621, Cl. 370-248.000.

Zelickson, Brian D.: *See—*
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Zenco (No. 4) Limited: *See—*
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Zeneca Limited: *See—*
Hughes, Nigel, 5,625,080, Cl. 549-299.000.

Zenhausern, Frederic: *See—*
Wickramasinghe, Hemantha K.; and Zenhausern, Frederic, 5,624,845, Cl. 435-287.200.

Zepf, Armin, to Otto Bock Orthopadische Industrie Besitz-Und Verwaltungs-Kommanditgesellschaft. Knee joint orthosis. 5,624,389, Cl. 602-26.000.

Zexel Torsen Inc.: *See—*
Yehl, Patrick J.; and Damick, Mark W., 5,624,344, Cl. 475-160.000.

Zhang, Hongyong: *See—*
Takayama, Toru; Zhang, Hongyong; and Takemura, Yasuhiko, 5,624,851, Cl. 438-166.000.

Zhao, Chen: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Sham, Hing L.; and Zhao, Chen, 5,625,072, Cl. 548-204.000.

Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A. J.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Scarpetti, David; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-Heh J.; and Zhao, Chen, 5,625,092, Cl. 560-24.000.

Zhou, Hongxi: *See—*
Wu, Bao-Gang; Gao, Jianmi; Zhou, Hongxi; and Ma, Yao-Dong, 5,625,477, Cl. 349-35.000.

Ziemelis, Maris J.: *See—*
Glover, Shedric O.; Bujanowski, Valeris J.; Ziemelis, Maris J.; Skinner, Michael W.; Homan, Gary R.; Perz, Susan V.; and Cannady, John P., 5,624,762, Cl. 428-447.000.

Zilog, Inc.: *See—*
Dalrymple, Monte J., 5,625,842, Cl. 395-842.000.

Zima, Ric T.: *See—*
Henderson, Gerald O.; Rice, William M.; and Zima, Ric T., 5,625,117, Cl. 585-860.000.

Zimmer, Ernst, to Kuka Schweissanlagen & Roboter GmbH. Tool change device for manipulators. 5,624,364, Cl. 483-16.000.

Zimmerman, Jeffrey S.; and Rohrbaugh, George W., III, to International Business Machines Corporation. Pass through mode for multi-chip-module die. 5,625,631, Cl. 371-22.100.

Zimmermann, Horst. Telescopic rods for a crane. 5,624,046, Cl. 212-349.000.

Zimmermann, Martin: *See—*
Reutter, Werner; Nuck, Rolf; and Zimmermann, Martin, 5,625,037, Cl. 530-387.500.

Zissu, Diane M. Resilient support caddy. 5,624,095, Cl. 248-231.810.

Zolotoochin, Vladimir M.; Delling, David R.; Skogley, Robert N.; and Coustry, Francis M., to Solvay Minerals, Inc. Method for recovery of alkali values from trona using two-stage leaching. 5,624,647, Cl. 423-206.200.

Zomorodi, Mostafa: *See—*
Cook, Charles; and Zomorodi, Mostafa, 5,624,417, Cl. 604-319.000.

Zoski, Glenn D.: *See—*
Ghaed, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,624,637, Cl. 422-52.000.

Zumtobel Staff Lighting, Inc.: *See—*
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Zusi, Fred C.: *See—*
Swann, R. Thomas; Smith, Daniel; Tramposch, Kenneth M.; and Zusi, Fred C., 5,624,957, Cl. 514-535.000.

Zydzik, George J.: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29th DAY OF APRIL, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barnard, Michael E., to U.S. Philips Corporation. Vehicle location system. Re. 35,498, Cl. 342-357.000.

Bolza-Schuenemann, Claus A.; and Schaede, Johannes G., to Koenig & Bauer Aktiengesellschaft. Printed sheet monitoring assembly. Re. 35,495, Cl. 101-232.000.

Carter, George A., III, to Carter, III, George A. Decorative simulated wheel cover retention system. Re. 35,497, Cl. 301-37.430.

Dow Chemical Company, The: *See—*
Munjal, Sarat; and Kao, Che I., Re. 35,499, Cl. 528-198.000.

Fujimoto, Hitoshi: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Kao, Che I.: *See—*
Munjal, Sarat; and Kao, Che I., Re. 35,499, Cl. 528-198.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Bolza-Schuenemann, Claus A.; and Schaede, Johannes G., Re. 35,495, Cl. 101-232.000.

Michii, Kazunari: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Miyamoto, Takashi: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Munjal, Sarat; and Kao, Che I., to Dow Chemical Company, The. Elimination of monocarbonate from polycarbonate. Re. 35,499, Cl. 528-198.000.

Sasaki, Hitoshi: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Schaede, Johannes G.: *See—*
Bolza-Schuenemann, Claus A.; and Schaede, Johannes G., Re. 35,495, Cl. 101-232.000.

Tsumura, Kiyoaki: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

Ueda, Naoto: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, Re. 35,496, Cl. 174-52.400.

U.S. Philips Corporation: *See—*
Barnard, Michael E., Re. 35,498, Cl. 342-357.000.

Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and method of producing the same. Re. 35,496, Cl. 174-52.400.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Guergov, Milko G. Method and apparatus for injection molding. B1 5,441,680, Cl. 264-40.100.

LIST OF DESIGN PATENTEES

A-Dec, Inc.: *See—*
Nordstrom, Carl G.; Stewart, William R.; Rogers, Victor D.; and Rice, Brad A., 378,961, Cl. D6-361.000.

A. Teichert & SOn, Inc.: *See—*
Hubbard, Brent F., 379,019, Cl. D34-29.000.

Alexander, Kent. Magnetic nail driver. 378,981, Cl. D8-51.000.

Allway Tools Inc.: *See—*
Gringer, Donald, 378,959, Cl. D4-132.000.

Asian Micro Sources, Inc.: *See—*
Hahn, Stan S., 379,003, Cl. D13-138.000.

August, Mitchell, to Drew, David. Combined football helmet container and bank. 379,023, Cl. D99-37.000.

Avitan, Isaac, to Schaeff, Incorporated. Fork lift truck. 379,020, Cl. D34-34.000.

Azuma, Sadayoshi: *See—*
Matsumoto, Hiroyuki; Hiraoka, Takashi; Azuma, Sadayoshi; and Ohno, Akio, 379,005, Cl. D14-106.000.

Bauer, Daniel R.; and Kosmider, Kristofer G. Lighted sign assembly for an automatic teller machine. 379,026, Cl. D99-43.000.

Bird, Richard H.: *See—*
Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 378,973, Cl. D7-406.000.

Boelling, James E., to Wytech, Inc. ladder inclinometer. 378,991, Cl. D10-66.000.

Bombardier Inc.: *See—*
Picard, Claude; Trepanier, Francois; Coulombe, Mario; and Poulin, Sylvain, 378,994, Cl. D12-90.000.

Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., to Porcelain Metals Corporation. Barbeque grill ring shelf. 378,973, Cl. D7-406.000.

Brady, Martin; and Morecraft, Michael J., to Hamilton Beach/Proctor-Silex, Inc. Coffee maker. 378,970, Cl. D7-309.000.

British-American Tobacco Company Limited: *See—*
Digianni, John A., 379,010, Cl. D27-189.000.

Brown, Larry D.; and Hubbard, Kirt, to Securus, Inc. Pipe hanging bracket. 378,988, Cl. D8-380.000.

Carsello, Anthony J., to Emhart Inc. Door lever. 378,984, Cl. D8-308.000.

Chapman, Leonard T., to Leonard Studio Equipment, Inc. Camera crane arm base. 379,017, Cl. D34-28.000.

Choi, James H. Eagle wheel spinner. 379,000, Cl. D12-213.000.

Cinna: *See—*
Mourgue, Pascal, 378,963, Cl. D6-383.000.

Clubb, James M. Bread slicing rack. 378,979, Cl. D7-673.000.

Colgate-Palmolive Co.: *See—*
Sherman, Adam; Moskovich, Robert; and Petronio, James, 378,955, Cl. D4-104.000.

Conair Corporation: *See—*
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Constantine, Richard; and Rittenhouse, James M., Jr., to Conair Corporation. Electronic message recorder. 379,008, Cl. D14-167.000.

Coulombe, Mario: *See—*
Picard, Claude; Trepanier, Francois; Coulombe, Mario; and Poulin, Sylvain, 378,994, Cl. D12-90.000.

Crebolder meergenaamd Krijbolder, Jacobus J.: *See—*
Keijser, Johannes W. M.; and Crebolder meergenaamd Krijbolder, Jacobus J., 379,004, Cl. D13-184.000.

Cruz, Anthony V., to Hamilton Beach/Proctor-Silex, Inc. Toaster. 378,971, Cl. D7-330.000.

Cuthbertson, Jack C. Container mover. 379,022, Cl. D34-38.000.

Dachille, Denise. Three-dimensional children's shoe sizer. 378,992, Cl. D10-70.000.

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Daigle, Bernard. Hunter's rifle sling. 378,954, Cl. D3-262.000.
Darula, Calvin. Fence bracket. 378,986, Cl. D8-354.000.
Desmond, Mildred. Athletic girdle. 378,947, Cl. D2-738.000.
Deutsch, Peter K., to Marinco. Cover for horn. 379,001, Cl. D12-317.000.
Digianni, John A., to British-American Tobacco Company Limited. Container for smoking articles. 379,010, Cl. D27-189.000.
Dockery, Olden A.: *See—*
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Drew, David: *See—*
August, Mitchell, 379,023, Cl. D99-37.000.
Eastern Company, The: *See—*
Weinerman, Lee S.; and Kuminski, Arthur J., 378,985, Cl. D8-338.000.
Emhart Inc.: *See—*
Carsello, Anthony J., 378,984, Cl. D8-308.000.
Frye, Elam C., Jr.; and Gore, Fred M., to Frye International Corporation. Cutter guide. 378,978, Cl. D7-673.000.
Frye International Corporation: *See—*
Frye, Elam C., Jr.; and Gore, Fred M., 378,978, Cl. D7-673.000.
Gaumet, Michel, to Solaic (Societe Anonyme). Smart card with m-shaped isolation region. 379,006, Cl. D14-117.000.
Gore, Fred M.: *See—*
Frye, Elam C., Jr.; and Gore, Fred M., 378,978, Cl. D7-673.000.
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6 5,624,501
10 5,624,502
104.3 5,623,956

CLASS 137
246 5,623,957
269 5,623,958
322 5,623,959
375 5,623,960
377 5,623,961
469 5,623,962
554 5,623,963
588 5,623,964
625.32 5,623,966
625.64 5,623,967
625.66 5,623,968
854 5,623,969
896.2 5,623,965

CLASS 138
40 5,623,970
89 5,623,971
137 5,623,972

CLASS 139
452 5,623,973

CLASS 141
20 5,623,974
51 5,623,975
83 5,623,976

CLASS 144
220 5,623,977
235 5,623,978
241 5,623,979

CLASS 148
103 5,624,503
325 5,624,504
407 5,624,505
433 5,624,506
510 5,624,508

CLASS 149
2 5,625,165

CLASS 150
150 5,623,980

CLASS 152
213 R 5,624,509

CLASS 156
62.2 5,624,510
64 5,624,511
98 5,624,513
148 5,624,514
5,624,515
173 5,624,516
212 5,624,517
224 5,624,518
245 5,624,519
249 5,624,520
275.7 5,624,521
279 5,624,522
285 5,624,523
311 5,624,524
360 5,624,525
361 5,624,526
466 5,624,527
556 5,624,528

CLASS 157
1 5,623,981

CLASS 159
3 5,624,530
13.3 5,624,531

CLASS 160
178.2 5,623,982

CLASS 162
111 5,624,532

CLASS 164
416 5,623,983
457 5,623,984
516 5,623,985

CLASS 165
45 5,623,986
104.12 5,623,987
134.1 5,623,988
152 5,623,989
298 5,623,990

CLASS 166
216 5,623,991
250.01 5,623,992
292 5,623,993
379 5,623,994

CLASS 169
30 5,623,995

CLASS 172
118 5,623,996
156 5,623,997
548 5,623,998

CLASS 173
170 5,623,999
216 5,624,000

CLASS 174
52.4 Re.35,496
5,625,166
77 R 5,625,167
102 R 5,625,168
250 5,625,169

CLASS 175
299 5,624,001
356 5,624,002

CLASS 177
50 5,625,170

CLASS 180
65.1 5,624,003

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CLASS 181

130 5,625,171
204 5,625,172
227 5,625,173

CLASS 182

45 5,624,006
92 5,624,007
136 5,624,008

CLASS 187

201 5,624,009
289 5,625,174
316 5,625,175
393 5,625,176

CLASS 188

299 5,624,010
329 5,624,011

CLASS 190

115 5,624,012

CLASS 192

8 R 5,624,013
33 R 5,624,014
61 5,624,015
110 S 5,624,016

CLASS 194

207 5,624,017
209 5,624,018
217 5,624,019

CLASS 198

460.1 5,624,020
626.1 5,624,021

CLASS 200

1 R 5,625,177
327 5,624,022
526 5,624,023

CLASS 202

153 5,624,534

CLASS 204

157.15 5,625,178
228 5,624,535
283 5,624,542
298.11 5,624,536
403 5,624,537
418 5,624,538
451 5,624,539
625 5,624,540

CLASS 205

94 5,624,541
688 5,624,543
742 5,624,544
746 5,624,545
779.5 5,624,546

CLASS 206

172 5,624,024
233 5,624,025
289 5,624,026
308.3 5,624,027
315.6 5,624,028
372 5,624,029
386 5,624,030
391 5,624,031
433 5,624,032
469 5,624,033
484 5,624,034
522 5,624,035
534 5,624,036
565 5,624,037

CLASS 208

89 5,624,547
94 5,624,548

CLASS 209

281 5,624,038
714 5,624,039

CLASS 210

98 5,624,549
104 5,624,550
134 5,624,551
170 5,624,552
198.2 5,624,553
232 5,624,554
321.75 5,624,555
5,624,556
411 5,624,557
415 5,624,558
447 5,624,559
486 5,624,560
500.32 5,624,561
605 5,624,562
607 5,624,563
609 5,624,564
614 5,624,565
634 5,624,566
662 5,624,567
698 5,624,568
727 5,624,569
728 5,624,570
741 5,624,571
746 5,624,572
748 5,624,573
754 5,624,574
759 5,624,575
767 5,624,576
768 5,624,577
781 5,624,578
783 5,624,579
800 5,624,580

CLASS 211

4 5,624,040
30 5,624,041
59.2 5,624,042
74 5,624,043
186 5,624,044
192 5,624,045

CLASS 212

349 5,624,046
350 5,624,047

CLASS 215

395 5,624,048

CLASS 216

11 5,624,872
22 5,624,581

CLASS 218

80 5,625,179

CLASS 219

69.12 5,624,584
121.48 5,624,586
121.63 5,624,585
121.83 5,624,587
124.34 5,624,588
133 5,624,589
390 5,624,590
522 5,624,591
619 5,624,593
633 5,624,594
679 5,624,592

CLASS 220

1.5 5,624,049
4.05 5,624,050
553 5,624,051
575 5,624,052
713 5,624,053

CLASS 221

6 5,624,054

CLASS 222

135 5,624,055
148 5,624,056
212 5,624,057
240 5,624,058
309 5,624,059
376 5,624,060
402 5,624,061
528 5,624,062

CLASS 224

324 5,624,063
414 5,624,064
625 5,624,065

CLASS 225

106 5,624,066

CLASS 228

216 5,624,067
262.21 5,624,068

CLASS 229

74 5,624,069
155 5,624,070

CLASS 232

17 5,624,071

CLASS 235

462 5,625,180

CLASS 239

92 5,624,072
442 5,624,073
588 5,624,074
690 5,624,075

CLASS 241

3 5,624,076
20 5,624,077
24.14 5,624,078
39 5,624,079
80 5,624,080

CLASS 242

43 A 5,624,081
131 5,624,082
374 5,624,083
375.3 5,624,084
381 5,624,085
381.1 5,624,086
5,624,087

CLASS 244

158 R 5,624,088

CLASS 248

62 5,624,089
102 5,624,090
205.5 5,624,091
219.3 5,624,092
231.41 5,624,093
231.81 5,624,094
5,624,095
451 5,624,096
464 5,624,097
550 5,624,098
562 5,624,099

CLASS 250

214 A 5,625,181
229 5,625,182
236 5,625,183
287 5,625,184
288 5,625,185
292 5,625,186
308 5,625,187
338.3 5,625,188
343 5,625,189
363.03 5,625,190
363.04 5,625,191
363.1 5,625,192
372 5,625,193
431 5,625,194
492.21 5,625,195
559.1 5,625,196
559.22 5,625,197
559.29 5,625,198

CLASS 251

65 5,624,100
172 5,624,101
335.2 5,624,102

CLASS 252

68 5,624,595
5,624,596
182.11 5,624,597
182.12 5,624,598
182.28 5,624,599
299.61 5,624,600
5,624,601
301.4 F 5,624,602
301.4 H 5,624,603
313.1 5,624,604
500 5,624,605
506 5,624,606
606 5,624,607

CLASS 256

66 5,624,103

CLASS 257

40 5,625,199
69 5,625,200
88 5,625,201
94 5,625,202
132 5,625,203
190 5,625,204
197 5,625,205
198 5,625,206
207 5,625,207
214 5,625,208
253 5,625,209
292 5,625,210
317 5,625,211
321 5,625,212
5,625,213
355 5,625,214
379 5,625,215
387 5,625,216
412 5,625,217
529 5,625,218
530 5,625,219
5,625,220
686 5,625,221
687 5,625,222
692 5,625,223
698 5,625,224
700 5,625,225
705 5,625,226
712 5,625,227
5,625,228
5,625,229
736 5,625,230
751 5,625,231
758 5,625,232
771 5,625,233
773 5,625,234
776 5,625,235

CLASS 261

30 5,624,608
36.1 5,624,609
104 5,624,610

CLASS 264

1.36 5,624,611
4.1 5,624,612
40.1 B1 5,441,680
44 5,624,613
45.7 5,624,614
71 5,624,615
83 5,624,616
103 5,624,617
5,624,618
109 5,624,619
115 5,624,620
176.1 5,624,621
258 5,624,622
296 5,624,623
318 5,624,624
406 5,624,625
430 5,624,626
447 5,624,627
513 5,624,628
516 5,624,629
553 5,624,630

CLASS 267

34 5,624,104
64.15 5,624,105

CLASS 269

138 5,624,106

CLASS 271

3.2 5,624,107
9.12 5,624,108
10.13 5,624,109
18.3 5,624,110
236 5,624,111

CLASS 273

148 B 5,624,117
157 R 5,624,118
269 5,624,119
279 5,624,120
317 5,624,121

CLASS 277

9 5,624,123
167.5 5,624,124

CLASS 279

62 5,624,125

CLASS 280

32.6 5,624,126
163 5,624,127
250.1 5,624,128
478.1 5,624,129
728.2 5,624,130
728.3 5,624,131
735 5,624,132
740 5,624,133
741 5,624,134
801.1 5,624,135
5,624,136
839 5,624,137

CLASS 283

36 5,624,138

CLASS 285

31 5,624,139
133.1 5,624,140

CLASS 292

165 5,624,141
241 5,624,142

CLASS 293

118 5,624,143

CLASS 294

1.3 5,624,144
55 5,624,145
65.5 5,624,146
89 5,624,147
93 5,624,148
121 5,624,149
146.11 5,624,150
214 5,624,151

CLASS 297

59 5,624,153
184.13 5,624,152
217.1 5,624,154
217.3 5,624,155
217.4 5,624,156
228.13 5,624,157
230.14 5,624,158
325 5,624,159
452.2 5,624,160
452.52 5,624,161

CLASS 299

1.6 5,624,162

CLASS 301

37.43 Re.35,497

CLASS 303

6.01 5,624,163
9.62 5,624,164
119.2 5,624,165

CLASS 307

41 5,625,236
48 5,625,237
147 5,625,238

CLASS 310

68 B 5,625,239
90.5 5,625,240
156 5,625,241
198 5,625,242
211 5,625,243
232 5,625,244
306 5,625,245
316 5,625,246
323 5,625,247
324 5,625,248
334 5,625,249

CLASS 312

201 5,624,166
223.1 5,624,167
245 5,624,168
319.4 5,624,169
329 5,624,170
334.8 5,624,171

CLASS 313

309 5,625,250
403 5,625,251
414 5,625,252
422 5,625,253
493 5,625,254
506 5,625,255
636 5,625,256

CLASS 315

77 5,625,257
82 5,625,258
111.21 5,625,259
136 5,625,260
411 5,625,261

CLASS 318

71 5,625,262
116 5,625,263
254 5,625,264
5,625,265
466 5,625,266
625 5,625,267
696 5,625,268
5,625,269
5,625,270

CLASS 320

2 5,625,271
6 5,625,272
13 5,625,273
23 5,625,274
32 5,625,275

CLASS 322

24 5,625,276
58 5,625,277

CLASS 323

280 5,625,278
283 5,625,279
284 5,625,280
315 5,625,281
5,625,282

CLASS 324

74 5,625,283
96 5,625,284
133 5,625,285
156 5,625,286
158.1 5,625,287
5,625,288
207.14 5,625,289
248 5,625,290
427 5,625,291
538 5,625,292
638 5,625,293
668 5,625,294
719 5,625,295
753 5,625,296
754 5,625,297
5,625,298
5,625,299
765 5,625,300

CLASS 326

41 5,625,301
93 5,625,302
106 5,625,303

CLASS 327

63 5,625,304
78 5,625,305
112 5,625,306
113 5,625,307
203 5,625,308
217 5,625,309
233 5,625,310
293 5,625,311
353 5,625,317
483 5,625,312
486 5,625,313
519 5,625,314
536 5,625,315
553 5,625,316
563 5,625,318

CLASS 329

325 5,625,319

CLASS 330

2 5,625,320
124 R 5,625,321
129 5,625,322
277 5,625,323

CLASS 331

2 5,625,324
16 5,625,325
64 5,625,326
74 5,625,327

CLASS 333

116 5,625,328
195 5,625,329
230 5,625,330

CLASS 335

216 5,625,331
5,625,332

CLASS 338

2 5,625,333

CLASS 340

309.15 5,625,334
431 5,625,335
432 5,625,336
449 5,625,337
539 5,625,338
551 5,625,339
561 5,625,340
572 5,625,341
578 5,625,342
620 5,625,343
623 5,625,344
628 5,625,345
5,625,346
686 5,625,347
690 5,625,348
825.25 5,625,350
825.31 5,625,349
825.52 5,625,351
870.01 5,625,352
870.03 5,625,353

CLASS 341

20 5,625,354
67 5,625,355
5,625,356
143 5,625,357
5,625,358
5,625,359
144 5,625,360
172 5,625,361

CLASS 342

70 5,625,362
352 5,625,363
357 Re.35,498
449 5,625,364

CLASS 343

700 MS 5,625,365
718 5,625,366
745 5,625,367
753 5,625,368
770 5,625,369
788 5,625,370
867 5,625,371

CLASS 345

8 5,625,372
58 5,625,373
113 5,625,374
128 5,625,375
132 5,625,376
146 5,625,377
150 5,625,378
154 5,625,379
157 5,625,380
163 5,625,381
173 5,625,382
200 5,625,383
201 5,625,386
211 5,625,387

CLASS 346

135.1 5,625,388

CLASS 347

23 5,625,384
24 5,625,385
41 5,625,389
5,625,390
5,625,391
55 5,625,392
69 5,625,393
71 5,625,395
84 5,625,396
100 5,625,397
104 5,625,398
175 5,625,394
195 5,625,399
197 5,625,400
208 5,625,401
232 5,625,402
239 5,625,403

CLASS 348

7 5,625,404
5,625,405
5,625,406
16 5,625,407
42 5,625,408
117 5,625,409
154 5,625,410
220 5,625,411
222 5,625,412
246 5,625,413
312 5,625,414
350 5,625,415
388 5,625,416
416 5,625,417
495 5,625,418
568 5,625,419
580 5,625,420
607 5,625,421
731 5,625,422
734 5,625,423
743 5,625,424

CLASS 349

35 5,625,477
79 5,625,474
86 5,625,473
123 5,625,475
149 5,625,476

CLASS 351

43 5,625,425
158 5,625,426
159 5,625,427
208 5,625,428

CLASS 353

98 5,624,172
119 5,624,173
122 5,624,174

CLASS 355

22 5,625,435
53 5,625,436

CLASS 356

3.08 5,625,446
4.01 5,625,447
71 5,625,448
72 5,625,449
73.1 5,625,450
236 5,625,451
326 5,625,452
351 5,625,453
359 5,625,454
369 5,625,455
376 5,625,456
390 5,625,457
446 5,625,458
5,625,459

CLASS 358

298 5,625,460
448 5,625,465
449 5,625,466
470 5,625,467
487 5,625,468
5,625,469
505 5,625,470

CLASS 359

30 5,625,471
34 5,625,472
125 5,625,478
135 5,625,479
158 5,625,480
179 5,625,481
216 5,625,482
224 5,625,483
244 5,625,484
326 5,625,485
431 5,625,486
432 5,625,487
435 5,625,488
455 5,625,489
484 5,625,490
487 5,625,491
586 5,625,492
630 5,625,493
634 5,625,494
663 5,625,495
666 5,625,496
751 5,625,497
811 5,625,498
831 5,625,499
841 5,625,500
855 5,625,501
872 5,625,502

CLASS 360

25 5,625,503
27 5,625,504
46 5,625,505
51 5,625,506
71 5,625,507
77.02 5,625,508
94 5,625,509
96.5 5,625,510
99.08 5,625,511
103 5,625,512
5,625,513
104 5,625,514
106 5,625,515
132 5,625,516
137 5,625,517

CLASS 361

56 5,625,518
93 5,625,519
103 5,625,520
111 5,625,521
5,625,522
127 5,625,523
232 5,625,525
234 5,625,526
273 5,625,527
321.1 5,625,528
321.5 5,625,529
604 5,625,530
623 5,625,531
680 5,625,532
681 5,625,533
686 5,625,534
719 5,625,535
736 5,625,536
775 5,625,537

CLASS 362

72 5,624,175
83.1 5,624,176
101 5,624,177
220 5,624,178
222 5,624,179
249 5,624,180
252 5,624,181

CLASS 363

15 5,625,538
17 5,625,539
21 5,625,540
5,625,541
41 5,625,542
44 5,625,543
59 5,625,544
71 5,625,545
5,625,546
89 5,625,547
98 5,625,548
132 5,625,549
5,625,550

CLASS 364

149 5,625,551
162 5,625,552
423.09 5,625,556
423.098 5,625,555
424.04 5,625,557
426.041 5,625,558
436 5,625,559
468.09 5,625,560
474.35 5,625,561
479.05 5,625,562
488 5,625,563
5,625,564
489 5,625,565
5,625,566
490 5,625,567
491 5,625,568
492 5,625,569
514 A 5,625,570
5,625,571
5,625,572
514 R 5,625,573
550 5,625,574
578 5,625,575
5,625,576
5,625,577
5,625,578
5,625,579
5,625,580
611 5,625,554
724.01 5,625,581
786 5,625,582

CLASS 365

45 5,625,583
5,625,584
63 5,625,585
104 5,625,586
127 5,625,524
145 5,625,587
149 5,625,588
182 5,625,589
185.17 5,625,590
185.24 5,625,591
189.01 5,625,592
189.05 5,625,593
189.12 5,625,594
194 5,625,595
200 5,625,596
201 5,625,597
203 5,625,598
205 5,625,599
218 5,625,600
220 5,625,601
222 5,625,602
230.03 5,625,603
233.5 5,625,604

CLASS 366

2 5,624,182
20 5,624,183
139 5,624,184
141 5,624,185
176.1 5,624,186

CLASS 367

149 5,625,605

CLASS 368

10 5,625,606

CLASS 369

13 5,625,607
24 5,625,608
44.23 5,625,609
47 5,625,610
5,625,611
77.2 5,625,612
112 5,625,613
116 5,625,614
5,625,615
5,625,616
121 5,625,617
275.1 5,625,618
5,625,619
275.3 5,625,620

CLASS 370

232 5,625,622
248 5,625,621
280 5,625,623
307 5,625,624
321 5,625,628
347 5,625,627
5,625,629
395 5,625,625
448 5,625,626

CLASS 371

22.1 5,625,630
5,625,631
43 5,625,632

CLASS 372

32 5,625,633
45 5,625,634
50 5,625,636
96 5,625,637
103 5,625,638

CLASS 374

11 5,624,187
119 5,624,188
141 5,624,189
161 5,624,190

CLASS 375

200 5,625,639
202 5,625,640
5,625,641
206 5,625,642
222 5,625,643
242 5,625,644
276 5,625,645
285 5,625,646
295 5,625,647
316 5,625,648
328 5,625,649
335 5,625,650
354 5,625,651
355 5,625,652
356 5,625,653
365 5,625,654

CLASS 376

203 5,625,655
245 5,625,656
261 5,625,657
306 5,625,658

CLASS 377

21 5,625,659

CLASS 378

15 5,625,660
5,625,661
16 5,625,662
65 5,625,663
72 5,625,664
156 5,625,665
167 5,625,666

CLASS 379

30 5,625,667
58 5,625,668
5,625,669
5,625,670
5,625,671
59 5,625,672
61 5,625,673
5,625,674
67 5,625,675
88 5,625,676
93 5,625,677
5,625,678
99 5,625,679
199 5,625,680
207 5,625,681
266 5,625,682
355 5,625,683
387 5,625,684
399 5,625,685
5,625,686
416 5,625,687
433 5,625,688

CLASS 380

3 5,625,689
4 5,625,690
5 5,625,691
21 5,625,692
23 5,625,693
5,625,694
28 5,625,695

CLASS 381

18 5,625,696
92 5,625,697
96 5,625,698
99 5,625,699
192 5,625,700
197 5,625,701

CLASS 382

107 5,625,702
112 5,625,703
118 5,625,704
128 5,625,705
5,625,706
157 5,625,707
202 5,625,708
203 5,625,709
209 5,625,710
224 5,625,711
232 5,625,712
5,625,713
233 5,625,714
236 5,625,715
254 5,625,716
260 5,625,717
274 5,625,718
275 5,625,719
284 5,625,720
309 5,625,721

CLASS 384

15 5,624,195
100 5,624,191
448 5,624,192
517 5,624,193

CLASS 385

1 5,625,722
11 5,625,723
12 5,625,724
14 5,625,725
5,625,726
16 5,625,727
30 5,625,728
31 5,625,729
49 5,625,730
53 5,625,731
88 5,625,732
5,625,733
5,625,734
91 5,625,735
120 5,625,736
137 5,625,737
146 5,625,738

CLASS 386

46 5,625,462
52 5,625,739
53 5,625,461
95 5,625,464
106 5,625,463
5,625,740
120 5,625,741

CLASS 392

45 5,625,635
345 5,625,742

CLASS 395

2.14 5,625,743
2.31 5,625,744
2.36 5,625,745
2.38 5,625,746
2.52 5,625,747
2.6 5,625,748
2.63 5,625,749
22 5,625,750
5,625,751
24 5,625,752
27 5,625,753
51 5,625,754
109 5,625,755
5,625,756
113 5,625,757
114 5,625,758
124 5,625,760
128 5,625,761
131 5,625,762
133 5,625,763
135 5,625,764
5,625,765
5,625,766
140 5,625,767
141 5,625,768
143 5,625,769
167 5,625,772
5,625,773
200.1 5,625,774
200.12 5,625,775
227 5,625,776
283 5,625,777
287 5,625,778
293 5,625,779
311 5,625,780
335 5,625,781
341 5,625,782
352 5,625,783
380 5,625,787
386 5,625,784
390 5,625,788
393 5,625,789
431 5,625,790
433 5,625,791
440 5,625,792
465 5,625,793
5,625,794
475 5,625,795
495 5,625,796
497.04 5,625,797
500 5,625,798
5,625,799
5,625,800
5,625,801
5,625,802
5,625,803
5,625,804
556 5,625,806
558 5,625,805
560 5,625,807
568 5,625,785
571 5,625,786
598 5,625,808
601 5,625,810
602 5,625,811
5,625,812
5,625,813
605 5,625,814
608 5,625,815
614 5,625,809
5,625,816
5,625,817
615 5,625,818
618 5,625,819
5,625,820
670 5,625,821
705 5,625,822
706 5,625,823
728 5,625,824
730 5,625,825
750 5,625,826
752 5,625,553
761 5,625,770
762 5,625,771
763 5,625,827
800 5,625,828
5,625,829
5,625,830
5,625,831
5,625,832
5,625,833
5,625,834
5,625,835
5,625,836
5,625,837
5,625,838
824 5,625,839
825 5,625,840
835 5,625,841
842 5,625,842
5,625,843
853 5,625,844
856 5,625,845
872 5,625,846
880 5,625,847

CLASS 396

50 5,625,848
65 5,625,430
95 5,625,434
114 5,625,849
269 5,625,850
284 5,625,432
300 5,625,429
341 5,625,851
349 5,625,852
418 5,625,431
419 5,625,853
429 5,625,854
513 5,625,855
604 5,625,433
5,625,856

CLASS 399

49 5,625,857
54 5,625,445
107 5,625,437
176 5,625,858
272 5,625,438
5,625,439
5,625,440
5,625,441
325 5,625,859
327 5,625,442
353 5,625,443
400 5,625,444
403 5,625,860

CLASS 400

477 5,624,194
625 5,624,196
629 5,624,197

CLASS 403

76 5,624,198
100 5,624,199
217 5,624,200
231 5,624,201
327 5,624,202

CLASS 404

6 5,624,203

CLASS 405

52 5,624,204

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129 5,624,205
157 5,624,206
173 5,624,207
232 5,624,210
263 5,624,208
269 5,624,209
286 5,624,211
302.2 5,624,212

CLASS 408

206 5,624,213
226 5,624,214

CLASS 409

131 5,624,215

CLASS 411

5 5,624,216
85 5,624,217
87 5,624,218
308 5,624,219
383 5,624,221
441 5,624,220

CLASS 414

11 5,624,222
480 5,624,223
490 5,624,224
495 5,624,225

CLASS 415

129 5,624,226
139 5,624,227
204 5,624,229

CLASS 416

5 5,624,230
97 R 5,624,231
114 5,624,232
219 R 5,624,233
238 5,624,234
241 R 5,624,235

CLASS 417

12 5,624,236
33 5,624,237
61 5,624,238
187 5,624,239
222.2 5,624,240
234 5,624,241
238 5,624,242
366 5,624,243
5,624,244
373 5,624,245
386 5,624,246

CLASS 418

55.2 5,624,247
61.3 5,624,248
102 5,624,249
150 5,624,250
206.1 5,624,251

CLASS 419

2 5,625,861
23 5,624,631

CLASS 420

544 5,624,632

CLASS 422

28 5,624,634
32 5,624,635
37 5,624,636
52 5,624,637
61 5,624,638
83 5,624,639
90 5,624,640
98 5,624,641
140 5,624,642
177 5,624,644
186.11 5,624,734
266 5,624,645

CLASS 423

3 5,625,862
130 5,624,646
206.2 5,624,647
242.1 5,624,648
243.11 5,624,649
332 5,624,651
335 5,624,652
533 5,624,653
558 5,624,650
579 5,624,654
584 5,624,655
700 5,624,656
5,624,657
702 5,624,658

CLASS 424

1.49 5,624,659
1.65 5,624,660
9.35 5,624,661
9.361 5,624,662
59 5,624,663
60 5,624,664
68 5,624,665
70.21 5,624,666
76.21 5,624,667
78.17 5,624,668
78.35 5,624,669
85.2 5,624,670
195.1 5,624,671
5,624,672
5,624,673
400 5,624,674
405 5,624,675
414 5,624,676
435 5,624,677
442 5,624,678
444 5,624,679
448 5,624,680
454 5,624,681
455 5,624,682
470 5,624,683
484 5,624,684
488 5,624,685
489 5,624,686
490 5,624,687

CLASS 425

67 5,624,688
72.1 5,624,689
100 5,624,690
116 5,624,691
144 5,624,692
146 5,624,693
577 5,624,694
589 5,624,695

CLASS 426

231 5,624,696
241 5,624,697
330.3 5,624,698
425 5,624,699
564 5,624,700
600 5,624,701
603 5,624,702
607 5,624,703

CLASS 427

2.24 5,624,704
64 5,624,705
77 5,624,706
96 5,624,707
126.2 5,624,708
162 5,624,709
212 5,624,710
261 5,624,711
327 5,624,712
371 5,624,713
393.6 5,624,714
420 5,624,715
430.1 5,624,716
448 5,624,717
530 5,624,718
577 5,624,719
583 5,624,720
585 5,624,721
586 5,624,722

CLASS 428

43 5,624,724
65.5 5,624,725
74 5,624,726 7.24
76 5,624,727 7.4
5,624,728 7.92
90 5,624,729 8
136 5,624,730 25
143 5,624,731 26
167 5,624,732 28
182 5,624,733 29
192 5,624,735 30
196 5,624,736 69.1
198 5,624,737
5,624,738
201 5,624,739
204 5,624,740
210 5,624,741 69.52
212 5,624,742 69.6
216 5,624,743 69.7
308.8 5,624,745 91.2
327 5,624,747
336 5,624,748 91.4
341 5,624,723 91.5
5,624,749 108
344 5,624,750 172.3
355 AC 5,624,751
357 5,624,752 177
373 5,624,754 193
412 5,624,757 194
423.1 5,624,758 201
424.2 5,624,759 204
426 5,624,760 252
5,624,761 253.5
447 5,624,762
461 5,624,763
462 5,624,764
492 5,624,765
547 5,624,766

CLASS 429

7 5,624,767
23 5,624,768
32 5,624,769
143 5,624,770
173 5,624,771
187 5,624,772

CLASS 430

5 5,624,773
5,624,774
7 5,624,775
56 5,624,776
96 5,624,777
106.6 5,624,778
109 5,624,779
124 5,624,780
192 5,624,781
198 5,624,782
204 5,624,783
250 5,624,784
253 5,624,785
264 5,624,786
270.1 5,624,787
5,624,788
311 5,624,789
320 5,624,790
325 5,624,791
356 5,624,792
458 5,624,793

CLASS 431

7 5,624,252
116 5,624,253
153 5,624,254

CLASS 432

128 5,624,255
252 5,624,256

CLASS 433

6 5,624,257
20 5,624,258
72 5,624,259
90 5,624,260
222.1 5,624,261
223 5,624,262
5,624,263

CLASS 434

12 5,624,264
307 R 5,624,265

CLASS 435

2 5,624,794
5 5,624,795
5,624,797
6 5,624,798
5,624,799
5,624,800
5,624,801
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5,624,803
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5,624,833
5,624,834
5,624,835
5,624,841
5,624,842
264 5,624,843
5,624,844
5,624,845
287.2 5,624,836
325 5,624,837
5,624,766
378 5,624,839
395 5,624,840
410 5,624,838

CLASS 436

50 5,624,846
68 5,624,847
164 5,624,848
180 5,624,849
527 5,624,850

CLASS 437

3 5,624,864

CLASS 438

105 5,624,853
135 5,624,855
164 5,624,861
166 5,624,851
193 5,624,860
210 5,624,863
276 5,624,862
298 5,624,859
331 5,624,854
339 5,624,856
378 5,624,852
396 5,624,865
419 5,624,858
420 5,624,857
426 5,624,866
453 5,624,871
487 5,624,873
560 5,624,867
602 5,624,869
653 5,624,870
5,624,874
715 5,624,582
718 5,624,529
720 5,624,583
762 5,624,868

CLASS 439

34 5,624,266
54 5,624,267
66 5,624,268
83 5,624,269
136 5,624,270
352 5,624,271
353 5,624,272
399 5,624,273
417 5,624,274
489 5,624,275
532 5,624,276
620 5,624,277
675 5,624,278
680 5,624,279
724 5,624,280
729 5,624,281
733.1 5,624,282
751 5,624,283
752 5,624,284
5,624,285
786 5,624,286
801 5,624,287
843 5,624,288
852 5,624,289

CLASS 440

80 5,624,290

CLASS 441

70 5,624,291
80 5,624,292

CLASS 442

129 5,624,744

CLASS 445

25 5,624,293

CLASS 446

253 5,624,294
475 5,624,295

CLASS 450

36 5,624,296

CLASS 451

11 5,624,297
28 5,624,298
5,624,299
36 5,624,300
47 5,624,301
157 5,624,302
285 5,624,303
287 5,624,304
354 5,624,305
358 5,624,306

CLASS 452

176 5,624,307

CLASS 453

3 5,624,308

CLASS 454

66 5,624,309
121 5,624,310
202 5,624,313
230 5,624,311
247 5,624,312

CLASS 455

3.3 5,625,863
4.2 5,625,864
5,625,865
8 5,625,866
13.1 5,625,867
13.4 5,625,868
33.1 5,625,869
5,625,870
5,625,871
5,625,872
33.2 5,625,874
33.3 5,625,876
34.1 5,625,877
5,625,878
5,625,879
38.1 5,625,880
38.3 5,625,881
5,625,882
41 5,625,883
53.2 5,625,875
54.1 5,625,884
5,625,885
5,625,886
54.2 5,625,887
56.1 5,625,888
67.1 5,625,889
5,625,890
67.2 5,625,891
69 5,625,892
70 5,625,893
78 5,625,894

CLASS 460

72 5,624,314
99 5,624,315

CLASS 463

45 5,624,316

CLASS 464

68 5,624,317
140 5,624,318

CLASS 470

21 5,624,319

CLASS 472

51 5,624,320
118 5,624,321

CLASS 473

54 5,624,322
73 5,624,323
125 5,624,324
137 5,624,325
176 5,624,326
268 5,624,327
282 5,624,328
287 5,624,329
308 5,624,330
345 5,624,331
354 5,624,332
386 5,624,333
430 5,624,113
471 5,624,122
497 5,624,112
520 5,624,114
538 5,624,116
567 5,624,115

CLASS 474

79 5,624,334
80 5,624,335
82 5,624,336
205 5,624,337
263 5,624,338

CLASS 475

72 5,624,339
5,624,340
119 5,624,341
127 5,624,342
160 5,624,343
5,624,344
230 5,624,345
249 5,624,346

CLASS 477

5 5,624,347
46 5,624,348
5,624,349
78 5,624,350
148 5,624,351
197 5,624,352

CLASS 482

5 5,624,353
51 5,624,354
57 5,624,356
72 5,624,357
90 5,624,358
91 5,624,359
129 5,624,360
130 5,624,361
139 5,624,362

CLASS 483

3 5,624,363
16 5,624,364
50 5,624,365

CLASS 493

23 5,624,366
167 5,624,367
312 5,624,368
355 5,624,369

CLASS 494

20 5,624,370
22 5,624,371

CLASS 501

39 5,624,875

CLASS 502

120 5,624,877
152 5,624,878
344 5,624,879
402 5,624,880
407 5,624,881

CLASS 503

207 5,624,882

CLASS 504

116 5,624,883
148 5,624,884

CLASS 505

234 5,624,885

CLASS 507

217 5,624,886

CLASS 508

108 5,624,887
161 5,624,888
162 5,624,889
561 5,624,890

CLASS 510

195 5,624,891
223 5,624,892

CLASS 514

2 5,624,894
8 5,624,895
5,624,896
11 5,624,897
12 5,624,898
5,624,899
13 5,624,900
17 5,624,901
5,624,902
18 5,624,903
21 5,624,893
5,624,904
5,624,905
23 5,624,906
5,624,907
5,624,908
26 5,624,909
27 5,624,910
33 5,624,911
44 5,624,912
47 5,624,913
54 5,624,914
5,624,915
63 5,624,916
76 5,624,917
80 5,624,918
184 5,624,919
210 5,624,920
214 5,624,921
220 5,624,922
5,624,923
224.5 5,624,924
243 5,624,925
248 5,624,926
254 5,624,927
255 5,624,928
256 5,624,929

258 5,624,930
5,624,931
282 5,624,932
292 5,624,933
301 5,624,934
303 5,624,935
307 5,624,936
312 5,624,937
313 5,624,938
314 5,624,939
324 5,624,940
326 5,624,941
336 5,624,942
345 5,624,943
359 5,624,944
367 5,624,945
378 5,624,946
392 5,624,947
395 5,624,948
410 5,624,949
414 5,624,950
422 5,624,951
5,624,952
454 5,624,953
456 5,624,954
513 5,624,955
535 5,624,956
5,624,957
546 5,624,958
562 5,624,959
565 5,624,960
651 5,624,961
772.2 5,624,962
789 5,624,963

CLASS 518

704 5,624,964

CLASS 521

27 5,624,965
51 5,624,966
64 5,624,967
107 5,624,968
117 5,624,969
131 5,624,970
137 5,624,971
159 5,624,972

CLASS 522

40 5,624,973
96 5,624,974

CLASS 523

111 5,624,975
116 5,624,976
211 5,624,977
402 5,624,978
453 5,624,979
5,624,980
82 5,624,981
91 5,624,982
119 5,624,983
243 5,624,984
267 5,624,985
270 5,624,986
290 5,624,987
303 5,624,988
386 5,624,485
405 5,624,989
425 5,624,990
451 5,624,991
458 5,624,992
501 5,624,993
505 5,624,994
554 5,624,995
556 5,624,996
785 5,624,997
812 5,624,998

CLASS 525

52 5,624,999
68 5,625,000
78 5,625,001
189 5,625,002
208 5,625,003
285 5,625,004
301 5,625,005
5,625,006
328.8 5,625,007
333.1 5,625,008
390 5,625,009
416 5,625,010
431 5,625,011

CLASS 526

74 5,625,012
106 5,625,013
153 5,625,014
160 5,625,015
5,625,016
180 5,625,017
201 5,625,018
247 5,625,019
329.2 5,625,020
329.7 5,625,021

CLASS 528

15 5,625,022
29 5,625,023
5,625,024
38 5,625,025
44 5,625,026
196 5,625,027
198 Re.35,499
272 5,625,028
354 5,625,029
361 5,625,030

CLASS 530

300 5,625,031
324 5,625,032
5,625,033
350 5,625,034
380 5,625,035
381 5,625,036
387.5 5,625,037
388.25 5,625,039
388.4 5,625,038
395 5,625,040
416 5,625,041

CLASS 534

637 5,625,042

CLASS 536

6.4 5,625,043
18.2 5,625,044
18.6 5,625,045
22.1 5,625,046
23.1 5,625,047
23.4 5,625,048
23.72 5,625,049
24.1 5,625,050
24.2 5,625,051
25.34 5,625,052
25.4 5,625,054
25.41 5,625,053
25.42 5,625,055
26.12 5,625,056
55.3 5,625,057

CLASS 540

226 5,625,058
310 5,625,059
524 5,625,060

CLASS 544

1 5,625,061
249 5,625,062
251 5,625,063
366 5,625,064

CLASS 546

124 5,625,065
134 5,625,066
152 5,625,067
171 5,625,068
250 5,625,069
278.4 5,625,070
294 5,625,071

CLASS 548

204 5,625,072
262.8 5,625,073
263.8 5,625,074
542 5,625,075
552 5,625,076

CLASS 549

218 5,625,077
264 5,625,078
282 5,625,079
299 5,625,080
392 5,625,081
441 5,625,082
467 5,625,083
536 5,625,084

CLASS 554

107 5,625,085

CLASS 556

54 5,625,086
468 5,625,087
473 5,625,088

CLASS 558

26 5,625,089
78 5,625,090
274 5,625,091

CLASS 560

24 5,625,092
35 5,625,093
232 5,625,094

CLASS 562

519 5,625,095
522 5,625,096

CLASS 564

398 5,625,097
487 5,625,098

CLASS 568

347 5,625,099

CLASS 585

12 5,625,100
369 5,625,101
453 5,625,102
475 5,625,103
5,625,104
511 5,625,105
512 5,625,106
514 5,625,107
520 5,625,108
639 5,625,109
641 5,625,110
653 5,625,111
709 5,625,112
722 5,625,113
731 5,625,114
750 5,625,115
848 5,625,116
860 5,625,117
899 5,625,118

CLASS 588

205 5,625,119

CLASS 600

3 5,624,372
9 5,624,373
22 5,624,375
25 5,624,376
5,624,377
29 5,624,374
38 5,624,378
104 5,624,379
146 5,624,380
206 5,624,381

CLASS 601

2 5,624,382
5 5,624,383
84 5,624,384
135 5,624,385
385.2 5,624,426

CLASS 602

16 5,624,386
18 5,624,387
20 5,624,388
26 5,624,389
5,624,390
63 5,624,391

CLASS 604

43 5,624,392
48 5,624,393
67 5,624,394
93 5,624,395
5,624,396
95 5,624,397
5,624,398
96 5,624,399
110 5,624,400
5,624,401
111 5,624,402
179 5,624,403
187 5,624,404
199 5,624,405
207 5,624,406
216 5,624,407
224 5,624,408
246 5,624,409
256 5,624,410
265 5,624,411
280 5,624,412
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283 5,624,414
290 5,624,415
313 5,624,416
319 5,624,417
5,624,418
355 5,624,419
365 5,624,420
378 5,624,421
385.1 5,624,422
5,624,423
385.2 5,624,424
5,624,425
391 5,624,427
5,624,428
5,624,429

CLASS 606

1 5,624,430
5,624,431
2 5,624,432
7 5,624,433
9 5,624,434
10 5,624,435
12 5,624,436
5,624,437
15 5,624,438
45 5,624,439
59 5,624,440
61 5,624,441
5,624,442
86 5,624,443
88 5,624,444
89 5,624,445
96 5,624,446
5,624,447
108 5,624,449
5,624,450
131 5,624,451
139 5,624,452
140 5,624,453
151 5,624,454
159 5,624,455
166 5,624,456
170 5,624,457
181 5,624,458
185 5,624,459
189 5,624,460
191 5,624,461

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16 5,624,462
18 5,624,463
22 5,624,464

CLASS 731

159 5,623,850

CLASS 756

87 5,624,512

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2 5,625,121
5,625,122
5,625,123
5,625,124
5,625,125
5,625,126
5,625,127
5,625,128
5,625,129
200 5,625,130
5,625,131
5,625,132
5,625,133
5,625,134
5,625,135
205 5,625,136

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D2— 738 378,947
866 378,948
993 378,949
D3— 201 378,950
203 378,951
222 378,952
233 378,953
262 378,954
D4— 104 378,955
108 378,956
378,957
120 378,958
132 378,959
D6— 300 378,960
361 378,961
369 378,962
383 378,963
487 378,964
500 378,965
555 378,966
566 378,967
596 378,968
603 378,969
D7— 309 378,970
330 378,971
381 378,972
406 378,973
505 378,974
510 378,975
612 378,976
624 378,977
673 378,978
378,979
D8— 1 378,980
51 378,981
99 378,982
107 378,983
308 378,984
338 378,985
354 378,986
356 378,987
380 378,988
D10— 26 378,989
65 378,990
66 378,991
70 378,992
120 378,993
D12— 90 378,994
91 378,995
110 378,996
129 378,997
193 378,998
213 378,999
379,000
317 379,001
379,002
D13— 138 379,003
184 379,004
D14— 106 379,005
117 379,006
162 379,007
167 379,008
379,009
D27— 189 379,010
D28— 30 379,011
51 379,012
73 379,013
D30— 118 379,014
D34— 1 379,015
24 379,016
28 379,017
379,018
29 379,019
34 379,020
38 379,021
379,022
D99— 37 379,023
379,024
39 379,025
43 379,026

CLASSIFICATION OF PLANTS

P— 40.1 9,871
42.1 9,872
9,873
54.1 9,874
68.1 9,875
76 9,876
86.1 9,877
86.2 9,878
86.3 9,879
88.1 9,880

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PATENTS

01 :	5,623,808	5,623,928	5,624,439	5,625,005	5,625,471	5,625,759
	5,623,822	5,623,930	5,624,449	5,625,010	5,625,491	5,625,763
	5,623,953	5,623,936	5,624,457	5,625,020	5,625,499	5,625,765
	5,623,994	5,623,961	5,624,461	5,625,032	5,625,506	5,625,767
	5,625,646	5,623,975	5,624,463	5,625,035	5,625,510	5,625,773
02 :	5,624,128	5,624,028	5,624,521	5,625,048	5,625,515	5,625,778
04 :	5,624,018	5,624,035	5,624,546	5,625,052	5,625,522	5,625,780
	5,624,113	5,624,047	5,624,597	5,625,061	5,625,525	5,625,784
	5,624,114	5,624,056	5,624,598	5,625,079	5,625,528	5,625,797
	5,624,127	5,624,060	5,624,605	5,625,125	5,625,544	5,625,800
	5,624,133	5,624,062	5,624,623	5,625,126	5,625,554	5,625,803
	5,624,183	5,624,063	5,624,635	5,625,127	5,625,556	5,625,807
	5,624,432	5,624,092	5,624,654	5,625,142	5,625,563	5,625,809
	5,624,501	5,624,096	5,624,660	5,625,148	5,625,564	5,625,811
	5,624,614	5,624,106	5,624,664	5,625,150	5,625,565	5,625,812
	5,624,645	5,624,146	5,624,672	5,625,168	5,625,568	5,625,814
	5,624,661	5,624,154	5,624,694	5,625,170	5,625,570	5,625,815
	5,624,662	5,624,155	5,624,709	5,625,189	5,625,579	5,625,818
	5,624,721	5,624,174	5,624,711	5,625,211	5,625,580	5,625,823
	5,624,791	5,624,177	5,624,712	5,625,216	5,625,606	5,625,825
	5,625,164	5,624,180	5,624,716	5,625,220	5,625,609	5,625,837
	5,625,166	5,624,181	5,624,725	5,625,225	5,625,625	5,625,842
	5,625,201	5,624,214	5,624,750	5,625,226	5,625,628	5,625,880
	5,625,241	5,624,218	5,624,799	5,625,228	5,625,629	5,625,881
	5,625,360	5,624,221	5,624,800	5,625,231	5,625,638	5,625,891
	5,625,361	5,624,238	5,624,802	5,625,235	5,625,651	08 : 5,623,759
	5,625,373	5,624,262	5,624,803	5,625,245	5,625,652	5,623,995
	5,625,644	5,624,263	5,624,805	5,625,257	5,625,656	5,624,139
	5,625,732	5,624,264	5,624,806	5,625,275	5,625,658	5,624,223
	5,625,734	5,624,265	5,624,808	5,625,281	5,625,666	5,624,334
	5,625,868	5,624,266	5,624,809	5,625,283	5,625,668	5,624,511
05 :	5,623,882	5,624,274	5,624,813	5,625,290	5,625,669	5,624,572
	5,623,891	5,624,291	5,624,832	5,625,301	5,625,679	5,624,707
	5,624,230	5,624,294	5,624,833	5,625,303	5,625,684	5,624,713
	5,624,646	5,624,299	5,624,840	5,625,317	5,625,691	5,625,050
06 :	5,623,744	5,624,304	5,624,848	5,625,324	5,625,693	5,625,131
	5,623,745	5,624,306	5,624,850	5,625,346	5,625,698	5,625,270
	5,623,755	5,624,316	5,624,859	5,625,363	5,625,704	5,625,292
	5,623,804	5,624,328	5,624,874	5,625,365	5,625,707	5,625,299
	5,623,813	5,624,342	5,624,899	5,625,372	5,625,709	5,625,327
	5,623,828	5,624,356	5,624,901	5,625,374	5,625,711	5,625,480
	5,623,853	5,624,376	5,624,902	5,625,377	5,625,713	5,625,615
	5,623,856	5,624,378	5,624,905	5,625,386	5,625,716	09 : 5,623,750
	5,623,878	5,624,381	5,624,908	5,625,396	5,625,719	5,623,775
	5,623,886	5,624,385	5,624,909	5,625,398	5,625,724	5,623,876
	5,623,892	5,624,396	5,624,911	5,625,416	5,625,726	5,623,988
	5,623,898	5,624,415	5,624,925	5,625,421	5,625,751	5,624,023
	5,623,916	5,624,433	5,624,990	5,625,425	5,625,752	5,624,032
	5,623,925	5,624,434	5,625,004	5,625,448	5,625,755	5,624,171

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5,624,175 | 5,623,885 | 5,624,207 | 5,624,142 | 5,624,353 | 5,624,227
5,624,217 | 5,623,894 | 5,624,372 | 5,624,149 | 5,624,516 | 5,624,287
5,624,267 | 5,623,998 | 5,624,502 | 5,624,176 | 5,624,586 | 5,624,293
5,624,370 | 5,624,054 | 5,624,574 | 5,624,213 | 5,624,679 | 5,624,344
5,624,431 | 5,624,089 | 5,625,105 | 5,624,222 | 5,625,141 | 5,624,369
5,624,470 | 5,624,091 | 23 : 5,624,009 | 5,624,245 | 5,625,364 | 5,624,387
5,624,513 | 5,624,094 | 5,624,409 | 5,624,271 | 5,625,548 | 5,624,467
5,624,618 | 5,624,123 | 24 : 5,624,000 | 5,624,311 | 5,625,822 | 5,624,471
5,624,745 | 5,624,140 | 5,624,088 | 5,624,333 | 34 : 5,623,764 | 5,624,507
5,624,824 | 5,624,169 | 5,624,144 | 5,624,352 | 5,623,815 | 5,624,524
5,624,837 | 5,624,188 | 5,624,292 | 5,624,523 | 5,623,976 | 5,624,528
5,624,929 | 5,624,307 | 5,624,295 | 5,624,579 | 5,624,025 | 5,624,547
5,624,951 | 5,624,339 | 5,624,375 | 5,624,616 | 5,624,057 | 5,624,558
5,624,957 | 5,624,430 | 5,624,393 | 5,624,624 | 5,624,065 | 5,624,641
5,624,983 | 5,624,444 | 5,624,577 | 5,624,706 | 5,624,074 | 5,624,668
5,625,063 | 5,624,451 | 5,624,637 | 5,624,762 | 5,624,095 | 5,624,731
5,625,090 | 5,624,462 | 5,624,810 | 5,624,769 | 5,624,116 | 5,624,733
5,625,146 | 5,624,493 | 5,624,814 | 5,624,878 | 5,624,126 | 5,624,767
5,625,176 | 5,624,569 | 5,624,830 | 5,624,966 | 5,624,198 | 5,624,804
5,625,446 | 5,624,575 | 5,624,847 | 5,624,997 | 5,624,399 | 5,624,817
5,625,655 | 5,624,642 | 5,624,849 | 5,625,023 | 5,624,421 | 5,624,845
5,625,694 | 5,624,677 | 5,625,335 | 5,625,087 | 5,624,490 | 5,624,869
5,625,804 | 5,624,723 | 5,625,344 | 5,625,128 | 5,624,491 | 5,624,881
5,625,821 | 5,624,744 | 5,625,573 | 5,625,156 | 5,624,559 | 5,624,922
10 : 5,623,888 | 5,624,797 | 5,625,640 | 5,625,337 | 5,624,590 | 5,624,923
5,624,596 | 5,624,883 | 5,625,889 | 5,625,345 | 5,624,611 | 5,624,932
5,624,741 | 5,624,888 | 25 : 5,623,762 | 5,625,354 | 5,624,612 | 5,624,938
11 : 5,624,071 | 5,624,924 | 5,623,827 | 5,625,371 | 5,624,615 | 5,624,985
5,624,895 | 5,624,946 | 5,623,829 | 5,625,518 | 5,624,657 | 5,625,040
5,625,624 | 5,625,053 | 5,623,884 | 5,625,557 | 5,624,665 | 5,625,112
12 : 5,623,777 | 5,625,072 | 5,623,938 | 5,625,750 | 5,624,727 | 5,625,210
5,623,778 | 5,625,092 | 5,623,947 | 5,625,827 | 5,624,754 | 5,625,233
5,623,787 | 5,625,106 | 5,624,110 | 5,441,680 | 5,624,759 | 5,625,273
5,623,816 | 5,625,132 | 5,624,173 | 27 : 5,623,758 | 5,624,838 | 5,625,369
5,623,823 | 5,625,238 | 5,624,211 | 5,623,797 | 5,624,843 | 5,625,378
5,623,843 | 5,625,285 | 5,624,332 | 5,623,802 | 5,624,880 | 5,625,402
5,623,855 | 5,625,367 | 5,624,362 | 5,623,817 | 5,624,891 | 5,625,414
5,623,901 | 5,625,500 | 5,624,374 | 5,623,943 | 5,624,892 | 5,625,427
5,623,917 | 5,625,670 | 5,624,392 | 5,623,945 | 5,624,906 | 5,625,458
5,624,076 | 5,625,683 | 5,624,435 | 5,623,963 | 5,624,914 | 5,625,460
5,624,118 | 5,625,688 | 5,624,443 | 5,623,974 | 5,624,920 | 5,625,483
5,624,151 | 5,625,743 | 5,624,445 | 5,623,978 | 5,624,927 | 5,625,485
5,624,156 | 5,625,796 | 5,624,478 | 5,624,016 | 5,624,928 | 5,625,501
5,624,157 | 5,625,862 | 5,624,552 | 5,624,090 | 5,624,958 | 5,625,645
5,624,160 | 5,625,882 | 5,624,554 | 5,624,200 | 5,624,964 | 5,625,674
5,624,215 | 5,625,887 | 5,624,571 | 5,624,248 | 5,624,965 | 5,625,692
5,624,321 | 18 : 5,623,785 | 5,624,599 | 5,624,260 | 5,625,064 | 5,625,705
5,624,398 | 5,623,806 | 5,624,617 | 5,624,281 | 5,625,068 | 5,625,729
5,624,418 | 5,623,835 | 5,624,622 | 5,624,379 | 5,625,082 | 5,625,736
5,624,456 | 5,623,854 | 5,624,638 | 5,624,395 | 5,625,103 | 5,625,793
5,624,459 | 5,623,918 | 5,624,703 | 5,624,411 | 5,625,104 | 5,625,808
5,624,512 | 5,623,965 | 5,624,801 | 5,624,526 | 5,625,121 | 5,625,835
5,624,592 | 5,623,971 | 5,624,807 | 5,624,581 | 5,625,140 | 5,625,836
5,624,681 | 5,624,246 | 5,624,823 | 5,624,714 | 5,625,199 | 5,625,859
5,624,816 | 5,624,343 | 5,624,904 | 5,624,726 | 5,625,206 | 5,625,893
5,624,894 | 5,624,345 | 5,624,910 | 5,624,734 | 5,625,251 | 37 : 5,623,767
5,625,036 | 5,624,360 | 5,624,963 | 5,624,758 | 5,625,304 | 5,623,818
5,625,118 | 5,624,390 | 5,624,982 | 5,624,763 | 5,625,307 | 5,623,833
5,625,173 | 5,624,412 | 5,625,030 | 5,624,898 | 5,625,407 | 5,623,863
5,625,202 | 5,624,447 | 5,625,077 | 5,624,955 | 5,625,410 | 5,623,893
5,625,224 | 5,624,553 | 5,625,149 | 5,624,973 | 5,625,412 | 5,623,956
5,625,271 | 5,624,724 | 5,625,152 | 5,624,986 | 5,625,449 | 5,624,034
5,625,316 | 5,624,735 | 5,625,193 | 5,625,006 | 5,625,465 | 5,624,044
5,625,328 | 5,624,772 | 5,625,259 | 5,625,062 | 5,625,472 | 5,624,119
5,625,341 | 5,624,934 | 5,625,358 | 5,625,070 | 5,625,478 | 5,624,190
5,625,342 | 5,624,937 | 5,625,359 | 5,625,239 | 5,625,575 | 5,624,277
5,625,349 | 5,624,940 | 5,625,397 | 5,625,339 | 5,625,608 | 5,624,366
5,625,351 | 5,624,944 | 5,625,452 | 5,625,508 | 5,625,617 | 5,624,475
5,625,489 | 5,624,949 | 5,625,459 | 5,625,511 | 5,625,622 | 5,624,659
5,625,566 | 5,624,953 | 5,625,463 | 5,625,512 | 5,625,630 | 5,624,669
5,625,664 | 5,625,065 | 5,625,469 | 5,625,552 | 5,625,673 | 5,624,782
5,625,775 | 5,625,172 | 5,625,547 | 5,625,562 | 5,625,677 | 5,624,825
5,625,845 | 5,625,186 | 5,625,549 | 5,625,712 | 5,625,680 | 5,625,033
5,625,877 | 5,625,244 | 5,625,567 | 5,625,776 | 5,625,687 | 5,625,047
13 : 5,623,830 | 5,625,265 | 5,625,642 | 5,625,820 | 5,625,697 | 5,625,054
5,623,948 | 5,625,375 | 5,625,701 | 5,625,892 | 5,625,708 | 5,625,136
5,623,996 | 5,625,406 | 5,625,722 | 28 : 5,624,492 | 5,625,721 | 5,625,277
5,624,024 | 5,625,543 | 5,625,731 | 29 : 5,623,769 | 5,625,723 | 5,625,531
5,624,041 | 5,625,690 | 5,625,746 | 5,623,860 | 5,625,733 | 5,625,621
5,624,309 | 19 : 5,623,783 | 5,625,748 | 5,623,862 | 5,625,745 | 38 : 5,624,049
5,624,397 | 5,623,794 | 5,625,749 | 5,624,042 | 5,625,747 | 5,625,129
5,624,488 | 5,623,858 | 5,625,802 | 5,624,520 | 5,625,854 | 39 : 5,623,743
5,624,729 | 5,624,143 | 5,625,805 | 5,624,675 | 5,625,871 | 5,623,803
5,625,049 | 5,624,324 | 5,625,833 | 5,624,697 | 5,625,884 | 5,623,834
5,625,435 | 5,625,038 | 26 : 5,623,741 | 5,624,836 | 35 : 5,624,529 | 5,623,870
5,625,523 | 5,625,135 | 5,623,774 | 5,624,956 | 5,624,794 | 5,623,880
5,625,667 | 5,625,180 | 5,623,812 | 5,624,968 | 5,625,276 | 5,623,910
5,625,737 | 5,625,555 | 5,623,841 | 5,625,073 | 5,625,288 | 5,623,926
15 : 5,623,799 | 20 : 5,623,844 | 5,623,849 | 5,625,093 | 5,625,635 | 5,623,949
5,623,842 | 5,624,314 | 5,623,897 | 5,625,124 | 5,625,636 | 5,623,968
16 : 5,624,303 | 5,624,414 | 5,623,906 | 5,625,689 | 36 : 5,623,732 | 5,623,979
5,624,468 | 5,624,930 | 5,623,907 | 30 : 5,623,959 | 5,623,734 | 5,623,980
5,624,863 | 5,625,405 | 5,623,908 | 5,624,015 | 5,623,790 | 5,623,985
5,624,865 | 21 : 5,623,846 | 5,623,972 | 5,624,566 | 5,623,875 | 5,624,051
5,624,868 | 5,623,922 | 5,623,997 | 5,625,876 | 5,623,909 | 5,624,067
5,625,588 | 5,624,167 | 5,624,007 | 31 : 5,623,740 | 5,623,927 | 5,624,098
5,625,756 | 5,624,170 | 5,624,011 | 5,624,008 | 5,623,987 | 5,624,145
5,625,790 | 5,624,224 | 5,624,061 | 5,624,239 | 5,624,038 | 5,624,148
17 : 5,623,735 | 5,624,534 | 5,624,086 | 32 : 5,624,122 | 5,624,066 | 5,624,166
5,623,739 | 5,624,562 | 5,624,087 | 5,625,583 | 5,624,131 | 5,624,234
5,623,784 | 5,625,117 | 5,624,103 | 5,625,761 | 5,624,153 | 5,624,325
5,623,807 | 5,625,576 | 5,624,115 | 33 : 5,624,210 | 5,624,189 | 5,624,357
5,623,809 | 22 : 5,623,962 | 5,624,132 | 5,624,237 | 5,624,205 | 5,624,368

5,624,388 | 5,625,788 | 5,625,686 | 5,624,078 | 5,625,768 | 5,623,915
5,624,420 | 42 : 5,623,737 | 5,625,798 | 5,624,101 | 5,625,781 | 5,623,929
5,624,422 | 5,623,754 | 5,625,819 | 5,624,124 | 5,625,806 | 5,623,931
5,624,426 | 5,623,757 | 5,625,863 | 5,624,135 | 5,625,816 | 5,623,992
5,624,427 | 5,623,796 | 44 : 5,624,203 | 5,624,182 | 5,625,817 | 5,624,022
5,624,442 | 5,623,800 | 5,624,692 | 5,624,184 | 5,625,824 | 5,624,136
5,624,452 | 5,623,805 | 5,624,789 | 5,624,206 | 5,625,826 | 5,624,196
5,624,473 | 5,623,819 | 5,625,320 | 5,624,252 | 5,625,829 | 5,624,326
5,624,485 | 5,623,845 | 5,625,456 | 5,624,261 | 5,625,838 | 5,624,329
5,624,496 | 5,623,924 | 5,625,605 | 5,624,288 | 5,625,864 | 5,624,446
5,624,522 | 5,623,969 | 45 : 5,623,736 | 5,624,417 | 5,625,870 | 5,624,594
5,624,532 | 5,623,990 | 5,623,795 | 5,624,419 | 5,625,890 | 5,624,613
5,624,666 | 5,624,006 | 5,623,867 | 5,624,548 | 49 : 5,623,951 | 5,624,626
5,624,676 | 5,624,017 | 5,624,082 | 5,624,560 | 5,624,130 | 5,624,728
5,624,698 | 5,624,021 | 5,624,225 | 5,624,582 | 5,624,212 | 5,624,818
5,624,737 | 5,624,027 | 5,624,282 | 5,624,620 | 5,624,320 | 5,624,896
5,624,742 | 5,624,050 | 5,624,302 | 5,624,636 | 5,624,377 | 5,625,075
5,624,790 | 5,624,168 | 5,624,404 | 5,624,647 | 5,624,465 | 5,625,279
5,624,820 | 5,624,258 | 5,624,453 | 5,624,704 | 5,624,519 | 5,625,399
5,624,921 | 5,624,273 | 5,624,563 | 5,624,718 | 5,624,542 | 5,625,401
5,624,978 | 5,624,279 | 5,624,736 | 5,624,747 | 5,624,674 | 5,625,657
5,625,098 | 5,624,394 | 46 : 5,623,751 | 5,624,827 | 5,624,700 | 5,625,676
5,625,196 | 5,624,413 | 47 : 5,623,789 | 5,624,844 | 5,624,819 | 5,625,678
5,625,495 | 5,624,438 | 5,623,981 | 5,624,854 | 5,625,165 | 5,625,706
5,625,659 | 5,624,539 | 5,623,986 | 5,624,860 | 5,625,171 | 5,625,783
5,625,660 | 5,624,568 | 5,624,037 | 5,624,879 | 5,625,333 | 5,625,799
5,625,738 | 5,624,570 | 5,624,045 | 5,624,886 | 5,625,696 | 54 : 5,625,012
40 : 5,623,798 | 5,624,602 | 5,624,129 | 5,624,893 | 50 : 5,624,178 | 55 : 5,623,836
5,623,921 | 5,624,631 | 5,624,259 | 5,625,007 | 5,624,359 | 5,623,890
5,624,031 | 5,624,632 | 5,624,437 | 5,625,015 | 5,624,383 | 5,624,073
5,624,358 | 5,624,649 | 5,624,441 | 5,625,016 | 5,625,280 | 5,624,159
5,624,877 | 5,624,651 | 5,624,971 | 5,625,043 | 5,625,302 | 5,624,241
5,625,101 | 5,624,708 | 5,624,987 | 5,625,182 | 5,625,631 | 5,624,367
5,625,267 | 5,624,757 | 5,625,028 | 5,625,184 | 5,625,787 | 5,624,423
41 : 5,623,772 | 5,624,775 | 5,625,029 | 5,625,194 | 5,625,789 | 5,624,428
5,623,942 | 5,624,873 | 5,625,134 | 5,625,204 | 5,625,830 | 5,624,429
5,623,944 | 5,624,912 | 5,625,138 | 5,625,209 | 51 : 5,623,859 | 5,624,472
5,623,977 | 5,624,915 | 48 : Re.35,497 | 5,625,227 | 5,623,864 | 5,624,589
5,624,400 | 5,624,916 | Re.35,499 | 5,625,232 | 5,624,026 | 5,624,630
5,624,403 | 5,624,926 | 5,623,760 | 5,625,278 | 5,624,064 | 5,624,693
5,624,440 | 5,624,936 | 5,623,779 | 5,625,293 | 5,624,077 | 5,624,701
5,624,527 | 5,625,001 | 5,623,780 | 5,625,325 | 5,624,322 | 5,624,913
5,624,567 | 5,625,031 | 5,623,788 | 5,625,326 | 5,624,644 | 5,625,133
5,624,576 | 5,625,081 | 5,623,810 | 5,625,357 | 5,624,684 | 5,625,137
5,624,604 | 5,625,084 | 5,623,869 | 5,625,379 | 5,624,688 | 5,625,190
5,625,217 | 5,625,100 | 5,623,932 | 5,625,424 | 5,624,919 | 5,625,262
5,625,291 | 5,625,109 | 5,623,939 | 5,625,455 | 5,625,334 | 5,625,550
5,625,348 | 5,625,113 | 5,623,958 | 5,625,477 | 5,625,404 | 5,625,662
5,625,389 | 5,625,200 | 5,623,966 | 5,625,532 | 5,625,587 | 5,625,663
5,625,390 | 5,625,249 | 5,623,993 | 5,625,534 | 5,625,623 | 5,625,831
5,625,451 | 5,625,314 | 5,624,001 | 5,625,535 | 5,625,851
5,625,569 | 5,625,490 | 5,624,002 | 5,625,541 | 53 : 5,623,792
5,625,582 | 5,625,545 | 5,624,068 | 5,625,603 | 5,623,820
5,625,779 | 5,625,653 | 5,624,069 | 5,625,681 | 5,623,889

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01 : 378,975 | 379,000 | 379,022 | 378,998 | 378,959 | 378,972
06 : 378,952 | 379,001 | 15 : 378,990 | 379,024 | 378,992 | 378,983
378,958 | 379,003 | 16 : 378,979 | 26 : 378,956 | 379,009 | 42 : 378,949
378,964 | 379,011 | 17 : 378,968 | 378,965 | 379,010 | 379,016
378,981 | 379,017 | 378,997 | 379,023 | 37 : 378,957 | 48 : 378,960
378,982 | 379,019 | 379,025 | 27 : 378,996 | 379,015 | 378,978
378,984 | 09 : 378,986 | 18 : 378,967 | 379,021 | 39 : 378,966 | 378,993
378,987 | 379,008 | 19 : 378,991 | 28 : 378,948 | 378,969 | 51 : 378,970
378,988 | 379,014 | 379,020 | 29 : 378,951 | 378,985 | 378,971
378,995 | 12 : 378,947 | 21 : 378,973 | 32 : 378,962 | 41 : 378,950 | 53 : 379,002
378,999 | 378,980 | 25 : 378,954 | 36 : 378,955 | 378,961 | 55 : 379,026

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06 : 9,872 | 9,873 | 12 : 9,871 | 15 : 9,880 | 39 : 9,875

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